

FAIRCHILD
HORIZONS



A Corporate Overview

Horizons is a new name in Fairchild corporate employee communications.

Beginning this month and every other month thereafter it will attempt to present a digest of the events and prospects that influence our lives as employees of the Fairchild Camera and Instrument Corporation. Horizons will act as a supplement to the communications media now in use to give you a broader view of the company of which you are a part.

The contents of this first issue were based on guesses of what you, the employees of Fairchild, would most like to know about. Ideally, we felt, every employee could meet with the company president, Dr. C. Lester Hogan, to discuss Fairchild, where it is headed and his individual role in achieving its goals. The limitations of time and the problems of distance created by our world-wide activities make this impossible. So, we believe we have done the next best thing. For this first issue of Horizons, we have organized an employee conference with Dr. Hogan. The people who attended the conference were selected on the basis of their job assignments within the company, supposing that employees involved in different day-to-day efforts would provide a kaleidoscopic view of the corporation. It is hoped that similar conferences can be held in other Fairchild plants and offices in the future.

Again, in planning what you might like to read about, we examined why we work. Through the minds and experiences of Fairchild employees around the world, we attempted to discover the things that satisfy us in our jobs and those that motivate us to perform a little better than the man or woman who handles a similar assignment with a competitive company.

We devoted the balance of this first issue of Horizons to events within our corporation in the past months which we believe should be shared.

The first issue of Horizons was planned around what we thought you'd like to know about your company. But, don't keep us guessing for future issues. Your ideas for and comments on Horizons, should be referred to the Corporate Employee Communications Office, 464 Ellis Street, Mountain View, California 94040, mail stop 20-2284.

They talked of many things . . .
. . . of the past, profits and prospects.

The conversations took place in the office of Dr. C. Lester Hogan, Fairchild President; an office in which most of the major decisions which affect our company are made.

Involved in the discussion with Dr. Hogan were seven employees. The objective of the meeting was to talk about the things that are of interest to employees generally.

Ideally, every employee at Fairchild would have attended the July 24 session in Dr. Hogan's office, but time and distance made that impossible. So, we attempted to do the next best thing.

Seven employees, representing major job categories within the corporation and having varying lengths of service were invited to talk with Dr. Hogan. The ground rules for the conference were simple. Dr. Hogan was open to any questions about Fairchild. The seven employees, who are identified on the following pages, came armed with their questions. In an hour and a half of non-stop dialogue, they talked about job security, the company's plans for the future of specific divisions, the state of the semiconductor industry, management changes . . . but read for yourself. On the following pages are the results of the meeting.

Conference
with the
President

Don McCall: *Do we have any corporate plan to offset the feelings of insecurity and anxiety which exist among the people who have been with us during a period of restructuring, layoffs, pay losses, etc.*

C. Lester Hogan: You're referring to the feelings about job security?

Mr. McCall: Yes, job security. Information doesn't filter down about where the corporation is today and people are still looking over their shoulder to see if someone is coming along with a pink slip.

Dr. Hogan: I certainly understand this insecurity. It is one of the side effects of the very intense recession that our industry has gone through. We have been through the worst recession in our industry since the invention of the transistor.

Mr. McCall: *The golden years are behind us?*

Dr. Hogan: Well, I don't believe that. As you know, the transistor was invented in 1948, but it was 1954 before the semiconductor industry really began its growth. It was a relatively unimportant industry from 1948 to 1954, so it had only little bumps in reaction to adverse economic conditions. No major cutbacks occurred until the spring of 1970 when we went into this very, very intense recession. As many of you know, our company is structured in a way that a very, very large percentage of our sales are in semiconductor products. There are many small companies that have a large portion of semiconductor sales, but no large company has as great a dependence on the semiconductor industry as Fairchild. Right now semiconductor sales are well over 70 percent of our gross sales. So that when that industry suffered a setback we had no place to turn, we had nothing to balance it, and there were some very tough decisions we all had to face and major contributions were asked of all of us during that period. We weathered the storm and we ended in a very strong financial position. We're now in a stronger financial position than at any time since I joined the corporation.

Mr. McCall: *This is what people want to know.*

Dr. Hogan: But, we went through a period that was really very difficult—from the latter part of 1970 through

the beginning of 1971. As you know all wages were frozen. It was through these kinds of contributions by employees that we managed to pull out of our problems. It was either asking employees to help carry the burden or taking other drastic steps which would have interfered with our ability to rebound when the economy came back. We were able to save enough of the organization that we came back very well. That, coupled with the fact that we now have a very strong financial balance sheet, makes me believe that we will never, at least in the next few years, come close to the position we were in during 1970 and 1971.

A lot of people say the golden years are over, but I don't believe that.

Mr. McCall: *Back in the early days there was nothing but money . . .*

Dr. Hogan: It's there today, too, but now you have to work for it. You know it wasn't too many years ago—1962 through 1964—when we could sell a gate for \$50. Now, MOS Gates are sold from one-half cent per gate and bi-polar gates begin at a penny and a half. So you have to work a lot smarter to ship out a gate at a half cent than you did when they sold for \$50. This part has changed, but there are exciting new technologies at Fairchild that promise to prolong the golden years. The world has not yet recognized the importance of our new Isoplanar technique. So far, we have only applied it to bi-polar products, but it is equally applicable to MOS technologies and it will have as profound an influence on MOS technologies as it has on bi-polar. We hope that before this year is over we will have our first Isoplanar MOS devices out in the marketplace. Our engineering group has gone through a very detailed analysis of the performance of these circuits and the results are really staggering. The increase in performance that is possible is amazing. We feel once we introduce this, it is going to be more of a shockwave in the industry than the Isoplanar bi-polar.

Mr. McCall: *You're implying that MOS has a bright future? We've heard for years that we're pouring money into MOS and we're not making a profit.*



Dr. Hogan: Remember, Fairchild got a late start in MOS products though it did not get a late start in MOS technology. In fact, most MOS technology was developed at Fairchild research labs in Palo Alto. But, we're not behind now. We have the capability of being a major factor and with the application of Isoplanar in MOS, by year end, we will be a technical leader in the field.

Mollie Shears: *Even though the R&D staff has declined this doesn't mean that Fairchild has stopped investing in research programs?*

Dr. Hogan: Total R&D output that is effective for Fairchild is greater than it has ever been. There are very tough questions in R&D for an administrator to answer: how to guide R&D, how to support it, how much to support it—and I don't pretend to have the kind of wisdom that would allow me to offer the absolute answers to these questions. I feel matching our R&D effort closely to our needs is the most beneficial approach. I think that the actual R&D output that is effective in advancing Fairchild interests is greater than it was when we had a large, perhaps undisciplined, R&D effort.

Helen Basford: *What are we doing to keep people with Fairchild? I know that we do some things for exempts, like training, but what is planned for non-exempt and hourly employees?*

Dr. Hogan: Honestly, a few years ago, Fairchild had few training programs. I feel that when you're beginning training of any kind you should reach the men and women at the foreman level and train them first. They really represent the first line of management in the corporation and until they have been trained to relate to and motivate people, you don't have much of an organization. We now have a supervisor's training program. This is one of the key elements in keeping people—to make people realize that they do belong and they are important. They should get satisfaction from a day's work rather than putting in eight hours grudgingly. I think people must enjoy their work and whatever it takes to achieve this environment is important. Now

that we are out of the woods financially—at least, our financial security is not in question anymore—we're looking at all kinds of programs along these lines. Maintaining a more than competitive basic wage and benefit package is one area. Improving promotion opportunities is another. We're looking at many programs. But, it takes time to develop effective programs, they can't be done overnight.

Alberta Stidham: *There is a problem with communication. People upstairs plan things and discuss them. People downstairs often don't hear the whole matter. For instance, meetings were held not too long ago in MOS—they called the exempt and salaried non-exempt employees together and told them how bad things were and how they would have to improve and, the very next day, they took the assemblers into a meeting to tell them they're doing a fantastic job.*

Dr. Hogan: Well, both stories might have been true. The assemblers might have been doing a great job and management was not.

Mrs. Stidham: *Yes, but, the assemblers were told they were doing a fantastic job, yet couldn't understand why we weren't doing better. After all, we'd like to hear the bad news, too.*

Dr. Hogan: I agree. The best way to communicate is the whole truth and nothing but the truth. If there is bad to go with the good, we all feel more comfortable if we know we've shared in both. As long as there are problems you would like to share in them and I think you should. Now as far as my office and my staff are concerned, the whole function of this new publication is to expand the role of communications with another medium for getting the facts to employees.

Ms. Shears: *What do you determine has had the greatest influence on our return to profitability?*

Dr. Hogan: One of the major changes in recent years is that our capacity in production has increased. As a result, production costs have gone down.

Second, through our ability to match the R&D operations to manufacturing operations we have kept our competition off balance by introducing circuits at a very

Don McCall joined Fairchild in 1960 as a Senior Laboratory Technician. He is presently a General Research Supervisor in R&D.



Alberta Stidham joined Fairchild as an assembler in 1961. She is presently a Production Scheduler in the MOS Division.



rapid pace. Within the last 18 months, the pace of Fairchild new product introductions has been impressive. For instance in linear, this new programmable operational amplifier, and the new 7800 family monolithic voltage regulators, have no equal in the industry. In the bi-polar digital ECL areas we have the broadest and best families of products. We're the only one in the business manufacturing Isoplanar devices. That will have a strong affect on the industry. We are now the dominant supplier of bi-polar memory in the world. This is a very exciting field. There is no doubt in our minds that all computers will shift over from magnetic memories to semiconductor memories. Both MOS and bi-polar will play a part in the memory of the future. In the MOS area, the 3534 is a very exciting new circuit, it is far superior to anything on the market. This little chip is able to contain 1,024 bits of information. It is faster than anything the competition has and it is less critical to the timing sequences within a computer. In the MOD Division we have a whole family of optical couplers, light emitting diodes and diode arrays. We recently placed on the market a product we call our "super digit" which is twice the size of the original digit we had. We're working on the gallium phosphide technology and hopefully by year end we will have gallium phosphide displays rather than the mixed crystal gallium arsenide phosphide displays. Gallium phosphide is a far more efficient light producer than gallium arsenide or gallium arsenide phosphide. We can get equal light out of much less power. So I think that two things: our ability to produce at low cost and the image we have been able to build in the marketplace by taking a strong technical position in nearly every product area have contributed greatly to our restored profitability.

Ms. Shears: *I notice that the automobile industry is using semiconductors . . .*

Dr. Hogan: What you're seeing now is just a beginning. The automotive industry is not a large user of semiconductors at this time. You know some of the areas in which semiconductors are used—they're in radios and car tape players and they're used in the bat-

tery changing system. But with the strict requirements that the United States government has placed in the area of safety and pollution there is absolutely no way the automotive industry can meet the requirements of 1975 and 1976 without using hundreds of semiconductors in these automobiles. So, I believe, that between 1975 and 1980 the most rapidly growing user of semiconductors will be the automotive industry and, by 1988, it will be the largest user in the world even exceeding the total computer marketplace. So, there's a huge market there.

Ms. Shears: *Then we still have room to grow . . .?*

Dr. Hogan: A great deal of room to grow.

Nancy Johnson: *The greatest question at Systems Technology is why we had to move from the big building in Sunnyvale to the cramped building in Palo Alto. We've hired so many people since we moved that the building is actually too small for us.*

Dr. Hogan: Let me start by saying that one of the great turnarounds in our company has been Systems Technology. We have concentrated on Semiconductor in our discussion thus far because most of you are from the Semiconductor Group. You've asked the questions, so you've led me down the trail. Actually, in terms of the problems that faced the corporation in 1970, Systems Technology was a more serious problem than Semiconductor.

Fortunately, Systems Technology, through an outstanding effort on the part of all employees from top management right on down—management developed the strategy, engineering designed the new Sentry series of testers, and the production people brought those systems to the marketplace—not only turned Systems around and made it profitable but they moved it from a position of being just a so-so producer of semiconductor test equipment to one of the leading suppliers of test equipment in the United States. We're also a major supplier of semiconductor test equipment in Japan; at present, we're not the largest in Europe. Give us another year and we're going to cover that continent, too. We're not only going to be profitable we're going



Helen Basford
joined Fairchild as an
assembler in May, 1969.
She is presently
Technical and
Administrative Supervisor
in Discrete Marketing.



Mollie Shears
Secretary in Corporate
Labor Relations since
November 1971.

to be number one in the world in semiconductor test systems. So, we witnessed a very exciting turnaround in Systems Technology.

Now, back to your question. If you'll remember the building in Sunnyvale was pretty empty. It was just sitting idle. And that costs. Even if you don't have people in them, buildings have to be maintained, guarded, secured . . . With people bouncing around in a near-empty building, you still have to heat it and light it and the costs outweigh the benefits. We had many buildings that were only partially occupied so we put several of our facilities on the market. The object was to get to the point that all buildings that remained were fully utilized and, hence, reduce our maintenance costs. It turns out that we found a customer for Systems Technology's Sunnyvale building and we found customers for some of our facilities in the Eastern United States.

In selling the near-empty buildings we have that much less air conditioning, plant maintenance and guard services to pay for. Now, there is nothing I would rather hear than that your building is full. If the building is full and we're profitable, we'll find a way to give you more space. That's an easy thing to do. But, we have to be careful that we don't over-expand.

Mr. McCall: *That's an interesting statement. You're saying we're not going to over-expand again, we're going to proceed cautiously . . . ?*

Dr. Hogan: We're going to take a long, hard look at everything before we lay future expansion plans.

Mickey Kashima: *Why is it we have had so many management changes in a short period of time?*

Dr. Hogan: The success of any business is almost completely dependent upon having the right managers at the right time. Some of our people were better suited for situations different than those we had to offer. During a recession period, a special kind of management approach is required to enable a company to survive with most of its major goals intact.

I realize that a change in management—and about 20 percent of our top managers were changed over a four-year period—has profound effect on the corporation.

Change at the top creates even more numerous changes at other levels within the organization.

But, I can be honest with you, I'm happy with my present team and organizational stability at all levels of the company is one of the primary goals for the future.

Armondo Nila: *I've wanted to ask—what future do you see for automotive transducers as a result of your meeting with General Motors?*

Dr. Hogan: It's a tremendous field. The automobile is a mechanical machine. It is not electronic. It is not like a computer. A computer is 100 percent electronic. In electronic equipment, you don't need transducers. An automobile fires gas, pistons go up and down, there's linear motion, rectangular motion, all kinds of temperatures, and we want to control that machine with an electronic brain to offer greater safety, control the emissions and to reduce pollution. We can build the electronic brain that is capable of managing the fuel system, the transmission ratio and the sparking voltages. But, we have to know when and how much, what the pressures are, what the exhaust gases are and what their composition is to give the brain some information so that it knows what to do. We have to measure mechanical quantities—pressure and others. We, then, have to pass this information into the electronic system that we want to build for the car. That's why we need transducers. We require elements that will measure mechanical things and transfer this information into the electronic brain so it knows what to do to control them. We'll require a whole family of automotive transducers. We're presently working on the pressure transducers.

This is very important, probably the most important, transducer in the entire automobile. We need position transducers to tell the angle of the crankshaft and temperature transducers to tell the brain what the temperatures are in various parts of the automobile. These are very important and without the transducers the brain has no information. We have to convert mechanical information into electronic information. That's what we mean by a transducer—taking a mechanical quantity

Nancy Johnson
Electronic Assembler in the
Systems Technology
Division since
January 1964.



Mitsugi (Mickey) Kashima
Foreman in the Analog
Division since July 1970.



and converting it into an electronic quantity that our electronic systems will understand and act on. Without transducers there will be no electronic automobile. And the industry needs one. Automotive manufacturers need greater reliability and sensitivity in their product at a reasonable cost. Anyone can build a good transducer today for \$1,000. That's what the aerospace industry paid for transducers used in the Apollo missions. When they sent a man to the moon they needed transducers to tell the computer what was going on in all of the valves and ignition chambers so that the computer could control the lunar module and bring it down on the surface of the moon. But those transducers cost them \$1,000 to \$5,000 apiece. The automotive industry needs better transducers than these and can't afford to pay more than \$1 or \$2 each. So far we only know how to build such a device at a cost of \$1,000. But, new technology that is being worked on at MOD is the first effort that promises to give us better transducers than those used in Apollo at 1/1000ths of the cost. We're very excited about it.

Ms. Shears: *What about our International operations, in terms of profit and growth . . . ?*

Dr. Hogan: Actually we're doing very well on the International front. Our sales abroad are going up quite remarkably. As you probably know, we have reached agreement, in principle, with TDK Electronics of Japan to form a joint venture manufacturing/marketing organization in that country. We're still working out some of the details, but this joint venture will be our first bold entry into the Japanese market for semiconductors.

Ms. Shears: *What effect will our International expansion have on jobs in the United States?*

Dr. Hogan: Traditionally, companies have found that when they open a manufacturing/marketing facility within a country to serve that immediate market area, the demand for products far exceeds the local plant's ability to produce. So, plants abroad are always partially dependent on the headquarters plants for additional product and, of course, product development.

Armondo Nila joined Fairchild in 1962 as a Calibrator in the Transducer Dept. He is now a Product Development Engineer in the Microwave and Optoelectronics Division.



Entering new markets abroad actually increases the number of domestic jobs.

Mr. McCall: *We've really covered the Semiconductor operations and Systems Technology pretty well, what about other areas of the company such as the Federal Systems Group?*

Dr. Hogan: Well, the divisions in the Federal Systems Group produce primarily for the government. The Space and Defense Systems Division is primarily involved in the manufacturing of aerial reconnaissance cameras. These products are the descendants of the camera Sherman Fairchild invented which began the Fairchild family of companies. Sherman Fairchild successfully designed an iris diaphragm which could open and close in 1000th of a second; this speed was required for successful aerial photography. There have been very few changes in Mr. Fairchild's original camera design over the 50 years it has been in production. Space and Defense is using new materials; but the basic design remains the same. Fairchild is the largest manufacturer of aerial cameras in the world. Our cameras were used in the metric mapping of the moon and recently went up in the Earth Resources Satellite. This satellite will be used to photograph the earth looking for diseased forests, tracing the movement of schools of fish in the ocean and generally providing the visual information which will help in managing our planet. The Federal Systems Group is profitable and has remained so even in the recent recession period. The group, however, could be limited in its growth potential as it now stands because it is entirely dependent on U.S. government spending.

