

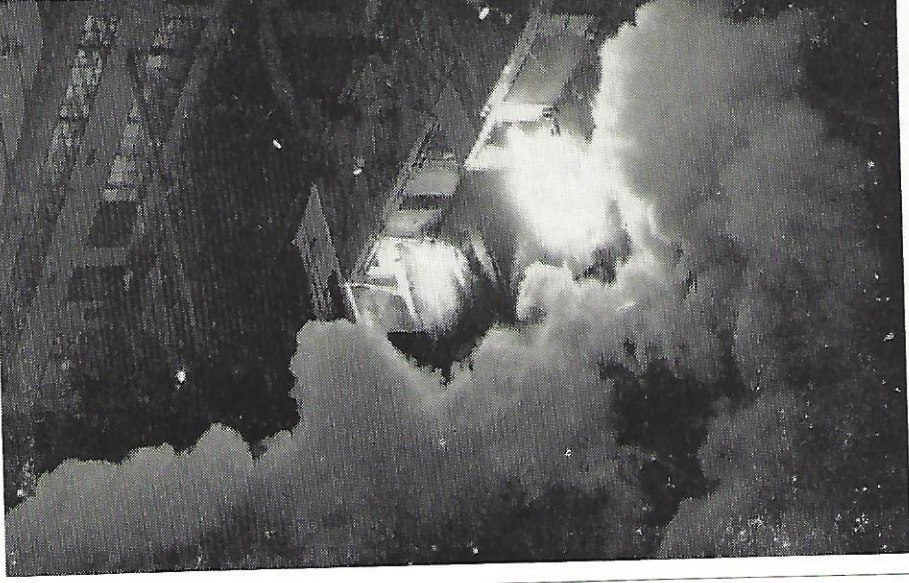
# Satellite Planets Possible in Next Twenty Years

By ROY J. SANDSTROM, Vice-President for Engineering

While it is rather difficult to predict where we will be in the field of aviation in the next twenty years, we can make certain conjectures based on the accomplishments in the realm of flight that have taken place in the past twenty years, which is the length of time Bell Aircraft has been in the business. It seems rather significant and attests to the technological advances made by the engineers and scientists of the aviation industry when one realizes that in the year 1935 the fastest airplane cruised at 250 miles an hour. The largest commercial airplanes had a seating capacity somewhat less than 25 persons, and there was essentially one means of propulsion, a conventional reciprocating engine driving a propeller.

Today the fastest airplane — the Bell X-1A — has reached a speed two and one-half times the speed of sound and has carried man aloft to altitudes never before believed possible. Some versions of commercial airplanes of today have a seating capacity upwards of 150 persons. In this short period of time there have been many new means of propulsion developed, including rocket engines, ram-jets, pulse jets, turbo-jets and turbo-propeller, and in the very near future man's greatest discovery, nuclear energy, will be powering our aircraft through the skies.

In the last two decades, guided missiles have progressed from the dream stage of reality. One can

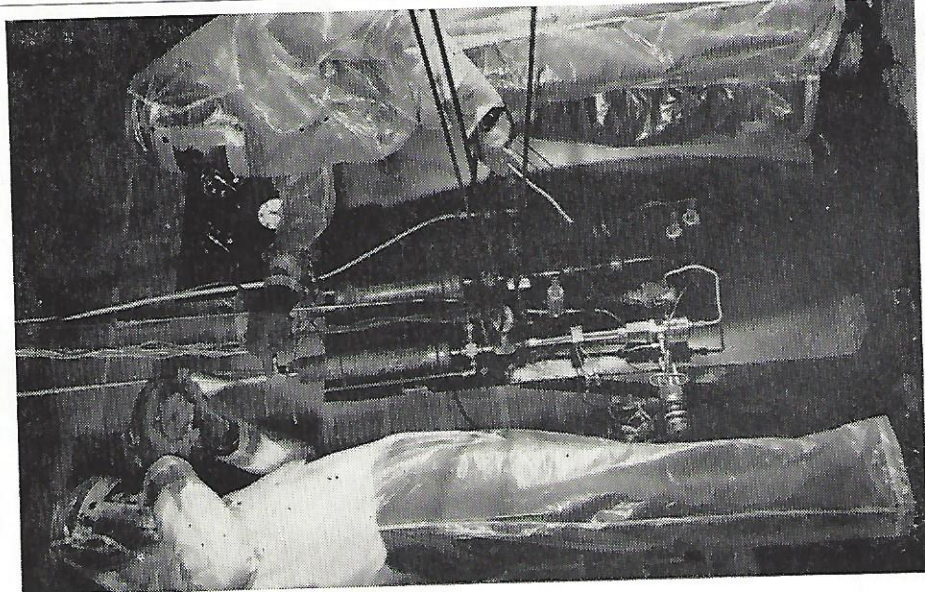


**NIGHT ROCKET FIRING** illuminates test cell area at Wheatfield. Bell is one of nation's few prime contractors for liquid-fuel rocket engines, also handled both R and D and production assignments for engine used on Nike missile.

Now as to what may be expected in the field of aircraft in the next twenty years we have only to look at some of our more recent accomplishments in this realm. The vertical take-off and landing principle has been proven to be sound. I expect that all fighter-type, and possibly light bomber type, aircraft will have a vertical take-off capability. It is also to be expected that many commercial airplanes will be operating on this principle.

With the guided missiles of the near future solving some of our more notable flight problems, it is not difficult to envision aircraft of the commercial type operating at speeds of twenty-five times the speed of sound and at altitudes of 250,000 feet.

With the pioneering spirit prevalent throughout the aircraft industry and with the industry's continuing accumulation of knowledge, we are on the verge of significant technological break-throughs. It does not seem inconceivable that we in our life time may witness man's flight into space in a satellite.



**LOOKING LIKE MEN FROM MARS**, rocket technicians prepare an engine for test firing at Wheatfield rocket house. Company also operates Bell Test Center as rocket test installation. Mars-like outfits are carefully devised safety garments.

# Bell's 'R and D' Means More Progress Faster

By JOHN LONKHUYZEN  
Chief, Engineering Technical Departments

many problems and they are so complicated that we need teams of trained specialists to back up the

find the right way to design new military airplanes. It is a very unpredictable business,

electronics, optics, servomechanisms, mathematics, even psychology. It means new equipment in our laboratories and technicians to



The importance of research and development in aircraft production was illustrated in a visit to Bell early in June by a group of people from one of the large television networks, which was planning a series of weekly shows on aviation.

They were particularly concerned with putting together a sample program which would really "sell" the companies they hoped to get as sponsors.

The interesting thing is that these men were fully convinced that the theme of this all-important first television program had to be "research and development," that this more than any other one thing characterized modern aviation.

So they came to Bell to find out about the X-1, the X-2, rockets, missiles, and research and development.

It was Larry Bell who as early as 1945 recognized the importance of new ideas to the defense industry and directed the company into concentrating on the development of such ideas.

Today this recognition of the importance of R & D is nationwide. In fact, we now have an assistant secretary of defense for research and development and an assistant

secretary of the air force for research and development.

During and after the war, we found that pilots could do their jobs better if they had automatic devices to do some things, such as spotting the enemy (radar), aiming the guns (fire control), flying the airplane (autopilots), exploding the shells (proximity fuses), navigating (computers) and many others.

In fact, so many things might be done that in many cases it was more efficient to leave the pilot out altogether. This led to guided missiles. These were all new inventions and demanded that we do what the Wright brothers had done, try over and over to make them workable and practical, each time fixing something that wasn't right.

Today, however, there are so

ingenuous theories... laboratories to back up the experimental shop and we need great quantities of test hardware before production can begin.

Research requires many models which are altered almost daily to find the right way to design something. Sometimes it requires complete airplanes — research airplanes such as the X-1, X-2 and X-5—to

## 926 Receive Tuition Aid

Tuition assistance has been granted by Bell to 926 employees who are now attending or have attended area colleges, universities and technical and trade institutions.

In order to be eligible for tuition assistance, an employee must pursue a course of study directly related to his work at Bell. Percentage of tuition paid by the company is based on the calibre of school work maintained by the employee.

Some things which look almost impossible turn out to be much easier than anyone expected (such as flying faster than the speed of sound). Other things which seemed rather easy turned out to be very difficult.

As aircraft became more complex, our customer, the Military Services, found it important to hold us responsible for seeing to it that all of these automatic devices worked together properly.

They didn't want the airframe manufacturer blaming the autopilot supplier or the fire control supplier if the airplane could not accomplish its mission.

Just as with your car, you blame the manufacturer if it doesn't start, not the company that supplies the starter, and it is the manufacturer you expect to fix it.

Research and development means many new things at Bell.

It means many new technical skills which we never had before, specialists in ceramics, fuels, elec-

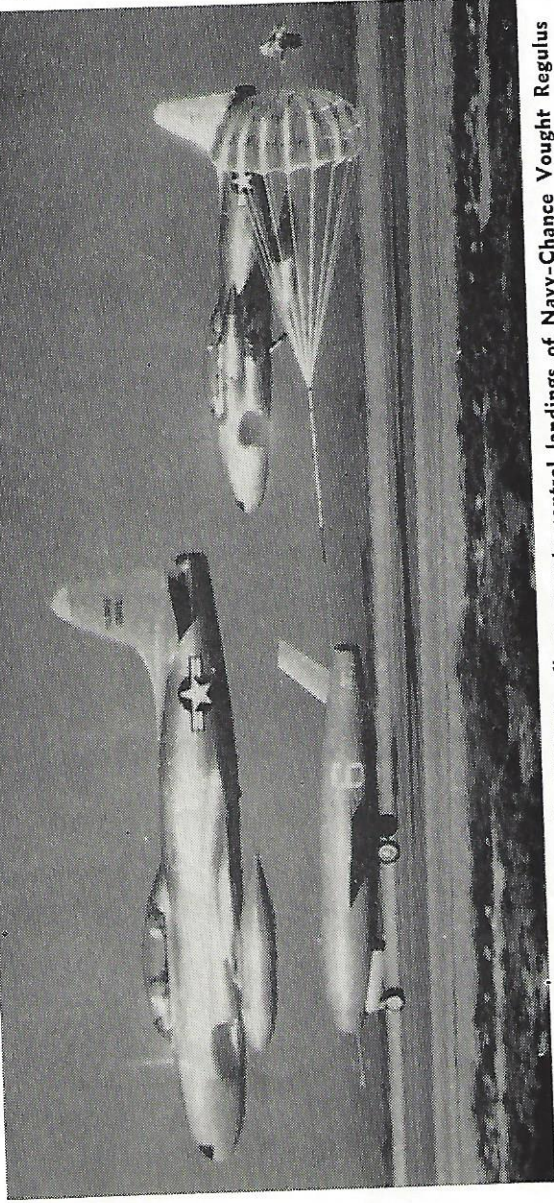
operate and frequency vibrators, analogue simulators, acid analysis skills, heat transfer apparatus, spectrum analyzers, even a supersonic wind tunnel.

Most important, of course, it eventually means new production—electronics, guided missiles, hydraulic valves and rocket motors. Today we deliver many products which are the direct result of R & D, which in some cases started many years back.

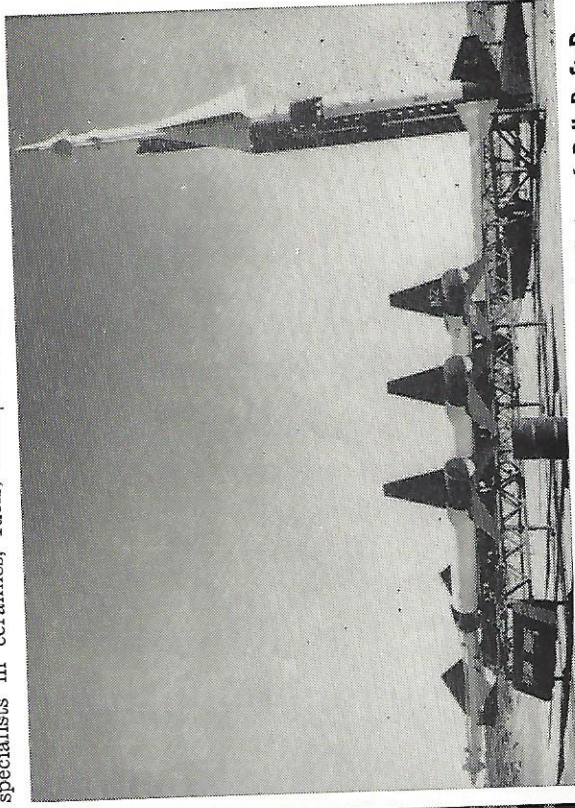
For example, the R & D for proportional control equipment which Bell builds for Chance Vought started back in 1946, when we first tried a remote radio control system on the P-63.

The R & D for today's helicopters was started by Art Young with small models in a garage in Gardenville in 1941.

Similarly, today, research and development is starting on new ideas which will be important products ten years from now.



