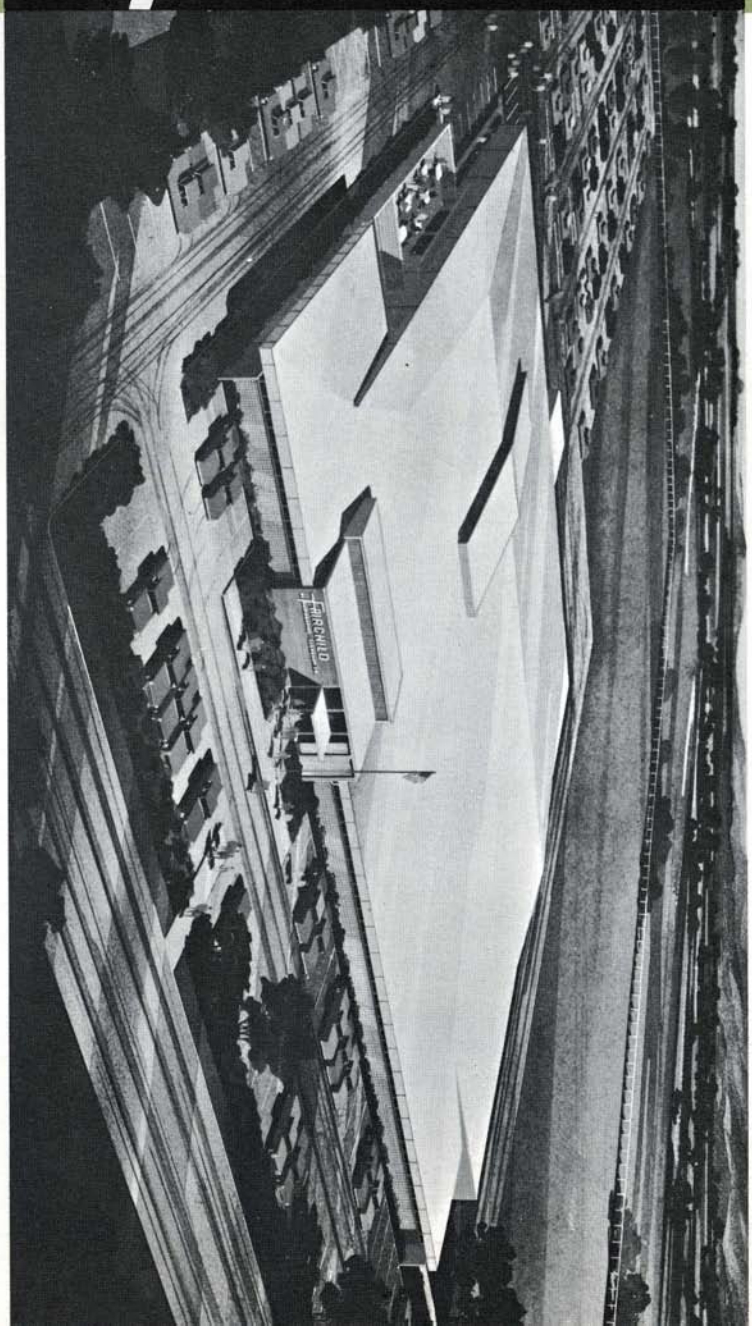
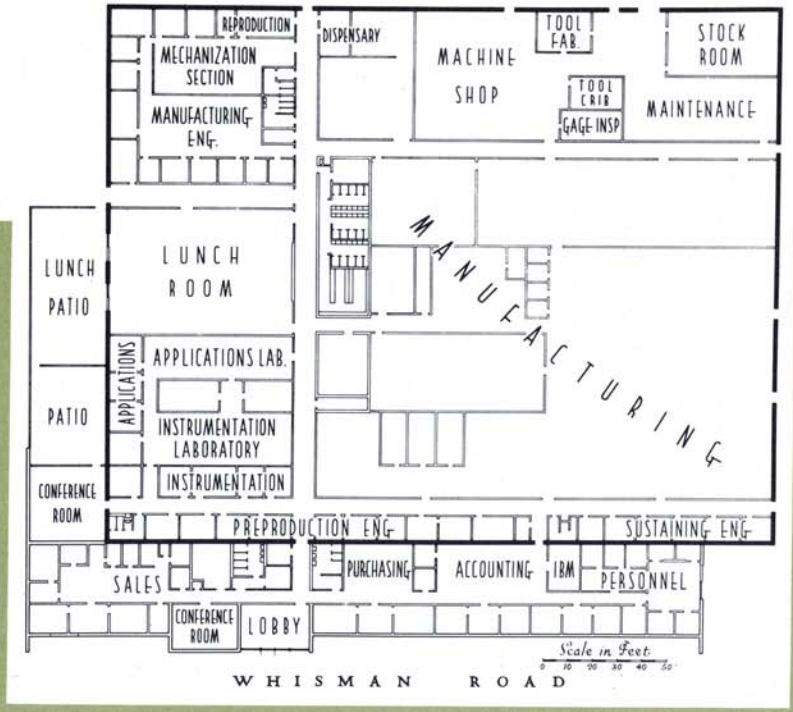
WELCOME TO FAIRCHILD



