

The AIRCRAFT YEAR BOOK

In a national emergency, CRAF airplanes and their flight and ground crews would be subject to call into military service on 48 hours notice. They would stay in service for the duration.

The Civil Reserve Air Fleet today has a capacity ten times greater than the civil fleet that performed with such distinction in World War II.

Although the Civil Reserve Air Fleet and the bulk of the scheduled airlines' national defense potential is provided by the larger trunk and international carriers, the 14 scheduled local service lines are also an important part of the defense picture. Due to decentralization, more and more defense plants are located away from major population centers and must rely upon the local service airlines for fast transportation.

Another phase of the scheduled airlines' increased usefulness to the nation is concentrated in the activities of the Military Bureau of the Air Transport Association. Through the bureau, with offices in Washington, the airlines speed up the movement of about 13,000 military personnel a month to points all over the country. It has shown that the movements of large groups of men, long regarded only in terms of trainload or shipload, can be made by air with substantial saving in time and money.

Where mail revenues constituted the major source of income for the country's young airlines in the past, mail payments today amount to only 8.66 percent of total revenues. At the same time, the amount and quality of air mail service today is greater than ever before.

Passengers account for 88.76 percent of total operating revenues for the domestic trunk lines, 50.99 percent for the local service lines and 68.89 percent for the international lines. The percentage for the entire industry is 82.03 percent.

Freight makes up 3.37 percent of the trunk lines' revenues, while it is 0.92 percent for the local service lines and 8.08 percent for the international lines. Total for the industry is 4.54 percent.

Express comes to 1.52 percent for the trunk lines and 0.92 percent for the local service lines for a total of 1.09 percent for the industry. Express and freight revenues are not segregated by international airlines.

It is still too early to determine the success of the 3-cent mail by air experiment now in its second year. During the first year, however, senders of first-class letters saved nearly ten billion hours of delivery time, with hundreds of millions of letters reaching their destinations an average of 11½ hours sooner than if they had moved by surface means.

Postage revenues during the first year of the experiment amounted to \$29.5-million. Out of that, the Post Office kept \$27.6-million or 94 percent of the total, while they paid the airlines only \$1.8-million for the service.

The experiment is not limited only to the larger cities in the country served by the trunk lines. Intermediate cities are also taking part in the experiment through the operations of the local service airlines in 23 states.

It must be pointed out that this new service does not infringe upon six-cent air mail service, which gets priority treatment from the moment of mailing. Space is contracted for air mail. It is guaranteed air transportation and it takes precedence over other mail, as well as passengers and cargo.

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There follows a comparative table showing traffic and revenue statistics for the U. S. scheduled airlines during 12-month period ending September, 1954, and 12-month period ending September, 1955.

U. S. AIRLINE STATISTICS 12 Months—September 1954-1955

	1955	1954	Percent Change
DOMESTIC TRUNK			
Revenue Passengers (000)	33,689	28,363	18.78
Revenue Passenger Miles (000)	18,648,353	15,621,291	19.37
Mail Ton-Miles (000)	84,826	78,728	7.75
Express Ton-Miles (000)	47,057	38,135	23.40
Freight Ton-Miles (000)	170,366	138,440	23.06
Total Operating Revenues (000)	\$1,106,037	\$944,125	17.15
LOCAL SERVICE			
Revenue Passengers (000)	2,728	2,099	29.97
Revenue Passenger Miles (000)	495,315	386,566	28.13
Mail Ton-Miles (000)	1,220	1,007	21.15
Express Ton-Miles (000)	1,257	954	31.76
Freight Ton-Miles (000)	1,262	991	27.35
Total Operating Revenues (000)	\$55,304	\$49,300	12.18
INTERNATIONAL			
Revenue Passengers (000)	3,246	2,779	16.80
Revenue Passenger Miles (000)	4,287,097	3,633,195	18.00
Mail Ton-Miles (000)	55,863	37,992	47.04
Cargo Ton-Miles Express & Freight (000)	87,528	80,241	9.08
Operating Revenues (000)	\$378,724	\$357,556	5.92

Source: CAB recurrent reports.

Allegheny Airlines

Allegheny Airlines' traffic during the first nine months of 1955 has established new records almost on a monthly basis.

For the period, January through September, Allegheny flew more than 42,248,000 passenger miles for an average increase over last year of 33 percent.

Express and mail loads were also up substantially over last year.

In June, 1955, Allegheny Airlines started services over selected routes on the Company's seven-state system in the Middle Atlantic Area with twin-engine Martin aircraft seating 40 passengers. By September, Allegheny had Martins operating on four of the Company's seven segments. Allegheny, calling itself the "Airline of Executives," named the new equipment "Martin Executives."

The Company now has four Martin Executive aircraft and 14 DC-3's. New services were begun at Trenton, N. J., during the year, and for

the first time, Allegheny Airlines operated non-stop flights between Pittsburgh and Atlantic City during the summer.

The Civil Aeronautics Board has inaugurated a proceeding during which Allegheny will be certificated permanently over its present route system, and hearings are presently in process concerning Allegheny's application to extend direct services to Detroit, Mich., by way of Erie, Pa., and eight other industrial centers in New York and Pennsylvania.

The company again won the Aviation Safety Award of the National Safety Council, and through September, 1955, has flown over 200-million passenger miles without an accident.

American Airlines

American Airlines in 1955 made new traffic and revenue records, and began phasing toward the turboprop and turbojet age.

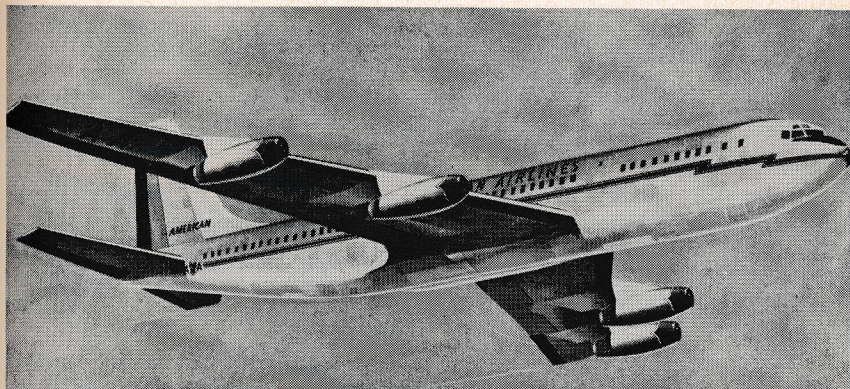
Highpoint of the year came on Nov. 9, when C. R. Smith, President, announced that American will operate the first transcontinental service with turbojet aircraft, beginning June 15, 1959. The service will be operated with Boeing 707's, powered with Pratt & Whitney J-57's. Thirty planes are ordered, with delivery to begin in March, 1959. The order totals about \$135-million with each aircraft costing about \$4.5-million.

First schedules will be between New York and Chicago, Chicago and Los Angeles, and non-stop between New York and Los Angeles. The Los Angeles-New York run was expected to take 4 hours, 15 minutes; the return leg, 5 hours and 15 minutes. Chicago-New York would be cut to 1 hour, 25 minutes, with the return flying time running to an hour and 45 minutes.