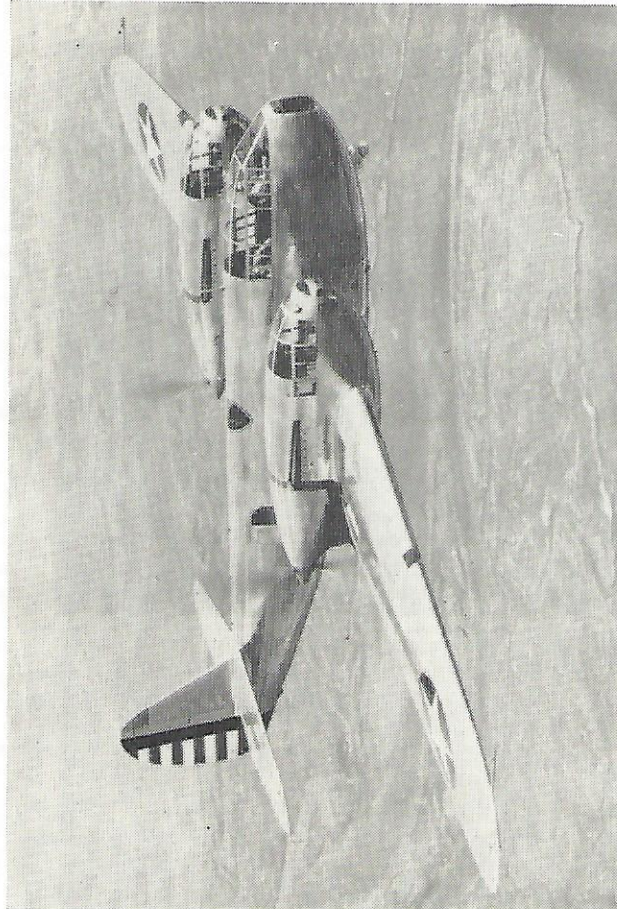
**BELL PROPORTIONAL CONTROL SYSTEM** allows remote-control landings of Navy-Chance Vought Regulus missile after test firing with no damage to the airframe. One missile has been test-fired 15 times, landed each time by this system for great time and financial savings.



**NIKE ANTI-AIRCRAFT MISSILES** also embody fruits of Bell R & D, this time on a Bell-produced liquid-fuel rocket engine powering the deadly weapon.

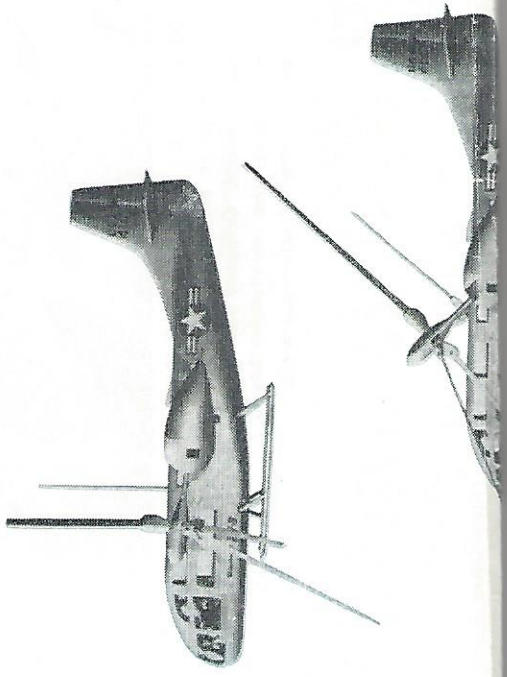


# Bell's Advanced Designs

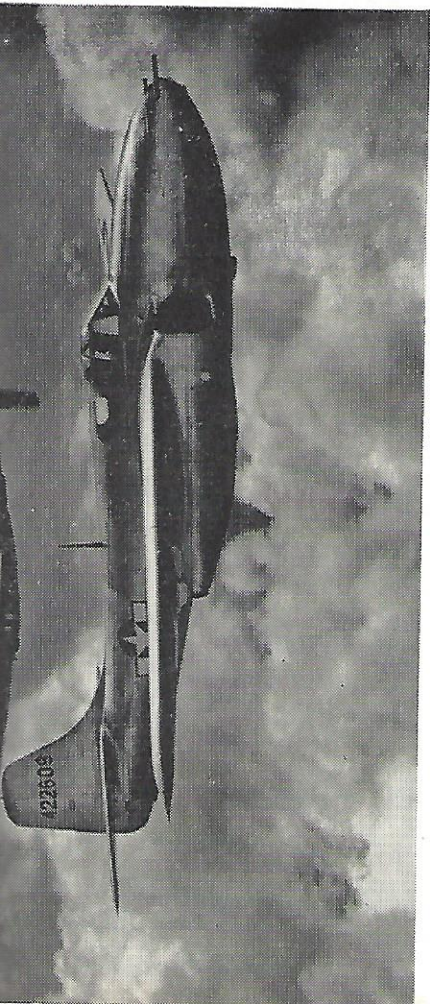


**FIRST BELL PLANE** was the YFM-1 Airacuda, twin-engine escort fighter. 'Cuda was far ahead of its time, never went into mass production. Fourteen were built.

**FIRE-SPITTING COBRAS** carried 37 mm. cannon in nose for heavy attack power. Bell manufactured 9,588 Airacobras, 2,971 Kingcobras.

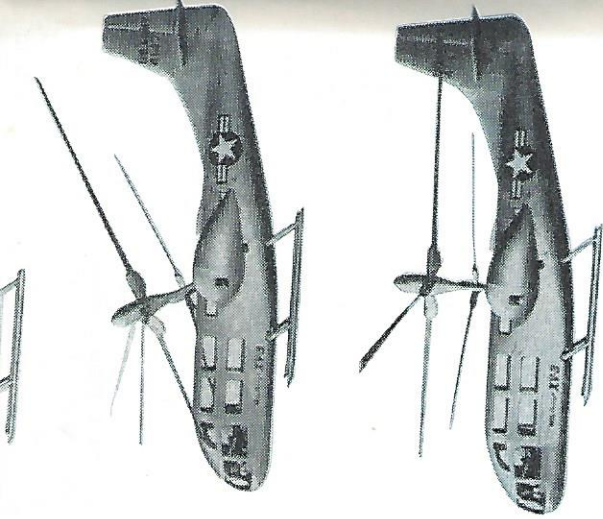




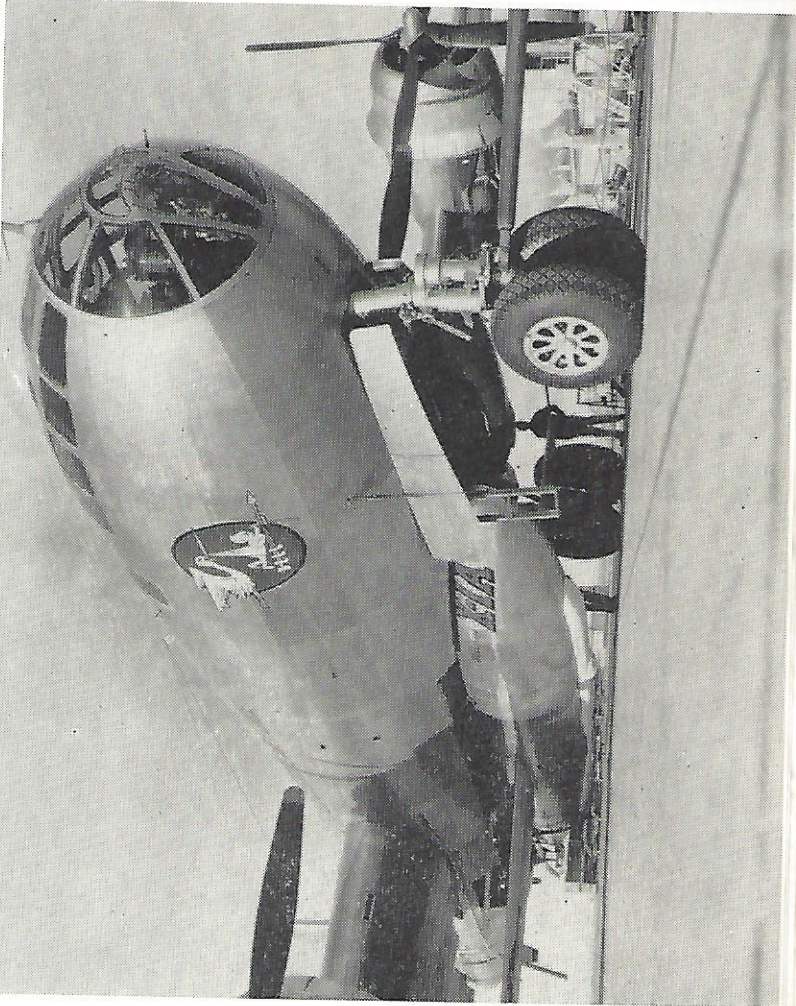


**WARTIME FIGHTERS** include (reading down) XP-77, experimental all-wood plane; P-39 Airacobra; P-63 Kingcobra; P-59 Airacomet, America's first jet plane.

**RADICAL VERTICAL-FLIGHT PRINCIPAL** is embodied in XV-3 convertiplane. Craft takes off like helicopter, converts to standard fixed-wing configuration by tilting rotors down to propeller position during flight. Ship reverts to helicopter configuration for descent.

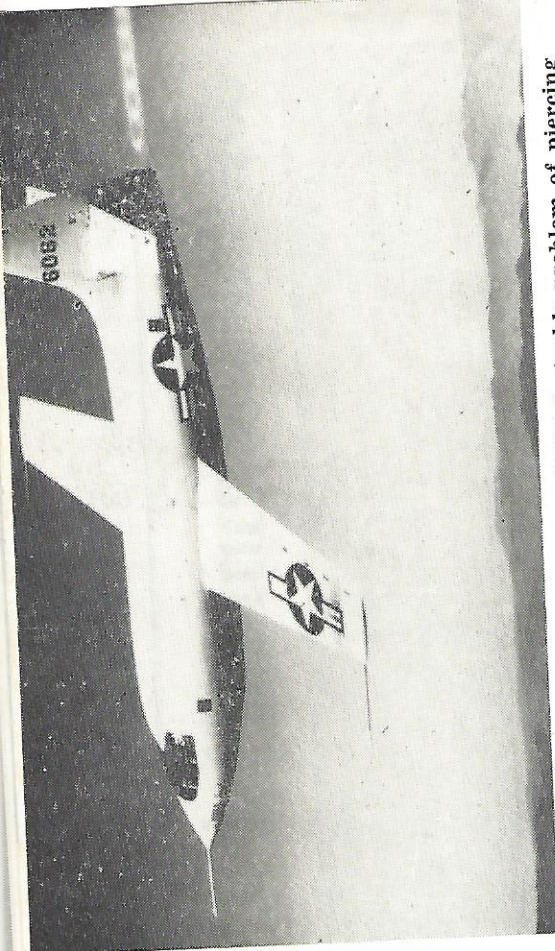
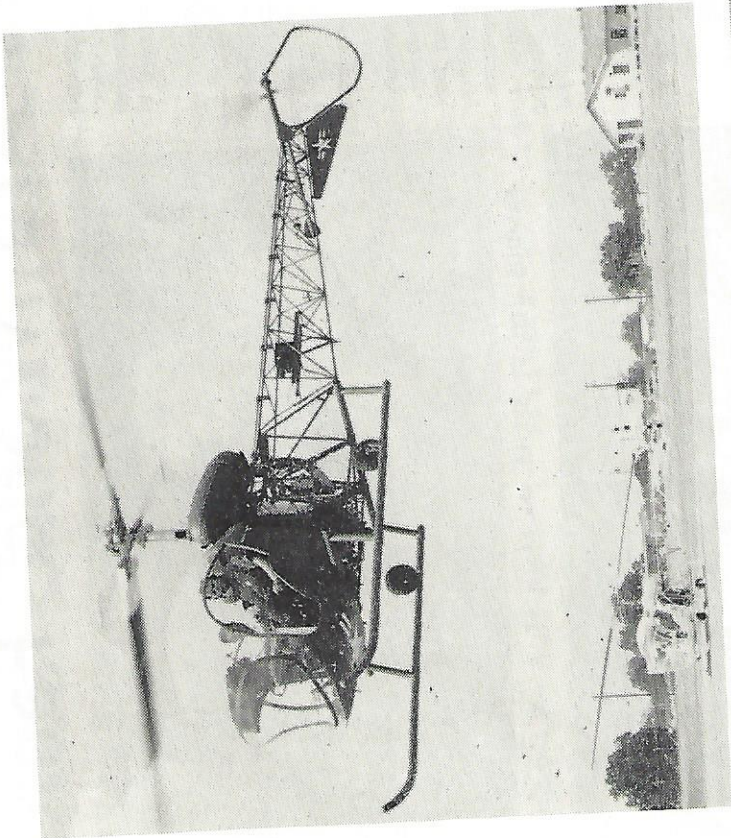


**FLIGHT STORY, X-1A:** world's fastest and highest airplane is carried aloft in bomb bay of B-29, dropped from mother ship to

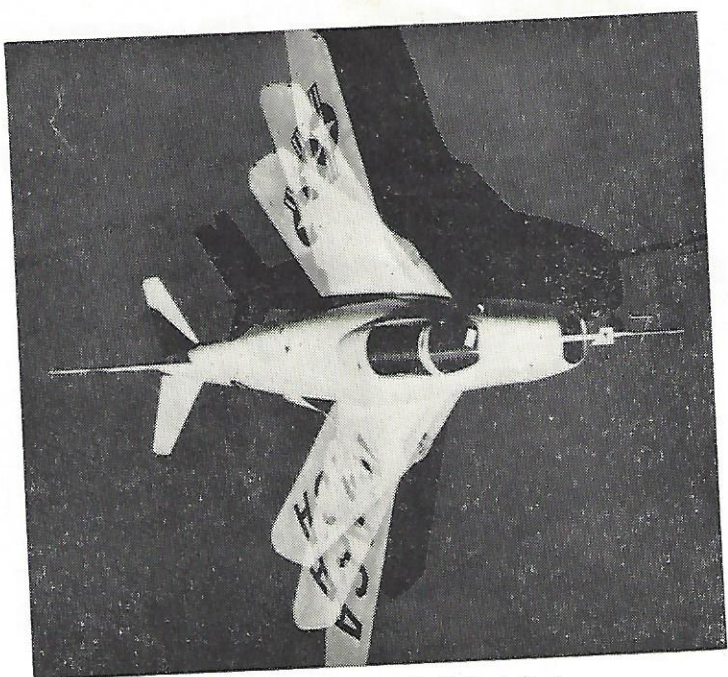




# ave Paced the Industry



DESIGNERS 'THREW AWAY THE BOOK' to tackle problem of piercing sound barrier, came up with the sleek sturdy X-1. It made world's first supersonic flight Oct. 14, 1947.

