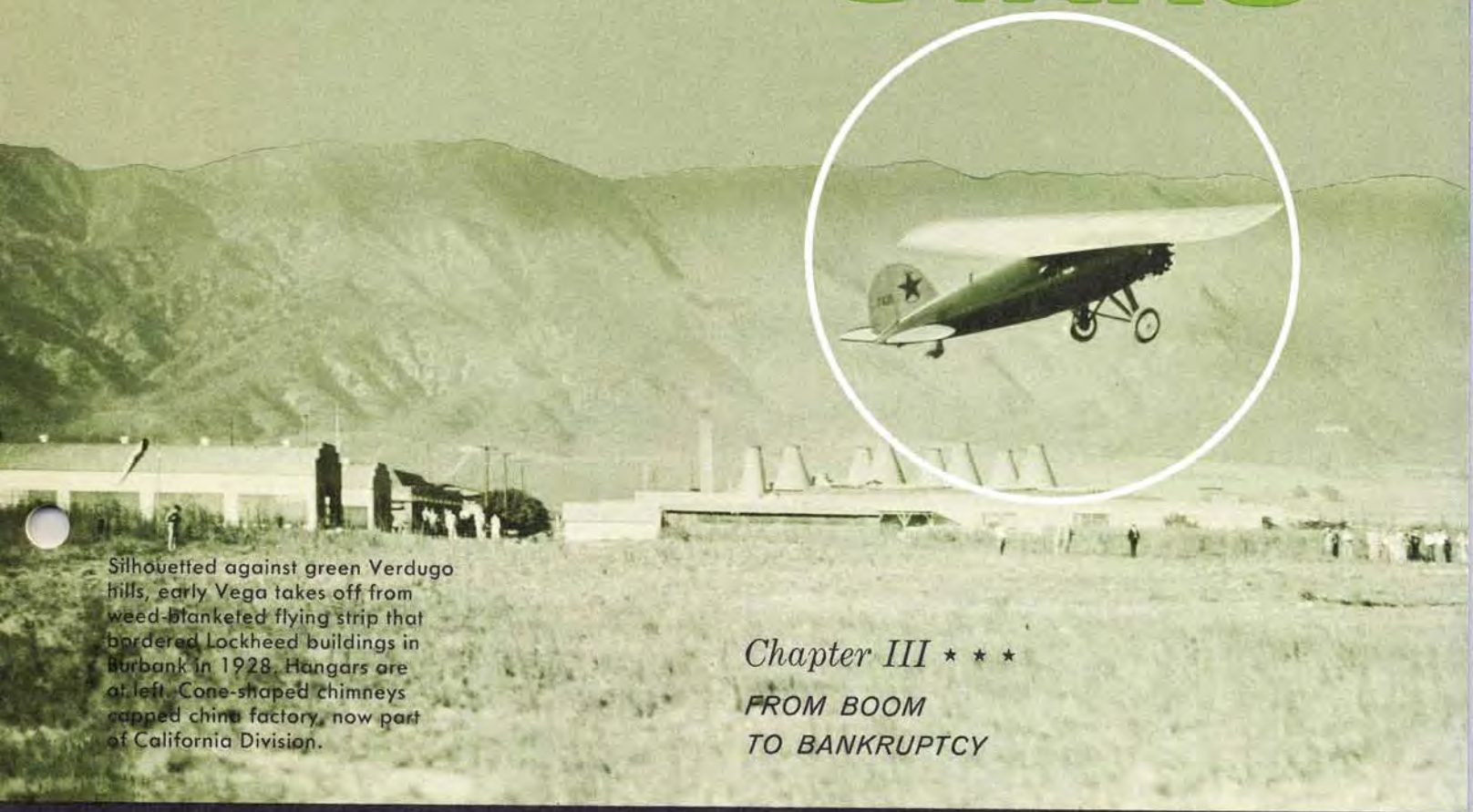
F.O. Rick

A History of Lockheed Aircraft Corporation

OF MEN AND STARS

May 1957



Silhouetted against green Verdugo hills, early Vega takes off from weed-blanketed flying strip that bordered Lockheed buildings in Burbank in 1928. Hangars are at left. Cone-shaped chimneys capped china factory, now part of California Division.

Chapter III * * *

FROM BOOM TO BANKRUPTCY

Six men stood anxiously in a hayfield near Inglewood, site of today's bustling Los Angeles International Airport, under the hot morning sun. It was the Fourth of July 1927—but they were not shooting firecrackers. Their eyes strained into the blue California sky as they watched a speck on the horizon grow larger.

The speck became an airplane that rocked its wings in salute, dipped into a long, smooth glide, and trailed a cloud of dust as it landed and taxied to a stop. Pilot Eddie Bellande, grinning broadly, jumped from the cabin.

"Boys," he said, "she's a dandy!"

There were answering smiles from the men he greeted. They were Allan H. Lockheed, John K. Northrop, W. Kenneth Jay, Fred S. Keeler, Anthony Stadlman, and Ben Hunter. Only six months earlier they had formed the Lockheed Aircraft Company with a slim $25,000 in its treasury and an airplane design they felt represented a far-reaching advance.

Painted a glistening orange, with a red star sparkling on its vertical fin, the craft was the first Lockheed Vega, forerunner of an airplane that flew to fame around the world.

Its fuselage, elliptical in cross-section and torpedo-like in silhouette, refined the molded-plywood technique devised and patented 10 years before by Allan Lockheed and his brother Malcolm, Northrop, and Stadlman. Its high wing, spanning 41 feet, employed the cantilever principle that eliminated external, drag-creating braces.

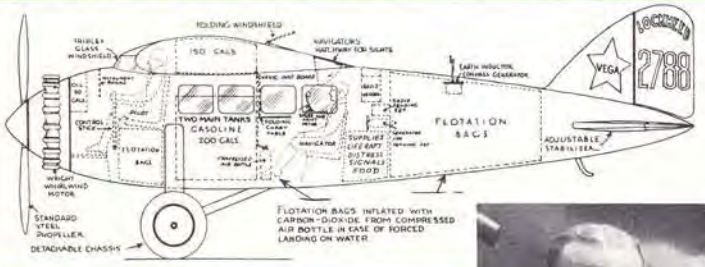
Fuselage construction was like that of the S-1 sport

The First Vega

Streamlined prototype of famous Vega line was constructed in small Hollywood plant.

John K. Northrop (left of engine) checks first Vega before plane's maiden flight.

Airborne for first time, new Vega climbs into sky off Inglewood hayfield in 1927.



Hearst newspapers bought first Vega and named it *Golden Eagle*. Plane entered Hawaii air race, was lost at sea. Craft's pilot was Jack Frost, shown at right.

biplane built by the Loughead Aircraft Manufacturing Company in Santa Barbara before that firm folded in 1921. The S-1 had failed to sell in a market glutted with war surplus aircraft.

