

LEADWIRE

SPECIAL

AUGUST, 1962

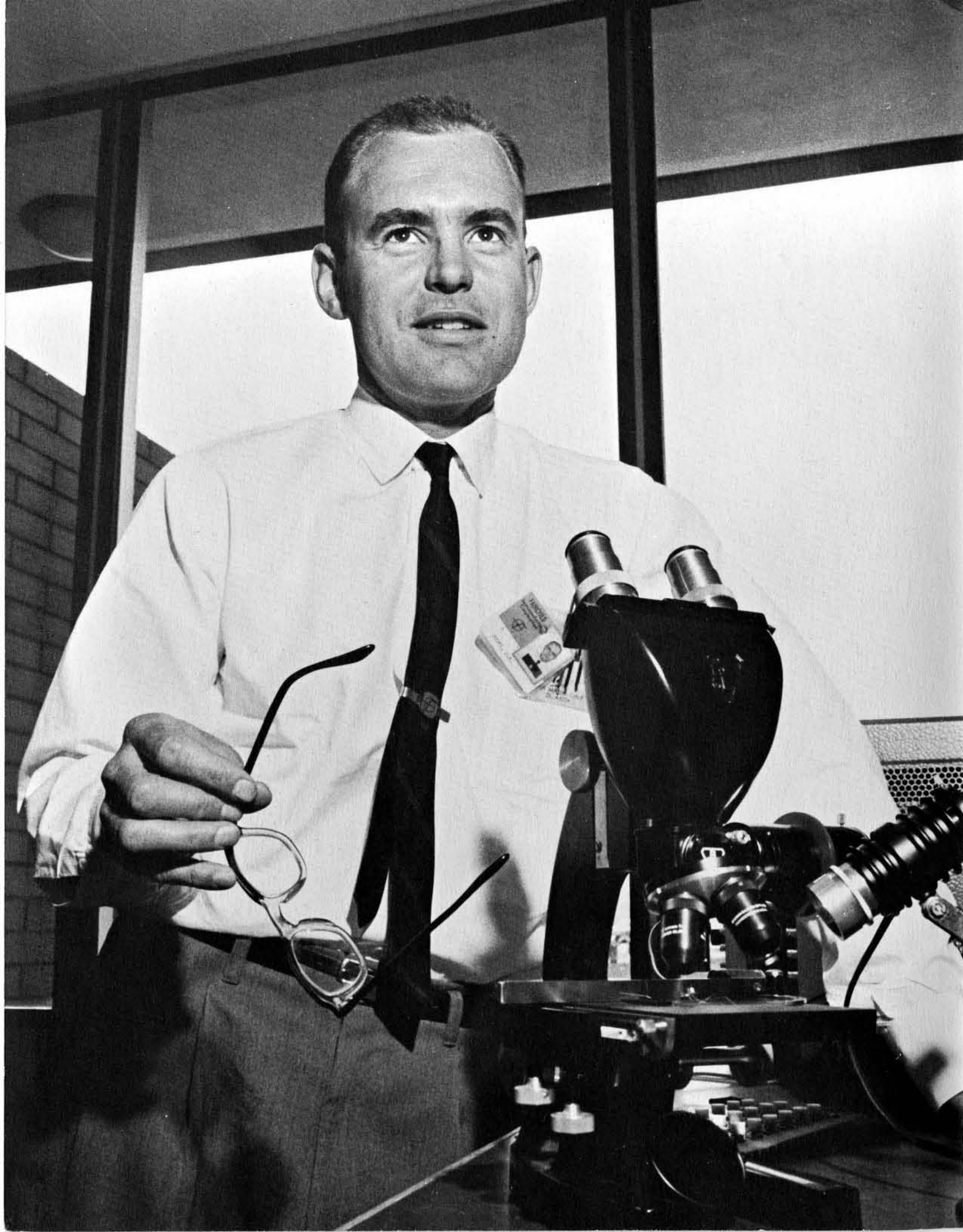


FAIRCHILD

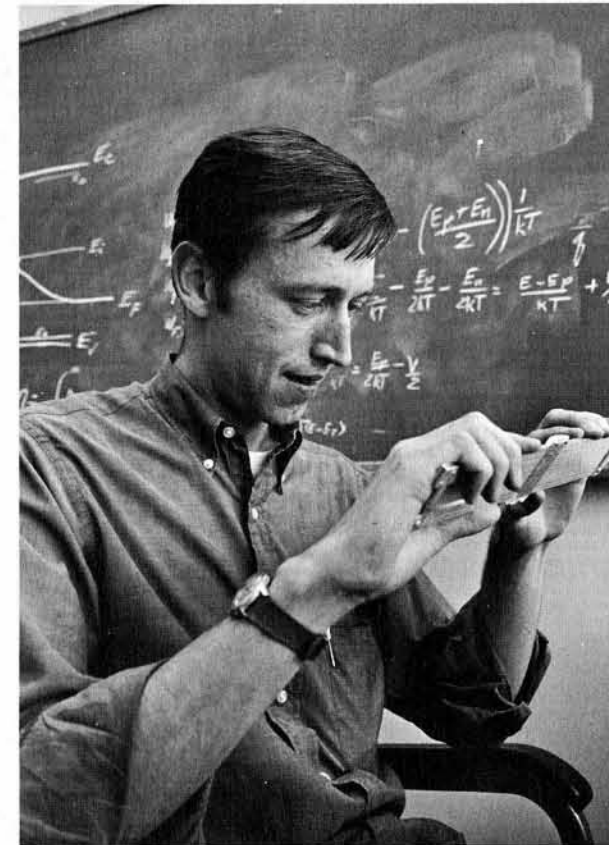
SEMICONDUCTOR

RESEARCH AND DEVELOPMENT LABORATORIES

A DIVISION OF FAIRCHILD CAMERA AND INSTRUMENT CORPORATION

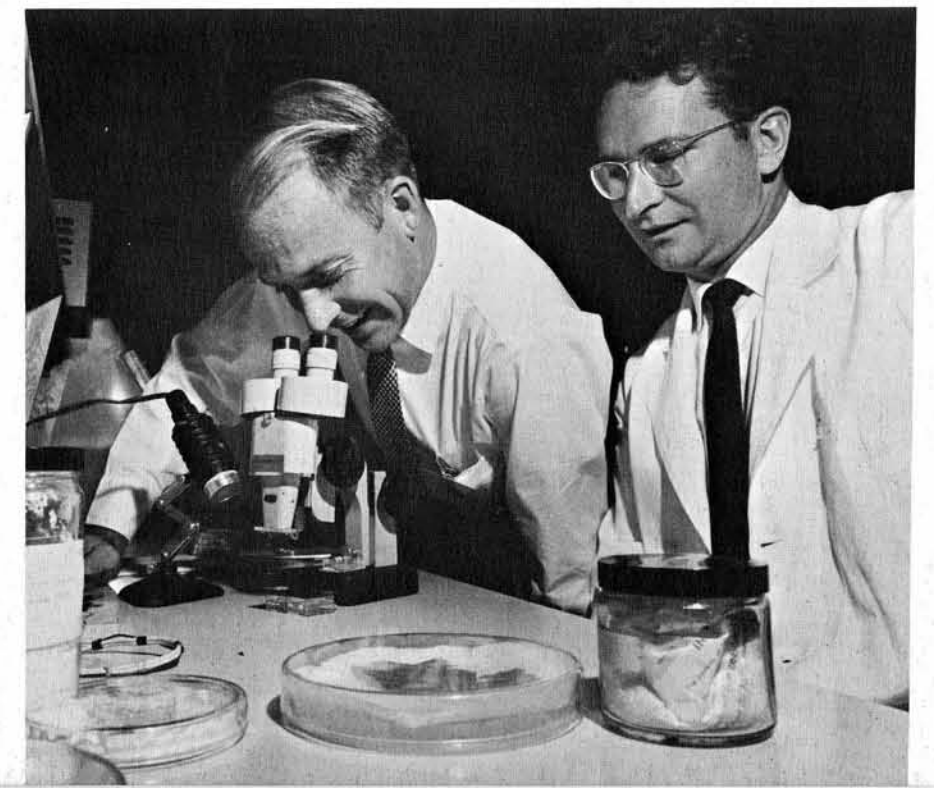


people . . . with knowledge with training, with curiosity —these are the people of Research and Development at Fairchild Semiconductor. Theirs is the endless search for answers . . . answers to the questions which arise in the day-to-day quest to advance the technology.



Fairchild's position today as the world's leading producer of high performance silicon semiconductor devices is due in large measure to the success of their work. Completion of the new Research and Development