plunge. TAG announced service between Detroit and Cleveland "every hour on the hour" from 7 a.m. until 10 p.m. The big question was "would the expensive gamble succeed and would there be enough business to support it."

And there was. The traffic began going up by leaps and bounds. The business grew so fast that TAG began to schedule some flights in peak periods every half hour, then every 15 minutes. In 1963, the volume was up to 44,374 passengers; in 1964, to 65,605 passengers.

G. E. Weller (AOPA 2517), TAG's director of sales and public relations, insists that the big secret of TAG's success is the frequency of service and the ability to get passengers to their destinations with little loss of ground time.

He explains that TAG passengers generally spend 20 minutes to a half hour traveling to and from the airports —in contrast to two hours or more for the Detroit-Cleveland passengers who fly between Cleveland Hopkins International Airport and Detroit's Willow Run or Detroit Metropolitan Airports.

"Why," he said, "we have times when up to 50 passengers at Lakefront Airport refuse to wait a couple minutes for a taxi, simply pick up their baggage and walk to the downtown business district."

TAG presently has a staff of 30 pilots, is operating 11 *Doves* and nine *Aztecs*, and shortly will put another eight *Aztecs*, which it has at Toledo, into service. Since the line is limited to flying aircraft grossing less than 12,500 pounds' takeoff weight, it has had troubles locating new "off-the-shelf" aircraft that would suit its purposes; and it found the *Aztec* ideally suited for the purpose.

"Only one pilot to pay," he says, "they carry five pay passengers, plenty of seats to make the flight pay; and if there are empty seats, you don't go broke."

TAG requires its pilots to have a minimum of 5,000 hours and an Air Transport Rating, to take rigid qualification tests; most are former executive pilots or former military pilots. It has no difficulty finding plenty of candidates for the jobs.

Its *Aztecs* are superbly equipped with full panels, and plenty of equipment, including radar transponders, dual Mark 12 omnis, ADF, dual glide slope, marker beacons, deicer boots, heated propellers, heated windows, fuel injection engines, Piper autopilots with approach couplers.

When TAG put the *Aztecs* into service, it was concerned that the passengers, generally being the type of persons who ride the big scheduled airlines, might be skeptical about flying with only one pilot. Also, there was some concern that the radio chatter might annoy or frighten some passengers. So pilots were equipped with radio head sets, with instructions not to use cabin speakers.

Finally one day a passenger accosted Weller:

"It's a lot of fun to ride those airplanes, to see what is going on and what the pilot has to do—but why can't you give us passengers headsets, too?" The upshot of it was that the pilots were instructed to use the cabin speakers for radio reception, in place of the headsets—and the passengers glory in it.

As to the concern about riding with one pilot. . . . "Well, out of some 1,500 passengers carried in the *Aztecs*, only two passengers commented on it," Weller said.

One problem that TAG encountered was that passengers held back in boarding the aircraft, each trying to be last aboard so he would get to ride the copilot's seat. TAG finally countered that by issuing a jocular "Back-seat pilot's license" to each passenger, inviting him to criticize, advise or help the pilot with "back-seat" advice whenever he saw fit.

"So every trip," says Weller, "is one big happy lark."

TAG gets frequent comments from passengers who say that now, since they can see and hear what is going on, instead of being "cooped up" in the back of a big airliner, they feel more confident and much safer in flying.

Weller likes to tell of an experience he had recently with fast transportation. He had hired a "Kelly girl" to pass out literature on the line at the Cleveland Public Auditorium. He commented to her that she was only five minutes away from TAG's aircraft loading gate.

"Oh, come now!" said the girl in disbelief. "Tell that to the customers, but don't expect me to believe it."

In a sudden spurt of inspiration, Weller grabbed the girl, shouting "Come on."

They hailed a taxi outside the auditorium and exactly five minutes and 30 seconds later climbed aboard a TAG plane; 38 minutes later, they were sitting in a bar at Detroit City Airport, sipping a cold drink. She was convinced.

Weller points out that TAG figures it takes a passenger only an even hour, using TAG to get from the heart of either Cleveland or Detroit to the heart of the other; this includes 40 minutes of flying time and 15 minutes' on the ground travel. "Using one of our competitors, it takes him 2½ to three hours," he said.

