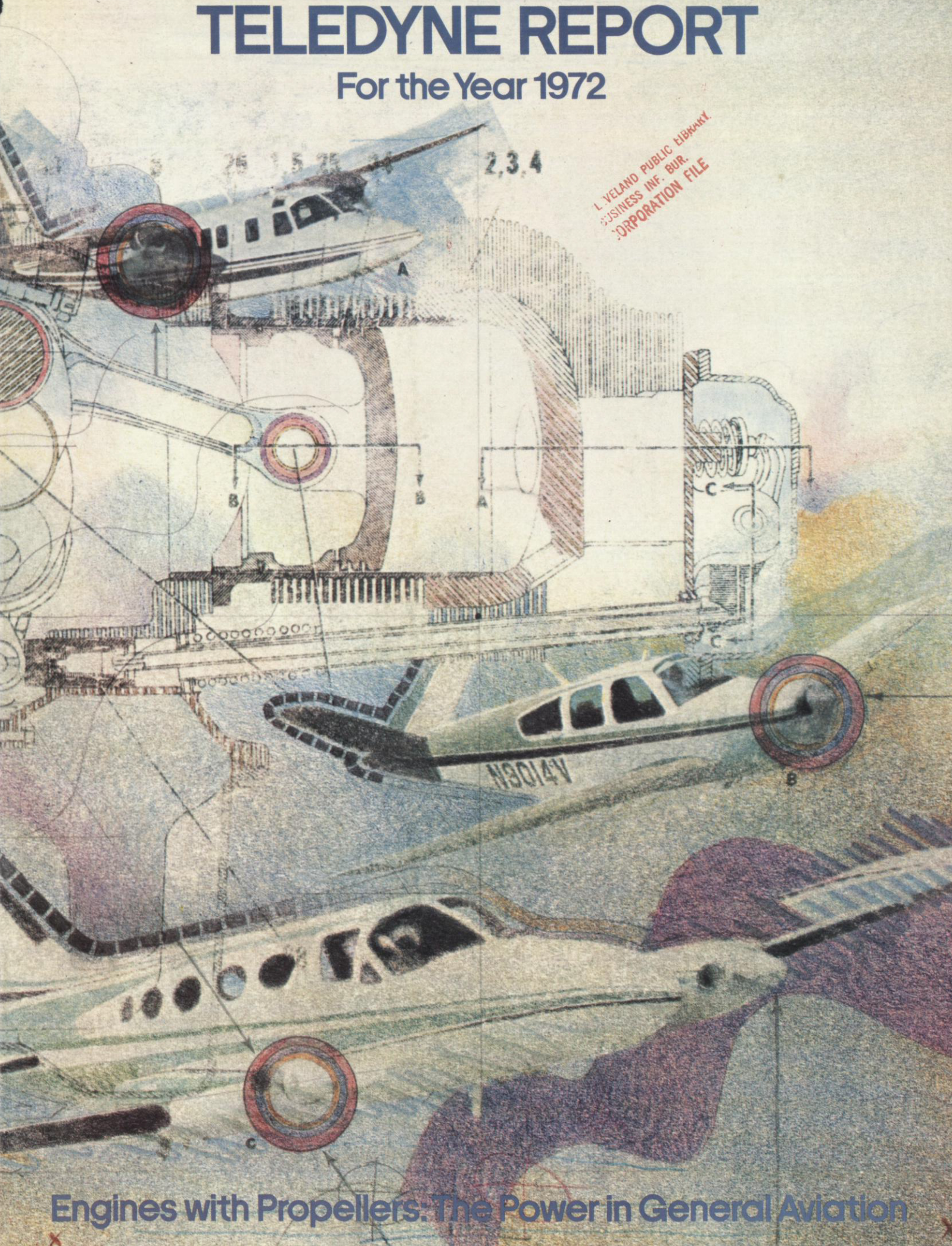


# TELEDYNE REPORT

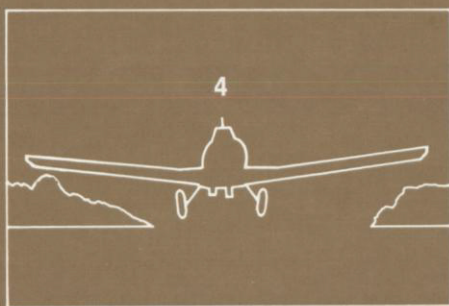
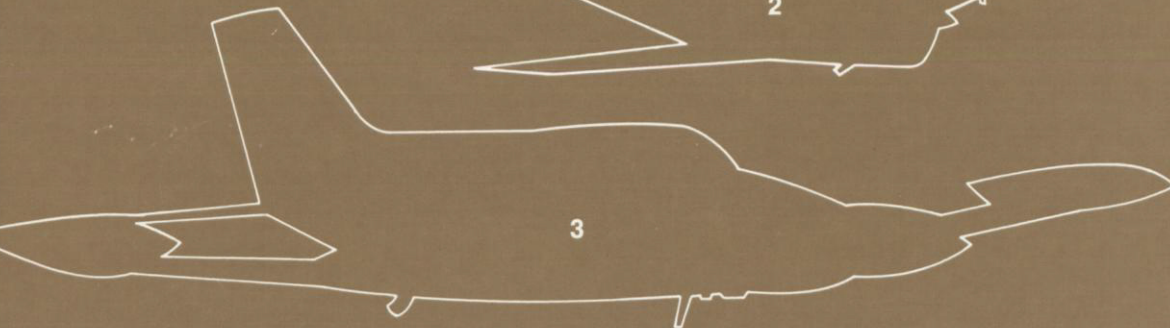
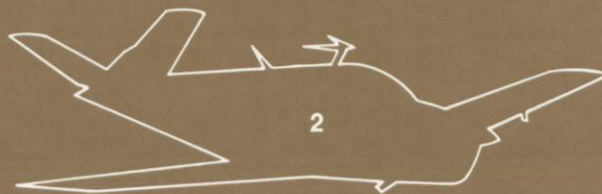
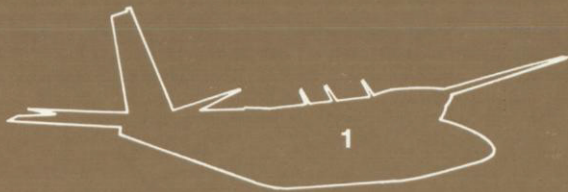
For the Year 1972

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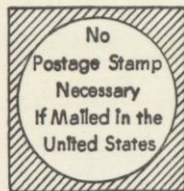
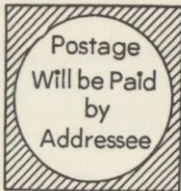
Engines with Propellers: The Power in General Aviation



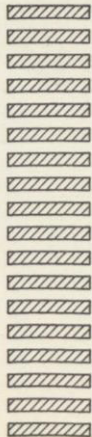


**On the cover :**

- 1** Aero Commander 685 twin-engine business aircraft built by North American Rockwell, powered by Teledyne Continental's highest horsepower engines in production today, the GTSIO-520F. These turbosupercharged, geared, fuel injection engines develop 435 horsepower.
- 2** Beechcraft Bonanza V35B powered by a 285 horsepower fuel injection Teledyne Continental IO-520B engine. The Bonanza line which has been in production for 25 years has always been powered by Continental engines.
- 3** Cessna Pressurized 414 twin-engine business aircraft, powered by Teledyne Continental 310 horsepower TSIO-520J turbosupercharged, fuel injection engines. All Cessna twin engine aircraft are currently Continental powered.
- 4** Piper Pawnee Brave agricultural aircraft, powered by a Tiara 6-285 fuel injection, 285 horsepower engine. This is the first production aircraft to be powered by one of the new Tiara line of engines.



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TELEDYNE  
PROXY





# General Aviation Engines

Propeller driven aircraft powered by conventional piston engines are not only alive and well more than 30 years after the advent of the jet, they dominate air activity today.

At first glance, commercial airline companies would seem to account for most of the civilian air activity in the United States. The fact is, however, that certificated airlines own only two percent of registered civil aircraft, employ only four percent of licensed pilots, log only twenty-one percent of total airplane hours, and fly only twenty-nine percent of total air miles traveled.

What about the other twenty-seven million air hours flown last year in the U. S.? They come under the heading "general aviation" and include such diverse aerial activities as business flying, personal or pleasure flying, air taxi service, pilot training, agricultural and conservation flying, mineral exploration, aerial survey and photography, forest fire control, border patrol and many other pursuits.

Business flying, whether by large corporations, small businesses, or individual professional people, makes up the largest single category of general aviation usage. Some 33,000 aircraft are flown for business purposes and these account for 44 percent of the total general aviation hours flown. Perhaps more significant is the fact that business flying adds up to 61 percent of the total general aviation hours flown for transportation purposes.

This is not really surprising when it is considered that 90 percent of new plant construction in

the U.S. since 1954 has been located outside of the 22 major hub areas that receive about half of all airline flights. There are over 10,000 airports in the U.S. and only slightly more than 500 of these are served by scheduled air carriers. As a result, general aviation provides the only air service to more than 19,000 incorporated communities, some with populations approaching 100,000.

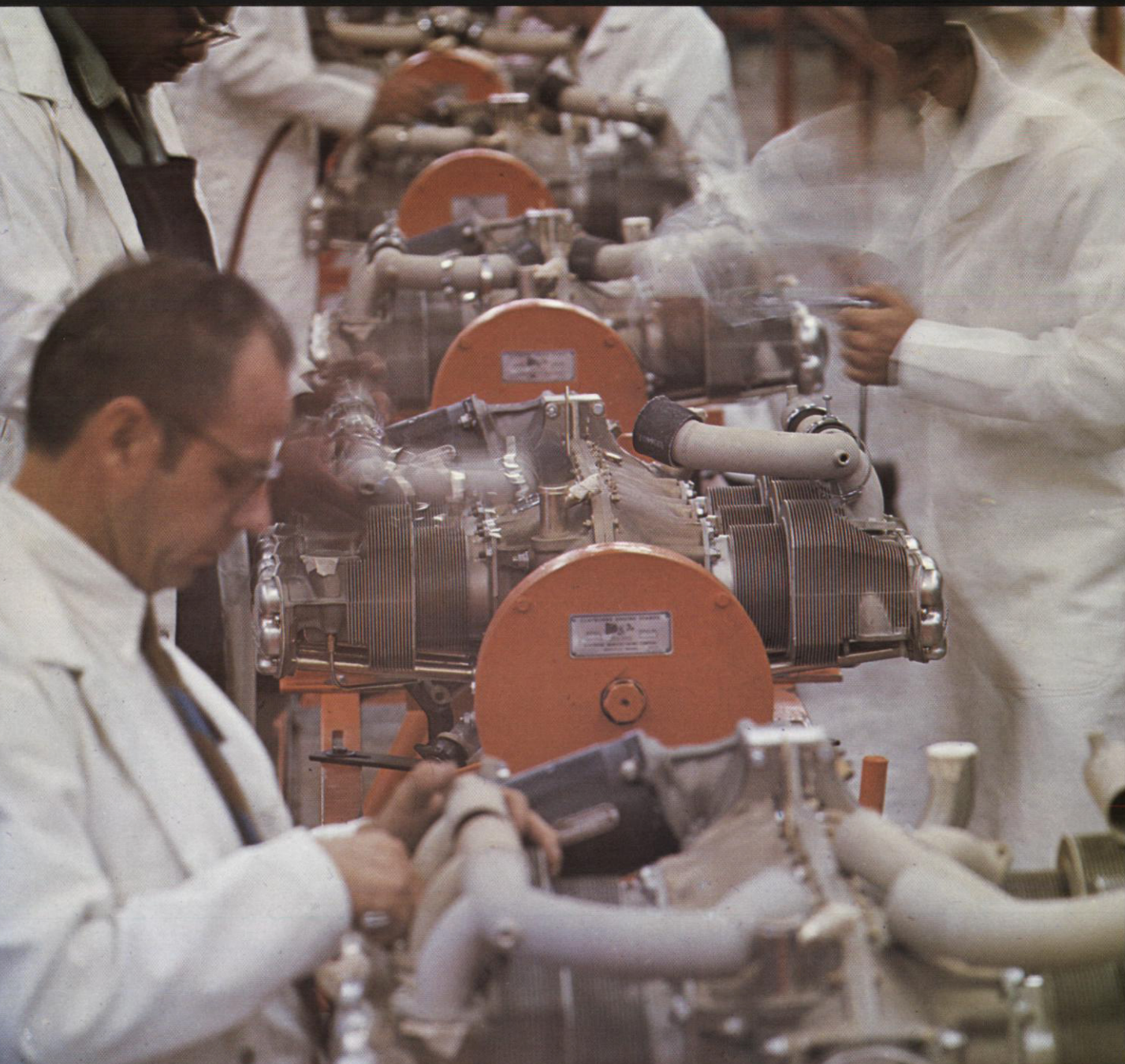
Personal or pleasure flying is the next largest category in general aviation with about 63,000 privately-owned aircraft logging about 27 percent of all hours flown.