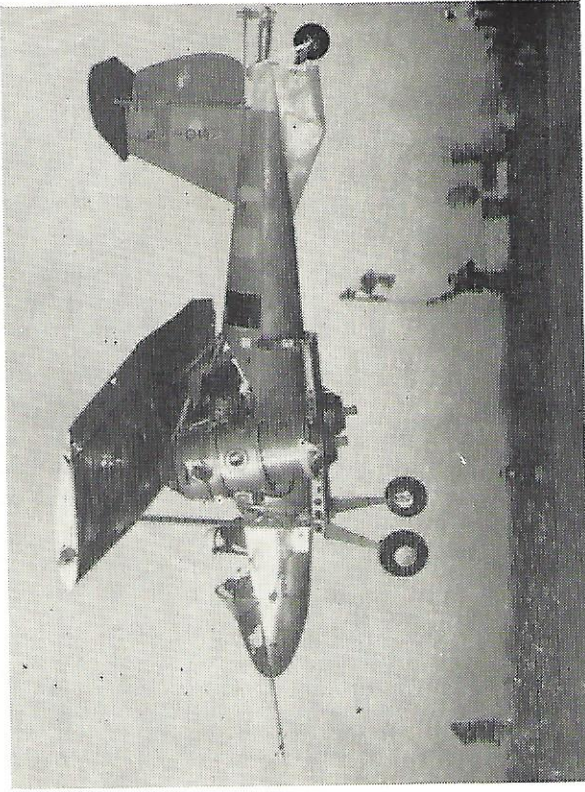


SECOND 'X' PLANE to go into test, the X-5, was designed as a laboratory aircraft to test aerodynamic effects of swept-wing configuration. World's first plane able to vary degree of wing sweep-back during flight, X-5 incorporated device which automatically changed center of gravity to compensate for changes in wing position.

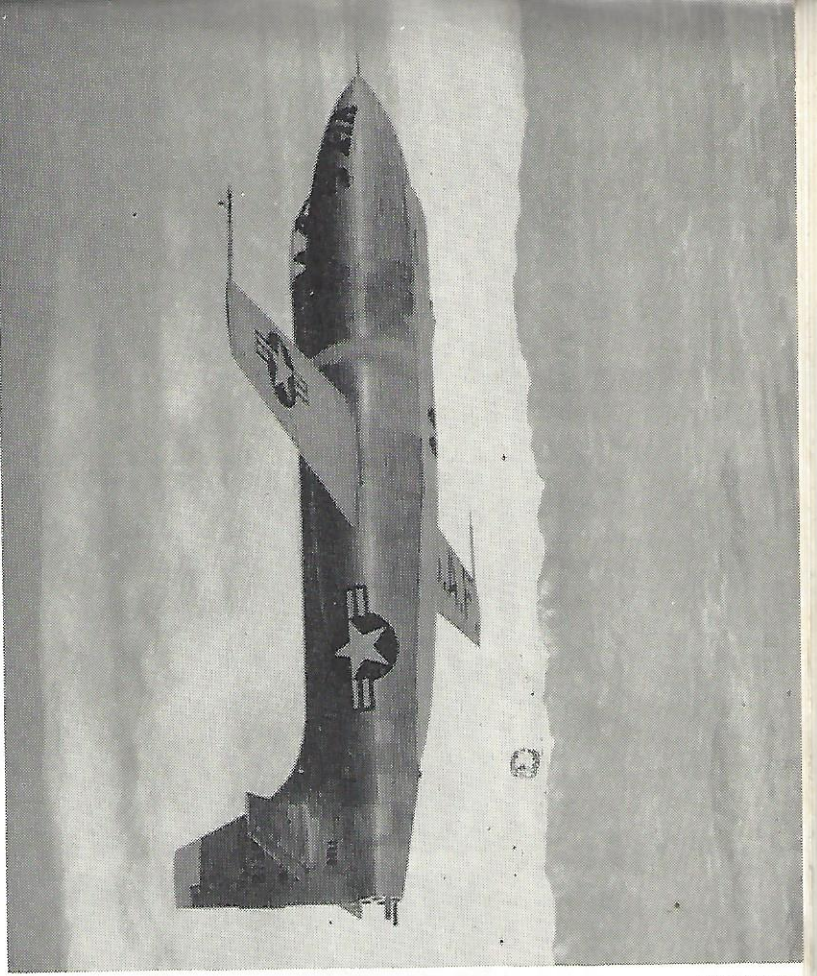
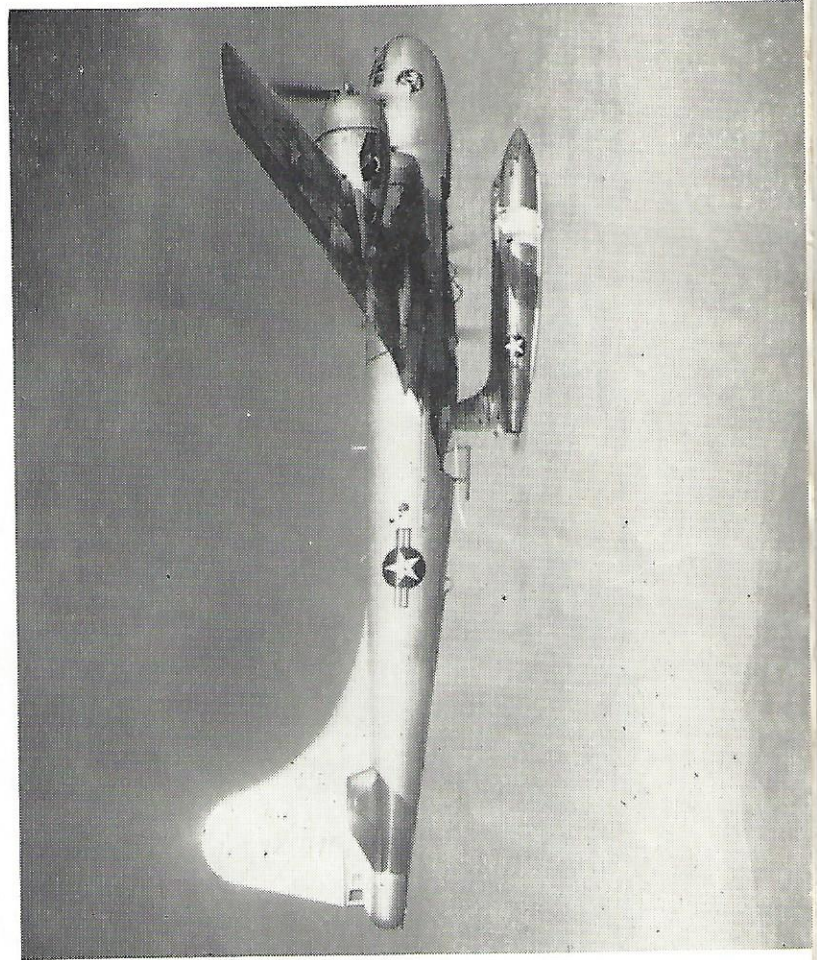


**SINGLE- AND TANDEM-ROTOR HELICOPTERS** are both produced by company. Single-rotor Model 47 (top) is one of popular utility series, was modified (as H-13s and HTLs) for rescue, liaison assignments for the military. Tandem-rotor HSL-1 (lower photo) was developed by Bell for Navy as submarine hunter-killer craft.

**BUILT TO PROVE A THEORY**, Bell's revolutionary VTOL successfully demonstrated feasibility of jet-powered vertical-takeoff aircraft. Unlike 'tail-sitter' types of VTOLs, Bell model allows pilot to remain in normal sitting position during all stages of flight. Engines are perpendicular for take-off, rotate to horizontal position for forward flight. Like XV-3, VTOL would eliminate need for long airport runways.



at highest speeds yet recorded for piloted aircraft. Test Pilot Maj. Charles E. 'Chuck' Yeager, USAF, piloted both X-1, X-1A on record-smashing flights.





# Bell's Commercial Copters Are World-Famous

When President Larry Bell welcomed guests to the formal opening of Bell's new Texas Division in June of 1952, he observed that "this is only the beginning for helicopters, their services and conveniences."

By its very nature the helicopter is possessed of unlimited potential, he said, and "helicopters have barely scratched the surface of their great utility."

He added that "there still is much to be done in designing, engineering and production."

This was six short years after a Bell helicopter had been awarded the world's first CAA commercial license. Already, hundreds of Bell commercial helicopters were per-

Production also is beginning on the Model 47J, a four-place streamlined helicopter powered by the 260 hp. Lycoming used in the Model 47G-2.

This helicopter looks like a larger 47H-1 except that the pilot's seat is placed forward in the cockpit, while three passengers sit behind him on a comfortable, automobile-width cushioned seat. It is scheduled to go on sale in 1956 to meet an already active demand.

On Bell's 20th anniversary, more commercial Bell helicopters are in operation than the total of commercial helicopters sold by all other manufacturers.

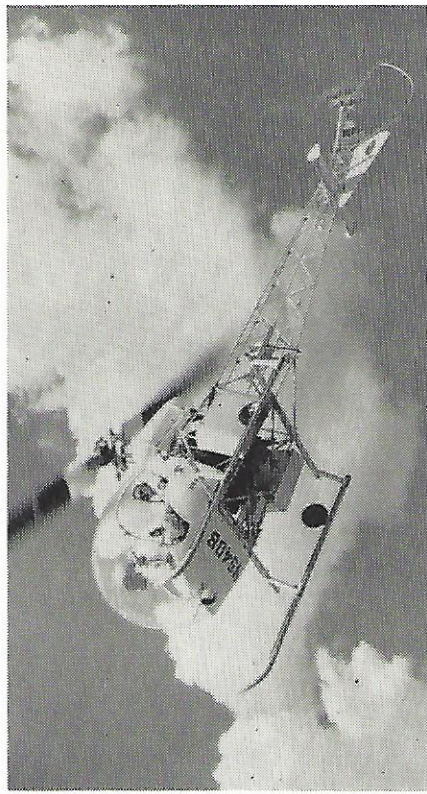
Commercial helicopter sales are steadily increasing. Texas Division officials say the ceiling is unlimited. Said Cully Weadock, manager of the division's commercial sales:

"The commercial market is growing and commercial sales should continue a healthy climb from year to year along a steadily-rising line that will reflect few sensational spurts either upward or downward."

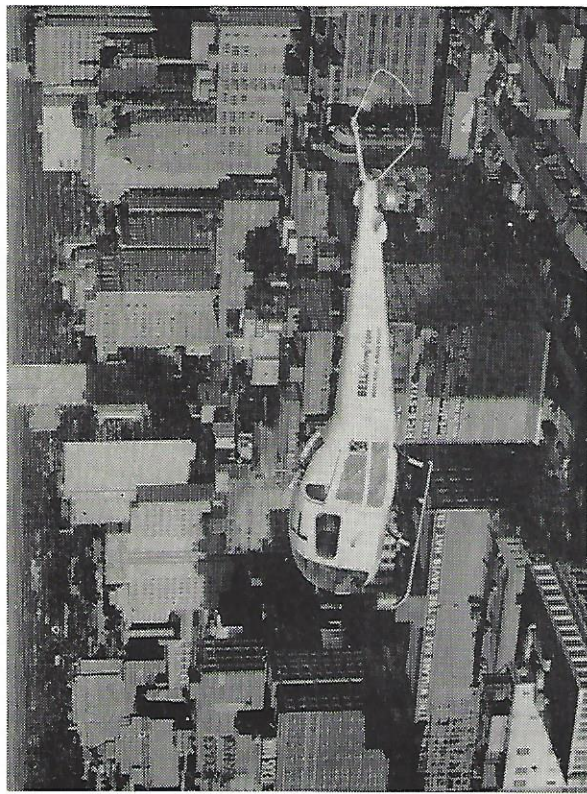
Bell has set a new record in commercial helicopter sales every year for the past three years. The company's entire commercial helicopter output for the next six months is already sold and production in addition to that on original schedules for the year has been authorized.

"All of this," says Weadock, "indicates that Bell is continually adding emphasis to its commercial helicopter programs and sales promotion. We are the leading supplier to the commercial helicopter market—and it is our aim to hold that position as the market grows."

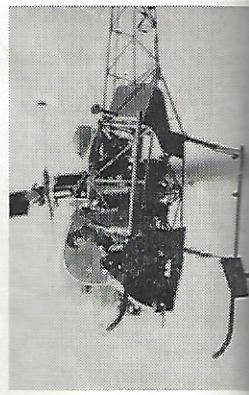
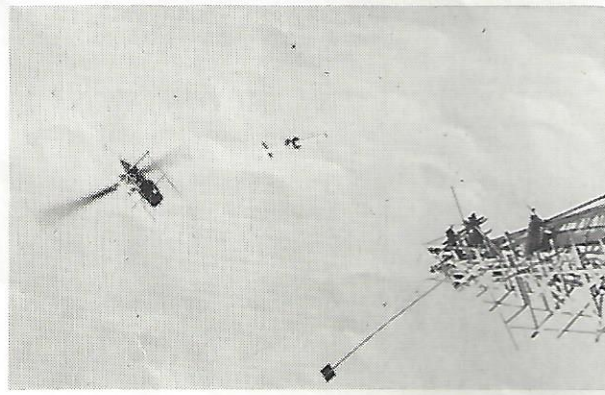
No one in the Texas Division, however, assumes that Bell will automatically hold this standing. "Returns on any project are in proportion to the effort put into it,"



FAMOUS UTILITY SERIES, the Model 47, is still going strong.



