FOR AN AGE OF ***PRECISION*** . . .

THE GENERAL PRECISION GROUP

PRINCIPAL SUBSIDIARIES

GPE CONTROLS, INC. *(Formerly Askania Regulator Company)* *Chicago, Illinois*

GENERAL PRECISION LABORATORY INCORPORATED *Pleasantville, New York; Pasadena, California*

GRAFLEX, INC. *Rochester, New York*

THE GRISCOM-RUSSELL COMPANY *Massillon, Ohio*

THE HERTNER ELECTRIC COMPANY *Cleveland, Ohio*

KEARFOTT COMPANY, INC. *Little Falls, Clifton, Paterson—New Jersey; Asheville, North Carolina; Van Nuys, California*

LIBRASCOPE, INCORPORATED *Glendale, Livermore—California*

LINK AVIATION, INC. *Binghamton, New York; Palo Alto, California*

AIR TRAINERS LINK LIMITED *Aylesbury, Bucks, England*

NATIONAL THEATRE SUPPLY COMPANY *New York, New York (28 branch offices in principal cities)*

SHAND AND JURS CO. *Berkeley, California*

SOCIETY FOR VISUAL EDUCATION, INC. *Chicago, Illinois*

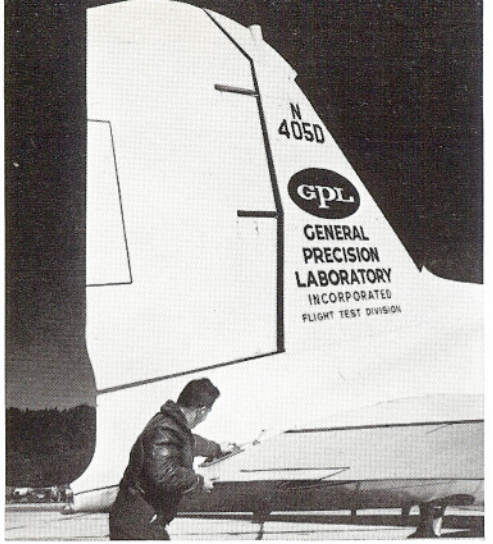
THE STRONG ELECTRIC CORPORATION *Toledo, Ohio*

JOINTLY OWNED AFFILIATE *(Owned jointly with Royal McBee Corporation)*

ROYAL PRECISION CORPORATION *Port Chester, New York*

General Precision Equipment Corporation is a holding company that does not itself make or sell any products, but provides centralized management services for its subsidiaries.

The terms "General Precision" and "the General Precision group," as used in this report, refer individually or collectively to the subsidiaries of General Precision Equipment Corporation which carry on as separate corporate units the business and activities referred to herein. The shorter terms are used only for convenience and simplicity.



Fascinating achievements in high precision technology are changing our world today. This booklet describes some of the major contributions being made by the General Precision group of companies in these significant product areas . . .

Missile – aircraft – marine systems, components, and simulators

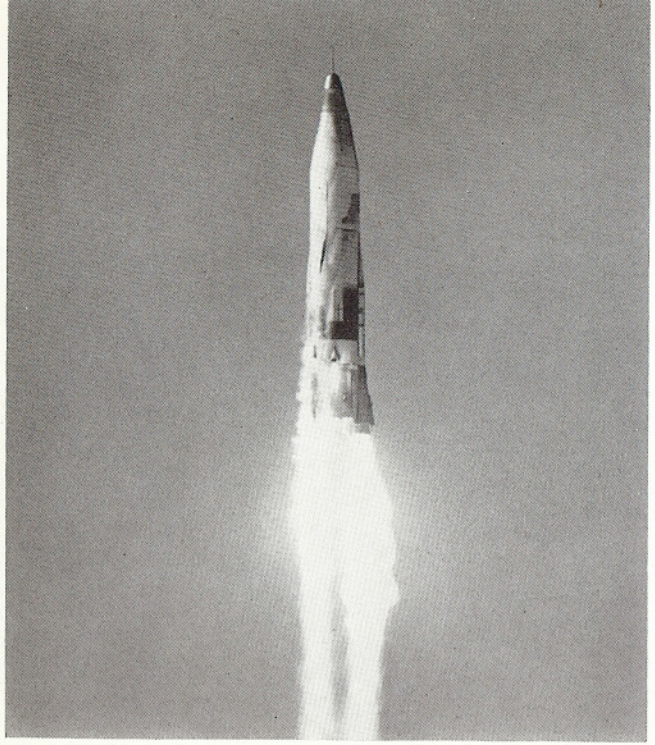
Computers and data processing equipment

Heat exchangers, distilling and atomic reactor equipment

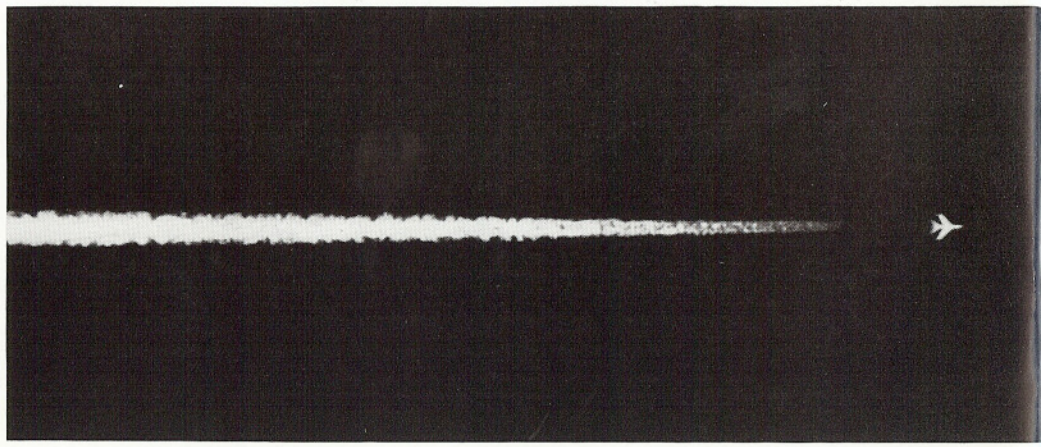
Motion picture and photographic equipment

Television systems and equipment

Industrial controls



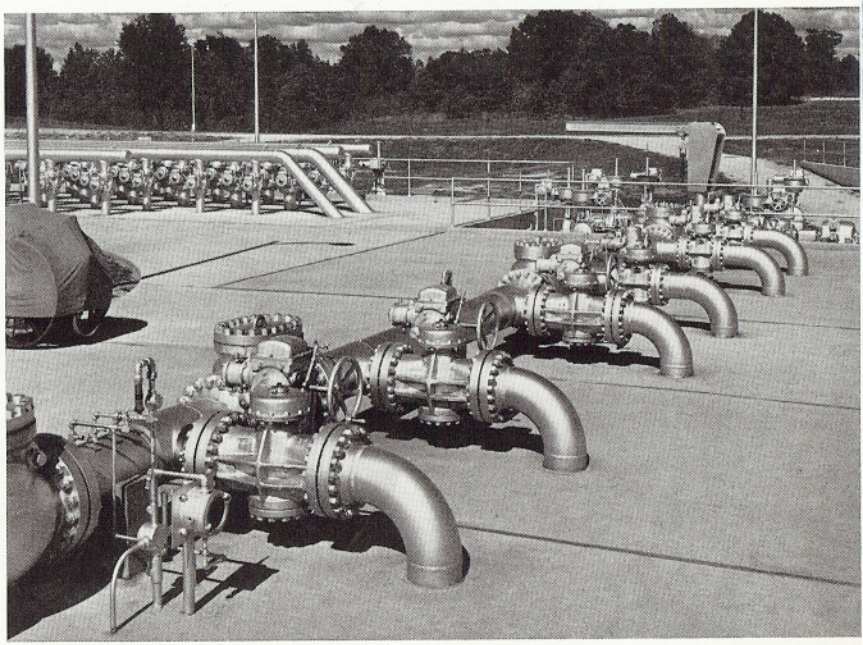
Firing a missile at a target thousands of miles away . . .



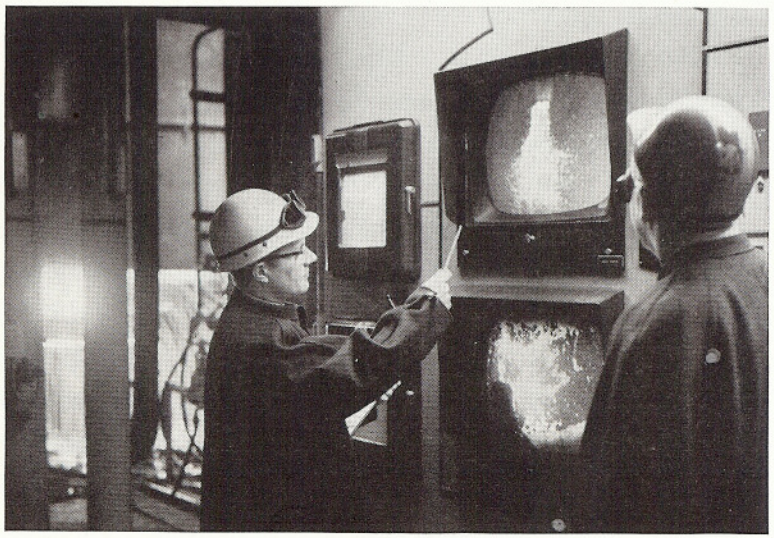
Navigating a jet plane at the speed of a 30-caliber bullet . . .

Launching an airborne rocket-assisted torpedo . . .

Simulating jet flight on the ground . . .