Laboratory in Palo Alto, newest and most modern in the industry, effectively punctuates the continuing story of research at Fairchild Semiconductor.

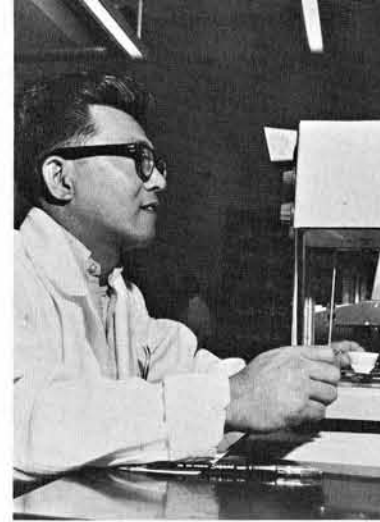
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Director of Research and Development is Dr. Gordon E. Moore, one of the founders of Fairchild Semiconductor. In a field where potential is defined chiefly by the limits of a man's inventive imagination, his is the job of choosing direction, defining scope and setting the goals Fairchild research is to pursue.



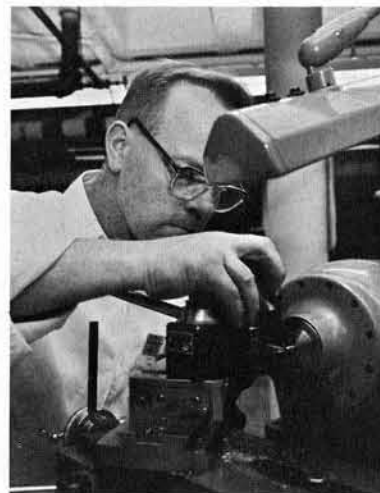


...who
ask
the
questions ...

The four conference rooms of the new laboratory are in constant use for discussions, lectures, seminars and classes in the multiple areas of semiconductor technology.



From the minute to the massive. A scale balanced to .00003 gram above—a two-ton magnet below.



Tooling so precise it is done under magnification—hand-blown laboratory glassware—custom-machined copper fittings: typical of work from the experimental machine shop.



... and
find
the
answers ...



Dr. Victor H. Grinich, Associate Director of Research and Development, had already earned three degrees in electrical engineering and spent five years in advanced semiconductor research before joining the other scientists in founding Fairchild Semiconductor. After completing his PhD at Stanford, he became a research engineer at Stanford Research Institute. Today Dr. Grinich shares close responsibility with Dr. Moore in the overall lab direction.