What we need there is a breakthrough technology to produce a good growth opportunity. We have some pretty exciting things working which will do just that. I'm not free to detail this technology now, as we would prefer that our competition not know what we're up to.

The Federal Systems Group is very excited about this new technology and, with it, the Group could experience a very dramatic expansion.

Mr. McCall: *What about the funding of research and development? Is that going to continue on a Division interest basis, or will corporate eventually underwrite most of the R&D expenses?*

Dr. Hogan: R&D funding has already expanded beyond Semiconductor as you can see. Federal Systems Group is now supporting projects in the R&D facility in Palo Alto; and the Commercial Systems Group is beginning to find need for R&D services. For the time being at least, we will support R&D on a direct need/benefit basis in order to tie the work that is being done to the needs of our divisions.

The product contributions from R&D have been tremendous recently and, I believe, that coupling research efforts to product division needs has been a major factor in restoring our profitability. We will continue on this funding basis for the immediately foreseeable future. Perhaps, later, we will support small corporate programs in the research labs, but our present method of funding appears to be very effective.

(Continued on page 13)

When Apollo 16 lifted off its pad on April 16, two Fairchilders had joined the crowd on the top floor of the Manned Space Operations building at Cape Kennedy to watch the start of another of the history-making journeys of the Apollo missiles. Chris Rasmussen, Project Engineer for Fairchild at the Cape, and Joe Shepard, Staff Engineer, experienced several emotions as they watched the huge space vehicle move into the atmosphere: gratitude that the first stage of the Apollo 16 mission had gone off without a hitch; relief that their direct responsibilities in the mission were formally complete; and anxiety until they could get down to the data control room to listen to the astronauts' conversations to assure themselves that everything, indeed, was going well.

Earlier that morning, 5 a.m. in fact, Chris and Joe had been at the launching pad, conducting the final tests on the Fairchild camera which was one of the major scientific systems used in the mission. For weeks leading up to the launch, Apollo 16 and the Fairchild camera it would contain occupied most of the thoughts of the two Fairchild men. It also occupied most of their time.

The Fairchild men at Cape Kennedy are on 24-hour call before the launch of one of the missiles carrying a Fairchild camera. North-American Rockwell, the company responsible for all equipment in the scientific module of the Apollo missiles, operates three shifts to test and retest the equipment in the pre-flight readiness stages. "It always seemed that the camera came up for test about 3 a.m.," Chris reveals. So, he or Joe would leave their office in the Manned Space Operation Building, some four miles from the launching pad, knowing that they would return to the NASA building before the sun came up to be on hand during the camera test.

"The pre-flight check-outs (of systems and the missile itself) leave no doubt in anyone's mind that the actual launch should go off without a problem, but it is not until the astronauts return to earth that tension eases at the Cape and at the Houston Manned Flight Control Center." At the time Apollo 16 left the pad, its well being became the concern of NASA personnel and suppliers who were on

Caretakers of the Fairchild Camera at the Cape

duty at the Control Center in Houston. At that point, Fred Ratowsky, program manager of the lunar mapping camera, who was in Houston for the flight, took over responsibility for the performance of the Fairchild camera. He has been on hand through the past two Apollo missions to see the first photographic prints produced by the special space camera.

"No one at the Cape ever loses sight of the significance of their work," Chris reveals. "NASA has established an all-encompassing routine for checkout of the missile, its systems, and ground support equipment, that leaves no room for error. All of the NASA suppliers were acutely aware that the lives of three astronauts and the success of the mission depended on the performance of their equipment.

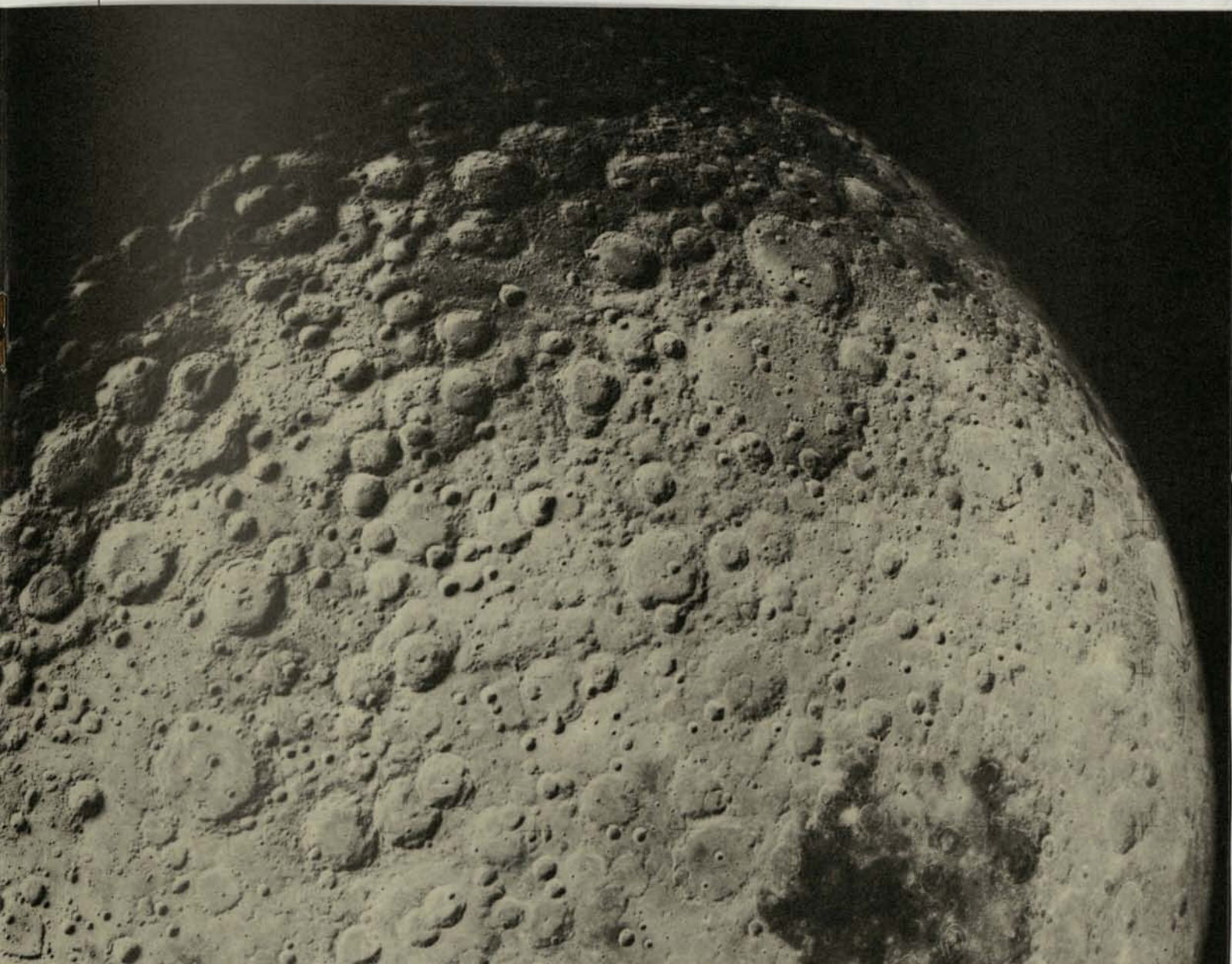
"You can see and feel the arrival of a launch," Chris explains. "About two months before lift-off, the population at the Cape begins to increase as suppliers and support personnel arrive. When we go into count-down, about six weeks before launch, the tension begins to build and reaches its peak, as each of the systems is tested for the final time before lift-off. The hours between the time you sign off on your equipment and when you are assured that it is operating as expected in space are long.

"Once a mission is complete, the Cape settles again until the next countdown," he reveals. "Many people leave for their homes in other parts of the country. In fact, if it were not for the balmy Florida weather, the Cape could be anywhere in the United States. Most of the people who work at NASA are from other parts of the country. There are a great many Californians because of the high

concentration of aerospace companies in that state, and New York and other eastern states are well represented year-round at the Cape. In fact, if you had a roll call at any time, I believe that you will find representatives from almost every state in the Union."

All the scientific instruments involved in an Apollo mission are delivered to the Cape six to eight months before lift-off. In the case of the Fairchild camera, it arrived with a complete back-up system should anything fail during test. The Fairchild system is monitored with other electronic and mechanical measuring and control devices in the Scientific Instrument Module of the missile. Testing and retesting of the system occurs throughout the module and vehicle assembly leading up to the two major check-outs. One major test is





Metric photography from the Fairchild Lunar Mapping Camera.

run with the astronauts on board the vehicle, operating the camera from the missile's control board. "All operations to be conducted during the flight," Chris explains, "are included in the astronauts' flight manual—a document that resembles two volumes of the encyclopedia in size. Every action and procedure—when to turn the camera on and off—is outlined in the manual. The astronauts have already become familiar with the camera system during an earlier visit to the Fairchild Space and Defense Systems Division in Syosset, New York.

"The second vital test for our system," Chris continues, "is during the count-down demonstration when we will conduct a dry run of the entire readiness procedure. All along we are testing the performance of the camera alone and in operation with

other equipment as the Scientific Equipment Module begins to take shape."

Chris arrived at Cape Kennedy in February, 1971, to become On-Site Project Manager for the Fairchild Camera System. Previously he worked at the Syosset, New York, headquarters of the Space and Defense Systems Division; before that, he was an Engineering Program Manager at the Defense Products Division in Copiague, New York for two years after serving as a field engineer on the West Coast for that division.

Joe Shepard, Staff Engineer on the Cape Kennedy project, has been in Florida since February, 1970, when Fairchild delivered its first camera system for the Apollo mission. He has been atop the Manned Space Operations Building for the lift-off of

Apollo 15 and 16, and plans to watch the Apollo 17 departure in December from this same vantage point.

"There's a bit of glamour attached to working at the Cape," Chris admits. "You're part of one of the most significant scientific projects in history. You're affected by the scope of the Apollo project and, most important, you are able to see the result of your work and its benefit in increasing our knowledge of space. People who have worked at the Cape for as many as ten years can't imagine life without the tension and achievement connected with space shots. This makes it doubly difficult for them as they watch the wind-down of the space program. Apollo 17 will be the final Apollo mission, and this is reflected in empty buildings and lessening activity at Cape Kennedy."

At first thought, the reason we work could be explained in a single simple sentence: We work to earn money.

However, hundreds of scientists have written literally billions of words analyzing the reasons men and women work and, more important, why they strive to improve their work performance, and actually enjoy

Why We Work

working. To say that it is to earn income alone denies that enjoyment or satisfaction can be found in work. Even the scientists in the most remote ivory towers would willingly admit that one of the basic motivations in work is to provide food, clothing, shelter and some measure of economic security. Once these basic needs are satisfied, what carries us beyond simply doing the minimum we must accomplish? The pursuit of an improved standard of living? Sure, that's a motivator. But, it's a long-term goal and lives and careers are not constructed of long-term goals alone; they are lived and developed minute by minute. So, men and women require more immediate satisfaction from their work. Fulfilling work, scientists have determined, can be found in a challenging job which allows opportunity for achievement, contains responsibility, and offers possibility for advancement and recognition. The same scientists say these qualities can be found in virtually every area of work. Why so much thought and concern about the things that motivate us in our work?

People and their efforts determine the very basis of our society. Our standard of living is established as a direct result of the effort of people. All social and scientific advances are the consequence of people who have been motivated in their work. Human effort and creativity is the single greatest resource of any company, country or society. Understanding the things that make work more meaningful and satisfying receive a great deal of attention from the people who study human behavior.

So much for the scientists. Each of us at Fairchild is a self-styled expert on work; after all, a good portion of our lives is spent in it. So, we're turning the following pages over to an examination of work by some of the Fairchild people who are deeply involved in their jobs.

Ann Van-Zwol

Marker

Fairchild, Australia

It's the same the world over. Ann Van-Zwol, Fairchild plant in Croydon Australia, like her counterparts in U.S. plants, spent many years as a housewife and mother before entering the labor force.

Her three children were teenagers when she decided to investigate what industry had to offer her. She had to offer it. Fairchild was the second job she had to offer it. Fairchild was the second job hunting in August of 1966. She remembered she had no idea of what semiconductor manufacturing would be like, but she was most impressed by the friendly reception she received at Fairchild. The cleanliness of the plant and offices. She joined Fairchild that month to become a marker in the firm. She has remained in that section since.

The single greatest source of satisfaction for Ann is her job is turning out quality products. "I don't go to get anything back from Quality Assurance," she says. "Q.A. happy the first time around takes care of it and Ann becomes so involved in satisfying the customer that each workday passes very quickly."

Other things that are vital to Ann in making her work more enjoyable are, she states: "The pay, the conditions, the work and my work environment. All have, in Ann's opinion, earned at least a satisfactory mark."

Her supervisors, another major influence on her attitude toward work, she has found to be very interested and friendly—"they don't hand out compliments, but when they do they are really appreciated."



Frank Troisi

Electronic Technician,
Aviation Products
Industrial Products
Division



Frank Troisi believes that the most important thing in satisfying work is ability to be creative. He finds satisfaction in being able to find pride in his job. He finds satisfaction in getting a job done well and really enjoying it.

Frank came to Fairchild four years ago at his in-law's recommendation. While he was in the Forces he attended communication and radar school and found electronics to be a field he liked. After his stint in the military service, he went on to a civilian school to expand his knowledge of electronics.

"Electrical circuits," he explains, "each has its own peculiarities and getting the problem solved brings satisfaction."

Other than earning a living, and providing for creativity, "Work," says Frank, "enables you to meet and enjoy people."

Sumi Kusaba

Production Assistant
Microwave and Optoelectronics Division

"Even if I could stay in bed every morning, I wouldn't," says Sumi Kusaba. "I would get bored and restless if I didn't have a job I liked." And Sumi readily admits that she likes her work at MOD. The work itself is interesting. "I work with the research and development engineers on prototype boards," she explains. "There's always plenty of variety and it's fun to be involved in new product development." Sumi claims she rarely has bad days in her job. "I like the work, and the people I work with so there is no reason to have bad days."

Sumi also joined Fairchild to work for a "little while" to help finance the education of the Kusaba's four children.



Chan Wai Ling
Q.A. Inspector
Fairchild, Hong Kong

"I joined Fairchild in Hong Kong because Fairchild is a large and historic factory, and I could have security working in it. Simultaneously, I was able to utilize my daytime to further my studies, as I work swing shift. I graduated from a high school recently, and with my present academic qualification I could attempt to look for a better job than a Q.A. & R. inspector elsewhere, but I just don't want to, because I have gradually realized the meaning and the enjoyment of my work here.

"Wonderful, isn't it? Transistors are so minute, yet they can manifest such great might. We are justly proud to be the producers of these powerful components. Each time when I watch on television the victorious return of the spacemen from the moon, I feel most excited. It seemed that I had contributed to its success. You must think I am day-dreaming, nevertheless, this conception has always motivated me to work tirelessly. I never dare doing my work uncautiously, for fear that a minor mistake in bonding or in the work process might cause trouble to a spaceship or an aircraft.

"I have worked in Fairchild for three years. Together with other colleagues, we have become members of a family and we are just unwilling to part with it. I wish to conclude that I revere my job here and am always happy with it."

Chan Wai Ling joined Fairchild in September, 1969, as a U-bond operator in Metal Can Transistors. She was promoted to Q.A. & R. inspector in July, 1971.



Roger Royster

Shipping, Receiving and Direct Stores Supervisor
Semiconductor Group, Mt. View.

"People make all the difference in a job. Particularly, your supervisor. Now, I have a boss who lets me know when things are going right. Just this morning, he was on the phone letting me know that we surpassed our goals for the month. He's the first one with congratulations.

"When we have to work overtime or weekends, he's there too. You don't work *for* him, you work *with* him and that determines the entire atmosphere in our area.

"The work you're doing is important, too. Here in Shipping, Receiving and Stores we're always pushing deadlines and fighting to meet objectives. When we've reached our goal for a day, I feel great. When we don't, I go home unhappy. Fortunately, the good days outweigh the bad ones. I guess that's why I enjoy my job.

"It's important that you're recognized for your achievements and given the opportunity to get ahead. I've really moved rapidly since coming to Fairchild in 1969. I started as a stock clerk and the moment I was ready for promotion, there was a promotion waiting for me."



David Crosby
Analog Products Engineering
Manager
Systems Technology Division



"The work itself is an important consideration in finding satisfaction and fulfillment in my job. I've always been interested in making things work and discovering how they work. It was obvious very early in my life that I would go into engineering. The product I work on is also important to me. My assignments have always been related to developing automatic equipment that relieves some of the repetitious and uncreative chores that were previously done by people.

"I've always worked for large companies because they offer the resources and are capable of the long-term planning which it takes to bring major engineering projects to life. Therefore being part of a large organization, like Fairchild, but a member of a smaller group within that organization gives me the best of both worlds. Systems Technology is a small enough unit of people that communication is easy and you can see the results of your work. You stay with a project from start to finish. You and the people with whom you work can truly share the satisfaction of work well done."

Even so, Shirley feels that life would not be complete without some sort of regular, constructive work. "Being in industry is personally broadening," she explains. "You meet and work with people, learn to be more tolerant and you can also gain a sense of achievement in a job that you can't find taking care of a house all day."

"An inheritance would be nice. You could travel for a while and not be worried by day to day expenses," states Maxine Teaque. "But you'd soon be looking for work again, if you're like me. After all, travel would soon lose its interest and you can't play golf all day, every day. People need something more in their lives than just leisure."



Ruth Lyon has been a mathematical and computer programmer for 12 years. She enjoys her work, especially her status as a rare female engineer. She insists she would work even if her kids didn't eat!

Satisfaction comes in "getting the job done and knowing it has been done well." She also knows that she has been a help to the engineer whom she works—"analyzing their needs for information and determining what data to supply and

"I believe that many things make up a work relationship: your supervisor's attitude toward employees, recognition for work well done, and the ability to be creative in your job."

A black and white portrait of a woman with short, dark, curly hair, smiling. She is wearing a light-colored top. The background is dark and textured.

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Editor's note: Following the conference with employees, Dr. Hogan discussed some of the specific programs that are presently being implemented to recognize and retain long-term employees, to attract new employees, and to generally strengthen the company.

—He cited internal promotion systems which would guarantee that existing employees would be given the opportunity to apply for jobs that would represent promotions, before outside recruiting is conducted. Such promotion programs now reach all employees on the salaried non-exempt and hourly payrolls in the Bay Area, and adaptations of the systems will be implemented in Fairchild operations throughout the world to reach all employees on all payrolls. "We want to give employees every opportunity for advancement in order to develop career relationships with Fairchild," Dr. Hogan stated.

