A.T.C. #219
(9-4-29)
KEYSTONE-LOENING "COMMUTER", K-84

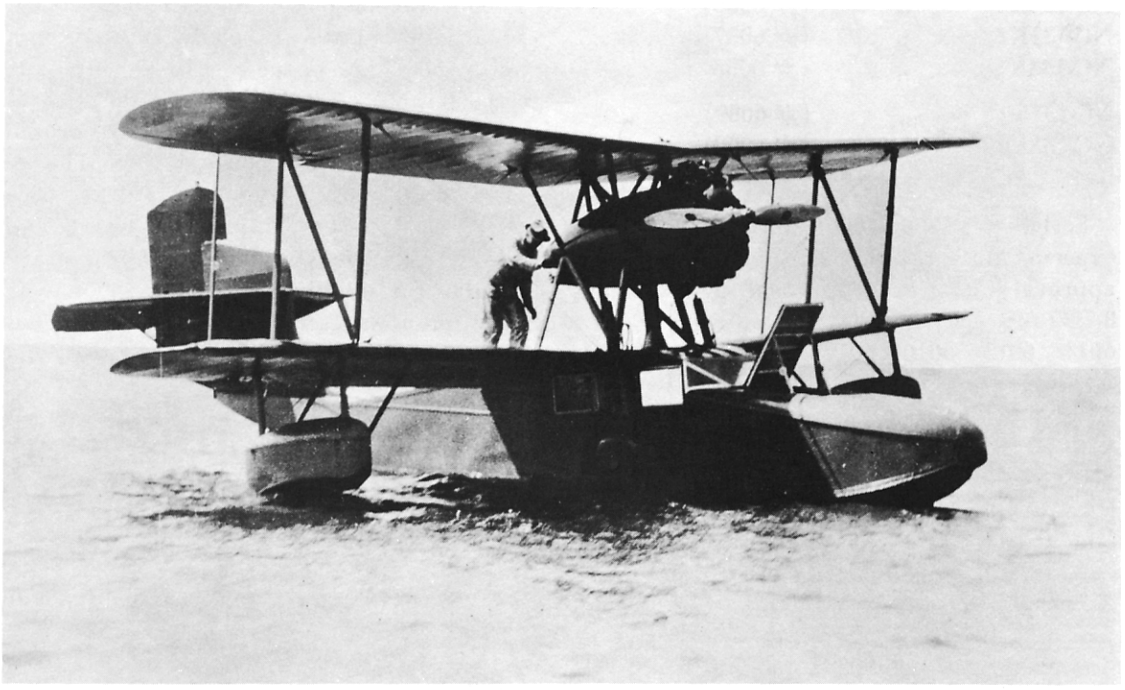

Fig. 61. Keystone-Loening "Commuter" model K-84 with 300 H.P. Wright J6 engine.

Loening was among the first to bring forth a practical and successful amphibious aircraft; introduced in early 1925, this craft certainly surprised one and all with its excellent utility and above-average performance. Put into use with the Army and Navy service, further development of this basic design led directly to the commercial versions of the C2C and C2H "Air Yacht", which enjoyed popularity and extensive use across the nation and abroad in air-ferry operations. The new Loening "Commuter" as shown here in various views, was also an amphibious aircraft that was primarily designed for and especially leveled at the sportsman-pilot and the business man; a market for this type of craft that was just beginning to show some possibilities. Arranged as a comfortable 4 place cabin airplane, this new version was also highly versatile in the fact that it could pick and choose its airports or landing-places to the best advantage or wherever fancy would dictate. Unlike the previous "Air Yachts", which were called the "flying shoe-horn", the "Commuter" was basically a "flying boat" configuration with the engine mounted between the wings in tractor or puller fashion. The tractor configuration did have some advantages, but it was not as practical as the pusher-engine installation for this type of airplane. However the rugged "Commuter" did enjoy a a good measure of popularity and success, and was used many times for exacting and unusual service; the New York City Police Dept. operated one to patrol the harbor area, and another served in the north country with Alaskan Airways. Of very rugged constitution, several of the K-84 were still in service many years later.

