

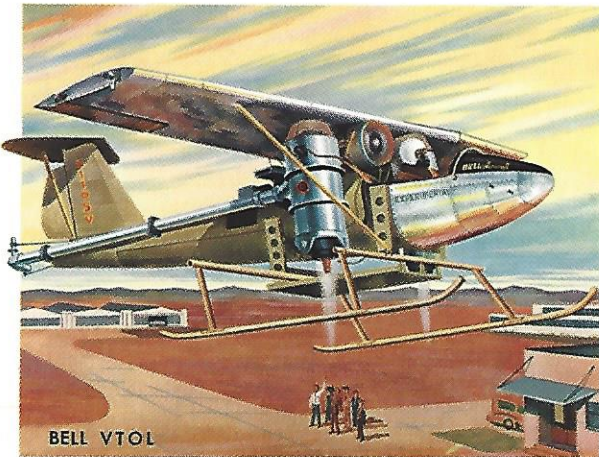
NINETEENTH

Annual Report

1954



BELL CONVERTIPLANE



BELL VTOL

BELL *Aircraft* CORP.

BELL *Aircraft* CORPORATION

and Subsidiary Companies

TABLE OF CONTENTS

	Page
Directors, officers....	Inside cover
Year at a glance	1
President's Report ..	2, 3
Financial Review	4, 5
Operating Review....	6-16
Bell X-1A	6
Electronics	7
Servomechanisms ..	8
Rocket propulsion ..	9
New helicopters	10, 11
Vertical rising aircraft	12, 13
Helicopters	14-16
Subsidiary Review..	17, 18
Financial Statements	19-23
Financial Highlights	24
Divisions and subsidiaries	Inside cover

ANNUAL MEETING

The annual meeting of stockholders of Bell Aircraft Corporation will be held at the executive offices of the corporation, Town of Wheatfield, N. Y., on Monday, April 18, 1955 at 2 p.m. E.S.T.

Color reproduction of Mr. Bell (Page 2) from a direct color portrait by Fabian Bachrach.

COVER — features artist's conception of the Bell XV-3 convertiplane and the Bell VTOL.

DIRECTORS

LAWRENCE D. BELL	President
JOHN E. BIERWIRTH	President, National Distillers Products Corp.
R. SHERRARD ELLIOT, JR.	Executive Vice President, The Equity Corp.
LESTON P. FANEUF	Vice President and General Manager, Treasurer
PAGE HUFTY	Chairman, Investment Committee, The Equity Corp.
ELLERY C. HUNTINGTON, JR.	Chairman, The Equity Corp.
DAVID M. MILTON	President, The Equity Corp.
GEORGE OLMSTED, MAJ. GEN. USA (RES.)	Chairman, Hawkeye-Security Insurance Co.
OTTO A. PFAFF	President, American Wheelabrator and Equipment Corp.
FREDERICK F. ROBINSON	President, National Aviation Corp.
J. FREDERICK SCHOELLKOPF, IV	President, Niagara Share Corporation
C. S. STUCKENHOLT	President, The W. J. Schoenberger Co.
WEBSTER B. TODD	President, Real Estate Equities, Inc.
RAY P. WHITMAN	First Vice President
WALTER A. YATES	Vice President, Spaulding-Yates Inc.

OFFICERS

LAWRENCE D. BELL	President
LESTON P. FANEUF	Vice President and General Manager, Treasurer
WILLIAM E. KEPNER, LT. GEN. USAF (RET.)	Executive Vice President
RAY P. WHITMAN	First Vice President
JULIUS J. DOMONKOS	Vice President
ROY J. SANDSTROM	Vice President
HARVEY GAYLORD	Vice President
WILLIAM G. GISEL	Secretary and Comptroller
G. B. CLARK	Assistant Vice President
HERBERT H. MUNSEY	Assistant Vice President
JOHN W. RANE, JR.	Assistant Vice President
JOHN F. STRICKLER, JR.	Assistant Vice President

CORPORATE DATA

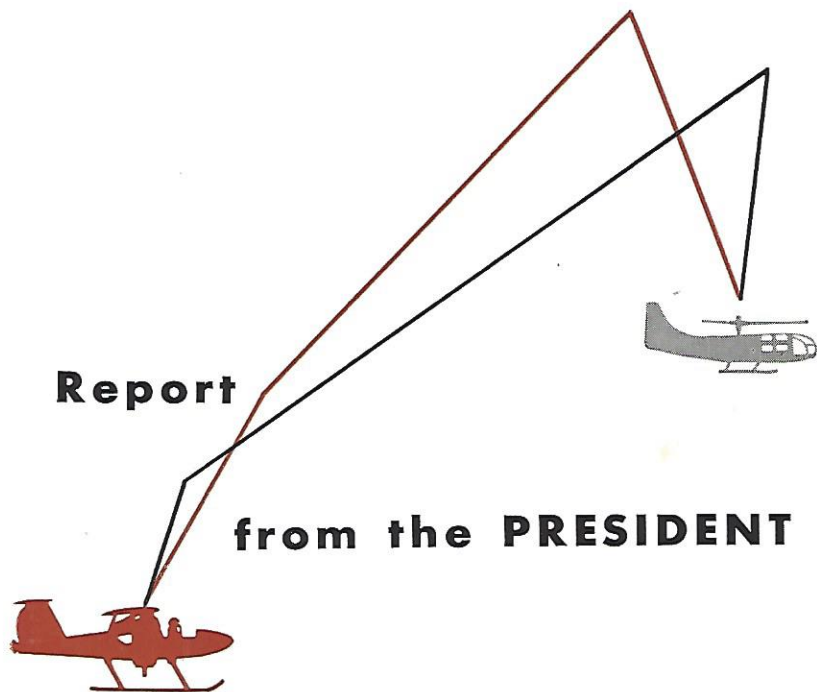
EXECUTIVE OFFICES—P.O. Box 1, Buffalo 5, N. Y.
Located in Wheatfield Plant, Town of Wheatfield, N. Y.,
adjacent to Niagara Falls Municipal Airport

TRANSFER AGENT—Marine Midland Trust Company of New York, New York, N. Y.

REGISTRAR—New York Trust Company, New York, N. Y.

THE YEAR AT A GLANCE

	1954	1953
Results of Operations:		
Sales	\$185,646,114	\$145,967,100
Income before taxes	13,054,243	10,561,223
Federal taxes on income	6,650,000	7,095,800
Net income	6,404,243	3,465,423
Financial Position:		
Shares outstanding	2,590,692	884,478
Dividends	\$ 3,233,249	\$ 1,768,806
Working capital	19,500,786	11,160,096
Stockholders' equity (Book value)	34,398,302	22,870,002
Bank loans and mortgage	8,250,000	14,250,000
Statistical:		
Number of Employes	18,850	16,600
Number of stockholders	6,018	2,765
Square feet of floor space	3,250,000	2,900,000
Payroll	\$ 96,450,000	\$ 80,900,000



To the Stockholders and Employees:

The year 1954, in many respects, was the most satisfactory year in the company's history.

The net income of \$6,404,243 was the highest earnings figure of any year since the company was founded in 1935.

This income was influenced by increased sales and by the reduced rate of Federal income tax. Also contributing to these improved earnings were continuing budgetary and expenditure controls.

New products were designed, developed, tested and introduced; two additional wholly-owned subsidiaries were added; new customers were acquired; our policy of diversification was widened and our technical personnel made significant advances.

As a result of these combined endeavors, the corporation was able to pay its stockholders an increased amount in dividends and also to retain approximately half the earnings for the present and future well-being and growth of the company. By year's end, the number of stockholders increased from 2700 to more than 6000.

Prominent among the advances which we are able to discuss within the limits of national security are two Bell-designed vertical-rising aircraft; two improved commercial helicopter models; satisfactory progress in guided missiles, electronics, servo-mechanisms and rocket propulsion, and new contracts from new military and industry sources.

These two new vertical-rising aircraft, which, in our opinion, will make important contributions to the future of aviation, were the Bell VTOL, a jet-propelled airplane which lands and takes off vertically without changing its horizontal attitude, and the XV-3 convertiplane, combining proven features of the helicopter and fixed wing aircraft.

The first VTOL model was built with our own funds as a flight test vehicle to demonstrate an entirely new method of control for vertical-rising aircraft. This control permits the plane to rise in a horizontal attitude without need of conventional runways and to maneuver in any direction, with or without forward speed.

The XV-3 convertiplane was completed by the end of 1954 for the U.S. Army. The XV-3 has conventional helicopter rotors for take-offs and landings. These horizontal rotors are tilted forward and become propellers for forward flight.

Our guided missile work included the U.S. Air Force GAM-63 Rascal missile, for which we have the overall weapons system responsibility. We also are developing and supplying missile components for four other major missile contractors.

One of these missiles is the U.S. Army's Nike. We supply rocket engines to the Douglas Aircraft Co. for these anti-aircraft missiles.

Other scientific advances included development and construction of missile and helicopter flight

trainers; automatic landing systems, and a variety of electronics and servomechanical devices.

In 1954, the company sold more Model 47 commercial helicopters than in any other year and also developed two new and improved helicopter models for commercial and military uses. One is a newly-styled three-place ship and the second is a versatile four-place model quickly adaptable to several configurations.

Also during the year, deliveries of the company's large, tandem-rotored anti-submarine HSL-1 helicopters were made to the U.S. Navy.

Since the close of last year's business, the U.S. Army announced Bell Aircraft as the winner of a design competition for the development of a new utility helicopter. The Bell design was selected from among a large number of designs entered in this industry-wide competition.