—"We recently completed an audio/visual orientation program for new employees," he continued, "which gives a broad view of our company. It is important, I believe, that employees realize the scope of our company and the impact their actions and effort have on our future and our industry.

—"Now that we've recovered from many of the day-to-day problems that have pressured our company and our industry for the past years, we're devoting concentrated effort to long-range planning that will enable us to get over future rocky areas in our economy more smoothly than in the past. We have engaged the services of an economic consulting firm which will analyze industry and economic trends so that we may predict peaks and valleys in the economy and in our specific market areas. With some forewarning of difficult periods, we'll be able to prepare for them with the least impact on employees and profits.

—"In June, we held a company-wide management conference to discuss the problems that lie on the immediate corporate horizon and to develop strategies for meeting and

Conference with the President

solving them. One of the prime areas of discussion during this conference was employees; their attitudes toward our company and the means through which we can create truly long-term relationships with Fairchild.

—"Running a stable, profitable business is, naturally, a giant step toward giving every Fairchild employee job security and opportunity for career advancement.

—"At this moment, division managers and support operations are preparing five-year plans, based on knowledgeable estimates of our product and marketing strengths, which will help us in developing the environment at Fairchild in which employees will feel secure.

—"Our ability to predict downturns in our markets and our economy will allow us to do some 'recession proofing' in our planning. It is this kind of long-range, strategic planning that will allow our company and its employees to weather any rough spots that may be ahead. Every member of Fairchild's management realizes that the company's strength lies in the commitment and effort of its

people. My job and that of the other members of the Fairchild management team is to assure that people get top priority in all our planning."

If the questions you have about our company were not answered in this issue, address them to the Fairchild Employee Communications Office, mail stop 20-2284, 464 Ellis Street, Mountain View, California 94040. We'll attempt to get the answers from Dr. Hogan or the member of Fairchild management who is most knowledgeable about the subject. If the question is of broad, general interest we'll answer it in the pages of *Horizons*. If it deals with a specific problem, area or job, we'll respond by personal letter.



Fairchild Forms Joint Venture With TDK of Japan

Fairchild last month successfully concluded negotiations for the establishment of a joint venture manufacturing company with Tokyo Denki Kagaku Corporation (TDK) of Japan. Headquarters for the new company, TDK-Fairchild, Inc., will be located in Tokyo. Initial manufacturing will be conducted at the existing Fairchild facility in Okinawa. The new venture will bring Fairchild advanced technology products to Japanese industry.

Fairchild opened its Okinawa product plant in early 1969 as the initial step in a program to reach the Far East markets. With the advent of Okinawa's reversion to Japan, Fairchild began investigating the possibilities of developing a partnership with a Japanese company to serve the semiconductor market in that country. Under Japanese trade regulations, foreign companies cannot own manufacturing operations in the country without joining forces with a national company.

After extensive research, Fairchild entered negotiations with TDK Corporation to form a joint venture company. TDK, which was incorporated in 1934, has annual sales of approximately \$100 million and employs more than 5,000 people in nine plants in Japan and one in Taiwan.

TDK ranked third among the top five hundred Japanese companies in terms of profit growth over the past five years. The company has achieved a spectacular 56 percent average annual profit growth during this period.

An international company, TDK operates sales offices in Frankfurt, Germany; New York, Chicago and Los Angeles. TDK produces more than 45 percent of all ferrite materials manufactured in Japan and is a world leader in the development and production of ceramic dielectrics. TDK produces almost 30 percent of all ceramic dielectric devices made in Japan.

Tape recording fans are probably familiar with TDK's magnetic tape cassettes. The company's Super

Dynamic model is the first audio cassette to offer true high fidelity sound equal to that previously possible only in open reel recording tapes. TDK has also established itself as the world's largest duplicator of recorded information on cassette and is presently developing tape products to serve the television and computer industries.

The relationship with Fairchild will be TDK's first entry into the semiconductor industry. It is anticipated that an expansion of manufacturing capacity in Japan will be underway in the near future to satisfy the increasing demands for Fairchild semiconductor products.

Lieutenant General Robert J. Friedman (USAF-Ret.), manager of Far East Affairs for the Semiconductor Group, has moved to Japan to assist with the start-up of the new Fairchild-TDK company. He will remain in that country as the Resident Director of TDK-Fairchild, Inc.

In addition to his relationship with the new joint venture company, Friedman continues to be responsible for maintaining the company's relationships with local governments and communities in Far East countries where Fairchild has offices and plants.



THERE WERE FAIRCHILD PICNICS this summer from Hong Kong to Australia and all offered traditional and enjoyable picnic pleasures. But, there was no other outing that received the dramatic start of the Fairchild picnic for members of the Mexico City plant in June. Dolores Jimenez, metal can operator, announced the official start of picnic entertainment with a 5,000-ft. parachute jump, landing near the picnic grounds. This was Dolores' 17th jump. The young parachutist meets with a small group of other young people at a local airfield each weekend to practice jumping under the direction of the Mexican champion of sport parachuting. Dolores, the only parachutist at the Fairchild plant in Mexico City, is met by admiring co-workers (above) after her descent to a field near the picnic site in Cuernavaca.

Names in the New

John K. Sussenberger was named general manager of the Analog Products Division July 21.

John D. Husher, who previously headed the division, has been named manager of advanced analog programs with primary responsibility for the automotive and camera controls market segments. His assignment termed a key step in enabling Fairchild to focus greater attention on these growing high potential markets.

Sussenberger has been with Fairchild since 1962 in various engineering and management positions, most recently as manager of combined digital integrated circuit operations. Before joining Fairchild he held engineering positions with Westinghouse Electric Co. and Raytheon.

Husher joined Fairchild in 1968 as director of digital integrated circuit operations, and served as group director of linear and hybrid circuit operations before being named general manager of Analog Products in November 1971.

William N. Moody was named general manager of the DuMont Electron Tubes Division on May 17.

Moody joined the division from Heath Company in Benton Harbor, Mich., where he served as chief engineer for scientific instruments. Previously had been with Weston Instruments, Inc., where he was director of operations in the firm's Components Division at Archbald, Pa. Affiliated with Weston for 14 years, Moody was a manager of marketing and engineering in a number of the company's divisions.

Australia Sends Its First Power Transistors To Market

Fairchild-Mountain View, with its years of experience in transistor production, makes the whole process appear easy. But, that's just an illusion. At least that's what Fairchild-Australia found when it attempted to go into the manufacture of silicon bipolar transistors on a commercial basis.

The seasoned Mountain View manufacturing operation will probably not be dumbfounded by the fact that the Australian plant is now into power transistor manufacturing. But, Australia has justifiable reason for pride in its accomplishment. The Croydon Australia plant (one of the smallest in the Semiconductor Group), through a great deal of ingenuity, developed an economical production process which allows it to be competitive in the relatively small Australian market for silicon power products.

Because of the limited market size, Fairchild-Australia had to carefully curb the amount of investment it made in developing a power transistor production method.

Bernie O'Shannassy, Croydon Manufacturing Manager, reveals it took "four years of trials and tribulations to iron out the problems in transistor production." First came the search for the right type of chip to economically serve Australia's limited market. A scaled-up version of the small signal planar construction was the first attempt. That, however, resulted in a device that was too expensive. A similar experience was found in attempts to manufacture using multiple emitter construction.

The breakthrough came with a "bi-mesar" chip. Because it involves only one critical masked diffusion process, the bi-mesar can be produced at low cost.

Bonding the die to the package header also created some furrowed foreheads. This problem took another good dose of Australian ingenuity and innovation, which resulted in a reflow solder bond technique that uses a four-zone hydrogen furnace.

IPD To Equip All Nippon Airways With Voice Recorders

The Fairchild Industrial Products Division recently received a contract to equip the entire fleet of aircraft of All Nippon Airways with Fairchild Cockpit Voice Recorders.

The order came as a result of Japan's civil aviation authorities' recent ruling that all commercial aircraft operated by the country's airlines must be equipped with voice recording systems in 1972. Fairchild Cockpit Voice Recorders are currently in use as standard equipment aboard planes of 94 airlines in 38 countries. Cockpit recording equipment is mandatory on all passenger aircraft operated by U.S. lines.

Fairchild Cockpit Voice Recorders are capable of recording four separate channels of voice communications on a 30-minute, closed loop tape. The tape is constantly erased and recorded throughout the flight, retaining the most recent 30 minutes of conversations which originate from the cockpit and over the passenger address system.

For the past several months, 14 types of power transistor products have flowed from the Croydon plant in commercial quantities.

In retrospect, O'Shannassy states, "The so-called humble workhorse, 2N3055, may be easy enough to make on a one-by-one basis in the lab, but to produce this type of device in commercial quantities is difficult . . . but our work has finally paid off."

Fairchild Lenses In Earth Resources Technology Satellite

Fairchild has provided specially designed, high resolution lenses for the three camera systems on NASA's first Earth Resources Technology Satellite (ERTS-A), which was launched in July.

The return beam vidicon camera system, built by RCA, uses three cameras in three spectral bands and a multispectral scanner in four special bands. The lenses used in the camera system were developed by the Fairchild Space and Defense Systems Division, Syosset, New York.

The launch of the ERTS-A is man's most ambitious attempt to monitor the earth's natural resources from space. The satellite's objective is to obtain multispectral images of the earth's surface with high resolution remote sensors and to process and distribute the images to scientific users.

The 2100-pound automated satellite was launched into near-polar orbit at an altitude of approximately 500 miles above the earth and will move synchronously with the sun.

Data is telemetered to ground stations and then relayed to NASA's Data Processing Facility at Goddard Space Flight Center, Greenbelt, Maryland.

More than 300,000 photographs are to be produced each week. A second Earth Resources Technology Satellite (ERTS-B) is scheduled to be launched in 1973.



PRESIDENTIAL CITATION TO FAIRCHILD SEMIKOR, LTD.—Chris Reardon, General Manager of Fairchild Semikor in Seoul, Korea, accepted a presidential medal and citation from the Korean Minister of Health and Social Affairs, Hyung-Ho Lee, at a ceremony held on July 6. The awards recognized Fairchild as an outstanding employer in Korea, and cited the exemplary performance of Fairchild employees in that country. The awards ceremony was attended by more than 3,000 people including Yi-Chang Cho, Korean Director of Labor Affairs; Tae-Sik Yang, Seoul Mayor; and other government dignitaries. The awards recognized the positive influence Fairchild has had on employment in Korea as well as the excellent company-employee relations it has maintained.

Number of employees:

July 1, 1972: 15,092

Financial Facts:

First Half 1972—January-June

Sales—\$103,172,000

Net Income—\$3,011,000

Facilities:

Headquarters—464 Ellis Street,
Mountain View, California 94040

Semiconductor Components Group,
San Francisco Bay Area; Shiprock,
New Mexico; South Portland, Maine;
Hong Kong; Croydon, Australia;
Singapore; Seoul, Korea;
Weisbaden, Germany, and Okinawa.

Analog Products Division
(Mt. View, Calif.)

Products: Linear integrated circuits
and integrated microsystems for the
industrial, instrumentation,
automotive and consumer
electronics markets.

Digital Products Division
(Mt. View, Calif.)

Products: Standard and custom digital
integrated circuits, including MSI
(Medium Scale Integration) and LSI
(Large Scale Integration), for the
computer, industrial and aerospace/
defense markets.

Discrete Products Division (Mt. View,
and San Rafael, California)

Products: Silicon transistors and
diodes for the computer, industrial
and consumer markets.

Microwave & Optoelectronics Division
(Palo Alto, Calif.)

Fairchild Facts

A quick look at our company as it is
today in terms of people, products
and plant locations.

Products: Light-emitting diodes,
optical arrays and microwave and
radio-frequency devices for
industrial and aerospace/defense
markets.

MOS Products Division
(Mt. View, Calif.)

Products: MOS devices, both custom
and standard, for manufacturers of
calculators and computer peripheral
equipment, including memories.

Federal Systems Group
(Headquartered in Syosset, N.Y.)

Defense Products Division
(Copiague, N.Y.)

Products: High-volume production of
fuzing, timing and arming devices
for ordnance uses.

Electro-Metrics Division
(Amsterdam, N.Y.)

Products: Surveillance systems, both
manual and computer-controlled,
which monitor high-frequency
interference and electronic
pollution; radio frequency
interference test and analysis
equipment.

Space and Defense Systems Division
(Syosset, N.Y.)

Products: Camera and TV imaging
systems for aerial reconnaissance
and mapping applications,
analog-to-digital converters; image
data processing; specialized
radio-frequency systems; precision
optics.

Commercial Systems Group
(Headquartered in Mt. View, Calif.)

DuMont Electron Tubes Division
(Clifton, N.J.)

Products: Cathode-ray, direct-view
storage, power and photomultiplier
tubes for industrial and aerospace/
defense markets.

Industrial Products Division
Commack, N.Y., The City of
Commerce, Calif. and Traverse City,
Mich.)

Products: Audio/visual systems for
industrial and commercial use,
aircraft recording and announcing
systems, pressure switches and
magnetic heads used for recording,
storing and playback of data and/or
sound.

Inland Manufacturing (Walnut, Calif.)
Products: Precision tooling for plastics
and metals, including molding
presses and molded piece parts.

Systems Technology Division
(Palo Alto, Calif.)

Products: Semiconductor test systems
for manufacturers and users of
solid-state products, and
semiconductor memory systems for
data processing equipment.

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Fairchild **HORIZONS**

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Editor: Veronica Kane

Correspondents: Marilyn Schwarz, SDS;
Royce Boone, DuMont; Peg Schinnerer,
IPD; Al Jiminez, DPD; Carmella Simiele,
Electro-Metrics; Rhoda Tennis, World Mag-
netics; Caryl Gates and Donna Rehrmann,
Systems Technology; Clifford Prodder, In-
land Mfg. Co.; John Walsh, San Rafael;
Mrs. K. Engelberg, Weisbaden; John Hous-
ton, Australia; M. Kimura, Tokyo; S. J. Lee,
Korea; S. K. Sze, Hong Kong; Jason How,
Singapore; John Gundershaug, Shiprock,
Arizona; and Roger Gerard, So. Portland.

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FAIRCHILD
HORIZONS



Where We're Headed

Out there is an untouched new year that holds all the possibilities our imaginations can conjure. There's opportunity to grow personally and professionally.

Like individuals, companies take formal inventory of where they have been and where they are going at least once each year. Based on the wisdom gained through past successes and disappointments and all the information that can be gathered on the potential of the economy and its markets, the company develops its operating plans. Fairchild's plans for 1973 and its long-term goals for the coming four years were set down on paper before the year turned.

In the next pages, Gene White, Vice President and General Manager of the Commercial Systems Group; Lou Pighi, Vice President and General Manager of the Federal Systems Group; and Wilf Corrigan, Vice President and General Manager of the Semiconductor Components Group talk about where we are headed in 1973 and beyond.

On page 8 through 10, several employees talk about personal resolutions they've made and kept which might stimulate others to stick to their vows to get into better physical shape in 1973. On page 15, HORIZONS looks at how employees in the Far East will bring in their new year—the year of the Ox—which begins February 3.

On page 7, one of the Semiconductor Group's newest projects, providing the electronics for the SX-70 Polaroid camera, is described. This program will contribute significantly to the Group's income in 1973.

And, on pages 12 through 14, we look at the employee transfer from the point of view of the transferee.

Happy new year.

May 1973 fulfill all the promise it holds—increased career growth, a smaller waistline, or even a transfer to a new locale, if that's your desire.

Commercial Systems Group

"Increased profitability . . ."

"Growth in sales . . ."

"Accelerated research and advanced development efforts . . ."

I've stated it many times in the past few months, but I am not at all reluctant to repeat it again—we're very optimistic about the coming year for the Commercial Systems Group.

We've set ambitious growth goals in profitability and in sales. We're also preparing for beyond 1973 through increased investment in research and development efforts that relate directly to products which will be marketable within the next four years.

In an inventory of each of the divisions within the Group for 1973, everything looks positive if we are prepared to take advantage of opportunities as they arise.

SYSTEMS TECHNOLOGY

At Systems Technology we'll begin moving into new market areas with our existing product capability. In 1972, we received our first major contract for avionics test equipment and

(continued page 4)

Gene White



Semiconductor Components Group

"A Significant Increase In Sales"

"Promising New Markets"

"Increased Career Opportunities For Employees"

"Expanded Multinational Operations"

The Semiconductor Components Group faces one of the most promising years in its history. Opportunities for increased sales, improved profitability and expanded operations are projected for 1973 through 1976. Our products will be used in many new applications in world-wide markets.

All of these projections are based on careful studies conducted by Fairchild and outside economists. To give you some foundation for the Semiconductor Group's enthusiasm about the future, knowledgeable economic sources predict that the semiconductor industry will grow from \$2.8 billion in 1973 to \$6.2 billion in 1980. In addition, it is projected that the U.S. economy will increase by seven to eight percent annually during that period and the economies of Europe and Japan are

(continued page 5)

Wilf Corrigan



Federal Systems Group

"Movement into new market areas"

"Penetration of foreign markets"

"Introduction of new technology"

The Federal Systems Group in 1973 is presented with a tremendous challenge which is a carry-over from 1972. The challenge is one of growth and diversification into non-Department of Defense business areas. In early 1972 the group began embarking on this course; first, through the promotion and support in the development of the Charged Coupled Device (CCD) technology. This was a combined effort with the Digital Products Division. It is believed that this technology will be a key to the future electro-visual equipment market, government and commercial. A second approach initiated in 1972 was to develop plans for penetrating foreign markets with existing products as well as with new product lines.

In all of these areas our goals in 1972 were met or exceeded. We were, at year end, the leader in CCD technology, and well underway in developing plans for exploiting the application

(continued page 6)

Lou Pighi



Commercial Systems Group - 1973

(continued from page 3)

we plan to aggressively pursue opportunities in this potentially large market in 1973. Our first order for avionics test equipment for circuit boards came from the government and we have since received a commercial order for similar equipment.

We have the capability in this area—our Sentry Series can be easily adapted for avionics testing—and the potential market for this specialized test equipment is very exciting. Virtually every equipment manufacturer who uses a large number of circuit boards is a potential customer for these systems. With the application of the Sentry system's capability to these diagnostic procedures, the entire check-out process can be conducted with greatly increased speed and reliability compared with most techniques presently employed.

