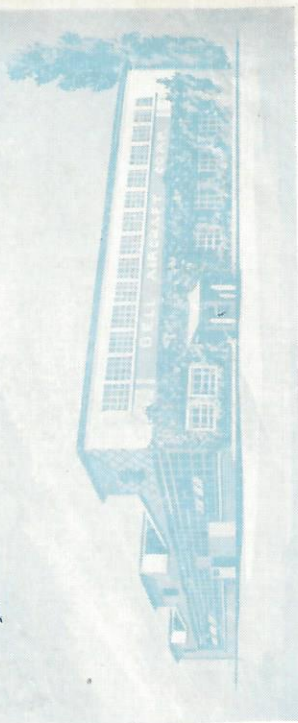
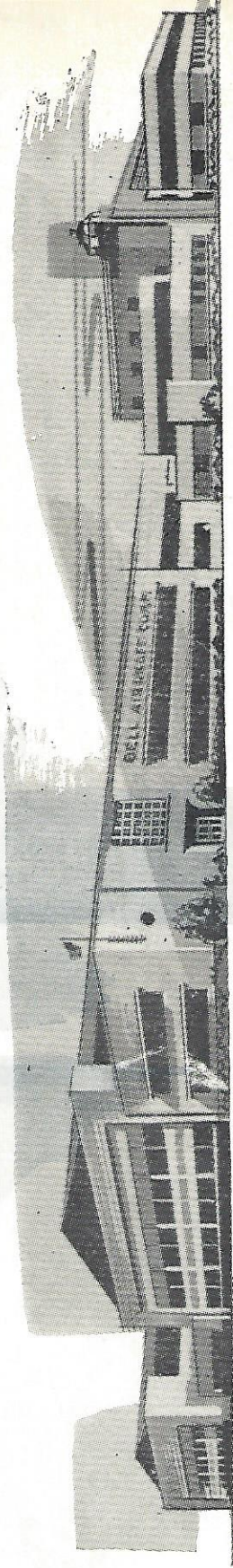
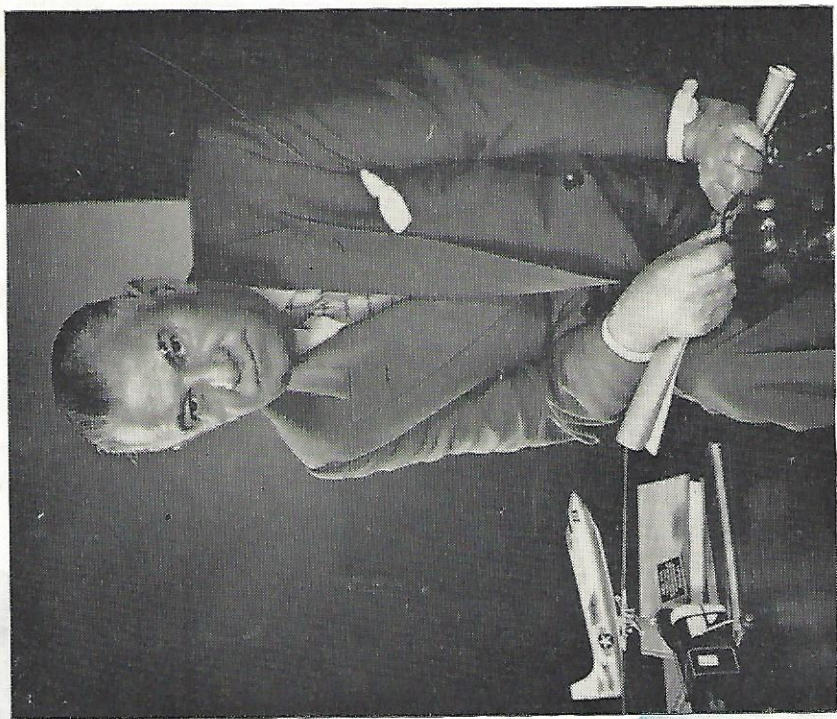


BELL
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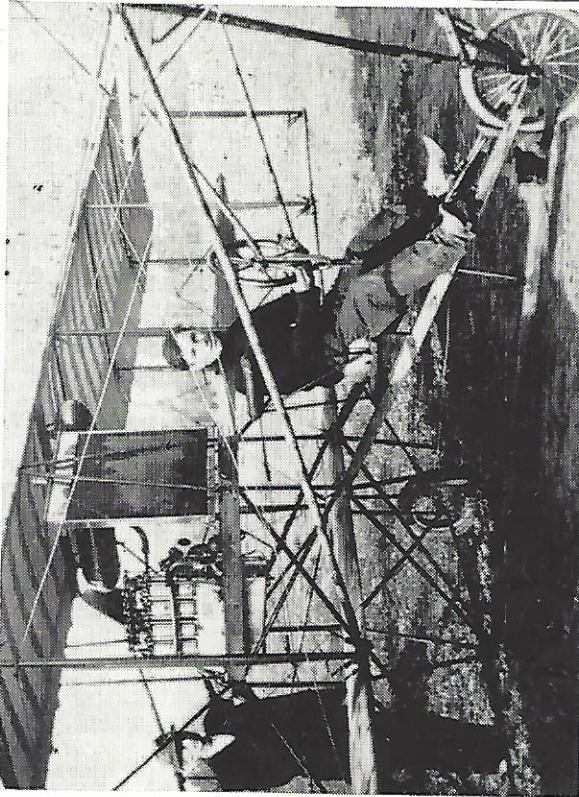
1935

**first twenty years
twenty years of**
Firsts

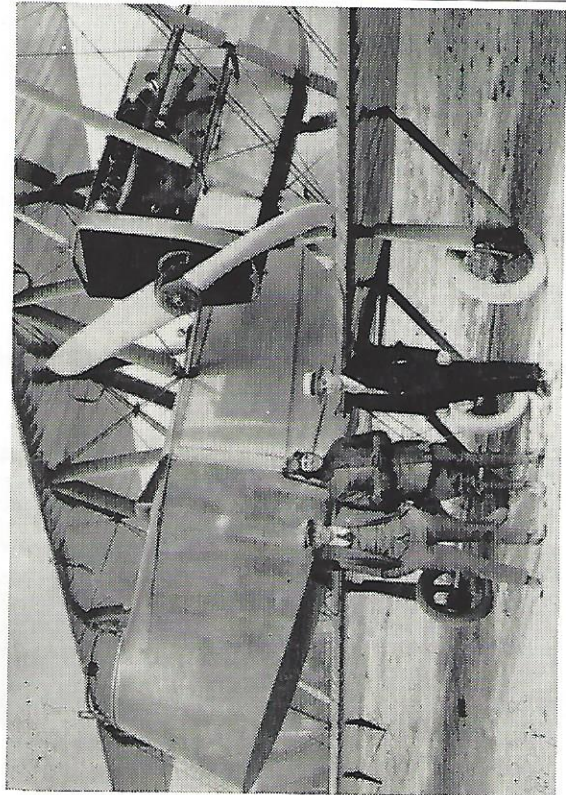


1955

BELL Aircraft NEWS



IN CALIFORNIA IN 1912 Larry began his career as a mechanic for early airplanes of this type.



IN CLEVELAND IN 1918 he stood before first Martin bomber, which he had helped build as factory superintendent. With him are Donald Douglas and Eric Springer.

Pre-World War I Biplanes to 'X' Aircraft, Larry's Career Spans 43 Years of Aviation

Lawrence D. Bell built his first airplane in 1910.

Fashioned from wood, cloth and wire, it was a model of one he had seen the day before at the country's first aviation meet in Long Beach, Calif.

Under his direction, Bell Aircraft Corporation, the firm he founded in 1935, has turned out more than 13,000 fighters, nearly 700 bombers and more than 1,500 helicopters in its first 20 years.

Two years after he saw his first plane, Larry Bell entered the then infant aviation business as a mechanic for his brother, Grover, an exhibition pilot.

When Grover was killed trying to avoid some horses while landing in a pasture the next year, Larry firmly resolved to quit flying, but friends persuaded him to change his mind.

Aviation has gained immeasurably as a result of his decision.

Aircraft of today are flying faster, higher and more efficiently directly and indirectly through his demonstrated ingenuity and leadership.

Larry was employed by Glenn Martin as a mechanic at the time of the tragedy, quit his job and returned a few weeks later.