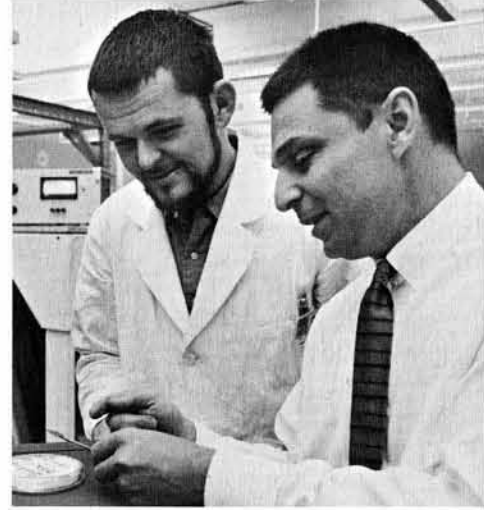


The ultimate goal of Fairchild research is new products and product improvements. Hence the Device Development Section, under the direction of Philip J. Ferguson, is its "bread and butter." Here potential new devices go the final mile in pilot production. Only after the bugs have been worked out, rigid testing and reliability standards met and surpassed, is a new device accepted into the Fairchild product line. More than 40 different major projects are currently in progress.

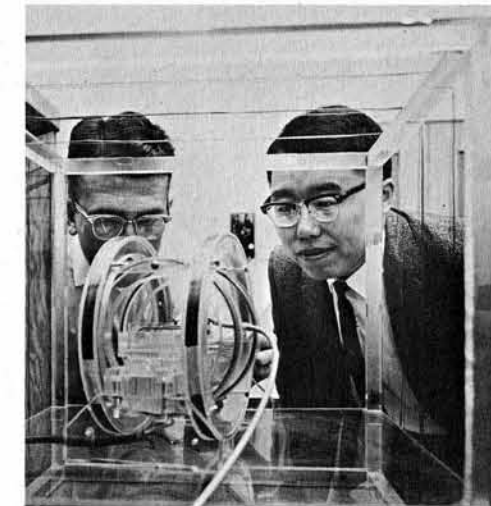
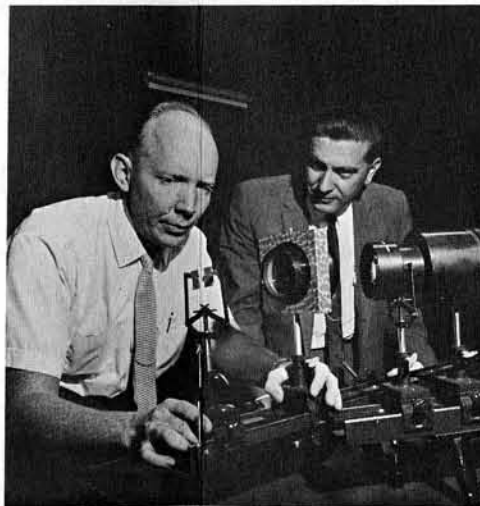
High frequency phenomena in solids and their potential applications in electronics is the field of investigation of the Microwave Physics Section. This work will result in the development of components useful in radar, microwave communications, radio astronomy and other applications employing radio frequencies above 1 kMc/sec. Manager of this section is Dr. Irvin H. Solt, whose specialty is basic physical phenomena in magnetic materials.



Work of the newly-created Basic Physics Section is of a "blue sky" nature—the study of new and unusual phenomena with potential applications in solid state electronics. Although it may be several years before Fairchild's product line is expanded as a direct result, this inquiry represents an important investment in our continuing future leadership in the industry. Head of the section is Dr. Herbert N. Leifer, who holds three degrees in physics from UCLA.

