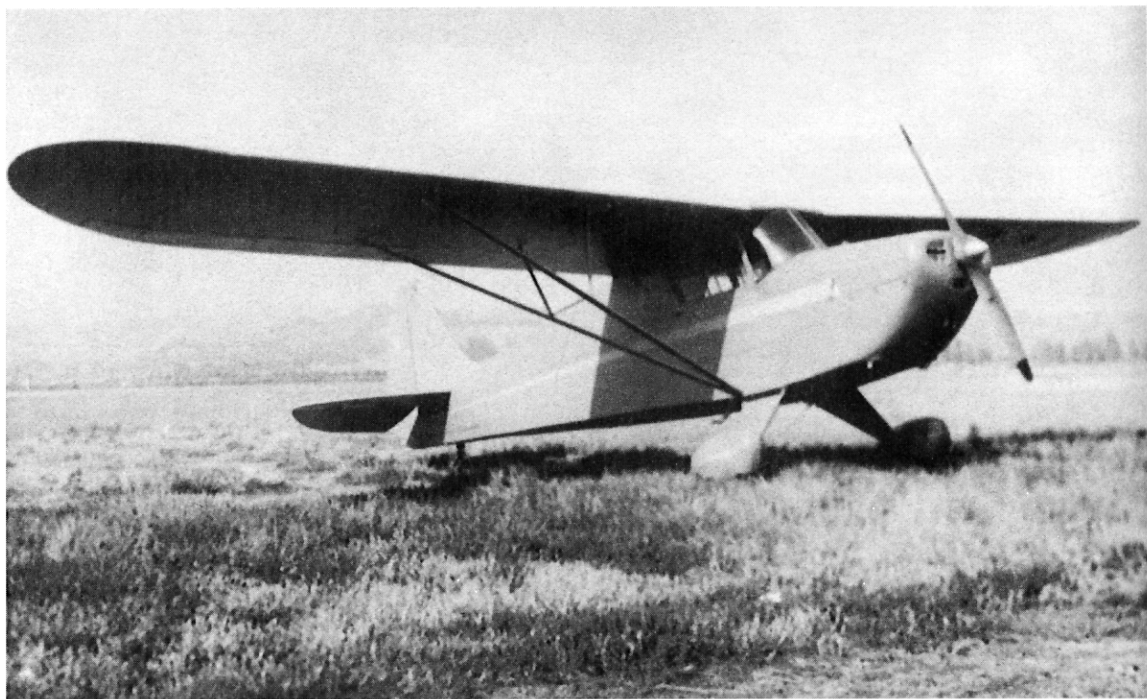


**ATC # 737
(2-26-41)
INTERSTATE "CADET," S-1-A.**



Interstate "Cadet" was designed to be one of the better lightplanes.

President Roosevelt said he wanted to darken the skies with airplanes and that was reason enough for "Interstate" to go into business. The Interstate Engrg. Corp. was a parts jobber that was building bomb shackles, hydraulic units and the like for airplanes, in the former "Moreland" plant in El Segundo; they bought the plant for their expansion (May 1937) and there was still room enough to build airplanes too. Deciding that a primary trainer for the CPTP program was the most logical way to go for a small outfit such as theirs, Don Smith engaged Ted A. Woolsey (a highly respected aeronautical engineer) to do the designing and engineering. After Woolsey laid out the basic design it became sort of a school project because most of the detail work was handled by students of the Wiggins Trade School. The finished airplane (model S-1) was appropriately named the "Cadet"; there was nothing particularly outstanding about this airplane except that it was designed to be an improvement over other airplanes of its type. With 50 h.p. on its nose the S-1 was first flown on 20 April 1940 by E. G. "Slim" Kidwell, but tests quickly proved that more power was certainly advisable. The prototype

was certificated (under a Group 2 approval) in 4 months at a total cost of \$15,000. The "Cadet" was then approved with 65 h.p. as the model S-1-A early in 1941, and it was said to be one of the nicest little airplanes of this type. It was also the first lightplane to be manufactured on the west coast. First production was coming off the line by 21 Dec. 1940 and there were 20 airplanes right behind it; 120 airplanes were already in sub-assembly form, and material for 200 more was already in stock. Initial production was set for one airplane per day, but that had to be revised very soon; orders were pouring in. In May of 1941 a flight of 15 "Cadets" left California on a mass fly-away to the east coast; customers were picking up airplanes as soon as they were rolled out. Contract flying schools took a great interest in the "Cadet," and eventually more than 300 were built going into 1942. In late 1941 some "Cadet" were delivered as the S1A-65F, and in early 1942 some were delivered as the S1A-85F and S1A-90F; these were powered with 65-85-90 h.p. Franklin engines and were said to be the best of the series. Production of the "Cadet" for civil use had ceased in 1942, but by then "Interstate" had started production of the L-6 liaison version

for the USAAF. A Kansas City plant handled deliveries east of the Rockies.