FOUR-PLACE MODEL 47J is well-appointed executive copter.



Now on the market are:

- **Model 47G:** This familiar three-place, bubble-type cockpit design, powered by a 200 hp. Franklin engine, continues to perform all kinds of jobs in 33 countries of the free world.

- **Model 47G-2:** A more powerful version of the Model 47G, this model is equipped with a 260 hp. Lycoming engine derated to 200 hp. for exceptional high altitude and hot weather performance.

The first commercial Model 47G-2, delivered May 31 to Bell's helicopter dealer and operator in France, Fenwick, SA, has already caused eye-popping in Europe's helicopter industry. Fenwick Pilot Jean Moine set a record when he landed atop

fact that Bell's high level of demand, currently riding 30 per cent above last year's record-breaking commercial sales year, is rising because more and more private busi-

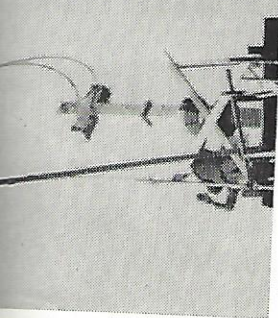
versatile piece of equipment which



...took the G-2 up to 16,500 feet and reported that "I still had a climbing speed of 600 ft. per minute."

● **The 47H-1:** Probably the most beautiful of all Bell helicopters, this sleek, streamlined helicopter is designed especially for executive transport, but serves many utility purposes as well. It is a three-placer, featuring teardrop streamlining and monocoque tail boom. Like the Model G-2, it is in heavy demand and production of a substantial block for commercial sale is proceeding rapidly in the Texas Division.

The first of the series already has been delivered to President Larry Bell for his personal use. The second, handsomely painted in the national colors of Colombia, has been delivered to President Gustavo Rojas Pinilla of that country.



**VERSATILE BELL COPTER** recently solved the problem of getting new cross atop church steeple in Avesta, Sweden. Workmen (upper photo) await descent of copter carrying cross which is fixed securely (lower photo) while craft hovers steadily above. (United Press Photo)

forming a long list of chores ranging from cattle herding in Texas to support of huge construction projects.

**Bell helicopters** had already evacuated some 12,000 wounded United Nations troops from the battlefields of Korea.

Bell's own helicopter program had outgrown facilities in New York and mushroomed to the point where helicopter manufacturing requirements easily justified the new Texas plant.

Larry Bell's company had pioneered this new industry, the commercial helicopter business. It had constantly moved forward in the field, in spite of ups and downs. It had compiled a long line of helicopter firsts.

To the casual observer, helicopters already were accomplishing the unbelievable.

But that's another story. For while it is reassuring to pause and consider the company's illustrious history, the real challenge lies in the present and the future.

This, then, is a progress report on Bell commercial helicopters, on

"As more dollars pour into the commercial market, the market attracts more and more competition. It will require the best efforts of all of us in the Texas Division to maintain our leadership in the face of this ever-increasing competition.

"In sales, it means we must keep always on the move, continually pushing ahead in market development, sales promotion and customer contact. In manufacturing and engineering, it means we must allow no one to produce a product that is better than ours—or even as good—quicker or less expensively than we can."

Trends in the commercial helicopter market are changing. According to Weadock, the change indicates further and faster growth of commercial helicopter sales.

The change is pointed up by the

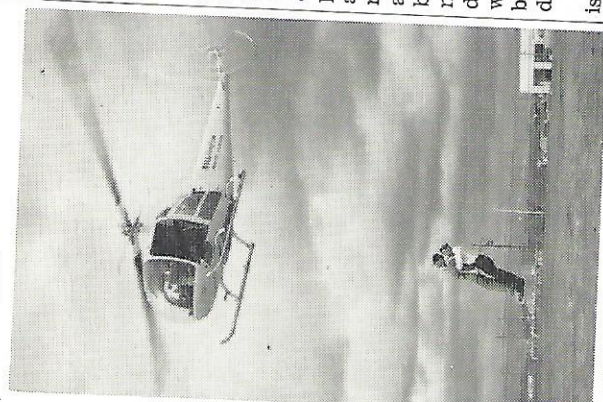


**AMONG AGRICULTURAL USES** are crop dusting, pest control. Craft also spots forest fires, power line breaks . . .

**Orders for this year's production** are more equally distributed between domestic and foreign sales. In the past, export shipments amounted to roughly 70 per cent of commercial production.

Today, one fourth of Bell's increased commercial sales volume is made up of "first sales," and approximately half of them are to private business firms. Most of the commercial sales growth can be attributed to American business and industry and the trend indicates a growing recognition of the helicopter as an effective competitive tool.

Business and industry have used helicopters for years but, for the most part, the services have been leased from commercial helicopter operators, of which there are approximately 70 in the United States and Canada.



**AS RESCUER, THE 47** does the impossible. Newest models are equipped with hoists for greater efficiency.

"Particularly encouraging," says Weadock, "is the fact that commercial helicopter services have gained rather than lost business as companies buy their own helicopters and further prove the value of the versatile craft to industry.

"Such gilt-edged companies as Anaconda Copper and Mining, Magnolia Petroleum, Shell Oil, Pipeline Construction and Drilling and others now operate their own helicopters. Firms of this caliber will hardly indulge themselves in 'flying gimmicks' as some skeptical 'authorities' have classified the helicopter.

"The helicopter has proven to their satisfaction that it is a practical and progressive machine which earns its own way. This encourages other firms to avail themselves of services offered by the commercial operator.

"We do not claim that everyone needs or can afford a helicopter. In the future, as the rotary wing art progresses, this may change.

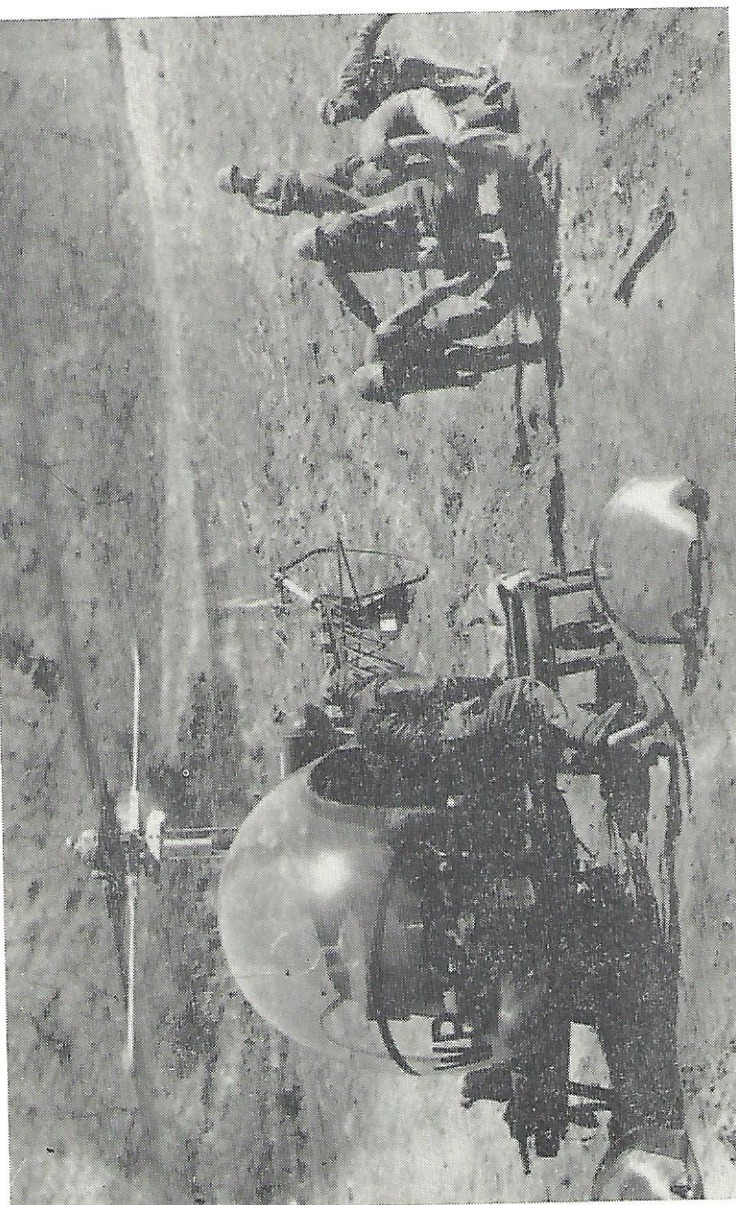
"Right now, there are many, many jobs in business, industry and agriculture that can be done only by helicopter or more economically by rotary winged aircraft. When this is the case, the machine is worth its weight in gold."

Today, of course, Texas Divisions concentrate most of their efforts on production of military craft. No one anticipates that the commercial market will support nearly the amount of manufacturing supported by the military's need within the near future. But they do confidently believe the day will come when commercial sales are the backbone of steady Texas Division production.

This much is certain: the market is constantly growing and Bell, with its proven product and leadership in the commercial market, is in an ideal position to increase its commercial sales in accord with that growth.



# Korea Called the Copters 'Mechanized Angels'



ABOARD THE USS KULA GULF, March 24 (delayed) — "I've just spent one of the most gratifying days of my life. "I've seen men unhesitatingly bet their lives that we in the Texas Division build only top-quality helicopters—and win . . ."

That's Bart Kelley, Bell Aircraft's chief helicopter engineer, talking. He is telling the story of how three Bell HSL-1 anti-submarine helicopters proved 100 per cent available on simulated anti-sub missions during an eight-day cruise aboard the carrier Kula Gulf last March. And he's putting his finger on the element which has enabled Bell to score giant strides in military helicopters since the Model 30 first flew in 1943.

A record of quality in design and production of helicopters and their components, coupled with imaginative engineering, made it possible for Bell to win two of the three major helicopter design competitions held in the past five years.

First of these, of course, was a Navy competition for an anti-submarine helicopter. Bell's HSL design won, was ordered into production, and is now being delivered by the Texas Division.

Significance of the HSL program is well known. It was partly responsible for formation of the Texas Division and provided work for some 4,000 people in Texas. And it has taught Bell engineers many valuable lessons in helicopter design, especially in tandem rotor configuration.

Second competition won by Bell, held last year, was for an Army utility helicopter. The Department of Defense announced in February that Bell's Model 212 — designation for which has since changed to the Bell Model 204 — has been selected for development from designs submitted by all major helicopter manufacturers and that the Texas Division would receive a Phase I contract from the Army. The entire

But, important as these three big projects are, none can overshadow the military accomplishments of the Model 47 series. Army H-13's and Marine-Navy HTL's evacuated more than 18,000 wounded United Nations soldiers in Korea; Army men nicknamed them "mechanized angels." Only 8,000 evacuations were made by all other type helicopters combined.

As a result of their service in Korea, Bell H-13 helicopters became so popular with the military that they are now assigned on the battalion level to the SHAPE troops in Europe, while U. S. Medical Detachments use no other type helicopter.

Latest military order for the Model 47 type rotorcraft was a Navy purchase of 24 HTL-6's, improved version of the HTL-5's, for training purposes. Several have already been delivered and work is continuing on the remainder of the order. It has the familiar bubble cockpit configuration.

Three other military projects are currently under way in the Texas Division. Included are:

- The H-13H: This is essentially the same helicopter as the commercial Model 47G-2. Powered with a 260 hp Lycoming engine derated to 200 hp. for helicopter operation, it was built especially for maximum performance at high altitude and in extremely hot weather. Two have been delivered to the Army and are being tested at Camp Rucker, Ala.

As the BELL NEWS went to press word was received that the Texas

'LITTLE BELLS' made military medical history in Korea, where they flew wounded back to hospitals within minutes after casualties were first reported. They evacuated more than 18,000 wounded during conflict, were affectionately dubbed "Mechanized Angels" by American soldiers there.

Among ships recently received by the clinic were eight old Model H-13B's, one of which carried serial No. 2. It was the second H-13B delivered to the Air Force at Buffalo in 1948. Already overhauled, Texas Division test pilots say it flies as well as a brand new Model 47.

• Project Blank: This is a classified project having to do with the conduct of studies and development of special equipment related to helicopter instrument flying.

Army, Navy, and Air Force leaders have repeatedly voiced their confidence in helicopters and their need for them as well as for continuing research in the military helicopter field.

Bell's versatile and service-proven military craft have distinguished themselves at missions ranging from wire-stringing to simple reconnaissance. There is every reason to believe the Texas Division will continue in the forefront whenever significant strides are made in helicopter for military applications.



# Future Copters May Be Turbine-Powered, Wing-Shaped

Press-time report from the Texas Division confirms actual receipt of contract for Model 204 military design winner and gives the craft the military designation of XH-40.

neering staff already has been set up for this program and preliminary design study is progressing.

But by far the most captivating military project under way in the Texas Division is the Army XV-3 convertiplane.

Rolled out in February at formal ceremonies, characteristics of the Bell convertiplane became familiar to almost every American. Some 400 newspapers and magazines carried stories and pictures; movies were shown on nationwide television hookups.

At present, the model is going through exhaustive ground testing before flight.

A look at the long list of Bell "firsts" indicates that the company believes the best way to stay ahead in the aircraft industry is, simply, to — stay ahead.

Staying ahead in an industry as dynamic as aircraft means continual and painstaking research and imaginative development of those principles which appear to be workable.