On June 9, American also announced it had ordered 35 four-engine turboprop "Electra" transports from the Lockheed Aircraft Corporation, valued at approximately \$65-million. The Electra will be powered by Allison 501 turboprops, will cruise at over 400 mph, and has a cruising range of approximately 3,000 miles. Deliveries will be in 1958-59. Also on order by American are 14 Douglas DC-7's (delivery in 1956-57), four Douglas DC-6A Airfreighters (delivery in 1956) and 12 Douglas DC-6B's (delivery in 1957).

Substantial increases in traffic and revenue marked the first nine months of 1955. Revenue totaled nearly \$195-million, up 26 percent over the same period a year ago. Net earnings, after taxes, were over \$14-million. American carried nearly 5.5-million passengers over 3-billion passenger miles during the period, a 30 percent increase over 1954, plus nearly 50-million ton miles of airfreight—a jump of 31.5 percent. A new all-time record for airfreight was set in September at 6,653,000 ton miles. The previous record airfreight month, also set by American, was August, 1955, at 6,375,000 ton miles. American thus became the only domestic airline ever to reach or exceed the 6-million ton mile-a-month mark, having done it five times: in October and December, 1954; and again in June, August and September of this year.

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American Airlines purchases turbojet aircraft for delivery in 1959

American scored another history-making first on Wednesday, October 12, when it became the first airline in the world to fly 50-million passengers. The 50-millionth passenger, Edgar Elbert of Maywood, Ill., rode American's flight 204 from Chicago to New York.

A third all-time traffic record was established in June, when American flew more than 686,000 passengers approximately 416-million passenger miles. It marked the first time that any airline had flown more than 400-million passenger miles in a single month.

In October, installation began of radar inflight weather surveillance equipment on the 25 American DC-7's now in transcontinental service. Radar will also go on 14 additional DC-7's due for delivery in 1956. Cost of the entire initial program was estimated at \$800,000.

Early in the year, American was given the National Safety Council's highest employee safety award, the Award of Honor, for the company's employee safety record in 1954. The new record—8.9 disabling injuries per million manhours worked—was described by the Safety Council as 39 percent better than the overall air transport industry average for the three years ending Dec. 31, 1954.

Braniff International Airways

An \$87-million aircraft program which will include the purchase of turbo-jet, turbo-prop and piston-engine transports, as well as placement of the largest new aircraft order in its 27-year history, highlighted the activities of Braniff International Airways during 1955. Braniff's management also took steps toward expanded corporate financing, improved ground facilities, and stronger schedule patterns through equipment interchange agreements with other major U. S. air carriers.

And the year 1955 also saw Braniff's domestic system free of subsidy from the government. Subsidy on the airline's international routes to South

America has been greatly reduced thus, according to Braniff President Chas. E. Beard, creating a "healthy situation reflecting the increased earning capacity of our operations."

In March, Braniff contracted to buy seven DC-7C's, delivery to begin in the fall of 1956, for \$20-million, including spare parts and special shop equipment.

In October, Braniff programmed to purchase up to eight new Convair 440's, up to ten turbo-prop aircraft and up to six jets, at a total cost of \$67-million. Firm delivery dates in 1956 cover six Convair 440's, and in 1959 and 1960 for both Douglas and Boeing jets. Tentative arrangements have been made for deliveries of Lockheed Electras in the spring and summer of 1959.

Modification of Braniff's present Douglas DC-6 fleet at a cost of \$1.2-million was begun in the company's shops November 1. More powerful engines, which will increase the plane's speed to 335 miles per hour, will be installed, and the passenger cabin interiors will be completely modernized.

During the first six months of 1955 Braniff called all of its outstanding convertible debentures and paid off in advance other long term debts, leaving the airline free of debt except for current operating items.

Major move to improve the airline's ground facilities came in June, 1955, when President Beard signed a 30-year agreement with Dallas, Texas, for the lease and construction of a new \$4-million maintenance and overhaul base at Love field. The new base will be completed by the end of 1956.

The Civil Aeronautics Board decision in the New York-Balboa Through Service Case, April, gave Braniff its most important access to new markets. In August, Braniff and Eastern Air Lines began new through one-plane air-service between New York and Washington, and key cities in Panama and on both coasts of South America through an equipment interchange at Miami. Braniff and Eastern are now providing daily DC-6 service between New York and Washington and South America. Four flights weekly are through interchange flights, with three additional connecting schedules per week at Miami.

In January, 1955, Braniff and Trans World Airlines, under an interchange agreement, began through one-plane service between Houston and Dallas and Los Angeles, Oakland and San Francisco. Las Vegas was added as an intermediate stop on August 15.

Single-plane through air service between Houston and Dallas and Salt Lake City, Boise, Portland and Seattle-Tacoma also was resumed September 25 by Braniff and United Air Lines through a similar interchange agreement. Begun in September, 1953, the service was temporarily suspended in April, 1954.

Braniff continued to show increases in virtually every category of its operations during 1955. For the first nine months of the year, revenue passengers increased 13 percent, from 1,101,000 in 1954 to 1,248,600 in 1955. Overall revenue passenger miles increased 12 percent, from 456,818,-

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000 in the first nine months of 1954 to 510,587,000 in the same period of 1955.

Air freight tonnage increased 11 percent during the first nine months of the year, with an 8 percent increase in freight ton miles. Express tons were up 5 percent, and express ton miles flown showed an 11 percent increase.

The four billionth passenger mile flown by Braniff International Airways was recorded Oct. 10, 1955, on a Houston to Chicago DC-6 flight, a little more than 27 years following the airline's first 116-mile flight between Oklahoma City and Tulsa.

Capital Airlines

Outstanding among the events of the year 1955 for Capital Airlines was the inauguration of turbo-prop Viscount service on July 26. The airline became the first U. S. carrier to operate turbine-powered aircraft in scheduled service.

The first of the fleet of 60 Viscounts ordered by Capital arrived in America from Vickers-Armstrongs, Ltd. in Great Britain on June 16. By the end of the year, six of the airplanes had been received and frequent service was provided between Washington and Chicago and between New York and Chicago. Pittsburgh, Cleveland, Detroit and Norfolk were also included in the Viscount schedules. During 1956, it is expected that the manufacturer's production will be increased to allow the delivery of three to four airplanes a month so that schedules will be progressively augmented and extended to cover eventually virtually all of Capital's system.

The Viscount was christened on June 23 at the National Airport in Washington. Vice President Richard Nixon extended greetings to the audience of some 2,500 guests and congratulated Capital on the significant step it had taken in advancing the jet age of flight in American air transportation by introducing the Viscount.

The airline during the year launched a comprehensive training program to acquaint all its personnel with the new airplane and to enable a transition program which would permit the change-over from reciprocating to turbine power efficiently and easily.

Capital took a major step forward in the development of its route program when the Civil Aeronautics Board removed restrictions which had previously hampered operations between New York and Chicago.

The decision gave Capital a new route segment from New York to Rochester, Buffalo, Detroit and beyond to Chicago and to Milwaukee and Minneapolis/St. Paul.