Confronted with this distressing economic reality, Allan—who with his brother had built and flown the first airplanes to carry the Lockheed name—closed the small factory. For the next few years he sold real estate in Los Angeles during its spectacular postwar growth. He was also associated with the regional distributor of the Lockheed four-wheel hydraulic brake for automobiles that his brother had invented and marketed.

The Vega Is Born

Northrop, whom the Lockheeds had employed as draftsman in 1916, remained in Santa Barbara. But he and Allan kept in touch. In 1923 Allan helped him obtain a job at Douglas Aircraft. There he did design work on several airplanes including the famous round-the-world cruisers that made aviation history in 1924. Of four biplanes that left on a projected global circuit, two completed the 28,000-mile journey in 179 days. One of the pilots was Henry H. Ogden, now vice president of Lockheed Aircraft Service.

In 1926 Lockheed and Northrop roughed out what was to become the celebrated Vega, and Allan began exploring means of financing its construction. The search led him to W. Kenneth Jay, an Iowa-born accountant, Air Corps flying instructor during World War I, and long-time aviation enthusiast. Knowing of the previous Lockheed accomplishments, Jay scanned the Vega drawings and decided the plane had commercial possibilities.

He, Lockheed, and Northrop prepared a stock prospectus. Jay showed it to his associate, Fred S. Keeler, a brick and tile manufacturer and stockholder in the Empire China Company, whose factory was on the site of our present B-1 plant in Burbank.

"Keeler took one look at the prospectus," Jay recalled, "and offered to put up the entire $25,000 in return for 51 per cent of the common stock and all of the preferred."

Lockheed Company Formed

With Keeler investing all but $2500—Lockheed himself invested that amount—Lockheed Aircraft Company came into being as a Nevada corporation in December 1926. As president Keeler gave the company its name. A shrewd businessman, he felt the proposed airplane would be more salable if called a Lockheed because the public would link it with Malcolm Lockheed's hydraulic brakes, in which he had invested and which were widely promoted and advertised.

Other officers included Allan Lockheed, vice president and general manager; Jay, secretary-treasurer; and Ben Hunter, Keeler's attorney, executive vice president. Northrop left Douglas to become chief—and for a time only—engineer. Stadlman was factory superintendent.

Operations began in a small building at Sycamore and Romaine Streets in Hollywood. Northrop suggested Vega as the airplane's name because it was short, easy to pronounce and remember, and connoted astronomical speed and distance.

About $17,500 went into the first plane, including machine tools and equipment. Probably the biggest item was the 220 hp Wright J-5 radial aircooled engine. During its production Lockheed continued to earn his bread—and occasionally some butter—selling real estate. Late every afternoon he went to the Hollywood plant, peeled off coat and tie, and speeded the project along.

Hearst Buys the Vega

Principally because information on monocoque construction was sketchy, production was slow. Day-to-day problems were solved as they arose.

"A great deal of it was luck," Northrop said. "We used big rubber bags to press the plywood into the concrete molds. Whenever we did this everyone dropped whatever he might be doing, put on overalls, and helped sling casein glue."

While this work went on, aviation received a tremendous impetus. Charles A. Lindbergh fired the world's imagination with a pioneering solo hop from New York to Paris in May 1927. From then on, newspaper headlines almost daily emblazoned another daring flying achievement—or, on occasion, an air tragedy. Within a few weeks Jim Dole, publicity-conscious pineapple king of Hawaii, posted a $25,000 prize for the first air race from California to Honolulu.

Jay found a buyer for the first Vega. He encountered John W. Frost, a San Francisco aviator whom Jay as an Air Corps instructor had taught to fly during World War I, and showed him the prototype under construction.

Slight Redesign Necessary

Convinced it was the best airplane he'd ever seen, Frost so informed his brother, who worked for the Hearst newspaper chain. To inspect the new monoplane, Hearst dispatched A. M. Rochlen, one of his executives and now a Douglas vice president. Upon Rochlen's recommendation George Hearst bought it for $12,500.

"The sale price represented a loss," Allan explained, "but we were happy to absorb it. The prestige of selling the Vega to Hearst was tremendous."

On an early flight the plane revealed one design flaw. Its vertical fin proved directionally unstable. Northrop redesigned to put more area in the fin, less in the rudder.

Vega Enters Dole Derby

That problem solved, Hearst took delivery, hired Frost as pilot, christened the Vega *Golden Eagle,* and entered it in the coming Dole race. The plane quickly proved itself the fastest commercial craft in the skies. It flew from Oakland to Los Angeles in 3 hours and 5 minutes with three passengers, the pilot, and a 400-pound load. And it made the return journey, carrying the pilot, three passengers, and a 1500-pound payload, in less than 3½ hours.

For the Oakland-to-Honolulu race Hearst insisted upon every known safety device for the *Golden Eagle.* So fitted, it was capable of staying afloat 30 days. Every ship in the race had to pass a rigid instrument check and carry 15 per cent more fuel than necessary. But when the Dole Derby began August 16, 1927, four of the eight entries couldn't struggle into the air. There were disastrous crashes.

"The start of the race was a hair-raising sight," Northrop declared. "I wouldn't go through it again for $10,000."

But the *Golden Eagle* took off effortlessly.

"It cleared the border lights by 200 feet," Lockheed

The Air Express

First Air Express, eyecatcher at air show in 1928, featured long dorsal fin and "parasol" wing. With rudder redesigned (lower photo), plane cruised at 150 mph, set many records.

said, "made a graceful left turn, headed for the Golden Gate, and was flying at 3000 feet by the time it reached San Francisco."

The smallest, fastest, most beautiful airplane in the race was never seen again.

By the following evening no word had come from Frost or his co-pilot Gordon Scott, and the *Golden Eagle* was presumed lost. Northrop believed it reached Hawaii and probably cracked up in rough terrain. For a week after the plane's disappearance flares of the same color as those it carried reportedly lighted the area around Kilauea Volcano. Lockheed thought the Vega could have flown right over Hawaii when the islands were obscured by clouds and that somewhere in the Pacific it ran out of fuel.

"I wasn't in favor of entering the plane in the race," he insisted. "I didn't think aviation was yet ready for such a gruelling test. The risk was too great and we were gambling with human lives."

Another Vega Order

For four years an Australian-born adventurer and explorer, Captain George Hubert Wilkins, had been seeking to fly over the top of the world. The fact that in May 1926 Admiral Richard E. Byrd made such a hop did not deter him. Wilkins refused to abandon the project in spite of five smashed planes and two expeditions that ended in failure. Planning still another attempt, he was in San Francisco in August 1927. And from his hotel window he saw a fast plane of clean design fly by.