The Lakefront and City Airports have relatively high weather minimums —600 feet and one mile at Cleveland Lakefront; yet TAG completes an unusually high percentage of its scheduled trips, up to 95 per cent, Weller insists.

During instrument weather, TAG pilots begin radar approaches on Cleveland Hopkins Airport; if they break out at 600 feet, they find themselves right over the Lakefront airport and are permitted to abandon their approaches, turn out over Lake Erie and land at Lakefront. But sometimes, TAG must use Hopkins Airport as an alternate, then ferrying the passengers in taxicabs between the two fields. ●

The

A few years ago, two big military contractors lost the profitable job of providing the Air Force with medium-range jet training planes. Already tooled and productively manned to turn out dozens of the aircraft, they were caught on the horns of a dilemma. Theoretically too small for air carrier use and too costly for private ownership, their jets didn't fit neatly into any then-existing commercial category. Should they scrub production and mark off their previous efforts as a loss, or continue to produce the aircraft for other customers?

The audacious decision reached by both companies was to adapt their aircraft to civil use and invade the business aircraft market. Since Lockheed and North American plotted that course for the four-engine *JetStar* and the twin-jet *Sabreliner*, respectively, a whole new category of aviation has opened up that is becoming increasingly competitive. The corporate jet, a concept that was skeptically regarded just five brief years ago, today is solidly entrenched.

Some 400 pure jets and turboprops now ply the airways, and at least seven different aircraft manufacturers here and abroad are vying fiercely for leadership in the executive jet market. [Business jet aircraft currently or soon to be available are shown on pages 36 and 37.]

And an astonishingly large market there seems to be. FAA, which in 1960 foresaw little appreciable business jet activity in its long-range crystal ball, now admits that there may be as many as 950 of the high-flying corporate speedsters in use by 1970. Those in the business of supplying the growing demand, however, are convinced that the figure by then will more closely approximate 2,500 to 3,000.

Considering the comparatively high initial and operating costs, their relative newness to the market, and the entrenched reputation big business has of being conservative in the face of change, the business jet phenomenon raises a lot of questions. What type of business firms are buying jets? What are their primary attractions? How

General aviation's youngest, but potentially richest, segment is expanding at a fiercely competitive rate. Industry sees possibly 2,500 or 3,000 small jets in use by 1970

BUSINESS JET Race Is On

will their growing popularity affect the piston-engine business aircraft trade? Does their instant popularity mirror the false boom seen in the market following World War II, or does the jet surge represent more solidly based progress?

Some of those questions were answered by Kenneth M. Smith, vice president and general manager of the Aero Commander Division of Rockwell-Standard Corporation in a recent speech:

"The initial phases of marketing [corporate jet] airplanes . . . indicates that only large, well known companies are in a position to use jet airplanes . . . However, it seems to us that history will repeat itself. When the original *Aero Commander* was introduced in the late '40's, it was widely believed that because of the price of the airplane . . . only large corporations could afford to make use of such a transportation vehicle. Within 10 years, companies with less than $1,000,000 in sales a year owned and operated *Aero Commanders* all over the world. We believe that as the competitive advantages of jet ownership become obvious to the smaller companies (with sales volume ranges of $1,000,000 to $5,000,000), these companies will realize that in order to compete in their markets, they will require business jet transportation."

Aero Commander, with its twin-jet, six- to eight-place *Jet Commander*, is one of seven pure jet business plane builders currently fighting for leadership in the field. The others are Lockheed with its *JetStar*, North American *Sabreliner*, *Lear Jet*, and from overseas, West Germany's Hamburger Flugzeubau *Hansa 320*, England's Hawker Siddeley DH-125, and the French-built Pan Am Fan Jet *Falcon* (the Dassault Mystere).

Forerunners of the pure jets and still strong competitors in the same general performance (450 m.p.h.-plus cruising speeds) and price ($575,000 to $1,700,000) range are a few turboprop aircraft. The Fairchild F-27 and Grumman *Gulfstream* are two examples.

Current worldwide top sellers among the business jets appear to be the DH-125, the *Lear Jet*, the *JetStar* and the *Jet Commander*. All manufacturers reportedly are selling well ahead of their own preproduction forecasts, however.