Sales and income for the year ending December 31 were \$185,646,114, well above the sales for 1953. Net income has been stated as \$6,404,243 and income before taxes was \$13,054,243.

Approximately fifty per cent of net income, or \$3,233,249, was paid to stockholders in dividends. The company's payroll for 1954 was \$96,540,000.

Borrowings under our revolving V-Loan credit were further reduced from \$12,000,000 to \$6,500,000 and the mortgage on the Hurst Plant in Texas, originally \$2,500,000, was lowered to \$1,750,000.

The 1954 balance sheet, which appears in this report, continues to reflect the steady growth of the company. During the year, stockholders' equity increased from \$22,870,002 to \$34,398,302 and working capital from \$11,160,096 to \$19,500,786.

In accordance with our planned policy of diversification, the company, through an exchange of Bell shares, acquired in June all the stock of the American Wheelabrator and Equipment Corp. of Mishawaka, Ind. This company, like The W. J. Schoenberger Co. of Cleveland, O., acquired in 1948, are operated as wholly-owned subsidiaries and continued in 1954 to be well-managed and profitable.

Late in the year, and also through an exchange of Bell shares, we acquired the Hydraulic Research and Manufacturing Co. of Burbank, Calif.

These companies represent different fields of endeavor and were acquired to create a balance for our future stability and to help offset inevitable fluctuations inherent in the defense industry.

Due to the changing requirements of National Defense, there may be a realignment of emphasis on different phases of our work from time to time.

We are pleased by the cooperation and assistance we have received from our subcontractors and vendors who have important roles in our efforts.

Since the last annual meeting of stockholders, four new members were added to the Board of Directors. At the conclusion of his foreign service with the U.S. Government, Webster B. Todd was re-elected to the board. Elected to the board were Leston P. Faneuf, vice president, general manager and treasurer of Bell, Otto A. Pfaff, president of Wheelabrator, and C. S. Stuckenholt, president of Schoenberger. These men add management and operating experience to the board membership.

In order for your president to devote more of his efforts to the broader aspects of the company, especially in view of our increasing diversification and our expanding assignments for National Defense, Mr. Faneuf was promoted to general manager. His responsibilities include the day-by-day operations of the company and its subsidiaries.

I am continuing as president with more opportunity now to give special emphasis to planning for the future and to encourage and assist our technical personnel in product development.

I would like to express appreciation to the officers, executives and men and women of the company and its subsidiaries for their efforts of the past year and their loyalty and devotion for the future.

We are fully conscious of the fact that, in cooperation with the military services, it is our responsibility and duty to help provide the maximum National Defense at the lowest dollar cost.

Respectfully submitted,

By Order of Board of Directors

LAWRENCE D. BELL

President

March 14, 1955

FINANCIAL REVIEW

The consolidated financial statements presented in this report include the operations of the American Wheelabrator and Equipment Corporation and the Hydraulic Research and Manufacturing Company, wholly-owned subsidiaries acquired in 1954, as well as the operations of other wholly-owned subsidiaries acquired previously.

In 1954, Bell Aircraft Corporation completed a very successful year, during which sales amounted to \$185,646,114. This represents an increase of 27.2% above the sales for 1953 and is the fourth largest sales volume in the history of the company.

Income before taxes amounted to \$13,054,243, and net income was \$6,404,243, after provision of \$6,650,000 for Federal income taxes. Per share earnings of \$2.85 are adjusted to the average number of shares outstanding during the twelve month period and give effect to the two-for-one stock split of November 1954.

The net income-to-dollar sales ratio was 3.4% which was very favorable in comparison to such

ratios for prior years. This was due in part to the expiration of the excess profits tax at the end of 1953, and the cost reduction program which resulted in increased efficiency in the work performed.

Current assets exceeded current liabilities by \$19,500,786, resulting in a ratio of 1.57 to 1. This improved financial position was due in part to reducing borrowed capital under the V-Loan during a period of increasing sales volume.

Additions to plant, machinery and equipment amounted to \$3,262,301 bringing fixed assets at year's end to \$23,457,913. The capital expenditures for such items for the period 1950 to 1954 are shown in graphic form in this report and total \$13,571,835.

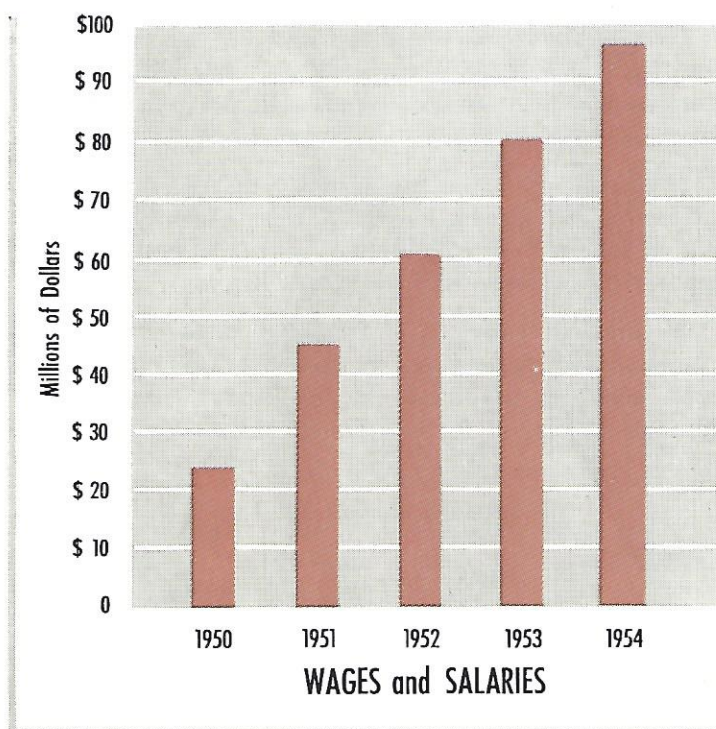
Raw materials, supplies and work-in-progress inventories amounted to \$79,762,411 at the end of the year. A substantial portion of such materials and work performed was in connection with Government contracts and, therefore, partial payments applicable thereto were requested and received. These payments, which totalled \$59,637,244, were applied to reduce the gross value of inventories, and the net balance was \$20,125,167.

Materials and supplies purchased during the year amounted to \$83,665,000. In our subcontracting program, which was established five years ago to insure a stabilized growth, there were 610 active subcontractors supplying the company with parts and sub-assemblies during the year. Of this number, 86% were in the so-called small business category.

The portion of amortization under certificates of necessity, allowable as an element of cost under certain Government contracts, was included in depreciation for 1954.

Borrowed capital under the V-Loan Agreement, which expires June 30, 1955, amounted to \$6,500,000 at the year's end, as compared to \$12,000,000 on December 31, 1953. During the year, the revolving V-Loan credit of \$30,000,000 was reduced to \$20,000,000.

Although final release has not been received from the Renegotiation Board for the years 1952 and 1953, it is believed that no refund will be necessary. A substantial portion of the 1954 sales is subject to the Renegotiation Act of 1951 and no provision has been made in the financial statements for the current year, since no refund is anticipated.



Federal income tax matters have been settled through 1951 and the return for the year 1952 is under examination by the Treasury Department. It is believed that the reserve for Federal taxes of \$8,807,972, at December 31, 1954, is adequate to cover all liability of the company for Federal income and excess profits taxes.

Operations under Government contracts with the Air Force, Navy and Army involved a variety of programs in supplying products for the Department of Defense. Production work was performed generally under fixed price or incentive target contracts, while research and development and experimental work was performed under cost type contracts.

The backlog at the year end was \$295,723,233, which covers only work to be performed for the Department of Defense.

The company and its wholly-owned subsidiaries occupied 3,250,000 square feet of floor space, of which 1,700,000 square feet were company-owned, 560,000 square feet were leased from the Government, and 990,000 square feet were acquired under regular lease agreements. The significant increase in floor space area in 1954 was due to the property owned or leased by American Wheelabrator.

The gradual increase in floor space occupied during the past five years has been accomplished under a well-planned and coordinated program to meet an increasing volume of business. It is felt that such arrangements are sufficiently flexible to meet current and future requirements.

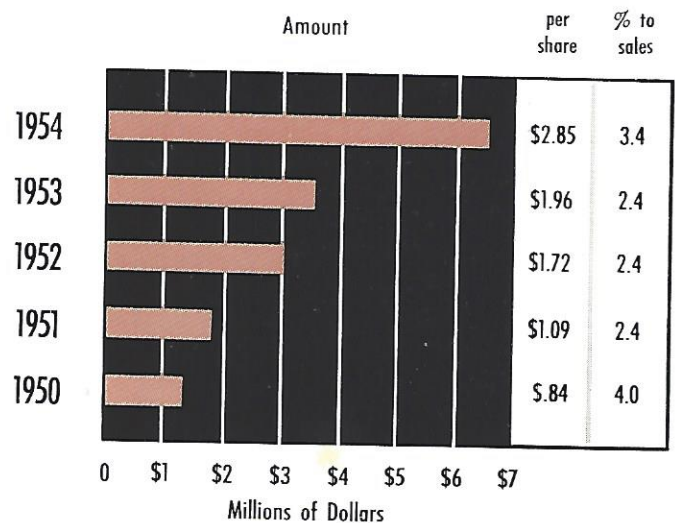
Management-labor relations continued on an even level and 27-month contracts were negotiated early in 1955 with the various bargaining units representing our organized hourly and salary workers.

Through the Bell Employees' Humanity Fund, employees contributed \$177,354 during the year to recognized charitable organizations, bringing the total of such gifts for three years to \$413,096.

