

RESEARCH FACILITIES AND PROGRAMS



Newly occupied physics building at Kodak Research Laboratories in Rochester, N. Y.



Kodak physicists test lens on optical bench extending length of 160-foot underground lens tunnel located near physics building.

Kodak Research Center

A new seven-story physics research building has recently been occupied by the Kodak Research Laboratories in Rochester, N. Y. Its 200 000 square feet of floor space provide room for the work of about 400 persons and include over 200 special rooms for research in such fields as the theory of the photographic process, image structure, optical systems, sensitometry, radiography, sound recording, electrostatics, and solid-state physics. Special features include an optical penthouse on the roof for use in long-range photography and solar-radiation work and a temperature-controlled underground lens tunnel measuring 160 feet long, ten feet wide, and ten feet high.

Construction of the building was begun in 1959. It is fully air-conditioned, permitting year-round control of both temperature and humidity in all laboratories, which are located in interior areas away from outside walls. One wall of the building's lobby contains a ceramic tile mural depicting fundamental aspects of physics.

Republic Aviation Laboratories

On April 29, the Republic Aviation Corporation formally dedicated its new Paul Moore Research and Development Center in Farmingdale, L. I. Named for one of the corporation's founders, the \$14 million facility contains seven laboratories, each of which is intended for studies in a particular area of interest in the design and construction of space vehicles. The equipment will also be used in part for work on the design of advanced aircraft involving many of the same problems.

Materials for space vehicles will be tested in the Materials Development Laboratory, which contains chemical, physical, and metallurgical equipment to test the composition of various materials and their capabilities of withstanding the rigors of outer space. Electronic components will be studied in the Electronics Laboratory, equipped with a large anechoic chamber for space-simulation testing of antennas. Work on thin-film diodes and laser applications is already underway in the Guidance and Control Systems Laboratory, and Republic's Fluid Systems Laboratory plans to test both



Anechoic chamber in Republic's Electronics Laboratory, equipped with remote-control turntable, is used for tests in simulated space environment.

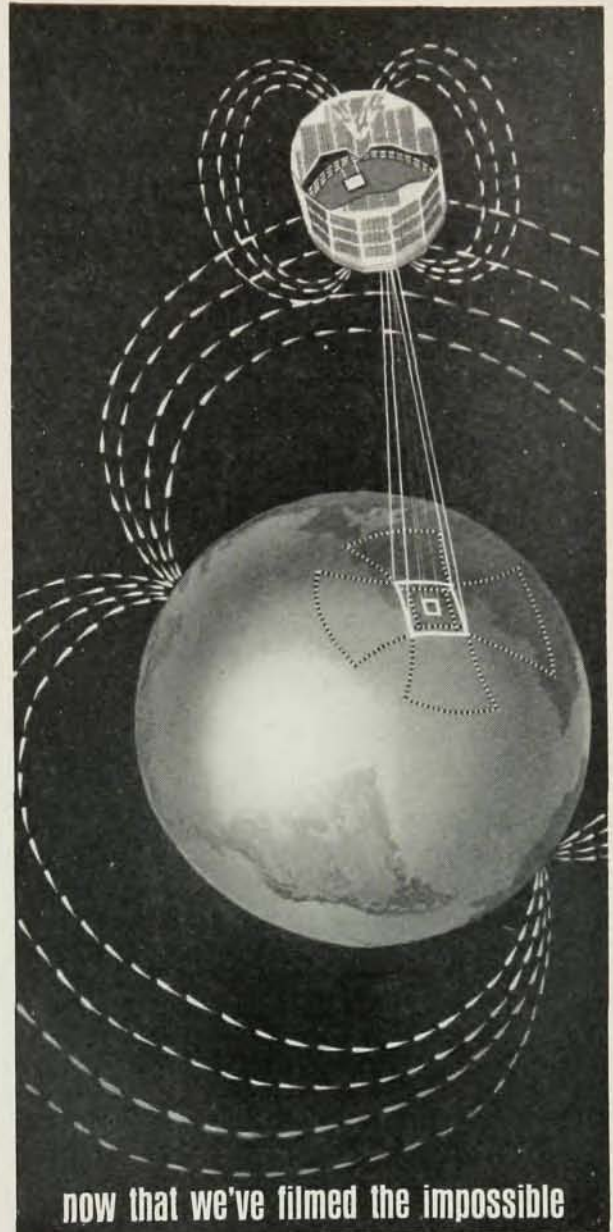
gas and liquid systems in a temperature range from -320 to $+1900^{\circ}$ F. at pressures up to 5000 psi. The Nuclear Radiation Laboratory includes two hot cells and a cobalt-60 gamma-ray source for testing the effects of radiation, and it has been designed to permit future installation of a linear accelerator. Equipment of the Re-Entry Simulation Laboratory includes a 96-foot hypersonic tunnel, a supersonic tunnel, a transonic tunnel, and a ballistic shock tube. The three tunnels will permit simulation of re-entry conditions at speeds ranging from 0.6 to 25 times the speed of sound. Finally, a Space Environment and Life Sciences Laboratory will study the physiological and psychological effects of being in an extraterrestrial environment. A thirty-foot space chamber capable of simulating conditions at an altitude of more than 150 miles will be used to test complete systems, space capsules, and people.

The center, which took two years to construct, contains a 70 000-volume technical library, conference rooms, and other ancillary facilities in addition to the laboratories. Its technical staff currently numbers more than 400 persons, primarily specialists in the physical and life sciences. The new Long Island Graduate Center of Brooklyn Polytechnic Institute, which will open in the fall, is under construction a short distance away on a site donated by Republic.

Data on the Research Effort

Expenditures for separately budgeted research and development at colleges and universities increased from \$410 million to \$736 million between 1954 and 1958. According to a survey by the National Science Foundation, the problem of finding the people to perform the increased amount of work represented by the increase in money has largely been met by shifting faculty members already involved in part-time research over to full-time participation. The NSF found that in 1958 a total of 69 919 scientists and engineers (defined as all persons with baccalaureate degrees who were doing professional-level work) were engaged in research at colleges, universities, federal contract research centers, and agricultural experiment stations. Faculty members accounted for 32 820 of the total, which represented an increase of only 3 percent over 1954, but the number of faculty members doing full-time research increased almost 50 percent, from 7000 to 10 400.

Of the 69 919 workers in research and development, the overwhelming majority (50 294) were found in colleges and universities. Federal contract centers employed 8284 and agricultural research stations 11 341. Nearly half (32 616) were engaged in life-science research, and more than a quarter (18 045) in the physical sciences. Engineering (12 236) and social sciences (7022) accounted for the rest. The survey is reported in *Reviews of Data on Research and Development*, Number 27 (April 1961), designated NSF 61-21, which is available from the Superintendent of Documents, US Government Printing Office, Washington 25, D. C., for ten cents.



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