Systems Technology will continue to participate in the custom bi-polar memory designs like the unit developed for use with the IBM 360. We will continue to use the Fairchild semiconductor bi-polar components and specialize in memory applications where our component technological leadership is pertinent.

Without any radical departures from our current product interests, I believe that Systems Technology will double in size—in terms of employment, sales and profitability—in the foreseeable future. The division survived a very difficult period in the industry and the economy during 1971 and 1972 and has benefited from the experience. I believe that we came out of this trying time with our product strengths improved and plans to fully exploit the technology we have developed within this division.

INDUSTRIAL PRODUCTS

For the Industrial Products Division,

I see increases in sales for IPD aircraft products such as the new weight and balance systems. The growing emphasis on aircraft safety is a positive factor. In recent months we have logged major orders for these systems from international aircraft manufacturers and commercial lines. The international marketplace offers considerable potential for sales of IPD's aircraft recording systems; another product that is receiving more attention as a result of increased concern for aircraft safety.

The Industrial Products Division's series of rear screen Super 8mm projectors is continuing to receive growing recognition as a convenient tool for communications, sales aids, and education. The U.S. Armed Forces plans to use the Fairchild Seventy-20 in recruiting and education programs. The commitment to 16mm film in general educational applications is easing and this market could offer vast opportunity for sales of our super 8mm products.

Magnetic recording and playback heads produced by IPD continue to find new applications in data processing peripheral systems. The heads are used in credit card reading equipment for magnetic ink character recognition such as in check sorting equipment and computer tape drives.

In other component areas, IPD's line of pneumatic pressure sensors are also finding new applications in many industrial and consumer products. Major sales for this product line can be represented in applications for products for the home such as vacuum cleaners and similar products for consumer applications.

INLAND PRODUCTS DIVISION

The Inland Products Division is aggressively pursuing new business in every potential market area. The Division produces several varieties of molded plastic parts for commercial and consumer uses in addition to developing and manufacturing presses and molds for plastic part fabrication.

It is looking to new areas to exploit its ability to produce custom precision plastic parts for most applications.

At this moment, we are talking with companies involved in medical instrumentation, automotive supplies and other industries which use a large volume of plastic parts in their products.

DUMONT ELECTRON TUBES

DuMont Electron Tubes Division is involved in a mature industry and we have known for a long time that we cannot look to this Division's traditional product lines to provide dramatic growth in the future. We do, however, expect the Division to demonstrate some improvement in sales in cathode ray tubes and direct view storage tubes in applications where high quality and reliability are vital. DuMont continues to provide superior products for use where a high level of performance is essential.

As I have said, I am highly optimistic about the Commercial Systems Group's potential in 1973, and know that our increased growth in sales and profitability can be realized only through the full support of everyone within the group. I firmly believe that Commercial Systems need not be second to anyone in any of the market areas we have chosen to serve. But the key to this enviable industry position is service. Anticipating the customer's need and being there with the product when he needs it is essential to our industry image. *Service in the Seventies* is the Commercial Systems Group pledge.

We have the engineering, management and manufacturing talents within each of our divisions to meet any opportunities that lie ahead. If we can provide the extra measure of service, I believe that we can achieve industry leadership in each of our product areas during the 1970s.

Semiconductor Group - 1973

(continued from page 3)
expected to exceed the U.S. growth rate.

INTERNATIONAL MARKETS

One of the most significant moves we'll make in 1973 is to prepare for greater penetration of the European and Japanese markets for semiconductor products. We'll continue development of the Fairchild-TDK joint venture company in Japan to establish a firm position in markets in that country, and plan to open plants in Europe over the next few years to serve the growing markets on that continent.

If I were to single out a trend for 1973, I would point to a greater participation in international markets. While U.S. sales will continue to be the major source of income for the Group, throughout 1973 we will be laying the groundwork to participate fully in markets abroad.

We anticipate major increases in employment during 1973 to meet the growing demands for our products. With this growth in personnel will come increased opportunities for career advancement for present employees. It is projected that many new management opportunities will be created during the year and many new jobs will open in other assignments throughout the Group.

The potential for growth is great, but we are approaching all markets very cautiously. We could not hope to serve all of the applications for our products that are expected to open within the next four years, so we will be selective about the opportunities we will pursue. We'll go after those

market segments in which we have confidence we can serve and serve well.

The organization that is now in place will enable us to respond to the growth opportunities with speed and actions based on familiarity with our industry. We will continue to operate in our existing divisional mode in order to keep decision-making at the organization level where the most knowledgeable actions can be taken. Each division within the group is structured with its own product marketing, engineering, manufacturing and finance activities to serve its own specialized market interests.

1973 BUSINESS PLAN

According to the business plan which has been developed, 1973 will be a good year for all Semiconductor Components divisions:

- The most conservative estimates indicate that the Analog Division will increase its sales by a significant amount in 1973. This growth could increase even more dramatically if some of the major applications for this division's products are realized within the year.

- The Digital Products Division is expected to almost match the Analog sales growth for the year through increased market demand for its Isoplanar products.

- The Discrete Division, though representing a decreasing share of the total Group income, will realize significant sales growth as a result of the greatly expanded overall market for semiconductor devices.

- The Microwave and Optoelectronics Division made tremendous progress in 1972 and is expected to almost double its sales in 1973 over 1972.

- MOS Products Division, which has had more than its share of problems in the past, will come into its own in 1973.

The growth in sales projected for the next year in all divisions will come from both traditional markets for our products and emerging new applications. The computer industry will continue to be the primary market, but consumer and industrial applications demonstrate exciting opportunities.

One of the most promising new markets lies in the automotive industry where demands for safety and pollution control devices have created increasing dependency on electronics. This could create a demand for semiconductor products that exceeds a billion dollars annually in less than a decade.

Camera systems, such as the modules we have developed for Polaroid, also open great potential for sales. The overall market for camera systems is expected to reach \$600 million in 1980 and we have the pioneering technology in this area.

MOS products, light emitting diodes and other visual displays will experience broad, new applications in products for industrial and consumer use. MOS products are already finding their way into experimental use in automobiles, industrial process control equipment and computer peripheral equipment. LEDs are being used for displays on calculators, test equipment, wristwatches and computer terminals.

CALM OPTIMISM

If I were to sum up our feelings about the immediate future in a single phrase, I would select "calm optimism." Everything seems to indicate that we are entering one of the most exciting growth periods in the history of the semiconductor industry. The years ahead are expected to offer unprecedented opportunity for the industry generally and Fairchild specifically, if we approach the opportunities that present themselves with the deliberate restraint and selectivity that will allow us to build our future on the most stable foundation possible.

Federal Systems - 1973

(continued from page 3)

of this technology in equipment markets. In the foreign markets we sold our standard photographic and communications products but, even more important, we won contracts from two foreign countries to provide airport security systems.

NEW TECHNOLOGY

For the Federal Systems Group a specific challenge in 1973 is to introduce products based upon the CCD technology to the non-DOD marketplace. The introduction of new technology is always a challenging task. However, when it is also coupled with penetration into new market areas, the task is even greater.

Despite the major effort that will be devoted to the foregoing, the Group has also set as its primary goal, increased profitability for 1973. The backlog at year end at Space & Defense Systems Division and Electro-Metrics Division is higher than it was at the outset of 1972. Furthermore, products and programs that were problems for these Divisions in this past year have been corrected. From this standpoint they are in a stronger position. This is also true of the Defense Products Division where our MK-344 Program has been meeting budget and schedules for the second half of 1972. Defense Products Division in 1973 will be undergoing a transition period wherein it will phase down its highly competitive, low cost, high volume product lines, and concentrate on the new developing sophisticated systems that offer higher profit potential.

INCREASED SALES

At Space and Defense Systems Division the basic product lines of camera systems and converters will have increased sales in 1973 over those of the prior three years. The A6E converter is programmed through 1976. An automatic film tilting system that has been in development for two years will go into production this year. The Integrated Coded Circuit System under development at the Defense Products Division will begin a major development phase the first quarter using CMOS technology for its logic functions.

ELECTRO-METRICS

At the Electro-Metrics Division, 1973 will be the year to ascertain whether

or not there will be a pay-back for the effort expended over a three-year period to bring the BRT-35 system to the market place.

The planning and initial successes accomplished last year have set the basis for achieving the objectives and goals for 1973. While the pressure is on to introduce products employing CCD's, entering foreign market places, as well as new business areas, the challenge is stimulating to people who are accustomed to working in our high technology type of company.

Another major objective for the new year is the continuation of our employee development programs. While some new talent will be required in areas where the group has little or no prior experience, the emphasis will be to develop our own employees so that they may also grow with the group.

MOD Introduces "Superdigits"

The first of a new line of LED digits that halve the cost of LED displays has been announced by the Microwave & Optoelectronics Division (M.O.D.).

Although the new FND-70 one-quarter-inch-high digits are not yet in full production, cost savings achieved in initial production stages have lowered the introduction price to \$3.95 per unit in 100-up quantities. This is approximately half the price of other quarter-inch LED displays currently on the market.

The new FND-70 displays are the first of Fairchild's planned family of "Superdigits," which are expected to greatly expand the industrial display market by reducing cost. The new displays are suited for applications such as computer terminal readouts, digital panel meters and instruments, desk calculators and credit card verifiers.

Federal Express Falcon Fleet to Add 21 STAN Systems

Receipt of an order for 21 additional STAN* Integral Weight and Balance Systems for Federal Express' cargo operations in Falcon 20 aircraft was announced in early December by the Industrial Products Division.

Little Rock (Ark.) Airmotive, an aircraft modification company, placed the orders for the STAN systems used by Federal Express, an air cargo carrier, also based in Little Rock. Little

Fairchild Lunar Mapping Camera On Final Apollo Moon Mission

SYOSSET, N.Y., Nov. 30—The Fairchild Lunar Mapping Camera subsystem was aboard its third successive moon mission when Apollo 17 was launched December 6.

Designed and developed for NASA by the Space & Defense Systems Division of Fairchild, the Lunar Mapping Camera is one of the major orbital experiments housed in the Scientific Instrument Module of the Apollo Command Module.

Astronaut Ronald E. Evans, command module pilot, operated the camera during the Apollo 17 flight. He retrieved the film canister containing more than 3,000 exposures during the EVA (extra-vehicular activity) on Apollo 17's return to earth.

While astronaut Evans orbited the moon, astronauts Eugene A. Cernan, spacecraft commander, and Harrison H. Schmitt, a geologist, performed lunar surface experiments.

Areas of the moon not previously photographed or explored were included in the Apollo 17 program. In addition, where Apollo 17 overlapped areas covered by previous missions, the difference in sun angles provided the photo-geologists with photographs of lunar features at new illuminations.

Apollo 17's specific objective was the exploration of the Taurus-Littrow area of the moon, deploying scientific experiments on the lunar surface and conducting extensive experiments from orbit. The landing site, a combination of mountains, highlands, and lowland valley regions, was determined with the aid of high resolution photography from Apollo 15.

Rock Airmotive last spring ordered and installed 10 STAN systems in Federal Express Falcons.

STAN systems provide an automatic on-board means of determining an aircraft's true weight conditions and center of gravity before takeoff.

*STAN (Summed Total and Nosegear) is a registered trademark of Fairchild Camera & Instrument Corp.

the camera that will make color photography a part of everyday life

If only HORIZONS was printed in full color . . .

. . . then words would not be required to describe one of the latest and most exciting consumer products that Fairchild has helped to bring to market.

The new Polaroid SX-70 camera, which is possible only through advanced electronic technology, promises to make a radical change in personal photography.

The pocket-sized product produces life-like color photographs which develop outside of the camera.

"This product," Dr. Cliff Duncan, vice president of engineering at Polaroid, declares, "is the camera Dr. Edwin Land envisioned when he began development of the Polaroid process in 1943. His concept could never be fully realized until electronics, chemistry and physics caught up with his ideas."

Ideas and electronics were, in 1972, successfully married into the most remarkable, trouble-free camera on the market today. The SX-70 does away with the paper and chemical debris of previous Polaroid systems. It makes photography virtually fool-proof through electronically controlled exposure and flash activation. The six large scale integrated circuits which govern the camera's exposure meter, flash synchronization and motor, were

designed, developed and are manufactured by Fairchild in the Mountain View headquarters of the Semiconductor Products Group.

Fairchild became involved in the development of the electronics for the new Polaroid camera more than four years before the product began appearing on dealers' shelves. Meanwhile, Polaroid scientists were devoting their attention advancing photo



Pamela Meintz, a member of the Polaroid production group at Fairchild, looks through the view finder of one of the first SX-70 cameras to be demonstrated.

chemistry to create a picture that would be self-developing without the wait and messy chemicals of the previous Polaroid color process. Four


years and \$250 million later, Polaroid had the electronics, physics and chemistry to introduce the SX-70 which the company believes will make color photography a commonplace accessory to everyday life.

Describing some of the uses of the lightweight, compact, convenient camera, Dr. Duncan states that in the not too distant future, a woman will drop her SX-70 into her handbag before embarking on a shopping trip. If she is undecided about an item she considers buying, she will snap a picture of it. At leisure in her home, she will study the photograph before making the final decision on the purchase. Small scale replicas of clothing, furniture, or even enlargements of a silver flatware pattern, for instance, can receive the scrutiny of the entire family before a purchase is made. "The SX-70 has all the elements—size, reliability and low cost—that will remove the 'special event' quality from color photography," Dr. Duncan continued. The camera is retail-priced at approximately \$180; and film costs about 50 cents per print in packs of ten.

The camera was introduced in Florida in October and stores in that area received the first available units. Under Polaroid's marketing plan, the new SX-70 should be on sale throughout the United States during the first three months of 1973.

The production area at Fairchild-Mountain View that houses the Polaroid project.





Somewhere in every list of New Year's resolutions, whether written or mental, is the pledge to lose some weight, to undertake some regular form of exercise or to generally get into better shape.

If the waistline has just begun to occupy more space in the past year, the physical fitness resolve is likely to head the list of goals for 1973. If it is a familiar pledge that has been forgotten by January 2 for a number of years it is likely to have lost its place of importance. But take heart, even if you've fought the losing battle with your bulges in the past, there is still hope for 1973. All around you there are people who have successfully altered their silhouettes in the past year and there are those who seem never to worry about "getting into shape" because their life style keeps them there at all times. Their stories of success and suggestions for others who wish to re-shape their silhouettes are told here to offer stimulus to those who would hope to whittle their waistlines in 1973.

Resolved: to occupy less space in 1973



Richard Bartyzel
Field Service
Specialist
Electro Metrics
Division

"It is like a rebirth at age 26," states Richard Bartyzel, when he describes the changes that have been made in his life in the last year. Richard occupies a great deal less space than he did last January—120 pounds worth.

But it isn't just his greatly improved appearance that has made a change in his life. Stripping off the excess pounds he had carried for more than three years has influenced what he does with his days. "Before I lost a considerable amount of weight," he relates, "enjoyable entertainment meant a good book, classical music on the stereo, and something to nibble. Today, a game of tennis or dancing to popular music provide the same, or more, enjoyment. I have more energy. For the first time I'm really involved in sports as more than a spectator."

Richard's tennis game has become so good over the 10 months he has

been playing that he is in search of more demanding opponents. He swims in the summer, plays tennis as often as possible, and this winter he will round out his exercise program with skiing.

In November, he purchased a parka and began shopping for ski pants and the other accouterments he'll need to get started on the slopes. "That's a new sensation," he confesses, "to go into a clothing store and know that you'll be able to find something that will fit and look good. As a result, I've become sort of a clothes horse."

For others who are facing a fight with a fading physique, Richard advises, "Stick with your diet until you lose enough weight that you can see some difference. That's when you'll have all the incentive you'll need to continue losing. It's getting that first 10 or, in my case, 40 pounds off that encourages you to continue. By that time," he added, "you will have altered your eating habits to the point that the next major loss won't be so hard to achieve. It's worth all the will power, believe me. I'm never going to let the pounds slip up on me again. There's too much fun to be had, if you have the energy to pursue it."

Model: Pat Freeman, Secretary, Semiconductor

"Don't take an elevator when you can use the stairs. Don't walk upstairs when you can run. Avoid escalators in airports. Use your leg and back muscles when you get up from a chair." This is an executive's advice for staying trim. And, by all appearances, it's working for Mike Baker, Systems Technology Division Manager.

Mike has made keeping in shape an integral part of his daily life. "I don't set aside so many minutes each day for exercise, instead I exercise all the time. When I want to talk to someone, I don't call him into my office unless it is absolutely necessary; I go to him and feel it's a bonus if I have to run up the stairs to get there."

"I tried everything! Prescription pills which made me moody and nervous. I even visited a doctor every day to take shots which helped me lose weight. But, as soon as I stopped the shots, the weight came right back. Will power is the only thing that has worked for me."

That's Archie Bryson talking. And she knows the subject of weight gain and loss very well. She is grateful that her knowledge of loss is expanding—some 63 pounds worth in the past year.

Edie Beem is a crusader in spreading the message about physical fitness. She has been on both sides of the fitness fence and knows what a difference excess pounds and poor muscle tone can make in your attitude toward life. She has experienced the feeling of well-being that comes with good health and she'll tell anyone who'll listen about the benefits of good diet and exercise.

Four years and 70 pounds ago, she was tired most of the time, overindulgent with herself when it came to the gravies and desserts she enjoyed, and was handed a prescription for diet pills when her doctor thought she was "too lazy" to develop the self-control which would allow her to lose weight naturally.

In addition to the exercise Mike includes in his daily routine, he also plays basketball or baseball whenever he can. "I prefer basketball because it is the most strenuous of the organized sports. I couldn't follow any formal exercise program, like working out in a gym or jogging; it would bore me to death."

Mike admits that in his late 20s, he allowed himself to get out of shape. "My life was out of balance. I was spending too much time working or worrying about my work. I would become so mentally exhausted that when I did have time for myself, it was spent in front of a television. Realizing that I was not nearly as effective as I could be—nor as healthy—I began consciously sorting out the important things in life from the trivia. My health, both physical and mental, naturally controlled my effectiveness in business and my relations with my

"I gained weight with my first child (she now has three)—and never could lose it. I added pounds with each pregnancy until I ballooned up to 200 pounds.

"I finally got to the point where I didn't like myself anymore. I faced the fact that the only way in which I would lose weight and keep it off was to cut down calories and change my eating habits.