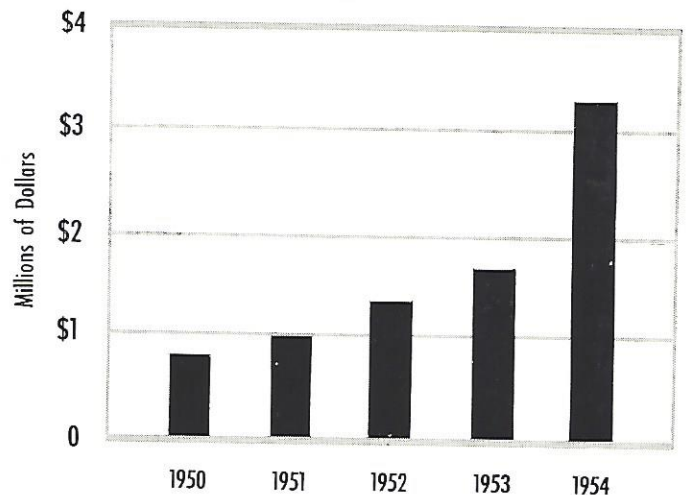
The company made 1954 contributions of \$603,308 to scientific, charitable and educational organizations and to approved foundations, thus making a total of \$1,399,666 in corporate gifts during a similar three-year period.

With almost 98% enrolled in the U.S. Savings Bonds payroll savings plan, employees set aside \$2,610,000 for the purchase of these bonds. In addition, employees deposited \$3,762,000 in savings banks through regular payroll deductions.

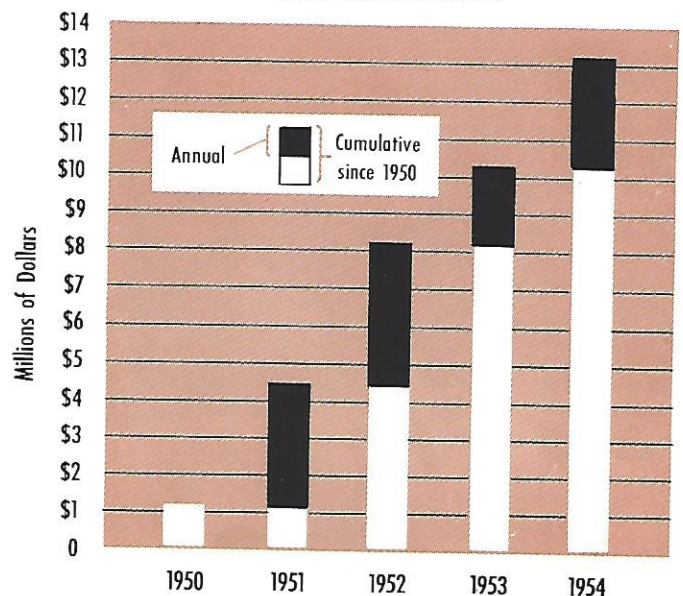
EARNINGS



DIVIDENDS



PLANT EXPENDITURES



OPERATING REVIEW

As was the case in previous years, 1954 was a period of further growth in the overall operations of the company. A series of new products came into being; diversification was expanded; additional subsidiaries were acquired and continued emphasis was placed on research and development to insure future progress.

Two revolutionary new types of vertical-rising aircraft were revealed by the company; our established products maintained their high rate of performance; our list of customers continued to grow and marked advances were achieved by our scientific and technical groups.

In the Niagara Frontier Division, where the programming is largely directed towards government work, our efforts were concentrated in the fields of guided missiles, electronics, servomechanisms, rocket engines, special research aircraft, remote control systems for missiles and aircraft and the production of various types of airframe and electronics components for major bomber aircraft.

The introduction of two improved models of the basic Model 47 helicopter; deliveries to the U.S. Navy of the HSL anti-submarine helicopters; an increase in commercial helicopter sales and a highly successful experimental program were among the highlights of the year in the company's Texas Division.

One of the outstanding achievements of our products came in the field of special research aircraft, a field which the company has dominated for the past ten years.

The Bell X-1A, already the world's fastest airplane, set a new world's altitude record by climbing to more than 90,000 feet above Edwards Air Force Base, Calif.

The rocket-powered X-1A previously traveled at the unprecedented speed of 1650 miles per hour, two-and-a-half times the speed of sound.

A sister-ship, the X-1B, was delivered to the U.S. Air Force in 1954 and the company and Air Force testing programs of both aircraft were completed. The X-1A and the X-1B were then turned over to the National Advisory Committee for Aeronautics for further exploration into high speed and high altitude flight.

The company's guided missile effort continued on an integrated and unified weapons system basis and while discussion in this field is naturally limited by national security, it can be reported that satisfactory progress was made. Much of our technical skill was devoted to such projects as the GAM-63 Rascal (guided aircraft missile) for the Air Force, and new contracts were secured from other missile prime contractors for the production of different missile components.

The company is one of the few missile manufacturers in the country charged with the prime responsibility for the design, development and production of the missile airframe, guidance system, propulsion system, launching and ground handling equipment, flight testing and training and training aids. This responsibility applies to GAM-63.

The Air Force has described the GAM-63 Rascal as an air-to-ground strategic missile, designed to be carried aloft by the nation's long range bombers. The Air Force further states that Rascal enables these bombers to deliver nuclear weapons against an enemy many miles away.

Design, development and testing of high precision electronics and servomechanisms also played a key part in the company's program last year.

The company's Niagara Falls plant, activated in 1952, was converted solely to the production of electronics parts, components, assemblies and systems, supplemented by the development work conducted in the laboratories of the Wheatfield Plant.

Fastest and highest! Major Charles E. Yeager, USAF, left, who flew the Bell X-1A at a speed of 1650 m.p.h., and Major Arthur Murray, USAF, who reached 90,000 feet in the same airplane, stand in front of the record-holding X-1A at Edwards Air Force Base.



Deliveries at an increased tempo were made of the Bell proportional control system to the Chance Vought Aircraft Corp. for use in the launching and recovery programs during the actual flights of the Navy's Regulus missile.

The Navy also announced the successful testing of a Bell-developed automatic carrier landing system, capable of landing aircraft safely despite zero-zero visibility.

This system, a complex electronic combination of radio and radar, is operable both on airports and on aircraft carriers and has the advantage of being able to land aircraft whose pilots are either wounded or overly fatigued after flying long missions.

The Bell landing system equipment is compact and easily transportable by air. It determines the plane's altitude, lateral position and distance from touch down and, taking into consideration velocity and direction of the wind, calculates where the approaching aircraft should be in relation to the landing area.

With this information, an electronic calculator determines approximate corrective commands, transmits them to the command radio transmitter. The pilot is informed that control of the airplane has been taken over by the automatic landing system and further landing commands are transmitted.

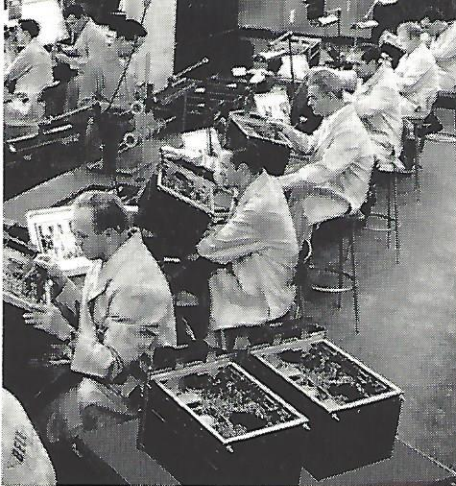
If for any reason, landing conditions are not suitable, automatic wave-off commands are sent and the plane is controlled back into the air for another landing attempt.

Other forms of flight safety, such as autopilots for helicopters and aircraft, were further advanced by the company's technical groups.

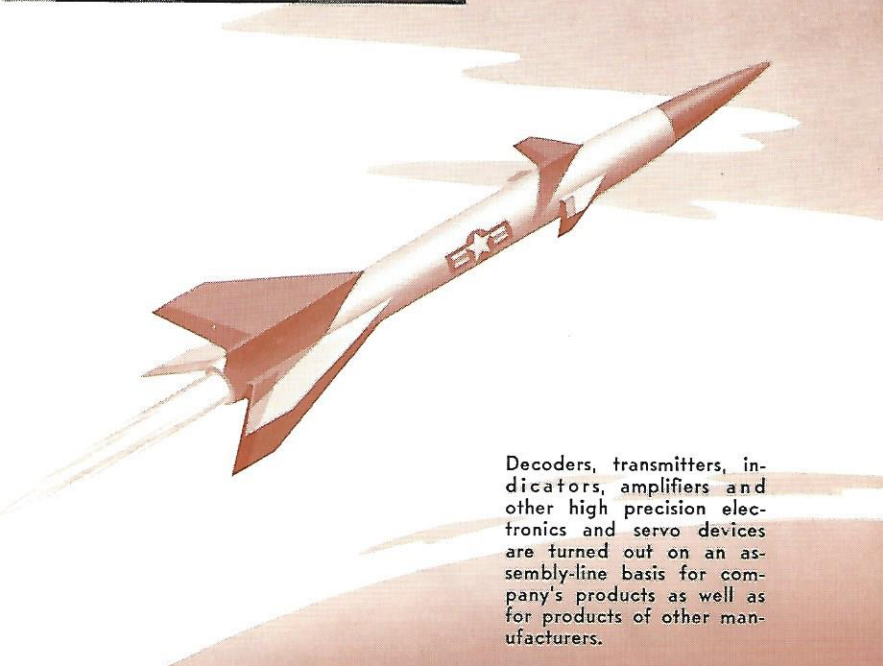
Design, development and testing of high performance automatic control and maneuvering systems for guided missiles also was continued and an increasing effort was expended on several different types of guidance systems for missiles.