In the Texas Division, R&D (research and development) work runs into millions of dollars annually—some of it on government contract, and some at the company's own expense.

The company's management believed so strongly in rotary winged flight that Bell spent some \$10,000,000 of its own hard-earned cash before it received a single government contract for helicopters. Today this same spirit prevails as helicopter engineers continue their pursuit of

a cruising speed of 100 nautical miles per hour, a hovering ceiling of 6,000 feet, and a 1,500 feet-per-minute rate of climb.

Bell engineers, however, point out that these figures are not actually indicative of the flight performance they expect from the ship.

The utility competition gave the Texas Division its first chance, since its formation, to start from scratch and come up with a helicopter it could call all its own.

Another interesting—and important—R&D project is the XH-13F, a Model H-13 helicopter which was equipped with an Artouste turbine engine and delivered to the Air Force for testing. The project proved Bell's basic concepts of turbine engine installation and provided much information to be utilized in future Bell helicopters. It also points up the division's continu-

ing investigation of sources for helicopter power.

Metal blades, produced under development contract from the Air Force, have been delivered and testing to date shows promising results. Information gained in this program probably will change the appearance of Bell blades on future products, engineers predict.

One of the division's newest and most encompassing development projects is a Navy research program which is not intended to develop any new helicopter design as such but could conceivably affect future design of helicopters produced not only by Bell but by all other manufacturers as well.

Details are classified, but the program involves study of problems and development of equipment related to helicopter instrument flying. The program is scheduled to go on for several years.

In addition to these specific research and development projects, Bell engineers are continually working to improve performance, stability, and components of current models.

Work to adapt present models for new jobs, both military and commercial, gets much emphasis in the Texas Division too. It was from such research that the bigger four-placed Model 47J grew out of the Model 47G.

The Navy has expressed interest in its own version of the Model 47J. Industry trade papers have reported that it will award a contract totaling more than \$1,500,000 for purchase of eight of them for testing.

"R&D work," says Harvey Gaylord, Bell vice president in charge of the Texas Division, "is one of the most important ends of our business. It means business for the future—and if we are to be ahead in the future, we must be ahead in R&D today."

## Bell Copters Span Globe

The sun never sets on a Bell helicopter.

Helicopters bearing the company trademark are operating in more than 40 countries. Over 1500 have been built since Bell received the first commercial license in 1946. In addition to the Helicopter Division at Fort Worth, Bell-designed rotorcraft are being produced in two foreign countries on practically opposite sides of the world.

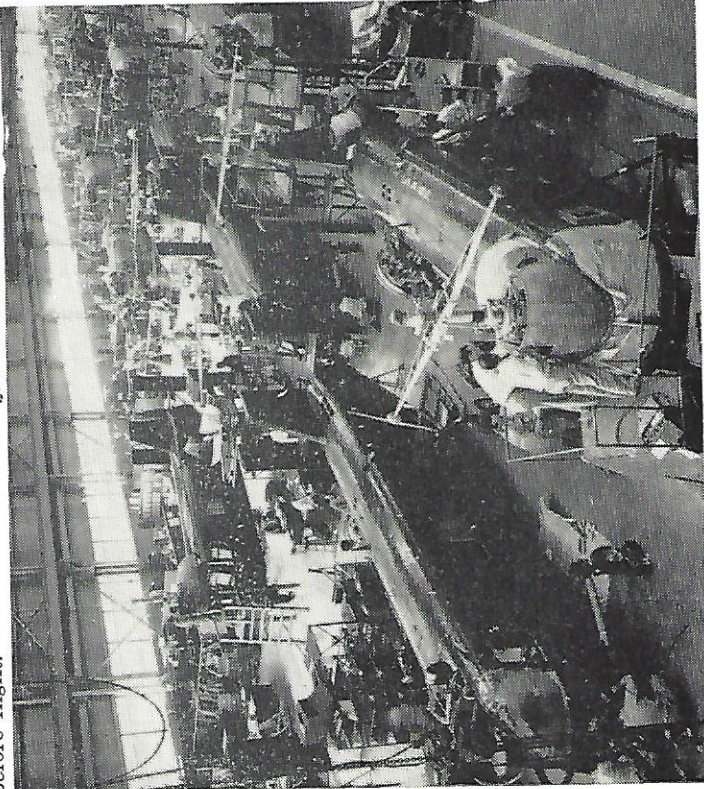
Under licensing agreements, the Nippon Machinery Trading Company of Tokyo delivered its first Model 47 to the Japanese National Security Force in 1954, while Costruzioni Aeronautiche Giovanni Augusta of Cascina Costa delivered its first Model 47 to the Italian Air Ministry.

The principle is that the contoured fuselage acts as a wing, creating an air foil which takes part of the lift load off the rotors, giving the craft more speed and enabling it to operate more economically. Both military and commercial applications are readily apparent for this type of craft.

Under development is the Bell Model 204—formerly designated the Bell Model 212—which the Department of Defense announced early this year had won the Army's utility helicopter design competition.

The Defense Department said the Model 204 will be used for front line evacuation of wounded, for general utility missions, and as an instrument trainer.

It will be a light-weight closed cabin single rotor aircraft which will meet Defense Department specifications of an 800-pound payload,



SUB-CHASING HSLs are now in quantity production. The ship, first Bell-designed dual-rotor craft, is manufactured for Navy.



# 'Routine' Operations Number in the Thousands

## Indirect Departments Contribute Vitally to Production Programs

Ask the average person what industry needs to produce experimental planes, rocket motors or jet nacelles. He'll probably answer in terms of huge machines, skilled technicians and machinists, sheet metal, tools, blueprints and the conveyors and belts of a production line.

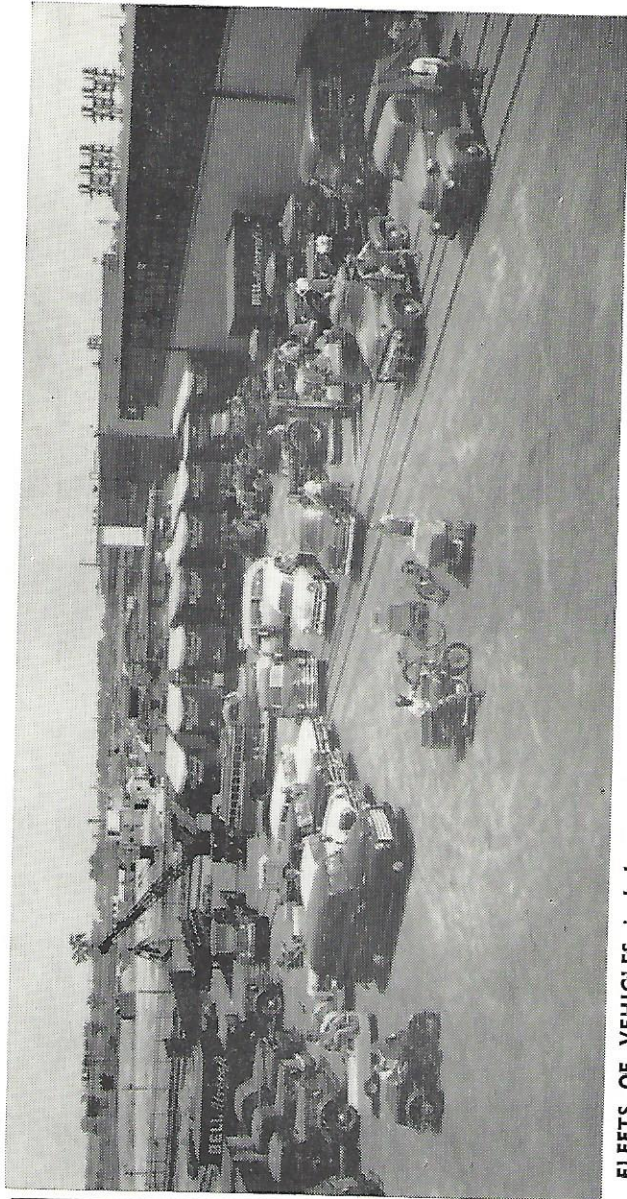
His answer is right, of course, but it's only part of the story. It takes more than the direct manufacturing operations and personnel to keep an industry going.

Hundreds of indirect routines are essential to a company like Bell Aircraft. Many of them are only distantly related to metal fabrication or final assembly. But they all mesh like good gears to form the whole that is a complete operation. All new business starts in paperwork—in Contracts (Dept. 14) where agreements between the customer and the company are put down on paper in terms of delivery dates, quality requirements and fees.

Raw materials and component parts don't appear on an assembly line by magic. Well ahead of the time those parts and materials are needed Dept. 22 (Purchasing) or Dept. 23 (Outside Production) has taken bids, placed orders and set up schedules for delivery to Bell.

Once here, inspectors (Dept. 34) examine the newly arrived shipments for uniform quality, Raw and Finished Stores (Depts. 71 and 72) and Cribs stock them, Production Control and Dispatching employes (Depts. 26 and 81) schedule them into work in a given department at a given time and expedite their on-time arrival there.

To move all materials Intra-Plant Traffic (Dept. 82) maintains a fleet of radio-dispatched fork and skid



**FLEETS OF VEHICLES include every type from bicycles through fire and crash equipment, fork trucks and tractors to huge trailer trucks.**

maintains the company's many switchboards and supplies such office essentials as pencils, paper, glue, ink and typewriter ribbons.

These are but a few of the many "routine" operations without which Bell Aircraft, or any other large company for that matter, could not function.

There are many more: the mechanics assigned to the flight hangar, the estimators, the photographers, the plant engineers and the men and women of the legal and industrial and public relations departments.

These thousands of people working together with the direct production groups all have a common purpose — to keep Bell Aircraft the "Facemaker of Aviation Progress."

## Announcements of VTOL, XV-3 Highlight First Months of Year

(Continued from Page 5)

January 19—Bell Foundation pledges \$60,000 to the Western New York Heart Association to establish a full professorship in cardiovascular research at the University of Buffalo School of Medicine.

Feb. 3 — VTOL airplane, employing an entirely new principle of aircraft flight, is unveiled to the public.

Feb. 10 — Bell XV-3 convertiplane, combining flight features of the helicopter and airplane, is rolled out at Fort Worth for public

March 28 — U. S. Navy announces that Bell has developed an all-weather automatic landing system for aircraft carriers.

April 20 — President Larry Bell returns to his hometown of Mentone, Inc., to dedicate a new school library established with \$5,000 gift from Bell Foundation.

April 30 — Two Bell Model 47H-1 helicopters participate in Civil Defense exercises during atomic tests at Yucca Plains, Nev.



Production Engineering (Dept. 15) and manufactured in the Tool Room (Dept. 40), the Machine Shop (Dept. 43) or the Foundry (Dept. 56).

Production blueprints are turned out by the dozens of copies by the machines in the Blueprint Rooms (Dept. 16). Chances are that the Blueprint Room will also have received out on that job by Bell engineers.

**In order to help maintain Bell's high standards in all**

shuttles and passenger cars travel Niagara Frontier highways day and night, transporting valuable cargoes to their destination and covering regularly scheduled passenger and mail routes between Bell facilities.

Mechanics are needed to keep these vehicles as well as intra-plant conveyances in tip-top shape.

Shipping centers in five of Bell's area plants prepare company products for delivery to all parts of this country and to many foreign countries. Before a shipment leaves the busy loading docks a Material Shipping Order with no less than 13 carbon copies must be completed.

Before paychecks can be distributed every week, timekeepers and payroll department employees must make thousands of computations on wages and hours worked. Accounting must record detailed information for cost analysis, budgetary control and planning and operations control.

In other words, every penny that goes out must be accounted for.

**Office Services (Dept. 11) handles several thousand individual pieces of mail every day,**

## Pilot's Confidence Helped Write Airacobra Story

On a cold February day in 1940, Army and Bell officials stood on a snow-swept ramp at Buffalo Airport. High overhead Capt. George E. Price was at the controls of the XP-39, the first Airacobra built and the only one then in existence. The officer had taken the ship up on its Army acceptance test.

In flight the ship performed beautifully, but as Capt. Price returned to the field the landing gear, frozen in the high altitude and biting wind, stuck in the one-quarter-down position.

The captain worked furiously, following instructions radioed to him from the ground, but after an hour the situation looked hopeless and Larry Bell urged the pilot to bail out.

Capt. Price had worked too long with the development of the XP-39, though. He knew what the plane meant to the Army and to Bell. A smashed ship would cost the Army a powerful weapon and could set Bell's progress back many months.

The pilot made his decision and elected a belly landing. Wheels up, he started in for the runway, hit on the underside of the fuselage, threw up a spray of snow and ice and slithered to a stop.

The only damage was a slightly bent propeller which was immediately replaced. A few hours later the ship was in the air bound for Washington—accepted.

Had it not been for Capt. Price's courage and his confidence in the experimental plane, the brilliant story of the Airacobra during World War II might have been entirely different—or it might never have been written.

March 13 — Bell GAM-63 Rascal described as an air-to-ground strategic missile, designed to be carried aloft by long range bombers enabling these bombers to deliver nuclear weapons against the enemy many miles away.

March 18 — U. S. Army announces Bell is supplying engines for the ground-to-air Nike guided missiles.

March 27 — Bell Exploration & Development Corp. formed to expand the utility of Bell helicopters in the geophysical and geodetic field.

Children's Hospital for operation of a clinic to administer Salk anti-polio vaccine.

June 7 — Company announces delivery of its first set of B-52 power packs.

June 12 — President-General Gustavo Rojas-Pinilla of Colombia receives first of Bell's new streamlined executive helicopters, the Model 47H-1.

July 9 — Dinner honors President Larry Bell and 20-year employees.



