



Weighing in baggage for a demonstration flight.
The Patrician had a payload capacity of 3,880 pounds.
(Smithsonian 74-10043)

The Keystone Patrician by Edward Peck

"PATRICIAN: noble, aristocratic, any person of high social rank."¹ What better word to describe the grand proportions and stately posture of Keystone's K-78 trimotor airliner? But, despite its impressive size and capabilities, the Patrician offered no significant advance in design and construction engineering. It adhered to the long-held concept of stretching fabric over a wooden wing structure and welded tube fuselage—and this was probably in part responsible for the airplane's failure to attract buyers. At a time when all-metal Ford Tri-Motors were pouring from the production line in Dearborn and strut-braced wings were rapidly becoming passe, Keystone's big monoplane was just not the kind of machine which could excite potential owners. Moreover, the early 1930s found all businessmen eyeing their balance sheets with deepening concern and foreboding, and this was especially true of the toddling airline industry. No board chairman was prepared to commit his company to a transport airplane whose stance on the ground might have been impressive but which was not certain to be a profitable investment once it took to the air. The Patrician was not entirely wanting of good qualities, but these were too few to satisfy close analysis by an airline's accountants, engineers and pilots.

Nineteen twenty-eight was a vintage year for aviation. Following Lindbergh's solo flight to Paris the year before and the outpouring of enthusiasm for flying which ensued, all manner of new aviation projects blossomed—airlines, airplanes, private flying, expanded airports. In brief, anything connected with aeronautics was sure to capture public attention and much of the money which was then being spent like there was no tomorrow. To be sure, that tomorrow was about to cave in on an unsuspecting world. Caught up in this euphoria and a general feeling of good times unending, Keystone's management decided in late 1927 to manufacture a large trimotored airliner which they felt would command a major share of this rapidly expanding market. It might have eventually succeeded to some degree, provided the airplane's design flaws were corrected in timely fashion, but unforeseen economic convulsions awaited the entire world as the end of 1929 approached. Carried away in the debris of that Great Depression would be many of the newborn aviation enterprises. The Patrician was one of those casualties.

The Keystone Aircraft Corporation had its origin in a company formed by Thomas H. Huff and Elliott Daland in Ogdens-

burg, New York, in 1920.² Huff Daland Airplanes, Inc., tried to establish itself as a manufacturer of military aircraft, and indeed it did supply a handful of trainers to the Army and Navy during the period 1920 to 1925. They included the TA-2, TA-6, TW-5 and AT-1, some 20 of these machines being produced for the Army Air Service.³ Then, in 1924, the company formed a subsidiary named Huff Daland Dusters. This organization was headquartered at Macon, Georgia, and later Monroe, Louisiana, for the purpose of operating its own agricultural applications aircraft, then an industry in its early infancy.⁴ Huff Daland Dusters prospered and was to become the seed from which Delta Air Lines sprang.⁵

Meanwhile, the parent Huff Daland Airplanes, Inc., purchased the Harriman Shipbuilding Company's factory at Bristol, Pennsylvania, so as to have more adequate production facilities. It moved into those buildings in the spring of 1925, and in 1926 the company reorganized as the Keystone Aircraft Corporation.⁶ Here production of military aircraft continued, notably the B-4A and B-6A Panther heavy bombers. The company produced its first multi-engine civil aircraft in 1927—the trimotored Pathfinder. One of these aircraft was entered in the Orteig Prize transatlantic competition by Lt. Cdr. Noel Davis, but it crashed on a test flight and the prize was eventually won by a youthful airmail pilot named Lindbergh.⁷ Other Pathfinders were operated by West Indian Aerial Express and by the Aerial Advertising Company.⁸ A merger of Keystone and the Loening Aeronautical Engineering Company was consummated in October 1928, but each continued to operate as a semi-autonomous unit under Keystone-Loening ownership.⁹