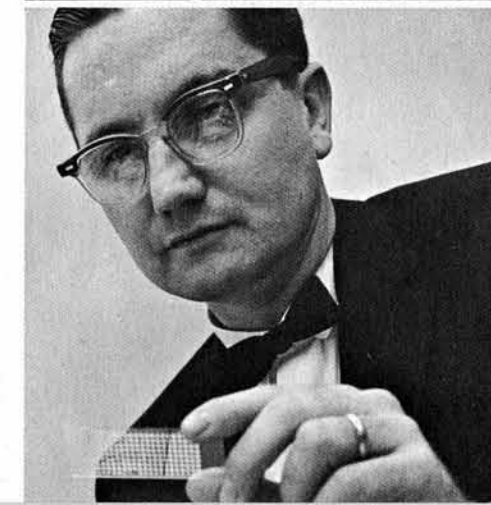
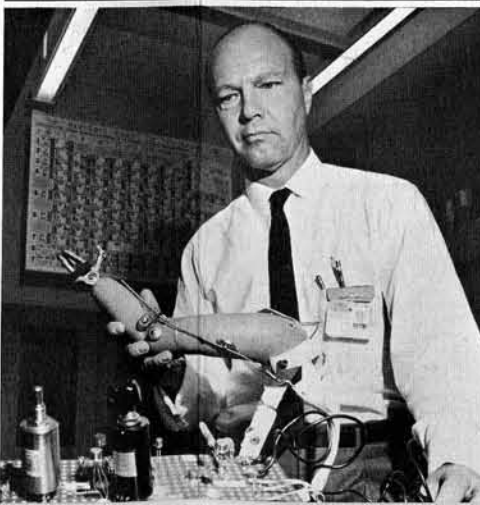


A transducer is a device used to convert energy of one form into another form. Hence the activities of the Transducer Section include work on photoelectric devices for converting light into electrical energy and on piezoelectric effects which convert strain into electric energy and can be used to sense pressure acceleration or weight, depending upon the mechanical arrangement employed. L. Jack Kabell, Manager of the Transducer Section, brings to his work a background of 13 years of research, development and design in electronic circuits.