Although precision electronic components must be carried in sufficient quantity at all times, it's not a good idea to overstock. Production Control's Telautograph Machine helps insure that an ideal maximum is carried in Engineering stockrooms. When a disbursement is made, a Telautograph operator simply writes the information on a electrically

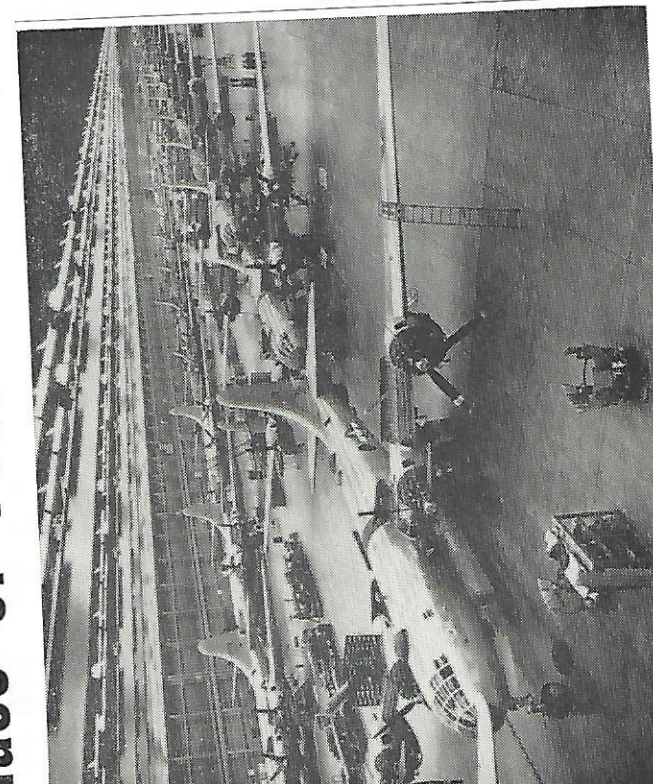
sensitized plate and the information is automatically transferred, in the operator's own handwriting, to the receiver in Production Control. Under this system it's easy to determine when any stock is nearing a dangerous minimum. Seven transmitters and receivers at Wheatfield and Niagara Falls feed into central unit operated by Veronica Burns.



**SILHOUETTED AGAINST GRAYING SKY, guard stands lonely post near B-29 on Wheatfield ramp. Plant Police, like other "indirect" groups, perform vital service.**



# Mass or Precision Production, Manufacturing Can Handle It



**MASS PRODUCED B-29 BOMBERS** rolled from Bell-Georgia assembly lines at rate of more than one a day during World War II.

Aircraft production today is varied as a kaleidoscope. Into that production go parts and subassemblies ranging from microscopic gears and valves through complex electronic-control units to huge forgings hammered out on giant presses.

Engineering demands tighten constantly. Units of greater tensile strength, increased heat and friction resistance, closer and closer tolerances must be fashioned at no sacrifice in weight. More and more wiring, fantastically accurate electronic components must be housed in smaller and smaller boxes. Airframes for supersonic craft must be aerodynamically clean, with no bolts or welds visible to slow down the plane or guided missile.

That's the story of today's aircraft production. In essence, it's been the continuing story of aircraft development ever since the Wright brothers tinkered with their first successful

Dating from the 'X' aircraft, tolerances in Bell products have become smaller and smaller. During the war .0625" (1/16th of an inch) was a usual dimensional tolerance for sheet metal fabrication, .032" (1/32nd of an inch) was an exceptional tolerance requirement. Today, dimensional tolerances of .005" and .010" are usual.

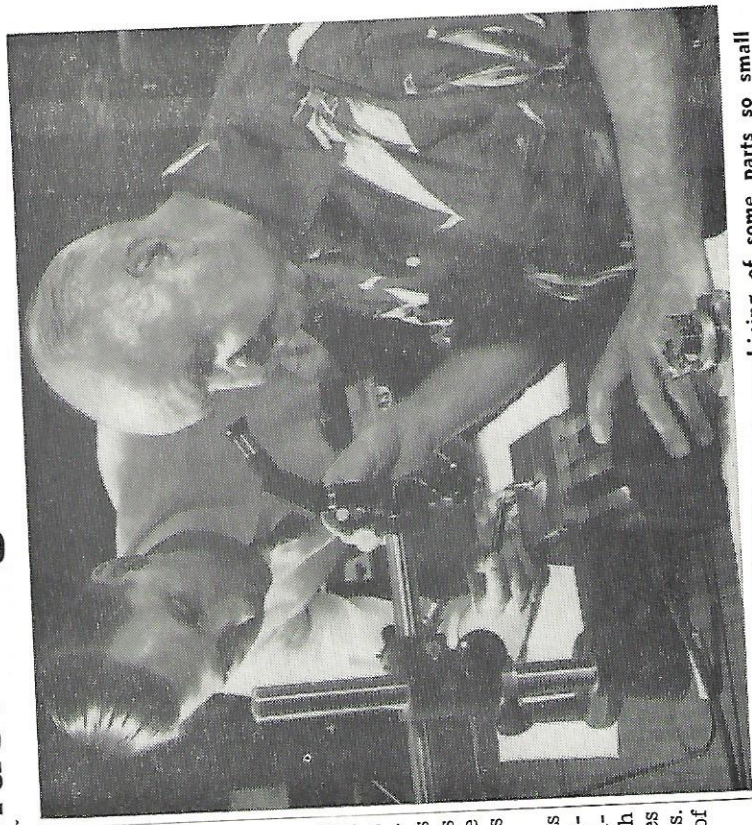
Machine Shop tolerances have shrunk even more. Where .005" and .010" were normal during the war, .0002" is common now, with additional requirements of smoothness and finish measured in micro-inches and light waves. Parts today are held to closer tolerances than tools were during World War II.

Bell's present production tasks range from mass output of helicopters (in Texas) and bomber components (at Kenmore) through secrecy-shrouded guided missiles and their complex weapon systems. Each task carries its own set of problems.

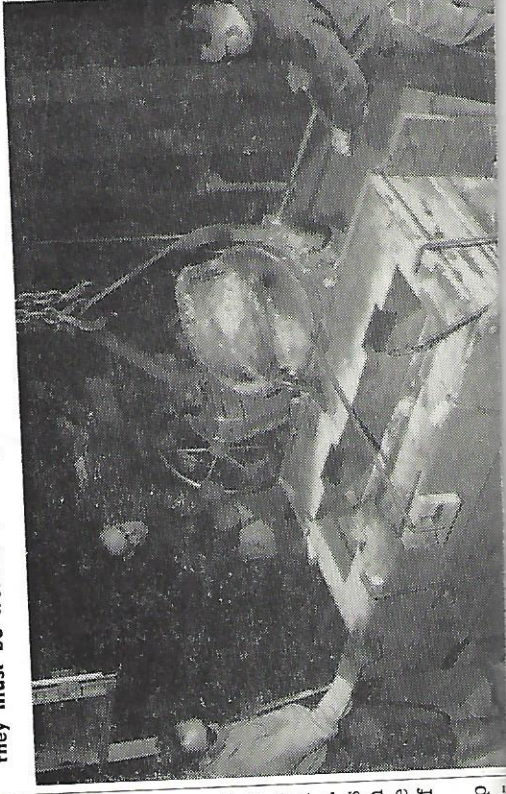
Holding close tolerances can be a particular problem, for example, when the metal involved is titanium. The temperamental glamour girl of metals, titanium is so light-weight, so high in tensile strength as to be an aircraft designer's dream. Fabricating that titanium into production parts, however, turns dream into nightmare.

Titanium has been engineered into a substantial percentage of Bell's production of jet nacelles for the Boeing B-47 bomber, and is designed into the power packs for the B-52. As sole B-47 nacelle supplier, and as one of the major subcontractors on the B-52 pods, Bell is therefore one of the nation's largest users of titanium.

Researching that metal turned up



**PRECISION PRODUCTION** means machining of some parts so small they must be worked under optical micrometers.





World War II at Bell saw production miracles.

- Miracles of hiring and training, as employment soared dizzily from 4,300 in 1940 to 30,000 in 1942 to 47,600 in 1944.
- Miracles of tooling, as fool-proof production aids and machine tools were designed to allow unskilled persons to operate them.
- Miracles of mass production, as fighter planes rolled off the assembly lines at a peak rate of 22 a day, as our first B-29s were built and tested six months after completion of the Bell bomber plant at Marietta (Ga.).

With war's end came the overnight contraction from 47,000 employees to 2,509 at the end of 1945—and new production problems of a different sort developed.

First, there was the necessity for keeping those 2,500 employees busy. From fighter aircraft production, the company turned increased attention to its developmental helicopter program, got the nation's first license in March 1946, set out to prove the craft's utility and build up a production demand.

But other uses for Bell's production facilities at Wheatfield had to be found. Like all other aircraft manufacturers (one company made coffins to keep going), Bell took on any production job it could get.

Bell made juke boxes, cabs for fire engines, automobile heater casings. The company developed and produced a motorized wheelbarrow, the Prime Mover. More than 2,500

## 80 Times Higher Since '40

The precision and complexity of today's powerful jet planes require ever increasing engineering skill. A typical manufacturing reports that the engineering manhours needed in designing just the airframe of a modern fighter is 80 times that needed for its 1940 counterpart and estimates that planes of 1960 will require 127 times as much.

temperatures and in the case of upper altitudes, yet they had to resist the surface heat caused by friction in fast flight and the internal heat built up by new and high-powered engines.

These experimental ships were an endless series of production challenges. For example, the fuselage of one of the planes was of K-Monel, a brand-new alloy that met the ship's high speed design requirements. In fabricating that fuselage, however, all recognized welding rods were useless. The welds cracked in heat treat. Over 100 kinds of welding rods were tried before that problem was solved.

The same ship produced another puzzle when the fuselage cracked for no apparent reason in heat treat. No welds or bolts were involved, yet the cracks mysteriously occurred. The culprit: oil containing sulphur, that dripped occasionally from overhead conveyors, produced a chemical reaction that caused the metal to fracture under heat. It took a long time to answer that riddle.

The wings of the "X" ships were another departure. In Bell's wartime planes, wing strength came from cross members attached between upper and lower halves of the wing. In the "X" ships' knife-edge wings, there was no room for those supports.

Instead, the wing skins had to be machine tapered — planned down out of thick sheet metal, a process that gives the greatest possible strength to the metal through weight distribution. That taper milling has since been supplanted by another Bell development — an abrasive belt grinding machine that tapers skins in 30 minutes.

Those thin-sectioned wings also led to development of the Bell Gun, a spot-welding tool that gets around corners and into crevices. It was designed to handle welding operations inside the slender wing structure.

that it will tear through most lubricants, which must be used in press and drop hammer operations, and bite into lead and kirkite dies. Yet a fingernail scratch can cause it to fracture during heat treat.

Its chemical properties can vary so widely from batch to batch, even when two batches have been produced under identical conditions by the same vendor, that one supply will take hot forming perfectly while the other will rupture during the forming operation.

Like every other production problem faced by Bell, the difficulties of titanium fabrication have been licked. Nacelles carrying 563 detail parts made from the "wonder metal" are now rolling off Kenmore's nacelle assembly lines for installation in Boeing B-47s.

## Trainees Study Skilled Crafts

Thirty-six Bell employees have been graduated from on-the-job training classes since that program was started in September 1952. Fifty others are now receiving instruction.

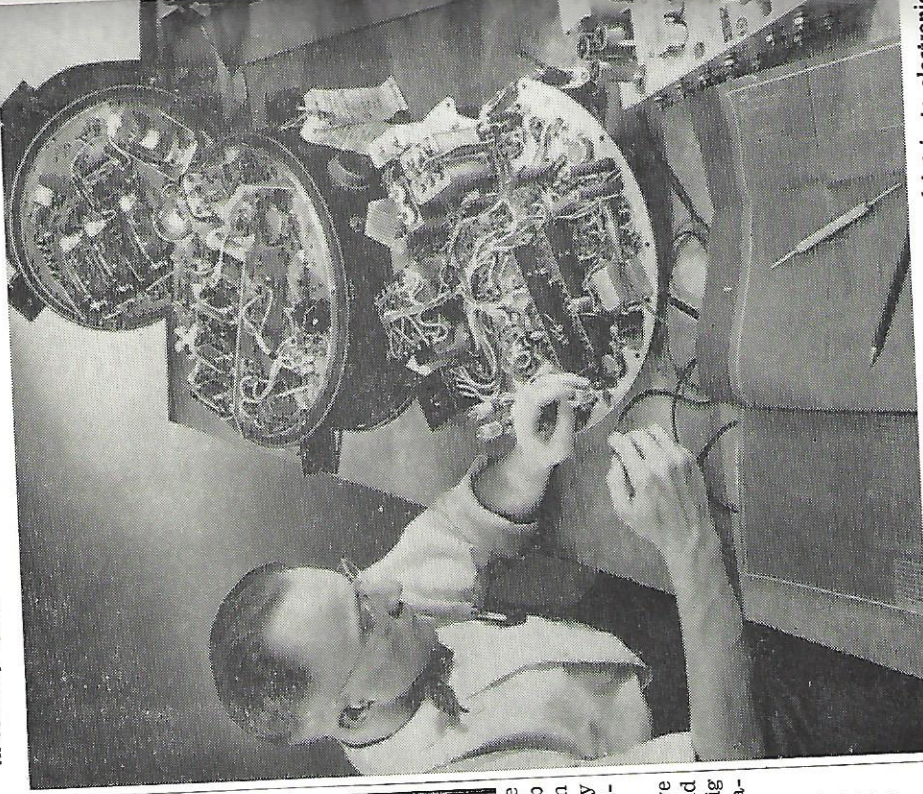
Instruction was offered in five fields: jig and fixture building, and engine lathe, milling machine, jig bore and pettegill hammer operation.