In addition, the airline was sanctioned by the CAB to operate non-stop flights between New York and Chicago. Also, flights can be operated non-stop Detroit-New York and between Pittsburgh and New York on an unrestricted basis. Prior to the decision, the company was required to make at least one stop between New York and Detroit and two stops between New York and Chicago.

Philadelphia was made a stop on Capital's New York-Chicago route as well as on the airline's route between New York and Atlanta and New Orleans.

In the Northeast-Southwest case, the Civil Aeronautics Board authorized Capital to connect its northeast cities of New York, Philadelphia, Baltimore and Washington on a straight-line operation with its equally important southern cities.

At the same time, the Board amended Capital's certificate on its southern route structure to permit more effective competitive service between New Orleans and Atlanta via Birmingham and Mobile. Also authorized was service between Pittsburgh and Philadelphia.

For the second consecutive year, the Board of Directors of Capital Airlines announced a 5 percent common stock dividend on the outstanding common capital stock of the company payable December 28, 1955.

For the third consecutive year of successful operation, Capital brought forth its popular package-tour Weekend at the Waldorf. The airline also continued to set a pace in the charter field for major league baseball teams, college and professional football teams and other special group movements.

The company's advertising program was stepped-up to introduce the Viscount and to educate the public to turbine-power. The scope of the program included newspapers, national magazines, trade magazines, radio, television and its unique direct mail program which has earned seven consecutive national awards.

A 45-foot tractor-trailer housing a Viscount display with a cut-away model of a Rolls-Royce engine was toured throughout the country as part of the Viscount educational program.

For the first nine months of 1955, the airline reported an operating income of \$945,842. Net income after taxes, principally on sales of aircraft, amounted to \$4,081,277. In the like period of 1954, net income was \$1,010,647.

Passengers carried during the first nine months totaled 1,946,229 as compared to 1,813,518 in 1954 for the same period. Passenger miles flown during the first three quarters reached 605,116,431. Revenues were up from \$35,901,275 for the first nine months of 1954 to \$38,043,463 for the same period in 1955.

Colonial Airlines

Colonial Airlines celebrated in May, 1955, a quarter of a century of flying without a single accident involving a fatality to passenger or crew—a new all-time high in air transport operations.

During the year, the airline expanded the frequency of its service between New York and Montreal, scheduling nine daily flights between the cities. Service totals 468 seats daily in each direction.

The Colonial Owl Flight to New York from Montreal, a late-at-night economy service, proved a popular service, and traffic increased during winter months between Canadian points and Bermuda. Winter service for skiers in the other directions also increased.

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Beginning of work on the St. Lawrence Seaway also brought rapidly increased traffic, doubling and in some cases tripling service in cities along the route.

Delta Air Lines

The Civil Aeronautics Board decision, in the fall of 1955, giving Delta Air Lines entry into New York and Washington, was Delta's biggest news event for the year.

Passengers carried during the first ten months of the year show a 6 percent increase over the 1,830,015 total carried during 1954. Revenue passenger miles increased 2 percent over last year, from 836,215,635 during 1954 to 850,216,154 during the first ten months of 1955. Through October, 1955, the airline transported 10,749,204 pounds of air express, an 11 percent increase over the 9,646,391 pounds carried during a corresponding period last year. For the first 10 months of 1955, airfreight totalled 22,640,184, a 16 percent increase over the 19,584,590 pounds carried during the first ten months of 1954.

Delta reported a net income after taxes of \$636,000—equivalent to 86 cents a share on 738,038 shares of common stock outstanding for the quarter ending September 30. Net income for the quarter—first quarter of the current fiscal year—amounted to 4.28 percent of gross revenues.

For over two years since the merger, Delta had operated as Delta-C&S, but in September the airline announced that it was progressively discontinuing the use of the dual operating name. Aircraft markings, company billboards, electric signs, ticket forms, stationery, telephone directory listings and advertising materials will be changed over a period of months.

Acquisition and operation of Golden Crown DC-7's during 1955 contributed to the company's revenue gains. Of the present ten DC-7's now in use, seven were received last year and three during the early part of 1955. In April, Delta placed orders for five additional DC-7's, and in August placed orders for six, making a total of 11 of the giant 69-passenger 365-mile-per-hour transports on order. One is scheduled for delivery before the end of 1955 and ten others in 1957.

For the ninth straight summer, Delta in 1955 offered all-expense packaged vacations to Miami Beach and to such holiday spots as Fort Lauderdale; Nassau; Mexico City; Havana, Cuba; Montego Bay, Jamaica; Port au Prince, Haiti; San Juan, Puerto Rico; and Ciudad Trujillo, Dominican Republic.

Eastern Air Lines

As 1955 closed, Eastern Air Lines was charting the final steps in another long-range flight equipment program which would take it well into the jet era, at a cost of more than \$350-million. Eastern has already signed contracts for a total of 40 DC-7B's, 10 new Lockheed Super-G Constellations, 40 Lockheed Electra turbo-prop's, and an option for 30 additional planes. Cost of the 50 piston driven aircraft (12 of which were in operation in the fall of last year) amounts to \$125-million and the jet-prop's will cost another \$100-million.

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An additional \$125-million had been set aside for straight jet airliners, either Douglas DC-8 jets or Boeing 707's.

To finance this program Eastern negotiated a 20-year, \$90-million loan with the Equitable Life Assurance Society.

The projected program will increase Eastern's present operating fleet from 120 aircraft to 218 by 1961. Capacity would increase from 5.7-billion seat miles to 15.5-billion the first year the entire new fleet is in operation.

At year's end, a new \$5-million northern maintenance base at Idlewild Airport was nearing completion. The New York City reservations sales office was enlarged to nearly double its capacity and new improved telephone facilities and other fixtures were installed to take care of increased travel demands.

Evidence of the airline's success in overcoming traditional summer slump in travel to the south was apparant in Eastern's third-quarter report which showed the first nine-months traffic and net earnings at an all-time high.

Third quarter statistics showed earnings, after taxes and all charges, at \$4,748,089 or \$1.90 a share as compared with \$1,789,824 or 72¢ a share for the same period of 1954.

Gross operating revenue for the first nine months of 1955 was \$148,483,380, a gain of 16 percent over the \$127,915,987 reported during the previous year.

Operating expenses, including depreciation, were held to \$129,685,000, representing an 11 percent increase over the \$116,755,000 for the same months of 1954. A provision for federal income tax of \$14,067,000 for the first nine months of 1955 compared with \$9,049,000 during the corresponding period of 1954. Compared with the nine months operating ratio of 91.3 percent in 1954, the ratio of expenses to revenue, including depreciation, but before taxes, was 87.3 percent for the same period in 1955.

A major contributing cause to the improved earnings record was the continuing drive on cost control in all departments of the airline's activities.

Evidence of this was reflected in nine months' figures showing that, while a 17 percent increase was shown in revenue passengers carried (from 4,307,000 for the first nine months of last year to 5,037,000 for the current period), and an additional 400-million seat miles were operated, expenses were held to an across-the-board increase of only 11 percent. The gain in load factor during the period was from 58.49 percent in 1954 to 62.54 percent for the first three-quarters of 1955.