"I would still like to lose another 20 pounds and I know that even then I'll have to watch how and what I eat

That prescription hit her pride. She threw it away and, that day, began a will-power diet that trimmed off 70 pounds in little over a year. But, Edie didn't stop with diet. She began exercising with a stationary bicycle and also turned to health foods.

Today, the morning begins with a workout on her exercycle, then she swallows an alphabet of vitamins before breakfast that consists of natural foods.

At least three evenings a week she visits a local gym for some "real" exercise. Her energy level is astounding. Sleep of 5 to 5½ hours each night fully satisfies her; compared to the 9 or more she required when she was overweight and out of condition.

Her living example of what atten-

Mike Baker
General Manager
Systems
Technology
Division



family. It was then that I began disciplining myself to exercise. That discipline carries over to all other parts of my life. I believe that I am a much more effective manager today, for instance, than in the days when my life was consumed with little more than work and worry.

"It doesn't take fantastic effort to include exercise in daily life—just some conscious thought. In fact, I would prefer to eat the foods I like, and compensate for the extra calories with increased exercise."

Archie Bryson
Assembler
San Rafael



for the rest of my life. But it's worth it. I can wear mini skirts, pants and boots . . . things I was ashamed to wear when I weighed 200 pounds. The dieting is worth it."

Edie Beem
Mask Maker
Central Services—
Semiconductor



tion to physical condition can produce has lured many of her friends into gyms or encouraged them to start long-delayed diets. So great is the change between the "before" and "after" Edie Beem that her physician asks her to counsel other patients who are having difficulty dieting or staying with an exercise program.



**Lee Sandominick,
Production Worker
Industrial Products
Division**

"There was no good reason why I gained weight. I had an operation and just let myself go. I have been carrying more weight than I need for over four years.

"I finally decided to do something about it five months ago. I was tired of being frumpy looking." Doing something about it meant losing 42 pounds for Lee. "One morning I got up and said 'this is the day I begin losing weight, and I did. I developed my own

diet—I count calories and allow myself 1100 each day," she says.

"It takes will power and sometimes I get a little disappointed in my progress, but my husband, son and friends at work have kept me going with their compliments every time I move down a dress size."

"I exercise morning and evening," she continued. "In the beginning I started out with such vigor, but now I do my 20-25 minutes of exercise listening to music on the radio or watching television. It makes it a great deal easier."

Lee still hasn't lost all the weight she hopes to trim off. Her goal: a size 12 dress. And, from the tone of her voice when she talks about her objective—she'll make it.



**Andy Mera,
Senior Engineer,
South Portland,
Maine**

Even 10 inches of snow on the ground doesn't stop Andy Mera, Senior Engineer in South Portland, from his daily two mile jog around his neighborhood. "I just put on my snow boots and plunge out into the cold," he states. The weight of the boots adds an additional handicap to the exercise, making each step more fruitful.

Andy has been jogging faithfully for about three years. The only breaks in his morning pattern came when he bought a 10-speed bike last year and

he decided riding could replace jogging. "Even though I was riding 20 miles each day to and from work, I wasn't getting the exercise that two miles of jogging provides," he believes.

Andy admits that he doesn't really enjoy jogging, but savors the feeling of physical and mental well-being that jogging creates. "When I jog regularly," he explains, "my mental outlook is improved. I don't become irritated at things that might bother me otherwise."

It is knowing the result that pulls Andy out of bed 15 minutes early each morning to head out into the still-quiet world for a two-mile run. This takes real will power, particularly in the winter, because Andy, a native of Cuba, states he is still not acclimatized to the rough Maine winters.



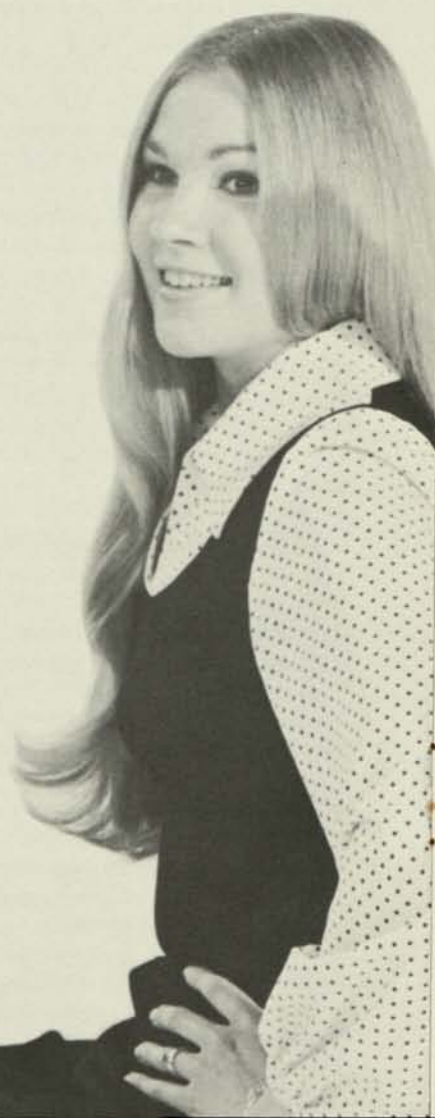
**Isabel McLeod
Secretary
Space and Defense
Systems Division**

Isabel McLeod's trim figure draws envious glances from those among us who must fight to keep the scale reading an acceptable lighter poundage. Isabel attributes the ease with which she maintains her good physical status to genetics—"I come from a family of lightweights"—and exercise. But, exercise for Isabel doesn't mean getting down on the floor for bends and twists. She thinks exercise is enjoyable if it's taken in a palatable

form—skiing, canoeing, hiking, swimming, golf or softball. A week doesn't go by that doesn't include some form of physical sport.

Isabel was a late bloomer in terms of sports. While most everyone receives exercise in school through physical education classes, Isabel was not allowed to exert herself. An asthmatic child, she sat on the sidelines and watched her classmates play the traditional school games.

At 18, the asthma retreated as mysteriously as it had begun, and Isabel began making up for lost time. Her interest in sports has paid off in a great social life, many friends, a trim figure and, what every woman over 25 covets, an appearance that is younger than her years.



Keeping in Shape

from the medical point of view

Dr. O. Bruce Dickerson, Fairchild's Medical Director, states that he has witnessed greatly increased concern about physical fitness in the years he has specialized in occupational medicine.

Physical fitness became a familiar term in every vocabulary when President Kennedy stressed its benefit for the health of American people. Today, everyone knows that a spreading waistline after age 30 is not a natural progression that must be accepted with grace. Portly physiques at any age are thought to be detrimental to health.

You'll note, that I state people "know" and "believe" that physical fitness should be a concern throughout life. That knowledge doesn't always display itself in action. There are many people, like the Fairchild employees described in this issue of HORIZONS, who maintain an active physical fitness program. But, there are many more who should pay greater attention to their diet and set aside a portion of their days to some form of regular exercise. I am not talking only about the overweight or terribly out-of-condition person; diet and exercise should play an important part in everyone's life no matter how slender or apparently fit.

Naturally, the first move toward physical fitness for anyone who is overweight is to take off the excess pounds. Literature is available in each of the company's dispensaries describing healthy diets which lead to weight loss. Others outline menus which are aimed at reducing the saturated fat in the diet. Saturated fat increases the cholesterol build-up in the body, which, in turn, increases the chance of developing heart and other circulatory problems.

Exercise, tailored to your age and physical condition, contributes to emotional as well as physical well-being. As many of the employees featured in this issue have stated, the most obvious benefit of good diet and exercise is an improved appearance; but the most personal benefit of good physical condition is psychological. Enjoyable exercise provides relief from tension and serves as a safe and natural tranquilizer.

If you have allowed your muscles to get out of tone, start slow with any exercise program. Let your body become acquainted with the demands exercise will make upon it. Gradually work up to the level of exercise you determine necessary to maintain your body and mind in good tone.

Even people who exercise regularly should include a warm-up to loosen muscles and a cooling-off period when they have completed their exercise whether it is on the tennis courts or the gym or bedroom floor.

If you're in search of programmed exercise which can help you achieve and maintain a good level of fitness, I suggest investigating the Royal Canadian Air Force Program, the classes offered by the YMCA and YWCA, or some of the jogging-swimming-walking regimes outlined by doctors in books available at most libraries.

As I have said, I have recognized a marked degree of increase in concern about physical fitness during the period I have been in medical practice. I've also seen some results. Everyone would realize that the efforts



Dr. O. Bruce Dickerson

are worth the result if they could experience the peak of their physical and mental health through a perfectly conditioned body. The benefits are great: life will be more enjoyable, work can be performed with greater ease, and periods of stress can be met with less tension.

A weight consistent with your body build, programmed exercise and regular physical check-ups can lead to the physical and emotional state which allows you to live life with vigor.

That phrase is heard more and more frequently in homes throughout the world as employees of multi-location companies accept new assignments at different geographic plants. Established managers and those who would like to climb higher on the organizational ladder accept the proffered transfers for a number of reasons. If the transfer represents a promotion, the motive is obvious. If it's a lateral move, it may offer the employee a chance to broaden his experience in his field, to gain exposure to an entirely new set of business problems, or may take him and his family to a new and desirable part of the world.

You'll note that we use the masculine pronoun when referring to the transferred family. Though employers will agree that their female managers and professionals have talents equal to those of the male workforce, wives are traditionally negative to geographic transfers as it means their husbands would have to seek employment in the new area. Obviously, our society is not quite ready for this. Single women, on the other hand, view a corporate transfer in much the same manner as their male counterparts in business.

Fairchild realizes that employee transfers are not without trauma, and attempts to make the transition from one state or one country to another as painless as possible. The packing and physical move of household goods is arranged by company representatives through a moving company with a reputation for responsibility. The employee and his family are allowed to select, within limits, the means of transportation from one plant location to the city of the new assignment, and the extra expenses usual in the first weeks in any new locale are picked up until the family is settled in permanent quarters.

In investigating employee transfers, we found that there is no such thing as a typical transfer. The individuality of employees and members of their families makes every move unique. Each employee accepts a transfer for his or her own reasons and each member of the transferring family adjusts to the move in their own way.

Daddy's Being Transferred



Since we can't chronicle the story of every employee who has moved across the country or across the world to accept a new assignment with Fairchild, we've selected two recently transferred families and have asked their observations on the contemporary phenomena—the corporate transfer.

Eight moves in eight years and the Zucker family was able to face another with a spirit of adventure.

The demands that have been made on John and Elizabeth Zucker and their two young children in order to further John's career would tax most families to the limit, but they have weathered the multi-moves smiling.

Fairchild is responsible for the Zuckers' latest pair of cross-country journeys. John and Fairchild met while he was employed in West Lafayette, Indiana. After an interview with Fairchild representatives and a discussion with his wife, he accepted the company's offer of employment as a Senior Product Marketing Engineer. Naturally, a move followed—from Indiana to the Semiconductor Group Headquarters in Mountain View. "Fairchild's smooth system of servicing transferring families helped make the move easy," John reveals. "We were contacted to find our choice of moving company and Fairchild took it from there. A van arrived at the appointed time, our household belongings were carefully packed and loaded aboard the truck and on their way to California. We would not have had to lift a finger if we didn't want to."

As soon as the van pulled away, the Zuckers were settled in their car for a leisurely trip across country. "Fairchild gave us the option to fly," John states, "but because we had some time before I was to report to work, we decided to see some of the country."

The trip gave the Zuckers their first visit to Yellowstone Park and the Grand Tetons. "Because of my frequent transfers," John relates, "my children have seen much more of the country than most children their ages."

Their furnishings had arrived before them in the Bay Area and were stored, at company expense, in a warehouse in San Jose. On arrival in Mountain View, there were motel rooms awaiting them, where they stayed for a few days until one of the apartments the company maintains for transferred employees was available. They were to live in the furnished company apartment for six weeks until they found a

home they wished to purchase and made the necessary arrangements to move into it.

"We were given an orientation to the Bay Area through a service that Fairchild provides to employees who are new to the area. With this orientation and some scouting on our own, we quickly settled on the area in which we wanted to live."

As might be expected, the Zuckers have home-hunting in a new area down to a virtual science. "First," John reveals, "you can't expect to know an area if you don't get out and investigate. In our first few days in a new part of the country we spend almost every spare minute driving and walking everywhere we can."

In selecting a new home, the Zuckers first determine the neighborhoods that are within their price range, next they eliminate all except those that are within comfortable commute of John's office, then they check on the quality of schools within each of the acceptable neighborhoods. It is only at that time that they begin looking at individual homes. Once they find a house they like, they knock on the doors of neighboring houses to talk with the residents. "You'd be amazed what you find out about a neighborhood this way—neighbors will tell you about poor garbage collection, heavy traffic. . . . Talking with prospective neighbors has discouraged us from several homes."

Once the Zuckers have found the home that meets their lengthy checklist, they buy and move in.

For the less mobile among us, moving into a new home represents

stretched-out unpacking. But not for Elizabeth Zucker. She has unpacking down to a two-day chore. "We're totally settled in that time," John states, "and we're inviting neighbors in to get acquainted."

This is another point that helps the Zuckers survive the trauma of transfer—they enjoy becoming acquainted with people and are not hesitant about extending invitations to their new neighbors.

The Zuckers were settled in their home in Sunnyvale for all of two months when John came home to announce that Fairchild had a great job opportunity for him as a Field Sales Engineer . . . in New Hampshire. If Elizabeth Zucker felt like fainting when John announced his news, she hid her emotions totally, listened quietly and began making a mental list of the things involved in putting their home up for sale and preparing for another cross-country move.

The Zuckers' careful house-hunting held them in good stead. Their Sunnyvale house sold in three days. The moving van arrived. This time they boarded a plane for the trip to New Hampshire with a stop-over in Pennsylvania to allow Elizabeth and the children to visit family while John found an apartment in New Hampshire.

Because the Zuckers are skiers, they purchased a home in Vermont close to the slopes and maintain an apartment in New Hampshire close to John's clients. It's a new life style; a new adventure for a family that has learned to get the most out of a transfer.

Barrie Henderson candidly admits that the readjustment to home presented more difficulties than the adjustment to an assignment in Hong Kong.

The Hendersons returned to the United States in October after three years in Hong Kong to find housing prices in the Bay Area had risen rapidly in their absence and that California social life is much more casual than remembered.

It could be supposed that the Hendersons would enjoy Hong Kong as Barrie had accepted several stateside transfers to get into condition for a move to the Far East whenever there was a spot available for him.

Barrie joined Fairchild as a General Accounting Supervisor in Mountain View more than six years ago. He remained in that assignment for 1½ years and then was transferred to South Portland, Maine, as Cost Accounting Manager for that facility. "When the South Portland job opened, I saw it as an opportunity to move into cost accounting," Barrie remembers. But, that assignment was short-lived. Ten months later, he and his family were on their way to San Rafael, California, where Barrie was to become Plant Controller for the Fairchild facility in that city.

Barrie held that assignment for a full six months before accepting another transfer, this time as Manager of Financial Accounting in Mountain View. Even though this move covered only 60 miles, household belongings still had to be packed, housing found, and a new job had to be learned.

Barrie was Manager of Financial Accounting for little more than three months when the transfer he coveted was offered—Controller for the Fairchild plant in Hong Kong.

"I was very anxious to get an international assignment," Barrie reveals, "because of the broad exposure to finance it would offer. As a member of the accounting staff at the corporate headquarters, you usually deal with a very specialized area of finance. As a domestic plant controller, you receive a somewhat broader view. As a controller at one of the company's off-shore locations you gain the most



Behind every transfer of employees and their families is a well-ordered system designed to relieve as much of the anxiety of the move as possible.

Fairchild's transfer counsel is Jan Alves, a member of the Semiconductor Group Industrial Relations staff. It is Jan who makes contact with the employee immediately after the decision to transfer is made in order to explain to the family the numerous company-provided programs which are aimed at easing the move.

Jan will arrange for a professional moving company to handle the packing and transporting of the family's household goods. She will make plane and hotel reservations or arrange for temporary residence in one of the company apartments if the move is to Mountain View. She'll explain the company's policy of reimbursement of added expense the family may incur in its first weeks in a new area.



The Hendersons: Barrie; his wife, Lillian; and their daughters, Lea and Jayce.

diversified financial experience because you deal with bankers, tax agents and other government authorities in addition to the usual domestic accounting functions. Besides, an international assignment gives you the opportunity to get to know another part of the world."

The Henderson family was ready for their flight to Hong Kong within four weeks after Barrie accepted the assignment, their arms still aching from the numerous shots they received to make the journey. Although forewarned of the housing shortage in Hong Kong, the Hendersons weren't totally prepared for the realities of the situation. Barrie and Lillian; Lea, then age five; and Jayce, age six months, were to remain in hotel rooms and other temporary quarters for five months before they could find a permanent apartment. "It sounds much worse than it really was," Barrie admits. "We were immediately swept up into the active social life of Hong Kong and really spent very few evenings in our hotel rooms. The problems of caring for a young baby in such close quarters were partly compensated by the excitement of the city and the delightful people we met every day. Little Lea Henderson became a very independent young lady during her first few weeks in Hong Kong. Each morning she took the ferry from Kowloon across the Harbor to attend classes at the International School on the island of Hong Kong. "In the beginning it was difficult to say goodbye to her at the ferry," Barrie states. She was so small and didn't know the ways of the city. I was afraid that she would get lost. But she adjusted to her new home very quickly and soon all fears

about her ability to find her way around were soothed."

The Hendersons finally settled in a permanent home—a huge apartment with a magnificent view of Hong Kong harbor—only after another Fairchild expatriate was transferred to Okinawa. "Apartments were so scarce in Hong Kong—and homes are virtually nonexistent—that they were literally passed from friend to friend or company to company. At that time I don't know how you would have broken into the chain if you didn't know someone who was planning to leave Hong Kong."

For a quick rundown of the differences in life between Hong Kong and the United States, Barrie cites:

Shopping: "You can find almost anything you wish to purchase in Hong Kong. There are so many foreigners in the city that merchants stock food, clothing and other items that meet almost every nationalistic taste. However, the wives have to do a lot of hunting to line up sources of such things.

"Grocery shopping is much more of an adventure than in the United States. In fact, it became a family outing. We would visit the open bazaars in villages outside the city to buy our food. There are a few supermarkets in Hong Kong, but the prices are prohibitive."

Social life: "Life is much more socially oriented. Many of our friends were expatriates who were on short-term assignments in Hong Kong and we tended to socialize more frequently than is usual in the U.S. There were parties for every holiday. In fact, we thought that Christmas might be difficult away from home, but found that

we were carried away by the events that surround the holidays and never felt any pangs of loneliness for home.