Our technical sections were also instrumental in the introduction to the commercial market of a line of two-stage electro-hydraulic servo valves which have applications in control systems where high performance and reliability are required.

Other technical efforts encompassed an extraordinarily large scope of projects ranging, for example, from the field of developing prevention of or protection against icing conditions at high alti-

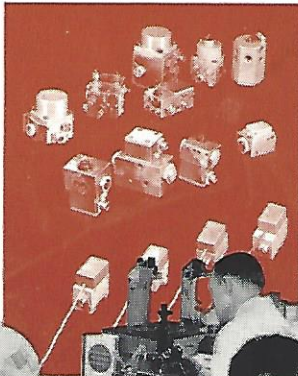


Electronics equipment for the remote control of guided missiles and aircraft are now mass-produced at company's Niagara Falls plants.

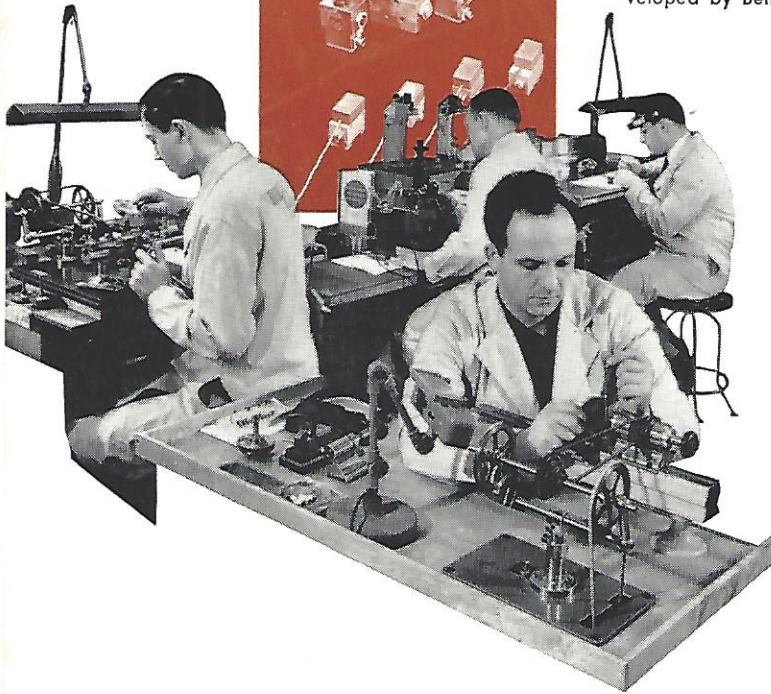


Decoders, transmitters, indicators, amplifiers and other high precision electronics and servo devices are turned out on an assembly-line basis for company's products as well as for products of other manufacturers.





The skill, and even the equipment of watchmakers, is required to meet the high tolerances of the servomechanisms designed and produced by the company. An illustration of the types of servo valves developed by Bell is shown here.



tudes and subsonic and supersonic speed ranges to the development and production of radar cameras.

The company added to its reputation in the field of reliability and the procedures for handling test data of all kinds on a highly unified basis brought favorable comment from military and industrial customers.

While we have a number of major contracts, the company also has undertaken a quantity and variety of smaller research projects in various scientific and engineering fields, each with the potential of expanding into more substantial work.

In the production of major components for major bombers, our work on the Boeing B-47 remained constant and we secured additional business of this nature by successfully competing for a contract to provide jet engine nacelles for the Boeing B-52 bomber.

The fact that the Air Force announced in mid-year the production of the 1000th B-47 will give some indication of the contribution the company has made to this program alone. This is particularly significant since the company has provided the double engine inboard nacelles as well as the single

engine outboard nacelles, not only for Boeing, but also for two other builders of the B-47, the Douglas Aircraft Company and the Lockheed Aircraft Corporation.

In addition to this work, we are also engaged in the production of other types of major assemblies, mostly of an electronic nature, for the Boeing and Douglas companies.

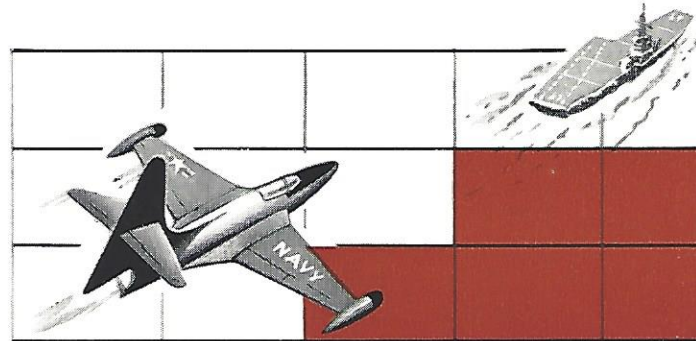
The company also added to its stature as a leader in the field of liquid propelled rocket engines. We continued to supply entire rocket systems for the company's own missiles, such as the GAM-63, and received several new and important contracts to supply rocket engines for the missiles of other contractors.

The U.S. Army revealed the identity of one of the latter missiles when it disclosed the company is in production of rocket power plants for the Nike anti-aircraft guided missile, a missile Bell Aircraft has been associated with on an ever-increasing basis since 1951.

The Bell-produced engines for Nike are supplied to Douglas Aircraft where the engines are incorporated in the 20-foot long supersonic missiles. These missiles are being installed in numerous operational anti-aircraft sites strategically located throughout the country.

The company's rocket engine program continued to expand in research and development, in personnel and facilities. Our two test sites, one for research

Automatic landings on the moving decks of aircraft carriers in all kinds of weather are provided by one of the safety systems developed by the company.



and the other for production engines, were augmented in 1954 to accommodate our increased efforts as well as to accommodate the new business secured. Over 600 engineers and technicians are engaged in rocket propulsion, exclusive of production workers.

More than 35 rocket engine test cells are available at the Wheatfield Plant and at the Bell Test Center. At the latter site, which we operate for the Air Force, a temperature controlled cell, large enough to accept a full scale missile, was in consistent use at temperatures ranging from minus 60° Fahrenheit to plus 160° Fahrenheit.

The greatest part of the company's rocket development has been with the JP-4 and acid propellant combination and more than 16,000 thrust chambers tests have been conducted with these fuels alone.

Employment at year's end was 18,853, an increase over the 16,637 employees at December 31, 1953. The total included 14,239 in the Niagara Frontier Division, 3,365 in the Texas Division, 832 at American Wheelabrator, our largest subsidiary, and the balance in other company subsidiaries.

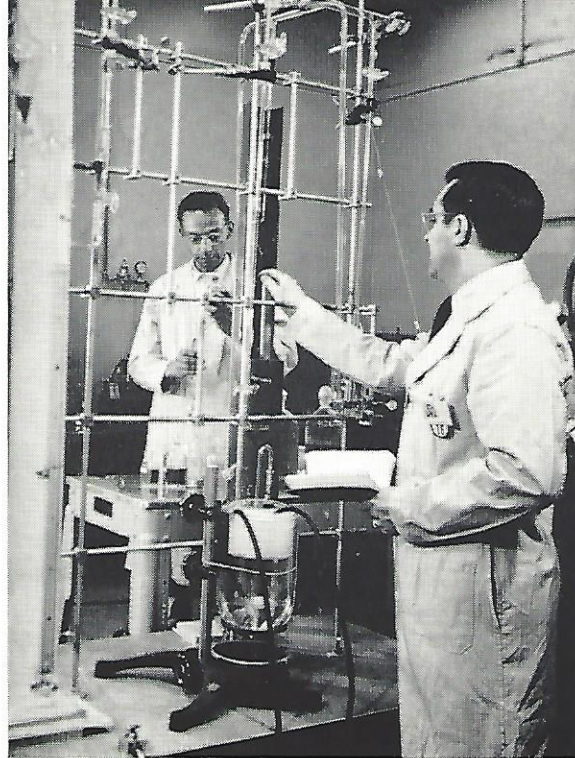
Employees were stationed at various domestic military bases to conduct tests of the company's products and were also at many foreign sites assisting in the training and servicing programs of Bell helicopters owned by the U.S. Government, foreign governments and commercial operators.

One-third of the engineering department employees of the company have college degrees. And to help add to the technical and administrative knowledge of our employees, various types of training programs were continued in 1954.

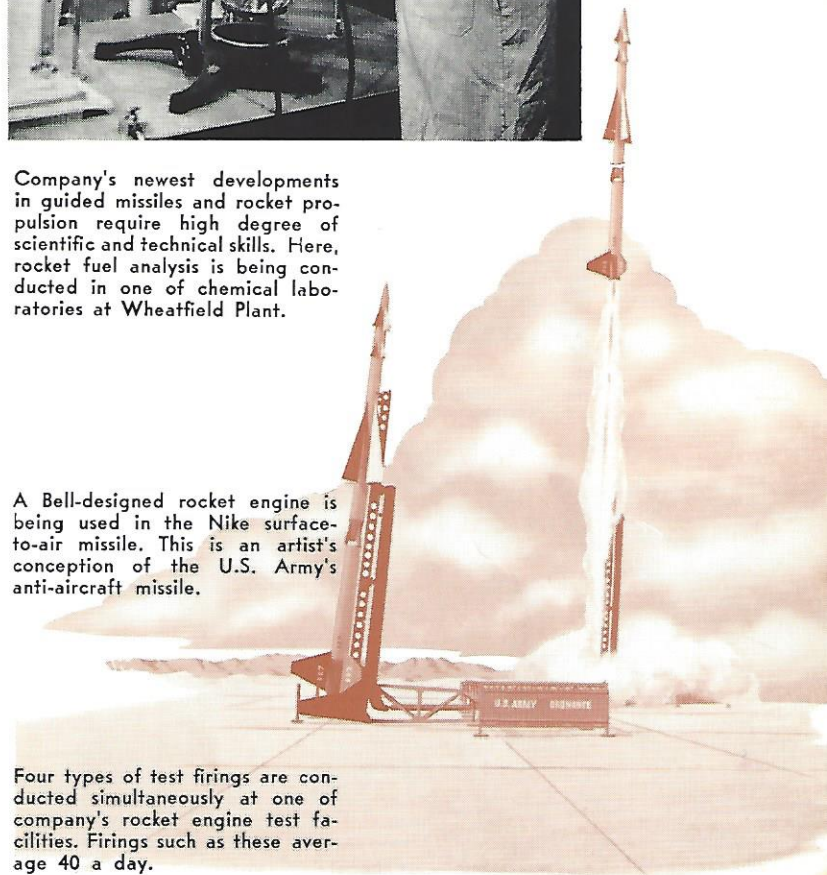
Our engineering training section provided more than 20,000 hours of training and our manufacturing division, more than 90,000 hours of training.