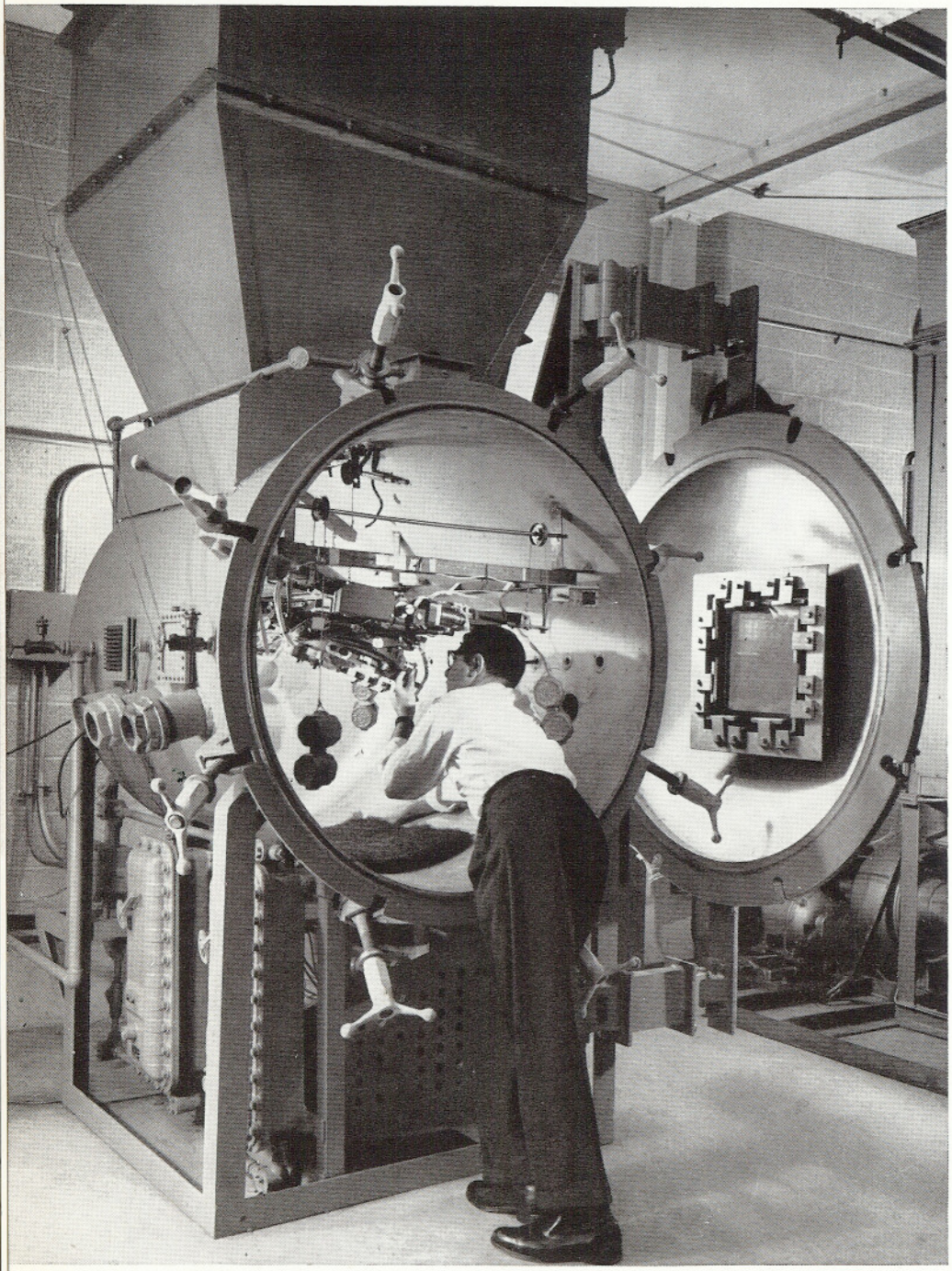


Remotely controlling liquids in pipelines . . .



Watching steelmaking in a furnace hundreds of feet away . . .

ALL THIS TAKES PRECISION – AND PRECISION EQUIPMENT



Navigation system antenna is prepared for "explosion-proof" test.

THOSE WERE A FEW GLIMPSES of our precision world today — a world in which man is extending his power and control through science and technology at a breathtaking pace.

And they are only the beginning.

Our world has come to depend on precision — and on the performance of precision equipment.

Industrial processes are increasingly built around the precision of automatic systems and controls. Our national security depends more and more on equipment that is precisely engineered and produced. Research laboratories, engineering centers, defense manufacturers, atomic energy installations, utilities, steel companies, and countless other factors in the economy are helping to make ours a world dependent on precision equipment for its security and progress.

This is the world for which the General Precision group of companies was created.

General Precision is in the business of putting science and technology to work for man — by developing and producing precision systems and equipment, along with the techniques for using them. Each company in the General Precision group can call on the research, development, and production resources of other companies in the group so that none is limited by its own specialization.

General Precision's people make up one of the finest teams of scientists and engineers in the country. They engineer complex control systems, such as our armed services require for shipboard and submarine weapons control and for missile launching. They develop complete concepts, such as safe and efficient methods for

organizing air traffic handling in the United States and internationally. They manufacture hundreds of finished products widely used in industry and national defense as well as certain consumer products.

Four of the General Precision companies — General Precision Laboratory (GPL), Kearfott, Librascope, and Link — constitute a leading factor in the field of high precision electronics engineering and development. They are leaders in production of analog computers and digital computers. General Precision Laboratory manufactures one of the most complete lines of closed-circuit television systems and is the first and foremost producer of Doppler radar air navigation equipment and airborne computers.

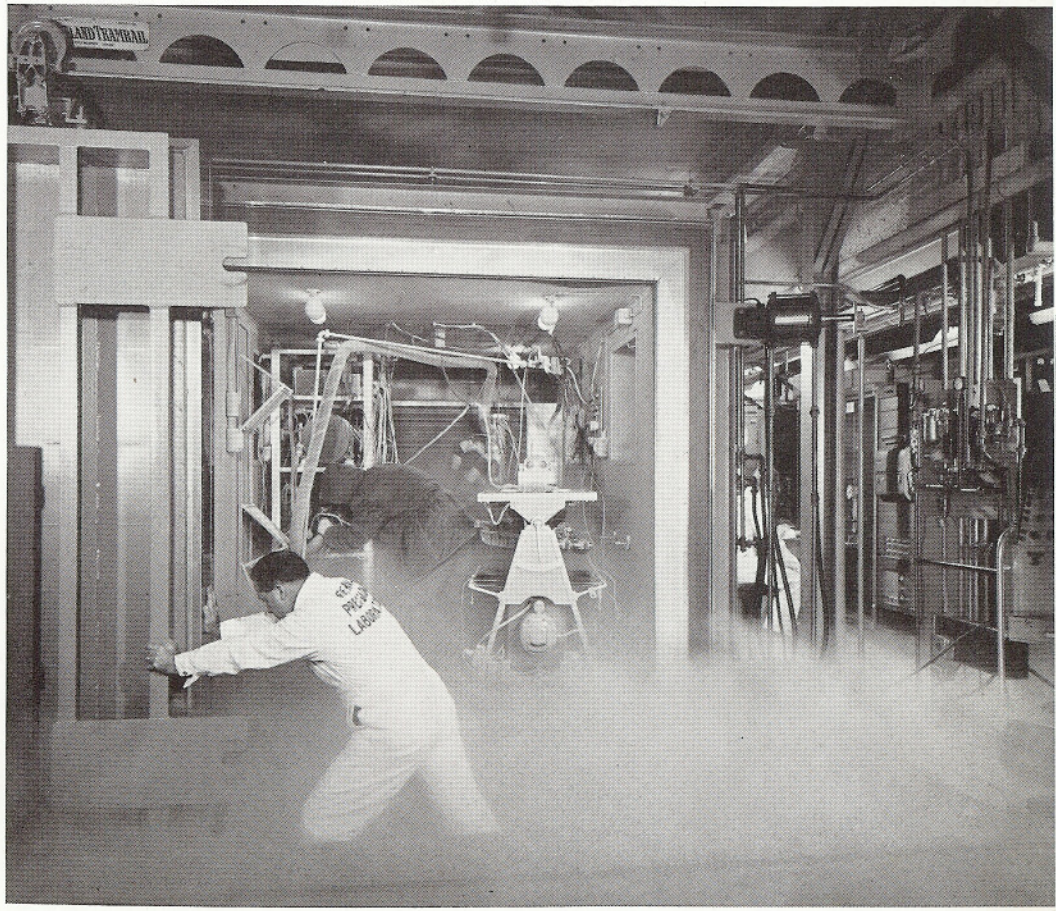
Through its group of companies General Precision participated in 33 different missile programs in the past year, providing equipment for guidance, control, fire control, ground support, and training. One Jupiter C missile alone — the one that launched the first U. S. earth satellite — contained 22 Kearfott components. General Precision has equipment in almost every type of aircraft in the U. S. armed forces, both those in operation and those still in development.

The scientists and engineers of General Precision are opening new frontiers in areas where their experience in precision technology can be put to work. For instance, they are investigating methods of obtaining accuracies beyond the capabilities of man-machine operations. They are using minute particles, such as atoms and electrons, in the manufacture of new devices to achieve dimensional accuracies and stabilities in the order of 1/100,000,000 inch.

Since our nation's defenses depend heavily on precision equipment it is natural that many of the General Precision group's activities are connected with our national defense program. This defense work often has led also to the manufacture of advanced products for industry.

This booklet suggests the useful role this group will play for both industry and defense in tomorrow's age of precision.

Component testing in temperature-altitude chamber.



AIR TRAFFIC CONTROL FOR THE JET AGE

On a typical busy day last year, about 800 aircraft landed or took off from New York City's Idlewild Airport. During the peak traffic hour on that day the airport handled more than 50 airplanes — almost an airplane a minute. Nearby La Guardia Airport frequently handled over 1,000 aircraft a day and, in rush periods, far more than an airplane a minute.