It was in that same year the ingenuity which was to be demonstrated so consistently later on first was directed to aviation. He helped turn a Martin pusher-type plane into the world's first bomber for Pancho Villa, Mexico's revolutionary leader. The bombs were lengths of gas pipe filled with dynamite.

The same year, as the Martin activity expanded, Larry was made shop superintendent at the age of 20, but his job didn't last long. The Martin firm was merged with the

four .50 caliber machine guns, all remotely controlled.

Throughout those pre-war years, Larry spent countless nights in Pullman cars moving between his Elmwood Avenue headquarters, Washington, D. C., and Wright Field in an effort to get the needed business to keep the company going.

When the P-39 won a fighter competition, the new firm gathered momentum as it moved into quantity production. Facilities were expanded, thousands of workers were hired. Soon three separate divisions were operating, one on the Niagara Frontier, another in Marietta, Ga., site of B-29 production, and an Ordnance Division in Burlington, Vt.

Thus the president and general manager of the fast-growing company was on the move again, this time adding Marietta and Burlington to his stops, along with Washington and Wright Field.

At war's end, with the company now back in a single plant at the Niagara Falls airport, Larry once more became the salesman and concentrated on developing a market for the firm's helicopters and a motorized wheelbarrow called the Prime Mover.

A few years later he was on his way to Europe to stimulate helicopter sales on the continent. Next it was Korea, to see how the helicopters were performing in service there.

On October 2, 1954, Larry resigned as general manager to devote all his attention to the responsibilities of the presidency. He was succeeded by Leston P. Faneuf, who a few months later was named a vice president.

Wright Airplane Company and Glenn Martin moved to Cleveland to start all over again. Larry went with him.

Within a short time he was factory manager and within a few years had directed the building of this country's first twin-engine bomber.

During this early period, incidentally, the youthful aircraft executive had hired two men who later were to make their own place in the industry.

They were Donald Douglas, who formed his own firm, and J. H. Kindelberger, now chairman of the board of North American Aviation Company. Douglas was the first engineer hired by any aircraft manufacturer.

By 1928, Larry was vice president and general manager of Martin and was ready to move again. He came to Consolidated Aircraft Company, located in Buffalo as sales manager, shortly regained the title of vice president.

When Major Reuben H. Fleet, then president of Consolidated, elected to take his company to the West Coast, Larry and a few of his associates in Consolidated resolved to remain in Buffalo to form their own firm, employing the experienced aviation tradesmen here.

Financing was hard to come by in those days and, despite the fact that only \$150,000 was needed to get the

Airacuda Was First Of Famous 'Aira' Family



AT BUFFALO IN 1937, after his company's first plane, the YFM-1 Airacuda, flew successfully, he posed with associates, ship's crew.

These Are The Famous Bell 'FIRSTS'

In its 20-year history Bell Aircraft has established an industry-wide reputation as an aircraft pioneer. These are a few in the imposing list of aviation "firsts" developed by the Company.

- FIRST twin-engine escort fighter (Airacuda).
- FIRST aircraft to mount 37 mm. cannon and flexible gun turrets (Airacuda).
- FIRST modern multi-place fighter, establishing a new type for the Army Air Force (Airacuda).
- FIRST American fighter airplane designed around its armament (P-39 Airacobra).
- FIRST use of tricycle landing gear on modern military aircraft (P-39).
- FIRST satisfactory .50 caliber machine gun shock dampener which became standard for both Army and Navy.
- FIRST modern all-wood military fighter (XP-77).
- FIRST helicopter with automatic stabilizing control.
- FIRST jet-propelled fighter airplane in the United States (P-59).
- FIRST commercial helicopter.
- FIRST supersonic airplane (X-1).
- FIRST commercial helicopter with 200 hp. engine and skid landing gear.
- FIRST airplane able to vary degree of wing sweepback during flight (X-5).
- FIRST radio-guided bomb (Tarzon).
- FIRST helicopter designed specifically for anti-submarine warfare (HSL-1).
- FIRST airplane able to fly at speeds two and a half times the speed of sound and at altitudes of 90,000 feet (X-1A).
- FIRST turbine-powered helicopter (XH-13F).
- FIRST jet-propelled vertical take-off and landing airplane (VTOL).
- FIRST automatic carrier landing system.
- FIRST convertiplane incorporating tilting-rotor system (XV-3).

first airplane, marked the birth of Bell's famous "Aira" family.

Wanting a name symbolic of the airplane's striking power, President Larry Bell compared it with a barracuda. Thus, the plane was known as the Airacuda, the "tiger of the sky."

Next came the P-39 Airacobra with a .37 millimeter cannon in the nose to give it all the deadliness of its reptilian namesake. A modified version for the Navy was dubbed the Airabonita.

There was a break in the "Aira" family with the P-63, called the Kingcobra because it was larger and more deadly than its predecessor. The prefix was picked up again when the P-59, which had the semblance of a comet because of its speed and fiery jet exhaust, was appropriately named the Airacomet.

many weeks of door-to-door selling to raise it.

From Consolidated Bell bought \$17,000 in second-hand machinery. Another \$1 bought everything the California-bound firm couldn't take along. Larry was pleased with this last transaction.

From a miscellaneous collection of machinery, work benches, office equipment and other items, the small group of Bell employees selected what could be used, sold the remainder for \$17,000, winding up with an investment of \$1.

When Larry and his associates set out to design the first all-Bell airplane, Larry employed one maxim he had learned over the years: "First choose your firepower, then build an airplane around it."

Result was the Airacuda, which had two 37 millimeter cannon and

1,200 Complete Courses In Technical Training

Five out of every seven Bell employees who have enrolled for after-hour Technical Training classes have successfully completed the course.

Since the program began in early 1951, 1,732 persons have enrolled for instruction, 1,250 have received certificates of course completion.

Subjects range from basic blueprint reading to template layout. Instructors are Bell employees who have been certified to teach a particular class by the New York State Department of Education.

During the Spring (1955) semester, 25 classes were offered.



IN KOREA IN 1953 Larry toured combat zone for on-the-spot evaluation of helicopter performance under battle conditions.

Company Celebrates Twentieth Anniversary

Reputation as Industry Pacemaker

Built on Solid Achievement Record

Twenty years of aircraft production, generously sprinkled with aviation "firsts," comes to an end today, July 10, for Bell Aircraft Corporation.

Founded in Buffalo in 1935 by President Lawrence D. Bell and a group of enterprising associates, Bell Aircraft consistently has ranked high in the industry, both as a manufacturer producing airplanes in volume and as a pioneer exploring revolutionary concepts of flight.

There were only 56 employees on the payroll at the end of the first year of operation, but that number had climbed to more than 4,000 five years later.

Geared to wartime production of fighter airplanes, bombers and gun mounts, employment hit an all-time peak in 1944 when 50,000 persons were at work in three divisions.

Bell Aircraft came into being when Consolidated Aircraft Corporation, of which Larry Bell was vice president and general manager, moved from Buffalo to California.

The company began with \$150,000 in capital raised through the sale of stock in Buffalo and western New York. Work began with \$35,000 worth of second-hand machinery and a miscellaneous collection of used office equipment and work benches.

Just as with any fledgling company, the early days meant looking for business, any business that would keep men on the job while the founders worked on plans for an airplane.

First product of the design boards was the Bell XFM-1 Airacuda, which was flown Sept. 1, 1935.

Killing pestiferous insects, patrolling power and pipe lines and seeking out minerals, to mention only a few of their everyday assignments.

Before the end of the war, recognition of Bell Aircraft's futuristic thinking came in the form of a contract to design and build an airplane which would penetrate the then mysterious sonic barrier.

On October 14, 1947, the rocket-powered Bell X-1, sturdily designed to meet the relatively unknown stresses of supersonic flight, became the first airplane in the world to fly faster than the speed of sound.