#### **What Ever Happened to the Jet Age?**

It is estimated that there were 130,800 fixed wing aircraft (as opposed to rotorcraft such as helicopters) registered in the U.S. in 1972. Of those, only 2500 (including commercial jet airliners) were jet powered. The remaining 128,300 aircraft were powered by highly refined versions of the reciprocating piston engine that traces its lineage back to the first flight of the Wright brothers.

That early engine was a four-cylinder, in-line, water-cooled horizontal design that produced 12 horsepower. By the end of World War II gigantic powerplants employing multiple banks of radially-arranged cylinders were developed that ultimately produced as much as 3700 horsepower. These giants, manufac-





**Top:** Continental aircraft engines are built up from the bare crankcase into complete ready-to-run powerplants on several assembly lines such as this one. Over a quarter of a million Continental aircraft engines have been built to date.

**Right:** Complex subassemblies such as fuel injection systems are fabricated and assembled at the Mobile, Alabama plant. Teledyne Continental Motors pioneered in designing and developing its own proprietary fuel injection systems for general aviation engines.





tured primarily for military and transport service, were the engines that were finally obsoleted by the commercial jet turbine engines of the 1950's.

The jet turbine engine, however, has never been able to compete successfully with the reciprocating piston engine in terms of cost, ease of maintenance or fuel economy at horsepowers below 500. Since the vast majority of modern aircraft have single or multiple engines in the 100 to 500 horsepower range, the piston engine has maintained its supremacy, and evolved into a highly refined and reliable power source for most aircraft.

#### **Teledyne Aircraft Engines**

Teledyne Continental Motors is a major manufacturer of piston aircraft engines. Continental en-

gines are used in various aircraft built by such leading airframe manufacturers as Beech, Bellanca, Cessna, North American Rockwell, Piper and others.

Continental's engine building experience goes back to 1901, when the company first started building utility engines and rapidly became a major producer of engines for the early automotive industry. In 1928 the first Continental aircraft engines were built and this activity has been a part of the company's business since.

Teledyne Continental Motors carries on three major types of general aviation activity: manufacture of new engines, complete factory re-manufacturing of used engines to new engine specifications, and factory general overhaul of used en-

gines. A fourth activity, the distribution of spare parts and maintenance supplies on a worldwide basis, is handled from a computerized central warehouse in the Chicago area.

#### **Trends in Engine Design**

Almost all piston engines used in aircraft today employ a flat, horizontally-opposed configuration of four, six or eight air-cooled cylinders. Engines in these configurations can be built to provide horsepowers of less than 100 to more than 500.

Within this basic format there are a number of design options that change the performance and operating characteristics of the engine.

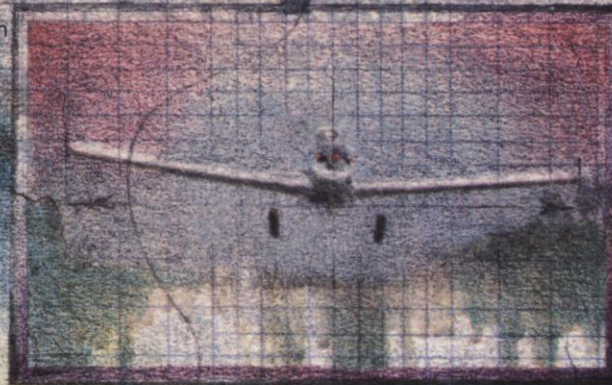
#### **Carburetion vs. Fuel Injection**

Early aircraft engines were designed with conventional carburetion systems, similar to those used in automotive practice. A basic prob-

## **ESTIMATED MILES FLOWN IN GENERAL AVIATION: 1970**

<b>TOTAL:</b>	<b>3,207,127,000</b>
<b>BUSINESS:</b>	<b>1,134,279,000</b>
<b>COMMERCIAL:</b>	<b>554,683,000</b>
<b>INSTRUCTIONAL:</b>	<b>686,152,000</b>
<b>PERSONAL:</b>	<b>753,434,000</b>
<b>OTHER:</b>	<b>78,578,000</b>

SOURCE: Federal Aviation Administration

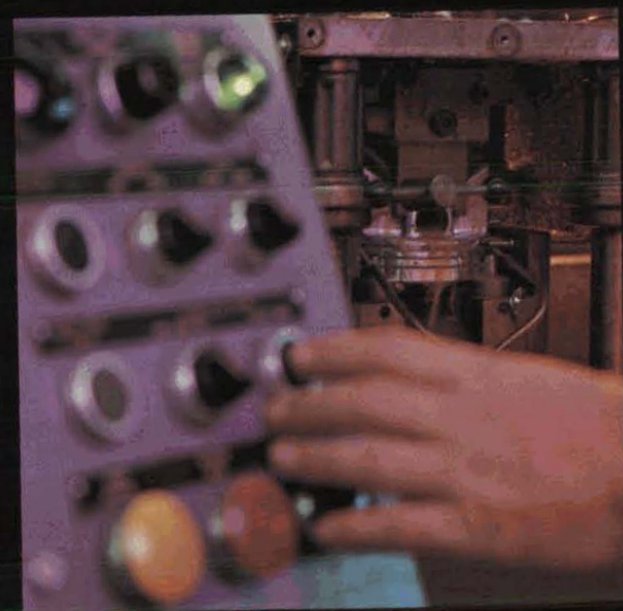






**Top:** Numerically-controlled machine tools maintain the high precision and uniformity necessary in mass producing critical aircraft engine parts. This tape-programmed machine, one of many used, is performing a machining operation on a fuel injection system throttle body.

**Right:** Another type of automatic special purpose machine is used to bore the wrist pin hole and drill oil smoke holes in a Tiara engine piston.





lem with this system is the formation of ice in the carburetor throat under certain conditions, with a possible loss of power.

Carburetor heating systems are used to prevent this, but the trend is toward the use of more reliable fuel-injected engines which virtually eliminate this problem. Fuel injection also achieves better general engine performance and economy through better control of the fuel/air mixture under varying conditions. At present only two of the models of engines built by Teledyne Continental Motors are still offered with a conventional carburetion system.

#### **Conventional vs. Turbocharged Engines**

Both additional power and higher altitude capability are made possi-

ble by turbosupercharging a conventionally-aspirated engine. This is accomplished by using the hot exhaust gases from the engine to drive a gas turbine which in turn drives a compressor that supplies air to the engine under pressure. This not only compensates for the rarified atmosphere at high altitudes, but can also be used to supply pressurization air to the cabin.

Aircraft manufacturers are becoming more and more interested in higher altitude operation because this gets the aircraft above turbulence and improves performance.

Teledyne Continental Motors now offers four turbocharged engine models ranging in horsepower from 210 to 435.

#### **Non-Geared vs. Geared Engines**

Common practice in the aircraft in-

dustry for years has been to connect the propeller directly to the crankshaft of the engine. The propeller and engine thus run at the same speed at all times. This poses a dilemma. Propellers operate most efficiently at relatively low speeds. Engines operate most efficiently at relatively high speeds. Hence both engine and propeller speeds are usually a compromise.

The answer to this problem is the geared engine. A reduction gear system is placed between the engine and propeller, allowing the engine to run at a relatively high speed while the propeller speed is lower.

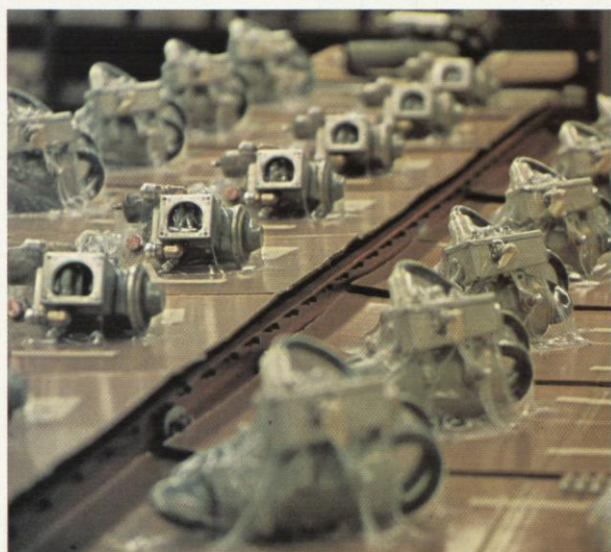
Teledyne Continental Motors now makes four models in the GTSIO-520 series of geared engines. This does not include the geared engines in the new Tiara line.



**Top Left:** Fuel metering accuracy in fuel injection systems is critical to engine performance. A series of test stands such as this one are used to calibrate fuel injection systems and components for uniform output.



**Top Right:** Pistons and cylinders are matched to each other after a 24-hour "cold soak" in a temperature controlled room to eliminate measuring errors due to temperature differences. This electronic read-out machine measures piston cam contour to 1/10,000 inch accuracy.



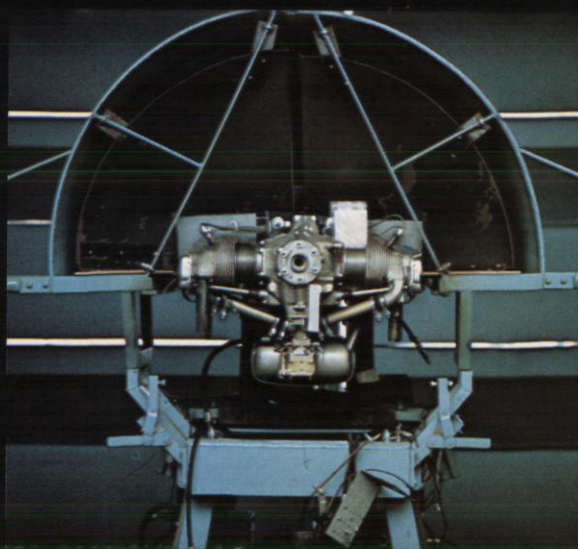
**Left:** Spare parts for Continental aircraft engines are produced and specially-packaged for worldwide distribution through a computerized central warehouse in Chicago. Marketing of spare parts accounts for a sizable fraction of total sales volume.





**Top:** Each engine is run in a test cell such as this one, following a carefully programmed test specification. Full instrumentation allows every engine parameter to be monitored and entered into a permanent test record for that engine. One engine in ten, randomly selected, is completely disassembled and inspected internally as a further quality control measure.

**Right:** Eighteen modern test cells are used for production testing of engines. Extensive life and developmental engine testing is also carried out in other engineering test cells.







## ESTIMATED HOURS FLOWN IN GENERAL AVIATION: 1972

Total:	27,500,000
Single engine piston:	20,800,000
Multi-engine piston:	4,500,000
Turbine:	1,200,000
Rotorcraft:	900,000
All other:	100,000

SOURCE: Federal Aviation Administration

### Tiara — New Generation of Aircraft Engines

Some years ago, Teledyne began design work on an entirely new family of engines that is now going into production under the name Tiara. The program involved the most exhaustive development and pre-production testing of any general aviation engine to date. The engines themselves represent a major advance in piston engine aircraft propulsion for a number of reasons.

Those Tiara engines which are geared have a ratio of 2 to 1 so that the propeller runs at exactly half the engine speed. This allows the engine to run in the 1000 to 4400 rpm range where greater horsepower per cubic inch displacement and pound of engine weight are possible. At the same time the propeller runs in the 500 to 2200 rpm range with greater efficiency and reduction of propeller noise. The 2 to 1 reduction gearing ratio is believed to be the highest ratio ever used in a mass production aircraft engine.

Tiara engines have also been designed to be more compact than contemporary engines of equivalent horsepower. This permits the airframe manufacturer to use a shorter and more streamlined nacelle. The extra space can be utilized for a roomier passenger compartment and the considerably lighter weight of the Tiara engine also increases the aircraft's payload. All this is achieved without compromising the accessibility of the engine accessories which are side-mounted for easy maintenance.