Wilkins Impressed

It was the "most efficient-looking monoplane I have ever seen," Wilkins wrote later in *Flying the Arctic,* an account of his polar flights. The plane was Lockheed's *Golden Eagle,* on its way to Oakland to prepare for the Dole race. Impressed by his fleeting glimpse, Wilkins visited the Bayfarm Airport for a closer inspection. Then he hastened to Los Angeles to order one like it.

The Wilkins Vega had skis instead of wheels, a hatch on top of the fuselage aft of the wings in place of the standard door, and two windows in the floor for aerial photography.

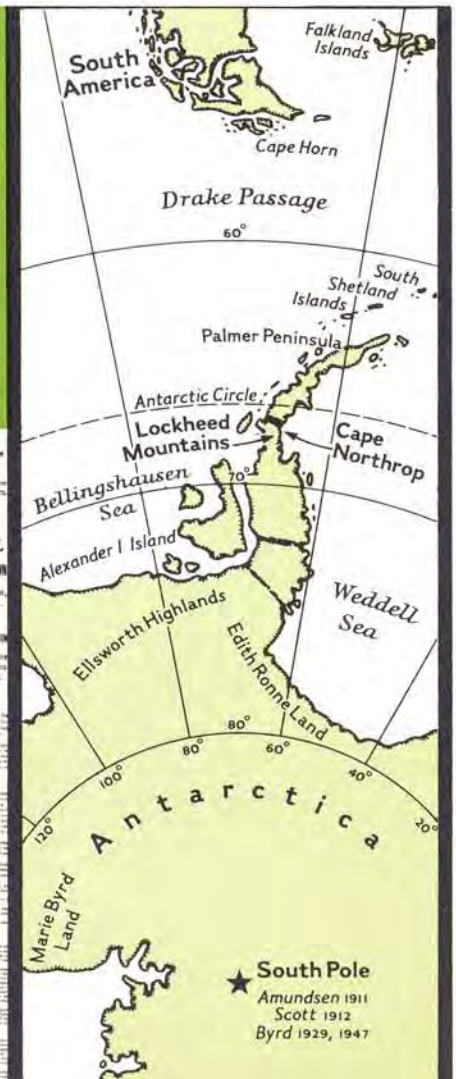
Test Pilot Bellande, now a vice president of the Garrett Corporation, first flew the plane, christened *Los Angeles,* early in 1928. Soon after, Lieutenant

Wilkins: First over Both Poles

Daring Wilkins-Eielson flight across Arctic wastes in April 1928 brought world acclaim to adventurous flyers and sturdy Vega. Below, ski-shod plane takes off on epic hop. Center, front page of *New York Times* was typical of news coverage given feat. Wilkins and Eielson made history again in December that year as first men to fly over the antarctic, named Cape Northrop and Lockheed Mountains.

The New York Times.

WILKINS FLIES FROM ALASKA TO SPITZBERGEN IN 20½ HOURS; COVERS POLAR SEAS IN TINY PLANE AND FINDS NO LAND; ISOLATED FIVE DAYS ON UNINHABITED ISLAND NEAR GOAL



Ben Eielson, pioneer Arctic aviator and associate of Wilkins, piloted it to Point Barrow, Alaska. There he and Wilkins conducted tests under polar conditions.

The Flight Begins

With the mercury at 20 below, the long, perilous journey over the Arctic Sea began April 15. For 20 hours Wilkins and Eielson flew over desolate wastes. But before they reached their objective, Spitzbergen, a choking blizzard forced them to land on the island of Dead Man's Point. Within minutes the *Los Angeles* froze fast to the ice.

Lost to the world outside, the two men lived on emergency rations five days until the weather cleared. On April 21, with only 20 gallons of fuel left, they took off and in less than half an hour sighted their goal. The 2200 mile flight, covered in the flying time of 20½ hours, made aviation history.

It brought honors to Wilkins, including a knighthood. It contributed valuable information to science. And it catapulted the Lockheed Vega, product of a small new factory, into a prominent niche among the world's great airplanes. News coverage was fabulously generous. Typical was the customarily conservative *New York Times,* which devoted six full pages to the flight and called it "the greatest feat of all aviation."

Later in 1928 Wilkins gained added fame for himself and Lockheed with a series of exploratory flights over the antarctic, first in aviation history. On this expedition he took two Vegas, the *Los Angeles* and the newer *San Francisco.* In the *San Francisco* on December 20, 1928, Wilkins and Eielson crossed the hazardous Weddell Sea icepack and discovered and named South Graham Land Island. Wilkins called its eastern tip Cape Northrop in honor of the Vega's co-designer and the rugged range beyond the Lockheed Mountains. The 9½ hour flight covered 1200 dangerous miles.

A Flood of Orders

The two Wilkins expeditions within the same year brought Lockheed a rich harvest of favorable publicity at a time when speculative fever was infecting the whole country. Aviation stocks soared dizzily. In a single week Wright Aeronautical and Curtiss each gained $35 a share.

After delivering three planes in 1927, Lockheed suddenly found itself flooded with orders that overtaxed production facilities in Hollywood. Through his connection with the Empire China Company in Burbank, Keeler found space available in a building across the alley, partly occupied by the Mission Glass Works. Around the plant stretched miles of vineyards, farms, orchards, and unreclaimed desert.

Lockheed Moves to Burbank

Flooded with orders after Arctic hop by Wilkins, Lockheed moved to larger quarters in Burbank in March 1928, now California Division. Photos above show factory from air, busy assembly line. Three men at right are Allan Lockheed, vice president; Fred S. Keeler, president; Ben Hunter, executive vice-president of company. Early brochure stressed Vega's speed and described Burbank as Los Angeles "suburb."

Lockheed Aircraft Co., Burbank, Calif., [illegible] Los Angeles, U.S.A.

Exponent of speed was Gerald Vultee (left), chief engineer in 1928-30, shown with Allan Lockheed.

It was a good place to build and fly airplanes. So in March 1928 the Lockheed company occupied 20,000 square feet of working area at the corner of San Fernando Road and Empire Avenue. The enthusiastic *Burbank Review* reported the work force would total 50 men—and added a wild prediction.

"At the end of a few months," the newspaper said, "it is expected that the plant will employ about 100 and ultimately will have a payroll of as high as 200 men."

Behind the new factory for a third of a mile workmen leveled off sagebrush and tumbleweeds for a landing strip just 2½ times as wide as the Vega's wing span. Twice a year they graded the strip to fill in gopher holes and keep down weeds. It was the era before aircraft brakes, and the low embankment of a railroad spur kept many a plane from running out onto the dirt road along the eastern boundary.

Almost immediately after the move Lockheed signed contracts for one of the largest single orders for commercial aircraft yet placed in America. Air Associates of New York ordered 20 Vegas, more than $250,000 worth.