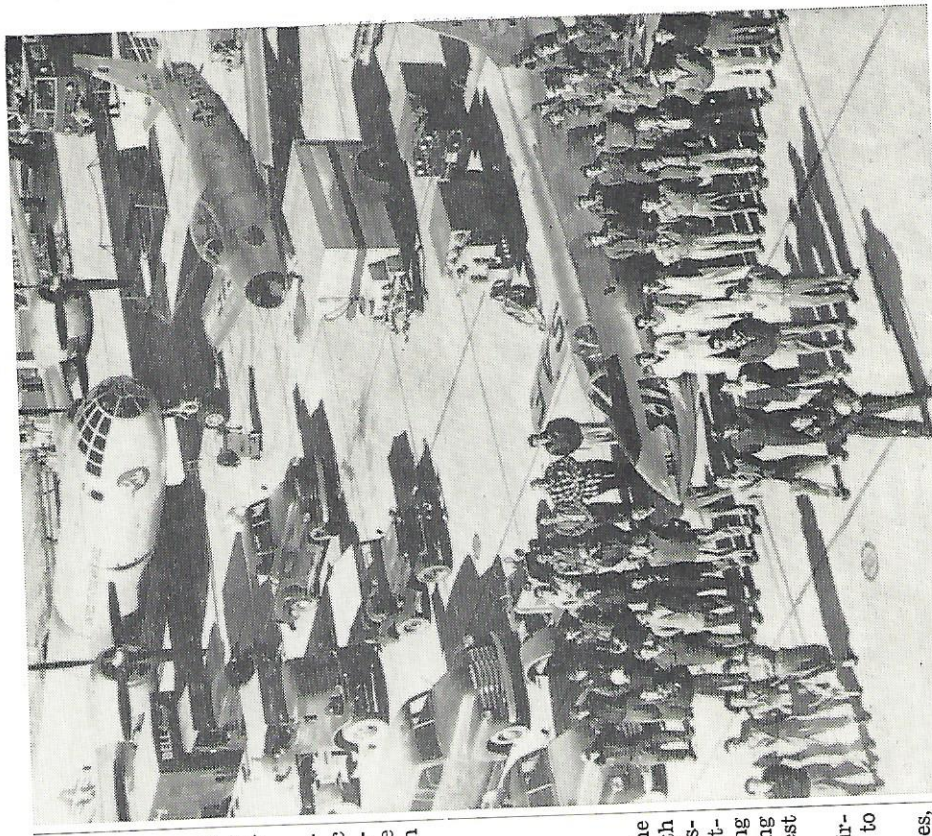
The original X-1 now is in the Smithsonian Institution, along with the P-59 Airacomet, but its successor, the X-1A, has gone on to attain new aviation laurels by flying 1,650 miles an hour and reaching an altitude of 90,000 feet, the fastest and the highest.

Another supersonic research airplane, the Bell X-2, is expected to top these records.

Remote radio control of airplanes, which permitted them to be flown from ground stations or from escort airplanes, and the company's experience with rocket propulsion, naturally led into guided missiles.

Product of this research and development has been the GAM-63 Rascal, which has been described by the U.S. Air Force as a rocket-propelled, air-launched, long-range missile.

Bell also is building rocket engines for the U. S. Army's Nike missile.



THIS IS WHAT IT TAKES TO PUT X-1A INTO AIR: 46 PERSONS, MOTHER AND CHASE PLANES, TANKS, TRUCKS AND SUPPORTING EQUIPMENT.

rier landing system, produced for the Navy.

Necessary expansion for the guided missile program prompted the move of helicopter activities to a new plant built near Fort Worth, Texas, and operated by a separate division of the company.

Here commercial and military production of the Model 47 was con-

forward, fly like a conventional fixed-wing airplane.

Bell employment, which dropped sharply to less than 2,000 during the immediate postwar era, started to climb again in 1949 and by 1955 had topped the 18,000 mark.

Continuing research and develop-

place fighter, the Airacobra embodied a number of revolutionary features which started Bell on its career of presenting the unusual aircraft design.

Despite the interest it aroused in military circles, the first Bell airplane didn't get the acceptance its designers had hoped for and only 13 were built.

What the then Army Air Forces did need, however, was a hard-hitting single-place fighter and Bell management immediately went to work to come up with a design in competition with other aircraft firms.

Bell finally submitted two designs and, after all the proposals had been studied, the Bell airplanes placed one and two. Selected for production was the P-39 Airacobra and by the end of the war more than 10,000 had been fabricated at the Elmwood Avenue plant in Buffalo and assembled at Wheatfield.

The Airacobra, which saw action in virtually every war theater, was followed by the larger, faster, more powerful P-63 Kingcobra. More than 3,000 of these were built.

Even while these airplanes were rolling from the assembly line, Bell engineers were looking into the future and coming up with even more revolutionary designs.

Among them were the P-59 Airacomet, this country's first jet-propelled fighter plane; the XP-77, a small, fast fighter developed for the continental defense of the United States and fabricated entirely of wood, and the RP-63, a heavily armored version of the fighter which was used to train aerial gunners.

Bell Photo by Bachrach

The photograph of President Larry Bell on the cover is a copy of a color portrait made by Fabian Bachrach at the direction of the United States Treasury Department.

from front lines to field hospitals, thus helping to make the combat mortality rate lowest in history.

Commercially the helicopters are carrying mail, patrolling New York harbor and docks for the police, spraying and dusting for agriculture,

Community, Customers Lauded

'What We Have Done, We

BY PRESIDENT LARRY BELL

Twenty years isn't very long as time is measured but to us at Bell Aircraft twenty years represents the life span of our company, for July 10 marks our twentieth birthday.

These past 20 years have covered an unusual era — half a depression, a major world war, a postwar readjustment, another tragic war, although an undeclared one, and now a world-wide "cold war."

We hope that over these past 20 years our contribution to national defense and to the national economy have helped to make our country stronger and our community a better place in which to live.

What we have done we could not have done merely as a company on our own. Only with the assistance of our customers, both in the armed forces and in commercial circles, and with the understanding and assistance of the whole community in which we have operated, could we have accomplished what we have done.

For this help and guidance, for the assistance and cooperation Bell Aircraft Corporation has received during our first 20 years, we are taking this opportunity to express publicly our sincere appreciation.

To our friends and neighbors, to our suppliers and customers, and above all to the many thousands of men and women who have been and who are our employees, we say —

for other guided missiles.

More recent Niagara Frontier contributions to Bell Aircraft's flight achievements have been the jet-powered VTOL (vertical take-off and landing) airplane, first of its kind, and an electronic aircraft carrier.

THANKS.

Throughout the years, we have required help from many sources. Repeatedly, we called upon the manpower (and womanpower) of the Niagara Frontier to help us meet our production schedules.

Some of our working assignments have been carried out under difficult situations and some of our employees have been called upon to service our products in remote parts of the world and even in zones of combat.

Our vendors and subcontractors, the companies which provide services and materials, have contributed to our products and our growth in an immeasurable manner.

The banking and financial institutions advanced credit and huge sums of money which enabled us to purchase materials for our inventories, to secure services for our operations, to build new facilities, to meet the weekly payrolls for our employees.

Town, city, county, state and federal governments have cooperated in many respects. Newspapers, television, radio, magazines and other media have readily told the product and personnel side of our company and have helped spread the word of the community's industrial importance to the whole world.

Without the serious efforts of the thousands who have worked

continued and two new models developed. One of these, the HSL-1, was designed for the Navy as a submarine hunter and killer. The other, the XV-3, designed for the Army, can take off vertically like a helicopter and then, with rotors tilted

for and worked with Bell Aircraft, we could not have accomplished what has been done. We are deeply appreciative of the fine team work between our engineers, scientists and technicians, who conceive the designs for our products and our skilled workers who keep production high and on schedule in our factories.

Our many projects have attracted new residents to the community and they have been accorded a warm welcome. Our employees are good citizens and they have demonstrated their interest in the community by their active participation in hundreds of worthy civic, church and charitable organizations.

More than generous has been the cooperation of families — of wives and mothers and children — who have given up husbands and fathers and sons for long working hours in emergencies and for extended assignments away from home, in this country and abroad.

Like so many enterprises, Bell Aircraft had a very modest beginning. In 1935, our first year of operation, we employed 56 persons and did \$20,942 in business.

In the nineteen years since then, we have done more than \$1,750,000,000 in business, have given employment to more than 100,000 persons, have paid \$800,000,000 in wages and salaries and have purchased \$850,000,000 in materials and services, much

Have Not Done Alone'

of it right in our own area. The fighter planes and bombers built by Bell were an important asset in the victory of the Allied Nations in World War II. In Korea, Bell helicopters successfully rescued 20,000 wounded United Nations' troops, a record for which we are both grateful and proud.

Our research and development work has opened new scientific horizons and has created valuable data which has benefited the entire nation. The achievements of our products, such as the X-1A, the world's fastest and highest flying airplane, and our helicopters have, we hope, brought credit to the community.

In spite of the traditional peaks and valleys of the aircraft industry, we have tried to establish an organization which will offer the maximum of stability to our employees and our business associates.