Mohawk Airlines

Appropriate to a tenth anniversary year, 1955 was a significant one for Mohawk Airlines. Many forward strides were made—route extensions, new equipment, permanent certification—bringing Mohawk to a prominent position in the local service field.

Mohawk, in 1954, carried 222,564 revenue passengers and flew 40,006,000 revenue passenger miles. The traffic figures for the first ten

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months of 1955 already have exceeded the 1954 totals, with 231,137 revenue passengers and a total of 40,303,000 revenue miles, 22.4 percent more passengers than in the same period a year ago.

Five consecutive monthly passenger records were set during May, June, July, August, and September. Although October failed to produce a new monthly record it produced the best single day in Mohawk history—1,732 passengers on Oct. 28.

The ten month total of 40,303,000 revenue passenger miles was achieved without accident or fatality to passenger or crew members.

During the year, Mohawk flew nine charters for New York State Governor Averell Harriman, carried sports teams from 27 different colleges and universities, transported the professional basketball world champion Syracuse Nationals for the fifth year, flew human eyes, for sight-saving transplantings, and made planes available for flood relief to stricken New England communities.

On Feb. 28, 1955, Mohawk began service to Westchester County Airport, serving White Plains, N. Y., an important step in competing with other carriers serving the densely-populated New York metropolitan area.

The purchase of four Convair 240's increased the Mohawk fleet to its present total of ten DC-3's and four Convairs, with another DC-3 being operated experimentally for General Electric.

During 1955, Mohawk conducted, under contract, flight test work for General Electric and for Hazeltine Electronics Corporation of Little Neck, N. Y. The airline operates and maintains a special DC-3 to test electronic equipment. The plane, operating out of Newark, N. J., is used commercially during weekends.

At the end of 1954, Mohawk showed a year's operating profit of \$184,577. For the first six months of 1955, with exclusive DC-3 service, operating profits were \$104,747.

Mohawk added Convairs on short haul, local service operations on July 1.

National Airlines

National Airlines was one of the leaders in 1955 in the trend to jet transport and its President, G. T. Baker, predicted that DC-8's would go into service between New York and Miami (2 hours, 21 minutes) in the summer of 1959. NAL placed a firm order with Douglas last August for six of the 550-mph jets at a total cost of \$36-million. National has an overall plane procurement program totalling \$95-million.

Total revenue passenger miles flown during the year ending June 30, 1955, was 860,067,000, a 26.05 percent gain over the previous year. Passenger load factor increased to 61.85 percent compared to 60.53 percent. Operating revenues reached an all-time high of \$58,616,468, an increase of 25.4 percent over the preceding year. Passenger revenue was \$44,164,227. It represented 90.8 percent of total revenue and was 28.1 percent ahead of the year before.

Only air mail revenue dropped by 10.5 percent, but this was made up by

increases in first-class mail carried. Total revenue for both was \$991,042, a gain of 8 percent over the previous year. Express, air freight and excess baggage revenues increased 15.7 percent.

Net operating revenues were \$6,604,576, an increase of 121 percent over the year before. Net profit after taxes, depreciation, and all charges totalled \$3,075,778, as compared with the net profit of \$4,465,743 for fiscal 1954. Total operating expenses were \$42,011,892, an increase of 17.4 percent.

In addition to its plane expansion program, National is investing \$1-million in airborne radar for all its equipment. Four-engine planes were expected to have it installed by the beginning of 1956.

National is now offering for lease executive type aircraft operated under scheduled airline operations and maintenance standards. Planes may be leased by the trip, day, month or more extended periods. Three Lockheed Lodestars are already in this service.

Northeast Airlines

Northeast Airlines set an all-time high in traffic for the company in 1955 by carrying more than a half million passengers by November. Northeast serves 36 New England communities, New York City and Montreal.

Ski traffic to northern New England states and Quebec's Laurentians was promoted again in 1955 by Northeast, and the company flew more than twice the number of ski passengers that they did in 1954. The company inaugurated a fall fishing promotion in New England with areas interested in extending the region's vacation season.

The company reduced its federal subsidy by \$220,000 in the first ten months of 1955, and placed a \$14-million order for ten new DC-6B airplanes. The first of these airplanes will be delivered in the first months of 1957.

Late in the year, Northeast applied for a route extension to Washington, D. C., and Florida.

The line operates six Convairs and 12 DC-3 aircraft in winter months and leases additional airplanes during the summer.

Northwest Orient Airlines

Northwest Orient Airlines' New York service through the Chicago gateway climaxed a year of developments for the company.

Since June 1, 1945, when Northwest became a transcontinental air carrier with flights into New York by way of Milwaukee and Detroit, it had sought a route also through Chicago instead of being compelled to terminate all eastbound flights there. The Civil Aeronautics Board finally authorized this, and service began October 30. Also authorized is a shuttle service between Detroit and New York.

Earlier in the year, the CAB renewed Northwest Orient Airlines' certifications for operations to the Orient, to Hawaii and along the inside route to Alaska.

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Northwest entered into an arrangement with New York Airways by which passengers have been flown by helicopter between La Guardia and Idlewild airports, as well as to and from a group of cities in the metropolitan area.

Northwest introduced Constellation flights to the Orient. It also provided five weekly frequencies to the Orient, for both first-class and tourist passengers. It doubled its service to Hawaii with four flights a week to Honolulu.

Northwest continued its million-plus passenger business in 1955. The year's total, based on actual figures up to September and projections to the end of the year, was 1,272,000 compared with 1,111,034 actual total for 1954, an increase of 14.5 percent. Revenue passenger miles flown were 838,356,000 compared with 748,616,575 in 1954, an increase of 12 percent.

On the domestic system, freight ton miles were 6,071,000 compared with 4,467,891, up 58.3 percent; domestic mail, 4,309,000 ton miles, compared with 3,394,416, up 26.9 percent; express, 2,491,000 ton miles, compared with 1,898,395, up 31.2 percent.

On the international route, passenger boardings were 100,000 compared with 88,159 during 1954, an increase of 13.4 percent. Revenue passenger miles were 180,528,000, compared with 161,057,970 for 1954, up 12.1 percent.

Other categories for the respective years were: freight ton miles, 6,600,000 and 6,424,960, up 4.7 percent; mail ton miles, 9,825,000, and 3,596,046, up 173.2 percent; express ton miles, 188,000 and 178,863, up 5.1 percent.

Northwest has ordered 13 additional DC-6B's and 8 DC-7C's for delivery starting early in 1957.

Ozark Air Lines

During the year ending June 30, 1955, Ozark Air Lines carried 193,876 passengers, 36 percent more than in the previous year. Air mail volume was up 46 percent to 65,082 ton miles, air express up 82 percent to 113,497 ton miles, and revenue passenger miles flown increased by 33 percent to 7.7-million.

Ozark expanded its charter operations and increased revenue by 68.7 percent. It won one of the largest single industrial charters in the country to fly 593 farmers and implement dealers from various midwest cities to the International Harvester Company.

The Ozark fleet was increased to 16 with the addition of three DC-3's.

During the fiscal year ending June 30, 1955, Ozark Air Lines revenues were \$3,706,000, an increase of 11 percent over the previous fiscal year. Expenses, after provision for depreciation of \$227,000, were \$3,643,000, an increase of 7 percent over the previous year, resulting in a profit before income taxes of \$34,712. For the previous fiscal year the operations of the airline resulted in a net loss of \$103,775.