Hawker-Siddeley, with a total of 71 DH-125 aircraft delivered, led the field as of July. Of those, 37 had been sold in the United States and Canada. Current authorized production orders for the six- to eight-passenger jet total 160. It is distributed in the United States by Atlantic Aircraft Sales in Washington, D.C., and AiResearch Aviation Service of Los Angeles.

The *Lear Jet* is refreshing proof that the age of the entrepreneur and free enterprise is not totally dead in the United States. Literally bulled into being by the will and force of William P. Lear, Sr. (AOPA 6975) alone, against the advice, counsel and delaying tactics of scores of skeptics, the speedy twin-jet craft is the lowest priced completely equipped plane of its type on the market today.

It went into production formally in mid-October, 1964. By the close of last month, more than 50 units had been delivered and firm orders had been placed for a total of 120. To meet expanding demands in this country and abroad, production has increased to 10 planes a month.

Strictly speaking, the *Lear Jet* is the only one of the business jets that is considered in the lightplane category (12,500 pounds gross weight and under). In performance, it compares favorably with its bigger brethren, except that its usable inside space is about half that of its next larger competitor.

Bill Lear foresees an annual market for 120 of his jet planes through 1975, which will give his company about 40% of the potential market.

While its *Jet Commander* had been on the drawing board and in developmental phases since 1960, Aero Commander did not officially introduce it to the market until last November. Between January and August, 16 *Jet Commanders* were delivered, 23 were off the production line and advance orders were in hand for 51 units.

Concerning its future market, Aero Commander believes that the jet will be the first plane in the business aircraft market to be good for an average of 100 units a year. It expects the *Jet Commander* share of that market will be 50 to 60 units annually.

Other jetmakers appear to be more subdued in their outlook, with the possible exception of Dassault of France. Stimulated by its American marketing agent, the Business Jets Division of Pan Am, Dassault is gearing for its $1,162,000 *Falcon*. The plane had its first public showing in the United States in mid-June, and Pan Am claims to have already taken $10,000 deposits on more than 50, with immediate advance orders on better than 100 more.

Both pioneers in the business jet field have progressed at their own rate of satisfaction since their products were first offered. On the market shortly before the advent of this decade, the Lockheed *JetStar*, largest and most costly of the group, has been delivered to 52 corporate buyers. Current production amounts to one a month. There are about 20 North American *Sabreliners* in use throughout the world, and production schedules parallel those of Lockheed.

The types of organizations buying corporate jets seem to run the broad gamut of big business. Hawker-Siddeley numbers paper, automobile and chemical manufacturers, oil and pipeline, mining and construction companies, department store chains, and a trade association among past purchasers of the DH-125. The *Lear Jet* and *Jet Commander* add to these types of buyers some Government agencies and well-heeled individuals. About the only common link is that all buyers have interests in widely separated locations and they have strong requirements to travel rapidly from one point to another.

Business jets, without question, provide that rapidity. With high cruising speeds of up to 547 m.p.h., any plane in the corporate jet group will average 460 m.p.h. in ramp-to-ramp travel. The strongest selling points, however, seem

Jet Commander

Hansa 320

to be their ability to rapidly rise and cruise at near sonic speeds well above the turbulence and weather phenomena of more mundane piston-powered flight altitudes.

The success achieved by the executive jet merchandising program in its brief life does not, most observers agree, represent the natural state of a ready market. Rather, it has been engendered by the aggressive efforts of its promoters. A supply is not being produced to fulfill a demand; the demand is being created through a hardheaded, soundly based promotional and merchandising campaign.

Initially, manufacturers of corporate jets ballyhooed the point that their product would transport Mr. Busy Executive from Point A to Point B in half the time that it would take to travel in a prop-driven aircraft. But an unforeseen trend has developed that has the jetmakers optimistically gloating over the future potential of their industry. Aero Commander reports that *Jet Commanders* it has delivered are being operated twice as much as the planes they replaced, indicating that the jets will be more widely used and that depreciation and replacement may be greatly accelerated. Some corporations, it was noted, have hired two or three flight crews to keep the level of operational utility high for jet aircraft.