Trainees spend an average of two hours a week, 40 weeks a year in classroom study. Remainder of their time is devoted to actual on-the-job work. Average course lasts for two years.

The 36 graduates spent 4,860 hours in the classroom. It will require about 10,000 classroom hours to graduate all 86 trainees.

Bell's on-the-job training program was the first to be inaugurated in the aircraft industry.

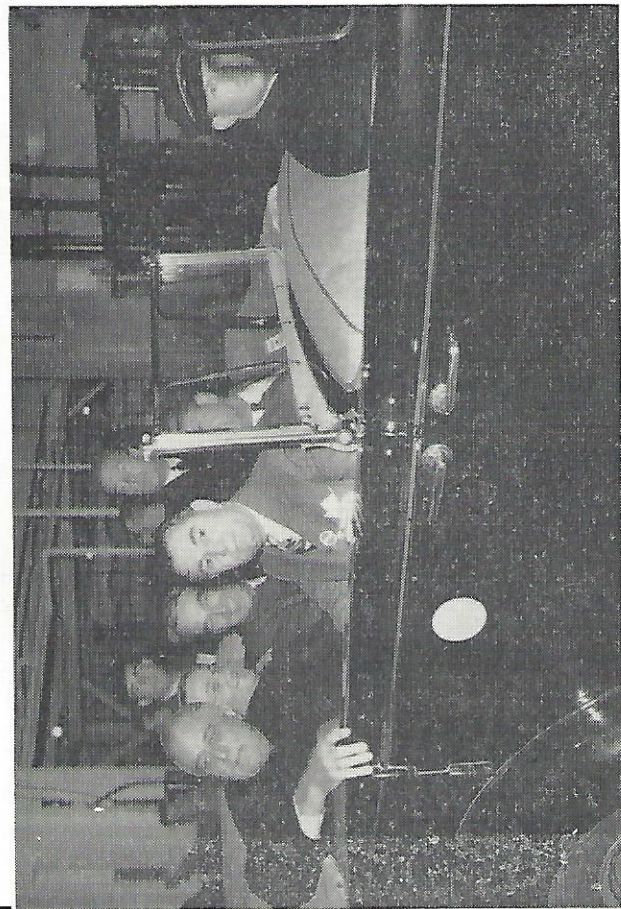
**PRECISION PRODUCTION** means painstaking pouring of complex dies in foundry operations of extreme delicacy.



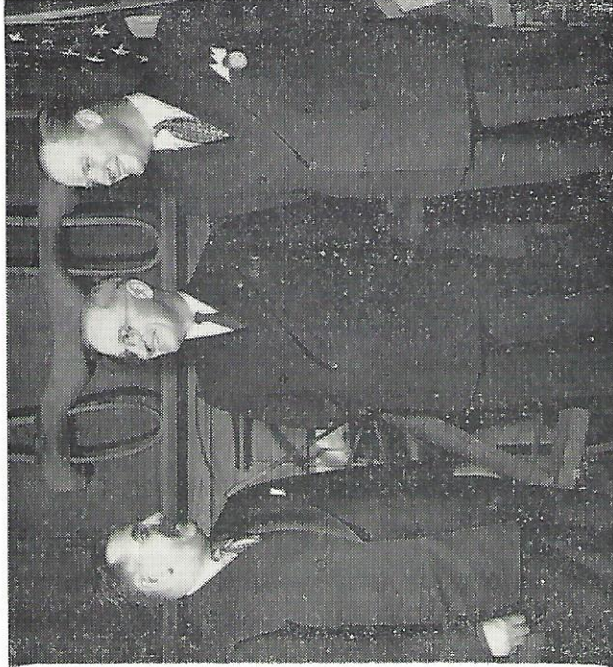
**PRECISION PRODUCTION** means complex wiring of intricate electronic assemblies like this modulator for a radar search system. In spite of extreme complexity, however, all Bell operations sheets are written in such a manner that, in event of accelerated programming or actual mobilization, present techniques could be amplified immediately for production of all electronic assemblies.



## Two Presidents Have Visited Bell Plants



**WAR-TIME PRESIDENT FRANKLIN D. ROOSEVELT** inspected Elmwood plant in 1941, when P-39 Airacobras were just beginning to roll off Bell's assembly lines. For four, presidential car rolled right into manufacturing areas.



**POST-WAR PRESIDENT HARRY S. TRUMAN** visited at Wheatfield just a few weeks before he succeeded to the presidency in April 1945.

## Four-Year Fund Gifts Near Half-Million Mark

Bell's Niagara Frontier Division employees have contributed almost a half million dollars (to be exact, \$477,181.44) since the Bell Humanity Fund was established Oct. 31, 1951.

Area Community Chests have received \$292,410.79, the largest single donations. Red Feather agencies operating in Buffalo and Erie County, the Tonawandas, Niagara Falls and Lockport have benefitted by Bell employees' generosity.

The fight against polio has received \$59,818.90 from the two Humanity Fund groups. This includes a \$25,000 grant recently presented to Children's Hospital for the establishment of a Salk anti-polio clinic.

The Cancer Crusade in Erie and Niagara Counties has been given \$51,924.65 while \$48,752.88 has been donated to the four area Red Cross Chapters.

Special contributions have also been given to the Heart Fund and Salvation Army and a \$2,000 grant was made to assist victims of the Lucidol explosion in September 1953.

## Bell Has Been Awarded Aviation's Highest Honors

During the past 20 years President Larry Bell has received scores of awards in behalf of the company and employees for their combined efforts and achievements in aeronautical science, industrial ingenuity and community welfare.

Among the citations most cherished by him is an inscribed gold plaque, the gift of the 400 pupils of the Mentone (Ind.) School. Purchased by the students from their contributions of nickels, dimes and quarters, it was presented to Larry last April when he returned to his hometown to dedicate a new school library provided by the Bell

division, and in 1945 Larry received from their contributions of nickels, dimes and quarters, it was presented and its Allies in World War II. The company received practically every type of award for war pro-

## Woman Rescued At Falls' Brink By Bell Copter

It was shortly after 9 o'clock on the morning of May 15, 1950 that a call was placed from the Central Alarm Station in Niagara Falls to Bell Aircraft.

A woman, the caller reported, was marooned on a rock in the river just off the Three Sister Islands.

A helicopter was dispatched immediately with Pilots Joe

## Subsidiaries in Commercial Fields Implement Diversification Policy

A total of 48,907 employees were on Bell Aircraft Corporation's payroll on February 2, 1945. By the end of that eventful year — a year that saw the enemy crushed to defeat in the greatest, most costly war in history — the work force throughout the company's scattered facilities had been sliced to 2,509.

Within a matter of months, more than 45,000 persons had been separated from the company, as war-necessary contracts were cancelled right and left.

Bell's experience is typical of the inevitable fluctuations in the air- that are being found in relatively unexplored regions of the nation and neighboring countries. Bell was quick to jump to the



library until it received the \$5000 grant from the Bell Foundation.

The entire history of the company has been based upon inspiration and challenge, and on Dec. 17, 1948, Larry Bell was in the White House to receive recognition for a challenge he accepted during World War II — to design and build a rocket-powered airplane that would fly faster than sound.

The airplane was the X-1, which made its historic flight on Oct. 14, 1947.

For this achievement Larry received the Collier Trophy, the nation's top aeronautical award, from President Harry Truman. Co-recipients were Air Force Captain (now Major) Charles E. Yeager, the first man to smash the supersonic barrier in the X-1 and John Stack, government research scientist with the National Advisory Committee for Aeronautics, for his research in the field of high speed flight.

Another presidential honor, the Certificate of Merit, dated March 22, 1948, and presented by Air Force Secretary W. Stuart Symington, cited Larry for his "outstanding fidelity and meritorious conduct in aid of the war effort against the com-

struction of military aircraft and for outstanding contributions to the methods of airplane production."

In February, 1947 Larry was honored for his "dynamic and creative leadership" in the world of aviation and for his "stellar contributions to both military and peacetime aeronautical progress" by the University of Buffalo which gave him its Chancellor's Medal.

Characteristically, one of the awards that probably gave him greatest personal satisfaction did not concern his prowess as an aviation pioneer. It was in another field, human relations, and centered around the company's program of hiring physically handicapped persons.

This policy gained recognition for the company when Larry was presented with the American Legion's national award in 1951.

Company records at the time showed that of the 9,123 employees, 4,113 were veterans and 943 of the veterans were handicapped.

The Republic of France honored the Bell president in December 1950 by making him a member of the French Legion of Honor.

On many occasions Larry has accepted recognitions and honors in behalf of employees for their wholehearted response to the Red Cross Blood Bank, all-out participation in the purchase of U. S. Savings Bonds, and generous support to community health and welfare agencies through the Humanity Fund.

Citations from organizations representing practically every field and profession have been bestowed upon the company. Each carries more than just sentimental value, since each is symbolic of some single outstanding contribution or accomplishment.

Each has found a permanent place in Bell's record of growth and progress.

Mrs. Jeanette Bugay clinging desperately to a rock only 300 feet above Horseshoe Falls.

Cannon climbed out on one of the craft's pontoons, eased a rope around the woman's shoulders and was ready to climb back into the cabin when the swirling water smashed against the pontoon.

The helicopter somersaulted, came to rest 35 feet nearer the brink of the falls. All three were now marooned.

Minutes later another Bell helicopter piloted by Bill Gallagher and with George White, airport operations manager, in the passenger's seat, was at the scene.

As Gallagher hovered the craft, White fed a rope to the stranded trio, then dropped the other end to waiting police officers on shore.

"Niehaus, Cannon, Gallagher and White are names to remember when the deeds of courageous men are told," the BUFFALO EVENING NEWS commented editorially the following day.

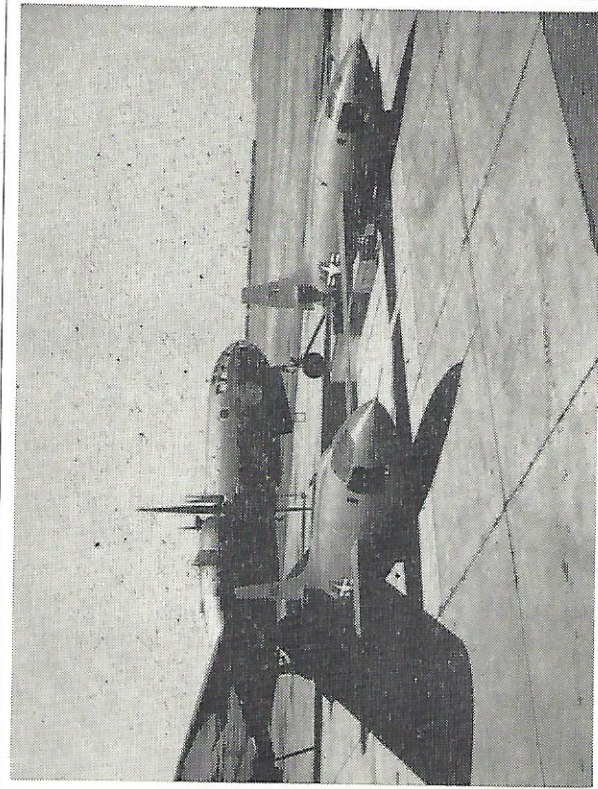
requirements inherent in the defense industry. Consequently, management has prepared itself to avoid any repetition of such conditions.

In addition to keeping up with its expanding defense assignments, Bell management established a planned policy of branching out into unrelated commercial fields. The first move came on September 21, 1948, with the acquisition of the W. J. Schoenberger Company of Cleveland, the company's first wholly-owned subsidiary.

Schoenberger is an important source for valves and fittings in the gas industry.

The Bell Aircraft Supply Corporation was the second of Bell's subsidiaries. Formed April 4, 1949, the firm is engaged in the sale of helicopters and spare parts, chiefly on the West Coast.

Not since the gold rush of 1849 have Americans been so engrossed in prospecting. Today the search is for uranium and other rich minerals



SUPERSONIC TWINS: Bell X-1 airplanes with B-29 "mother ship."

in pioneering all commercial applications of the helicopter. The need for a vehicle to expedite the search for these minerals — and the helicopter, a far cry from the days of the pick and mule pack, seemed the most natural — prompted the formation of the Bell Exploration and Development Company.

Operations began this year, with the purpose of expanding the utility of Bell helicopters in the geophysical and geodetic field.

Two important subsidiaries were added in 1954. Acquisition of the American Wheelabrator and Equipment Corporation of Mishawaka, Indiana, in June gave the company its largest subsidiary.

Best known product of the company, which has manufacturing licenses in foreign countries, is the Wheelabrator, a machine which revolutionized the blast cleaning process by hurling abrasive without use of costly compressed air. The machine is used in many industries including automotive, aviation, railroad, steel, and others.

The programs of Hydraulic Research and Manufacturing Company of Burbank, California, acquired in October 1954, are closely aligned with some of Bell Aircraft's endeavors, particularly in the servomechanical field.

In fact, Bell-developed servo and hydraulic valves already have been incorporated in Hydraulic's production program, and this company is expected to play a major role in supplementing Bell's efforts in this field. Hydraulic designs, develops and produces small, lightweight high pressure hydraulic valves largely with aircraft applications, including landing gear systems, control circuits and brakes.

Bell's five subsidiaries represent different fields of endeavor and were acquired to create a balance for the company's future stability.



# Bell Aircraft Is Outstanding Corporate Citizen

## Company's Financial Well-Being Directly Affects Community Good

The health and prosperity, the good citizenship of any corporation directly affects the health and prosperity of the community in which it operates. A corporation may contribute much or little to the community's well-being. It may rank as an outstanding citizen or as a mediocre one.