By diversifying our efforts as much as possible and by emphasizing forward-looking research and high quality production, we can best serve the military and commercial aviation needs of today and tomorrow.

On our twentieth anniversary, we of Bell Aircraft, in humble sincerity, extend our gratitude to all those who have so materially aided us in the past and renew our fervent hopes that the future will bring only the peace and prosperity we all desire.

Company's First Decade Saw Meteoric Growth

• 1935

June 18 — Lawrence D. Bell begins selling stock in the new Bell Aircraft Corporation.

June 20 — Press announces formation of Bell Aircraft.

July 1 — Lawrence D. Bell and Robert J. Woods move into two small offices at 1807 Elmwood Avenue, Buffalo, start work on airplane designs to be submitted for government inspection.

July 10 — Bell Aircraft incorporated; Lawrence D. Bell elected president, Ray P. Whitman vice-president and treasurer and Charles L. Beard, secretary and assistant treasurer. Ansley W. Sawyer retained as legal counsel. Robert J. Woods is chief design engineer.

Sept. 14 — Bell takes possession of 40,000 square feet of factory space at former Consolidated Aircraft Corporation plant, 2050 Elmwood Avenue.

Sept. 20 — \$50,000 worth of equipment installed.

Sept. 22 — Bell receives Army contract to install first Allison engine in A-11 attack plane.

Dec. 31 — Total employees at end of 1935 — 56.

• 1936

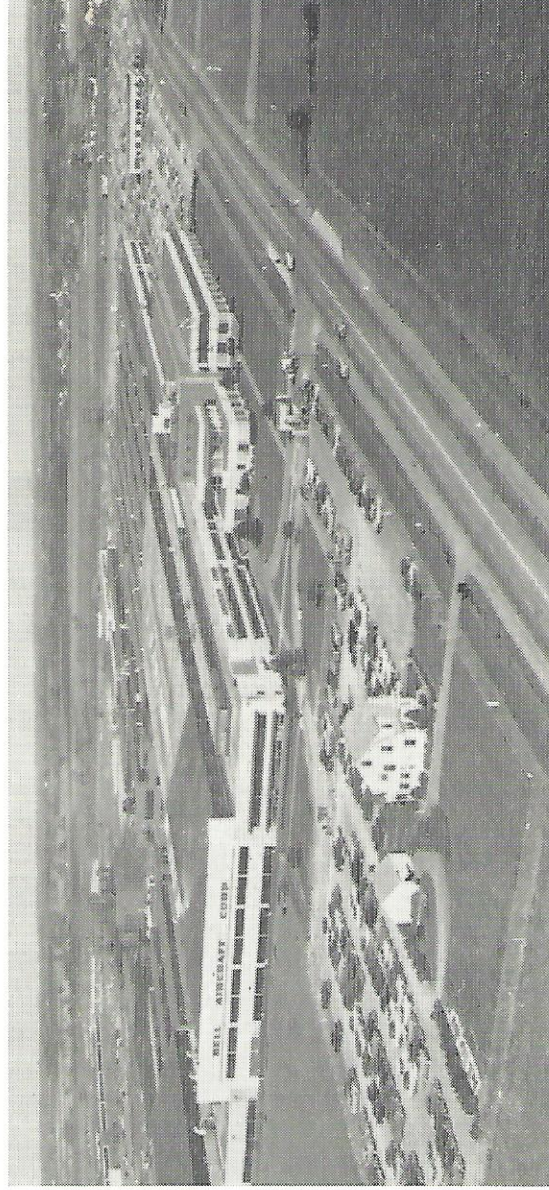
Feb. 11 — Announcement of Bell Aircraft's \$800,000 Navy contract to make wing panels, other parts for Consolidated plane; additional 40,000 square feet of floor space leased; total 80,000 square feet.

May 12 — Bell receives Army contract of \$403,057 for construction of one Aircraft.

Aug. 5—Additional 105,000 square feet of space leased from American Radiator.

Dec. 31 — Total employees at end of 1936—642.

• 1937



WHEATFIELD PLANT is among most beautiful in country. Housing executive offices and engineering and manufacturing areas, the plant is one of nine in Niagara Frontier Division.

Dec. 31 — Total employees at end of 1937 — 326.

• 1938

April 6 — First flight of the XP-39 at Wright Field.

May 20 — Bell receives Army contract for \$3,168,265 for 13 Aircraft airplanes.

Nov. 8 — \$245,000 Navy contract received for one Aircraft.

Dec. 31 — Total employees at end of 1938 — 852.

• 1939

Feb. 7 — Announcement of the XP-39 Aircraft, new Bell plane capable of 400 miles per hour.

April 15 — P-39 Aircraft accepted by Army after tests at Wright Field.

Sept. 14 — Bell receives Army contract of \$2,839,000 for 20 Aircraft.

Oct. 10 — Ground-breaking ceremonies held for new \$1,050,000 assembly plant at Wheatfield.

Oct. 12 — First production P-39 Aircraft airplane delivered by Bell to U. S. Army Air Corps at Wright Field.

Dec. 31 — Total employees at end of 1940 — 4,339.

• 1941

Jan. 8 — A Bell Aircraft attains a dive speed of 630 miles an hour, greatest speed ever endured by a human at that time.

March 20 — Lease signed for more floor space at Elmwood; total now 600,000 square feet.

May 19 — First 100 workers on the job at Wheatfield Plant.

July 31 — Bell Aircraft receives order from Army for rear gun enclosures, elevator and stabilizer assemblies for B-17 bombers.

Nov. 28 — Camp Cataract becomes Camp Bell, moves to new location opposite Falls Airport.

Dec. 7 — First flight of the XP-63.

Dec. 31 — Total employees at end of 1942 — 29,953.

• 1943

March 15 — Moving-in day at Bell bomber plant, Marietta, Ga. About 100 employees on job.

May 3 — Forty-seven per cent of all Bell employees are women.

June 2 — Ground broken for \$4,500,000 expansion at Wheatfield.

June 15 — Announcement of three divisions of Bell Aircraft Corporation—Niagara Frontier, Ordnance and Georgia.

July 29 — First formal flight of Bell helicopter at Gardenville.

Sept. 25—Ordnance Division opened at Burlington, Vt. after move from Elmwood plant.

Nov. 10 — Bell Ordnance Division

July 24 — Last Aircraft comes off production line at Wheatfield.

Aug. 1—Army Air Force announces Bell's new high-altitude fighter, the P-63 Kingcobra.

Oct. 20 — "Certificate of Service Award" from the Army Air Force given Camp Bell for training program.

Oct. 21 — Niagara Frontier Division receives fourth Army-Navy award for production.

Dec. 31 — Total employees at end of 1944 — 47,654.

• 1945

Jan. 10 — Larry Bell presented with Daniel Guggenheim Medal for achievement in the design and construction of military aircraft and for outstanding contributions to the methods of airplane production.

Jan. 29 — Bell Ordnance Division in Burlington awarded new contract to make mortar shells.

Feb. 8 — Bell XP-77 announced by the Army Air Forces; first all-wood fighter airplane.

Dec. 31 — Total employees at end of 1945 — 2,509.

• 1946

March 8 — Bell Model 47 helicopter gets first helicopter commercial license granted by Civil Aeronautics Administration.

May 8 — Bell Aircraft gets Helicopter Type Certificate No. 1, first granted by Civil Aeronautics Administration.

July 1 — Bell establishes first flight training school for commercial helicopter pilots.

Nov. 25 — Sale of 27 Model 47-B helicopters for total of \$675,000 announced at National Air Show in Cleveland.

Dec. 31 — Total employees at end of 1946 — 2,920.

Jan. 11 — Stock ticker carries first sale of Bell stock on New York Curb.

● 1940

July 19 — First Airacuda completed, taken to Buffalo Municipal Airport to be assembled.

Sept. 1 — First flight of the Airacuda.

Oct. 21 — First Airacuda delivered to the Army Air Corps at Wright Field.

Jan. 19 — P-39 flown to Bolling Field, Washington, D. C., for successful demonstration at Army Air Corps exhibition.

May 13 — First flight of the Airacuda, developed for Navy.

Dec. 31 — Total employees at end of 1939 — 1,111.

Sept. 4 — Gen. H. H. "Hap" Arnold calls Larry Bell to Washington to ask Bell to build radical jet fighter.

Sept. 26 — Work begins on the \$8,456,175 addition to Wheatfield plant.