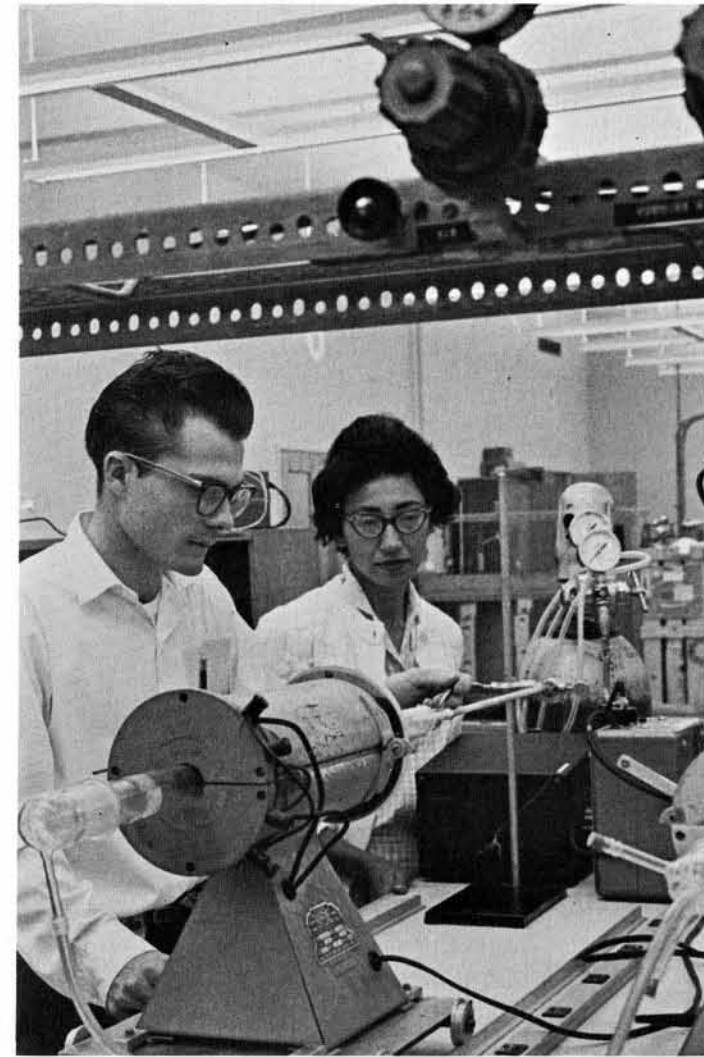
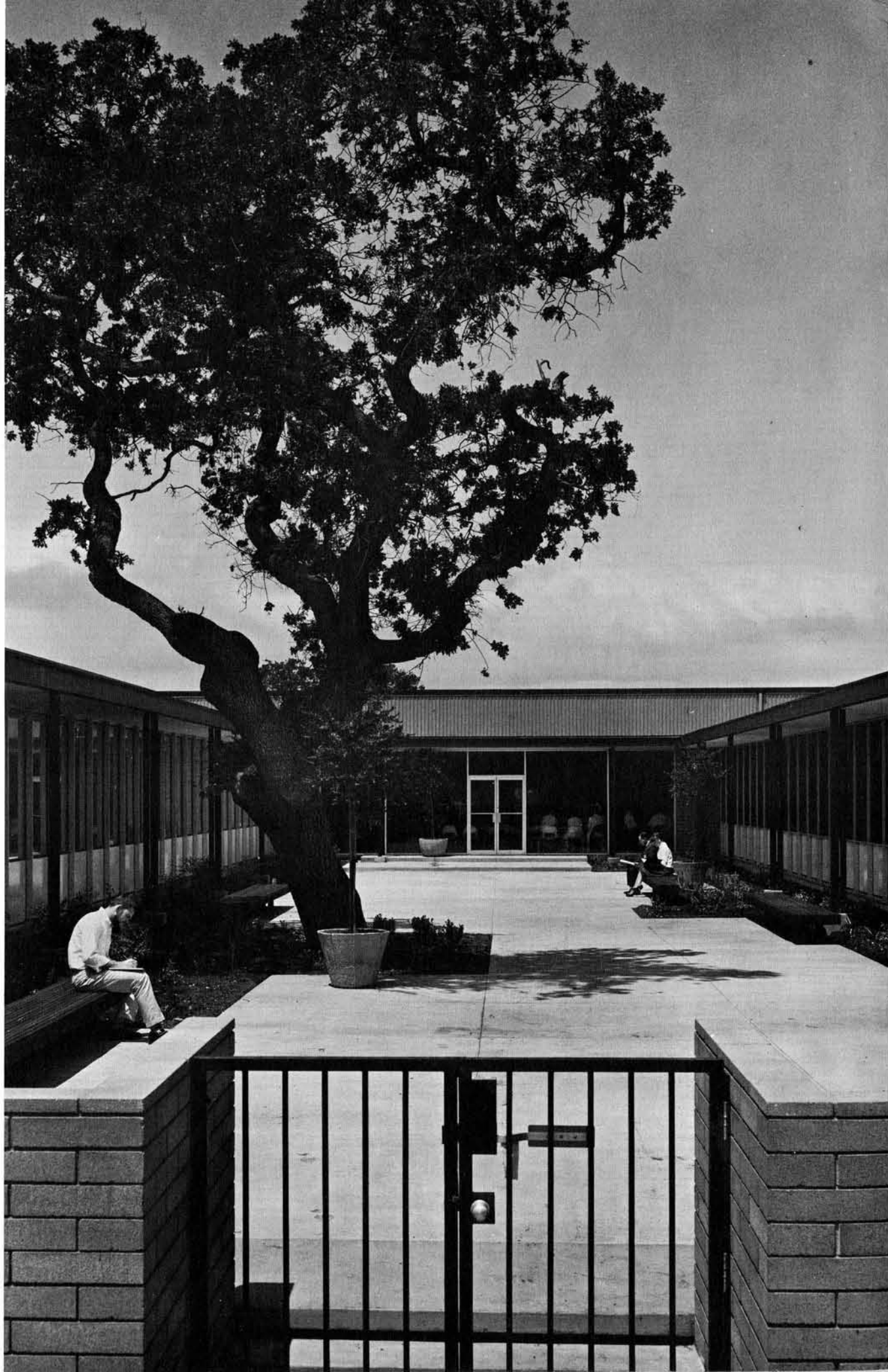


In addition to study of semiconductor devices and phenomena, the Solid State Physics Section, headed by Dr. C. Tom Sah, carries out studies of thin films of metals and insulators useful for resistors, capacitors and memories. Growth of crystals of various materials, including epitaxial growth of silicon and gallium arsenide, and development of technology for production of transistors and diodes in new materials are among the projects in progress.