For some time Northrop had been studying the flying wing theory and experimenting with all-metal construction. Neither project fitted into Lockheed's plans. So in June Northrop and Jay left the company and with Hearst backing formed the Avion Corporation. They sold to United Aircraft in 1931, and a year later Northrop and Jay organized the Northrop Corporation as an engineering subsidiary of Douglas. In 1938 Douglas bought out their interests. Jay withdrew from aviation, and Northrop in 1939 established the present Northrop Aircraft, Inc. He remained its president until his retirement in 1952.

After Northrop and Jay left Lockheed, Whitley C. Collins, then a Chicago banker and now president of Northrop Aircraft, joined the company as secretary-treasurer. Succeeding Northrop as chief engineer was the gifted Gerald Vultee, who had first worked for Lockheed as a stress analyst.

Leaders in an Era of Speed

Impressed with the Vega's performance, officials of Western Air Express—now Western Air Lines—came to the factory early in 1928 with an inquiry. Could Lockheed increase that plane's speed and power?

Lockheed was sure it could. Vultee and his staff reworked the Vega fuselage. They installed an open cockpit aft of the wing. They extended the wing to a 43-foot span and lifted it above the fuselage on short struts to improve the pilot's forward vision. They replaced the Vega's 220 hp engine with a 420 hp Pratt & Whitney Wasp.

Dubbed the Air Express, the new model proved a success. Although nearly half a ton heavier, it outran the Vega by 35 mph, cruised at 150 mph, and had a top of three miles a minute.

In an era when speed was the chief goal, the Vega and Air Express were undisputed leaders. Their accomplishments led to an advertising slogan with more truth than boastfulness:

"It Takes a Lockheed To Beat a Lockheed."

Continually striving for improvement, Lockheed engineers developed an engine cowling—a metal

The Detroit Days

Detroit Aircraft bought Lockheed in 1929, set Carl B. Squier (left) as general manager, kept emphasis on Lockheed speed in advertising material. At right, "half-breed" Vega with metal fuselage, plywood wings, ordered by Army Air Corps.

collar fitted around the radial power plants—that boosted speed nearly 20 mph. To it they added inter-cylinder baffles that prevented overheating. The National Advisory Committee for Aeronautics accepted the devices as a standard.

Speed-minded flyers made Lockheed their mecca. Piloting Vegas and Air Expresses, such famous birdmen as Art Goebel, Bob Cantwell, Frank Hawks, Herb Fahy, C. B. D. Collyer, Roscoe Turner, and Leland F. Schoenhair winged to new records. Lockheed sales zoomed. In 1928 the company delivered $750,000 worth of airplanes, its biggest year.

Only a few short years before, investors had regarded aviation as the wildest kind of gamble. But by 1929 abundant capital appeared, and the industry took on new strength. Business was good throughout the U.S. in early months of that year. Stocks reached all-time highs in July, and factories ran full blast. Along with almost everything else, aviation boomed. Sales of commercial planes and engines, four times as large in 1928 as in 1927, doubled again. Public enthusiasm for flying reached new heights.

The Detroit Era Begins

The Lockheed company chose this time to enter into a new and ultimately disastrous liaison. In April it negotiated to sell out to the ambitious Detroit Aircraft Corporation, a holding company organized as a "General Motors of the Air" to gather various aviation units into one interlocking structure.

Allan Lockheed was reluctant. "Out of the group that ultimately made up the Detroit Aircraft family," he commented later, "our company alone had any degree of financial stability. I was certain only tragedy could come out of the proposed sale."

But he was outvoted. In July Detroit Aircraft purchased an 87 per cent interest in Lockheed by exchanging 1½ shares of its own stock for one Lockheed. Allan resigned as vice president and sold his holdings at $23 a share.

New Company Organized

Later he organized the Loughead Brothers Aircraft Corporation with his brother and other investors and began developing a twin-engine cabin monoplane. In 1938 he announced plans for its production, using two 260 hp in-line aircooled engines placed horizontally in the nose. But on a test hop over San Francisco Bay—where Allan had flown the first Lockheed Model G in 1913—the pilot lost control. He and a passenger bailed out, leaving the plane to descend in slow circles until it hit waters of the Golden Gate and sank.

Lockheed determinedly stayed with aviation. During World War II he was general manager of the aircraft division of a company in Grand Rapids, Michigan, that manufactured parts for Navy fighters. Since the war he has been active as a real estate salesman in the mushrooming San Fernando Valley. But his interest in flying remains keen, and he has served frequently as an aviation consultant.

Squier Comes to Burbank

Detroit Aircraft chose able executives to operate divisions it acquired. And it planned to apply the same mass production and standardization policies that were making the automobile business the world's leading industry. Its first president was Edward S. Evans, Detroit industrialist, and the directorate included Charles F. Kettering, R. E. Olds, and Roy D. Chapin, all active in motor car manufacturing.

Among airplanes built and sold under Detroit Aircraft supervision were commercial versions of Lindbergh's New York-to-Paris Ryan monoplane, *The Spirit of St. Louis,* the Eastman sport seaplane, a monstrous all-metal flying boat called the Blackburn Nile, and Lockheed's Vega and Air Express.

The new management immediately stepped up production of Lockheeds. Experiments began on a steel-framed Vega fuselage, first step toward a metal Lockheed. Several ships had metal fuselages built in Detroit and conventional plywood wings turned out in Burbank.

Among wiser division management choices was that of Carl B. Squier as Lockheed general manager. Already a veteran of the aircraft industry, Squier had wide acquaintance among leading flyers, airline officials, and aviation executives. He was a founder of Eastman Aircraft and joined Detroit Aircraft when it purchased the Eastman firm.

When he arrived in Burbank, Squier found the plant facilities weren't impressive. A small red brick building, once a ranch house, served as the front office. Behind it, sharing a building with the Mission Glass Works, were the wood and metal shops. Scattered about were a hangar, two sheds where the sleek

City of Tacoma and second low-wing model cracked up but helped later design development of famous Sirius.

Lee Schoenhair

Wilkins (left) and Eielson

Art Goebel (left), Harry Tucker

Frank Hawks

Herb Fahy

It Took a Lockheed...