Sept. 30 — Bell receives first contract for three XP-59 jet-propelled airplanes.

Nov. 16 — Bell leases Main Street plant from Ford Motor Company, Buffalo, for experimental work.

Dec. 14 — Bell Aircraft chosen by Army Air Forces to build B-29's in Marietta, Ga.

Dec. 23 — First group of 20 women workers start on the production line at Buffalo plant.

Dec. 31 — Total employees at end of 1941 — 11,082.

● 1942

April 14 — Cataract House in Niagara Falls taken over as Camp Cataract to train Air Force mechanics.

May 1 — Building at Union and Losser Roads, Gardenville, leased for Bell helicopter project.

June 7 — Bell leases entire plant of the American Radiator Company, Elmwood Avenue, Buffalo.

June 29 — Army contract received for 2,000 P-39E airplanes. (On September 29, this was supplemented by 1,200 and plane changed from P-39E to P-63.)

Sept. 17 — Bell takes over Modification Center at Falls airport.

Sept. 19 — First XP-59 jet-propelled airplane arrives at Army test base, Muroc, Calif.

Oct. 1 — First flight of Bell-built jet-propelled XP-59A at Muroc.

Oct. 2 — First non-stop cross country flight of a fighter airplane. Jack Woolams flies P-39 with auxiliary fuel tanks from March Field, Calif., to Bolling Field, Washington, D. C.

Dec. 20 — Bell's first B-29 rolled out of final assembly building and turned over to flight hangar at bomber plant, Marietta.

Dec. 31 — Total employees at end of 1943 — 47,297.

● 1944

Jan. 7 — Army Air Forces announces revolutionary Bell-built jet-propelled fighter, the P-59 Airacomet.

April 1 — First flight of the new all-plywood fighter airplane, Bell XP-77.

May 1 — Bell helicopter announced.

May 10 — Bell helicopter makes aviation history when it is flown inside 65th Regiment Armory, Buffalo, marking first American indoor flight.

June 15 — First Bell-built B-29, the "Georgia Peach," participates in first Superfortress raid on Japan mainland.

June 16 — Bell produces its 10,000th fighter airplane, a P-63 Kingcobra.

July 4 — First public outdoor appearance of Bell helicopter in flight demonstration before 40,000 at Buffalo Civic Stadium.

Jan. 6 — First of 2 YH-13A helicopters built for Army Air Force leaves plant in C-82 Packet for Alaska.

Feb. 7 — Company makes first fly-away delivery of YH-13 helicopters, two to Wright Field, one to Fort Bragg, N. C.

March 5 — Bell helicopter transports expectant mother from snow-bound home near West Falls, N. Y., to ambulance.

April 11 — Delivery of 13 military helicopters for Army Air Force and Navy represents largest single delivery of rotary-wing aircraft ever made.

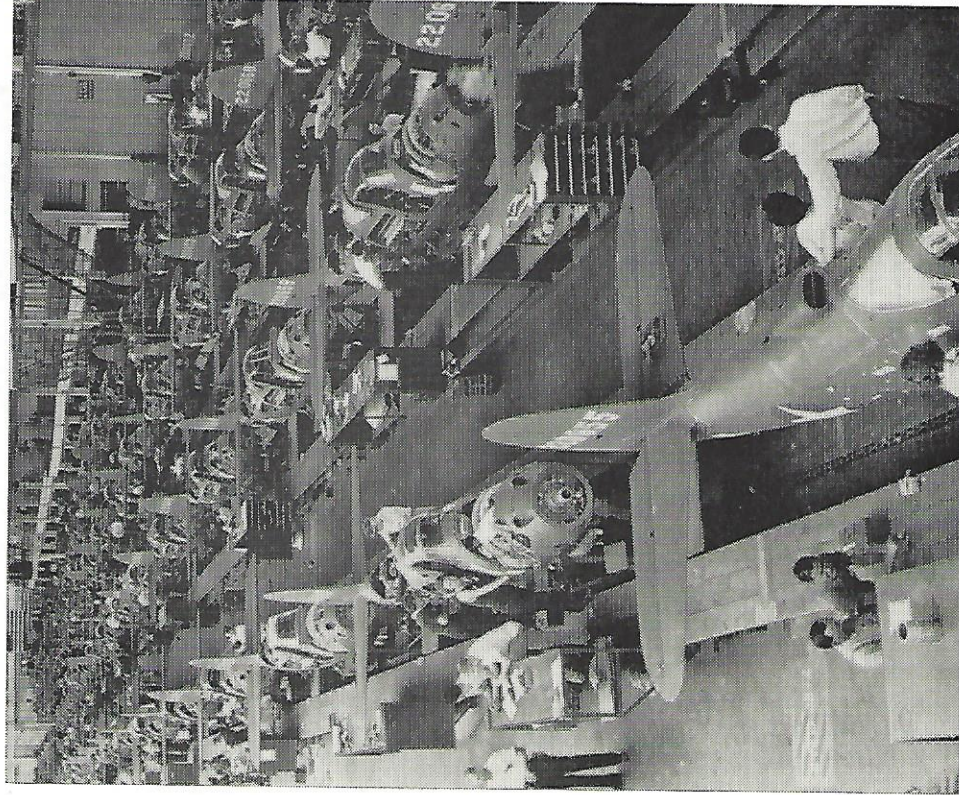
April 15 — Air Force announces Bell is building another laboratory airplane, the X-2, made of stainless steel with sweptback wings. Rocket-powered, airplane is to be supersonic.

June 2 — First three of an order of 11 commercial helicopters ordered by TAYR flown to Argentina in C-54.

June 18 — Bell crop dusting helicopter receives first air-worthiness certificate issued by CAA for aircraft specifically manufactured for agricultural work.

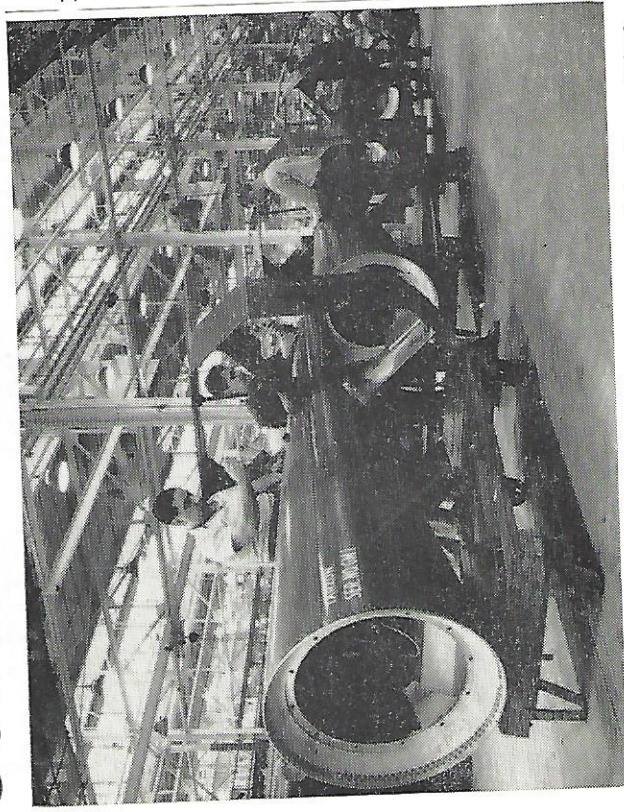


EARLIEST HELICOPTER WORK was carried out at Bell's Gardenville (N. Y.) facility beginning in 1942. Floyd Carlson, now chief helicopter test pilot, then flew craft like this experimental model.



FAMOUS 'CANNON ON WINGS' Bell's P-39 Airacobra, was turned out by the thousands during World War II. Ship saw action in every major combat theatre.

Second Ten Years Brought 'X' Ships, Missiles



BELL-BUILT TARZON, nation's first radio-guided bomb, weighed 12,000 pounds with war-head, was used with effectiveness in Korea.

Sept. 4 — Helicopters proved completely effective in fighting locust plague in Argentina.

Oct. 14 — X-1 makes world's first supersonic flight at Muroc, Calif. Speed undisclosed.

Dec. 31 — Total employees at end of 1947 — 2,022.

• 1948

Sept. 27 — Air Force announces two-place liaison helicopter, XH-15, being built by Bell.

Dec. 16 — Larry Bell receives Certificate of Merit (Presidential Citation) for "outstanding fidelity and meritorious conduct in aid of the war effort . . ."