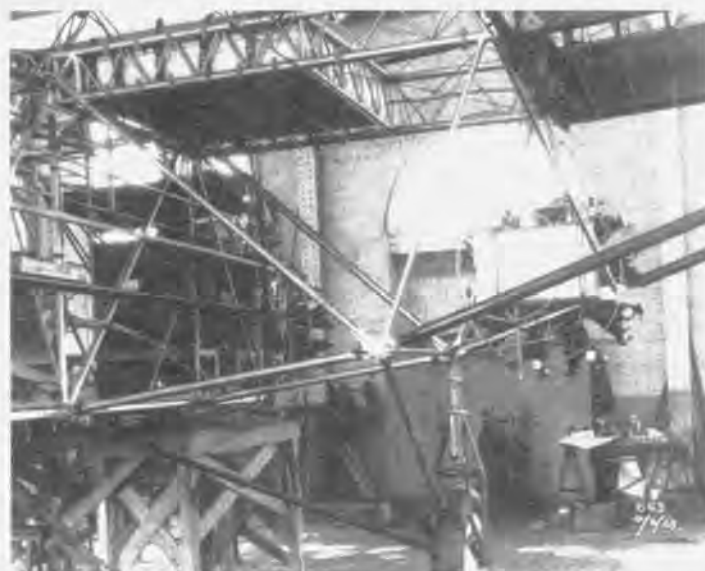
Compared to the biplane Pathfinder, Keystone's new K-78 Patrician airliner was much cleaner in appearance—although its construction was generally conventional for that day. Several designs had been drawn up for a successor to the Pathfinder, but wind tunnel tests in the spring of 1928 had shown that the Patrician would be the best of these. Accordingly, construction of the prototype K-78 was begun in June of that year and the first test flight was made on 5 November.¹⁰

The Patrician's fuselage was built up of tubular steel in the customary fashion, its lines rounded out with suitable formers, stringers and fairings. The wing center section was also of welded steel tube, while the outer panel structures were built around wooden box spars and ribs with steel compression ribs. The wings were externally strut-braced. Steel construction was also employed in the tail group which incorporated an adjustable stabilizer and fin. Apart from its aluminum fairings, the airplane was covered with fabric overall. Power was supplied by three uncowed Wright R-1750 Cyclones developing a total of 1575 hp.

Inside, the Patrician was arranged to accommodate 18 to 20 passengers, some of these being seated in a separate forward compartment. Continuous windows the full length of its 19½-foot cabin afforded an almost unbroken panoramic view. Up front the flight deck was laid out in the usual manner except that there was only one control wheel with a "throw-over" feature to permit flying from either seat. The captain's seat was on the *right* side and only a folding seat on the left for a copilot.¹¹ The usual complements of safety and convenience accessories were incorporated in the Keystone K-78, including overhead emergency exits in the cabin. One somewhat puzzling extravagance was the provision of rear-entrance doors on both



Although copyrighted in 1931, this photo shows the Patrician prototype under construction on 6 October 1928. F.A.A. records indicate that it was "built" two days earlier! (R.A. McDaniels)



Detail of strut and center section construction showing unusual engine location outboard of the landing gear. (National Air & Space Museum 76-16776)



Cabin interior of the prototype Patrician. Snap-shut panels in overhead upholstery conceal emergency exits. Large instruments at upper right of the bulkhead inform passengers of airspeed, altitude and time. (Smithsonian A-2046)



Left side view of the prototype Patrician showing integral boarding steps which could be stowed beneath the cabin floor when not in use. (Smithsonian 76-16775)

sides of the fuselage.¹² Another distinguishing feature was the built-in passenger loading ladder which was stowed beneath the left door when not in use and which could be pulled out and down for easy access to the cabin. The chart on page 118 outlines the prototype's principal specifications and performance. These are compared to its contemporary rivals to afford some idea of the Patrician's competitive position.

And what of the operating histories and ultimate fates of the three Patricians built? Their careers were varied if nothing else, ranging from the prosaic to the near-disastrous. Let us therefore examine the life of each as revealed by original records, contemporary press accounts and the memories of some who were intimately associated with these little-known transport aircraft.

Model K-78 c/n 186 NX-7962 ATC (Memo 2-85)

This prototype unit was completed on 4 October 1928 and was soon engaged in a comprehensive test and evaluation program. With a full load it achieved a maximum speed of 151 mph and a service ceiling of 16,500 feet.¹³ The new airliner was to have been exhibited in Chicago during December 1928, but on 21 November it caught fire on the ground at Bristol. All the fabric, interior trim and wooden outer wing panels were destroyed, thus a complete rebuild was required.¹⁴ This restoration was completed the following February and Keystone set about to demonstrate and promote its new trimotor. Following its second series of shakedown trials, the Patrician embarked on a transcontinental tour in the early spring of 1929. The western segment of this trip included El Paso, Phoenix, Los Angeles, San Francisco, Salt Lake City and Minneapolis, although "all the large cities were visited."¹⁵ Capt. St. Clair Streett, Chief of the Army Air Corps' Flight Test Division and then on leave, piloted the trimotor on this tour. Edgar N. Gott, Keystone's president, also participated.