This already heavy traffic is increasing, and so is the speed of flight. The need has become urgent to improve handling and scheduling procedure — at the airport, in the surrounding area, and along the nation's flight routes.

Present systems for handling traffic at major U. S. airports do not have the flexibility, speed, and capacity that modern technology can give them or that the future will demand of them.

Recognizing the importance of this whole problem, the U. S. Government is financing the development of an experimental traffic control system that will enable ground operators at the nation's major airports to handle greatly increased air traffic loads more efficiently. The objective is to make air traffic control a semi-automatic system, using computers and other devices already in use in business and for modern weapons.

The major part of this project, the data processing and display system, is being developed for the Federal Aviation Agency's Bureau of Research and Development by General Precision Laboratory. Two other General Precision companies, Librascope and Link, also are participating.

The new system, which is called a Data Processing Central, will represent a direct attack on the heart of the air traffic control problem by automating the processing and display of air traffic data. Through automation it will relieve the nation's traffic controllers of much of the staggering load of routine clerical work that reduces their efficiency today.

The equipment will include computers, controller consoles, flight progress strip printers, and display equipment. In a single hour it will process as many as 400 complete flight plans from commercial, private, and military aircraft and will simultaneously print and process up to 1,600 flight progress strips. Detection of conflicts in aircraft flights that might result in collision is one of the many functions to be made automatic by the new system.

By January 1, 1963, a significant segment of the experimental system is expected to be operating in the New York area. The Data Processing Central is being developed to take into account military air traffic as well as civil needs, including peak military traffic loads such as occur with the arrival of carrier-based aircraft or the sudden dispatch of interceptors through enroute traffic.

It is believed that equipment that will meet traffic control requirements of the New York area will be adaptable for nationwide use, since this area presents the most difficult air traffic problem in the United States. The equipment is being designed in "building block" units, so that traffic control systems can be built in any size to meet requirements in various geographic locations.

Engineers use mockups of consoles for experimental air traffic control system in functional and human engineering studies.

PRECISE NAVIGATION – A JET AGE REQUIREMENT

The Federal Aviation Agency (FAA) has given its top priority to modernizing ground-based traffic control facilities. The Agency has repeatedly stated that this is the most urgent task facing air traffic planners in the immediate future.

Among the other aspects of the FAA's all-out attack on the air safety problems is the consideration of airborne navigation equipment for air traffic control. An important part of this program is the evaluation of self-contained air navigation "tools," which promise new freedom to air traffic control planners and which provide a new order of precision in aircraft position reporting and flight plan following.

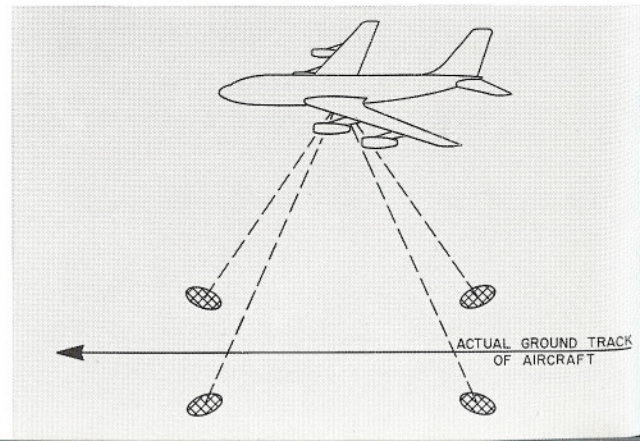
The ability of pilots to report positions accurately and to follow flight plans with precision will greatly assist the modernized ground traffic control facilities in reaching optimum efficiency. The Data Processing Central will make significant improvements in traffic control with existing navigational information. Supplying that system with improved flight information will enable its inherent traffic handling potential to be more fully realized.

In addition to performing as the major contractor in the development of the FAA Data Processing Central, General Precision has for years been engaged in basic work on self-contained air navigation systems. These efforts have resulted in production equipment with new standards of navigation accuracy. Completely self-contained, these systems make use of RADAN® navigation devices, which have now been tested in millions of miles of world-wide military air travel and have proved exceptionally accurate.

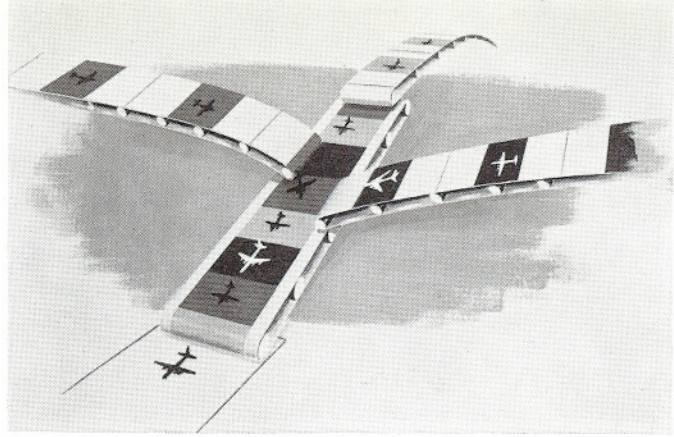
RADAN stands for RAdar Doppler Automatic Navigator and refers to a family of systems developed by General Precision Laboratory over a 12-year period. These systems give the pilot continuous ground speed and drift angle by means of four radar beams bounced off the ground and echoed back to his airplane. In extensions of RADAN equipment, known as HIDAN* (HIgh Density Air Navigation) systems, this information is fed to an airborne computer, where the position of the aircraft is calculated and then automatically compared to where it should be according to a flight plan previously coded and inserted into the same computer.

Thus with a HIDAN system the pilot can tell at any instant, and without requiring any computations on his own, exactly where he is in relation to where he is supposed to be – whether he is on or off course and whether he is behind or ahead of time according to the flight plan he filed at the traffic control center. At any time he can determine required flight plan changes that will reflect the conduct of his flight. After the air traffic control center approves

*Trademark



RADAN navigation systems use four radar beams echoed off the ground to tell ground speed and drift angle.



Terminal air traffic can be visualized as if on "conveyer belts" feeding into a main conveyer to the airport. Precise navigation will help airplanes touch down at assigned intervals as short as compatible with safe operation.

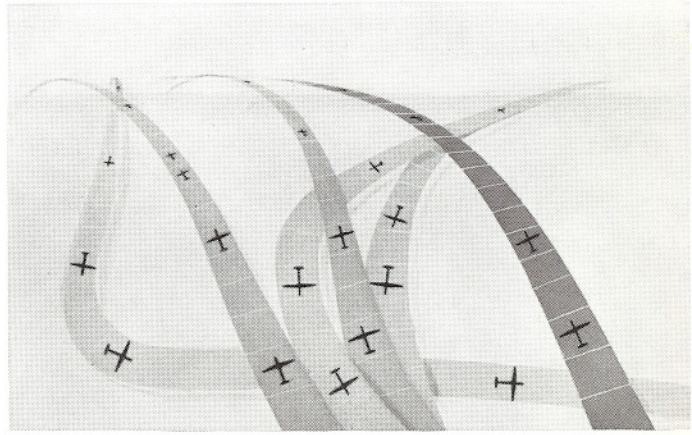
the changes, he can introduce the new flight plan data into his HIDAN navigation equipment by simple adjustments.

Until 1957 RADAN equipment was classified equipment on military aircraft. Many of the new commercial jets have since been wired to use this type of equipment, and it is already giving useful service in private business flying operations.

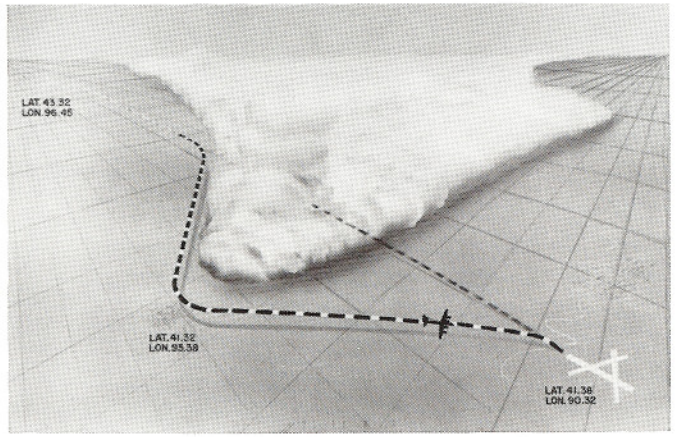
Among the important benefits the self-contained air navigation systems offer are lowered cost and improved efficiency in over-ocean and polar operation, resulting from the pilot's ability to make greater use of favorable wind and weather conditions. Operational economies also are made possible by substantial reduction of unscheduled flying time.

Use of these systems will make possible greater effectiveness of air traffic control with a minimum of reliance on complex ground-based navigation aids. The military advantages of navigation systems not depending upon ground stations, which are available only in friendly territory and can be cut off or destroyed by homing missiles in time of war, are obvious. Another advantage is their compatibility with the many different systems of aircraft control in other countries.

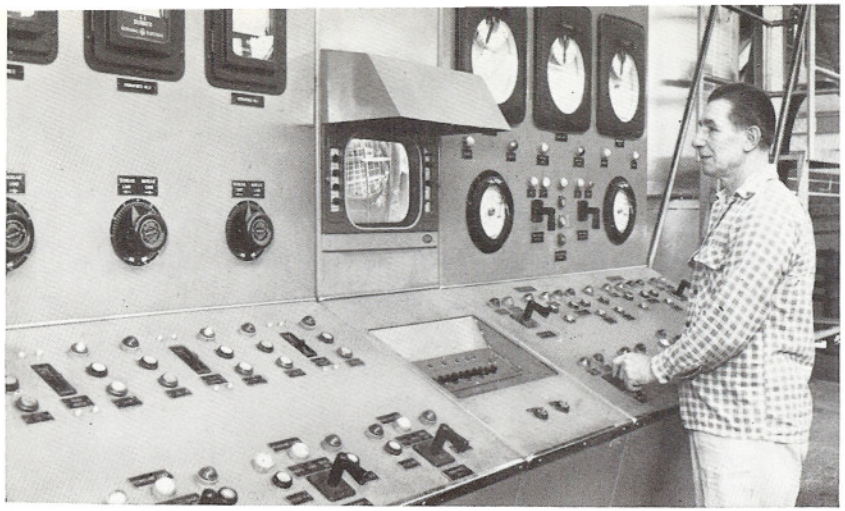
General Precision believes that the FAA Data Processing Central will make a major contribution to air traffic control. Information provided by precision self-contained navigation will further contribute to over-all improvement in air operations.