THE PLANT

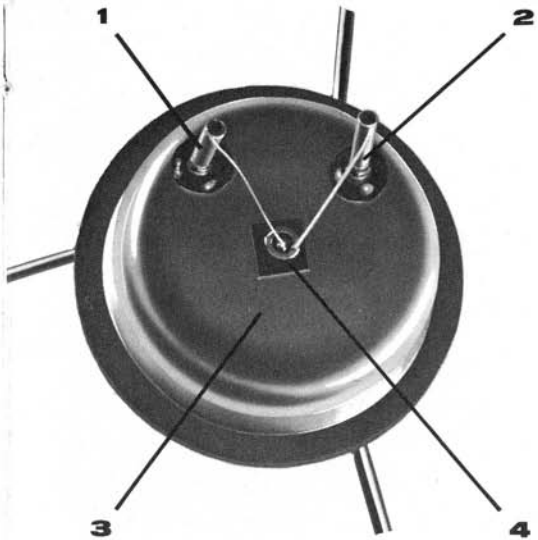


Built on a 10 acre site, Fairchild Semiconductor Corporation's new plant covers 68,000 square feet and houses complete facilities for crystal growing, device assembly, testing, circuit research, and applications engineering.

Begun in December of 1958, the building and consequent move were part of our effort to provide better products and services to our customers. The plant is pressurized with filtered air, regulated in temperature and humidity. This system insures the clean conditions necessary for transistor manufacture and contributes to employee comfort. Other plant features include adequate parking space for 800 cars, musicasts in the production area and a large lunch room and employee patio.

These excellent working conditions and facilities make Fairchild's new "home" one of the most functionally modern electronic component manufacturing plants in the nation.

THE STORY OF A FAIRCHILD TRANSISTOR



1 *Emitter lead*

2 *Base lead*

3 *Header*

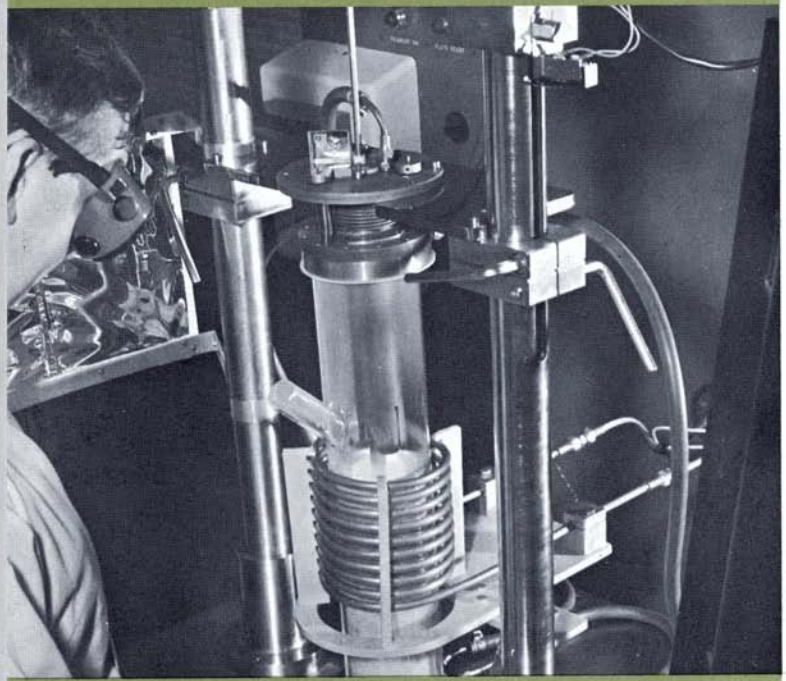
4 *Die*

A transistor is an electronic device about the size of a green pea, usually having three wires protruding from its capsule. It is used as an electrical gate or valve to control the amount of electrical energy allowed to flow in a circuit.

Its function is much like that of a vacuum tube, but it performs its job in a smaller space, in a simpler circuit, in a more efficient manner, and with greater reliability than its vacuum tube predecessor.

The transistor's small size, high efficiency, and high reliability are the principal reasons for its popularity in the civilian market and its tremendous acceptance by the missile and defense industries.

Fairchild's transistors are made from silicon, an element which, in its impure natural form, is the second most abundant material on the earth. Silicon is one of a number of chemical elements, including germanium, known as semiconductors. These elements differ from both metallic elements, which are electrical conductors, and non-metallic elements, which are nonconductors. Being neither fish-nor-fowl, silicon and germanium are among the semiconductors. Some of them are rather heavy and have a shiny luster like metals, but most of these elements conduct electricity rather poorly in their pure state as do the nonconductors. Carefully calculated amounts of other chemicals called



Growing a silicon crystal

dopants can be added to the pure semiconductor elements to increase their conductivity as required.