A new combustion chamber design that promotes a desirable high turbulence of the fuel mixture at the peak of compression also contributes to the high power output of the engine and permits higher compression ratios with existing fuels.

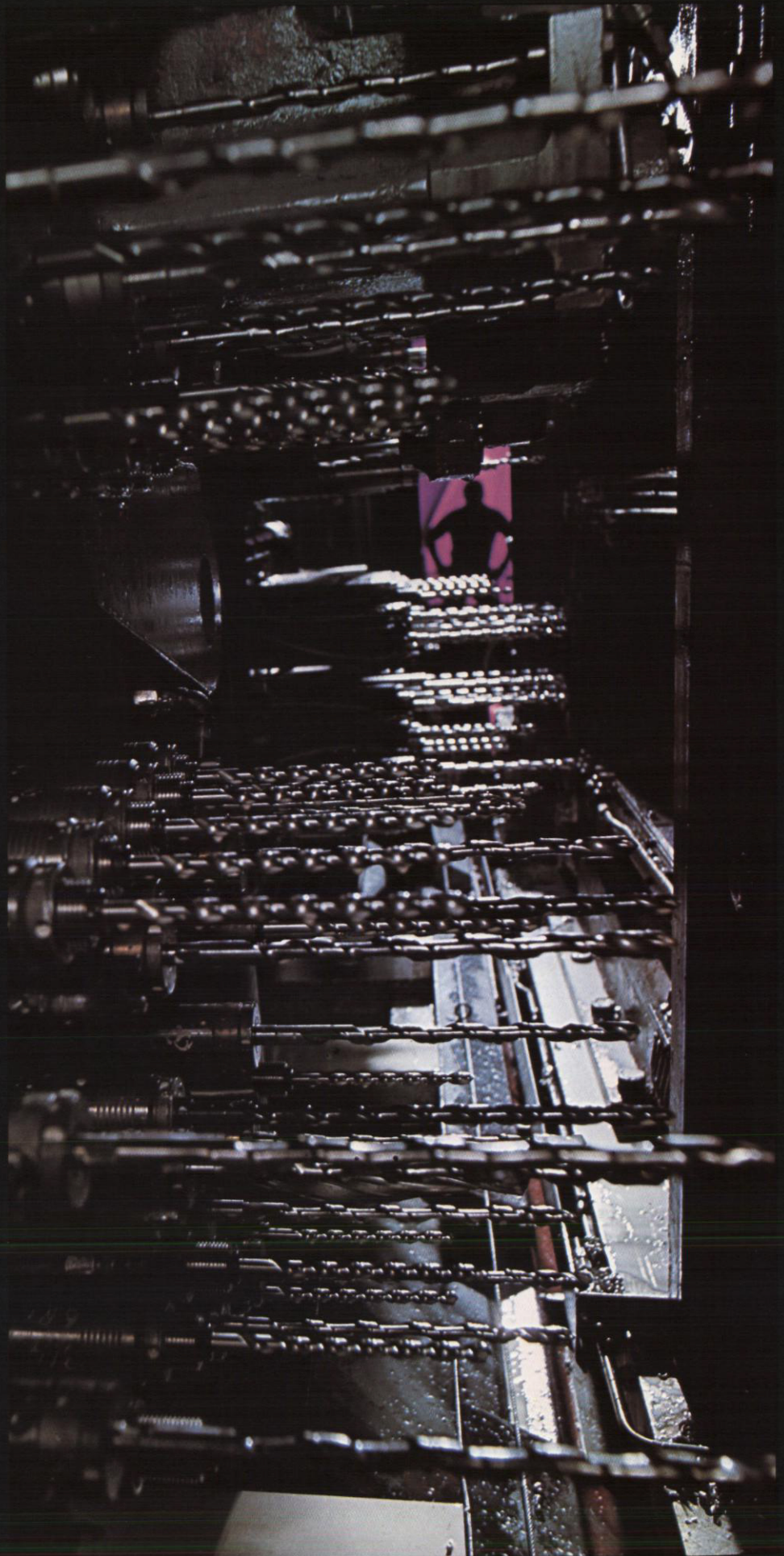
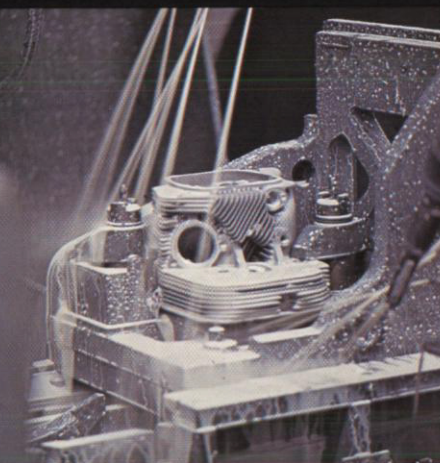
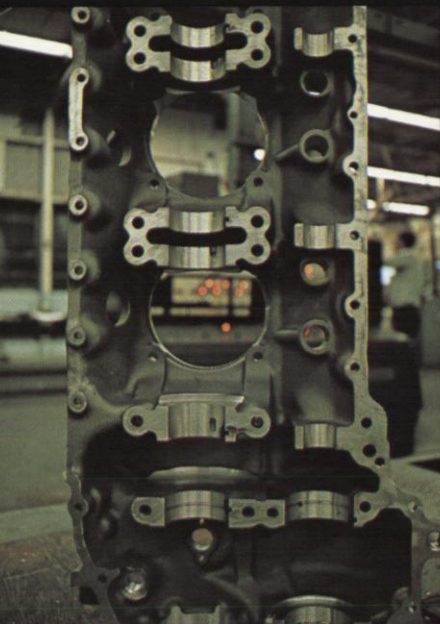
Complete redesign of such aspects of the engine as crankcase, cylinder barrels and cylinder heads, valve mechanisms and other parts has contributed to better performance and ease of maintenance. Asymmetric fin design on the cylinder barrel, for example, dissipates heat faster from the hot exhaust side than from the cooler intake side,



**Right:** This view down the ways of a transfer machine shows an impressive battery of drills which automatically make precisely-positioned holes in the Tiara crankcase casting as it progresses from station-to-station on its way through the machine. This machine and eight others perform all rough and finish machining operations on the crankcase.

**Top:** This half of a Tiara engine crankcase has been completely finish machined by automatic transfer machines and matched to a mating half. Nine automatic machines perform several hundred individual operations to transform a pair of rough castings into a finished crankcase.

**Bottom:** Tiara cylinder heads are also produced on automatic machinery. A single palletized transfer machine with 19 machining stations performs almost all of the operations required to produce a finished cylinder head.





equalizing engine temperatures. Coupled with special cooling baffles, this feature lowers the cooling air pressure requirement by 20 to 25 percent compared to a conventional engine of the same size.

**Tiara Design Philosophy**

In addition to these performance advantages, the Tiara engine has been designed to produce economies both in production and maintenance through extensive commonality of parts. All engines in the family will use the same pistons, cylinders, cylinder heads, connecting rods, valves and many other parts. This will simplify stocking of spare parts and reduce the cost of producing them.

Tiara engines are being built at the most modern reciprocating aircraft engine facility in the country.

A series of nine transfer machines have been designed and built expressly for machining Tiara crankcases. These automated machines each have three to seven machining positions and automatically perform a total of several hundred separate machining operations on each crankcase, producing a totally finished crankcase from a raw casting. This equipment will produce a finished crankcase at a greatly improved rate and quality level as opposed to conventional methods of production.

A similar through-type transfer machine performs machining operations on each Tiara cylinder head.

**The Market**

According to the General Aviation Manufacturers Association, the gen-

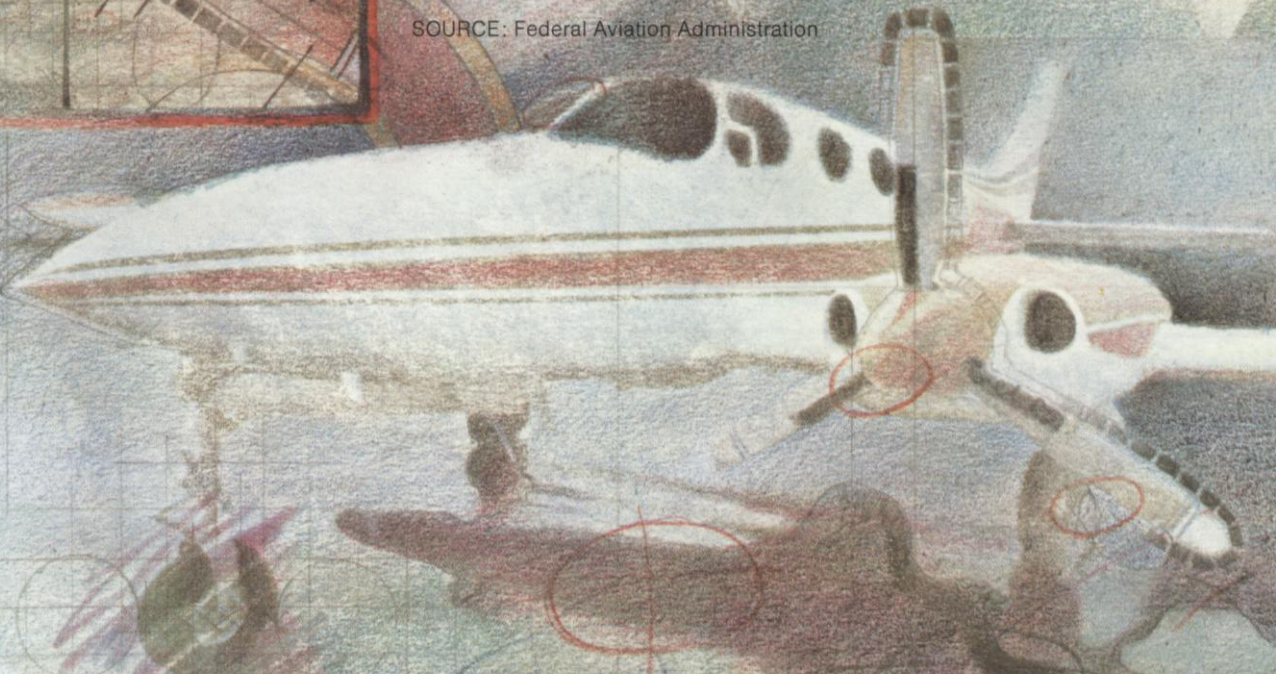
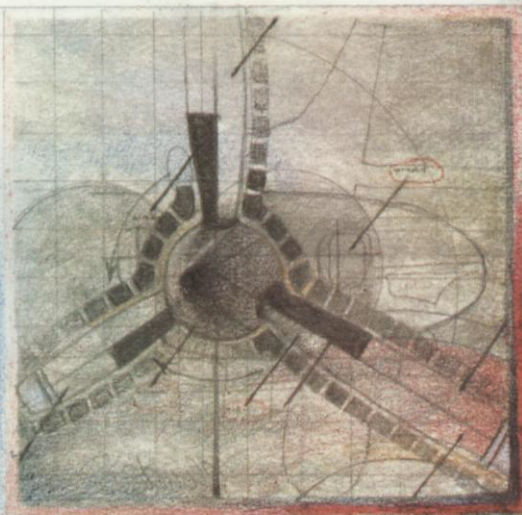
eral aviation industry has produced almost a quarter of a million aircraft valued at more than \$4 billion dollars since 1945. More than half a billion dollars worth of general aviation products were sold in the U.S. in 1971. Since 1967, nearly 12,500 aircraft valued at \$400 million—about one of every four produced—were shipped overseas resulting in a considerable benefit to the U.S. balance of payments.

General aviation is the dominant force in aviation today with some 26.5 million hours flown in 1971 in the U.S. The Federal Aviation Administration estimates that by 1983 that figure will reach 46 million hours and that over 40 million of those hours will be flown in piston powered aircraft.