Ozark's non-mail revenues during the past fiscal year increased from

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\$1,388,862 to \$1,964,399, an increase of \$576,000 or by 42 percent. Subsidy and service mail revenue decreased during the past fiscal year from \$1,946,511 to \$1,741,239, a decrease of \$205,000 or by 10.5 percent.

Pan American-Grace Airways

As the year came to a close, Panagra (Pan American-Grace Airways) reported an increase of approximately 12 percent over 1954, the airline's best previous year, as air travel between North and South America continued to rise.

New, faster flights, special summer excursion fares, improved hotel accommodations, and tourist attractions and a growing awareness on the part of U. S. businessmen and pleasure travelers of the economic and tourist potential in South America all contributed to making 1955 the best travel year in the continent's history.

On August 1, Panagra introduced radar-equipped Douglas DC-7B's on its El Inter Americano Fiesta Lounge service between Miami and Buenos Aires. The airline was operating daily first class service by September 14, and extended operations to Washington and New York through an interchange agreement with National Airlines and Pan American World Airways.

By eliminating changing planes at the Miami gateway, this new through-service cut flying times between New York and Buenos Aires to 21 hours.

The planes are equipped with the latest X-band weather radar developed for airline use, the Bendix RDR-1. This radar system enables Panagra pilots to spot and avoid storms and areas of considerable turbulence during day or night flights.

The interchange agreement also provided for the operation of Panagra's 72-passenger Douglas DC-6B's on daily El Pacifico tourist class flights from New York to Lima, Peru, and on a three times a week service to Buenos Aires.

Faster service and improved performance in its local flights in Peru, Bolivia and Ecuador were reported by Panagram after a month of regular operation with its modernized, high-performance DC-3 planes.

These recently converted and modified DC-3's, which were placed in operation early in January, 1955, have enabled Panagra to speed up flights and carry bigger loads over certain portions of its routes where local facilities do not permit the use of its four-engine DC-6 and DC-6B aircraft.

The new Panagra Hi-Per DC-3's have a cruising speed of 214 miles an hour and a maximum gross weight of 26,900 pounds, as compared to its former 180 mph and 25,200 pounds, respectively. Equipped with R-2000 Pratt & Whitney engines and new Hamilton Standard Hydromatic propellers, they have 20 percent more power on take-offs from sea level and high altitude airports.

At La Paz, Bolivia, where the airport is 13,400 feet above sea level, for example, the Panagra Hi-Per DC-3 has one-third more take-off power and can carry a bigger payload with a greater safety factor.

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The modernization of these planes, which includes not only new engines and propellers but also improvements in landing gear, brakes and the hydraulic, electric, instrument and control systems on the aircraft, cost Panagra around \$250,000.

Panagra planes last year began operating into the new airport at Antofagasta, Chile.

This new airport, commonly known as Group Seven Air Base, offers vast improvements over Cerro Moreno, the field formerly used by Panagra to serve this important commercial and mining area in the north of Chile.

Continuing the program it established with Pan American World Airways in 1937, Panagra last year granted 18 travel fellowships to study in U. S. universities to graduate students from the countries on its route.

The students, who received round-trip transportation from their respective countries to the United States, were selected by the Institute of International Education and recommended to the airline on the basis of merit and need.

Pan American World Airways

Highlighting the most successful passenger and cargo-carrying year in its history, Pan American World Airways in 1955 became the first airline to purchase American-built jet transports.

The company ordered 45 jets at a cost of \$269-million to go into trans-Atlantic, South American, trans-Pacific and round-the-world service in the five-month period beginning in December, 1958. The 575-mile an hour planes will carry between 104 and 131 passengers. Twenty will be built by Boeing and 25 by Douglas. By the end of the year other American and foreign airlines had followed Pan American's lead in placing jet orders.

New high marks in the number of revenue passenger miles and cargo ton-miles flown by Pan American were established in 1955, according to figures for the first nine months of the year and estimated totals for the final quarter.

Reflecting increased travel in the company's Atlantic, Pacific, Alaskan, and Latin American sectors, revenue passenger miles added up to 2,667,439,000 compared to 2,189,668,000 for 1954.

Cargo ton-miles also were up over the preceding year, 666,379,000 as opposed to 57,377,000 in 1954.

An all-time high in transporting freight by air between the United States and Europe was recorded by Pan American in 1955, with the total reaching 6.8-million pounds. The total represented an increase of 46 per cent over 1954's amount of 4.6-million pounds.

The only direct one-plane service from New York to Munich and Vienna was begun by Pan American in October on a basis of three round-trips a week.

In the Middle East, new routes from New York were launched to Damascus in February, to Tehran in April, and to Ankara in December.

An interchange agreement was signed with National Airlines and Panagra (Pan American-Grace Airways), Pan American affiliate, to pro-

vide a through service between New York, Washington, Miami, Panama and nine key cities in South America. The service, inaugurated in September, eliminates the necessity of changing planes at Miami on flights between North and South America. San Francisco became a gateway to Latin America in December when Pan American opened service from there to Caracas.

In other air activity in Latin America, Pan American inaugurated non-stop flights from New York to Ciudad Trujillo, capital of the Dominican Republic, and linked Panama City, Kingston, Jamaica, and Miami with a direct tourist service.

Besides steadily stepping-up its trans-Atlantic cargo flights until, by the end of the year, they totalled six departures a week from New York, Pan American improved its cargo service in other areas. All-cargo services were inaugurated in December to Latin America from San Francisco and Los Angeles, and from Houston.

Figures compiled after the first 18 months of operation of the pioneering "Pan Am Pay Later Plan" showed that 16,500 passengers had flown abroad on the installment system since it went into effect in May, 1954. There were no defaults in payments. First begun for United States residents, the Pan American plan now is available in England, Ireland, Puerto Rico, Canada, Australia, and Panama.

During the year Pan American put into service a new fleet of seven 353-mile-an-hour DC-7Bs, fastest transports flying between the United States and Europe. Carrying 71 passengers, the planes cut 1½ hours from the New York-Paris flight time, and 1 hour, 15 minutes from the New York-London time.

Pan American also has on order 33 advanced-type DC-7Cs, the first of which is to enter service in the spring of 1956. The Seven Seas are a longer-range (5,000 miles), improved version of the DC-7Bs, have a fuel capacity of 7,860 gallons, and can carry 56 passengers in standard configuration and 83 in tourist.

Shortly after going into service the DC-7B Clippers started establishing new unofficial commercial speed records. Their most striking single day of fast flights occurred on October 5 when a flight from New York to London was clocked in 8 hours, 52 minutes; one to Paris in 9 hours, 20 minutes, and to Prestwick in 8 hours, 10 minutes.

Airborne radar, costing \$3-million, was ordered for DC-6 and DC-7 Clippers already in service as well as all planes now on order. The weather-probing radar was designed to provide a smoother, faster and safer flight when heavy weather is encountered.