While in Los Angeles, the Patrician was pushed to its performance limits in setting what was hailed as a new world's record for load lifting. With 36 people somehow crammed into the airplane, it climbed to an altitude of 10,200 feet in just 25 minutes.¹⁶ The big monoplane's arrival in California happened

to coincide with a visit there by Charles A. Lindbergh who was inspecting the Glendale terminal facilities of Transcontinental Air Transport. As technical chairman of TAT, he was supervising preparations for the airline's inauguration in July. After a brief test flight with the Patrician out of Rogers Airport, Lindbergh piloted it to San Francisco on 22 March with 12 passengers aboard.¹⁷ Among others who tried out the trimotor in Los Angeles were Eddie Rickenbacker of Eastern Air Transport and D.W. "Tommy" Tomlinson of Maddux Air Lines.¹⁸

After completing its national tour, the prototype Patrician was chartered to Colonial Air Transport for experimental use on its New York-Boston route.¹⁹ All went well until 8 July 1929 when the airplane sustained serious damage at Boston while being flown by Heustis "Huey" I. Wells. An engine failed on takeoff and Wells turned back for an emergency landing on a confined part of the airfield. Swerving to avoid a team of horses and their driver, the Patrician with its 15 passengers and crew wound up in a ditch.²⁰ No one was injured, but the airplane was not so fortunate. Fuselage tubes between stations 9 and 11 were badly bent, the fabric torn and all three propellers damaged. Keystone repaired the airplane and stored it disassembled in their factory hangar at Bristol—hopeful of returning it to service at some later date. It appears that this was never done because the Patrician's license was allowed to expire and the government file on it closed on 2 June 1930.²¹

Model K-78 (D?) c/n 205 NX and NC-98N ATC 260? (uncertain)

Although this second Patrician is also identified as simply a Model K-78 in government files, it differed considerably in outward appearance from the prototype. No specifications for it have been found, but the airplane appears to have been somewhat heavier than the first Patrician. Its tail group and the cockpit area were extensively redesigned, probably the result of stability and visibility problems encountered with the earlier model.

The Wright Aeronautical Corporation of Paterson, New Jersey, assumed ownership of this machine soon after its completion in September 1929. All the available evidence indicates that it was utilized as both a public relations tool and as a testbed for Wright engines—also serving as a plush private transport for the company's executives. One of those who was closely involved with this Patrician was Ward D. Oakley who, with Leon Allen as First Pilot, flew the airplane during its entire career with Wright Aeronautical. Oakley says:

"He [Allen] and I picked up the Patrician at the Keystone field, Bristol, Pa., in November 1929 and flew it to Teterboro where it was parked next to the Wright tri-motor Ford. The airplane was flown around to get used to its characteristics, then it was used to run cooling and baffle pressure tests."²²

Oakley goes on to say that in the early part of 1930 this Patrician was returned to the Keystone factory for modifications—probably including the addition of two outboard rudders. It was then exhibited at the International Aircraft Exposition in St. Louis before returning to Teterboro Airport. Next came replacement of its Wright R-1750 center engine with a larger R-1830 for test purposes. The R-1830 engine²³ was then installed in Lindbergh's Lockheed Sirius in August 1930 and an R-1750 again fitted to the Patrician.

From this time onwards the Keystone appears to have been employed chiefly as a V.I.P. transport—"mostly to

Photographed on 12 April 1929, the first Patrician appears here during its national demonstration tour. (Leslie Forden Collection)



The prototype Patrician on an early test flight before its extensive damage by fire. (George Roland)



An antecedent of the Patrician, this Pathfinder was built especially for transatlantic attempt by Davis and Wooster. Both were killed on a test flight but the aircraft was rebuilt and operated by West Indian Aerial Express. (Peter M. Bowers Collection)



The prototype Patrician in Central Airlines Co. markings is an enigma, as no record of such use has been found. Probably it was loaned or leased to the Tulsa-Wichita carrier just before going to Colonial Air Transport in 1929. (Peter M. Bowers Collection)



Custom executive interior with berths, lounge chairs and tables in the second Patrician. (George Roland)

Washington'' as Oakley says. In May 1931 it was photographed at Mitchel Field, Long Island, while carrying press representatives during an Army Air Corps tour. By 1932 this Patrician was nearing the end of its usefulness. Official records indicate that Wright Aeronautical scrapped the airplane sometime before December of that year, although its license had already expired on 15 May. Oakley says that he and Leon Allen flew it for the last time to Valley Stream Airport, Long Island, that autumn and that this second Patrician was broken up there.²⁴

Model K-78D c/n 206 NC-10N ATC 260

No two of the three Patricians were exactly alike, although this final version bore close resemblance to the one before it. The addition of a "D" suffix to its model number would imply substantial changes, and indeed one can readily see the elongated fuselage forward of the wing. Its tail surfaces were also reconfigured somewhat, suggesting continued problems with directional control. Inside, the passenger cabin was modernized a bit with newer seating and revised decor. Undoubtedly the technical changes were more significant.