Throughout the year, personnel of the Air Force, particularly of the Air Training Command, were indoctrinated in courses conducted by the company in missile familiarization, operations and testing.

There was an extremely high rate of activity in the Texas Division, which has been the center of

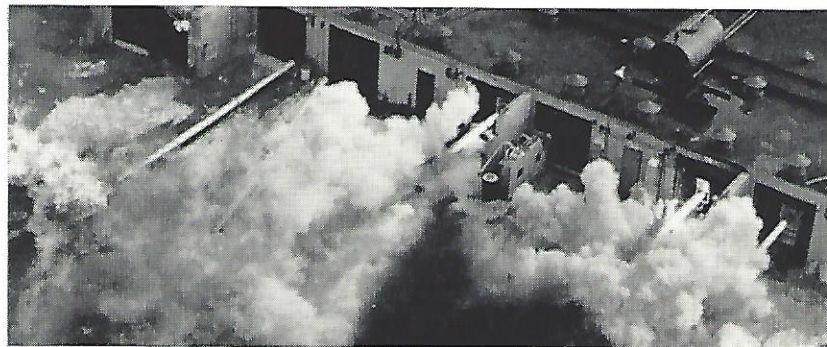


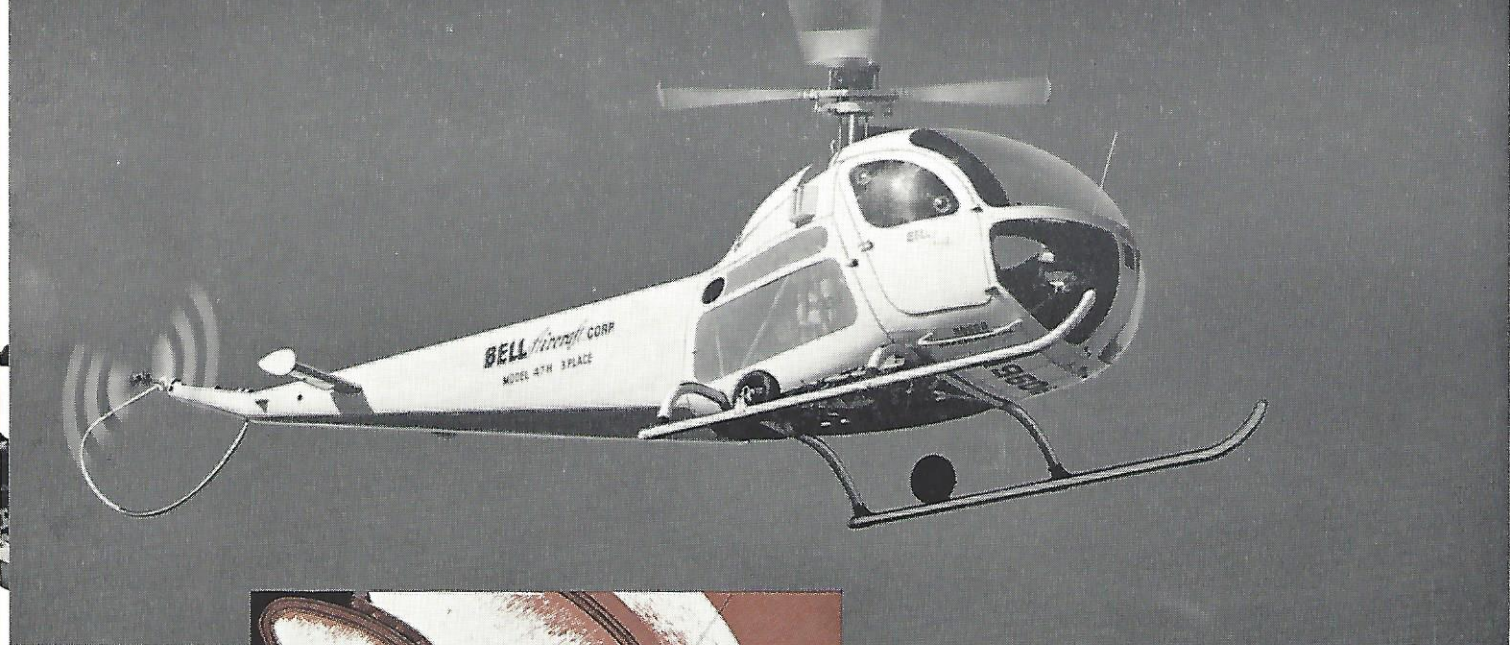
Company's newest developments in guided missiles and rocket propulsion require high degree of scientific and technical skills. Here, rocket fuel analysis is being conducted in one of chemical laboratories at Wheatfield Plant.



A Bell-designed rocket engine is being used in the Nike surface-to-air missile. This is an artist's conception of the U.S. Army's anti-aircraft missile.

Four types of test firings are conducted simultaneously at one of company's rocket engine test facilities. Firings such as these average 40 a day.





The Model 47H, above, is one of the two new Bell commercial helicopters introduced during the year. It presents an entirely new conception in interior, exterior styling.

Interior offers roominess, visibility, wide selection of colors.



the company's helicopter programs since all rotary wing projects were transferred there beginning in 1951.

To augment the company's strong position in the commercial field, two new versions of the basic Model 47 helicopter were introduced during extended cross-country flight demonstrations.

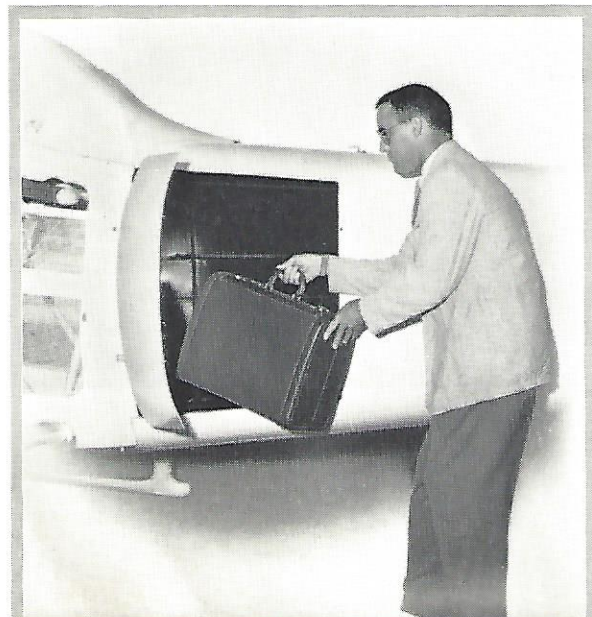
These are the Model 47H, a three-place helicopter which combines utility and attractiveness, and the Model 47J, a four place helicopter which incorporates a wide range of applications both for commercial and military interests.

Model 47H is ideal for executive transportation, general utility.



The Model 47H has already been certificated by the Civil Aeronautics Administration, and the other, the all-purpose Model 47J, is being readied for its certification tests. Each contains the operationally proven design features of the company's Model 47 helicopter, introduced commercially in 1946 and which now has accumulated a million and a half flight hours in world-wide usage.

Improvements include ample cargo space, higher speed, more economy.



The Model 47H is designed primarily for military use and executive and passenger transportation but it still has the overall utility of all Bell helicopters. It features exterior and interior styling, optimum pilot-passenger comfort, improved speed and operating efficiency.

The four-place Model 47J offers features available in no other helicopter. It, too, is newly styled,

has a 250 h.p. engine and can be converted by one man, without the aid of a single tool, into any one of five basic interior arrangements in five minutes or less.

These cabin configurations include all passenger, all cargo, combination passenger-cargo, internal hoist for the movement of persons or cargo and a two-litter arrangement for evacuation of sick or injured, with ample accommodations for pilot and medical attendant.

While each of these new helicopters presents military as well as commercial possibilities, the company offered the U.S. Army an entirely new concept of rotary-wing aircraft, and in an industry-wide competition, the Bell design was selected. This was considered one of the most important military helicopter competitions ever held.

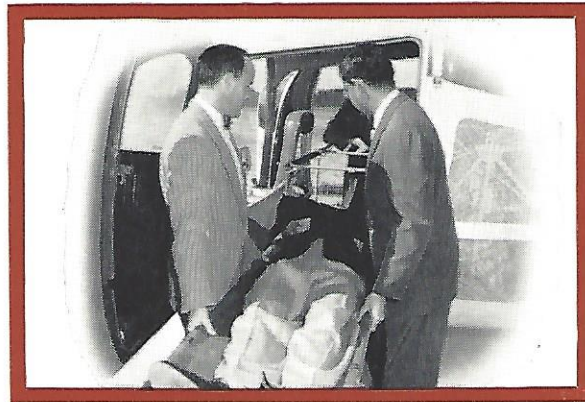
The new Army helicopter, designated Model 212, is a general utility helicopter and is the first to be designed exclusively by personnel of the Texas Division. It is believed to offer a potential as great as any helicopter yet developed.