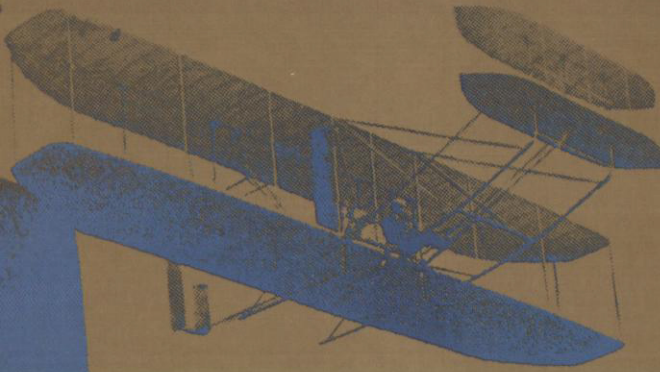
**FORECAST OF ACTIVE GENERAL AVIATION AIRCRAFT**

	Total	Piston
1972	135,000	128,300
1974	143,000	135,300
1976	154,000	144,800
1978	167,000	155,700
1982	203,000	187,500
1983	212,000	195,400

SOURCE: Federal Aviation Administration

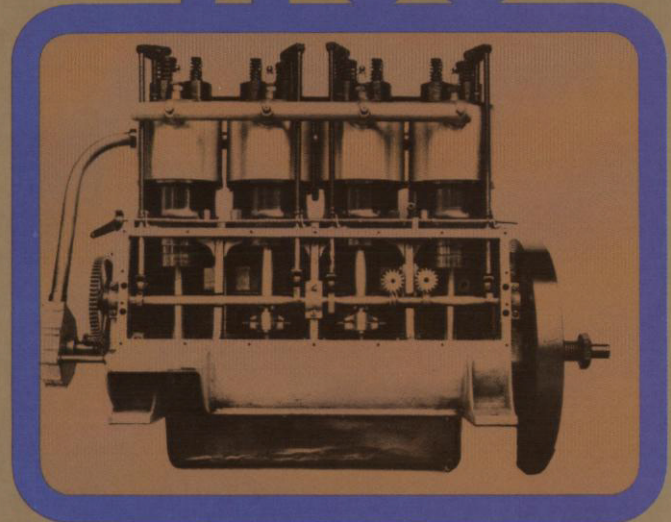






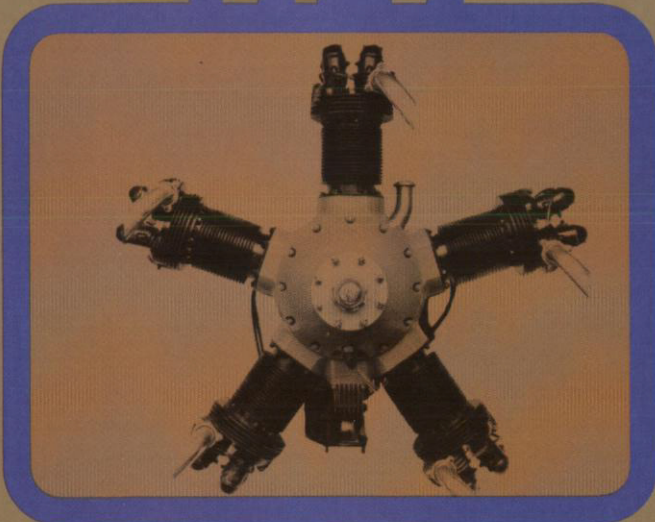
*Wilbur and Orville Wright, pioneers in aircraft engine development.*

# 1906



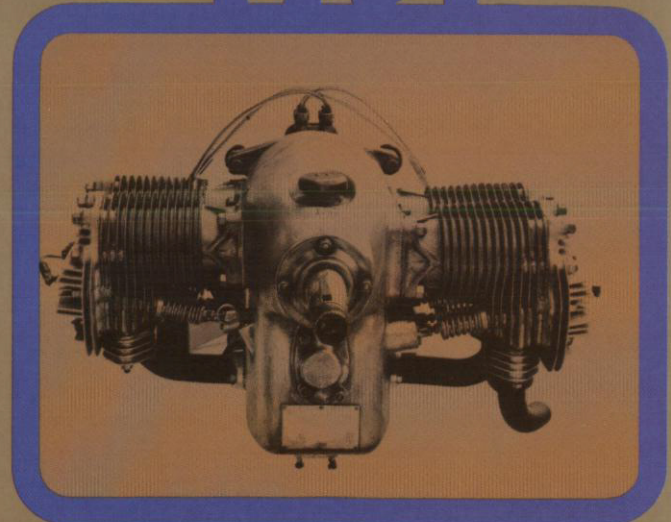
This second type of engine developed by the Wright brothers for aircraft was the most used of any engine they produced. It had no throttle or carburetor but eventually produced 30 horsepower, and powered the first Army aircraft.

# 1929



This K-5 model was one of many popular Kinner radial engines used on early biplanes and training planes. It developed 100 horsepower.

# 1931



Continental's four-cylinder A-40 engine was the forerunner of contemporary horizontal-opposed light plane engines that are universally used today. It developed 38 horsepower at 2500 rpm.

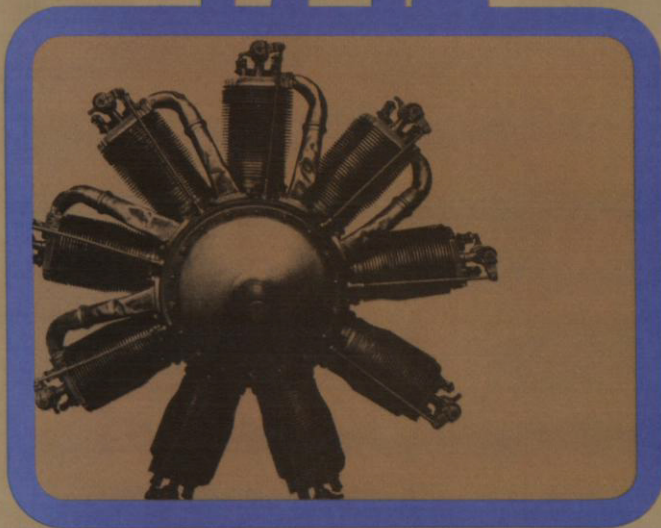


## Power From Pistons

Piston engine propulsion for manned heavier-than-air aircraft began for all practical purposes with the four cylinder 12 horsepower, 179 pound watercooled engine that powered the Wright brother's first flight in 1903. Less than 50 years later piston aircraft engine development reached its peak with the 18-cylinder two-row radial Wright Turbo-Cyclone engine that developed about 3700 horsepower. These giant military and commercial piston engines were largely obsoleted by the advent of the jet turbine engine in the 1950's, but piston engines still are the most common power source for aircraft. Of the 130,800 fixed wing civilian aircraft registered in the U.S. in 1972, only 2500 (including commercial airliners) were turbine engine powered.

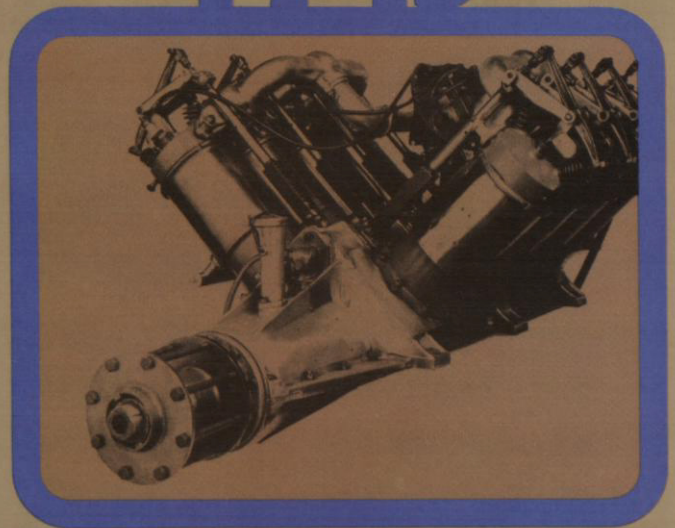
*Historic engine photographs courtesy San Diego Aero-Space Museum*

# 1912



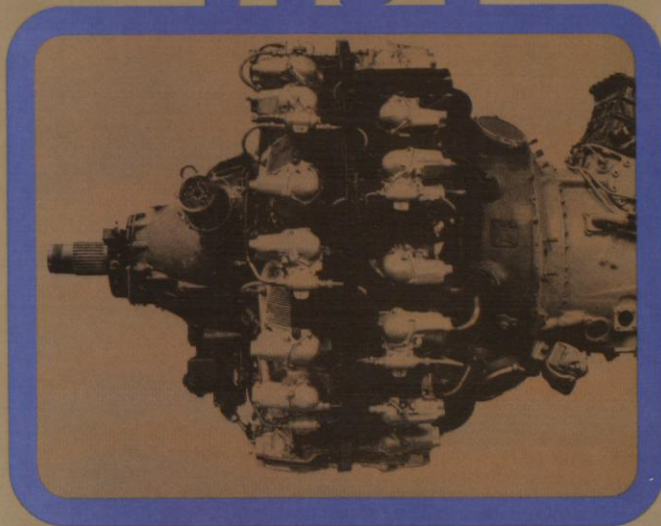
The cylinders of this unusual rotary engine revolved, with the propeller, around a fixed crankshaft. It is a Le Rhone Model C that developed 80 horsepower and was used on the Nieuport 17's of the Lafayette Escadrille.

# 1915



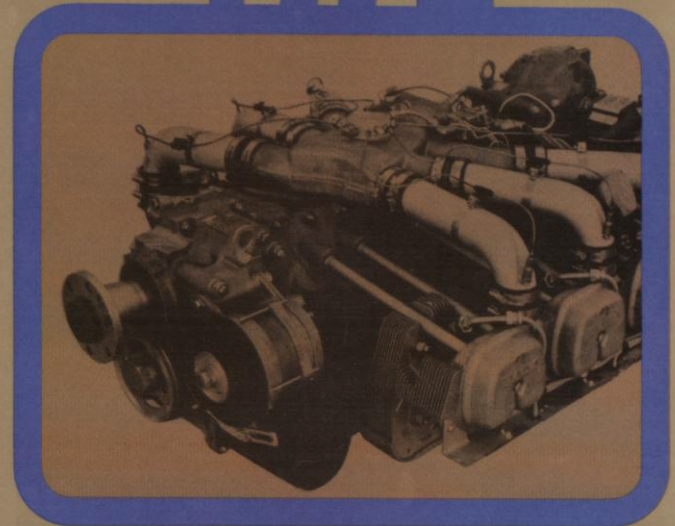
The watercooled, 90 horsepower Curtiss OX-5, first built in 1915, powered dozens of famous planes up to 1928 including Jennies, Waco's and Curtiss Robin's. It used the V-8 configuration long before it became popular in automotive use.

# 1951



Eighteen cylinders in two radial banks, with three exhaust-driven turbosuperchargers, reached about 3700 horsepower in the Wright Turbo-Cyclone 18.

# 1972



Teledyne Continental's Tiara line is the most recently developed family of general aviation engines. Tiara engines use fuel injection and are available in turbocharged and non-turbocharged versions.



## LETTER TO SHAREHOLDERS

Net income, earnings per share and sales for fiscal 1972 improved over 1971 and the general financial condition of Teledyne continued strong.

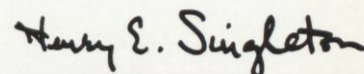
Earnings per share were \$1.62 as compared to \$1.54 a year earlier, after adjustment for the three percent stock dividend payable in March 1973. Consolidated sales of our manufacturing and service companies increased from \$1.102 billion to \$1.216 billion, while the combined revenues of our unconsolidated insurance and finance companies rose from \$447 million to \$513 million. Net income was \$57.4 million compared to \$56.2 million in 1971. Relative contributions to net income in 1972, 58% from consolidated companies and 42% from the insurance and finance companies, remained about the same as in 1971. Consolidated assets at year end were \$1.145 billion compared to \$1.076 billion in 1971, and combined unconsolidated insurance and finance company assets increased from \$963 million to \$1.082 billion.

It will be noted on page 17 that sales increased during the year in each of our major product lines, and that net income increased in all categories except consumer products. The decline in net income from consumer products was caused in substantial part by costs incurred in expanding our television and stereo product line to compete on a national basis. Manufacturing primarily for west coast markets until 1971, we have expanded our distribution into the midwest, east and south so that the number of retail outlets selling Teledyne television and stereo has more than doubled in the past year. To accommodate our growth in consumer electronics we have established new facilities in Mexico and will commence operations in a new plant in Tennessee this

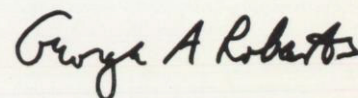
spring. Teledyne was the first television manufacturer to offer cartridge television for home use, a system for video recording and playback packaged in a standard television console. Further expansion in the area of consumer electronics was accomplished through the opening of 20 new Olson Electronics stores during 1972, making a nationwide total of 73 locations.