Trans World Airlines

Trans World Airlines in 1955—its 30th Anniversary year—used as its underlying theme "Thirty Years of Service" in the air transportation industry. A year-long program, based on this theme, was studded with high-

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light events, innovations and record progress in nearly every phase of the airline's global operations.

TWA launched its \$100,000 Cosmic Contest, one part of which invited the public to express its views about current air transportation; the other encouraged conjecture about aviation 30 years from now in 1985. Over 100,000 entries from almost every country in the world were microfilmed and stored for judging and awarding of a \$50,000 prize in 1985.

Preliminary figures for the year showed record increases in air traffic well beyond the best of 1954.

An estimated total of over 4-million passengers were flown almost 3.5-billion passenger miles over TWA's United States and international routes. The number of passengers was an increase of 13.4 percent over the number flown in 1954. Passenger mileage showed an increase of 8.5 percent.



Trans World Airlines new Super-G Constellation

In the United States, TWA's coast-to-coast routes accounted for over 2.8-billion passenger miles—8.9 percent above the 1954 figure. International passenger miles flown were estimated at about 615-million—an increase of over 7 percent over last year.

Still on the increase was TWA's passenger mileage flown in Sky Tourist low-cost service. Increases of 10.3 percent on domestic routes, and 9.2 percent on trans-Atlantic routes to Europe and the Middle East were recorded.

Healthy gains were recorded in domestic air express and freight, with air express ton mileage increasing some 10.6 percent over that of 1954; and air-freight ton mileage, some 12.5 percent.

A highlight factor in this progress and a stride into the future was made when, in April, TWA inaugurated first-class, non-stop coast-to-coast service with the nation's newest and most luxurious airliner, the turbo-compound Super-G Constellation. Twenty of these ultra-modern aircraft were in service by midsummer, augmenting TWA's fleet to 101 Super and standard-size Constellation aircraft.

Additional orders were placed for eight more Super-G's, to be delivered starting next June, and an order for 24 extra-long-range model 1649 Constellations, due in the spring of 1957.

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Keeping pace with the rapid growth of aerial communications and navigation, TWA in 1955 installed in its entire fleet over \$2.5-million worth of electronic radio and radar equipment, including weather surveillance radar equipment for all Super-G Constellations.

Summer flight schedules reached a record 181 daily United States passenger flights to meet the unprecedented demand. Internationally, TWA scheduled a peak of 96 weekly flights. Of the total number of TWA summer domestic flights, nearly 25 percent were tourist services; of international flights, some two-thirds were tourist.

TWA implemented in September the low transcontinental air fare of \$80 one way. This new excursion fare provides Sky Tourist service on regular scheduled flights between New York and Los Angeles or San Francisco, with similar excursion rates to the West Coast from Boston, Philadelphia, Baltimore, Washington, and to the East Coast from Fresno and Oakland, Calif.

TWA also introduced a scheduled non-stop tourist service between New York and California cities of Los Angeles and San Francisco with its huge new Super-G Constellations providing a multiple service on United States routes. The forward section of the Super-G provides accommodations for tourist passengers at \$80 each way, while all other compartments, including the sumptuous lounge, are available to first class passengers. Multiple service with the Super-G is also provided to and from six other cities — Philadelphia, Pittsburgh, Chicago, St. Louis, Kansas City and Dayton.

Overnight intercontinental air service was introduced Nov. 1 direct from California to London and Frankfurt with a fleet of long-range Super-G Constellations. Multiple service—first class and tourist service—is provided. The service will be expanded to include Paris and Rome in January, 1956, and Athens and Cairo in March.

Detroit and Cleveland were added to TWA's transcontinental schedules. In 1955, CAB approval was also given TWA to serve Denver.

Internationally, TWA received unanimous approval by the CAB to operate beyond Frankfurt to Zurich. The service is expected to begin in the near future.

Recognition of TWA's subsidy-free role in conducting both its domestic and international routes came from the United States Post Office Department. A special scroll and citation signed by the Postmaster General was presented to TWA Board Chairman Warren Lee Pierson and President Ralph S. Damon in Washington.

Another event was the publication of a memory-evoking pictorial history of the past 30 years, built around the story of TWA's growth over these years to its present global operations over 33,000 miles of routes on four continents, entitled "Thirty Years of Service."

Looking ahead, TWA exhibited a rocket ship permanently at Disneyland, Anaheim, Calif. The design is a serious, scientifically accurate representation of what experts predict for some 30 years from now.

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United Air Lines

The 1955 progress of United Air Lines generated many significant events but the one overshadowing all others occurred October 25, when the board of directors approved a \$175-million order for 30 Douglas DC-8 jets and spare parts.

W. A. Patterson, United's president, said that delivery of the new aircraft will begin in the spring of 1959, followed by scheduled jetliner service that fall. Passenger capacity will range from 112 in first-class cabin configurations to 140 in coach versions. Cruising speed will reduce transcontinental nonstop time to 4½ hours.

Nine months prior to the jetliner commitment, United had received the last of 25 DC-7's, ordered in 1952. On order for delivery in 1956 and 1957 were five all-cargo DC-6A's, 17 DC-7's, and 21 DC-6B's, costing \$64.8-million. With these aircraft, the company will have a fleet of 219 modern planes for expansion until delivery of the DC-8's.

United's 1955 traffic climbed beyond the highs of all previous years. Summer schedules were based on 17,597,000 airplane seat miles daily, a 17 percent increase over summer of 1954. On July 1, the peak day, 20,114 passengers were flown a record-making 14,692,319 revenue passenger miles. The company operated almost 90,000 flights in the year.

Operating results, based on ten months' figures, and estimates for November and December, were the best in history. Revenue passenger miles totaled 4-billion, 20.5 percent ahead of 1954; mail tons reached 26.3-million, an increase of 11 percent; express ton miles climbed to 12.5-million, up 19 percent; freight ton miles soared to 43.5-million, a gain of 27 percent. The number of revenue passengers totaled 5.5-million, an increase of 15 percent.

Nonstop DC-7 flights from New York to San Francisco were begun in May, clipping off an hour from the previous one-stop time of 9¾ hours. In July, Mainliner Convairs began providing Ely, Nev., with its first scheduled airline service. The first plane-auto travel packages, representing a reduction of approximately 15 percent in both air fare and car rental fees, became available between ten cities on October 1. Thirty days later, after removal of a CAB restriction on such service, United began nonstop flights between the Midwest and Pacific Northwest.

Air coach service was expanded. Nine first-class DC-6 Mainliners were converted to 72-passenger coaches. During the summer peak, the company's daily coach mileage amounted to a 39 percent increase over the same season of the previous year. Nonstop coach service between Chicago and Las Vegas began in September. Near the end of the same month, excursion coach fares of \$80 each way on round-trip transcontinental flights became effective.

Of major importance was the decision in April to equip United's entire fleet with airborne C-band radar. Two hundred C-band units were ordered from the Radio Corporation of America for \$2.5-million, with an additional \$1.5-million earmarked for installation costs.

United's first plane to be equipped with radar emerged from the com-

pany's San Francisco maintenance base in July. The aircraft—a Convair 340—was dispatched to key cities across the country for demonstrations to groups of newspapermen. Training of 1,785 pilots in the use of C-band radar began in September.

Communications aloft and on the ground were substantially improved.