Another new helicopter version was introduced when the Air Research and Development Command revealed many details of a turbo-jet powered heli-

(continued on page 14)



One or two-man hoist adds to rescue characteristics of Model 47J.



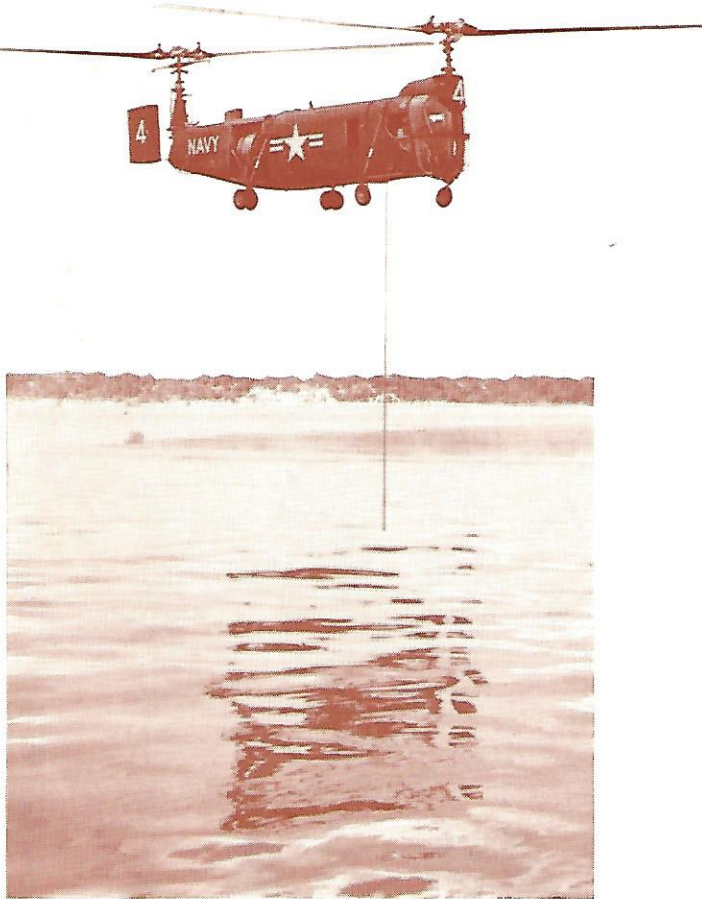
New configuration permits two litters plus medical attendant and pilot.



The Model 47J is the second new helicopter to be introduced in a year. It is a four-place, 250 h.p. helicopter offering five different cabin arrangements.



Custom interior includes even a fold-away desk for executive use.



The U.S. Navy's HSL-1 anti-submarine helicopter demonstrates its underwater sonar devices in this "dipping" test at Eagle Mountain Lake.

copter which the company has developed under contract for the Air Force.

This helicopter, designated the XH-13F, is powered by an Artouste gas-turbine engine and a series of successful flight tests have been conducted by company pilots.

While there was unusual activity in the small helicopter field, there was no lessening of the attention to the company's biggest helicopter, the HSL-1 anti-submarine helicopter under production for the U.S. Navy.

This mass produced twin-rotored helicopter dominated the assembly line area in the company's \$15,000,000 helicopter facility near Fort Worth and at one period there were more than a dozen HSL-1s under concurrent test by either the Navy or the company.

In mid-year, after 1500-mile flights to the Navy's Test Station at Patuxent River, Md., several of the HSL helicopters successfully completed one of the most exacting series of tests any rotary wing aircraft has ever undergone.

Various other tests were conducted, one in particular placing the HSL on a test stand to support the helicopter in oblique, nose-down attitudes varying from 10 to 45 degrees. Tie-down runs produced information on component reliability during flights in attitudes other than normal.

The combination of all these tests indicated the big and powerful HSL to be one of the most efficient and sturdy helicopters in existence.

It is equipped with the latest dipping sonar devices for detection of underwater craft and incorporates a Bell-designed autopilot, which enables it to hover for long periods of time, without fatigue to the pilot.

It carries, in its present configuration, a crew of four, consisting of two pilots and two sonar operators, and has an endurance of three and one-half hours, a forward speed of 120 knots and has flown sideways at 50 knots.

Tests also proved the ship has exceptional auto-rotating and flight stability characteristics, largely due to the HSL's high inertia system and the Bell-developed accelerometer, a device which automatically adjusts pitch to offset wind gusts, updrafts and downdrafts.



Four assembly lines of the company's big HSL-1 helicopter are in full production at the new helicopter plant in Hurst, Texas.

Military services maintained their interest in the Model 47 and a substantial number of these aircraft, which bear the military designation of H-13G, was delivered to the U.S. Army. At year's end, the U.S. Navy ordered 24 HTL-6s, slightly modified version of the Model 47.

Both services use these helicopters extensively for training and other military missions. They are present in most of the main military theaters of the world and several times during the year were pressed into rescue service when severe weather conditions, such as the hurricanes which emanated from the Caribbean area, caused staggering losses in lives and property.

National Guard Headquarters assigned more than 40 of its Bell H-13 helicopters to National Guard units in more than half of the 48 states as a modernization move and to assist local and state government agencies in time of emergency or disaster. Three Bell helicopters also accompanied the Navy's recent Antarctic Expedition.

During 1954, the company's commercial sales climbed 20 per cent above the previous year's volume with total billings for commercial ships and spare parts up 32 per cent over the same period.



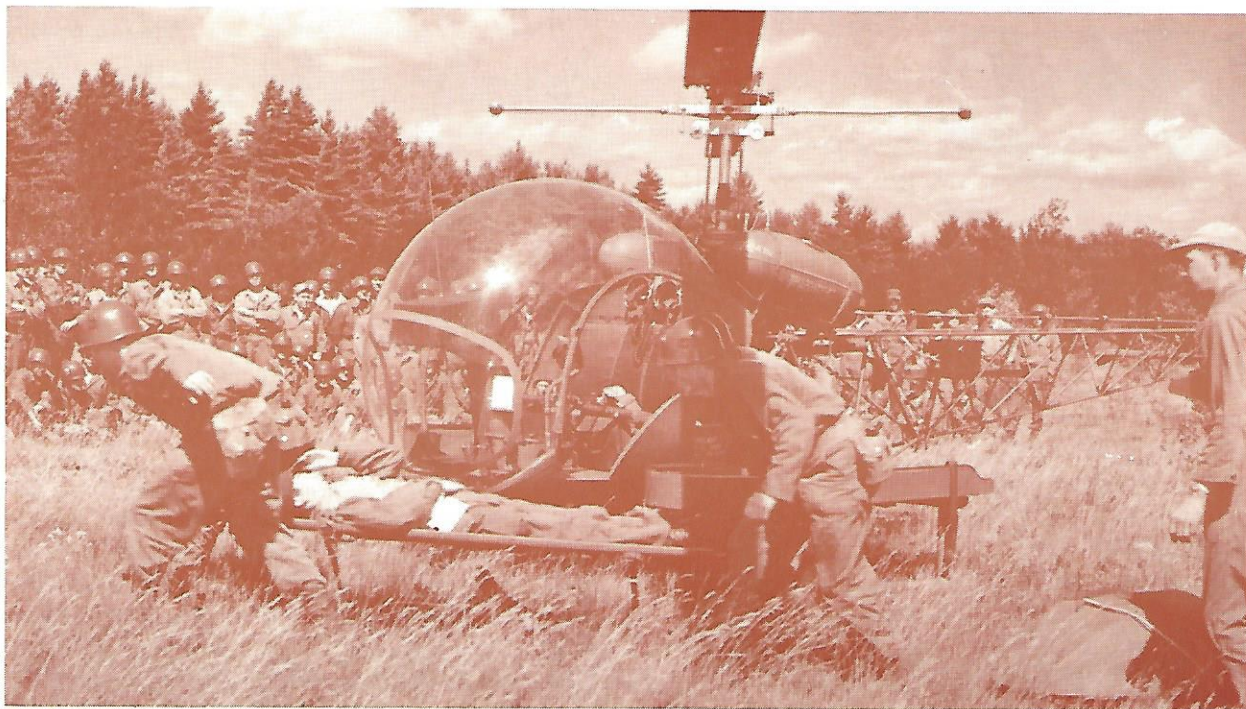
Company pilots have successfully test flown the turbo-jet powered Bell XH-13F helicopter under development for the U.S. Air Force.

Foreign sales accounted for more than half of the total commercial billings with deliveries being made to 37 different commercial and foreign military operations, 26 of which received their first Bell helicopters.

By the year's end, more than 300 military and civilian pilots and over 500 mechanics had graduated from the company's Helicopter Training School since its inception in 1946.