Greater use of air space will be demanded as air traffic grows, including increased use of crossing and converging airways. More precise navigation will be required to accomplish this.



When pilot changes course to avoid storms, HIDAN system indicates how far he is off and how to return to programmed flight plan; if change is great, he can refile flight plan and reset computer to new way point.



Western Electric operator can control the processing of pulp in another building with the aid of television.

Engineer controls and analyzes rocket engine firing at flight propulsion laboratory by using GPL TV monitor.

TELEVISION SERVES MANY NEEDS

At its cable plant in Kearny, New Jersey, the Western Electric Company processes its own heavy pulp for insulating telephone cable. Housed in one of the main plant buildings at Kearny are two 3,000-gallon "hydrapulper" tanks — tanks in which the pulp is mixed.

The hydrapulping process at Kearny is automated and needs only one control operator. Since the hydrapulper tanks are so huge, however, the man who actually operates the controls for the process is in a completely separate building.

Western Electric achieved remote control by installing a television camera over each of the two hydrapulper tanks and hooking them up to a monitor screen at the operator's control panel in the next building. The cameras give him a full view of the pulp-loading conveyers and processing equipment, so he can see through television what happens as he operates the controls. While watching the televised pictures, which he can alternate by pushing a button, he starts the hydrapulper's sharp 4-foot-diameter rotor blades, turns on the water at the top of the tank, and dumps the sheet pulp in — up to half a ton of it at a time. His television screen also

New York University and over 40 other schools teach with GPL TV.

eliminates a safety hazard by warning him if other personnel are near when he starts the hydrapulper.

The television equipment on which this whole process depends was made by General Precision Laboratory. Its equipment is also being used by the Upjohn Company, pharmaceutical manufacturers, in televising clinical staff meetings, diagnostic procedures, and surgery to doctors in 50 cities across the country — and by many hundreds of other firms and organizations.

Equipment developed jointly by GPL and Bludworth Marine, a division of Kearfott, was recently used by the Tennessee Valley Authority in examining underwater parts of Wheeler Dam in Sheffield, Alabama. The underwater television camera sent back pictures to a monitor screen on the surface where the dam's engineers could see cracks and erosion magnified two or three times.

Television is working outside the home in many places today as a tool of great importance to scientists and educators and to technicians in industry and the armed forces.

They use television to see what is going on in places where they cannot go themselves: in atomic energy plants, for example, where radiation dangers lurk; in intensely hot rocket tests and missile launchings; or to study the operation of aircraft landing gear or automobile springs.

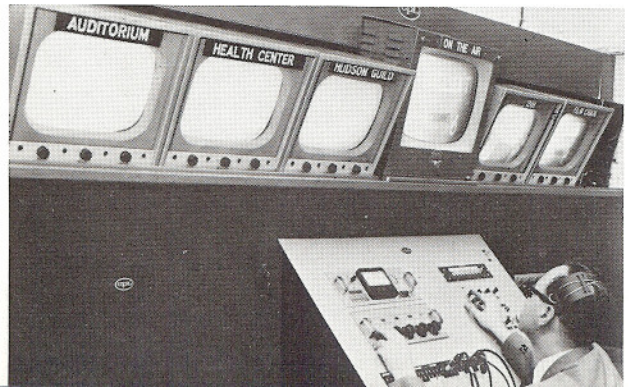
Also, to be many places at the same time: in psychiatric wards or prison cells; at department store counters; at bank teller stations; at various points in industrial processes, such as the manufacture of steel; and for specialized applications aboard U. S. Navy aircraft carriers and guided missile ships.

More and more often teachers are finding it possible to increase their effectiveness in our rapidly growing schools by giving instruction through television to several classrooms at the same time. In New York City a GPL closed-circuit system broadcasts educational programs from four originating sites to 400 families in a large housing project and 46 classrooms in a local school.

Business firms and other organizations with employees such as sales people scattered across the country are finding that television can bring people together with a minimum interruption of their regular work. Audiences in as many as 52 cities have been linked simultaneously by GPL TV.

Wherever you see television systems like these at work, you are likely to see General Precision equipment. Through three subsidiaries (General Precision Laboratory, Kearfott's Bludworth Marine Division, and National Theatre Supply), General Precision makes and sells television cameras, control units, projection equipment, and television film recording and transmission systems.

GPL system brings TV to 400 families and a school.



Students watch medical treatments via GPL portable projector.

TRAINING BY SIMULATION – FROM JET PILOTS TO MISSILE CREWS

In 1935 a regular airline flight from San Francisco to New York took 18 to 20 hours. In 1945 it took about 16 hours; in 1955 about 8 hours. Today, by jet, it takes less than 6 hours.

These startling advances in air travel are, of course, due to steady improvements in the nation's aircraft. Major U. S. airlines now generally buy new-model aircraft equipment every five or six years. For the U. S. armed forces the rate in recent years has been much faster.

Every time a new aircraft model comes out of the factory, hundreds, and sometimes thousands, of pilots must learn where the controls are, how they handle under all flight and emergency conditions, how a "pro" must act in the cockpit with instinctive sureness under all types of weather conditions and navigation problems.

For 30 years pilot training has been carried on with the help of flight trainers and simulators. The whole idea of flight simulation originated with Edwin A. Link, now President of General Precision Equipment Corporation and founder of Link Aviation, the country's leading manufacturer of simulators for flight training, as well as for training in weapons fire control, missile launching, nuclear reactor operations, and control of industrial processes.

One simulator at work today is for the DC-8, the new Douglas jet airliner. In this simulator it is possible for the pilot to look through his cockpit window and actually see an "airport" below, with the runway coming up to meet him as he makes his final approach. The airport is flashed on a screen in front of him by a General Precision Laboratory closed-circuit television projector that relays a scene picked up by a television camera from a model airport nearby. This television equipment is electronically coordinated with the airplane controls so that every change in the simulated airplane's position is geared automatically to the camera's view of the airport model.

Link Aviation is currently at work on simulators for advanced military aircraft like the B-58 and the A3J and for other jet airliners, such as the Boeing 707 and 720, the Lockheed Electra, and the Convair 880. Link makes simulators also for training radar crews, navigators, and missile crews, and it is studying, under contract, training requirements for the Atlas missile.

The Link Jet Engine Trainer is another aid to economy in training. Four portable units – an engine, instructor's station, pilot's station, and system engineer's station – permit personnel to start, operate, and shut down an engine under many conditions that would be impractical or uneconomical to duplicate with actual equipment.

Link's unusual precision engineering experience is today producing important developments in many new fields. One example is the Link *Fringecount* micrometer, which makes direct measurements to one millionth of an inch. Combining optical, mechanical, and electronic principles, this unique instrument uses the wave length of light as its standard.

Technicians outside and crew members inside watch runway on screen as jet comes in for "landing."
Link makes Douglas, Boeing, Lockheed, and Convair commercial jet simulators.

COMPUTERS SOLVE PROBLEMS QUICKLY IN INDUSTRY AND DEFENSE

In the Missile Flight Simulation Laboratory at White Sands Proving Ground, New Mexico, missiles are "flown" dozens of times mathematically for every time they actually roar into the clear blue skies overhead. Ideas are born and tested on the basis of mathematical logic, and the costly business of real firings is cut to a minimum.

One of the important tools that make this possible is a small computer no larger than a home deep freezer. In two hours this computer, the LGP-30, can fire 35 missiles mathematically and calculate the air effects at different flight speeds — a tedious task that would take ten full weeks of work by an experienced operator at a desk calculating machine.

Staff mathematicians at the laboratory use the LGP-30 for the "in-between" job of working out preliminary problems, thus making it possible to use their heavily scheduled giant computers more efficiently for large equations. They also find it easier to train operators with the small computer than with larger ones because of the simplicity of operation.

The LGP-30, manufactured by General Precision's Librascope and marketed by Royal Precision Corporation through the Royal McBee Data Processing Division, is a complete computing system with the largest memory (4,096 words) and lowest price in its class.

More than 200 LGP-30's had been manufactured by the end of 1958. It is the largest selling electronic digital computer on the market except for one more than three times its size.

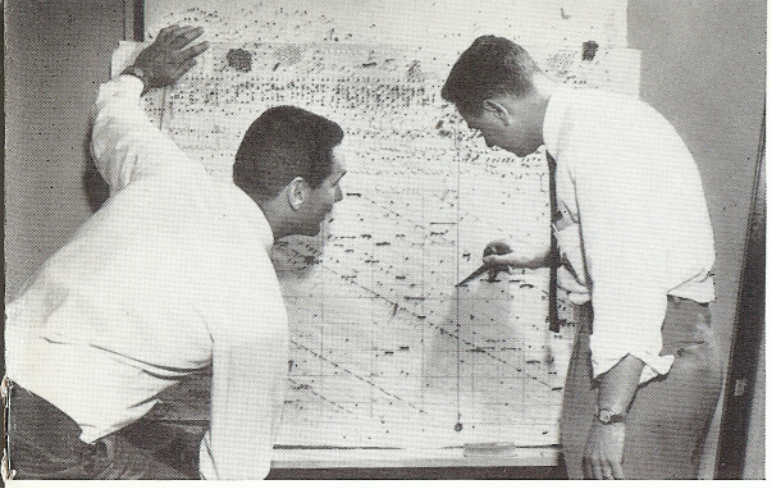
Engineering research organizations, such as Dodco, Inc., and Aeronautical Research Associates of Princeton, use this computer to solve some of the most advanced problems of the space age for the military services and private manufacturers. Dodco chose it after being authorized by the Government, as part of a long-term contract, to rent the computer that could most economically aid them in solving problems relating to such things as missile trajectories and re-entry of space vehicles into the earth's atmosphere.