Dec. 17 — Collier Trophy for flight beyond the speed of sound awarded to Larry Bell, John Stack (NACA), Capt. Charles E. Yeager (NACA).

• 1951

Jan. 7 — Creation of Helicopter Division with Harvey Gaylord named vice president in charge of the operation.

Feb. 12 — Announcement of HSL-1 helicopter, first anti-submarine helicopter designed for the U. S. Navy. Development marked company's first departure from single rotor helicopter.

Feb. 23 — Lease of first manufacturing facility in Fort Worth, Texas, formerly occupied by Globe Aircraft.

April 5 — Bell's convertiplane design selected by Air Force and Army with an award for a development contract.

May 9 — Ground broken for new helicopter plant outside Fort Worth.

• 1952

March 10 — Niagara Falls plant is leased for electronic assembly work, becoming Bell's seventh facility in Frontier Division.

April 11 — First helicopter delivered from Texas plant. Contracts department established to handle foreign licensing for helicopter manufacture.

Aug. 17 — First Bell-built outboard engine nacelle for B-47 leaves assembly line.

Sept. 17 — New official world's long distance, non-stop record is established as Bell pilot Elton J. Smith flies Model 47D-1 from Fort Worth to Wheatfield plant, a certified distance of 1,217.137 miles, in 12 hours, 57 minutes.

Sept. 24 — First on-the-job training contract in aircraft industry is signed with Local 501.

Nov. 9 — Single Army H-13 helicopter airlifts all supplies to engineering platoon and 100-man infantry group on Hill 1304 during five-day operation in Korea.

Dec. 31 — Total employees at end of 1952 — 13,440.

• 1953

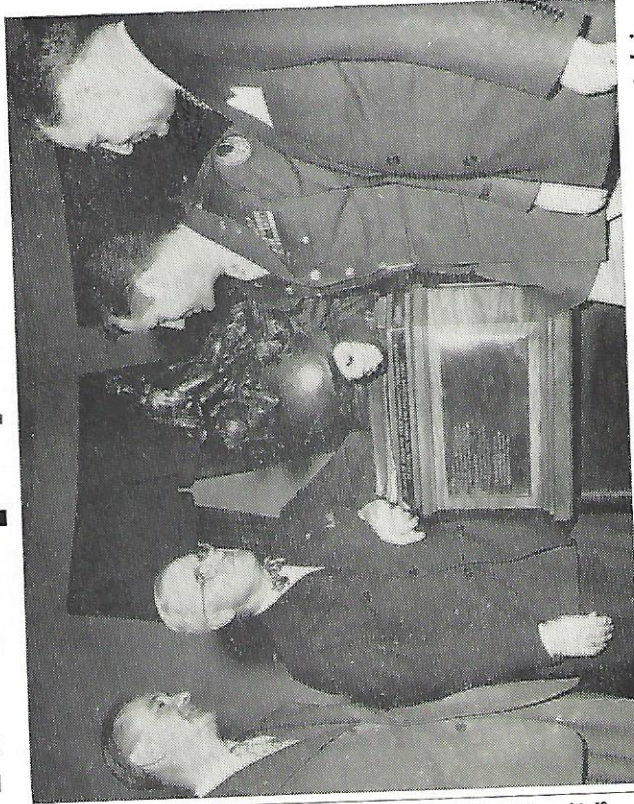
March 4 — First flight of XHSL-1 anti-submarine helicopter declared entirely successful by U. S. Navy.

April 9 — Rocket-powered Bell X-1A undergoes initial flight tests at Edwards Air Force Base, Calif.

May 6 — Bell helicopters transport American prisoners of war from Freedom Village in Korea.

May 12 — Jean L. Zeigler, chief of flight test, and flight engineer Frank Wolko are lost when explosion rips Bell X-2 from B-50 mother ship during routine flight over Lake Ontario.

President Larry Bell makes



COLLIER TROPHY, nation's highest aircraft award, was presented in 1948 for development of X-1, world's first supersonic plane. President Harry Truman awarded trophy jointly to (from left) John Stack, government research scientist with the NACA, Capt. (now Maj.) Charles Yeager and President Larry Bell.

• 1954

Jan. 9 — U. S. Air Force announces delivery of first HSL-1, powerful anti-submarine helicopter.

March 18 — Development of electronic remote control system to land guided missiles is announced.

March 21 — Development of autopilot for HSL-1 anti-submarine helicopter is announced.

March 24 — Boeing Airplane Company awards Bell contract to manufacture both the inboard and outboard nacelles for the Boeing B-52 Stratofortress.

June 15 — Bell announces it has completed preliminary designs for a revolutionary helicopter resem-

sister ship to the record-shattering X-1A, providing the Air Force with a double-barrelled opportunity to accelerate its investigation of supersonic and high-altitude flights.

Nov. 16 — Bell's experimental jet-propelled, vertical-rising airplane, the VTOL, makes its first free flight.

Nov. 18 — President Eisenhower presents Harmon International Trophy, aviation's highest award, to Major Charles E. Yeager for his record flight in the Bell X-1A.

Nov. 24 — Bell sponsors special concert for employees at Kleinhans Music Hall, featuring the two company choruses and conducted by Franz Allers, nationally known conductor and composer.

(USAF) for their work with Bell X-1.

Dec. 31 — Bell receives \$7,575,072 contract from Boeing Airplane Company to manufacture jet nacelles for B-47, world's fastest bomber.

Dec. 31 — Total employees at end of 1948 — 1,861.

• 1949

April 1 — Bell announces Model 47-D1 utility helicopter, capable of carrying three persons or 500-pound payload.

April 17 — Consolidated Vultec Aircraft Corp. and Bell announce that Bell has been given sub-contract to build twin-jet nacelles for Convair's B-36 bomber.

May 13 — Bell Aircraft Supply Corporation formed to fly helicopter oil surveys in South and West Coast.

June 13 — Local 501, UAW-CIO, members go out on strike.

Oct. 17 — Nineteen-week production strike ends.

Dec. 31 — Total employees at end of 1949 — 4,119.

• 1950

March 29 — Company announces more than \$32,000,000 backlog.

May 19 — U. S. Air Force announces Bell-built Tarzon Bomb.

June 13 — Navy announces that Bell won competition for anti-submarine helicopter. Contract for three experimental models being negotiated.

Sept. 17 — Northland plant, former government-owned facility, is purchased for manufacturing operations.

Oct. 21 — Announcement of Model 48 (YH-12) helicopter, large troop-carrying and cargo craft for U. S. Air Force.

Dec. 3 — Bell helicopter used by Corps of Engineers to complete first accurate survey of upper Niagara River rapids.

Dec. 31 — Total employees at end of 1950 — 6,800.

plant.

June 14 — Flight of jet-propelled X-5, first airplane with variable wing sweepback, announced. Airplane was one of three "X" models assigned to Bell by Air Force.

Oct. 29 — Establishment of Main St. Laboratory (Tech Pub) with leasing of three floors in Crosby Building, downtown Buffalo.

Dec. 6 — Chandler Street plant leased for manufacture of jet nacelle components.

Dec. 31 — Total employees at end of 1951 — 11,200.

• 1952

Jan. 16 — Six Bell 47D helicopters, operated by Helicopter Air Service of Chicago for hauling air mail, earn safety award for 700,000 accident-free miles.

Feb. 5 — Secretary-treasurer Leston Faneuf is named to newly-created post of assistant general manager.

Feb. 24 — First helicopters (HTL-5s) made specifically for U. S. Coast Guard are tested.

first hand inspection of. Dec. 18 — Bell HSL-1 helicopter completes 1465-mile flight from Fort Worth to Patuxent River, Md.

June 20 — More than 98 per cent of Bell's Niagara Frontier employees sign up for purchase of U. S. Savings Bonds.

June 27 — Company acquires American Wheelabrator & Equipment Corp., of Mishawaka, Ind., manufacturer of abrasive blasting equipment, as a subsidiary.

July 5 — Lease of Urban Street plant, Buffalo, gives company its ninth Frontier facility.

July 26 — Company begins familiarization program for Air Force personnel on the Rascal GAM-63 guided missile.

Aug. 21 — New altitude record in Bell X-1A is announced by U. S. Air Force, making it the highest and fastest flying airplane in the world. The pilot, Major Arthur Murray, reached an altitude of 90,000 feet.

Aug. 29 — Two new deluxe helicopters, the executive three-passenger Model 47-H and the four-passenger 260-horsepower Model 47-J, are announced.