Getting around: "Hong Kong is much more crowded than most American cities and at peak rush hours it is difficult to make your way on foot down the streets. The crowding makes the use of most public facilities almost impossible. In spite of the numerous beaches on Hong Kong Island and Kowloon, you can rarely find a space to sit in the sun on a warm day. I was able to purchase a boat with another Fairchild employee and, in this way, we enjoyed the Hong Kong waterways and avoided the crowds.

"We rarely drove our car in the city as walking was generally quicker and safer, and taxis more convenient."

Though the Hendersons thoroughly enjoyed their assignment in Hong Kong, they were anxious to return home when Barrie received a job offer as Manager of Financial Planning and Reporting in Mountain View. "We had a great deal more to pack for the journey home than we came with. Like almost every other visitor to the city, we had accumulated many pieces of fine, hand-made furniture for which the city is noted."

Barrie was ready to return to Mountain View because, "Although the Hong Kong assignment did broaden my experience in finance, after too long a period away from the domestic operations you lose touch with the developments in finance from a corporate point of view."

On their return to Mountain View, the Hendersons were housed in one of the apartments the company maintains for transferring employees while they conducted their search for a permanent home. "That was a shock," Barrie admits. "You tend to believe that things at home will remain unchanged while you're abroad. They didn't. Real estate prices were up considerably. Once the Hendersons adjusted to the realities of the cost of California real estate, they purchased a home in Saratoga where they hope to remain for three or more years.

After that, if another international transfer is offered, it would be considered . . . seriously.

KUNG HEY FAT CHOY

Around the world, the new year is brought in with parties, merriment and resolutions almost as if without the festivity and tradition the year wouldn't turn. But, nowhere does the new year receive the greeting that it is granted in Hong Kong, Singapore,

Taiwan and other parts of the world which follow the Chinese calendar.

In Chinese communities, January 1 is acknowledged with little more than a turn of a calendar page. February 3, 1973, the first day of the Year of the Ox, however, will arrive accompanied by the sound of gongs and drums.

The festivity and tradition which surrounds the two-day Chinese holiday is aimed at setting the new year off to the best possible start.

S. K. Sze of Fairchild Semiconductor Ltd. in Hong Kong gave us some insight into the Chinese New Year traditions and their symbolism. He explains that the Chinese New Year is the longest public holiday on the calendar. It begins with half day holiday from work on Chinese New Year's Eve. The half day preceding the holiday is essential to allow the elaborate preparations that must be made for the New Year.

On New Year's Day, performers in the Dragon Dance and Lion Dance snake through the streets to the accompaniment of gongs and drums which represent happiness and harmony. Traditionally, the popping of

firecrackers added to general revelry, but, S. K. Sze explains that firecrackers have been eliminated from the New Year's festival since 1967 because of the safety hazard they represent.

New Year's Day is also the time for Chinese people to visit the temple to worship Wong Tai Sin, the God that always bestows whatever is requested. Most Chinese families also conduct a round of visits to relatives, friends, and employers as a sign of respect. The host, in return, will serve tea and homemade seasonal cakes. The cakes are believed to give more earning power to men and help children to become taller.

When people meet each other on New Year's they always offer the greeting "Kung Hey Fat Choy"—"I wish you a good fortune."

S. K. Sze reveals that Chinese New Year is a profitable time for the children because they receive lucky money from their elders. The money is wrapped in red paper, a symbol of good luck and health. On the contrary, Sze explains, it is a rather costly time for married people because they are eligible only to give and not to receive. Most Fairchild employees in Chinese communities will spend the New Year's holiday with their families, either paying visits or receiving visitors in their homes.

Many employees at the Fairchild plants in Northern California will join in the Chinese New Year celebrations in San Francisco's Chinatown. The city's streets will be choked with visitors attempting to witness the activities which make up the New Year's Festival which begins with a huge parade on February 10.

The streets of Chinatown saw similar crowds on December 31-January 1 when revelers brought in the New Year of the Gregorian calendar. Horns blew, confetti flew, and shouts of the Happy New Year made the start of 1973 official in San Francisco's cosmopolitan Chinatown where the best New Year's traditions of the East and West are observed with equal measure.



NATIONAL GEOGRAPHIC Features Navajos and Fairchild

Fairchild and its people and plant in Shiprock, New Mexico, are featured in the December 1972 issue of NATIONAL GEOGRAPHIC. In a lengthy article, titled *Navajoland*, the writer describes the Navajo reservation, life, crafts and culture and some of the contemporary solutions to the economic problems that plague the Indian tribe.

"In the new spirit of controlling their own destiny, the Navajos are taking bold steps to solve the problem for themselves. The tribe's most successful economic project is Fairchild Semiconductor's big electronics plant at Shiprock. . . . Only 24 employees are non-Indian and 30 of 34 supervisors are Navajo." (The plant employs almost 700 people.)

The article continues to tell about the initial problems in establishing a sophisticated assembly plant in a culture that had not been previously exposed to industry. Paul Driscoll, Plant Manager, is quoted describing the way in which Fairchild

adjusted to Navajo life and language instead of superimposing "white man's" rule on the Indians. As a result, he stated, turnover in the employee population is less than one percent. "The plant assembles the most sophisticated devices known in our industry," Driscoll states. "This demonstrates the confidence our top management has placed in our Navajo employees."

The article continued, "Fairchild's 4½ million-dollar annual payroll has made Shiprock boom. It has also created a housing shortage. To meet it, a five-million-dollar project is blossoming near the plant (see HORIZONS November-December)—streets of neat modern homes, 214 houses and 41 apartments—the largest such development on a reservation. Fairchild put up \$100,000 and acted as a catalyst to form a nonprofit corporation with various federal agencies. In recognition of Fairchild President C. Lester Hogan's role in the project, Navajo humorists have dubbed the houses 'Hogan's hogans'."

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January-February 1973

Fairchild **HORIZONS**

published bi-monthly for the employees of the Fairchild Camera and Instrument Corporation.

Editor: Veronica Kane

Correspondents: Marilyn Schwartz, Federal Systems; Royce Boone, DuMont; Peg Schinnerer, IPD; Ruth Miller, SDS; Carmella Simiele, Electro-Metrics; Rhoda Tennis, World Magnetics; Caryl Gates and Donna Rehrmann, Systems Technology; Clifford Prodger, Inland Mfg. Co.; John Walsh, San Rafael; Mrs. K. Engelberg, Wiesbaden; John Houston, Australia; M. Kimura, Tokyo; S. J. Lee, Korea; S. K. Sze, Hong Kong; Jason How, Singapore; John Gundershaug, Shiprock; and Roger Gerard, So. Portland.

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FAIRCHILD
HORIZONS



On the cover . . .

A photograph taken by Phil Haas, Assistant Treasurer, Corporate, Mountain View took **Best of Show** and **first place** in the **people** category in the 1974 HORIZONS photo contest. The original is a color print, so a bit of imagination is required to visualize it in its full glory.

Other photographs which claimed prizes or honorable mention in the contest are shown on pages 11 and 12.

Obviously the winners in the contest were the result of thought and planning on the part of the employee-photographers. Excellent photographs, much like any other accomplishment, take some strategizing. And that—planning and strategy—is the theme of this month's issue.

Fairchild's salespersons manage their time as though it is their greatest asset—because it is. See this and the following page.

—Space and Defense prepares its products for almost anything. Pages three and four.

—Products that will appear on the market well into the future will result from planning that is being conducted at Fairchild today. Pages five and six.

—Having a well developed plan in mind has helped or is helping some employees to realize some sought after objectives. Pages six to eight.

Vol. 3, No. 5
September-October, 1974

Fairchild HORIZONS

published for the employees of the Fairchild Camera and Instrument Corporation.

Editor: Veronica Kane

Correspondents: Peg Schinnerer, IPD; Ruth Miller, SDS; Rhoda Tennis, World Magnetics; Caryl Gates, Systems Technology; Adam St. James, Inland Mfg. Co.; Bob Feld, San Rafael; Nancy Bohnet, Wiesbaden; John Houston, Australia; M. Kimura, Tokyo; M. K. Choi, Korea; S. K. Sze, Hong Kong; Miss Jamilah Bte. Razak, Singapore; Jack Coyne, Shiprock; and Bill Snow, So. Portland.

HORIZONS is printed on recycled paper.

Making Every Minute Count

Time, the salesperson's greatest asset, is planned and managed to get the most from every work day

He sits in the lobby of a major customer facility looking across the narrow expanse that separates two rows of visitors' chairs and directly into the eyes of one of his competitors.

Scenes similar to this are repeated at Fairchild customers' facilities throughout the world almost every working day. The Fairchild salesperson—and the competition—are waiting to see the customer representative who can influence the purchase of semiconductor products.

This salesperson is Phil Lulewicz, who works out of Fairchild's Santa Clara, California, office. Phil can't be categorized as a typical field salesperson, because there is no pat set of characteristics that describe members of Fairchild's sales force. However, Phil represents all Fairchild salespersons when he makes the rounds of his key customers.

Vital to Phil's job, in addition to product knowledge and a pleasant personality, are a car and a small black notebook. Salespersons like Phil, who are responsible for a number of accounts, often can measure their accomplishments by the number of times they climb in and out of the car each day, or simply by the jottings in their notebooks. "Time," Phil says, "is the greatest asset a salesperson has. The more people you can see in a day, the greater your chances of getting whatever orders are out there."

Phil carefully logs every promise he's made and every appointment he's set. He refers to his little black book just before he enters a customer's facility. He quickly checks all notations he has made about that company—follow-up that's needed, promises made that have yet to be fulfilled, new names added to his list of key people who influence where a company's future orders for semiconductor devices will go . . .

A promised catalog comes out of the trunk and Phil walks briskly into the lobby. On this day, he is calling on

an engineer to discuss a Fairchild product that fits into one of the customer's new product designs. Being "designed in" is a semiconductor salesperson's greatest ambition.

"If you can get a Fairchild product into the initial design for a product, half the sales battle is won," Phil says. "It is your product that will be requested each time the product goes into manufacture. The other half of the battle is to deliver the product in quantity, quality, and at the time and price the customer demands. If you can't, someone else will. You never forget that this is a highly competitive business because a competitor's sales representative is there almost every time you cross a customer's lobby."

At his next stop, Phil calls on a purchasing agent, the individual who handles the placement of component orders in most medium and large companies. "Here," Phil says, "is where a company's reputation comes in. If you have had difficulty with quality or delivery in the past, that is going to be factored into every decision this buyer will make regarding placement of future orders. Even after a long, successful relationship, a single delayed delivery remains in the customer's mind long after all thoughts of hundreds of on-time, quality, cost competitive products have faded.

"Fairchild's attempts to respond to the needs of all customers during the past year when orders were so greatly backlogged is often paying off during this slow economic period. Though the temptation to take only the large and most profitable orders was great when the demand for devices outstripped supply, Fairchild continued to concentrate on smaller customers as well as the so-called major accounts. That service is remembered by many small customers."

The typical morning moves quickly. Phil visits four customers before heading back to the office to check on phone messages. "I really begrudge my time in the office because I shouldn't spend more than three or four hours a week at the desk during normal work hours. You can become glued to that chair. One phone call leads to another. You get on the line to the factory. A job you believed would take an hour stretches into two. All the while your most valued commodity—time—is slipping away.



Phil (right) with Gary Voget discussing some of Microtest Systems' latest projects.

"For a salesperson to get the most out of every work day demands the complete support of the people at the plant. We don't have the answers," Phil says, "we can only attempt to get the answers from the factory. The faster we can obtain those answers, the more time we can spend in the field. Fairchild people in marketing, production control and customer service are generally very responsive to the needs of the sales force. The urgency with which requests from sales personnel are handled, I believe, has a direct relationship to the share of market a company realizes."

It's lunch time. But that doesn't necessarily mean a respite from the sales job. Phil often lunches with a customer to talk about potential orders or current problems. Today's companion is Gary Voget, Fairchild-salesman-turned-Fairchild-customer. Gary was a member of the Fairchild semiconductor sales force for more than two years before going into business for himself. As founder and president of Microtest Systems, a company that tests semiconductor devices for some of the San Francisco Bay Area's major users and builds environmental test chambers, Gary is also a customer of Fairchild's Systems Technology Division. "With all the exposure to small- and medium-sized accounts I had as a Fairchild salesman," Gary says, "I had very little idea of what the world looked like from the customer's viewpoint."

Next on the schedule is a company in which Phil has had an up-hill battle to establish Fairchild as a prime vendor.

"The purchasing agent," he says, "had a poor experience with Fairchild on a delivery a number of years ago. Fairchild tries harder than anyone to serve its customers, but one slip can



Phil reviews some product bids with Wayne Evans, components buyer for Memorex Corporation.

haunt you for years."

The meeting goes well. In the usually unseen side of sales, Phil, the purchasing agent and one of the company's expeditors carefully check rows of order numbers noting the status of each. Phil has done his homework and leaves the customer's facility with a purchase contract for devices which will represent orders of more than \$300,000 over the next year. "That is real proof that we have re-established ourselves with that company," Phil says.

It's on to another major customer to confront a problem about product specifications. That resolved favorably, there's time for another stop which yields several orders. "We have a great deal of leverage with our customers because of our broad product line. We offer almost one-stop shopping."

Phil's final call is a long-shot. He knows this customer is encountering difficulty with a competitor's products. If the samples in his briefcase can overcome the problem, there's a good chance that another Fairchild product line will find its way into this company's peripheral systems. (At the time Horizons went to press, this company had begun ordering Fairchild photo transistors.)

Traffic is heavy on the freeway as Phil joins the stream of cars heading toward home. But, Phil's destination is not home, it's the office. There, in the hour or so after the phones have quieted, he reviews all the notes he has collected, establishing appointment schedules for the days ahead and a long list of questions for which he must seek answers. He classifies the past 11 hours as a "good day." There are no in-between days for Fairchild salespeople. "You either get the orders or you don't."

Planning For Almost Everything

Space and Defense goes to shocking lengths to test its products

When a Space and Defense Systems Division project engineer delivers a new aerial camera to the environmental testing laboratory, it is with reluctance that he or she relinquishes the precious prototype into the eager hands of the lab crew. For good reason. That carefully designed and constructed camera is about to be "shocked."

The staff of the Environmental Test Center, managed by Marvin Rosenberg, is less than affectionately known as Marvin's Marauders by the engineers and designers at that Division. Members of the lab have earned that title as the result of the countless hours of abuse they have inflicted on cameras and related products.

You want to know if that new camera design can withstand freezing temperatures while attached to the underbelly of an aircraft travelling 500 mph? Ask Marvin. He won't speculate on the answer. He and his staff will simulate the environment and subject the camera to the maximum stress this set of conditions can inflict. Then, the laboratory crew will put the camera into operation expecting it to perform to its specified level. Usually, it will. The Space and Defense Systems Division has more than 50 years of experience in the design and construction of cameras that are expected to operate in the most hostile of environments and this experience can thwart even the most ghoulish acts performed by the environmental test crew.

In defense of his actions and those of the members of his staff, Marvin states, "We never put the cameras to any more punishment than they will be expected to endure performing

(continued)

their assignments in aerial mapping and reconnaissance applications."

On those assignments, however, the cameras may encounter everything from severe vibration, extreme shocks at take-off and landing, radical temperatures, and in the case of cameras used in space study projects, an environment without air.

But no conceivable conditions are out of the realm of re-creation by the especially constructed instruments of torture maintained in the environmental lab. There are vacuum chambers that can cool or bake a product from -300° to $+300^{\circ}\text{F}$; a vibration laboratory with its computer controlled machines that can shake loose any screw, bolt or component that is not absolutely secure; and an enclosed centrifuge the size of a backyard swimming pool whose sole purpose is to spin Space and Defense Systems products at dizzying speeds while the lab crew watches the inside action by means of closed circuit television. For a double dose of stress, the lab operates a temperature/vibration chamber that can freeze or roast a product all the while it bounces to the programmed rhythm of the vibration equipment.

"In developing a test program for any product," Marv says, "we tailor the tests to the situation in which the camera will be used. A test schedule might include limited exposure to humidity, temperature and physical shock if the equipment will operate in a comparatively unstressful environment or it may stretch to the lengthy test program developed for the cameras used in the Apollo mission. For that project, we built a chamber which duplicated the environment 300 miles into outer space. We operated the cameras in this environment 24 hours a day, seven days a week, for more than one month. The cameras, which were among the most important equipment in the Apollo space study, could not fail. We subjected them to every stress they would encounter in actual performance. We used a step-by-step procedure which simulated actual operation aboard the space craft. If ever a knob or dial was operated out of sequence, we stopped the testing and began again. Each step in the lengthy check-out process on the Apollo camera was carefully

documented, resulting in approximately 160 pages of computer-generated test data which was delivered to the Cape with each of the cameras.

"There's a perfect test schedule somewhere between shaking out all of the possible failures and actually damaging the equipment by subjecting it to stresses beyond what it would ever encounter in operation," Marv says. "Under many contracts, the customer has determined the test needs and we carry out the instructions to the letter. At other times we are asked, supplied with knowledge of the ultimate use of the product, to develop a reasonable test program which will ensure product reliability without straining the equip-

ment beyond its expectations."

Developing a recent environmental check-out plan for an analog-to-digital converter to be used aboard U.S. Navy planes, it was determined that more than 400 hours of temperature and vibration tests would be required to assure that the converter would reliably perform to specifications in the environment of the aircraft.

"Our job," Marv says, "is to make the product more reliable; to shake out all the possible failures while the product is still in the lab."

The Space and Defense Systems engineers and designers know what the lab's job is, but that does not ease their reluctance in handing over their precious products to the brutality of the Environmental Lab's tests.



Marvin Rosenberg, leader of Marvin's Marauders, by one of the carefully constructed torture chambers used to test Space and Defense products. The ovens shown are used for temperature-humidity trials.



A room-size vibration machine shakes down products before they are delivered to the customer.



Much of the equipment used in the Environmental Lab is controlled by computer for maximum efficiency. The sophisticated testing facility was capable of preparing a camera system for the Apollo mission.

Product Projections

tomorrow's products take shape today in Fairchild's plans

A microprocessor will be a key element in a system that will be pressed into service in over-the-counter food service establishments, in department stores and at super-market counters.

This electronic wizard will be capable of reading the price of an item, entering it in a cash register, totalling the entire purchase including tax, presenting the purchaser with a receipt and, at the same time, logging the sale in the store's accounting system and adjusting inventory records. All this capability will be available to retailers and others who can use its benefits for approximately \$50 a unit.