United negotiated interline agreements with Iranian Airways, Lufthansa German Airlines, Faucett Airlines and Malayan Airways, bringing the total of such pacts to 136. Resumption of United's operations at Eureka, Monterey and Santa Barbara was ordered by the CAB, which had temporarily suspended Mainliner service at those cities in January, 1952. The company complied on December 8.

An agreement in March between United and the Air Express International Corporation provided shippers in many cities with the first through international air freight rates. Depending on the type of commodity, this resulted in rate reductions of from 10 to 40 percent. Swissair and Airwork Limited were added to the company's international reserved air freight program in July, after similar pacts with Pan American, KLM, Sabena and Qantas.

Mr. Patterson announced plans for a \$6-million expansion at San Francisco, which will include additional shops and hangars at the maintenance base. In September, the company signed a lease with the Port Authority of New York for 27 acres at Idlewild Airport on which a unit terminal building would be constructed at a cost of \$5.5-million. The company's Idlewild facilities already consisted of a \$6-million hangar and operations building. Operations also were begun at Chicago's O'Hare Airport, where United leased two hangars and office space in the terminal building.

CHAPTER EIGHT

Utility Aircraft

BUSINESS USE OF AIRCRAFT continued high in 1955 promising prosperity for the utility aircraft manufacturers as well as the producers of accessories and parts.

Hourly use of the business airplane was expected to reach an all-time high of 4.2-million hours in 1955, exceeding the 1954 total of 3.9-million. CAA traffic forecasts for the next decade predicted that by 1960 total hours logged will climb to 7.2-million.

Aircraft shipments by lightplane manufacturers added up to about \$67.5-million for 1955, more than \$17-million over the 1954 figure. For the first time since 1948, number of units shipped hit about 4,200. CAA estimates that shipments will climb to 5,000 planes in 1960 and 6,000 in 1965 with the dollar value soaring first to \$140-million and later to \$240-million.

Greatest boost to the business plane and testimonial to the safety of the small twin transport came from the White House when the Air Force assigned an Aero Commander for President Eisenhower's use on short trips. This marked the first time in aviation history that the chief executive was permitted to fly in anything smaller than a four-engine transport.

The high dollar volume in lightplane shipments compared to the conservatively smaller increase in number of units shipped further attested to the small twin's acceptability by business and industry. Demonstration of the demand for the plane was reflected in production and sales plans of the manufacturers. Piper Aircraft Co. plotted its 1956 program around its Apache. Setting distributor sales quota at an all-time \$30-million high (sales in 1955 were \$20-million), Piper announced that production would be boosted to two-a-day; a new plant expansion is earmarked for Apache final assembly; and a Piper-sponsored service program for distributors gets under way early in 1956.

The 150 hp Apache for 1956 continues to cruise at 160 mph, but extra fuel tanks, being offered as optional equipment, increase range up to 1,100 miles.

To provide further safety and utility in the twins, manufacturers concentrated on increasing speeds and safety features in their standard models.

Aero Design & Engineering Co. goes into production on its new Model 580 Aero Commader with supercharged engines which will provide a top speed of about 260 mph, approaching that of the Convair liners.

Beech, late in 1955, announced its Model D50 Twin-Bonanza which is the basic Model C50 configuration with Hartzell three-blade props and two Lycoming high compression 495 hp engines which raise cruise speed to 203 mph and a top speed to 214 mph. The C50, cruising at 195 mph, will continue in production.

Despite the concentration on the multi-engine equipment, single-engine airplanes weren't overlooked. Piper announced that it would fly a prototype of its first all-metal aircraft in 1956 with production scheduled for 1957. Although details are not known, it will be a high performance, medium-priced aircraft called the Comanche.

The Bonanza was further speeded up by Beech for 1956 sale by using the more powerful Continental 225 hp Continental engine, formerly offered as optional, which boosts speed to 190 mph at 75 percent power. Cessna announced the Model 172 which is the company's first tricycle geared single engine aircraft.

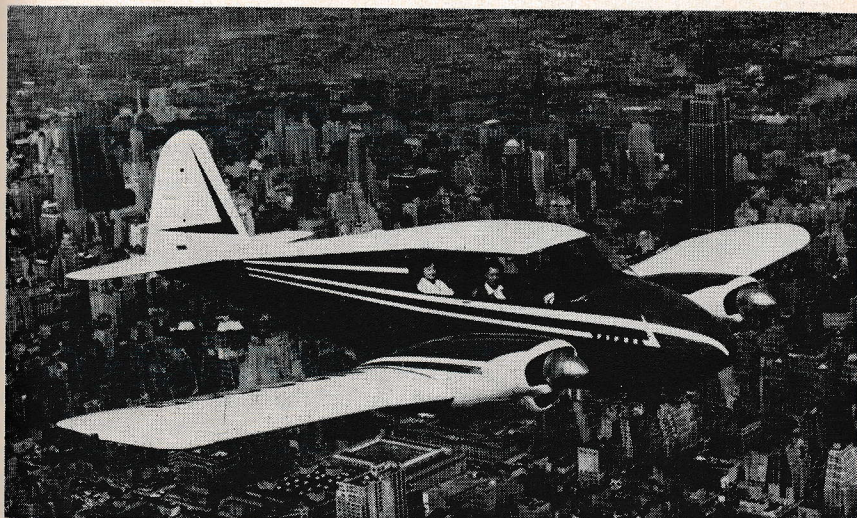
An interesting trend began to take form in 1955 in the leasing of aircraft. The sudden surge of interest in leasing planes to business, industry and commercial aviation was generally credited to the tightening up of business capital. Manufacturers, airlines, fixed base operators, used aircraft dealers, and business plane fleet owners were offering a great variety of lease plans. For example, National Airlines announced a packaged deal whereby it would lease executive Lodestars complete with crews and stewardesses. Other plans called for leasing of just equipment on monthly, seasonal, long term, or other terms. The best leasing business, however, was concentrated, again on the small twins. To stimulate further distributor and dealer sales, Beech and Cessna took the unprecedented step of working out nation-wide leasing plans for their distributors.

Beech entered into an exclusive agreement with American Leasing Corp. of Hartford, Conn., whereby a distributor can offer a lease program to a customer unable to put out a cash outlay for a self-owned plane. When such a customer signs a four-year lease for one of Beech's planes, ALC buys the aircraft from the customer's distributor.

Cessna operated in a different way. The company set up a wholly owned subsidiary which acts as a financing house for distributors. National Aero Finance, as it has been incorporated, will finance two year or four year leases on any new Cessna equipment with appropriate options. To date, users of Cessna twin Model 310 have been the biggest takers on lease.

With business flying well established as an industry, the long-hungry fixed base operators, now flourishing, were showing a willingness to make large capital investments in airport facilities to accommodate the group. Business flying centers were springing up in major cities throughout the country. The centers, representing investments of on an average \$500,000, provide small terminal buildings, pilot facilities, office space, maintenance and overhaul in one packaged unit.

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Piper's new Apache model

Also, the economic and operational importance of business flying has seen a strengthening of the organization that represents more than 300 companies. A reorganization of the National Business Aircraft Association has resulted in the top executives of the company members being brought into association activities.