Early transistors were fabricated from germanium chiefly because it could be handled easily and at relatively low temperatures. However, its limitation as a transistor material is that it cannot stand high operating temperatures. Until recently silicon has been more difficult to handle than germanium, but it produces transistors with vastly superior performance. Since the beginning, Fairchild's operation has been predicated upon the use of silicon as a raw material.

Our silicon is produced by a process which culminates in the growth of a solid single crystal about the size of a fat cigar.

This cigar-shaped crystal is sliced with a diamond cutting wheel into wafers the size of a nickel only much thinner. Polished to a finish approaching optical flatness, the wafers are then treated by a process called diffusion. In diffusion, the wafers are placed in a quartz "boat" and loaded into a furnace maintained at a temperture above 2000 degrees Fahrenheit. A gas containing a known amount of a certain chemical dopant is then passed over the wafers so that some atoms of the dopant diffuse into the silicon wafer. The concentration and depth of this penetration determine the electrical characteristics of the transistor.

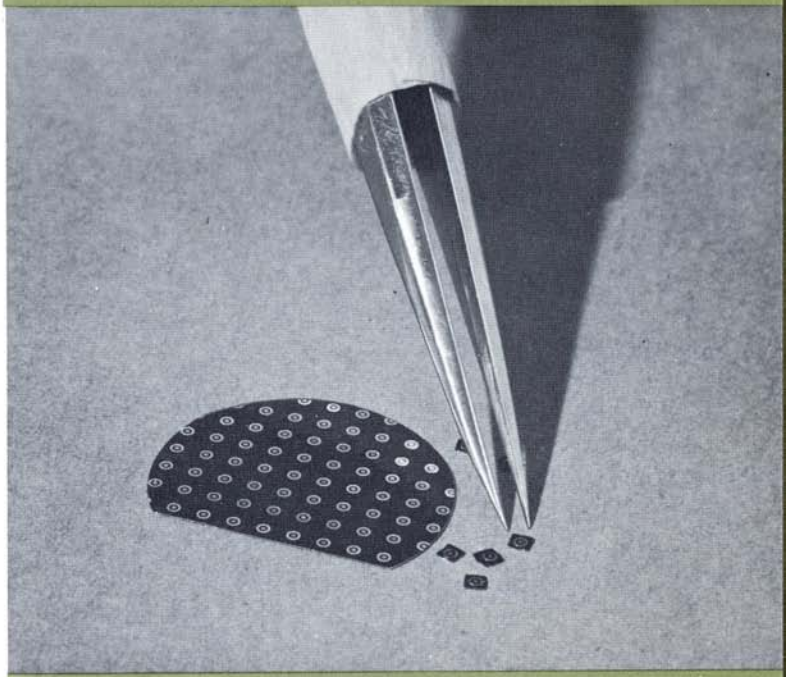
Certain metals are evaporated onto or alloyed with the silicon wafer to make the electrical con-

tacts. The wafer is next etched apart into several hundred "dice." Each "die" then becomes a transsistor.

When you look at a finished transistor you see the "header" to which the die is mounted. After mounting, wires are attached to the transistor's active areas, and the device becomes electrically complete. The addition of a protective "can" over the header seals air out and completes the unit.

The reasons for Fairchild's spectacular success and rapid growth are dual. The scientists and engineers who founded FSC had the aim of bringing the solid state diffusion process under closer control than had been previously done anywhere in the industry. Concurrent with this was the aim to put out a transistor having the greatest performance and reliability possible. The solid state diffusion process is better adapted to closely controlled volume production than are earlier methods of transistor manufacture. Hence, although former production procedures depended heavily on hand assembly, we can now produce premium quality units in large quantities at prices competitive with standard units made by less advanced methods.

Fairchild transistors are technically unsurpassed even in today's rapidly moving and highly competitive industry. The increasing acceptance of our products by governmental agencies is a further endorsement of the unexcelled quality of Fairchild transistors.



Closeup of finished wafer and dice

Research and Development Laboratories

HISTORY

In October, 1957, eight scientists and engineers, who had previously worked together in semiconductor research and development, combined their talents to form the Fairchild Semiconductor Corporation.

Uniquely qualified in every phase of semiconductor technology, the men consequently attracted other select people from science and industry who added an abundant fund of specialized knowledge. Forming a company with well defined goals, they obtained the backing of the Fairchild Camera and Instrument Corporation. The growing firm began an accelerated program of research, equipment design, and pilot production.

In the short period of two years, the Fairchild Semiconductor Corporation has grown from eight persons to a staff of over 600 qualified personnel, carefully selected and trained for specialized jobs. This rapid internal growth is matched by an outstanding record of leadership not only in research and development but in volume production of premium grade semiconductor products.

FAIRCHILD SEMICONDUCTOR CORPORATION • MOUNTAIN VIEW, CALIFORNIA

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RESEARCH AND DEVELOPMENT LABORATORIES • 844 CHARLESTON ROAD • PALO ALTO, CALIFORNIA