...to Beat a Lockheed

RECORD FLIGHTS 1928 THROUGH 1932

1928

Month	Pilot	Plane	Flight or Event	Time
April	Capt. George Hubert Wilkins, Lieut. Ben Eielson	Vega	Flew 2200 mi. across top of world from Point Barrow, Alaska, to Spitzbergen	20½ hrs. flying time (one stop, five days)
April	Col. Arthur Goebel, Harry Tucker	Vega	New York to Los Angeles	23 hrs., 45 min. flying time (one stop); 24 hrs., 20 min. elapsed time
June	Lee Schoenhair	Vega	San Diego, Calif., to Harrisburg, Penn., 2500 mi.	15 hrs., 10 min. nonstop; average speed 158 mph
Aug.	Col. Arthur Goebel, Harry Tucker	Vega	Los Angeles to New York	18 hrs., 58 min. nonstop; average speed 142 mph, nearly 8 hrs. faster than previous record
Sept.	Robert W. Cantwell	Vega	Class C winner transcontinental derby, New York to Los Angeles, National Air Races	Finished 3 hrs. ahead of second place entry
Oct.	Capt. C. B. D. Collyer, Harry Tucker	Vega	New York to Los Angeles	24 hrs., 51 min. nonstop
Dec.	Capt. George Hubert Wilkins, Lieut. Ben Eielson	Vega	First exploratory flight over antarctic, 1200 mi.	9½ hrs.

1929

Month	Pilot	Plane	Flight or Event	Time
Feb.	Capt. Frank Hawks, Oscar Grubb	Air Express	Los Angeles to New York	18 hrs., 21 min., 59 sec. nonstop
Feb.	Bobby Trout	Vega	Solo endurance record for women	17 hrs., 5 min., 37 sec.
April	Anscel Eckman	Vega seaplane	First nonstop flight, Seattle to Juneau, Alaska	
May	Lieut. Herbert Fahy	Vega	Solo endurance record	36 hrs., 56 min., 36 sec.
June	Capt. Frank Hawks	Air Express	New York to Los Angeles, return to New York	East to west, 19 hrs., 10 min., 32 sec. nonstop; west to east, 17 hrs., 38 min., 17 sec. nonstop; one stop in Los Angeles
Aug.	Col. Roscoe Turner	Air Express	Los Angeles to New York with full payload	18 hrs., 55 min. including three stops
Nov.	Amelia Earhart	Vega	Speed record for women, one mile	Average speed 184.17 mph; fastest mile 197.8 mph

1930

Month	Pilot	Plane	Flight or Event	Time
Feb.	Lee Schoenhair	Vega	Speed record, 100 kilometers	185.5 mph
April	Col. and Mrs. Charles A. Lindbergh	Sirius	Glendale, Calif. to Long Island, N.Y.	14 hrs., 23 min., 27 sec. flying time (one stop)
May	Col. Roscoe Turner	Air Express	New York to Los Angeles	18 hrs., 43 min., 34 sec. elapsed time
June	W. S. Brock, E. F. Schlee	Vega	Jacksonville, Fla. to San Diego, Calif. and return	31 hrs., 57 min. elapsed time
June	Amelia Earhart	Vega	International speed records for women, 100 kilometers	174.897 mph with no payload; 171.438 mph with 1102.31 pound payload (500 kilograms)
Aug.	Capt. Frank Hawks	Air Express	Solo record, Los Angeles to New York	12 hrs., 25 min., 3 sec. elapsed time
Aug.	Wiley Post	Vega	Winner overland nonstop event, Los Angeles to Chicago, National Air Races	9 hrs., 9 min.
Nov.	Capt. Roy W. Ammel	Sirius	New York to Panama Canal Zone	24 hrs., 35 min. nonstop
Dec.	Ruth Nichols	Vega	First transcontinental flight by a woman, Mineola, N.Y. to Burbank, Calif.	16 hrs., 59 min., 30 sec. flying time
Dec.	Ruth Nichols	Vega	First one-stop transcontinental flight by a woman, Los Angeles to New York	13 hrs., 21 min. flying time

1931

Month	Pilot	Plane	Flight or Event	Time
Feb.	Glen Kidston	Vega	London to Paris	72 min.
March	Ruth Nichols	Vega	American altitude record for women	28,743 feet
March	Vance Breese	Altair	San Francisco to Los Angeles	1 hr., 30 min., 40 sec., average speed 235 mph
April	Ruth Nichols	Vega	International speed record for women	210.636 mph
July	Wiley Post, Harold Gatty	Vega	Around the world, 15,474 mi.	8 days, 15 hrs., 51 min.
July	Capt. George Endress, Capt. Alexander Magyar	Sirius	Newfoundland to Hungary, 2600 mi.	26 hrs. nonstop
July-Aug.	Col. and Mrs. Charles A. Lindbergh	Sirius	Washington, D.C. across Bering Sea to Tokyo	
Oct.	Ruth Nichols	Vega	International distance record for women, Oakland, Calif. to Louisville, Ky.	1977.6 mi.

1932

Month	Pilot	Plane	Flight or Event	Time
Feb.	Ruth Nichols	Vega	Unofficial world altitude record for Diesel-powered plane	19, 928 ft.
May	Amelia Earhart	Vega	First solo flight across Atlantic by a woman, Newfoundland to Ireland	15 hrs., 18 min.
July	James Mattern, Bennett Griffin	Vega	Fastest Atlantic crossing, Newfoundland to Berlin	17 hrs., 30 min.
July	Amelia Earhart	Vega	Transcontinental record for women, Los Angeles to Newark, N.J.	17 hrs., 59 min. flying time
Aug.	Amelia Earhart	Vega	International distance record for women, Los Angeles to Newark, N.J.; first nonstop trans-continental flight by a woman	2447.8 mi. in 19 hrs., 5 min.

Roscoe Turner

Amelia Earhart

Charles A. Lindbergh

Harold Gatty (left), Wiley Post

Ruth Nichols

Lone Eagle, shown with Carl B. Squier, piloted Sirius to global fame.

In times when money was scarce Lindbergh check aided Lockheed treasury.

Newsreels filmed takeoff as the Lindberghs, Anne and Charles, began record flight east in Sirius.

Lindbergh's search for speed led to development of retractable landing gear for Sirius. Newspapers of day gave plane, pilot front-page treatment.

Los Angeles Times

Eagle's Plane to be Equipped Here for Still More Speed

WHEELS EXTENDED FOR LANDING

WHEELS FOLDED INTO WING—ADDS 25 MILES TO TOP SPEED PER HOUR

Named *Tingmissartoq*, Lindberghs' Sirius had trim Vega as escort on early flight.

wooden airplanes were assembled, a drying shed that stored spruce plywood, and a small service hangar adjoining the flying strip.

Squier investigated everything. He visited the one-room engineering department, once the ranch house kitchen and then headquarters for Chief Engineer Vultee and two draftsmen—James M. Gerschler, who joined the company in May 1928, and Richard A. Von Hake, who came early in 1929. Next Squier looked at his own small office with its rain-soaked ceiling. He glanced at the four-drawer cabinet that contained all the company's files. He sniffed the glue and airplane dope and sawdust, and listened to the hammers and buzz saws.