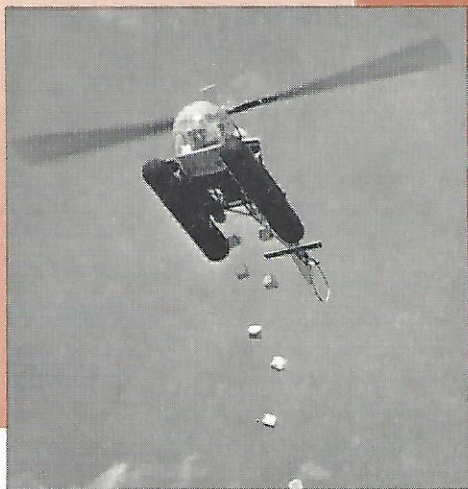
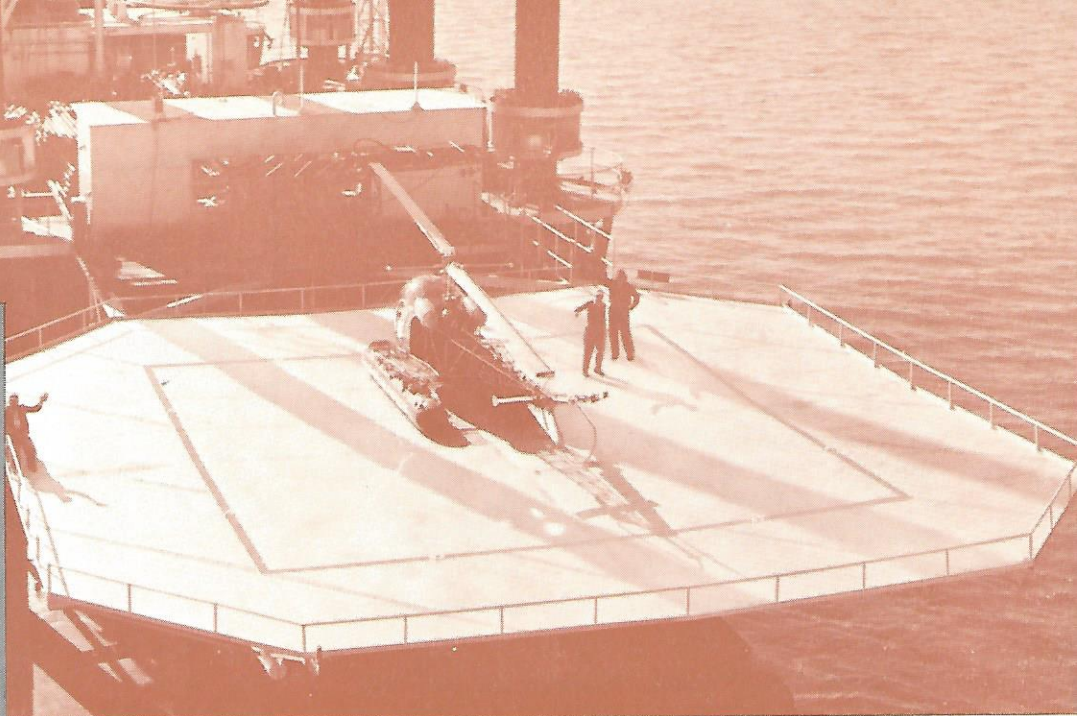
The licensing agreements entered into between the company and two foreign manufacturers also reached an important milestone when each licensee successfully produced and tested its first Bell helicopter.

Bell H-13 helicopters are an integral part of all training maneuvers of the U. S. Army. Here ground troops are given a demonstration of the evacuation procedures by helicopter.



Bell helicopters are rendering highly useful, economical services all over the world. One of the newest applications, illustrated in the photo to the right, is the assistance given major petroleum companies in their off-shore search for oil.

Photo by Shell Oil Company



Canada's forest fighters secure effective and early control of fires by water-bombing from Bell helicopters. (Upper left)



Serving as an aerial crane, a French-owned Bell 47-G carries large section of pipe to a mountain-top installation.



Airmail is delivered in regular service by Bell helicopters over the otherwise impassable snow and ice covered reaches of Sweden.



The sea-going characteristics of a Bell helicopter built under license in Japan is demonstrated in this ship-board landing.

The Nippon Machinery Trading Company of Tokyo delivered its first Japanese-built Model 47 to the Japanese National Security Force and Costruzioni Aeronautiche Giovanni Agusta of Cascina Costa delivered its first Italian-built Model 47 to the Italian Air Ministry.

While many industrial users and commercial operators continued to find unlimited utility with Bell helicopters in many of the proven fields — such as agriculture, air mail, power and pipe line patrol, construction, mapping and other jobs — new applications developed greater attention in 1954.

These included off-shore oil work and prospecting on an increasing scale for vital minerals in rugged and impassable terrain. Bell helicopters are providing quick over-water transportation for men, supplies and equipment in the off-shore oil fields and detailed and precise information is being secured in the quest for uranium and other deposits by helicopters carrying special instrumentation.

Recognition by many major companies of the helicopter's versatility and economical performance grew in 1954. These companies, some of which had leased helicopters from commercial operators for specific jobs, purchased their own helicopters for continuing uses.

To name a few, Magnolia Petroleum took delivery of a Bell 47G and assigned it to work on off-shore operations in the Gulf of Mexico and Anaconda Copper Mining Company began using a Bell 47G to search for uranium in the rugged Colorado Plateau region.

REVIEW OF SUBSIDIARIES

The acquisition of two wholly-owned subsidiaries through an exchange of stock and the founding of a third subsidiary marked the company's endeavors in fields outside of the defense industry.

As has been pointed out in previous reports, the company is convinced it is serving the best interests of its stockholders and the government by acquiring established and reputable concerns whose principal business operations can be converted to defense work in the event of an emergency.

In June, 100 percent interest in the American Wheelabrator and Equipment Corp. of Mishawaka, Ind., was acquired. In October, complete ownership of the Hydraulic Research and Manufacturing Company of Burbank, Calif., was secured and this year, the Bell Exploration and Development Corp. was formed, with headquarters in Fort Worth.

American Wheelabrator was founded in 1908 and has played an important part in the mechanization of industry in this country. Its products embrace



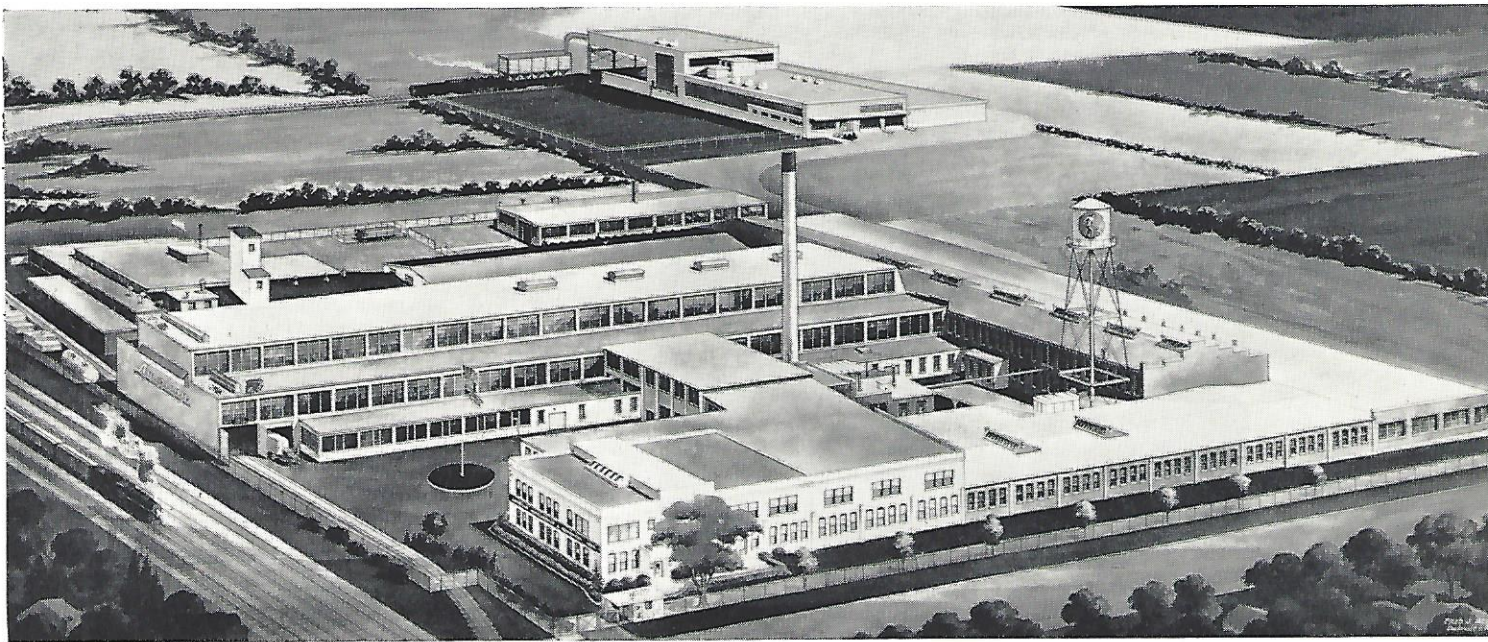
The Burbank, Calif., main plant of the Hydraulic Research and Manufacturing Co., which joined the Bell Aircraft group in 1954.

blast cleaning equipment, dust and fume control equipment and foundry equipment. It also has manufacturing licensees in foreign countries.

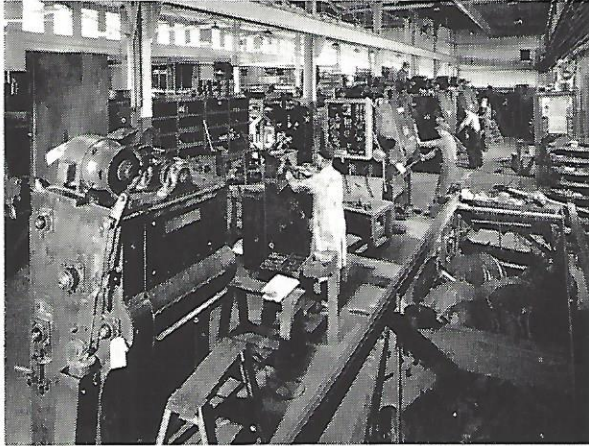
It is a recognized leader in the field of blast cleaning, and products included in this category bear such trade names as Wheelabrator Airless Blast Equipment, Airblast Equipment, Liquamette Wet Blast Equipment and Wheelabrator Shot Peening Equipment.