The Chemistry Section, under the direction of Dr. G. Worden Waring, is concerned with three major areas of research: 1.) electrochemical effects in silicon and electroplating; 2.) physics and chemistry occurring at the surface of semiconductor materials; and 3.) technology of glasses and ceramic materials.

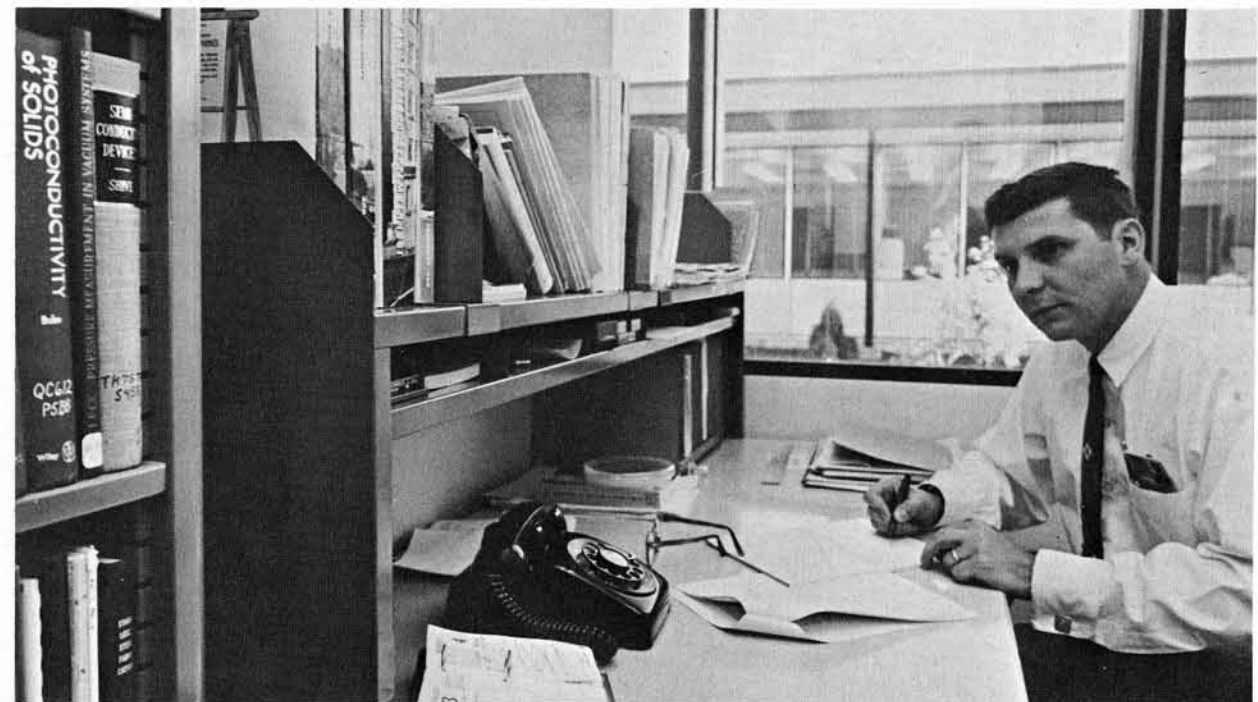


Harley A. Perkins joined Fairchild research staff as head of the new High-Speed Memory Engineering Section last April to investigate ways in which our capabilities can be employed in computer information storage and retrieval, one of the biggest limitations in current computer design.