Then he took off his coat and set out to become within a few years the world's best-known airplane salesman.

Lockheed Introduces the Sirius

He had two quality products to sell—the Vega and the Air Express. Joining these popular planes late in 1929 was Lockheed's first successful low-wing model, the Sirius.

Northrop had laid out the Sirius, first known as the Explorer, in 1928 on order from Wilkins, the polar flyer. But Wilkins ran out of funds, and workmen stored the partly finished fuselage. Then Harold Bromley, a pilot who hoped to win prize money offered for a Tacoma-to-Tokyo flight, bought it. A single open cockpit design with an unusually long dorsal fin vertical stabilizer, it was the first Lockheed to have balanced rudder, droppable landing gear, and full-length landing skid. Named *City of Tacoma,* it held enough fuel to fly 5500 miles.

On takeoff at Tacoma, fuel from over-filled tanks splashed in Bromley's face. He groundlooped the ship and washed it out. Undaunted, he ordered another, *City of Tacoma II,* similar except for a counterbalanced rudder. Test pilot Herb Fahy quickly discovered the new design set up a dangerous flutter. As he made a low pass to show watching engineers where they had erred, the vertical fin broke away, followed by

Equipped with floats, *Tingmissartoq* took Lindberghs on long flights in 1931, 1933.

Showman as well as pilot, Roscoe Turner designed parachute for pet lion Gilmore.

the rudder itself. Fahy crashed just beyond the runway, suffering painful but not serious injuries. The plane was a wreck.

But Vultee did not forget the low-wing design. In 1929 Lindbergh was in the market for a fast plane. Vultee, one of aviation's foremost exponents of speed, met the Lone Eagle at the Cleveland Air Races. Lindbergh voiced his requirements. With the Explorer in mind, Vultee scratched around on a piece of hotel stationery and within an hour drew up a preliminary specification. Lindbergh was impressed.

"Go ahead and build it," he said.

Lockheed filled the order in record time. It was a two-place open cockpit craft with fixed landing gear and wheel pants, dual controls, counterbalanced ailerons, and the Lindbergh-developed earth inductor compass. Later a sliding canopy replaced the fixed windshields—a Lockheed "first" but never patented. Extra fuselage space provided for mail, express, or more fuel tanks for longer range. Weighing about 7000 pounds, with a useful load of 2800 pounds, Lindbergh's Sirius had a top speed of 185 mph and cruised at 150 mph.

A Home Away from Home

Lindbergh hovered over his Sirius during manufacture as though it were a baby. His goal was perfection. To attain it he donned greasy white overalls to run errands, chase stock, rustle sandwiches, and perform other menial tasks. His visits brought out hordes of hero worshippers, and his first trip to the factory produced a memorable expense voucher.

Squier was his guide that day. Noon approached, and the world's most famous flyer, accompanied by Lockheed's general manager, strolled across the street to an open air lunch counter to feast on hot dogs and soda pop.

The meal cost 80 cents. Squier sent the itemized expense account to Detroit. The company paid it and harvested many times that amount in publicity.

After Lockheed's sale to Detroit Aircraft, pilots who spread the gospel of aviation around the globe continued to look upon the small Burbank factory as a home away from home. They gossiped, joked, ate, drank, and occasionally slept there.

Friend to all was Contact, aviation's most famous mascot. The brindle Boston Bull terrier regarded Lockheed as his property since factory workers in the early Vega era brought him in out of a rainstorm. He knew every flying celebrity in America, never took a bath—except once when he fell in an oil pit—and was happiest when pursuing skunks or rabbits along the runway.

Contact had several oddly-assorted playmates. Best known was Roscoe Turner's pet lion, Gilmore, who as a cub nursed on milk warmed in a baby bottle on a small alcohol burner in Squier's office. Turner allowed Gilmore to roam at large, but had to cage him after the lion good-humoredly chased Althea Story, now Mrs. Clarence L. Johnson, wife of Lockheed's present vice president in charge of engineering and research, up the front staircase. The lady, then head accountant, won the race, but the experience left an indelible mark on her memory.

Factory Fun and Frolic

Turner hangared his Air Express at Lockheed. Firman Gray, now California Division flight service shop superintendent, who joined the company in 1928 and first worked in the wood shop, constructed a box in the plane's cabin to house Gilmore while he and his master flew. Beneath the box was a trapdoor cut into the fuselage. Gilmore wore a parachute, and a cable from the trapdoor ran back to the control panel so that in an emergency both Turner and his pet could bail out. Fortunately no emergency ever arose. The thought of Gilmore parachuting gently onto the front lawn of a Burbank homestead is freighted with piquant overtones.

In costume and demeanor the contrast between Lindbergh and Turner was startling. Turner was

Playful CAA representative nearly caused heart failure among members of Lockheed force during critical sandbag stress test of Vega wing spar.

always sartorially elegant, often in yellow beige riding breeches, Sam Browne belt, powder blue tweed coat, gleaming boots, and military hat. Occasionally he varied such splendor by appearing in business attire garnished by derby, spats, and immaculate gloves.

But he and Lindbergh were alike in their mutual respect and their fondness for a practical joke. Along with hard work there was time for fun.

A rubber cord barred to the idly curious the door of the experimental hangar housing Lindbergh's Sirius. One day Slim wound copper wire around the cord and linked it to a booster coil. Turner approached and grasped the cord. Lindbergh flipped a switch. Well-selected profanity echoed through the Verdugo Hills.

The victim retaliated by wiring the same booster coil to a metal box containing miscellaneous small parts. Lindbergh fell into his own trap when one day he went to the bench to pick out some bolts and nuts and at the right instant the watchful Turner pressed the switch.

Wing Load Test

By this time improvements added nearly 500 pounds to the Vega's gross weight. Its wing, originally stressed for 4265 pounds, had to carry 4750. The Civil Aeronautics Authority discovered the fact and promptly ordered a wing load test. This meant supporting the spar with strategically located jacks and loading it with paper sacks filled with sand. More prosperous companies used lead shot in cloth bags, but at Lockheed economy was the watchword. To save costs workers dug and sacked sand at a nearby Burbank quarry.

On the appointed day CAA Inspector Hugh Brewster stood by as a crew began piling sacks on the spar. The weight count went up to 4265 pounds. On went more sand bags until the load reached 4750 pounds. Off came the jacks. Squier, Gerschler, and workmen stood by, hardly breathing. Squier held a stop watch that ticked off the seconds noisily. Three . . . two . . . one . . .

Snap!

For one ominous moment nobody moved. Squier and Gerschler both hesitated to examine the laden wing. Then Squier turned to talk to Brewster. The CAA representative tossed aside the sheet of plywood he had cracked across his knee and ran for the door.