When microprocessor systems begin appearing on sales counters in large numbers, Fairchild semiconductors will be there. Fairchild products will also be in new generation computers which are still on the drawing boards,

in new applications in automobiles, in digital watches... Fairchild will be ready with semiconductor devices to fill the needs of new and changing electronics systems and other products because of planning that occurred one, two, three, four and more years before these products appeared on the market.

Fairchild's semiconductor marketing managers, who are responsible for this planning, spend a good deal of time looking into the future. In discussions with key customers, they're interested not only in today's order, but they want to know where the customer is headed. What's surfacing in the R&D lab? What new demands will be made on semiconductors? Will tomorrow's devices be required to be faster, capable of storing more information, smaller, more complex?

"Our key customers are very candid about discussing their product plans with us," Lowell Turriff, *Digital Products Division marketing manager*, says. "This relationship stems from our mutual dependence. Major projects that they have in the concept stage usually rely on the availability of devices with specific performance characteristics to bring those concepts into operating hardware."

"MOS products," Elvet Moore, *marketing manager for that division*, says, "require a different strategy than planning for other lines. Ours is a

new technology and much of our future product line will depend on how fast and in what direction we move that technology. We want to develop a broad line of standard MOS products that serve potentially large markets. The microprocessor market is a perfect example of this approach. Only a few types of chips will be required for microprocessors capable of serving many different functions." There are numerous opportunities available to us," Ray Gouldsberry, *marketing manager for Transistor Division*, says, "but under close scrutiny we can narrow those opportunities down to a relatively few that contain the potential we're seeking. We're after large markets which will demand volume production of standard products."

"Information," Ralph Miller, *Opto-electronics marketing manager*, says, "is the fuel that feeds our planning. Everyone in a position to understand and interpret market movement, from Dr. Hogan and Wilf Corrigan, to the newest field salesperson is a source of feedback that helps to bring our future product plans into closer focus."

"There are two forces creating new markets for semiconductors," Gouldsberry says. "Improving and new technology on one hand makes possible new products, and the ability of semiconductors to reduce the cost of electronic systems continually opens entire new applications for devices."

Industry and economic forecasts, new areas that will be developed, technological trends, identified customer needs, expected cost reductions come together in shaping five-year product plans. Overriding all of this information is the general direction each of the divisions has charted for itself. Knowing that it is impossible to be all things to all possible customers, each of the divisions maps out a course that is designed to lead it in the most rewarding direction.

"Looking back," Turriff says, "over the recent history, we realize that many of the industry's long-range forecasts for growth were conservative. Market growth over the past several years has surpassed even the greatest expectations."

Yet, even with this history, product planners tend to be skeptical about the future for any market or product. "You continue to question," Gouldsberry says, "and if there is a soft spot in any of your forecasts, you'll uncover it if you confront it with the right questions."

"You can't think in confining terms,"



Lowell Turriff



Elvet Moore



Ralph Miller



Frank Haneman



Lee Schank



Ray Gouldsberry

Above, IPD projectors take shape in cardboard models years before they will appear on the market.

Turriff says, "if you are to benefit from the opportunities that are available to us. I always think of the guy who, in 1909, thought it was time to close the U.S. Patent Office because everything had already been invented. You only have to look at the new markets for semiconductors that have opened up in recent years—automotive, the hand-held calculator, digital watches, and even new areas within the television industry—to remind yourself that opportunities that lie ahead are just as great as those that have occurred in the past. Product planning," he says, "requires imagination and optimism tempered by all the information you can obtain."

The job of planning for the Federal Systems Group is far different than that of Semiconductor product planners. Though both organizations use the same basic information on economic forecasts and market analysis supplied by the Market Research and Planning Department, Frank Haneman, director of planning for Federal Systems, must analyze the direction of diversified products and engineering capabilities that are aimed at equally diversified markets. He relies on information obtained from the Division's marketing staff and international sales agents in plotting the future for some of the Group's large systems which are usually sold to government agencies. "We do not have what could be called a standard product line. We receive repeat orders on some of our camera systems, but for the most part we work on large custom projects. Much of our work comes from U.S. and foreign governments. Many of the projects we eventually receive are in the planning stage years in advance of the time proposals are solicited, so we depend heavily on our marketing and sales people for information on what government agencies are considering in areas that could directly affect our business. Usually long before requests for bid on the projects have been sent out, we have already analyzed whether or not we would be interested in the project. Balancing the problems we can identify against the benefits the contract offers, we decide in advance if we're interested."

A great boost in long-range planning for some areas of the Federal Systems Group is Fairchild's reputation in its markets. Thoughts of aerial camera and related systems and Fairchild are synonymous in the minds of most of the people throughout the world who would influence the purchase of such equipment.

Entry into new markets, such as the

potential applications for the miniature television camera which uses CCD technology, has prompted Frank and other Group planners to begin looking to other sources for information which will help to determine the size and scope of the market for these products.

"We believed, for instance, that there is a growing requirement for security and surveillance systems in industry and commercial applications as a result of inquiries we have received on our capabilities in this area. Market surveys conducted by the Market Research and Planning Department helped to confirm the trend we were seeing."

In the Industrial Products Division, the Fairchild line of audio-visual products is not only planned years in advance, marketing and division management knows what the division's a/v products will look like at least two years before they go on the market. Lee Schank, operations manager, explains that the product development cycle for IPD's rear screen projectors is usually three years from design to appearance on the market. "This division can usually depend on its well developed knowledge of its markets in product planning for its audio-visual and aircraft products. By keeping an eye on our competition and through customer surveys we can define what will be demanded in the next generation of products or in entirely new models. For audio-visual products, the usual market life is five to seven years from introduction to retirement," he says. "Of course, there are new model overlaps during that time. We must continue to refine and improve our products to maintain visibility with our customers. In systems designed for the aircraft industry, the product planning approach is a little different. Here we have a well defined body of customers. Communication of changing need is almost instantaneous. If an airline is looking for a new kind of tape recording/announcement system or requires a special weight and balance system, we know about it immediately. Whether we'll design and build the system that's needed depends on the results of surveys to determine what other applications it would have and if it would be economically reasonable for us to devote the amount of engineering and manufacturing time it would require."

To be there with the right products at the time when the market is ready for them, keeps Fairchild's product planners looking into the future.

Personal Planning

personal strategies center around retirement, education and home building

So you've made plans for your education, your career, your children and their educations. You can finally relax. Right? No, there's still one very important plan that must be created. Your plan for retirement.

"Don't let age 60 or 65 come as a shock," Ed and Marge Walewski of the Space and Defense Systems Division, advise. "Fulfilling and rewarding retirement years are going to require some planning." A material controller at SDS, Ed has 24 years of service with Fairchild. Marge, an engineering aide, has passed her 15th anniversary with the company. At the end of their lengthy employment, they intend to find second careers as satisfied retirees. They'll help to make retirement rewarding, they believe, with well mapped-out plans.

Still more than 10 years from the usual retirement date, the Walewskis are already putting their finances in order and deciding what they'll do with their leisure time after they give up the world of work.

Ed advises that everyone nearing the age of 55 begin financial planning for retirement, attempting to direct some earnings into savings or investments that will provide income after the weekly paycheck stops. In addition to regular savings, the Walewskis are purchasing U.S. Savings Bonds regularly through the payroll deduction plan offered by Fairchild.



Ed and Marge Walewski

But money isn't going to be the only concern after retirement, they say. You'll have many decisions to make—should you stay put in your present community or should you retire to an area in which you've always dreamed of living?

The Walewskis have chosen the second alternative. They've purchased two waterfront lots in Florida for their retirement. One will be used as a site for their home; the second as an investment. The Walewskis have tested the Florida life-style on vacation and find it very agreeable. "Don't make plans to go to an entirely new area for retirement," Ed says, "until you've given it a good trial before you make any permanent moves."

Most important in preparing for retirement, Ed believes, is developing interests which will put new free time to good and satisfying use. "Don't wait until you're 65 to start joining clubs and developing hobbies—get those interests going well beforehand."



Charlie Michel and home

The objective—to live and raise his family in a rural setting. The plan—to give up his job in Manhattan, to sell his house in Queens and to build the home he long envisioned.

For Charlie Michel, budget manager at the Space and Defense Systems Division, this objective meant a radical upheaval in life style. As a budget manager for a major company in New York City with a pleasant home within easy commute plus all the cultural amenities of Manhattan, it took some soul-searching before Charlie and his wife, Helga, made their move. The press of urban life, its struggles and tensions, loomed even more negative from the first time the Michels entertained the idea of living in a rural setting.

The community they settled on was one of the most remote they could

find on Long Island—Southold; the eastern tip of the Island. There they found the exact water setting they wanted, surrounded by 60 acres of bird sanctuary.

The real planning then began. Employment had to be found in Southold and Charlie became a business teacher at the local high school. The house in Queens had to be sold and the Michels found a buyer within days after the "for sale" sign went up. A temporary house was purchased in Southold, because there were no rentals available.

The city Michels became the country Michels within a few months after establishing their objective.

Still there was the house to design, and to build within a firmly established and not very liberal budget. But the Michels did not compromise their dreams. They sought the best architect for contemporary houses, one who understood their vision—yards of glass, natural materials, interesting angles...

During construction, which stretched over a year, the Michels acted as their own contractor, scheduling framers, plumbers, and electricians. They also served as construction aides, pounding nails, staining natural cedar to preserve it, and puzzling out the problem of a basement that flooded with the whims of the tides.

Meanwhile Charlie's stamina as a teacher was being tested. The remembered life as a member of a corporation's financial staff was cherished in comparison to his assignment in the classroom. Soon he found himself traveling west on the Island seeking employment. He joined Fairchild in Syosset, 70 miles away in order to return to the life of corporate finance as the Space and Defense Division budget manager. The 140-mile commute wasn't in his original plans, but he believes even the best laid plans must be subject to alteration.

He's achieved his objective: A rural life for his family... "It is an emotional experience every time I go home... I've become a bird-watcher. Even after a long day at the office, I spend a half an hour or so relishing the tranquility of our home's surroundings." The house itself has earned a great deal of recognition, appearing in such publications as *Architectural*

Record and *Interiors*. Charlie recently even received a copy of a Japanese publication which featured the house.

As for the three-hour round trip commute? "All that quiet time on the road gives me more time for planning."



Bert Pollick

"It's a rather shattering experience to realize midway in your career that you haven't kept pace with your field," Bert Pollick, Chief Avionics Engineer, of the Industrial Products Division, says. "The young engineers make you realize that you haven't kept abreast of new technologies."

Once Bert recognized that mechanical engineering had moved faster than he had, he developed a plan to catch up. He decided to resume work on a master's degree; study that had been allowed to drop some 20 years before because of career pressures.

For Bert, then in his late 40s, returning to school required learning to study again.

"It was one of the hardest assessments and decisions I ever had to make," he says. Enrolling in Brooklyn Polytechnic Institute three years ago, Bert had to give up almost all social life. "This was the same way I went through undergraduate school," he says, "working full-time, attending classes at night and attempting to find a little time for my family commitments. It was more difficult this time, however, because I had forgotten how to study, and had to spend more time with my books than the other, younger students enrolled in the graduate program in mechanical engineering. It was difficult to ask my wife to again be patient with the demands of school since this was the way in which we spent our early married years."

Along with his prime objective of obtaining intellectual refreshment at mid-career, Bert set a sub-goal—to complete graduate school before his eldest son received his master's degree. Bert achieved both objectives in June, 1973. His son Gary will receive his master's in psychology in June, 1975.



Georgia Washington

With two of her three children in college, Georgia Washington decided it was time to make school a family affair. For the first time in her adult life, family responsibilities were lessening, allowing her the time to devote attention to her own self-development.

With a promise of support with home chores from her oldest daughter, Georgia decided that she would enroll at Foothill College as a freshman in September, 1974. "It was time to begin making plans for my future," Georgia says. "I have as much of my work life ahead as I have behind me, and I don't want to leave my career of the next 20 years to chance as I did the first 20."

Georgia, in order to help a sister finance her education in nursing, went to work right after she graduated from high school. She worked in women's clothing shops in San Francisco and Palo Alto up to and following her marriage and the birth of her two eldest children.

Restless for a change of pace, she followed up on a friend's suggestion

that she look into employment opportunities at Fairchild. That was in 1960.

Beginning as a die plater and sorter, Georgia, by 1969, had worked up to electronic technician and, in that year, she was promoted to skills training specialist for the R&D plant. In 1970, a Skills Training Department was formed to support the training needs of the semiconductor operations and Georgia joined the new organization at semiconductor headquarters in Mountain View.

Recently, Georgia was assigned to the Bipolar Memory Division, with responsibility for developing programs and supervising training for that Division's production employees.

"Though I have had a number of promotions with Fairchild, I realized that I could not progress much further with the company until I obtained a college degree," Georgia says.

School won't be a new experience for Georgia. She has been both student and teacher throughout the years she's been employed by Fairchild. To expand her knowledge of electronics, she has taken numerous job-related courses through adult education programs and at local colleges. Her skills as a trainer in semiconductor processing have been recognized and pressed into service by the San Jose Regional Vocational Center where, for the past three years, she has served as an instructor in its electronics programs.

Returning to school to work toward a degree required a great deal of planning for Georgia. "I had to wait until my children were established in their own education knowing that a

working mother who is also a college student would create an additional burden on our household." Following a family conference, it was decided that now was the time that mom should go back to school. "I plan to take as many courses as I can at Fairchild in the program offered at the Career Center in cooperation with Foothill College. The classes at the Center begin and end earlier than those on campus, allowing me to arrive home at a reasonable hour."

Georgia faces five or more years of evening courses to qualify for a bachelor's degree. The time it will take to earn a degree is not the greatest challenge Georgia believes she confronts. "I think keeping pace with the young students who will be in my classes is going to be difficult. I'm happy that I've continued to take courses over the past 10 years, so that cracking the books won't come as a total shock. I believe that the discipline I've developed in my work will be very helpful in constructing good study habits."

Georgia has watched friends her age face with dread the thought of children who are growing up and becoming independent. She says she has witnessed the shock with which many women greet the end of the phase of their lives that centers around children and the beginning of another, if they have not made plans for the transition. "There's a great deal of your life left after your family is grown," Georgia says. "These should be rewarding, productive and contributory years if you plan for them."



Ron Nelson

Planning and striving need not be directed only toward lofty goals. Many people create and nurture plans that lead toward objectives that have nothing to do with so-called serious ambitions. Ron Nelson, Production Control Supervisor, Systems Technology Division, discusses his plans a bit sheepishly. First on his list of hoped-for attainments is to continuously outpace that 14-year-old girl

who takes the lead as often as not in Bay Area races in which he and she are entered. Next, is to build his stamina to the point that he can compete in the 26-mile Boston Marathon, the single most challenging event for cross-country runners.

A news item on the rules for the 1974 Bay to Breakers race in San Francisco stirred Ron's memories of high school track meets and so he entered. He covered the course, which takes runners over a 7.8 mile route from Fishermen's Wharf through Golden Gate Park and out to the ocean, in 57.3 minutes, finishing 1296th in a field of more than 5,000 entrants.

From that day to this, more than five months, Ron jogs five miles every other evening and covers at least 20 miles on Saturday, building endurance to improve his performance. In the

meanwhile, he enters other local competitions and often finds he is running shoulder to shoulder with this tiny, 14-year-old girl who, 50 percent of the time, kicks ahead of him at the finish line. While he's attempting to outpace the teenager, he's receiving the benefit of increased physical fitness.

Ron's only complaint with jogging is that, aside from races, it is usually a lonely pursuit. He's remedied that somewhat by joining the West Valley Joggers and Striders, who meet each Saturday and center their running around intra-club contests of speed and stamina. Enough of those Saturday work-outs and Ron's sure to out-distance that little girl. But, by then, her thoughts may have turned to other things.

W. J. Corrigan Named President, C. L. Hogan Vice Chairman



Wilfred J. Corrigan

Walter Burke, chairman of the Fairchild board of directors on July 16 announced the election of Wilfred J. Corrigan as president and chief executive officer, and C. Lester Hogan as vice chairman of the board.

Corrigan had been executive vice president—Commercial and Component Operations and a director since 1973. He joined Fairchild in 1968, becoming vice president in 1970 and group general manager for Semiconductor Components a year later.

In his new position, Corrigan has executive responsibility for world-wide activities of Fairchild



C. Lester Hogan

Camera and Instrument Corporation, Mr. Burke said.

Dr. Hogan, who has been president and a director of Fairchild since he joined the company in 1968, will continue, as vice chairman and director, to participate in the formulation of corporate policy and will represent Fairchild in major business and governmental forums.

Before joining Fairchild as group director of discrete devices, Corrigan headed various product and operations groups at Motorola Semiconductor. He holds a B.S. degree in chemical engineering from the Imperial College of Science, London.

David Marriott Elected Vice President

David J. Marriott, general manager of the International Division on August 22 was elected a vice president of the corporation, it was announced by Wilfred J. Corrigan, president and chief executive officer.



Marriott, who joined Fairchild in 1965, has been in charge of international operations for semiconductor components since December 1973. Prior to that he served for two years as general manager of European semiconductor operations, and previously headed the company's diode manufacturing plant in San Rafael, Calif.

R. Douglas Norby Named Vice President-Finance



R. Douglas Norby has been elected vice president-finance for Fairchild, it was announced on September 10 by Wilfred J. Corrigan,

president and chief executive officer.

Norby, who previously was vice president of the First Chicago Corporation, will have responsibility for all financial functions of the company, Corrigan said. Reporting to him will be Henry C. Montgomery, vice president-controller, and Frank J. Schmieder, vice president-treasurer.

His prior experience includes five years as vice president-finance for Intel Corporation, and seven years as an associate and senior project manager of McKinsey and Co., Inc. He served earlier in financial positions at Standard Vacuum Oil Co. and Union Carbide Corp.

Norby graduated magna cum laude from Harvard College in 1957, and received his M.B.A. with distinction from Harvard Business School in 1959.

Product News

Bipolar Memory Division has added two full-military versions of 256 x 4-bit TTL programmable read-only memories to its line of high-speed bipolar memory products.

Bipolar Memory Division has introduced plastic packaged versions of three Isoplanar random access memories, including the 93415 TTL 1024-bit RAM.

MOS Products Division is sampling customers with evaluation quantities of the 2102 N-channel 1,024-bit static random access memory with access times as fast as 350 nanoseconds.