Besides solving problems in engineering design, mathematics, and scientific analysis, the LGP-30 computer is being used in business data processing. In this field it is performing such work as computing sales reports from punched tape fed into it by cash registers and making the calculations for design and estimate of material requirements for new products.

Among the diverse organizations for which this compact and versatile computer is already working are the USAF Strategic Air Command, a midwest grain company, the Naval Research Laboratory, a Florida department store, and the Brookhaven, Long Island, atomic energy research laboratory.

Librascope, one of the first to produce electronic digital computers, has been developing and producing precision computers for the armed forces for many years. These have been used mainly in U. S. Navy fire control systems, navigation systems, optical systems, communications systems, and data processing systems.

Today every general-purpose destroyer in the U. S. Navy has



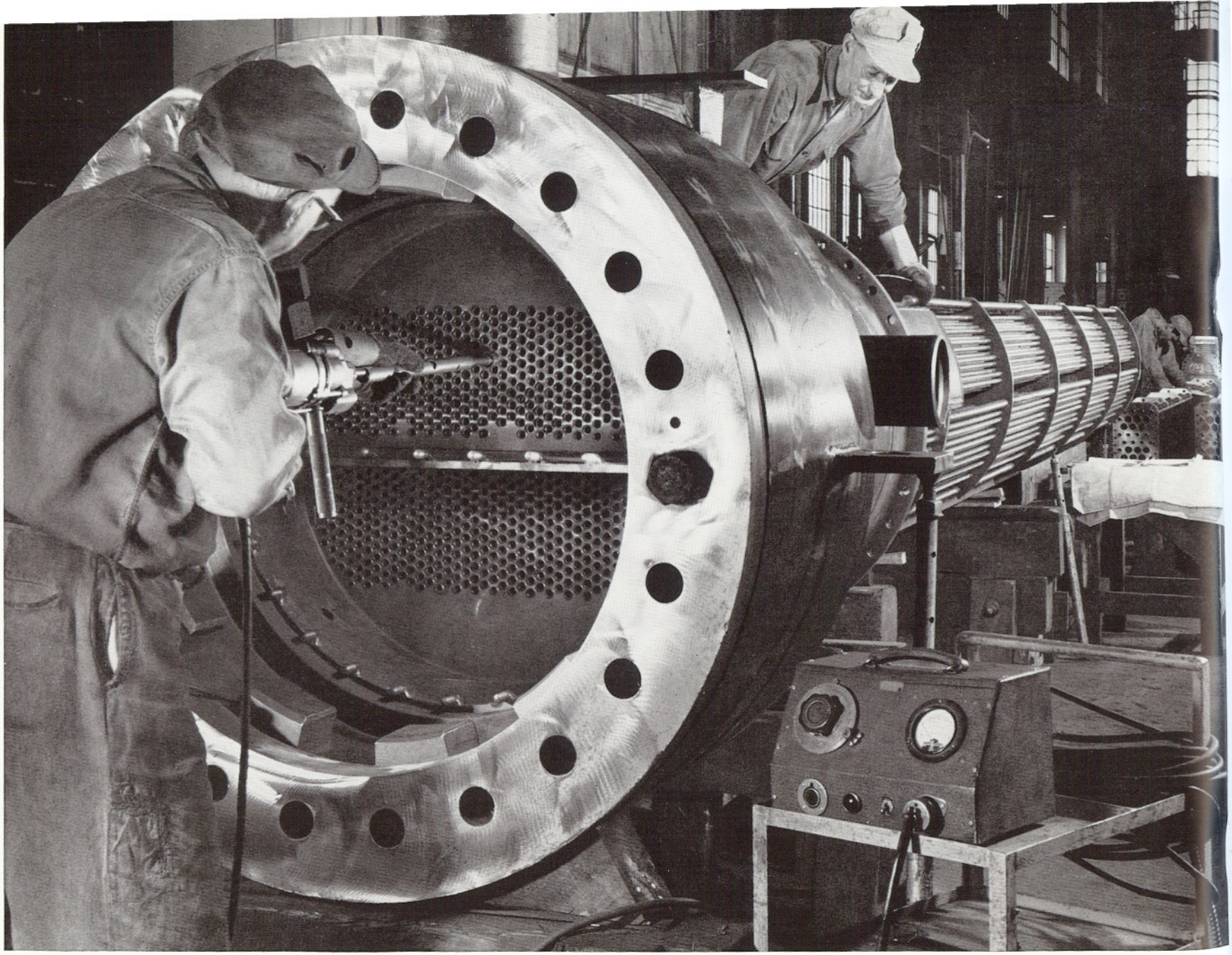
Development of a logic layout for a Librascope computer illustrates the planning that goes into such equipment.

a Librascope-designed computer at the heart of its antisubmarine attack system. In addition, Librascope computers for the Navy's ASROC and SUBROC missiles are the first electronic digital fire control computers for surface ships and submarines of the U. S. Navy. Librascope also designed and built the first airborne bombing and navigation digital computers to go into production for the Department of Defense.

SUBROC, on which Librascope is working with Goodyear Aircraft, will be an underwater guided missile to be fired from a submarine either on or below the surface. It will be able to detect a submarine target at long range, automatically compute the enemy's position and speed, and launch a rocket-propelled missile exactly on target. With information fed into it by sensitive instruments, the Librascope-designed computer will make all the calculations necessary to aim the rocket — and then fire it.

Librascope has in production or development new types of computers for advanced weapons systems and for business and industry. Of particular interest to industry is the Libratrol 500, one of the first computers introduced for process control.

Link Aviation uses the LGP-30 as a general engineering tool, particularly in solving problems related to flight simulation.



Griscom-Russell has long supplied these high-pressure feedwater heaters for heating boiler feed from turbine exhaust steam in power plants throughout the U. S. and abroad.

CONTRIBUTING TO THE DEVELOPMENT OF NUCLEAR ENERGY

As scientists and technicians learn to control atomic energy and put it to work for mankind through peaceful applications, the great benefits of this fundamental force will soon touch all our lives.

Meanwhile, of course, the defense needs of our nation require constant production of materials and equipment to help us maintain our strength in a threatening world atmosphere.

Mainly through Griscom-Russell, General Precision is now contributing to both phases of nuclear energy development: military and nonmilitary.

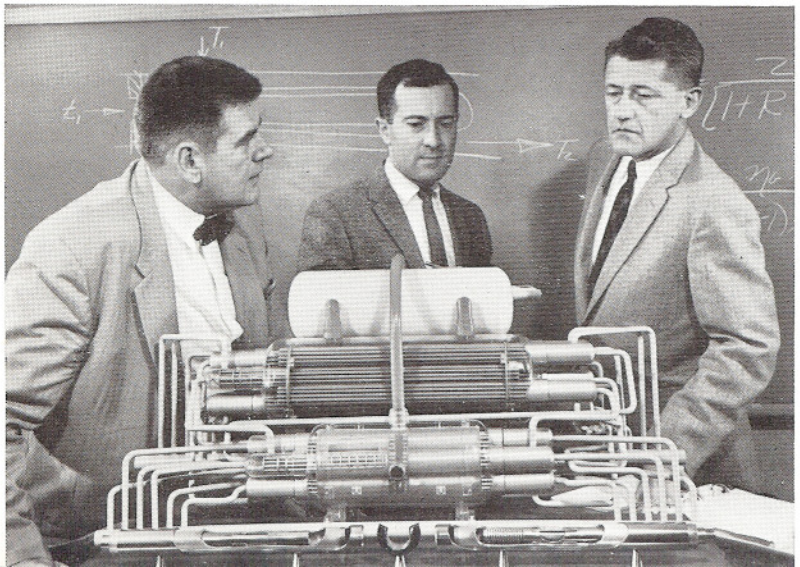
Griscom-Russell is working today on key parts of the first atomic engine for an airplane. This company's national eminence in designing and manufacturing heat exchangers — vital components in nuclear power plants — resulted in its receiving contracts for developing and manufacturing this kind of equipment for America's nuclear propulsion program for aircraft.

Griscom-Russell also is working on an Atomic Energy Commission contract to help develop nuclear power systems that will deliver electric power economically. G-R steam generators have been chosen for the Atomics International nuclear power plant of Consumers' Public Power District in Hallam, Nebraska, as well as the Enrico Fermi nuclear power plant in Michigan. The various types of G-R liquid metal heated steam generators are playing a key role in meeting the severe requirements encountered in harnessing atomic power for peaceful uses.

Another of Griscom-Russell's contributions to this field has been to devise a way to reduce the over-all volume of radioactive waste material so that such waste can be disposed of more safely.

The U. S. Navy's atomic submarines — in fact, most ships in our Navy — carry Griscom-Russell equipment. All the fresh water aboard the *Nautilus* is converted from salt water by special G-R distilling plants. The *Seawolf* has special fresh-water–salt-water coolers made by Griscom-Russell, and this company has provided cooler and heat exchanger equipment for other atomic submarines as well as for the *United States* and many other large ocean liners.

Griscom-Russell's position of leadership in the field of water distillation also will enable it to contribute importantly to efforts being made in this country and abroad to find solutions to the growing problem of inadequate fresh-water supplies.



Griscom-Russell liquid metal heated steam generators are expected to play an important role in future atomic power plants. Heat from a nuclear reactor is conveyed in a closed sodium loop to a G-R steam generator, one type of which is illustrated by this model.