The Lindberghs' Sirius

Charles and Anne Lindbergh christened their new Sirius *Tingmissartoq,* an Eskimo phrase meaning "the one who flies like a big bird." Painted black with red trim, it first took to the air in October 1929 with test pilot Marshall Headle. On April 20, 1930, the Lindberghs flew it leisurely to New York. Despite a stop for fuel they landed at Roosevelt Field, Long Island, 14 hours and 55 minutes after leaving Glendale, California, unofficially breaking the cross-country record.

Later that year the *Tingmissartoq* came back to Burbank for a pioneering improvement. Under Lindbergh's direction Lockheed redesigned the wing to accommodate retractable landing gear and added 25 mph to the airplane's speed.

In the same staunch monoplane, then float-equipped, the Lindberghs flew from Washington, D. C., across the Bering Sea to Tokyo in July 1931.

Wiley Post: Flyer's Flyer

Wiley Post, a Lockheed test pilot in 1929, hit first great peak in adventure-filled career two years later when he teamed with Harold Gatty to circle globe in famous Vega, *Winnie Mae* (right). Below, stamp collector's item is envelope signed by Post, Gatty, carried on journey. Trip, spanning 15,474 miles, took 8 days, 15 hours, and 51 minutes.

More Winged Stars

Acclaimed by sportsmen, record flyers, sleek Sirius had top speed of 185 mph.

YP-24 was first Lockheed fighter. The two-place ship carried bombs, two guns.

They made history again in 1933 with a 29,000-mile survey flight from New York to Labrador, Greenland, Iceland, Europe, the Azores, Africa, Brazil, and back to New York. In December 1933 Lindbergh presented the *Tingmissartoq* to the American Museum of Natural History.

The Post-Gatty Saga

Succeeding Sirius models were popular with sportsmen and long distance flyers. Lockheed built 14 of them. In one, *Justice for Hungary,* two Hungarian pilots—Captain George Endres and Captain Alexander Magyar—flew to Budapest on July 16, 1931, a nonstop 3200-mile flight from Newfoundland across the North Atlantic and down the European continent.

Such flights established that the Burbank factory, whether run by Lockheed and Northrop or as part of the Detroit Aircraft family, built fast planes. And noted flyers like Turner, Hawks, Amelia Earhart, and Ruth Nichols sent them hurtling through the skies to new records that added to the Lockheed reputation.

A custom-built long-range sky cruiser, the Altair was developed from Sirius.

Fastest commercial craft of its day was Orion, last of Lockheed's wooden ships.

Their feats were notable, but it remained for Wiley Post, quiet-spoken, one-eyed "flyer's flyer"; his Australian-born navigator, Harold Gatty; and the flashing white-and-gold Vega, *Winnie Mae,* to write the outstanding chapter in aviation's ledger in 1931.

There were only a few planes in this period of adventurous air travel whose names are still remembered. The *Winnie Mae* was one. In it on June 23 Post and Gatty took off from New York bound for Newfoundland on an around-the-world flight. Backing them was F. C. Hall, wealthy oil operator after whose daughter the *Winnie Mae* was named. As it roared off from Roosevelt Field the Vega weighed more than three tons. A little fog over the Atlantic, a little uncertainty about their location over England and Germany, a little mud in Siberia, and a little propeller damage in Alaska proved only trivial disturbances. The *Winnie Mae* made the trip almost without mishap and landed at Roosevelt Field eight days, 15 hours, and 51 minutes later, having covered 15,474 miles at an average of 146 mph.

Altair Crosses Pacific

Next in the Lockheed line was the Altair, a two-place sport plane with a hand-cranked retractable landing gear. It first flew in December 1930. The Altair had a top speed of 217 mph and boasted outstanding performance.

Lockheed built eight. One of them set a notable

mark in 1934 when Sir Charles Kingsford-Smith and Captain P. G. Taylor flew the *Lady Southern Cross* from Brisbane, Australia, to Oakland in 54 hours and 49 minutes elapsed time. Taking off October 20, they reached their destination November 4, making the first aerial crossing of the Pacific from west to east.

Tragedy befell the intrepid Kingsford-Smith and his Altair a year later. In November 1935 the Australian and his co-pilot and navigator, Thomas Pethybridge, disappeared during an attempted record flight from London to Sydney.

C. J. Melrose, another Australian flyer, reported that he passed Kingsford-Smith during a raging storm over the Bay of Bengal and saw flames shooting from the Altair's exhaust. Kingsford-Smith was then 150 miles from shore and less than 200 feet above shark-infested tropical waters.

But this is ahead of the story.

The Orion—Fastest Wooden Lockheed

With the acceptance of the Sirius and Altair, Lockheed designed another low-wing airplane, the Orion, that first flew in April 1931. It was the fourth Lockheed named after a celestial body and last of the great line of wooden ships built in the Burbank plant. Aeronautical engineers regard the Orion as one of the cleanest, most streamlined planes built up to that time. Carrying six passengers, it had a 225 mph top speed and cruised at 200. It featured the first successful hydraulically-operated retractable landing gear designed for commercial aircraft and was one of the fastest planes of the day. It found a ready market with the airlines—TWA, American, Northwest, and Varney Speed Lanes, among others, purchased Orions in substantial quantity.

Lockheed jack-of-all-trades in 1930 was Harvey Christen, now director of quality control at Georgia Division.

A notable operation was with the Varney line. Orions regularly flew from San Francisco to Los Angeles in 86 minutes, half an hour faster than some airliners even a decade later. On one flight an Orion made the trip in 65 minutes, averaging 254 mph.

The Troubled Years

Ambitious as were their plans, Detroit Aircraft's leaders could not foresee in mid-1929 what was so soon to come. The Big Bull Market hit its ultimate, fabulous peak in September, and collapsed Tuesday, October 29, when shares traded on the New York stock exchange reached more than 16 million, and 50 leading issues fell nearly 40 points.

Detroit Aircraft quickly found itself in difficulties. But Lockheed, under Squier's management, was solvent. It appeared to be weathering the economic storm. Five months after Squier took over—in January 1930—63 Lockheed planes were licensed in 14 states. By spring the factory's capacity was 12 planes a month. In November Squier reported Lockheed during the year reduced its credit obligations by more than $107,000, had "made a great deal of progress," and would, if Detroit decreased its overhead charges, "show a profit, especially when a few small wrinkles are ironed out and our sales are increased, which they will after economic conditions are adjusted."

But conditions didn't adjust. Industrial production declined steadily. Unemployment rose. Stock prices, after rallying during the summer, turned downward again to price levels well below the year before. Detroit Aircraft disregarded Squier's pleas and mercilessly milked the Burbank division for funds. The treasury began to run dry. No money was available for needed research and development of new designs.