At year end, Teledyne held 9,330,494 shares of its common stock in the treasury. Approximately 8.9 million of these shares were purchased in October 1972 through an offer to shareholders at a price of \$20 per share. Subsequent to year end a 3% common stock dividend payable in March 1973 was declared.

In each of the Teledyne Reports we feature a segment of our business. The report for the first quarter was on LORAN, an electronic navigation system having industrial, military and civilian applications. A new foreign agreement covering LORAN is discussed in the Review Section. The second quarter report discussed rubber products for automotive and industrial use. In this area we made significant advances in product development, sales and plant capacity during the year. The third quarter subject was consumer electronics, and the present Teledyne Report features engines for general aviation. A list of all of the 16 articles about your company's activities that have been published in previous reports will be found on page 27.



Chairman of the Board of Directors



President



### NEW ENTERTAINMENT PRODUCTS

A new line of proprietary electronic entertainment products has been introduced under the Teledyne brand name to be marketed through Teledyne's Olson Electronics. A typical new product is the Teledyne RA-632 240-watt, 4-channel stereo FM/AM receiver that sells for \$229.95 including walnut finish enclosure. This receiver features a 4-channel amplifier for discrete quadraphonic sound (see Teledyne Report Third Quarter 1972) from tapes and a universal decoder for matrixed or synthesized 4-channel sound from broadcasts, records and tapes.

Another new product line features a variety of microphones including a professional quality lavalier-type electret condenser microphone that weighs only one ounce and measures 1/2" in diameter by 1 1/8" long, priced at \$19.98.

These and other Teledyne products are available at over 70 Olson stores or by mail from Olson Electronics, 260 South Forge Street, Akron, Ohio 44327. Free catalogs are available on request.

### LOW NOISE EMISSION PRODUCTS

Two new products, designed to reduce noise in industrial applications, have been introduced by Teledyne Sprague Engineering.

The first is a low-noise portable electric motor-driven hydraulic test stand used in checking aircraft hydraulic systems without operating the aircraft's engines. A variety of design techniques have been used to reduce the noise level of this equipment to 80 DBA at a distance of 3 feet from the unit. This is an exceptionally low figure for equipment of this type and is considerably below the noise level standards specified by the new Occupational Safety and Health Act.

The second new product is a super-quiet air-operated high-pressure hydraulic pump for use with shop presses, portable hydraulically-operated tools, jacking equipment, power clamping and central lubrication systems. Operating noise of less than 80 DBA is achieved with a new integral vent air muffler system.

### ADVANCES IN AIRCRAFT STRUCTURES

Weight economics necessitated by the new generation of jumbo aircraft have led to a number of revolutionary developments in airframe structural components.

One of these is a tapered stringer that can be produced with a thickness that decreases uniformly from one end to the other, or with interrupted tapers in any given area as determined by engineering requirements. Stringers of this type have been produced in millions of feet by Teledyne Aero-Cal for a major portion of the Boeing 747 and DC-10 airframes, as well as for transport and patrol aircraft. The tapered stringers, in "hat" or "Z" or other cross section, are jogged, contoured, notched and drilled and may be tapered in lengths from less than two feet to over thirty feet.

Tapered stringers give designers tremendous advantage by putting the stronger, heavier-gage section in the inner portion of a component such as a wing or empennage where stresses are greatest, while the thinner, lighter sections are at the other end where stresses are lower. The weight savings per plane, using this method, can add up to hundreds of pounds.

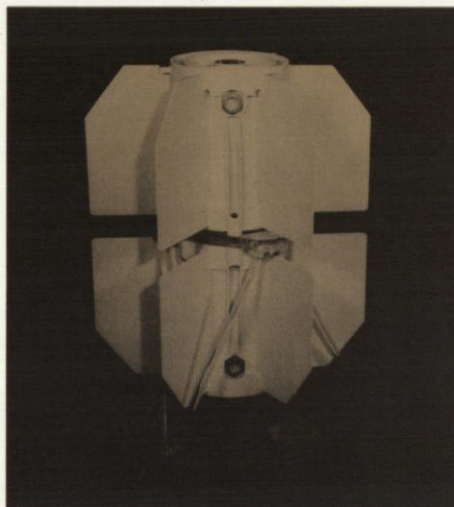
### IDENTIFICATION SYSTEMS FOR AIR DEFENSE

A new electronic identification system for use with the Army "Stinger" man-portable air defense system is now being produced by Teledyne Electronics. The new, highly reliable, miniature device permits a soldier on the ground to distinguish hostile from friendly aircraft. It is built to withstand severe environmental conditions and is small and light enough to be worn on the soldier's belt.



Teledyne RA-632 4-Channel Stereo Receiver





### DECORATIVE CASTINGS

Teledyne Casting, producers of precision aluminum and magnesium castings for such applications as thrust reversers for the Boeing 747 and the Lockheed L1011 engines, has recently introduced a new line of ornamental castings directed toward consumer and commercial markets.

These cast products are made of aluminum by a proprietary method (patent pending) that results in striking sculptural shapes. No two are identical.

One line of these castings is being marketed under the trademark Aquaform\* and is intended for use as aquarium decor. The castings are specially treated for long life under water and are non-toxic to fish and other aquatic life. They can be stacked and arranged to form interesting underwater grottos, and are available in a number of metallic color finishes.

The second line called Floracast\* can be used as a base for floral displays.

Another unique casting called Sculpturcast\* has many potential uses such as candle holders, desk sculpture, wall decor and paperweights.

\*TM App.

### GROUND POWER SYSTEM

An efficient new method for supplying electrical power to commercial aircraft while they are on the ground has been introduced by Teledyne Inet. The system, called SKYFLEX, is a low-cost, low-maintenance alternative to mobile generators or underground cabling installations.

With SKYFLEX, power from the ground source is carried to the aircraft over the passenger bridge. Flexible cables enclosed in a telescoping aluminum housing are attached to the side of the bridge. Cable and connector and on-off control are held ready for use in a basket attached to the bridge drive column. For longer cable runs an optional countersprung boom assembly can be installed at the end of the bridge.

The system reduces clutter around the aircraft, eliminates the maintenance problems of other systems and is ideally suited for a centralized aircraft power system, also produced by Teledyne Inet.

### LOW EMISSION DIESEL ENGINES

Two new low-emission diesel engines developed by Teledyne Continental Motors successfully passed tests during the year, meeting 1973-74 Environmental Protection Agency emission standards and received an official Certificate of Conformity. The engines also meet the more rigid 1975 California standards and projected 1976 Federal standards.

The test consisted of a 125-hour running test to determine emission levels, followed by a 1000-hour test at full load and speed to determine emission deterioration.

The Continental LED-500 engines that passed the test are 6-cylinder, watercooled, turbocharged diesels of 175 and 200 horsepower, for military and commercial applications. Other engines to be added in the line will include 250 and 290 horsepower units.

The low emission results were achieved in these pre-combustion chamber engines through improvements made over the last year.

### POWER FOR JUPITER MISSION

NASA's Pioneer 10 spacecraft has completed nearly a year of its 21-month voyage to Jupiter, the largest planet in the solar system and the fifth in order of distance from the sun. Power for the electrical systems aboard the craft is supplied by four Teledyne Isotopes SNAP-19 radioisotope thermoelectric generators (see Teledyne Report, First Quarter 1971) that are producing 155 watts of power — comfortably above the predicted performance level.

Radioisotope thermoelectric generators are the only feasible way to provide electrical power for spacecraft journeys to the outer planets. At increasing distances from the sun, solar cells lose effectiveness and ultimately become useless.

Pioneer 10 has set several firsts in its journey so far. It is the first NASA spacecraft to depend solely on nuclear energy for its electrical power, the fastest ever to leave the earth's gravitational field, the first to traverse the asteroid belt and will be the first man-made object ever to leave the solar system.

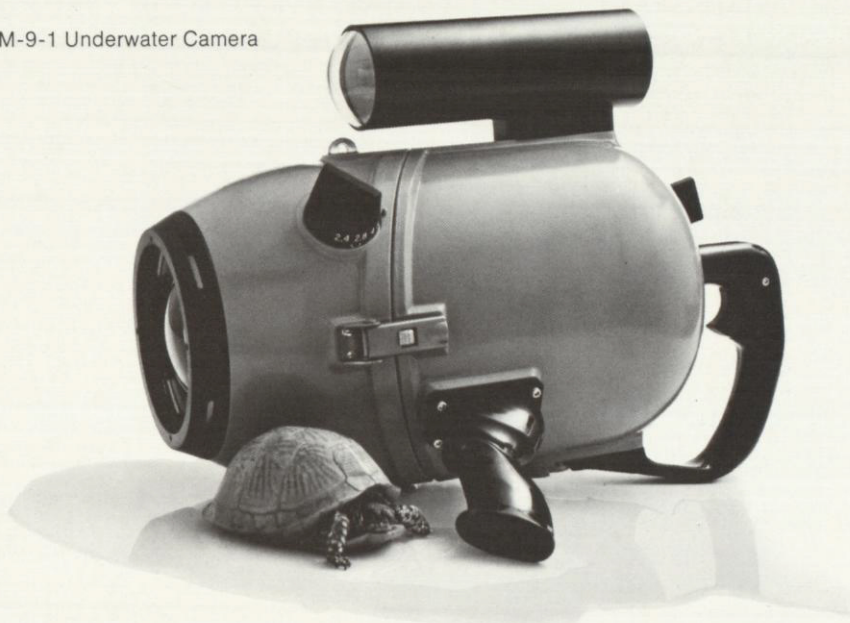
Pioneer 10 will fly by Jupiter in December 1973 and begin radioing back information about that planet. Round-trip communications will take about 90 minutes from the vicinity of Jupiter. Maximum communications distance will be about 1.5 billion miles, at which time round-trip communications will take 5 hours.

### HULL TESTING PROGRAM

Teledyne Materials Research has designed and installed an instrumentation system to monitor the dynamic strains and structural response of the hull of the 1000 foot M/V Stewart J. Cort, the largest ship on the Great Lakes. The testing program, being conducted by the U.S. Coast Guard's Office of Research and Development, will be used to develop strength standards for Great Lakes ore ships.

During the tests, the dynamic strains throughout the hull are recorded by an automatic data acquisition system. Data on the ship's motions, course, speed, wind velocity and wave conditions will also be obtained electronically and correlated with the strength information.





#### IMPROVED UNDERWATER MOTION PICTURE CAMERA

Teledyne Camera Systems has developed a new 16mm underwater motion picture camera, designed with particular emphasis on ease of operation in the underwater environment. Designated the DBM-9-1, it replaces an earlier model developed in the early 60's which has been extensively used by the U.S. Navy.

The new camera is self-contained in a compact corrosion-proof housing of improved hydrodynamic shape with handles and controls re-designed for easier underwater use. It is available with a choice of three interchangeable water-corrected lens systems and either optical or open frame viewfinders. Film magazines of 400-foot capacity are used and cine speeds of 16, 24, 32 and 48 frames per second are selectable.

#### FLAMELESS CATALYTIC HEATERS

Teledyne Merla has recently been granted Factory Mutual approval for the use of its line of radiant, flameless catalytic heaters in hazardous locations such as industrial, oil and gas field, or gas transmission operations where open flame heaters are unsafe.

The radiant heat produced is directional, like sunshine, and heats objects and people without heating the surrounding air. The heater is available in modular concept for any sizes in modules of 12" x 12".

#### STEEL FABRICATION AWARD

Teledyne Irby Steel recently received an Award of Merit from the American Institute of Steel Construction for its part in the construction of the East Pearl River Bridge between Louisiana and Mississippi. The company handled the steel fabrication for this outstanding high-clearance bascule bridge. Awards are presented annually by the AISC to recognize and encourage the imaginative and aesthetic use of fabricated structural steel in bridges.

#### NEW TURBOFAN ENGINE

Teledyne CAE has recently acquired the rights to market and manufacture a 3000 pound thrust turbofan engine for manned aircraft applications. This new engine, which is currently under development, meets the austere 1975 FAA low noise and air pollution requirements. These characteristics make the new turbofan engine, designated the Teledyne CAE Model 490-4, an attractive candidate for trainers, small business jet aircraft and remotely piloted vehicles.