Its best known product is the Wheelabrator, a machine which revolutionized the blast cleaning process by hurling abrasive without use of costly compressed air. This process involves controlled centrifugal force and has been highly successful because of its thorough cleaning action, production speed and many cost reducing advantages.

The Wheelabrator machine performs its functions in many industries including automotive, aviation, railroad, steel, foundry, forge shops, home appliance, sanitary wares, reconditioning and others.



An aerial view of the facilities of the American Wheelabrator and Equipment Corp. at Mishawaka, Ind. This is the second new subsidiary acquired last year. Wheelabrator's new steel shot plant is shown top, center.



The assembly line for Tumblast machines at American Wheelabrator is just one of many final assembly areas for company's diverse products.



High precision workmanship is essential to meet the exacting requirements of the valves and other devices produced by Hydraulic Research.



Mass production at high rates of speeds keeps a steady flow of Schoenberger valves and fittings flowing to the gas appliance industry.

American Wheelabrator developed a successful method of producing cast steel shot and built its own facilities in 1952 to turn out this expendable product. This plant, adjacent to the main Wheelabrator factory, is the largest and most modern of its kind but the demands on it were so great, an addition of 18,000 square feet is being built.

Wheelabrator is also an important factor in the production of equipment for controlling dusts and fumes in such processes as grinding, blast cleaning, packaging, pulverizing, milling, smelting and others. It manufactures a cloth-bag-type filter extremely efficient in trapping dusts and fumes and has wide applications in the chemical, mining, metallurgical, flour milling, rubber and cement fields.

The programs of Hydraulic Research are closely aligned with some of Bell Aircraft's endeavors, particularly in the servomechanical field. Hydraulic Research designs, develops and produces small, lightweight, high pressure hydraulic valves largely with aircraft applications, including landing gear systems, control circuits and brakes.

Bell-developed servo and hydraulic valves have already been incorporated in Hydraulic's production program and this company is expected to play a widening role in supplementing our efforts in this field as well as furthering its own products.

The W. J. Schoenberger Company, acquired as a subsidiary in 1948, continues to be an important source of supply for the gas appliance industry. Last year, for instance, Schoenberger introduced a new top burner timer for gas ranges and since then, more than 40,000 ranges have been equipped with this device. This was the first such product of its type to be placed on the market.

Its operation is simple since after the top burner is ignited, the timer may be set to any predetermined time from one to 60 minutes and at the end of this predetermined time the burner shuts off, thus eliminating any observation normally required.

Bell Aircraft Supply Corporation continued its helicopter sales and spare parts operation, principally on the West Coast. To further explore and expand the utility of Bell helicopters in the geophysical and geodetic field, the Bell Exploration and Development Corp. was formed and is scheduled to begin operations in 1955.



Consolidated Income and Earnings Retained in the Business

	For the years ended December 31	
	1954	1953
SALES — net (Including billings under CPFF contracts)	\$185,646,114	\$145,967,100
COSTS AND EXPENSES (Including interest expense of \$521,882 in 1954 and \$880,944 in 1953)	173,543,768	136,368,568
	\$ 12,102,346	\$ 9,598,532
OTHER INCOME — net	951,897	962,691
Income before provision for Federal taxes on income	\$ 13,054,243	\$ 10,561,223
PROVISION FOR FEDERAL TAXES ON INCOME (Including excess profits tax of \$1,700,000 in 1953)	6,650,000	7,095,800
NET INCOME FOR THE YEAR (Note 1)	\$ 6,404,243	\$ 3,465,423
EARNINGS RETAINED IN THE BUSINESS, at beginning of year	17,308,500	15,611,833
	\$ 23,712,743	\$ 19,077,306
Dividends paid — \$1.25 per share in 1954 and \$1.00 per share in 1953 (after adjustment for stock split in 1954—Note 3)	3,233,249	1,768,806
EARNINGS RETAINED IN THE BUSINESS, at end of year (Note 2)	\$ 20,479,494	\$ 17,308,500

The consolidated provision for depreciation and amortization was \$2,125,000 in 1954 and \$1,080,000 in 1953. The provision for 1954 included the portion of the amortization allowable as an element of cost under certain Government contracts. Such cost had no material effect on the results of operations for the year 1954.

The accompanying notes are an integral part of these statements.



CONSOLIDATED

Assets

	December 31	
	1954	1953
CURRENT ASSETS:		
Cash	\$ 7,632,150	\$ 4,863,705
Receivables —		
Defense contracts (Including costs and fees under CPFF contracts: 1954 — \$5,676,965; 1953 — \$7,487,602)	19,704,306	17,889,565
Other trade, notes and sundry receivables	5,258,811	2,266,311
Inventories, less partial payments of \$59,637,244 and \$45,411,636 in 1954 and 1953 respectively (Note 4) —		
Raw materials, supplies and perishable tools, generally at average cost	7,517,016	6,693,329
Work in progress, at lower of cost or market	12,608,151	15,426,428
Prepaid insurance and other expenses	724,620	733,214
Total current assets	<u>\$53,445,054</u>	<u>\$47,872,552</u>
MISCELLANEOUS INVESTMENTS, at cost or estimated realizable amount	<u>\$ 658,084</u>	<u>\$ 850,340</u>
PROPERTY, PLANT AND EQUIPMENT, at cost:		
Land and buildings	\$12,408,540	\$10,775,302
Machinery, equipment, etc.	10,337,313	7,876,510
Leasehold improvements, net	712,060	529,223
	<u>\$23,457,913</u>	<u>\$19,181,035</u>
Reserves for depreciation and amortization	8,255,608	6,678,255
	<u>\$15,202,305</u>	<u>\$12,502,780</u>
DEFERRED CHARGES (Including design rights and patents at \$1)	<u>\$ 287,127</u>	<u>\$ 106,786</u>
	<u>\$69,592,570</u>	<u>\$61,332,458</u>

The accompanying notes are an integral part of these statements.

BELL Aircraft Corporation

BALANCE SHEETS

Liabilities

	December 31	
	1954	1953
CURRENT LIABILITIES:		
Notes payable (Note 2)	\$ 6,500,000	\$12,000,000
Accounts payable	7,594,623	7,023,624
Accrued wages and benefits, taxes, etc.	11,041,673	8,921,690
Reserve for Federal taxes on income	8,807,972	8,767,142
Total current liabilities	<u>\$33,944,268</u>	<u>\$36,712,456</u>
FIRST MORTGAGE 4½% BONDS, due December 1, 1961, less \$500,000 included in accounts payable (Note 2)	<u>\$ 1,250,000</u>	<u>\$ 1,750,000</u>
STOCKHOLDERS' EQUITY (Note 2):		
Common stock, authorized 3,500,000 shares at \$1 par value per share (Note 3) —		
Issued and outstanding — 2,590,692 shares	\$ 2,590,692	\$ —
884,478 shares	—	884,478
Capital surplus, per accompanying statements	11,328,116	4,677,024
Earnings retained in the business, per accompanying statements	20,479,494	17,308,500
	<u>\$34,398,302</u>	<u>\$22,870,002</u>
	<u>\$69,592,570</u>	<u>\$61,332,458</u>

The accompanying notes are an integral part of these statements.

and Subsidiary Companies

FINANCIAL HIGHLIGHTS

from July 10, 1935 to December 31, 1954

	ACCUMULATIVE TOTALS
Sales	\$1,637,327,530
Income before taxes	110,630,262
Federal taxes on income	75,438,750
Net income	35,191,512
Dividends	13,917,986
Total assets	\$ 69,592,570
Current assets	53,445,054
Current liabilities	33,944,268
Working capital	19,500,786
Land, buildings, machinery and equipment — gross	23,457,913
Reserves for depreciation and amortization	8,255,608
Property, plant and equipment — net	15,202,305



BELL *Aircraft* CORPORATION
DIVISIONS AND SUBSIDIARIES

DIVISIONS

NIAGARA FRONTIER DIVISION

P.O. Box 1, Buffalo 5, N. Y.

Wheatfield Plant	Kenmore Avenue Plant	Chandler St. Plant
Northland Avenue Plant	Military Road Plant	Urban Street Plant
Main St. Laboratory	Niagara Falls Plant	Bell Test Center

TEXAS DIVISION

P.O. Box 482, Fort Worth 1, Texas

Hurst Plant	Globe Plant	Kent Plant
-------------	-------------	------------

COMMERCIAL PRODUCTS DIVISION

701 Seneca Street, Buffalo 10, N. Y.

SUPPORTING FACILITIES

Holloman Air Development Center, N. Mex.	Edwards Air Force Base, Calif.
Washington (D. C.) Office	Dayton (Ohio) Office

SUBSIDIARIES

AMERICAN WHEELABRATOR AND EQUIPMENT CORPORATION
Mishawaka, Indiana

BELL AIRCRAFT SUPPLY CORPORATION
P.O. Box 482, Fort Worth 1, Texas
Western Division, 1818 Victory Blvd., Glendale, Calif.

BELL EXPLORATION AND DEVELOPMENT CORPORATION
P.O. Box 482, Fort Worth 1, Texas

HYDRAULIC RESEARCH AND MANUFACTURING COMPANY
2835 N. Naomi St., Burbank, California

THE W. J. SCHOENBERGER COMPANY
8810 Harvard Avenue, Cleveland 5, Ohio