INERTIAL GUIDANCE – SPACE NAVIGATORS IN SMALL PACKAGES

Since 1903, when man burst into the air age, pilots have been faced with three fundamental questions while in flight: Which way is up? Which way am I going? Where am I?

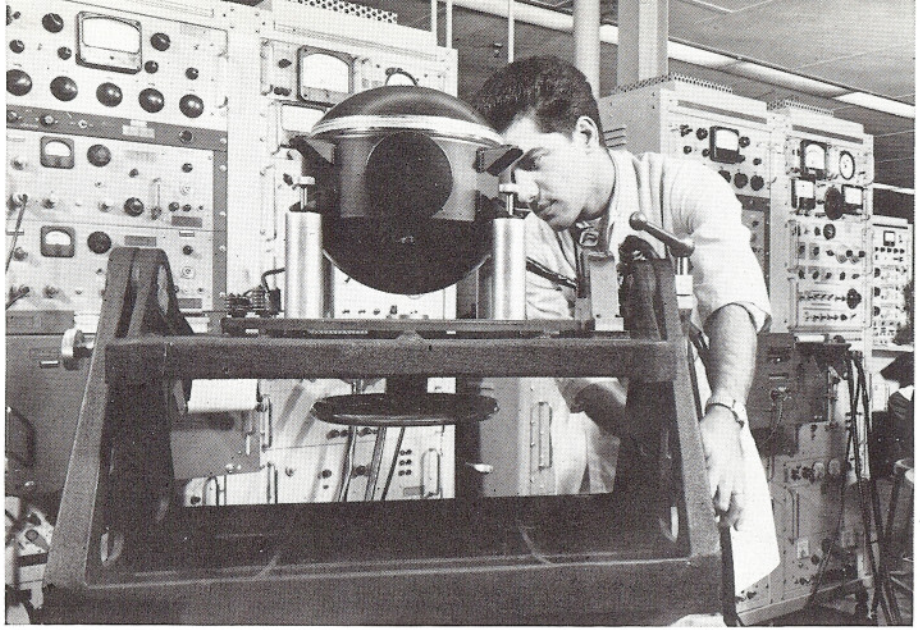
Finding precisely accurate answers to these vital questions while speeding through the air has never yet been possible, since fliers have had to rely on their own eyesight and on instruments which have been inaccurate. Even as recently as World War II pilots used instruments which, by today's standards, were of the crudest sort and which operated with wide margins of error.

As flying conditions have become increasingly severe with ever higher altitudes and fantastic speeds, the need for knowing vertical orientation, direction, and position has accordingly become ever more important to the pilot. Providing him with precise navigation information of this kind is one of General Precision's most important jobs.

One technique is, of course, through Doppler navigation, such as the RADAN systems pioneered by General Precision Laboratory.

Another, with a particularly bright future, is inertial guidance. This ingenious and completely self-contained system, consisting of a few "black boxes" in an aircraft or a missile, can determine the speed of the vehicle, the distance it has traveled, its position, and its attitude (whether it is in a roll, a pitch, or a yaw). In short, it can determine everything that needs to be known for precision guidance. Particularly valuable for space vehicles, missiles, and aircraft,

Surgical cleanliness is required in this dust-free Kearfott facility, where precision floated rate integrating gyros are assembled.



One of Kearfott's inertial guidance platforms undergoes final test.

an inertial guidance system can also be used for navigating surface ships and submarines.

Kearfott is today putting much of its energy, as it has under U. S. Navy contracts for the last ten years, into the development and manufacture of precise, lightweight inertial guidance systems.

Such a system is composed of three basic kinds of components: First, sensors — instruments that detect every slight change in the vehicle's speed or attitude; they can tell which way is up and in which direction the vehicle is headed. Second, computers, which calculate what these changes mean in terms of velocity, distance, and position. And third, display instruments, which give the final readings.

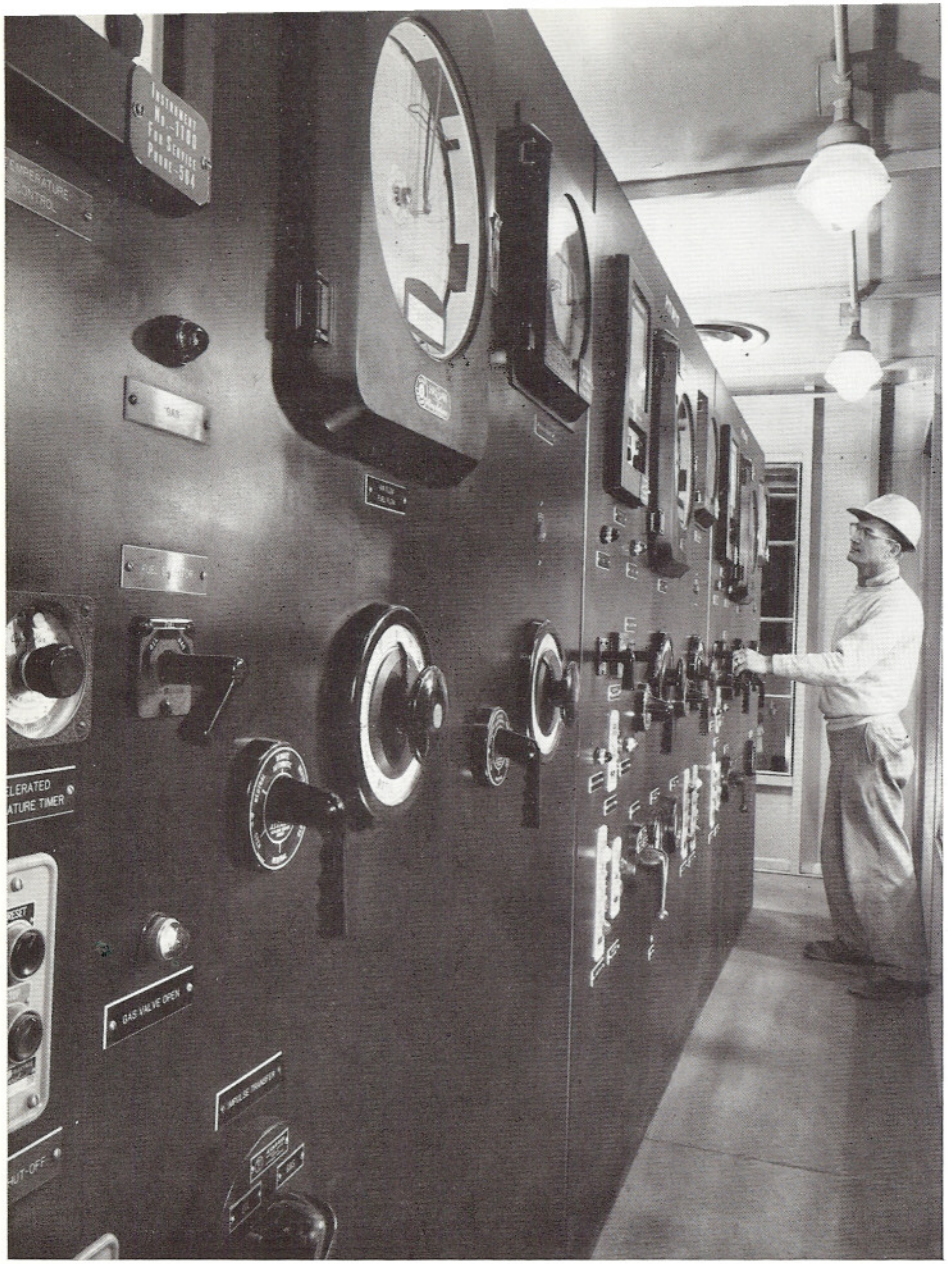
In years past, production of lightweight, yet highly accurate, inertial guidance systems such as this has been extremely difficult because of their extraordinary precision requirements. In addition to the manufacturing problems — some parts must be machined to within millionths of an inch in accuracy — such outside factors as the curvature of the earth, rotation of the earth, and inherent gyro "drift" (or built-in gyro error) must be allowed for automatically.

Even today inertial systems are unable to operate with high precision accuracy over long periods of time because their errors, while minute, are cumulative. For this reason combined Doppler-inertial navigation systems are now being used with great success. Doppler radar can provide highly accurate ground speed and drift angle information over the long term, and inertial components can provide accurate short-term information as well as vertical and heading information. Together they provide a system for the high precision, long-range navigation of today's air vehicles.

Kearfott also has many inertial guidance components and subsystems in operation, doing other kinds of jobs. Gyro reference systems, for instance, are functioning every day to stabilize radar equipment in aircraft flying early-warning missions in many parts of the world and to stabilize fire control equipment aboard the F-102 and F-106 aircraft; and, too, as a direction and vertical reference for aircraft.

Kearfott gyroscopes are used in many U. S. missiles: Atlas, Talos, Snark, Polaris, and SUBROC, as well as many others.