It is often supposed that Transcontinental Air Transport either purchased this Patrician or at least operated it on a regular basis, since it is most often pictured in TAT markings. Neither was the case. It is more likely that Keystone hoped to foster the airline's interest in buying this and additional Patricians by prominently displaying the TAT livery during what was probably an extended period of evaluation by the airline. Moreover, there was then an interlocking ownership of both Keystone and TAT through the "Keys Group" as North American Aviation, a holding company, was then known.

Federal records indicate that this K-78D was manufactured in September 1929—the same date as that of Wright Aeronautical's Patrician.²⁵ Keystone retained ownership of the airplane until its sale to Northwest Airways of St. Paul, Minnesota, on 2 October 1932. Here the mystery thickens, because there is no known record at Northwest Airlines of that company having ever owned or operated this aircraft.²⁶ Little matter, because Northwest is reported to have resold the K-78D nine months later on 25 July 1933. The new owner was Becker-Fornier Flying

Service of Jackson, Michigan. Thus began a series of small owner-operators who expected the Patrician to earn its own keep and theirs.

It would seem a safe guess that Messrs. Becker and Fornier used their Patrician in barnstorming operations—as were many obsolete airliners of that period—but no conclusive record of this has been found. It is only recorded in F.A.A. files that this Keystone was again sold on 9 July 1936 to Kenneth B. Hunter and George G. Gates of East St. Louis, Illinois. George "Sy" Gates was to become a TWA pilot in 1942. He later suffered severe injury in an automobile accident and never flew again.²⁷ His partner in the Patrician operation, Kenneth "Beans" Hunter, had something of the showman in his blood. With his brother John he had flown an old Stinson Detroit to a new endurance record of 553 hours and 41 minutes over Northbrook, Illinois, during the summer of 1930.²⁸

On 1 December 1937 the Patrician was transferred to Hunter Moody of Dalton City, Illinois. The endurance flight bug also bit Moody later on. In 1939 he and his brother Humphrey, flying a Taylorcraft, set a new lightplane record of 343 hours and 47 minutes.²⁹ After one season of Moody's squeezing some profit from it, the weary old Patrician was once more resold on 20 September 1938.³⁰ Its final owner was Alford D. Heath, then of Richmond, Indiana, and now a retired TWA pilot living in Houston. Fortunately, he clearly recalls his use of the airplane and can tell us of its eventual demise.

As a barnstorming operation, Heath took the Patrician through Indiana, Illinois, Kentucky, Tennessee, Louisiana, Alabama, Georgia and Mississippi during the summer of 1938. It would thus appear that his odyssey with the airplane began before its title was officially transferred to him. At Richmond, Indiana, business started briskly, but just as a profitable season was getting underway one of the Keystone's wheels broke. The replacement cost of three hundred dollars was bad enough, but he had to refund a thousand dollars in ride tickets on the spot—and lost revenue resulting from this downtime cost him three times that much. By then the Patrician was configured to seat 27 passengers, so it was a potential moneymaker in this kind of operation. Although Heath rates the Ford Tri-Motor as a better all-around airplane for barnstorming, he does give some high marks to the big Keystone:

"There was a smoking compartment in addition to the lavatory. The cockpit control for the horizontal stabilizer was located on the pedestal in a convenient place similar to present-day installations. Many trimotors had this control located in awkward places, such as above the pilot's head. To perform a successful landing in this type plane, the pilot had to rig it tail-heavy during the approach. This required many fast turns on the crank or wheel. In the overhead system many pilots lost a lot of hair when it caught in the worm drive. The Keystone also had pedal brakes instead of the "gearshift" type. Each week I crawled back in the fuselage to the last station under the tail to check and lubricate the stabilizer jack mechanism and to inspect the structure."³¹

On one of his passenger hops Heath glanced back into the cabin to check his passenger load and got the surprise of his life. All the seats were filled with young Mennonite men in straight-brimmed black hats and white shirts without buttons or collars. It's doubtful that Heath swore at a cross-wind gust on that landing approach!