Teledyne CAE holds a dominant position in the manufacture of turbine engines for unmanned applications, and has had considerable experience in the production of turbine engines for manned applications as well. Of the more than 10,000 turbine engines built by Teledyne CAE, over 3900 turbojets have been built for the U. S. Air Force T-37 primary jet trainer. Over the years these engines have logged some nine million hours of flight time.

The company is also studying low cost turbine engine derivatives for use in the smaller aircraft market.

#### LORAN FOR NORWAY

Teledyne Systems Company has entered into an agreement with Kongsberg Vapenfabrikk of Norway for the marketing, development and manufacturing of advanced Teledyne maritime electronic navigation aids in Scandinavia. The Norwegian company will be Teledyne's exclusive distributor for these products in Denmark, the Faroe Islands, Finland, Norway, Sweden and Iceland.

Initial efforts will concentrate on Loran C and auxiliary products, with the Loran C receiver recently developed for the U.S. Coast Guard as the first product to be introduced. Loran C is a fully automatic electronic navigation system that provides precise ship positioning, day or night, in any weather.

#### NEW DEVICE INCREASES LASER OUTPUT

A new device produced by Teledyne MEC makes it possible to extract up to 75 times more energy from a pulse gas laser than has been heretofore possible. In conventional laser operation only a small percentage of the total energy available in the laser cavity can pass through a partial mirror at one end of the cavity.

The new Teledyne device called an acousto-optical modulator makes it possible to bend or diffract the light beam out of the cavity and obtain the total available energy. The device operates on the phenomenon of interaction between radio frequency acoustic waves and the laser beam.

Applications will include pulsed holography, micromachining, raman spectroscopy, remote sensing and communications.

#### UHF COMMUNICATIONS SYSTEMS

Teledyne Lewisburg is currently producing three types of two-way UHF communications systems, each providing 3500 selectable communications channels. One-hundred watt and sixteen-watt systems are produced for the U. S. Navy, and a 1-watt version that weighs only 3.9 pounds is produced for the U. S. Marine Corps.

These systems provide amplitude modulated voice and tone signals in the frequency range of 225.0 through 399.95 MHz.



## Highlights of Financial History

	<i>Consolidated Sales</i>	<i>Net Income</i>	<i>Net Income Per Share (1)</i>	<i>Consolidated Assets</i>	<i>Shareholders' Equity</i>	<i>Average Common Shares (1)</i>
1972	\$1,215,991,000	\$57,444,000	\$1.62	\$1,144,986,000	\$500,458,000	34,066,289
1971	1,101,872,000	56,179,000	1.54	1,075,706,000	616,846,000	35,267,462
1970	1,216,448,000	61,864,000	1.74	1,042,958,000	584,349,000	34,475,034
1969	1,294,775,000	58,119,000	1.72	1,110,878,000	501,961,000	33,129,750
1968	874,905,000	45,161,000	1.44	766,680,000	362,780,000	31,272,084
1967	777,745,000	34,164,000	1.13	601,037,000	272,042,000	29,479,702
1966	700,211,000	31,693,000	1.09	437,845,000	229,372,000	27,844,777
1965	559,680,000	27,044,000	0.99	371,131,000	205,762,000	25,933,355
1964	465,304,000	20,195,000	0.79	311,667,000	173,069,000	23,812,955
1963	423,246,000	15,917,000	0.63	284,493,000	155,844,000	22,907,558
1962	388,420,000	11,291,000	0.44	259,247,000	134,536,000	21,983,781
1961	297,564,000	5,678,000	0.19	199,128,000	118,599,000	20,883,964

(1) Fully diluted and adjusted for a 3% stock dividend payable March, 1973.



## Revenues by Product Line

	1972		1971	
Industrial Products and Services	\$ 404,262,000	23.4%	\$ 375,990,000	24.3%
Aviation and Electronics	366,515,000	21.2	331,479,000	21.4
Specialty Metals	287,152,000	16.6	263,815,000	17.0
Consumer Products and Services	158,062,000	9.1	130,588,000	8.4
Subtotal	1,215,991,000	70.3	1,101,872,000	71.1
Insurance and Finance	512,621,000	29.7	446,620,000	28.9
Total	\$1,728,612,000	100.0%	\$1,548,492,000	100.0%

## Net Income by Product Line

	1972		1971	
Industrial Products and Services	\$15,704,000	27.3%	\$14,280,000	25.4%
Aviation and Electronics	8,344,000	14.5	6,360,000	11.3
Specialty Metals	8,068,000	14.1	7,176,000	12.8
Consumer Products and Services	1,085,000	1.9	4,491,000	8.0
Subtotal	33,201,000	57.8	32,307,000	57.5
Insurance and Finance (2)	24,243,000	42.2	23,872,000	42.5
Total	\$57,444,000	100.0%	\$56,179,000	100.0%

(2) Excludes minority interest in Unicoa net income.



# Teledyne, Inc. and Subsidiaries

## Consolidated Balance Sheets

October 31, 1972 and 1971

### Assets

	1972	1971
<b>Current Assets:</b>		
Cash .....	\$ 48,687,000	\$ 53,536,000
Marketable securities, at cost which approximates market .....	16,809,000	6,889,000
Receivables, less reserve of \$7,356,000 in 1972 and \$7,113,000 in 1971	164,254,000	158,143,000
Inventories (Note 3) .....	185,881,000	184,657,000
Prepaid expenses .....	11,495,000	13,279,000
Total current assets .....	427,126,000	416,504,000
<b>Investments in Unconsolidated Subsidiaries (Note 1) :</b>		
Unicoa Corporation (Note 7) .....	184,700,000	172,889,000
Argonaut Insurance Company (Note 8) .....	164,867,000	143,666,000
Other .....	32,777,000	15,374,000
	382,344,000	331,929,000
<b>Property and Equipment, at cost :</b>		
Land .....	16,652,000	16,230,000
Buildings .....	101,830,000	100,682,000
Equipment and improvements .....	400,921,000	376,635,000
	519,403,000	493,547,000
Less—accumulated depreciation and amortization .....	233,614,000	218,814,000
	285,789,000	274,733,000
<b>Other Assets:</b>		
Cost in excess of net assets of purchased businesses (Note 1) .....	33,681,000	33,681,000
Other .....	16,046,000	18,859,000
	49,727,000	52,540,000
	<b>\$1,144,986,000</b>	<b>\$1,075,706,000</b>

The accompanying notes are an integral part of these balance sheets.



**Liabilities**

	<u>1972</u>	<u>1971</u>
<b>Current Liabilities:</b>		
Accounts payable .....	\$ 53,087,000	\$ 49,069,000
Accrued liabilities .....	85,707,000	73,857,000
Accrued income taxes .....	3,500,000	6,500,000
Current portion of long-term debt .....	21,815,000	5,477,000
Total current liabilities .....	<u>164,109,000</u>	<u>134,903,000</u>
<b>Long-Term Liabilities:</b>		
Long-term debt (Note 4) .....	302,595,000	145,520,000
Deferred income taxes (Note 10) .....	32,500,000	32,400,000
Accrued pension benefits (Note 9) .....	5,608,000	6,187,000
Minority interest .....	4,972,000	5,106,000
<b>Subordinated Debentures</b> (Note 4) .....	134,744,000	134,744,000
<b>Shareholders' Equity:</b>		
Preferred stock (1972 liquidation preference \$37,123,000—Note 6) ..	714,000	714,000
Common stock (Notes 4, 5, 6 and 11) .....	32,303,000	30,985,000
Additional paid-in capital .....	419,758,000	393,253,000
Retained earnings (Notes 4 and 6) .....	234,156,000	199,223,000
	<u>686,931,000</u>	<u>624,175,000</u>
Less—common stock in treasury, at cost (9,330,494 shares in 1972 and 368,358 shares in 1971) .....	186,473,000	7,329,000
Total shareholders' equity .....	<u>500,458,000</u>	<u>616,846,000</u>
	<u>\$1,144,986,000</u>	<u>\$1,075,706,000</u>



## Teledyne, Inc. and Subsidiaries

### Consolidated Statements of Income

For the Years Ended October 31, 1972 and 1971

	1972	1971
<b>Consolidated Sales</b> .....	<b>\$1,215,991,000</b>	<b>\$1,101,872,000</b>
<b>Costs and Expenses:</b>		
Cost of sales .....	978,720,000	883,006,000
Selling and administrative expenses .....	169,476,000	152,755,000
Interest expense, net (Note 1) .....	2,794,000	4,404,000
Provision for income taxes .....	31,800,000	29,400,000
	<b>1,182,790,000</b>	<b>1,069,565,000</b>
<b>Income of Consolidated Companies</b> .....	<b>33,201,000</b>	<b>32,307,000</b>
<b>Equity in Net Income of Unconsolidated Subsidiaries</b> (Note 1) .....	<b>24,243,000</b>	<b>23,872,000</b>
<b>Net Income</b> .....	<b>\$ 57,444,000</b>	<b>\$ 56,179,000</b>
<b>Net Income Per Share of Common Stock and Common Stock Equivalents</b> (equal to net income assuming full dilution — Note 2) .....	<b>\$1.67</b>	<b>\$1.58</b>
Adjusted for 3% stock dividend payable March, 1973 (Note 11) ...	<b>\$1.62</b>	<b>\$1.54</b>

### Consolidated Statements of Retained Earnings

For the Years Ended October 31, 1972 and 1971

	1972	1971
<b>Balance, Beginning of Year</b> .....	<b>\$199,223,000</b>	<b>\$166,048,000</b>
<b>Add or (Deduct):</b>		
Net income .....	57,444,000	56,179,000
Fair value of common stock dividends (Note 6) .....	(18,720,000)	(18,355,000)
Dividends on preferred stock .....	(3,791,000)	(4,649,000)
<b>Balance, End of Year</b> .....	<b>\$234,156,000</b>	<b>\$199,223,000</b>

The accompanying notes are an integral part of these statements.



## Consolidated Statements of Capital Stock and Additional Paid-in Capital

*For the Years Ended October 31, 1972 and 1971*

	Preferred Stock (\$1 Par Value)	Common Stock (\$1 Par Value)	Additional Paid-In Capital
<b>Balance, October 31, 1970</b> .....	\$1,259,000	\$28,390,000	\$388,652,000
<b>Add or (Deduct):</b>			
Common stock dividend .....	—	854,000	17,501,000
Stock option and purchase plans (Note 5) .....	—	158,000	2,652,000
Redemption of \$3.50 preferred stock .....	(145,000)	—	(14,371,000)
Conversions of debentures and preferred stock .....	(400,000)	1,583,000	(1,181,000)
<b>Balance, October 31, 1971</b> .....	714,000	30,985,000	393,253,000
<b>Add or (Deduct):</b>			
Common stock dividend .....	—	918,000	17,787,000
Stock option and purchase plans (Note 5) .....	—	212,000	4,263,000
Additional consideration for purchased business .....	—	188,000	4,455,000
<b>Balance, October 31, 1972</b> .....	\$ 714,000	\$32,303,000	\$419,758,000

*The accompanying notes are an integral part of these statements.*

### Auditors' Report

To the Shareholders and  
Board of Directors, Teledyne, Inc.:

We have examined the consolidated balance sheets of TELEDYNE, INC. (a Delaware corporation) and subsidiaries as of October 31, 1972 and 1971, and the related statements of income, capital stock and additional paid-in capital, retained earnings and changes in financial position for the years then ended. Our examinations were made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We did not examine the consolidated financial statements of Unicoa Corporation and subsidiaries, which are summarized in Note 7 to the financial statements. These statements were examined by other auditors whose reports thereon have been furnished to us and our opinion expressed herein, insofar as it relates

to the amounts included for Unicoa Corporation and subsidiaries, is based solely upon the reports of the other auditors.

In our opinion, based upon our examinations and the reports of other auditors referred to above, the accompanying consolidated financial statements present fairly the consolidated financial position of Teledyne, Inc. and subsidiaries as of October 31, 1972 and 1971, and the results of their operations and changes in their financial position for the years then ended, all in conformity with generally accepted accounting principles consistently applied during the periods.

ARTHUR ANDERSEN & CO.

Los Angeles, California,  
December 6, 1972.