A Flood of Red Ink

Lockheed operations were in the black, but Detroit Aircraft was deep in the red. It lost $733,000 in 1929. Its capital stock, originally offered at $15 a share, slipped to $1.63 in 1930 and plummeted to 12½ cents in 1931.

Although the over-all economy showed faint signs of improvement early in 1931, spring brought renewed decline. Production ebbed, and commodity and stock prices tumbled. Detroit Aircraft's frantic efforts to regain stability were unavailing, and in October the corporation floundered into receivership.

Among the casualties was Lockheed's XP-900, ordered by the military in 1930. Identified as the Army Air Corps YP-24, this first Lockheed fighter had its test flight in 1931. Fuselages, constructed in Detroit, were shipped to Burbank for final assembly, and Lockheed people nicknamed the result the "Detroit Half-Breed."

It was similar to the Altair—a low-wing two-place ship, powered with the new Curtiss Conqueror 600 hp liquid-cooled V-12 engine. With a low drag coefficient and retractable landing gear, it could climb nearly 2000 feet a minute, had outstanding maneuverability, and cruised at 215 mph. Lockheed also built a Navy version, the YIC-23.

"Had this model continued," one Lockheed designer said later, "we'd have been in the pursuit or fighter business for good."

Lockheed Goes Into Receivership

But it did not continue. When the bankruptcy ax fell on Detroit Aircraft the Air Corps automatically canceled its 13-plane contract.

Squier couldn't keep Lockheed from being dragged into bankruptcy along with its parent organization. On October 27, 1931, the Title Insurance and Trust Company of Los Angeles became receiver for the Lockheed Aircraft unit.

For a time the factory maintained a production schedule of three planes a week. It had a substantial backlog of parts and work in process. The shop worked six days a week on commercial orders.

The spirit was willing, but it couldn't surmount cold facts and fast-freezing assets. Many able craftsmen were laid off. The hum of business faded to a whisper, although Lockheed ships in service throughout the world continued to make history. The planes soared ever higher—but the plant that built them sank lower.

As Christmas 1931 drew closer, the men in the shops had reason to be apprehensive. Only one plane, a Vega, was in production. Already there had been weeks when paychecks were a day or two late.

Crisis at Christmas

It rained Christmas Eve. The factory whistle blew, and the workmen—who knew Lockheed was broke—moved slowly toward the gate, thinking of families at home and wondering what to tell youngsters who still believed in Santa Claus.

Squier was waiting at the gate in the rain.

"Merry Christmas," he said, and handed each of the 120 men a $10 bill. To do it he'd scraped together every penny of his own meager savings.

To meet the next payroll early in January 1932, Squier mortgaged his car and his home. The workmen finished Lockheed's 141st Vega, last of the famous line built at the Burbank factory. Some of them still fly today.

At one point early in 1932 Squier, who received no salary while the company was in receivership, paced his office trying to figure out how to meet a $750 payroll. The answer came from an unexpected source. Varney Speed Lanes ordered three Orions to supplement those it used in commercial service, and Walter T. Varney, head of the operation, tossed a $3000 deposit check on Squier's desk.

With this order completed, the plant virtually closed down. The payroll comprised exactly three—accountant Ronald King, Alice Stevenson, Squier's secretary, and Harvey Christen.

Christen came to Lockheed in 1929 as a youngster and worked as office boy, guide, truck driver, keeper of the publicity scrapbook, stockroom and shipping

After leaving company he helped to found, Allan Lockheed designed two-engine Alcor.

Speed Specialists

Fastest airline on west coast in early 1930s was operated by Walter Varney. Speedy Lockheed Orions linked San Francisco, Los Angeles in 135 minutes, full hour ahead of competitors.

clerk—all for $50 a month. Through the receivership he kept an eye on the factory during the day and acted as watchman three nights a week.

After the Detroit organization bankruptcy, the jigs, machinery, and structural steel it used in making metal Vega fuselages were shipped to Burbank. Von Hake, Lockheed's chief engineer after Vultee left to form his own aircraft company, bought this equipment and supplies, as well as four fuselages. He and Gerschler—both had been laid off earlier in 1932—personally put together a half-breed ship, consisting of the metal Vega fuselage and an Orion wing. In June 1932 they delivered it to Jimmy Doolittle, then director of Shell Oil Company's aviation department.

Desperate Days

Another Vega was built under similarly unorthodox conditions. Braniff Airlines, an enthusiastic user of Lockheeds, purchased one fuselage and wing plus enough component parts to finish the plane and retained Firman Gray, laid off at Lockheed some months earlier, to supervise the assembly.

Although Squier was willing to dispose of such items—the commissions he so earned were the only income he had at the time—he steadfastly refused to consider selling the plant itself on a piecemeal basis, since that would mean complete disintegration of all that had been built up over the years.

"The Lockheed name is too good to die," he believed.

The name did not die. In those dark early months of 1932 its death appeared imminent, but Lockheed planes continued their history-making achievements. Most memorable of these accomplishments came in May when Amelia Earhart, in a Vega, became the first woman to fly solo across the Atlantic. From Newfoundland to Ireland her journey spanned 15 hours and 18 minutes and won her, among other citations, the French Cross of the Legion of Honor and the Congressional Distinguished Service Medal.

Time span of 30 years in Lockheed history shows in photo above. From left, E. A. Bellande, now vice president of the Garrett Corporation, who flew first Vega; Cyril Chappellet, one of founders, and now senior vice president; Allan Lockheed; Whitley C. Collins, early-day Lockheed officer and now president of Northrop Aircraft; and Robert Gross, one of founders of present company, now board chairman, chief executive officer.

But establishing aviation records was one thing—an idle factory was another. The receiver placed a value of $129,961 on Lockheed's assets. On April 15, 1932, he offered these assets for sale.

From the time that Allan and Malcolm Lockheed built and flew the Model G seaplane off San Francisco Bay until Detroit Aircraft and Lockheed plunged into receivership, 197 airplanes bearing the Lockheed name had taken to the air.

But now it appeared that the Winged Star was through.

Coming Next Month...

Chapters II and III have completed our flash-back to the days of the predecessor Lockheed companies and the colorful pioneers who built and flew the early planes.

Next month we resume the story of the present Lockheed company. Starting where we left off at the end of Chapter I, we'll tell the story of Lockheed in the mid-1930s after the first Electra flew. There will be accounts of the tragic last flights of Amelia Earhart and Wiley Post, the spread of our sales to foreign markets, the Electra Jr., and "the Boiler." We'll also tell a bit about the backgrounds of the men who founded the company and how the hectic aviation boom of the late 1920s brought them together.

Watch for Chapter IV of "Of Men and Stars" at your gate boxes in late June. As in the first three chapters, we're punching it with holes so that you'll find it easy to keep the issues in a binder. And if you're missing one or more of the chapters, call your public relations office.