In December 1938 Heath parked the Patrician at the Dothan, Alabama, airport for the winter. Then his application for employment with TWA was accepted with instructions to report for



Interior view of K-78D, last Patrician built. (Smithsonian 74-10038)



The second Patrician being prepared for delivery to Wright Aeronautical Corp. in November 1929. (Smithsonian 76-16774)

work in the spring of 1939. Meanwhile, he received an offer for the Keystone and terms were agreed upon. Although Heath never received any money for it, the airplane was picked up by its new "owner" and flown east.³² Apparently this operator hoped to earn enough money with the Patrician to meet his payments on it, but the transfer of title was never recorded.³³ Then, at Whander Field in Reading, Pennsylvania, on 18 July 1939, a rapid turn on the ground buckled the Keystone's right landing gear.³⁴ Parts for the necessary repairs were not easily obtained, and it seems that the prospective buyer simply abandoned the airplane where it sat.

During a TWA schedule layover at Newark, Heath went to Reading to examine his damaged Patrician. He was, however, flying full-time for the airline and had no opportunity to handle the repairs himself. Sometime in 1940 the Pennsylvania State Police contacted him with the news that the airplane had been stripped of all removable parts and the rest set afire leaving little of value. So ended the last of the three Patricians.

It does say something for the Keystone Patrician that not one was destroyed by structural or design failure. Instead, all three simply outlived their usefulness and were either broken up or left to the ravages of time and vandals. The Keystone company itself could not survive on optimism and good intentions alone. Having already become a subsidiary of the Curtiss-Wright Corporation, it was merged into that company's Buffalo, New York organization in the latter part of 1932.³⁵

Wright Aeronautical's Keystone Patrician after the installation of outboard rudders, seen here in late 1930 or 1931. (John C. Barbery)



The third and final version of the Patrician (K-78D) immediately after its completion in September 1929. Despite the markings of Transcontinental Air Transport, the airline never owned nor operated the airplane. (Keystone via Joe Juptner)



ADDENDA

After this article was submitted for publication the author was put in touch with Charles D. Koch, a Keystone engineer who was involved in the Patrician's development. He says that the prototype fire occurred during final preparation of the airplane when a painter dropped his can of thinner on a battery which then exploded. There were, however, no injuries.

Further development of the Patrician was halted not only because of prevailing economic exigencies but also as a result of Keystone's merger with Curtiss-Wright. The Army Air Corps had directed continued production of various Keystone bombardment aircraft in preference to competing Curtiss designs, thus Curtiss-Wright chose to discontinue the Keystone Patrician transport and proceed instead with the manufacture of its own Condor airliner. This was an adaptation of the B-2 Condor bomber, but only six of the transport version were built before it too was discontinued.³⁶

Koch also confirms that the second Patrician was indeed a Model K-78D. Both it and the third Patrician differed from the prototype chiefly in having their wings moved aft several feet to correct a center-of-gravity problem. Apparently this change also was not entirely satisfactory—as pilots who flew it have attested.³⁷

Additional comment comes from Karl E. Voelter who was in charge of sales promotion and a pilot for Curtiss-Wright Flying Service. In their hangar at the old Valley Stream Airport on Long Island was the second Patrician which had been placed there in "live storage" by the Wright Aeronautical Corporation. As Voelter describes the incident, "One night there was a fire in the hangar. The night crew grabbed extinguishers and squirted them on everything, including the Patrician. The following day the president of Curtiss-Wright Flying Service was 'jumping up and down' because they had 'saved' the Patrician."³⁸ It is obvious that by this time the Patrician was regarded as something of a "turkey" by Wright Aeronautical, and it is not difficult to understand why they might prefer to collect insurance on it rather than be burdened with a large piece of obsolete flying machinery.

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Comparative Specifications and Performance

	Keystone K-78	Boeing 80-A	Fokker F-10	Ford 5-AT-C
Price	\$90,000	\$75,000	\$67,500	\$55,000
Passenger seats	18-20	17-18	12	12-14
Total power (hp)	1,575	1,575	1,200	1,275
Height (feet)	13'	15'2"	12'8"	13'8"
Wingspan (feet)	90'	80'	79'3"	77'10"
Length (feet)	63'	55'	50'	49'10"
Wing area (sq ft)	1,000	1,250	850	835
Empty weight (lbs)	8,505	10,413	7,820	7,500
Gross weight (lbs)	15,000	17,500	13,100	13,500
Payload (lbs)	3,880	3,870	2,482	3,775
Cruising speed (mph)	130	135	118	113
Rate of climb (fpm)	1,450	900	1,400	950
Service ceiling (feet)	17,400	15,500	18,000	16,500
Range (miles)	750	460	765	525

Adapted from: Archibald Black, *Transport Aviation*, N.Y., 1929.

ABOUT THE AUTHOR

Edward Peck is no stranger to these pages, having contributed articles to the *Journal* in 1970 and 1976. Apart from his deep interest in airline and transport aircraft history, he continues research into pioneer-period aeronautics as well.

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