Oct. 1 — President Larry Bell resigns as general manager and is succeeded by Leston Faneuf. Comptroller William Gisel takes over duties as secretary from Faneuf who continues as treasurer.

Oct. 18 — Bell helicopters, operated by the Ontario Hydro Commission, rescue an estimated 100 persons during Hurricane Hazel at Toronto.

Oct. 21 — Bell inaugurates helicopter ambulance service at Kenmore Mercy Hospital with dedication of new heliport, second of its kind in the nation.

Nov. 1 — Bell stockholders approve a two-for-one split in the company's common stock.

Nov. 12 — Bell announces delivery of the rocket-powered X-1B,

ing a flying wing. Dec. 18 — Bell HSL-1 helicopter completes 1465-mile flight from Fort Worth to Patuxent River, Md.

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tions to Red Cross Blood Bank pass the 12,000-pint mark.

Dec. 13 — Bell Aircraft acquires the Hydraulic Research and Manufacturing Company of Burbank, Calif., its fifth wholly-owned subsidiary.

Dec. 17 — Air Research and Development Command announces that turbine-powered Bell XH-13F helicopter has made its first flight.

Dec. 31 — Total employment at end of 1954 — 17,625.

• 1955

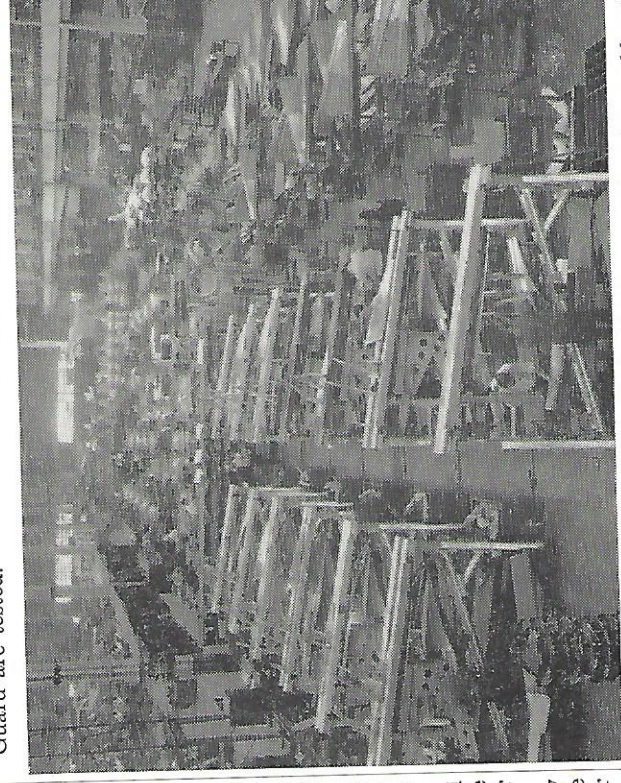
Jan. 6 — Company announces commercial helicopter sales for 1954 hit record volume, climbing 20 per cent over the previous year.

January 9 — New 27-month contract with Bell is ratified by the UAW-CIO local units.

(Continued on Page 12)



MANPOWER SHORTAGE during war brought women onto production lines. At one time 47 per cent of company employees were women.



JET POWER PACKS for Boeing B-47 move through final assembly at Kenmore. Plant also produces nacelles for Boeing B-52 Stratofortress.

Plane Power Comes in Many Packages; Six Different Propulsion Methods Used

In its twenty years of existence, Bell Aircraft has used every known method of aerial propulsion with the exception of an atom-powered engine.

The company's first experience was with conventional reciprocating engines. These were installed in the propeller-driven XFQM Airacobra, P-39 Airacobra, XFLL-1 Airabonita, P-63 Kingcobra, P-77 and B-29.

Similarly, the XV-3 convertiplane and all Bell helicopters but one are equipped with reciprocating engines. The exception, the H-13F helicopter, is powered by a gas turbine engine.

When the Armed Forces demanded aircraft capable of faster flight and greater altitude, Bell was given the assignment. The company designed and built the first jet-powered plane to be produced in this country, the P-59 Airacomet.

The P-59 was capable of speeds in excess of 450 miles per hour and could climb to 47,000 feet.

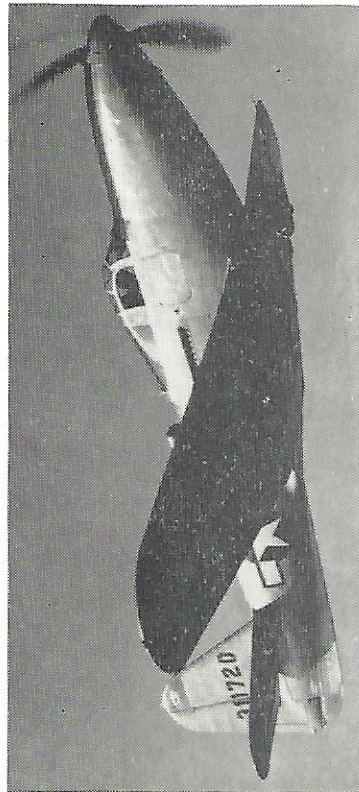
Preliminary studies were made in connection with pulse jets and ram jets. An XQ-1 airplane was equipped with a pulse jet engine for experimental purposes, and ram-jets were installed in a A-26 and a P-83.

The Bell X-1 gave the company an introduction to rocket-powered flight. Extremely valuable information was obtained during the testing of this plane, first in the world to fly at speeds greater than that of sound.

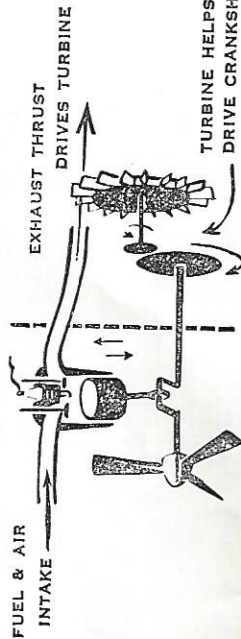
Before being put on permanent exhibition in the Smithsonian Institution, the X-1 attained a speed of 976 miles per hour and reached an altitude of 70,140 feet.

Since Bell had acquired very considerable experience with rocket engines, it was understandable that the company was awarded contracts to design and produce rocket engines and rocket-powered guided missiles.

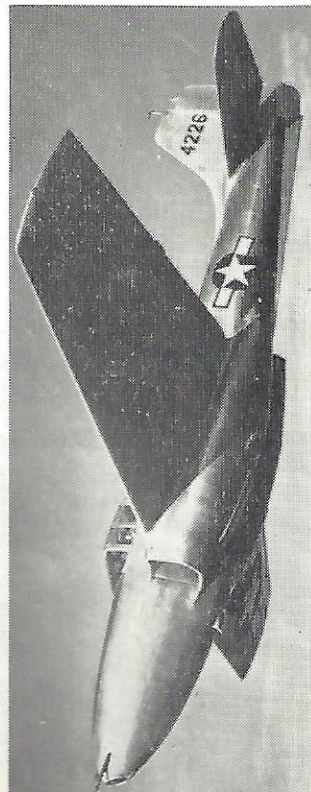
A combination of alcohol-water



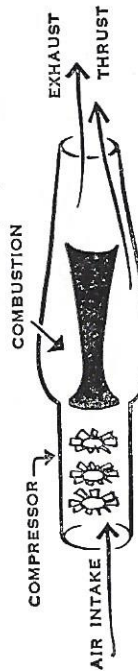
BELL P-63 KINGCOBRA was piston-powered.



PISTON: Air is drawn into the carburetor, mixed with fuel and forced into the cylinder. The sparkplug ignites the mixture and the resulting explosion forces the piston to move. The movement turns a crankshaft to which the propeller is fixed. **COMPOUND:** To gain still more horsepower, engineers decided to utilize waste exhaust gasses. A turbine wheel is placed in the exhaust path and geared to the shaft, thus helping the piston in its job of rotating the propeller.



BELL P-59 AIRACOMET was jet powered.



TURBOJET: Air enters the compressor unit, comprised of series of fans mounted on a single shaft. These blades compress the air into a smaller and smaller space, then eject it into combustion chambers where it is mixed with fuel and ignited. The heated gasses are forced through a turbine wheel and out through the tail cone. The turbine wheel, mounted on the same shaft as the compressor fans, causes the fans to rotate.