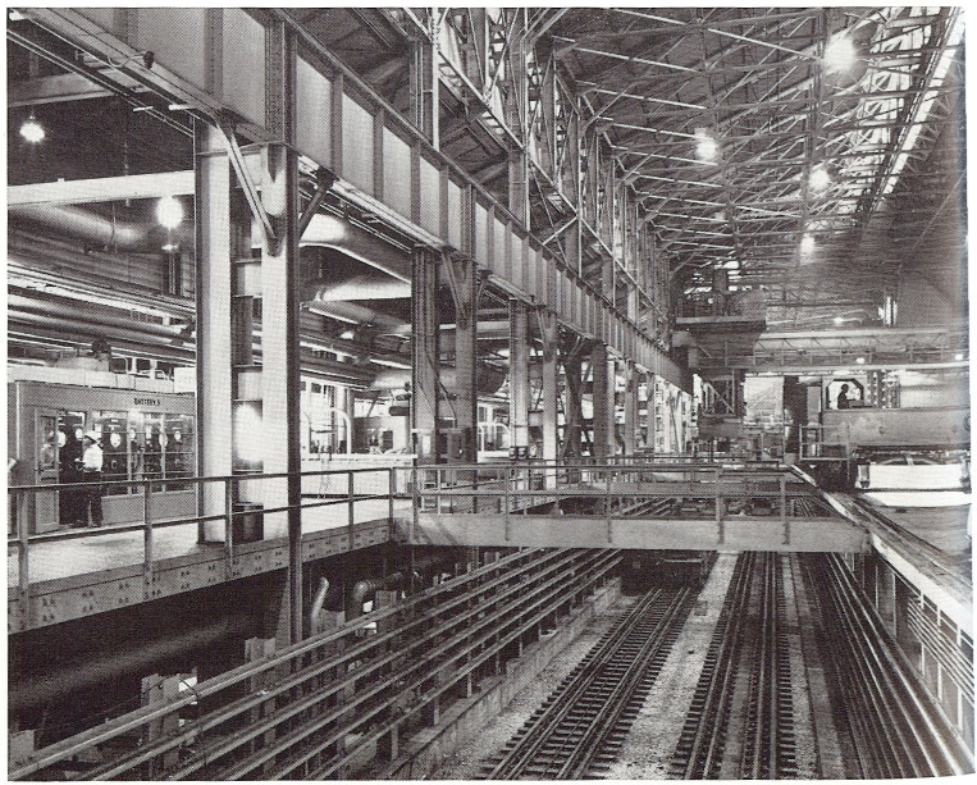
Today Kearfott is working on ways to produce inertial guidance equipment with ever greater precision and in small, lightweight packages.



GPE Controls' automatic combustion controls regulate soaking pits at this midwestern steel plant. This subsidiary today combines the technologies of Kearfott, Librascope, and Link with those of the former Askania Regulator Company in new industrial controls projects for many industries.

THESE PAGES HAVE BEEN WINDOWS into the General Precision companies, giving only a brief view of the activities of the group. They have not told the details of all the companies' activities or how these activities fit together.

By coordinating their research and production, for example, the General Precision companies are enlarging their capabilities. Kearfott and Librascope are working together as principal subcontractors for SUBROC; Griscom-Russell and GPE Controls have both contributed to the building of nuclear-powered submarines; General Precision Laboratory and Kearfott worked

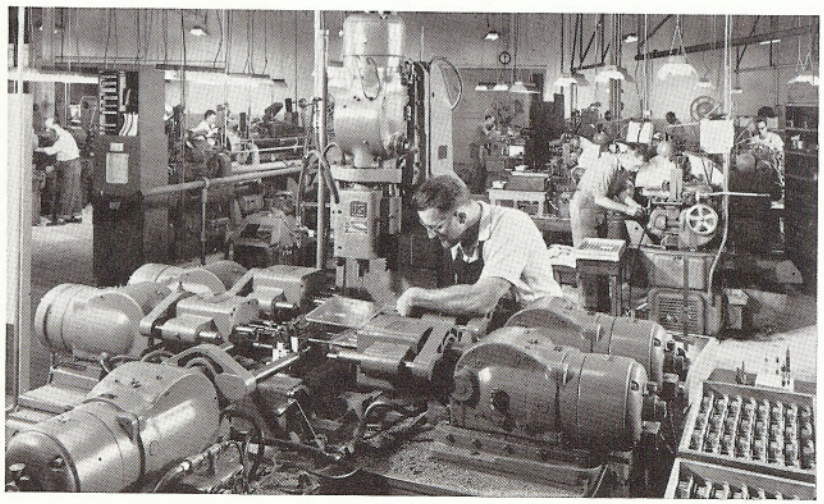


jointly on equipment for the Seamaster aircraft; GPL, Librascope, and Link are bringing complementary skills to the air traffic control work. All major projects are coordinated among the General Precision companies.

Other General Precision subsidiaries besides those already mentioned are carrying on important work in many fields: Shand and Jurs, a pioneer and leading manufacturer of precision equipment used in the transportation and storage of flammable liquids in the petroleum and chemical industries; Graflex, whose famous precision-built Speed and Super Graphic and other cameras for many years have been recording history in the hands of press and military photographers as well as amateurs; GPE Controls, which is intro-

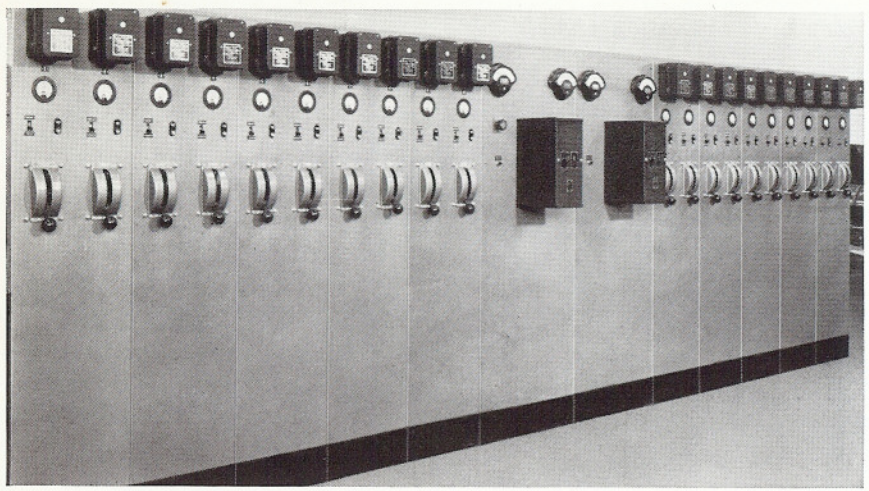
This Shand and Jurs Datalogger determines process variables such as storage tank levels and temperatures at a Richfield Oil Corporation marine terminal. Pilot lights signal high and low level alarms, and readings from a succession of tanks may be taken visually, or logged automatically on the electric typewriter.

Graflex cameras have recorded history for years.



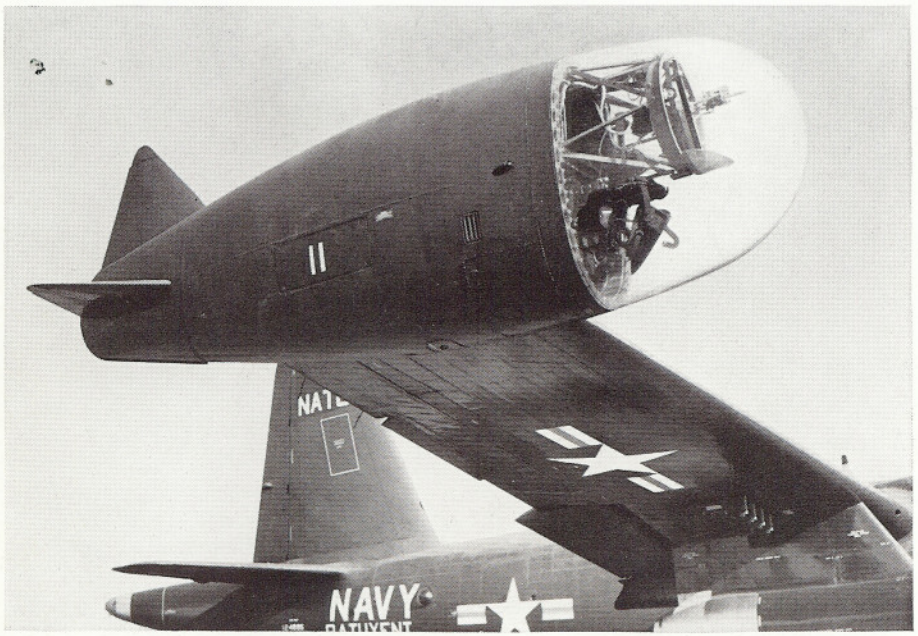
These workers are manufacturing and assembling cameras and slide projectors. Graflex skills are also at work on missile components.