The slab-sided Interstate "Cadet" was a light high-winged cabin monoplane with ample seating for 2 people in tandem. It was specifically designed for the CPTP training program, so its paramount features were tough construction and economical operation with minimum maintenance. The "Cadet" was not blessed with many soft curves, and it gave off the appearance of being somewhat stark and unfriendly, but it was not. It was not exactly cuddly, but it was friendly. The interior was pleasantly arranged, handsomely trimmed, and easy operation was the keynote to its character. As powered with the 65 h.p. Continental A-65 engine, the "Cadet" (S-1-A) was relatively lively and it had confidence; the controls were rather light, but it had good stability and plowed thru rough air like a small freight train. Intentional or unintentional stalls and spins were quite gentle, but red-line speeds were reached quickly, so one had to fly heads up; the "Cadet" in some ways was a better training airplane than most. It didn't matter whether you were flying behind the Continental engine or the Franklin engine, the "Cadet" was quite comfortable with either one. The models S1A-85F and S1A-90F as powered with 85-90 h.p. Franklin engines (up to 40% more power) were ships of much better performance, naturally, but were not necessarily better airplanes; this statement is attributed to hangar talk, of course. The Interstate "Cadet" was never as well known about the countryside as the "Big 3" of the lightplane in-

dustry (Aeronca-Piper-Taylor), but it was quite popular anyhow and pilots never spoke of it harshly. The type certificate for the "Cadet" model S-1-A was issued 2-26-41 with amendments on 10-1-41 for the model S1A-65F, and on 1-5-42 for the models S1A-85F and S1A-90F. In total, over 300 units were mfgd. by the Interstate Aircraft & Engineering Corp. at El Segundo, Calif. Don P. Smith, formerly gen. mgr. at Vultee Aircraft, was pres.; W. Earl Hirtensteiner was V.P.; L. B. Cameron was sec-treas.; Walter A. Hite was chf. engr.; and E. G. Kidwell was chf. pilot. Airplanes produced prior to 2-26-41 were approved on a Group 2 certificate. Interstate claimed that it had exclusive right to the name "Cadet" (pertaining to airplanes) because it had bought the rights from the Butler Aircraft Corp. of Kansas City; Culver also used the name "Cadet" and there was some bickering about this.

Listed below are specifications and performance data for the Interstate "Cadet" model S-1-A as powered with Continental A-65-8 engine rated 65 h.p. at 2300 r.p.m. at SL; length overall 24'0"; height overall 7'3"; wingspan 35'6"; wing chord 60"; total wing area 173.8 sq.ft.; airfoil NACA-23012; wt. empty 720 (735) lbs.; useful load 480 (515) lbs.; payload with 15 gal. fuel 212 (247) lbs. (1 pass. & 42-77 lbs. for bag. & extras); bag. allow. 47 lbs.; gross wt. 1200 (1250) lbs.; figures in parentheses as with (larger) optional tail group; max. speed 107; cruising speed (.80 power) 98; landing (stall) speed 36; climb 625 ft. first min. at SL; service ceiling 14,500 ft.; gas



"Cadet" S-1-A was on flight-line at many schools.

cap. 15 gal.; oil cap. (in sump) 4 qts.; cruising range (.80 power) at 4 gal. per hour 350 miles; price from \$2095 at factory. Also eligible and available as the S1A-65F from 10-1-41 with Franklin 4AC-176-B2 engine rated 65 h.p.; performance was comparable to S-1-A as listed above.

Specifications and data for model S1A-85F (eligible 1-5-42) as powered with Franklin 4AC-199-D2 engine rated 85 h.p. at 2500 r.p.m. at SL, same as above except as follows: length overall 23'4"; wt. empty 790 lbs.; useful load 510 lbs.; payload with 15 gal. fuel 242 lbs. (1 pass., 2 parachutes, & 32 lbs. bag.); bag allow. 47 lbs.; gross wt. 1300 lbs.; max. speed 116; cruising speed (.80 power) 108; landing (stall) speed 39; takeoff run 275 ft.; climb 790 ft. first min. at SL; ser. ceiling 16,000 ft.; gas cap. 15 gal.; oil cap. (in sump) 4 qts.; cruising range (.80 power) at 5 gal. per hour 320 miles; price not announced. Also available as S1A-90F (eligible 1-5-42) with Franklin 4AC-199-E3 engine rated at 90 h.p.

The fuselage framework was built up of welded 4130X and 1025 steel tubing in a Warren truss form, then skimpily faired with steel channel stringers and fabric covered. Parachute-type seats were arranged in tandem; there was a convenient entry step and a large wood-framed door on the right side; there were dual stick-type controls; and all operational apparatus was within easy reach, some in the ceiling. The interior was upholstered in suede-like cloth and a carpet was provided for the floor; a baggage compt. with allowance for 47 lbs. was behind the rear seat. The large Pyralin enclosure provided excellent protection and very good visibility; solo flight

from front seat only. The wing framework in 2 panels was built up of solid spruce spar beams with built-up truss-type "Alclad" (24ST) metal wing ribs; the leading edges were covered with dural metal sheet and the completed framework was covered in fabric. Vee-type wing bracing struts were of streamlined steel tubing, and ailerons were of the balanced-hinge type. The 15 gal. fuel tank was mounted just behind the firewall, and numerous inspection doors were provided thruout for quick inspection and easy maintenance. The semi-cantilever landing gear of 72" tread was a tripod affair arranged to operate with only one oleo-spring shock strut that was buried in the fuselage; wheels were 6.00x6 and fitted with hydraulic brakes. The tail wheel was steerable and metal wheel pants were optional. The fabric-covered tail group was built up of welded steel tubing and sheet steel ribs; the vertical fin was built integral to the fuselage, and left elevator was fitted with adjustable trim tab. Rudder and aileron had fixed trim tab adj. on the ground only. Besides all of this the "Cadet" had many little why-did-not-somebody-think-of-this-before features; altogether a very nice airplane. A wooden prop, dual controls, dual brake pedals, hydraulic wheel brakes, parking brake, carburetor heat-box, cabin vents, a cabin heater, normal set of engine & flight instruments, air-speed ind., compass, fuel gauge, wiring for navigation lights, fire extinguisher bottle, seat belts, tie-down rings, and first aid kit were std. equipment. Navigation lights, battery, radio gear and wheel pants were optional. The next "Interstate" development was the model S-1-B (L-6) as described here in the chapter for ATC # 754.



A "Cadet" on west coast at Reno Ranch; later models had balanced rudder.