**... in an
academic
environment ...**

Located on the grounds of Stanford University in Palo Alto, at the heart of one of the most important electronics research centers in the nation, Fairchild's new Research and Development Laboratory shares an academic environment conducive to basic inquiry.





...with the finest facilities available...

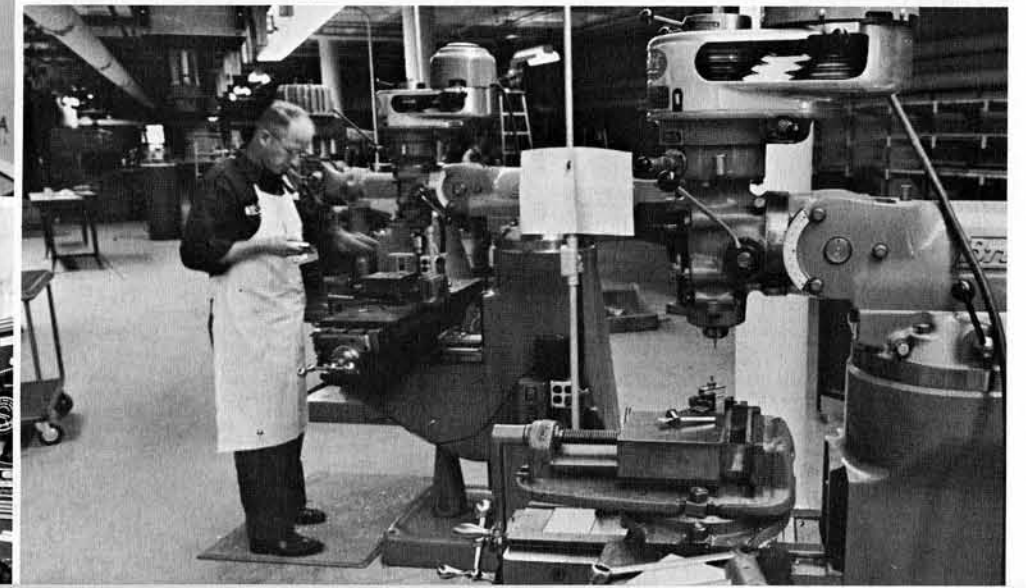
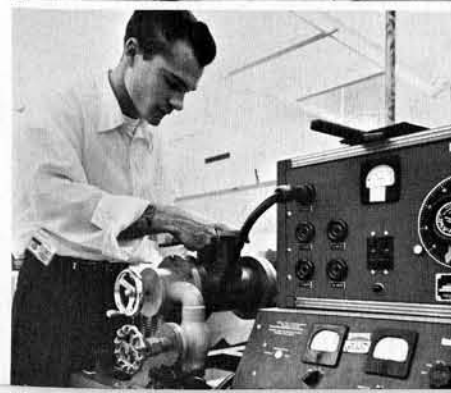


Julius Blank, Manager of Administration and Research Services and one of the founders of Fairchild Semiconductor, collaborated on design, supervised construction of the 100,000-square-foot laboratory. The result: a building literally conceived and executed to the demanding requirements of Fairchild research.

Today he points proudly to its abundance of laboratory space, private offices, conference rooms, photographic dark rooms; to its dispensary, attractive cafeteria, technical library and self-contained 5,000-square-foot experimental machine shop. He explains how distilled water, gas, tap water, compressed air and a 12,000-volt power supply are piped throughout the plant and can be tapped at any point simply by drilling through the three-inch thickness of the waffle grid concrete floor structure.

The design presupposes an almost infinite flexibility of use. Its total capacity for experimentation and research can scarcely be computed. Heating, air conditioning, power supply and other utilities are already adequate for an additional wing.

"These scientists will have to come up with something pretty weird to overtax our facilities," observes Mr. Blank. Then he adds, "I'm sure they will!"



magnification: 75 X

... get results

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