Introduced in early 1929, the Keystone-Loening "Commuter" model K-84 was a biplane of the classic "flying boat" type; a cabin of ample proportions with tasteful and practical appointments for four people, was arranged in the forward section of the all-metal hull, with entrance through a large hatch-way. A retractable undercarriage could be extended for operation on land, or swung up out of the way for landings on water; extension or retraction of the landing gear was accomplished by a manually operated hand-

crank accessible to the pilot. A large baggage compartment was provided for luggage and stowage of anchoring gear. The powerplant for the K-84 was the 9 cyl. Wright J6 engine of 300 h.p., which was mounted between the wing panels in a streamlined nacelle. Performance of this model was quite average for a craft of this type and flight characteristics were described as gentle and predictable. The type certificate number for the model K-84 "Commuter" as powered with the 300 h.p. Wright J6 engine was issued 9-4-29 and some 40 examples of this model were manufactured by the Loening Aeronautical Engineering Co. of New York City, which was a division of the Keystone Aircraft Corp. Through affiliations with the Curtiss-Wright Corp., "Commuter" sales and distribution were handled at scattered stations throughout the country. Grover Loening, founder of the Loening Aeronautical Engineering Co. and designer of various amphibious types bearing his name since 1925, sold out his interests to the Keystone Corp. and concentrated his efforts on several new developments. Leroy Grumman, able assistant to Grover Loening for several years, also had left the firm and started out on his own. President of the Keystone Aircraft Corp. was Edgar N. Gott; C. T. Porter was V.P. and chief engineer.

Listed below are specifications and performance data for the Keystone-Loening "Commuter" model K-84 as powered with the 300 h.p. Wright J6 engine; length overall 32′1″; hite on water 12′6″; hite with landing gear extended 13′6″; wing span upper & lower 40′0″; wing chord both 72″; total wing area 437 sq.ft.; airfoil Loening 10-A; wt. empty 2920 useful load 1230; payload with 70 gal. fuel was 593 lbs.; gross wt. 4150 lbs.; max. speed 112; cruising speed 90; landing speed 45; climb 850 ft. first min. at sea level; climb in 10 min. was 5000 ft.; ceiling 12,000 ft.; gas cap. 70 gal.; oil cap. 6.5 gal.; cruising range at 15 gal. per hour was 400 miles; price at the factory was $16,800. As is usually the case, the prototype "Commuter" was somewhat lighter and a bit smaller than the production version. Data showing difference was as follows; span both 36′0″; wing area 389 sq. ft.; wt. empty 2780; useful load 1220; payload with 70 gal. fuel was 583; gross wt. 4000; max. speed 116; cruising speed 96; landing speed 50; ceiling 9800 ft. The last versions of the model K-84, using improved Wright J6 of 330 h.p. were allowed a gross weight of 4270 lbs.

The hull framework was built up of dural frame members that were bolted together into a rigid and durable structure; outer covering aluminum alloy sheet that was bolted and screwed to the hull framework. The bottom of the hull was covered in 1/16 in. duralumin plate and all seams were water-proofed with strips of impregnated fabric. The wing framework was built up of solid spruce spar-

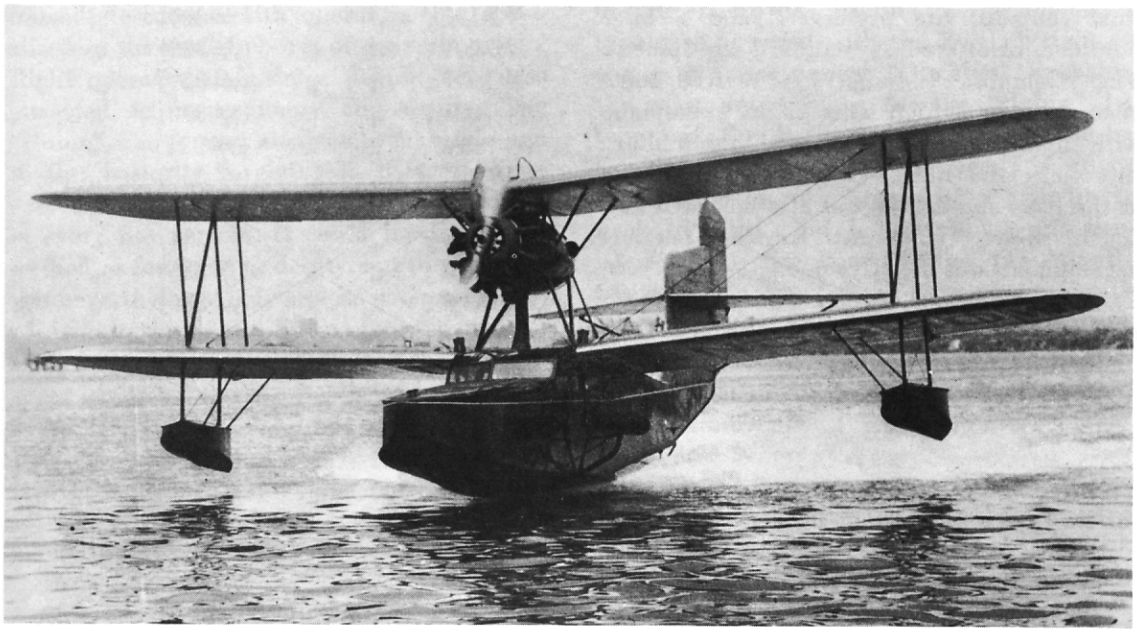

Fig. 62. Commuter behaved well in water; shown here on "step."