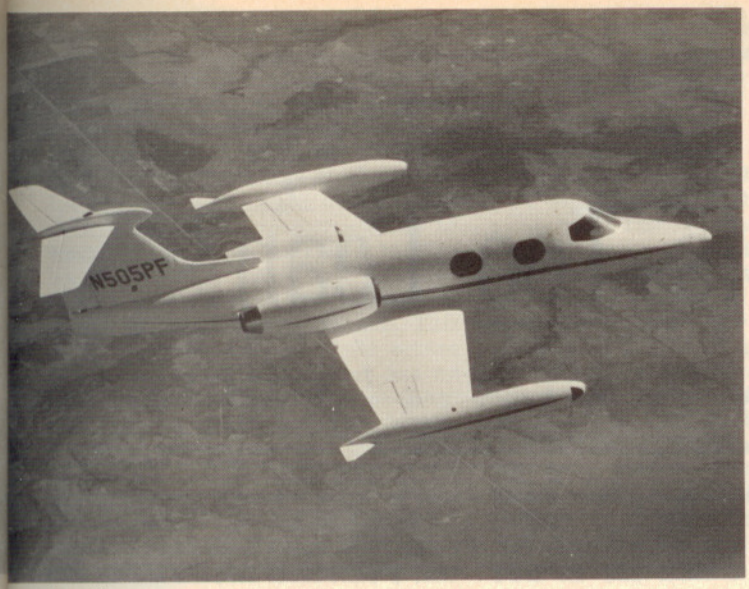
According to Aero Commander, the executive jet market in its scant year of life already has become a production race. Perhaps that is true in the sense that the market is expanding rapidly. But that expansion is not necessarily a natural course. Wooed by the various jet competitors, the normally conservative corporation "comparison shopper" has hesitated only long enough to observe that his own competitor is reaching the prospective customer first. Now he wants to equalize the situation or gain an edge himself by use of one of the speedy new jets.

Business aviation spokesmen believe that the advent of executive jets poses no threat to expansion of the piston-engine corporate fleet. With an estimated 20,000 aircraft now operated by business concerns in the United States, the potential is considered at least 10 times that great. The history of business flying shows that segment of general aviation is constantly being expanded and upgraded. As one corporation outgrows its aircraft and steps up to a larger or more sophisticated model, another company "graduates" to the former firm's old aircraft.

Manufacturers of executive jets place their confidence in their future success in the fact that their product will carry corporate executives as rapidly as giant jet air carriers. But the advantage of business jets is that they are not tied

Business Jet Fleet Selected Specifications and Performance Data

Manufacturer	Model	Seats	Gross Wt.	Empty Wt.	Cruise Range	Cruise Speed	Takeoff/Landing Distance	Price Equipped (Approx.)
Aero Commander	Jet Commander	6-8	16,000	7,040	1,600 mi.	505 m.p.h.	4,450/3,150 ft.	$ 690,000
Dassault	Falcon	8-10	24,470	13,230	1,600	546	4,100/2,500	1,152,000
Hamburger Flugzeugbau	Hansa 320	6-10	18,100	12,790	1,650	518	4,150/2,200	850,000
Hawker-Siddeley	DH-125	6-10	20,500	11,000	1,800	500	3,900/2,160	830,000
Lear Jet	23	4-8	12,500	4,700	1,800	535	3,900/2,800	595,000
Lockheed	JetStar	8-12	40,920	20,855	2,250	547	4,800/2,730	1,712,000
North American	Sabreliner	6-9	18,650	6,775	1,950	507	3,800/2,850	995,000



Lear Jet

JetStar

to schedules and to the 625 airports at which scheduled airlines operate.

Because more large companies are relocating their main plants and branches away from metropolitan areas, airlines are becoming less practical as a means of rapid point-to-point transportation. The jetmakers claim their aircraft can use a greater number of the nation's approximately 9,000 landing places and therefore can save the busy executive valuable hours of ground travel time. But the fact is that all jets require good, paved runways at least 5,000 feet long, and there are now less than 2,500 airports in the United States that provide that commodious a landing area.

Although the outlook for the business jet market appears bright, it has not yet achieved the luster of permanence. But in view of its high flying start, it won't be long in getting there. ●

Falcon

Sabreliner

DH 125