Today, Bell Aircraft ranks with the business and industrial leaders of every area in which it operates. The measure of its stature is in the impact on those communities of the company itself and of its employees.

The impact of the company may be measured in relation to its financial and job-market stability, to its contributions toward the maintenance of community services and the improvement of living standards, and to the prestige and protection it affords the community.

The impact of a company's employees is measured by the degree of their participation in community activities, their support of humanitarian and educational projects, their patriotism, their financial soundness, their high level of education.

Both in Fort Worth, where it employs 3,500, and in the Niagara Frontier, where it employs 12,700, Bell Aircraft Corporation stands as each section's second largest employer.

Last year Niagara Frontier employees alone poured a weekly payroll of more than \$1.4 million dollars into the banks and cash registers of the Buffalo-Niagara Falls area. Total corporate payroll for all facilities and subsidiaries in 1954 was a whopping \$96 million.



**WEEK-LONG SAVINGS BOND DRIVE** conducted at all Niagara Frontier facilities in June 1954 pushed employee participation in payroll-deduction bond purchase program to record-setting 98.6 per cent. Nearly 13,000 employees joined plan.

## Employees Set High Standard of Service

Bell's employe groups match the contributions made by the company to the community. Through their generous contributions of time, energy and money to organizations functioning on all levels of community activity, they contribute materially to the improvement of community living standards.

There is no major community program which they do not support. Through the Bell Humanity Fund, a single-solicitation plan for group donations to recognized charities through monthly payroll deductions, Niagara Frontier employees alone have pledged or paid \$477,181.44 since the Fund's organization four years ago. Texas employees last fall pledged \$41,822.57 to their Fund, embrace nearly every organization in Western New York from Civil Defense and the various Armed Forces reserve units, through PTAs and the child-welfare groups such as the Boy and Girl Scouts, to the 181.44 since the Fund's organization four years ago. Texas employees last fall pledged \$41,822.57 to their Fund,

tion for children in Western New York institutions.

Two excellent Frontier Division Chorus groups, the Bell Mixed Chorus and the Belladiers, are important among employe activities, participating as they do in benefit shows, programs for shut-ins in area hospitals, and seasonal company-sponsored telecasts.

The employes' sports programs rank among the largest of their kinds, both in New York State and in Texas. In the Niagara Frontier Division's major sports activities, more than 9700 bowlers compete in



participate generously in community activities.

Through its training programs, under which Bell employees are offered the opportunity to increase their job abilities, the standards of the community are also raised. More than 2,200 Frontier employees alone have completed various types of specialized training programs since 1952.

Last but not least, the company's contribution to community well-being is further increased by its promotion drawn to its home communities by the successful performance of those products, as well as through the protection afforded the nation by their successful development, Bell Aircraft offers increased prestige to the community.

people by the company is only part of the story of Bell's financial and employment impact, however. Bell also places substantial orders—\$83,665,000 worth in 1954—with other manufacturers and vendors. Last year 610 active subcontractors supplied the company with parts and subassemblies; of these, 86 per cent were in the "small-business" group.

This volume of business enables those suppliers in their turn to maintain high employment and payroll levels.

Bell's taxes help to maintain and improve community services—highways, schools, law enforcement agencies. Contributions by the Bell Foundation help to maintain educational institutions and recognized charitable agencies.

The company pays a large school

as first heavy-industry company to meet its quota, and as the company having the highest percentage of participation scored by heavy industry in the area.

Blood donations in the Niagara Frontier division stand among Bell's proudest records. With 13,774 pints contributed by 7,531 donors since the Bell Blood Bank's in-plant collection program was begun late in 1951, the total stands as the highest industrial donation in New York State, as one of the highest in the nation.

Bell employees have drawn on that blood account whenever it has been needed. Four hundred and eighty-six employees have received anywhere from two to more than 100 pints of blood for themselves or their families, at no cost to them other than hospital service charges.

**The record of Bell's Niagara Frontier men and women in the purchase of United States Savings Bonds through payroll deductions has been told in a Treasury Department ad carried by hundreds of trade and commercial publications across the country. In a bond drive conducted by the Division last year, participation skyrocketed to a record-setting 98.6 per cent of the entire employe force.**

Present weekly payroll deductions for bonds run \$5,427 in the Texas Division, more than \$50,000 in the Frontier. This amounted, in the latter division, to an annual investment of some \$2,610,000 in 1954.

In a similar payroll-deduction program, Niagara Frontier Division employes bank \$75,240 a week in the company's payroll savings plan for an annual saving of \$3,762,000. In Texas the plan has 880 members who bank \$11,787 each week.

A list of the civic, cultural and recreational groups in which Bell employes hold membership would

more startling: in addition to the organizational activities of native Texans, 300 Yankee "strangers" who moved to Fort Worth from Buffalo three years ago are now solid members of that community, holding such posts as Chamber of Commerce director, Dallas Symphony director, and president of the Newcomers Club, in addition to active memberships in a score of other organizations.

Through their own employe groups, functioning under company sanction as Bell clubs, Bell employes make still further contributions to the community's civic, cultural and recreational programs.

Unique among the employe clubs is the Frontier's Pinch Hitters, whose more than 800 members contribute financially to support a program of entertainment and educa-

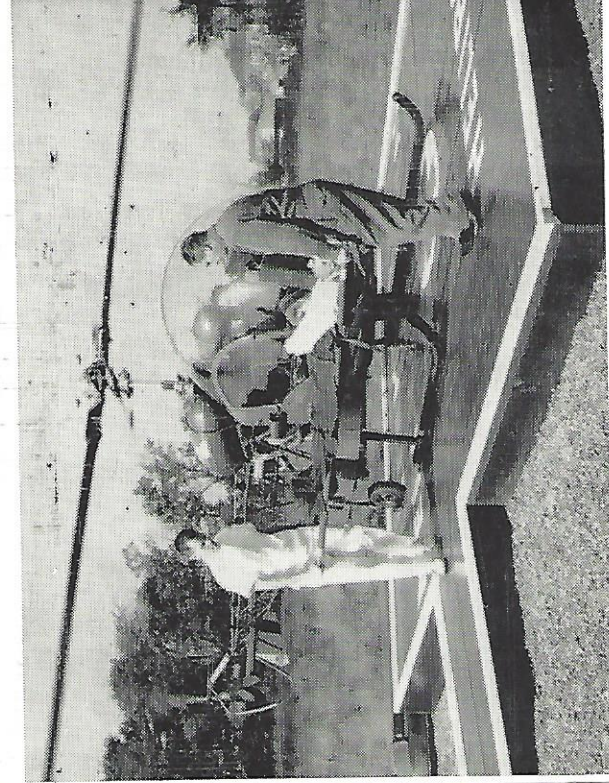
company - sanctioned leagues, while 67 softball teams take to the diamonds in the nine-league softball program.

Finally, Bell employes are stable citizens who like their jobs and their company. Proof of this is found in the company's long-service records. Approximately 9,000 Frontier Division employes have been with Bell for from five to nine years, approximately 2,000 have been with the company from ten to fourteen years, and more than 1,050 have been here 15 years or longer.

In Texas, where the Helicopter Division has been in operation for less than four years, 17 employes are 15-year men, 45 have served ten years or more, 50 are five-year employes.



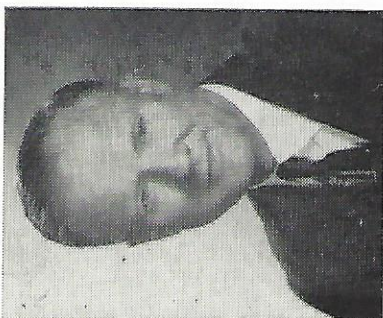
**HUMANITY FUND DOLLARS** have supported all recognized area charities, in addition have been used to purchase such specific needed items as these wheel chairs for crippled patients at Children's Hospital, Buffalo.



**HELICOPTER AMBULANCE SERVICE** was established at Kenmore Mercy Hospital last Fall when Bell made copter available for emergency service, constructed heliport on hospital grounds.



# Twenty-One Employees Have Been With Bell Since 1935



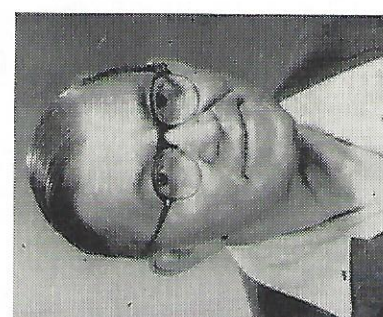
**RAY P. WHITMAN**  
First Vice President



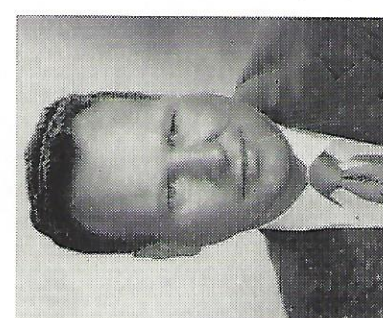
**ROBERT J. WOODS**  
Airplane Design Consultant



**IRENE B. HOGUE**  
Secretary to the President



**JULIUS FERRAND**  
General Foreman, Metal Working



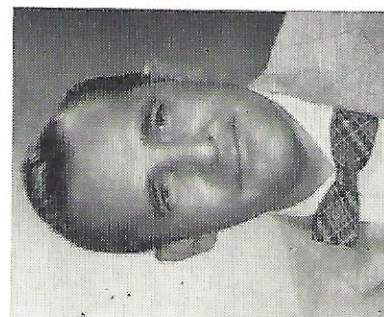
**RICHARD H. MCKEE**  
Assistant Secretary



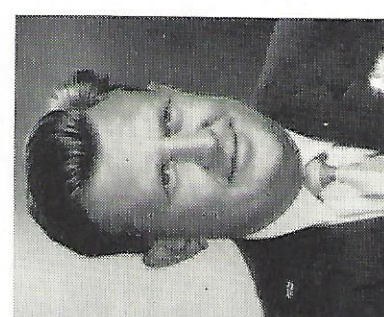
**J. F. STRICKLER, JR.**  
Assistant Vice President,



**MARVIN MCEUEN**  
Airplane Projects



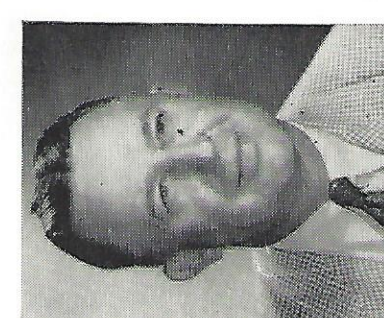
**DAVID M. MARSHALL**  
Supervisor, Blueprint



**KENNETH J. FAE**  
Service and Training



**WALTER B. ADAMS**  
Rascal Project Group



**ARNOLD PROEFROCK**  
Assistant Foreman, Tool Room



At the end of 1935, less than six months after its founding, Bell Aircraft Corporation listed 56 employees on its payroll, including President Larry Bell. Today, twenty years later,

tion among the leaders of one of America's greatest industries. As a token of appreciation for their contribution to that growth, Bell Air-





**WALTER YATES**  
Director

he began.

They have played an important part in Bell Aircraft's growth from a small firm struggling to keep going in a depression economy to its present position.

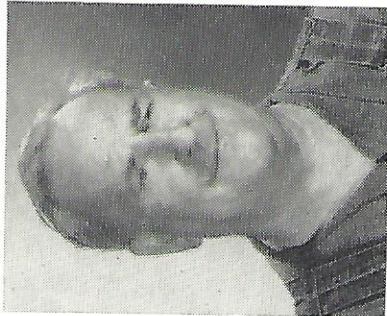
Their work, their loyalty, their belief in Bell Aircraft have helped to make it great. This is their anniversary — because, in a very real sense, they helped make Bell Aircraft possible.



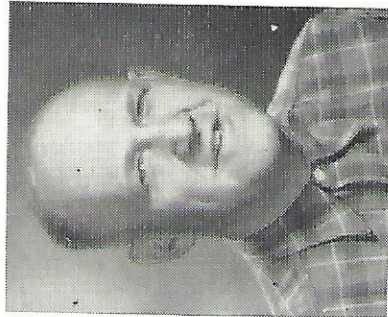
**ANSLEY W. SAWYER**  
General Counsel



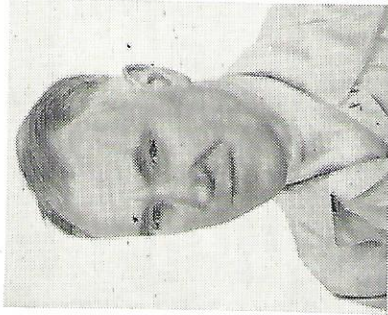
**ANTON GEISER**  
Foreman, Press



**JAMES P. SMITH**  
Maintenance



**RAYMOND PETERSON**  
Airport Operations



**CECIL E. FALLIS**  
Foreman, Experimental



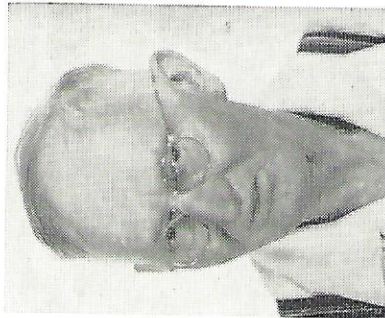
**GERHARD SJODEN**  
Assistant Foreman, Wood Shop



**JOSEPH ENGLISH**  
Metal Preparation



**ANDREW GROJEAN**  
Tool Room



**WILLIAM BERNHARDT**  
Maintenance

*News* for Bell Employees and Their Families

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# Bell's Twentieth Anniversary

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