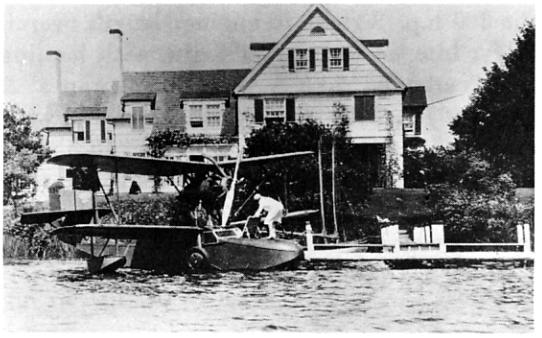

Fig. 63. Utility of "Commuter" amphibian ideal for sport flying.

Fig. 64. With gear lowered, commuter taxis up ramp to unload.

beams with stamped-out metal "Alclad" wing ribs; the completed framework was fabric covered. There were four ailerons connected together in pairs by push-pull struts; interplane struts were of streamlined chrome-moly steel tubing and interplane bracing was of streamlined steel wires. Metal-framed and metal covered wing-tip floats were mounted on outer end of lower wings to keep the craft from heeling over during water operations. The fabric covered tail-group was built up with a combination of wood spars and dural former ribs; the fin was ground adjustable and the horizontal stabilizer was adjustable in flight. The retractable landing gear was fitted with oleo-spring shock absorbing struts; wheels were 30x5 or semi-balloon tires were later available. Baggage compartment was allowed a maximum of 89 lbs., which included 40 lbs. of anchoring gear. A metal propeller, Eclipse electric inertia-type engine starter, fire extinguisher, anchor and rope, dual controls, life preservers, and a bilge pump, were offered as standard equipment. The "Commuter" design was revived some years later as a high wing cabin monoplane with engine mounted on a tripod mount above the wing; the hull was basically the same as the K-84 and engine was also mounted in a tractor drive. The next Keystone-Loening development was the "Cyclone" powered "Air-Yacht" model K-85, which will be discussed in the chapter for ATC # 395. The next Keystone development was the tri-motored "Patrician" model K-78D, which is discussed in the chapter for ATC # 260 in this volume.

Listed below are "Commuter" model K-84 entries that were gleaned from various registration records:

X-9781;	Model	K-84	(# 301)	J6-9-300
NC-60K;	„	„	(# 302)	„
NS-370N;	„	„	(# 303)	„
NC-59K;	„	„	(# 304)	„
NC-63K;	„	„	(# 305)	„
NC-61K;	„	„	(# 306)	„
NC-301V;	„	„	(# 311)	„
NC-374V;	„	„	(# 313)	„
NC-375V;	„	„	(# 314)	„
NC-376V;	„	„	(# 315)	„
NC-535V;	„	„	(# 316)	„
NC-538V;	„	„	(# 317)	„
NC-539V;	„	„	(# 318)	„
NC-540V;	„	„	(# 319)	„
NC-339W;	„	„	(# 320)	„
NC-340W;	„	„	(# 321)	„
NC-10247;	„	„	(# 323)	„
NC-10248;	„	„	(# 324)	„
NC-10249;	„	„	(# 325)	„
NC-10250;	„	„	(# 326)	„
NC-19E;	„	„	(# 327)	„
NC-20E;	„	„	(# 328)	„
NC-21E;	„	„	(# 329)	„
NC-22E;	„	„	(# 330)	„
NC-755W;	„	„	(# 331)	„
NC-756W;	„	„	(# 332)	„
NC-757W;	„	„	(# 333)	„
NC-758W;	„	„	(# 334)	„
NC-762W;	„	„	(# 335)	„
NC-763W;	„	„	(# 336)	„

Serials # 307 - 308 - 309 - 310 - 312 - 322 - 337 - 338 - 339 - 340 unaccounted for in registration records up to Jan. of 1932; serial # 313 later as model K-84W with P & W "Wasp" Junior of 300 h.p. on Group 2 approval numbered 2-526.