# Teledyne, Inc. and Subsidiaries

## Consolidated Statements of Changes in Financial Position

For the Years Ended October 31, 1972 and 1971

	1972	1971
<b>Working Capital Was Provided By:</b>		
Net income .....	\$ 57,444,000	\$ 56,179,000
<b>Add or (Deduct):</b>		
Equity in net income of unconsolidated subsidiaries before interest expense .....	(29,763,000)	(29,189,000)
Depreciation and amortization (principally straight-line) .....	36,434,000	33,361,000
Change in deferred income taxes (Note 10) .....	100,000	9,700,000
Working capital provided from operations .....	<u>64,215,000</u>	<u>70,051,000</u>
Issuance of long-term debt .....	179,893,000	8,000,000
Issuance of common stock:		
Employees' stock purchase and option plans .....	4,475,000	2,810,000
Additional consideration for purchased business .....	4,643,000	—
Conversions of debentures and preferred stock .....	—	1,586,000
Dispositions of property and equipment .....	3,786,000	3,226,000
Other, net .....	1,538,000	(1,560,000)
	<u>258,550,000</u>	<u>84,113,000</u>
<b>Working Capital Was Applied To:</b>		
Purchase of treasury stock .....	179,144,000	7,329,000
Additions to property and equipment .....	42,842,000	32,338,000
Decrease in long-term debt .....	22,818,000	6,316,000
Investments in unconsolidated subsidiaries, less \$2,095,000 property contributed in 1972 and \$6,836,000 in 1971 .....	18,557,000	10,353,000
Redemption and conversions of preferred stock .....	—	16,102,000
Purchase of businesses, net of working capital acquired .....	9,982,000	—
Dividends on preferred stock .....	3,791,000	4,649,000
	<u>277,134,000</u>	<u>77,087,000</u>
<b>Increase (Decrease) in Working Capital .....</b>	<b><u>\$(18,584,000)</u></b>	<b><u>\$ 7,026,000</u></b>
<b>Working Capital Increase (Decrease):</b>		
Cash .....	\$ (4,849,000)	\$ 21,372,000
Marketable securities .....	9,920,000	6,466,000
Receivables .....	6,111,000	(864,000)
Inventories .....	1,224,000	(30,835,000)
Prepaid expenses .....	(1,784,000)	(551,000)
Accounts payable .....	(4,018,000)	2,806,000
Accrued liabilities .....	(11,850,000)	1,279,000
Accrued income taxes .....	3,000,000	(1,900,000)
Current portion of long-term debt .....	(16,338,000)	9,253,000
	<u>\$(18,584,000)</u>	<u>\$ 7,026,000</u>

The accompanying notes are an integral part of these statements.



# Teledyne, Inc. and Subsidiaries

## Notes to Consolidated Financial Statements

(1) **Principles of consolidation:** The consolidated financial statements of Teledyne, Inc. include the accounts of all its subsidiaries except its insurance and finance companies. Investments in unconsolidated subsidiaries, which include advances, are at cost plus equity in net income which, after allocated interest expense, was as follows:

	1972	1971
Equity in net income of —		
Unicoa Corporation (Note 7) .....	\$11,811,000	\$ 9,732,000
Argonaut Insurance Company (Note 8) .....	16,150,000	17,787,000
Other .....	1,802,000	1,670,000
Equity before interest expense .....	29,763,000	29,189,000
Interest expense, net .....	(13,649,000)	(11,626,000)
Related income tax credit .....	8,129,000	6,309,000
	<u>\$24,243,000</u>	<u>\$23,872,000</u>

Teledyne's equity in the net assets of its unconsolidated subsidiaries, including advances, was \$185,274,000 in 1972 and \$148,556,000 in 1971, including its equity of \$114,418,000 and \$84,655,000, respectively, in their retained earnings. Cost in excess of net assets of purchased businesses is not being amortized. Research and development costs are expensed as incurred.

(2) **Computation of net income per share:** Net income per share is based on the weighted average number of common shares and equivalents outstanding during each year (33,074,067 shares in 1972 and 34,240,254 shares in 1971), including all convertible debt, \$3.50 (redeemed in 1971) and Series B preferred stock and all dilutive options and warrants. Each common stock equivalent has been considered outstanding from the beginning of each year or date of issuance, and the related dividend requirement or interest has been eliminated.

(3) **Inventories:** Inventories are stated at the lower of cost or market, as follows:

	1972	1971
First-in, first-out method .....	\$131,848,000	\$133,860,000
Last-in, first-out method .....	84,704,000	94,249,000
	216,552,000	228,109,000
Less — progress billings .....	30,671,000	43,452,000
	<u>\$185,881,000</u>	<u>\$184,657,000</u>

Inventories stated on the last-in, first-out method are at amounts which are \$30,887,000 and \$28,442,000 less than their first-in, first-out values in 1972 and 1971.

(4) **Long-term debt and subordinated debentures:**

	1972
<i>Long-term debt —</i>	
Variable Rate (currently 5¾%) Notes due December 1, 1975 .....	\$160,000,000
7½% Sinking Fund Debentures due 1994, \$1,400,000 payable annually commencing in 1975 ....	30,000,000
6½% Sinking Fund Debentures due 1992, \$1,350,000 payable annually .....	27,527,000
7% Promissory Notes due 1989, \$750,000 payable in 1973 and \$1,500,000 annually thereafter ....	25,000,000
6¼% to 6¾% Notes due 1973 to 1979 .....	31,951,000
7% to 7½% Notes due 1973 to 1976 .....	24,850,000
Other (including \$10,983,000 secured by land and buildings) due in various installments to 1984.	25,082,000
	324,410,000
Less — current portion .....	21,815,000
	<u>\$302,595,000</u>



## Notes to Consolidated Financial Statements

### Subordinated debentures—

3½% due 1992, \$3,000,000 payable annually commencing in 1978, (convertible into common stock at \$52.40 per share) .....	\$ 59,819,000
6½% due in annual installments from 1979 to 1983 .....	37,500,000
7% due 1999, \$1,871,000 payable annually commencing in 1989 .....	37,425,000
	<u>\$134,744,000</u>

Subsequent to October 31, 1972, the Company issued long-term debt with maturities ranging from 5 to 15 years and reduced the outstanding 5¼% notes to \$60,000,000. Taking such additional financing into account, long-term debt is payable \$21,815,000 in 1973, \$17,406,000 in 1974, \$16,839,000 in 1975, \$73,898,000 in 1976, and \$11,430,000 in 1977. Net interest expense was \$16,443,000 in 1972 and \$16,030,000 in 1971 including \$13,649,000 and \$11,626,000 allocated to unconsolidated subsidiaries.

Under the various borrowing agreements, the Company has agreed to maintain minimum amounts of working capital and net worth, and has agreed to certain restrictions with respect to borrowings, purchase and sale of assets and capital stock and payment of dividends. At October 31, 1972, these agreements were complied with and retained earnings of \$87,623,000 were not restricted as to payments of dividends.

The Company has reserved 1,141,531 shares of common stock for issuance upon conversion of the subordinated debentures.

(5) **Stock options and warrants:** At October 31, 1972, 308,782 common shares were reserved for issuance under outstanding options at prices from \$7 to \$43 per share (options for 57,466 shares were exercisable) and 612,174 common shares were reserved for the granting of additional options. At October 31, 1971, 314,513 common shares were reserved for issuance under outstanding options and 614,050 common shares were reserved for the granting of additional options. During 1972, options to purchase 57,062 common shares were granted; options to purchase 7,607 shares were exercised; and options covering 55,186 shares were canceled.

At October 31, 1972, 384,081 shares of common stock were reserved for issuance under warrants, each of which provides for the purchase of 10.24 shares at \$48.86 per share until October, 1978. In addition, 17,188 shares were reserved for issuance under other warrants.

(6) **Capital stock:** At October 31, 1972 and 1971, the Company's capital stock consisted of the following shares:

	<u>Authorized</u>	<u>1972</u>	<u>1971</u>
Cumulative convertible preferred stock, \$1 par value, .....	15,000,000		
issued and outstanding			
\$6 series .....		517,339	517,532
Series B .....		175,256	175,692
Series C .....		20,922	21,045
Common stock, \$1 par value .....	60,000,000		
Issued .....		32,303,008	30,984,732
Outstanding .....		22,972,514	30,616,374

The 1971 financial statements and related notes, except for shareholders' equity, have been restated to reflect a 3% stock dividend paid in March, 1972.

The holders of the \$6 series preferred stock are entitled to voting rights and cumulative annual dividends at the rate of \$6.00 per share. Such stock is redeemable at \$100 per share after April 22, 1978, and is convertible at any time into 1.34 shares of common stock. The holders of the Series B preferred stock are entitled to voting rights and cumulative annual dividends at the rate of \$3.20 per share. Such stock is redeemable at \$80 per share and is convertible at any time into 2.40 shares of common stock. The holders of the Series C preferred stock are entitled to voting rights and cumulative annual dividends at the rate of \$6.00 per share. Such stock is redeemable at \$100 per share after January 25, 1973, and is convertible at any time into a maximum of two shares of common stock. The Company has reserved 1,155,692 shares of common stock for conversion of all preferred shares.

At October 31, 1972, 112,781 shares of common stock were reserved for issuance to employees under a stock purchase plan.



(7) **Unicoa Corporation and subsidiaries:** The following condensed statements summarize the consolidated financial position and operating results of Unicoa Corporation and subsidiaries. Teledyne owned 85.1% and 67.4% interests at October 31, 1972 and 1971, respectively.

**Consolidated Balance Sheets**

	<i>September 30</i>	
	<i>1972</i>	<i>1971</i>
<b>Assets:</b>		
Bonds, at amortized cost (market: 1972—\$164,000,000; 1971—\$137,000,000) . . .	\$186,407,000	\$162,078,000
Stocks, principally at cost (market: 1972—\$49,000,000; 1971—\$46,000,000) . . .	53,709,000	52,997,000
Mortgage loans . . . . .	154,301,000	171,059,000
Real estate, at cost less accumulated depreciation . . . . .	42,629,000	41,308,000
Loans to policyholders . . . . .	9,597,000	9,227,000
Cash . . . . .	6,919,000	1,723,000
Premiums deferred and uncollected . . . . .	14,729,000	10,687,000
Cost in excess of net assets of purchased businesses . . . . .	13,720,000	13,720,000
Other assets . . . . .	22,365,000	18,137,000
	<u>\$504,376,000</u>	<u>\$480,936,000</u>
<b>Liabilities:</b>		
Policy reserves and liabilities . . . . .	\$365,388,000	\$341,278,000
Notes payable to bank . . . . .	7,672,000	—
Mortgage loan payable . . . . .	10,232,000	10,800,000
Subordinated debentures . . . . .	22,600,000	22,600,000
Other liabilities . . . . .	28,921,000	24,212,000
Shareholders' equity—		
Common stock . . . . .	18,732,000	18,732,000
Additional paid-in capital . . . . .	1,975,000	1,975,000
Retained earnings . . . . .	111,413,000	96,695,000
	<u>132,120,000</u>	<u>117,402,000</u>
Treasury stock, at cost . . . . .	(62,557,000)	(35,356,000)
Total shareholders' equity . . . . .	69,563,000	82,046,000
	<u>\$504,376,000</u>	<u>\$480,936,000</u>

**Consolidated Statements of Income**

	<i>Year Ended September 30</i>	
	<i>1972</i>	<i>1971</i>
<b>Income:</b>		
Premiums and other insurance income . . . . .	\$192,814,000	\$172,607,000
Investment income less expenses . . . . .	18,691,000	19,663,000
Other income . . . . .	2,930,000	2,531,000
	<u>214,435,000</u>	<u>194,801,000</u>
<b>Expenses:</b>		
Benefits paid or provided . . . . .	100,635,000	88,371,000
Insurance expenses . . . . .	91,724,000	87,277,000
Income taxes . . . . .	6,422,000	5,446,000
	<u>198,781,000</u>	<u>181,094,000</u>
Gain (Loss) on Sale of Investments, Less Applicable Income Taxes . . . . .	15,654,000	13,707,000
	(936,000)	271,000
<b>Net Income</b>	<u>\$ 14,718,000</u>	<u>\$13,978,000</u>

The above statements have been prepared on the basis of generally accepted accounting principles which differ from statutory life insurance accounting practices.

At September 30, 1972, up to \$42,000,000 (at current tax rates) would be required for possible Federal income taxes which might become due, in whole or in part, in future years if any portion of \$87,000,000 of the insurance companies' gains from operations since January 1, 1959, presently included in retained earnings, becomes includable in taxable income under certain conditions or upon the occurrence of certain events, including distributions in excess of \$15,000,000 as dividends.