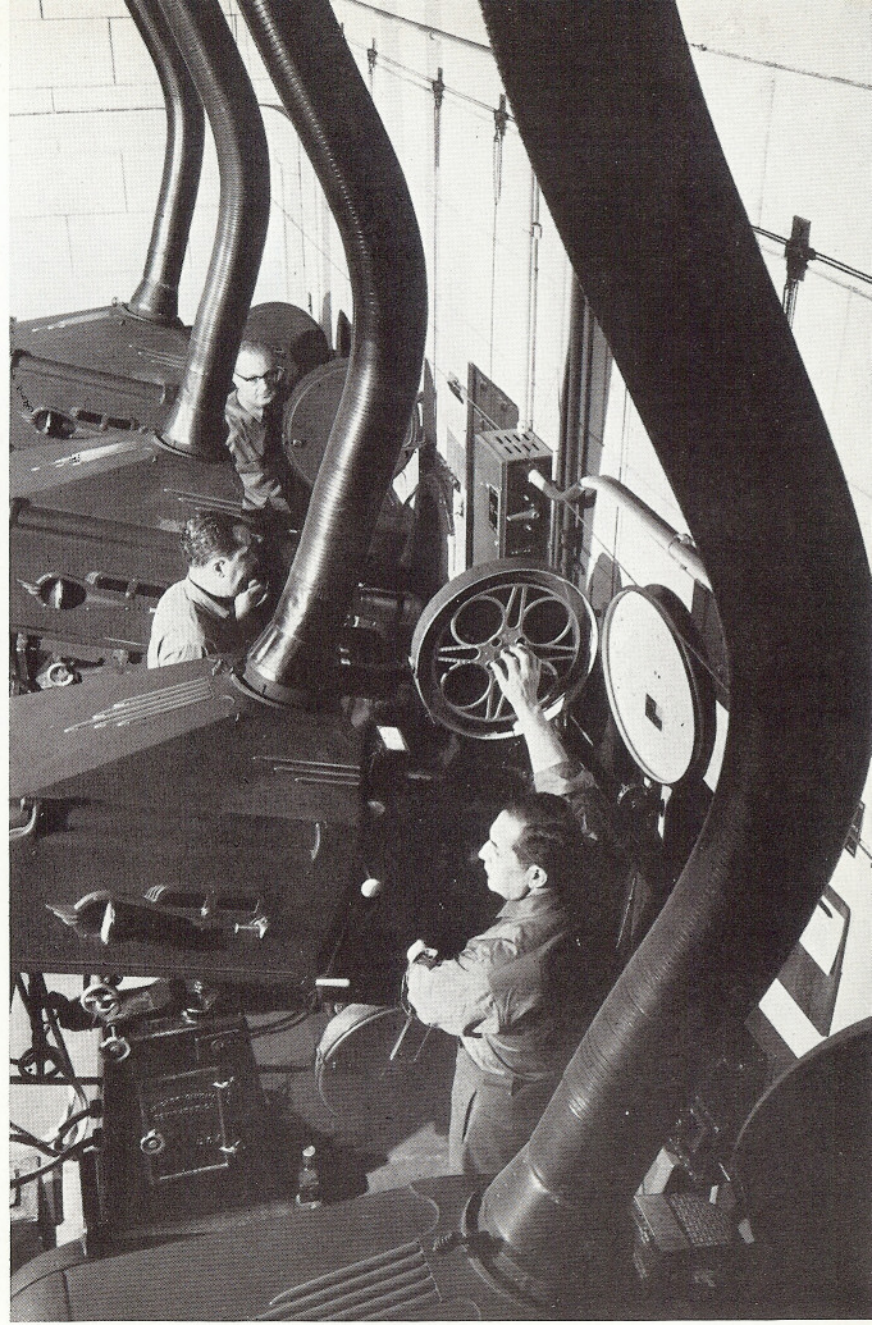
ducing process control digital computers and is able to design and install complete control-computer systems in industries such as natural gas, chemicals, steel, metal fabrication, paper, plastics, and textiles; Strong Electric, which makes the brightest arc light in the world for use in searchlights and motion picture projection equipment, and which is now applying its experience to the manufacture of special alloy metals and ceramics; Hertner Electric, a specialty manufacturer of precision power equipment including a wide range of a. c. and d. c. motors and generators for industrial and military use; National Theatre Supply, distributor of equipment for motion picture theatres, hotels, motels, and for the armed forces; Cinesound Service Corporation, exporter of motion picture theatre equipment and parts distributor; and the Society for Visual Education, which provides training and educational filmstrips and slides for institutional, industrial, and military use.



One Hertner Electric line is chargers and controls for industrial truck, mine locomotive, and telephone station batteries.

Most powerful light of its type, 70-million-candlepower searchlight on wingtip of Navy plane was made by Strong Electric.



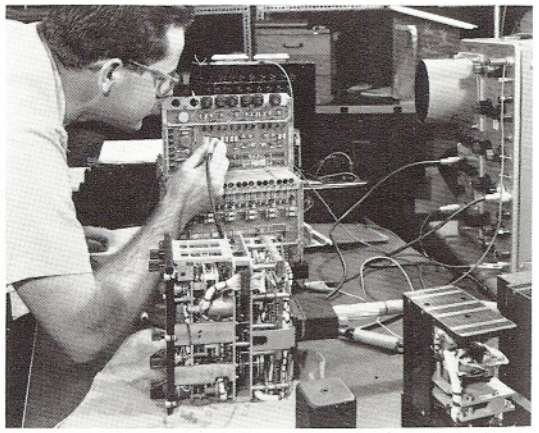


Radio City Music Hall uses GPL Simplex projectors, which are sold by National Theatre Supply.

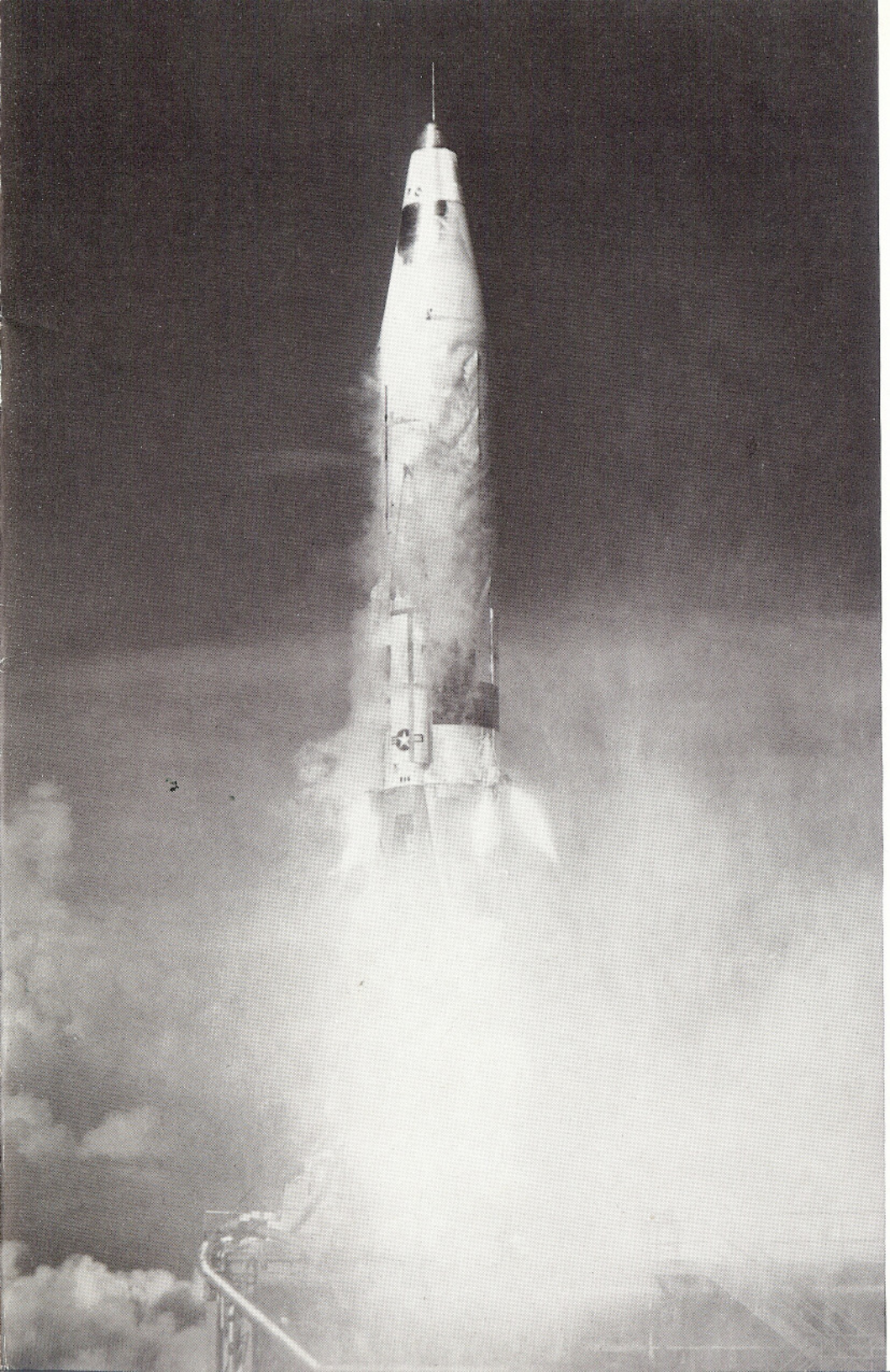
To appreciate fully the potential of this group of companies, we must really look to the future — for the things they are doing belong to the precision world of the future.

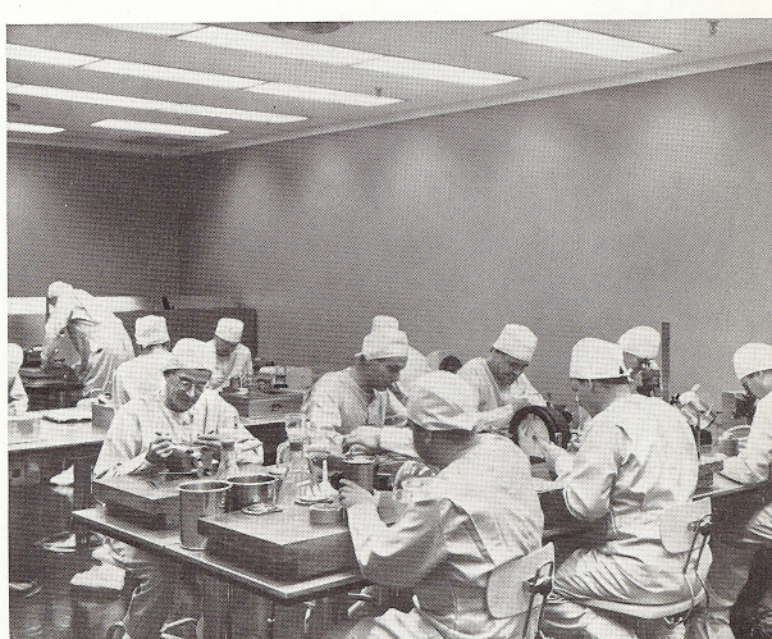
What will be the precision demands of space travel? What kind of equipment must be ready to help guide and control the space vehicles that exist today only in our minds? What will be required for their manufacture? What precision products will the consumer require? What precision demands will grow from our nation's defense and industrial needs?

It is to the job of meeting these challenges of the future that the men and women of the General Precision group are dedicating themselves.



General Precision companies are making components or systems for more than 30 different missile programs. The common denominator is precision — in computers (at right), in inertial guidance equipment (on opposite page), and in hundreds of other products for the future.





GENERAL PRECISION EQUIPMENT CORPORATION

92 GOLD STREET NEW YORK 38, N. Y.