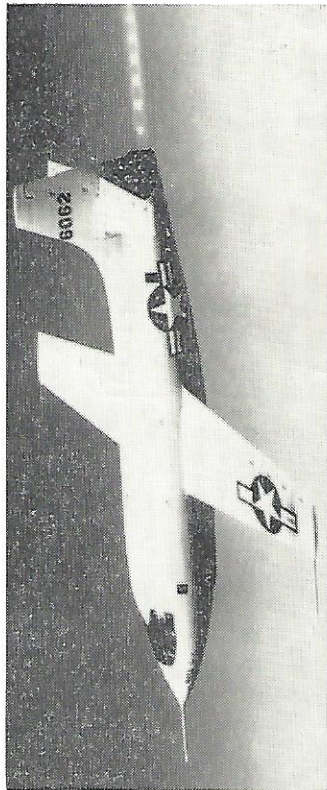
any piloted airplane. It has flown at a speed of 1,650 miles per hour and has reached an altitude of 90,000 feet.

The Bell X-2 has not yet flown in powered flight but is expected to do so in the near future. At certain speeds and altitudes its engine will develop horsepower comparable to the power output of the liner Bremen or a modern cruiser.

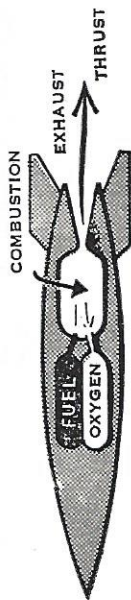
The Wright Brothers had at their command a total of twelve horsepower in their first engine.

The company also designed and produced a motorized wheelbarrow, the Prime Mover. This vehicle was powered by a three-horsepower engine, had a maximum speed of five mph.

In the field of supersonic aircraft, Bell attained and has held pre-eminence. The rocket-powered X-1A has flown faster and higher than



BELL X-1, first supersonic plane, was rocket-powered.



ROCKET: Internal combustion engines require atmosphere in which to operate. The rocket does not. This engine supplies its own oxygen for fuel ignition. Unequal pressure in the rocket chamber gives the rocket forward thrust.

Exhaust gases are re-ignited, further expanded and ejected more forcibly. The term "ducted fan turbojet" refers to a system whereby some of the air in the compressor is ducted around the combustion chamber and is ejected rearward through a nozzle surrounding the tail cone.

Prediction for 1975:

Fixed-Wing Aircraft Discarded Like Biplanes

By ROBERT J. WOODS, Airplane Design Consultant

As we at Bell Aircraft round out our first twenty years it seems logical that some sort of a look forward into the next twenty years be taken.

Bell Aircraft's past twenty years has generally seen the company as a leader in the design, construction, and test of aircraft and related devices to probe and extend the frontiers of aviation science. From my best recollection, none of the wildest dreams for the future, in 1935, approached the actual circumstances of the expansion and growth of Bell Aircraft or the aircraft industry.

While a direct extrapolation of the past twenty years cannot be made into the next twenty because of the powerful controlling influences of world economic and social conditions and possibly unexpected discoveries and technical advances, it appears almost certain Bell Aircraft will continue to lead and exploit the most advanced aviation concepts.

The curtain of national security prevents discussion here of actual details of plans, hope and dreams, but it would not seem too far from possibilities to expect to see Bell Aircraft products flying at speeds of 10, 20, and perhaps 30 times the speed of sound, in the next 20 years, in routine military and scientific operations.

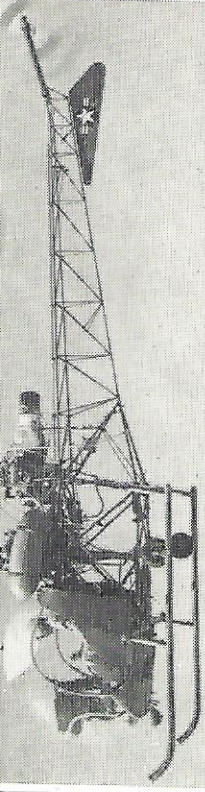
The power for their flight may come from fuels and propulsion techniques not now generally known to the public, and in some cases will possibly be developed through continued expansion of Bell's rocket research and development work.

As the traveling public, commercial industry, and the military serv-

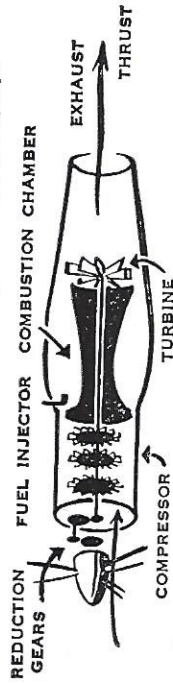
with others were begun and to date more than twenty fuels and oxidizers have been studied.

limit commercial air travel flight speeds to something just short of the speed of sound or to about 600 mph for some time. Supersonic speeds will be limited to military and scientific research aircraft.

Aviation is now "big business." In the next 20 years it seems destined to dominate the commercial transportation and National Defense pictures. With it, Bell Aircraft should fly faster, farther, and better.



BELL XH-13F HELICOPTER is powered by turboprop.



TURBOPROP: Air enters the compressor unit, comprised of a series of fans mounted on a shaft. The fans compress the air, forcing it into combustion chambers. The air is mixed with fuel and ignited. The resulting, greatly expanded gases are forced through a turbine fan wheel causing it and the shaft to which it is attached to revolve. The propeller, attached to the same shaft through a reduction gear system, revolves more slowly. The heated gases, after passing through the turbine, are forced through a narrowed exhaust cone rearward to give added thrust power.

Convertiplane Operational Within Next Five Years

By BART KELLEY, Chief Helicopter Engineer

(Editor's Note — Helicopter developments have come so fast in the past few years, there is no way of knowing where it will all lead. Bell News asked Bart Kelley, Bell Aircraft Corporation Chief Helicopter Engineer, to comment on more significant steps forward expected in the near future. This is his telegraphed report from Fort Worth.)

THESE PREDICTIONS WILL BE COMPARATIVELY SHORT RANGED BECAUSE IN 5 YEARS WE WILL ALL BE CELEBRATING THE EVEN MORE IMPORTANT ANNIVERSARY OF A QUARTER CENTURY. FROM WHAT WE KNOW OF ENGINEERING TRENDS TODAY, THE FOLLOWING BETS ARE REASONABLE FOR THE NEXT 5 YEARS.

1. THE CONVERTIPLANE WILL BECOME AN OPERATIONAL VEHICLE AND WILL HAVE A SURPRISING UTILITY. AT LEAST 3 TYPES HAVE ALREADY FLOWN AND THE BELL CONVERTIPLANE SHOULD TAKE TO THE AIR IN THE COMPARATIVELY NEAR FUTURE.

2. THERE WILL BE GREAT ADVANCES IN THE FIELD OF HELICOPTER STABILITY AND AUTOMATIC CONTROL. UP TO NOW MANY DEFICIENCIES IN THIS RESPECT HAVE BEEN TOLERATED IN THE IN-

TEREST OF GETTING BASIC HELICOPTER WORK ACCOMPLISHED. NOW THAT A GREAT MANY MA-CHINES HAVE BEEN BUILT AND PUT IN SERVICE, WE CAN ALREADY SEE A TREND TOWARD AUTO-PILOTS, STABILITY AUGMENTING DEVICES, AND GREATLY IMPROVED INHERENT STABILITY.

3. BASIC HELICOPTER CONFIGURATIONS WILL CONTINUE MORE OR LESS AS IN THE PAST, BUT THERE WILL BE MANY TECHNICAL IMPROVEMENTS. MOST OF THESE WILL COME FROM NEW MATERIALS AND TECHNIQUES, WHICH WILL ALLOW FOR LIGHTER AND SIMPLER DESIGN OF SUCH BASIC COMPONENTS AS BLADES, TRANSMISSIONS, UNIVERSAL JOINTS, ETC. MAINTENANCE WILL BE PROGRESSIVELY SIMPLIFIED AS STILL MORE EXPERIENCE IS GAINED.

4. LIGHTER POWER PLANTS, INCLUDING GAS TURBINES, WILL ALLOW INCREASED DISC LOADINGS UP TO THE LIMIT FOR SAFE AUTOROTATIONAL LANDINGS. TWIN ENGINE DESIGNS, CAPABLE OF GOOD SINGLE ENGINE PERFORMANCE, WILL APPEAR AND HELP TO OPEN UP THE MARKET FOR COMMERCIAL OPERATIONS OF LARGER HELICOPTERS, HITHERTO STRICTLY MILITARY.