## Notes to Consolidated Financial Statements

(8) **Argonaut Insurance Company and subsidiaries:** The following condensed statements summarize the consolidated financial position and operating results of Argonaut Insurance Company and subsidiaries.

### Consolidated Balance Sheets

	<i>September 30</i>	
	<i>1972</i>	<i>1971</i>
<b>Assets:</b>		
Bonds, at amortized cost (market: 1972—\$318,000,000; 1971—\$244,000,000) . . . . .	\$309,036,000	\$234,596,000
Stocks, at cost (market: 1972—\$61,000,000; 1971—\$46,000,000) . . . . .	57,993,000	43,592,000
Agents' balances and uncollected premiums, less reserve . . . . .	44,989,000	38,918,000
Other receivables . . . . .	20,353,000	13,813,000
Deferred policy acquisition costs . . . . .	22,536,000	20,570,000
Property and equipment, at cost, less accumulated depreciation . . . . .	11,261,000	11,660,000
Cash . . . . .	6,822,000	15,538,000
Cost in excess of net assets of purchased businesses . . . . .	8,589,000	8,589,000
	<u>\$481,579,000</u>	<u>\$387,276,000</u>
<b>Liabilities:</b>		
Loss and claim reserves . . . . .	\$211,341,000	\$159,511,000
Accrued loss adjustment expenses . . . . .	34,370,000	24,263,000
Unearned premiums . . . . .	104,220,000	91,857,000
Accrued income taxes . . . . .	2,478,000	5,045,000
Other liabilities . . . . .	25,943,000	23,823,000
Shareholders' equity . . . . .	103,227,000	82,777,000
	<u>\$481,579,000</u>	<u>\$387,276,000</u>

### Consolidated Statements of Income

	<i>Year Ended September 30</i>	
	<i>1972</i>	<i>1971</i>
<b>Income:</b>		
Net premiums earned . . . . .	\$261,711,000	\$222,766,000
Investment income less expenses . . . . .	19,908,000	15,794,000
	<u>281,619,000</u>	<u>238,560,000</u>
<b>Expenses:</b>		
Losses and loss adjustment expenses . . . . .	198,685,000	155,796,000
Underwriting expenses . . . . .	66,229,000	60,194,000
Provision for income taxes . . . . .	195,000	5,209,000
	<u>265,109,000</u>	<u>221,199,000</u>
	16,510,000	17,361,000
<b>Gain (Loss) on Sale of Investments, Less Applicable Income Taxes . . . . .</b>	<b>(360,000)</b>	<b>426,000</b>
<b>Net Income . . . . .</b>	<b><u>\$ 16,150,000</u></b>	<b><u>\$ 17,787,000</u></b>

The above statements have been prepared on the basis of generally accepted accounting principles which differ from statutory insurance accounting practices.

(9) **Commitments and contingent liabilities:** Annual rentals under long-term leases expiring between 1975 and 1987 are approximately \$3,900,000 through 1977, and \$1,100,000 thereafter.

The Company accrues pension expense at amounts equal to normal cost plus interest on unfunded prior service cost, and for certain plans, a portion of prior service costs. Total pension expense was \$12,982,000 in 1972 and \$10,358,000 in 1971. The Company contributes accrued pension costs on a current basis. During 1972, the benefits provided under certain plans were increased, and at October 31, 1972, the actuarially computed value of vested benefits for all plans exceeded the total of the pension funds and balance sheet accruals by approximately \$28,000,000.

(10) **Income taxes:** Deferred income taxes result from the deduction for tax purposes of accelerated depreciation and other items. The available investment tax credit, which is not material, is amortized as a reduction of the provision for income taxes over the expected lives of the related assets. The provision and accrual for income taxes include state income taxes. The 1971 amounts have been reclassified to reflect this change.

(11) **Subsequent event:** In December, 1972, the Board of Directors declared a 3% common stock dividend payable March 1, 1973, to shareholders of record January 4, 1973. The financial statements and related notes have not been adjusted to reflect this dividend.



**This Teledyne Report** details Teledyne Continental Motors' activities in the field of general aviation aircraft engines. Continental Motors has been building internal combustion engines since 1901, and was an important supplier of engines to the automotive industry in its early days. The first aircraft engines were built in 1928, and since that time more than a quarter million aircraft engines have been built for the worldwide general aviation industry. Continental engines command an approximate 50% share of the general aviation piston engine market, and are used in various models of aircraft built by such major airframe manufacturers as Beech, Bellanca, Cessna, North American Rockwell, Piper and others. For further information write to Teledyne Continental Motors, Aircraft Products Division, Brookley Air Force Base, Mobile, Alabama 36601.

**Teledyne Report**, featuring subjects of particular interest from Teledyne activities, is issued on a quarterly basis. Previous topics include:

**Consumer Electronics:** Sparked by the American public's love affair with television, the consumer electronics industry has tripled its sales since 1960, and more growth is predicted through innovations in products and technology.

**Rubber:** Rubber compounds are being called on to do new technological jobs in applications ranging from industrial tires to Teledyne's new automotive bumper system that will dissipate 5 mile-per-hour impacts.

**Loran:** Loran was one of the first all-weather electronic navigation systems. Recent Teledyne innovations have lowered costs and greatly improved its range and accuracy.

**Seismology:** This relatively young science has expanded from the classic study of earthquakes to become an important tool in oil and mineral exploration, detection of underground nuclear explosions and earthquake hazard reduction.

**Casting:** The simple process a small boy uses when he casts a tin soldier is the basis of a high technology industry that produces items ranging from high temperature turbine blades to 90-ton steel mill rolls.

**AIDS:** Aircraft Integrated Data Systems keep a running record of the vital functions of the new jumbo jets and provide airlines with an important tool for lowering costs associated with maintenance, fuel management and crew proficiency testing.

**Thermoelectrics:** Generators that convert heat directly into electricity are providing a practical new power source for applications ranging from space exploration to remote unattended weather stations.

**Thin Metals:** Less becomes more when space-age metals are rolled out into thin strip and foil. These new materials, already being used in thousands of products, are making new metal-working techniques possible.

**The Reproduction of Music:** Men began experimenting with methods of recording sound over 150 years ago, but it remained for electronics and some very recent developments to allow music to be reproduced with concert-hall realism.

**The Crowded Spectrum:** The lower portion of the radio spectrum is already overcrowded with hundreds of wireless services. Microwave devices such as the traveling wave tube are opening higher frequencies for practical use.

**Science and Cinematography:** Modern techniques of slow motion cinematography let scientists and engineers analyze actions and events that happen too fast for the eye to follow.

**Superalloys:** Materials that retain high strength at temperatures approaching 2000°F make the jet age possible.

**Jets of Water for Dental Health:** Studies show that high-pressure pulsed jets of water are a valuable aid in the care of teeth and gums.

**The Last Eight Miles:** The controlled descent to the surface of the moon was accomplished through use of a century-old principle called the Doppler effect.

**Oil Beneath the Sea:** New techniques of reflection seismology speed the profiling of the strata beneath the ocean floor in the search for oil.

**Electronic Navigators Find the Way:** High speed air and space travel as we know it today is made possible by a wide variety of sophisticated guidance systems.

**From Sand to the Reactor:** Sand from the beaches of Australia provides two atomic-age metals needed for the operation of practical nuclear power generators.



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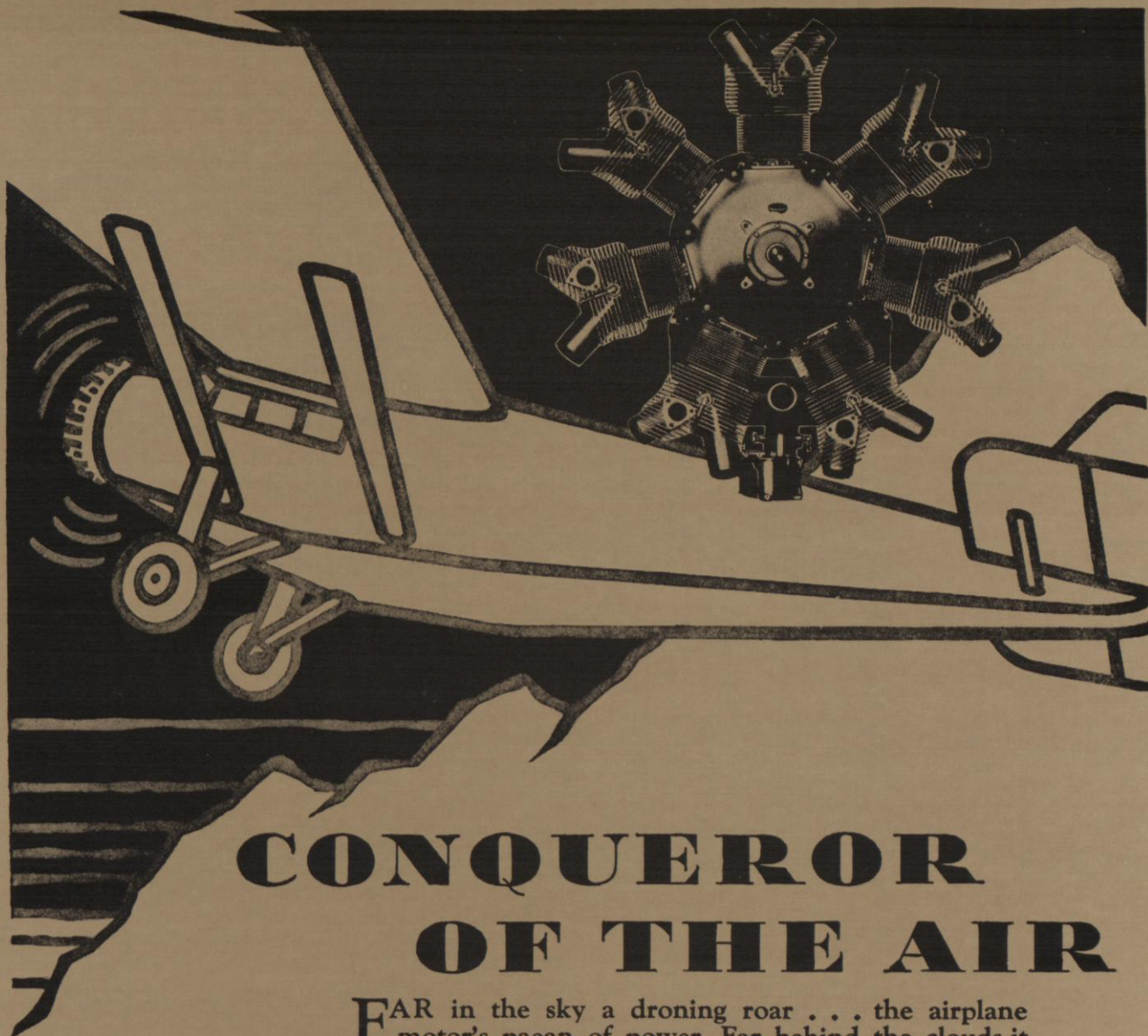
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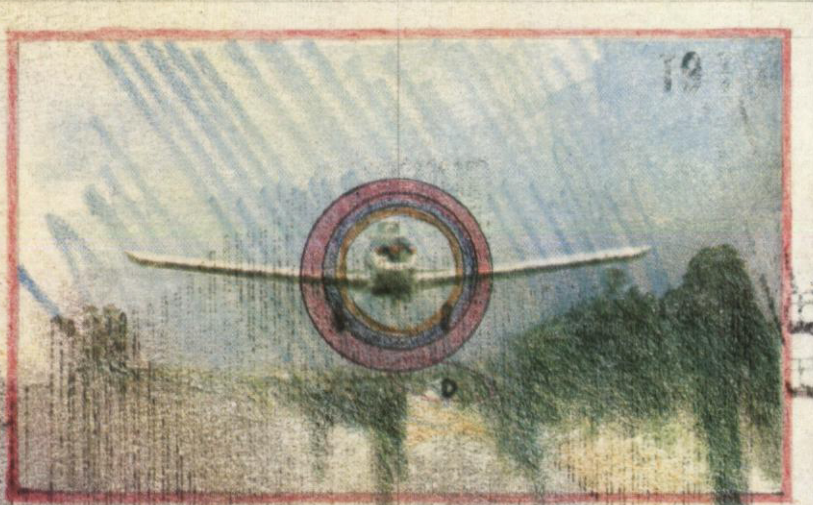
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