Primarily a pilots' group heretofore, the council will give the actual users of the aircraft a strong voice in association activities, which, of course, includes government representation.

In addition, NBAA has set up the machinery for regional groups to be organized to deal with local problems and activities.

While agricultural flying hours took a slight dip in 1954 because of weather conditions, estimates for 1955 had it coming back up to about 722,000 hours. CAA forecasts 1.1-million hours for commercial agricultural activities by 1960, going up another 200,000 hours by 1965. Dusting and spraying activities accounted for more than 500,000 of the 1955 estimates.

Piper continued during the year to produce its PA-18A Super Cub for spraying and dusting. There was no other new equipment coming on the market in 1955.

Passenger, air taxi, and cargo charter flying maintained a level of 650,000 hours in 1955. CAA conservatively predicts that this may rise to 850,000 hours in 1960 and probably up to 1-million in 1965.

Patrol and survey flying is expected to continue its expansion, but on a much smaller scale than in 1954 when it registered a 32 percent increase. With 400,000 hours flown in 1954, CAA predicts 550,000 hours by 1960 and possibly 650,000 hours by 1965.

An upturn in pleasure flying was noted in 1953 and 1954, after its

nosedive in 1947. It now accounts for between 20 and 25 percent of all general aviation activity. About 2-million hours were logged in 1954 and this may go as high as 2.8-million hours in the next decade.

The aircraft as a specialized tool of general aviation has now become an established factor in the industry. The business fleet now totals about 22,000 aircraft with all of general aviation using 61,000 civil planes. All of general aviation flew about 9-million hours in 1955. Its magnitude shows up when compared to the 2.6-million revenue hours chalked up the U. S. scheduled airlines during the same period.

HELICOPTERS

In the vertical take-off field, helicopter development shared the spotlight with convertiplanes which incorporate helicopter take off and landing characteristics with in-flight resemblance to fixed wing. Announcing convertiplane experimental developments during the year was Bell with its tilting rotor XV-3 and McDonnell with its XV-1.

Greatest interest in the convertiplane was evidenced by the Army, the greatest user of helicopters, when it invested close to \$16-million in the XV-1 and XV-3. The Army also awarded a contract to Anton Flettner, German aircraft designer, to draw up design blueprints of a 40-passenger convertiplane.

But while these developments were underway helicopter production was booming—for the military. While the civilians talked, the military was buying and planning. The Marine Corps announced that the helicopter would change the whole complexion of amphibious landings. Adding to its base of small, medium and large transport type, the Marines announced a requirement for a one-man helicopter at one end and a flying crane type to carry huge tactical equipment at the other. Marine officials pointed out that troop carriers, because of the helicopter, could disperse farther away from shore and at wider range.

The Army, pushing hard for a more powerful air arm for greater air mobility, was pinning its hopes on the helicopter since at this time the weight limitation of 5,000 lbs. imposed on its fixed wing airplanes, does not apply to helicopters. Spelling out its plans, the Army broke its helicopter transportation companies into three categories: (1) light, having a payload of 1½ tons and including such rotorcraft as the Piasecki H-21 and the Sikorsky H-34; (2) medium, with a three-ton payload using the Sikorsky H-37; and (3) heavy, with five-ton payloads using the Piasecki H-16.

Commercial use of helicopters still remained in the planning stage. Mohawk and National airlines, who had acquired several helicopters for experimentation, gave up during 1955 and sold the equipment. National's reason was high cost of operation and spokesman added they would like larger equipment as it became available before going back into helicopter shuttle service.

The three helicopter carriers, Los Angeles Airways, New York Airways, and Chicago's Midway airlines were the only active helicopter operators in the civilian field. Los Angeles expanded its routes throughout its area

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during the year for passenger, as well as mail service. New York Airways joined forces with Northwest Airlines with the trunk carrier supplying free transfer service from New York airports to White Plains, N. Y. Service to passengers to three other points was available at an additional charge.

But manufacturers were preparing for civilian demand. It is still predicted that helicopters will be in widespread commercial use beginning in about five years. Piasecki moved toward CAA certification of its H-21; Cessna had its small CH-1 certificated in the summer. The 21-passenger H-21 and the 12-passenger Sikorsky S-58 are available for civil use and are moving close to what the airlines want.

Non-carrier aviation was reportedly using close to 200 helicopters, mainly for patrol and survey work, flying about 40,000 hours. A few were being utilized in dusting and spraying operations and agricultural aviation was predicting wider use in this field. There are about 30 commercial operators in the U. S.

Rep. Carl Hinshaw (R-Calif.), keynoted the need for accelerating commercial helicopter development in a major speech before the American Helicopter Society. He noted that "no one has come up yet with the helicopter that fills either the present day or future commercial transportation needs." He stated that the "most important function of the helicopter" is "connecting transportation" and that it is the helicopter's function "to complement, augment and to help improve the other forms of transportation—by linking them together and by extending their service beyond their

Cessna CH-1 Helicopter



terminal points of departure and arrival through to the outlying communities. . . . While the helicopter is a specialty vehicle and most efficient on short hauls, it makes it possible for the long haul carriers to do their jobs right."

Outside of the current lack of civilian production, problems of navigation aids and heliports were yet to be worked out. Although various reports have been written on heliport specifications, it is generally conceded that actual operational evaluation of the type of equipment to be used is necessary first.

Stressed, however, is the need for enacting legislation on local levels that would obsolete zoning laws prohibiting aircraft operations at low altitudes and in cities to allow helicopters to go into cities, once put into service.

The International Air Transport Association, noting that helicopter development and introduction into transport service "is likely to be much more rapid" than that of previous vehicles, urged that a helicopter traffic control "highway" system be developed. Requirements for such highways to be one-way roads would be: (1) Main routes should not penetrate into the center they service but should bypass them with short secondary feeder routes connecting the centers to the main highway. (2) All routes should be clearly defined and easy to follow. (3) There should be no level crossings which complicate the structures and its operation. (4) There should be underpasses and overpasses for crossing routes.

The IATA helicopter group found that the easiest solution would be to establish a number of parallel lanes in the most strategic positions taking into consideration economy of distance, which is essential with the relatively low cruising speeds being achieved by helicopters.

Helicopter traffic control should be exercised in terminal areas and at heliports in a manner similar to methods used in controlling surface traffic, while in other areas precise navigational aids together with adequate enroute flight procedures would avoid collision hazard.

The Civil Aeronautics Board during 1955 circulated a proposed brief on airworthiness rules for transport helicopters which divided rotorcraft into three categories. Proposed CAR's were patterned on current requirements for fixed wing. The three categories are:

1. Normal Category, limited to 6,000 pounds gross weight. Helicopter would be eligible for all passenger and cargo operations, for hire, except in certificated scheduled and irregular carrier service, restricted to helicopter visual rules.

2. Category A would have no limitation on weight. Helicopters in this group must be multi-engine and subject to compliance with appropriate performance operation limitations. This category would be eligible for all types of operations under both visual and instrument regulations.

3. Category B would be limited to 17,500 pounds or less gross weight. It would be eligible for all types of operations only under visual flight, would be subject to compliance with performance operation limitations, and have certain route limitations.