Fairchild is going into production with three speed-range versions of the 2102.

GERMANY GRANTS FAIRCHILD PATENT FOR PLANAR PROCESS—

The German patent office on August 1 granted Fairchild a patent on the company's Planar process for manufacturing semiconductor devices.

This final decision, made in Munich by the Court of Appeals of the

German Patent Office, established the Planar patent in Germany over the oppositions of eight opponents. Germany was the only remaining country to rule on the Planar patent.

Industrial Products Division has received a contract for purchase of 36 cockpit voice recorder systems from Belgium's Sabena Airlines. Deliveries started in August.

Sabena Airlines is a member of the ATLAS Group, a consortium of European airlines that includes Alitalia, Air France, Lufthansa, Sabena and Iberia.

Systems Technology Division has introduced two improved versions of its Sentry 500 and 600 automated, computer-controlled, integrated circuit test systems.

Designated the Sentry 510 and 610, each utilizes modular construction and common hardware. In addition, both use software and peripheral options that are compatible with other Sentry models, providing the optimum cost-to-test ratio.

All in the family

Parallel Paths for Transistor Engineers

When Sue Powell, product engineer for the Power Department of the Transistor Division, confronts a knotty problem in her work, she's likely to take it home with her. That's not unusual. For she can discuss it across the dinner table with her husband, Mike, who just happens to be a process engineer in the Small Signal Department of the same Fairchild division. Together they can come up with a solution, or at least an approach to pursue.

It's a reciprocal arrangement. Mike's work-related problems get equal airing in the Powell home.

"There's great comfort in having a sympathetic and knowledgeable person at home to discuss the day's work with," Sue says. "On the other hand, we have to be careful not to overdo it. We make an effort to turn the conversation away from Fairchild at times, because, if we did not, our work would become our entire lives."

Sue and Mike were recruited from Georgia Tech by Fairchild when they were in the final stages of completing their work toward masters degrees in physics. They talked with representatives of more than 15 companies on the Georgia Tech campus, and became intrigued by the semiconductor industry.

"We didn't interview as a team," Mike says, "but whoever was interviewed first would always say, 'the next person you're going to talk with is the person I'm going to marry.'"

"Our acceptance of a job offer was



Mike and Sue Powell

not based on the company taking the two of us, but we hoped that we would be able to find jobs with the same company."

Shortly after the campus interviewing season was over, the Powells married, and accepted offers to visit several companies' facilities, including Fairchild. "Fairchild was our first choice, and when the company offered both of us jobs, we accepted immediately."

Now fully caught up in production-related engineering, the Powells say that engineering in industry is far different than what they envisioned as students. "It's a fast-paced learning experience," Mike says. "You encounter problems that require solutions now. We're getting experience that could never be gained in a classroom."

Both Powells plan to return to night classes in graduate school and there their parallel paths will part. Sue will work toward an MBA with the hope of moving into engineering management, while Mike will work toward a Ph.D. in physics, eventually planning to go into research.

CCD Demonstrates Memory Capability

Fairchild CCD technology will have the opportunity to demonstrate its memory capability as a result of a recent contract awarded to the Integrated Circuits Group by the Air Force Materials Lab at Wright Patterson Air Force base.

Fairchild buried channel CCD devices are currently in use in applications which demonstrate light sensing characteristics such as the miniature television camera capable of capturing images at low light levels which is produced at the Space and Defense Systems Division. Image sensors are also being pro-

duced and developed for use in optical character recognition, positioning sensing, slow-scan TV and facsimile applications.

The memory potential for CCD technology is even more far-reaching than image sensing. CCD's excellent storage density and potential low cost are expected to open many new memory applications. The devices are considered to be likely replacements for costly and cumbersome drum and disc storage media currently used in computer systems.

Under the approximate \$500,000 government contract, Fairchild will supply 16K and 32K CCD devices over the next two years for use in digital radar processor systems.

EEO Progress Reviewed; New Commitments Made

Wilfred J. Corrigan, Fairchild president and chief executive officer, recently reviewed the company's performance in equal employment for the past year. He noted significant progress in the employment of minority group members and in the advancement of women and minorities into professional assignments.

"The results of our Affirmative Action efforts last year indicate that Fairchild has considered equal employment laws in all of its actions relating to employees," Corrigan said. "However, we should not relax our commitments in this area. Because of the state of the economy, it may be more difficult to open new opportunities for women and minorities during the coming year."

"I therefore call on all Fairchild managers to use the same resourcefulness in meeting our obligations in this area as they exercise in addressing other business tasks."

Fairchild annually develops Affirmative Action plans for each of its U.S. facilities employing 50 or more persons. These plans outline efforts the company will make to increase the representation of minorities and women in jobs in which they are not found in numbers representative of the local area's workforce. Copies of these plans are available in Industrial Relations offices for review by any employee.

A Mrs. Without a Miss

Barbara Johnson, production controller, Quality Assurance, South Portland plant, celebrated her tenth anniversary with Fairchild on July 27—a particularly notable event because Barbara has not missed a single day of work during that decade. Factor in that she is the mother of three children and her attendance achievement is particularly significant.

Barbara credits her remarkable record to the excellent health of her family and herself—"For which I am continually grateful." The most difficult obstacle she has had to overcome on her way to this perfect record is that "I-can't-get-out-of-bed-today" feeling. From lengthy experience she says, "Once your feet are on the floor, the willpower battle is won."

No one ever said it would be an easy job

Even so, the judges for the HORIZONS photo contest did not anticipate the level of difficulty that awaited them. Hundreds of photos flowed into the Employee Communications Office in Mountain View during late July and early August. Hundreds of beautiful, interesting, humorous, colorful, touching and dramatic pictures that demonstrated the talent and sensitivity of Fairchild amateur photographers. The challenge to select nine winners from among the multitude of magnificent pictures created hours of decision (and indecision), furrowed foreheads and frustration for the judges: Jim Carter, graphic designer; Ed Garrigues, photographer for Research and Development; and Mary Jean Kulus, technical illustrator.

There were pleas to extend the number of prizes, but the rules had already been firmly set. There were numerous almost-winners that managed to bring the judges to a temporary standstill before they reluctantly moved on to make the final selection of three top winners in each of three categories: People, Animals and Scenic.

The results of the agonizing appraisal:



SECOND PLACE—People
Eugene Domnique, Assembler B,
Mountain View
original: color print



SECOND PLACE—Animals
Rex Indra, Business Planner, MOS Products Division,
Mountain View, Calif.
original: color print



SECOND PLACE—Scenic
Herbert Knufken, Customer Service
Manager, Wiesbaden, Germany
original: color slide



FIRST PLACE—Scenic
Ray Gouldsberry, Product
Marketing Manager, Transistor
Division, Mountain View
original: black and white print



FIRST PLACE—Animals
Robert McCurry, Production
Planner, Digital Products Division
South Portland, Maine
original: color print



THIRD PLACE—Animals
James Johnson, Director of
 Engineering, Communications
 Equipment, Sunnyvale, California
 original: color print



FIRST HONORABLE MENTION—People
Phil Haas, Assistant Treasurer,
 Corporate, Mountain View
 original: black and white print

THIRD PLACE—People
Larry Anderson,
 Account Sales
 Representative,
 Inside Sales,
 Mountain View
 original: color print



THIRD PLACE—Scenic
Jurgen Meyer,
 Wiesbaden, Germany
 original: color print



SECOND HONORABLE MENTION—Scenic
Herbert Knufken, Customer Service
 Manager, Wiesbaden, Germany
 original: color slide

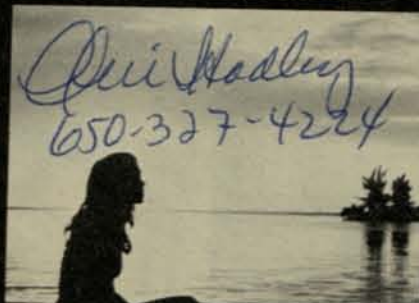


FIRST HONORABLE MENTION—Animals
Ray Gouldsberry, Product
 Marketing Manager, Transistor
 Division, Mountain View
 original: black and white print



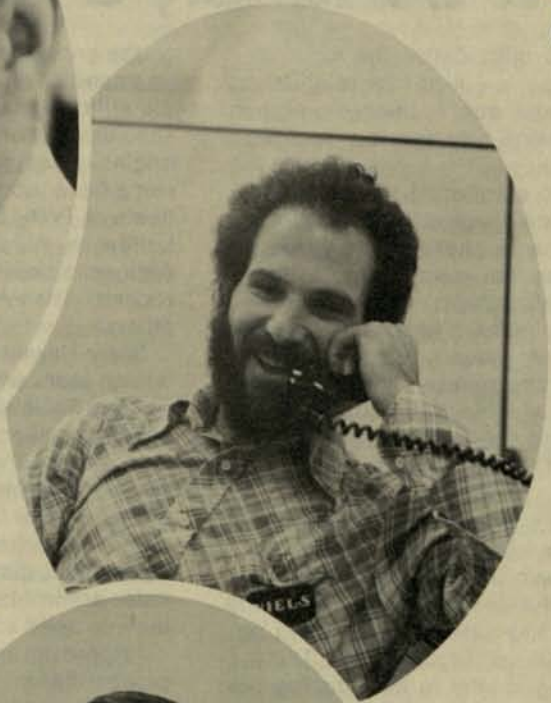
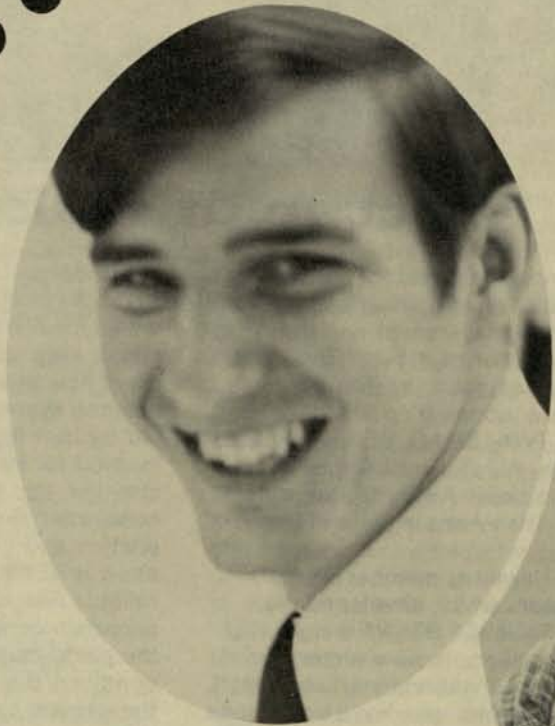
FIRST HONORABLE MENTION—Scenic
Ray Gouldsberry, Product
 Marketing Manager, Transistor
 Division, Mountain View
 original: black and white print

SECOND HONORABLE MENTION—People
Craig Newman, Electronic Tech-
 nician, Space and Defense Division,
 Syosset, New York
 original: color slide



SECOND HONORABLE MENTION—Animals
David Winterstein, Electronic
 Technician, Systems Technology
 Division, San Jose, California
 original: color slide

Chris Hadley
650-327-4224



Portrait of an Engineer P. 6-7



FAIRCHILD
HORIZONS

NOVEMBER-DECEMBER 1974



It's Planely a Matter of Balance

Everyone appreciates the value of balance . . . in human relationships, in business, in finances, and in the interaction between man and his environment.

From the standpoint of Fairchild products, nowhere is balance more critical than in aircraft. An overweight plane taxes fuel supplies and foils take-off calculations. Out of balance cargo may make it impossible to get a craft off the ground, or cause it to overshoot the runway. These are intolerable possibilities for the world's airlines and Fairchild's Industrial Products Division helps to solve this problem.

Without a doubt the most safety-conscious industry in the world, airlines have always depended on a careful examination of the cargo to supply the pilot with a reading on the plane's center of gravity. This calculation is vital in determining how to position the plane's tilt control surfaces for optimum lift at take-off.

In computing the center of gravity, airlines total the approximate weight of the cargo and passengers and review the distribution of the load to locate the approximate center of gravity. But approximate isn't good enough for many airlines. Though personnel are thoroughly trained and experienced in their jobs, the possibility of human error can lead to a mishap, so many lines have turned to technology to help assure that weight and balance readings are absolute.

In 1964, Pan Am came to Fairchild searching for a fail-safe system for weight and balance readings which would double-check human computations. Within a year, Fairchild had installed a unique system that uses electro-mechanical sensing to determine the center of gravity on freight carrying Pan Am planes.

At the press of a button in the cockpit, the pilot receives a reading

ON THE COVER: Engineers (top to bottom); Ray Trent, Niels Jackson, Al Arena and Terri Christensen represented four of the many engineering specialties within Fairchild.

on the gross weight of the loaded craft (in pounds or kilograms, depending on the airline's preference) and the absolute center of gravity. The system originally designed for Pan Am has since been mounted on planes in the fleets of TWA, BOAC, BEA, Air France, Lufthansa, Alitalia, Iran Air, Saudia Airlines, Kuwait Airlines, and, most recently, Irish-Aer Lingus and many others.

Barry Hawkins, member of the design team which developed the original Fairchild STAN* weight and balance system, is now a member of the Avionics Products marketing staff. He says few changes have been made in the original STAN concept over the past nine years, with the exception of the cockpit display. In 1972, the indicator control box was redesigned to include solid state electronic displays.

"Approximately five percent of the planes that can benefit from our system are equipped with it," Barry says, "so we still have vast market potential for the original STAN model as well as for a new system now being demonstrated for potential customers."

The new STAN model was developed after several competitive systems proved unsuccessful in Lockheed's *TM-FCIC

C-130 cargo craft.

The landing gear of the C-130, unlike most aircraft, is under unusual stress even while stationary, which plays havoc with any weight and balance system. Fairchild engineers, led by Bert Pollick, developed a method for introducing pressure changes into the struts of the gears, cushioning the plane and relieving stiction and friction on the gears to allow a STAN system to obtain a reliable weight reading, and thereby ascertain center of gravity. Bouncing the plane momentarily also serves to condition the landing gear in much the same way routine maintenance methods would.

The new STAN system is currently being tested on military aircraft and demonstrated for commercial users.

One of the Industrial Products Division's greatest sales points when its marketing personnel go calling on airlines to sell the STAN system is that 323 accidents in the past eight years have been traced to overweight or out-of-balance planes or incorrect center of gravity readings. During the same period, not a single plane equipped with STAN experienced a mishap resulting from inaccurate weight and balance information.

At top, members of the STAN engineering crew complete a successful early demonstration of the C-130 system for the Imperial Iranian Air Force. They are (left to right) Peter Knott, IIAF officer, Carl Palkovich and Dave Roush. Carl has since joined the Aviation marketing staff. Below, Bert Pollick examines the print-out of the multi-channel brush recorder that documents transducer signals during peak pressure testing of the C-130. At right, Barry Hawkins examines the C-130 STAN system in action.



The morning's paper tells you that the Gross National Product (GNP) has fallen for the third quarter in succession, there's a new government in France, and new housing starts are down. You register these facts in the section of your brain in which you store such information, fold up the paper and turn your thoughts to making semiconductors, or cameras, or aircraft recorders, or whatever Fairchild job demands your attention each day. Changes in GNP, international government or the state of the construction industry have little

The Futurists Taking some of the Surprise out of Tomorrow

relation to your immediate problems. Or do they?

Actually, these facts may mean something that relates directly to the manufacture and marketing of Fairchild products. The members of Fairchild's Market Research and Planning Department analyze what that influence might be. A change in the GNP often indicates that alterations will occur on the entire economic front. A new government anywhere in the world may be the harbinger of change in that country's import policies. An increase in new housing starts could mean that consumer spending is going up—spending which may increase purchases of consumer electronic products, which, in turn, means increased consumption of semiconductor devices.

Brian Brackle, Market Research and Planning director and his staff of economic and industry experts, therefore, read the daily newspaper a little differently than most people. Their job is to relate those occurrences in economics, politics and industry to Fairchild's future.

Computer Conversations

The information that pours into this Mountain View office is voluminous. It ranges from a field salesperson's observation of a change in customer buying patterns to a multi-page econometric computer model of the U.S. economy. The data, received from

many sources, is evaluated and placed in perspective to arrive at some reading on the future—for the economy, the electronic equipment industry, the semiconductor industry, or for Fairchild.

Market Research and Planning uses several approaches in attempting to determine business and economic directions. Among the most dramatic, and complex, is the use of econometric models, computer programs which simulate the entire economy or sectors of the economy.

The Market Research and Planning staff requests, via a computer terminal, a complete read-out on the forecasted economy from the econometric model located at Data Resources, Inc., in Lexington, Massachusetts. This information helps identify overall changes and trends which could influence the electronics industry. MR & P then factors in Fairchild's, and the industry's, experiences in the marketplace. A clearer picture emerges of what the economic implications to the company might be. This interaction between Fairchild and Lexington often occurs several times each week, particularly during periods of economic uncertainty. Assuming that a trend is identified and will continue, the MR & P staff can "request" model projections one, five or even 10 years into the future.

"We're not prophets," Brian says. "What we are is a group of economists, electrical engineers, and mathematicians with combined experience of more than 100 years in industry and more than 50 years in market research. We use the best forecasting tools available to attempt to discern the shape of our industry into the future."

Brian's staff also has constructed econometric computer models of its own that reflect the electronic equipment and the semiconductor industries. These computer models allow Fairchild to analyze general or more narrowly-based situations affecting the business.

Objective Opinions

But Market Research and Planning does not depend on computer conversations alone to develop its familiarity with the future. Polling industry experts on the probable changes in the semiconductor industry has proven effective in developing trend data. However, it is recognized that projections by any single person—even an industry expert—tend to be subjective. Personal biases often color views of the future. Therefore, after such a poll is completed, the MR & P staff digests the findings into

a single report, supplies the experts with feedback from the total poll and invites them to reassess their forecasts. "This takes some of the subjectivity out of individual projections," Brian explains.

Other methods used by the MR & P Department to forecast the future are interviews with the company's major customers and with other electronic component manufacturers to determine what directions other companies are taking.

Specific Studies

"The role of Market Research and Planning is to provide objective information on economic and industry trends; information on which management can base business plans. The department helps individual Fairchild operations as well. We can position our role in the future of a specific device market," Brian says. "In-depth analysis of specific market areas requires a good deal of the Department's attention. At times, we uncover a new product or market that appears to have great potential. If any of the company's divisions are interested in investigating this potential, we will conduct an analysis."

Forecasting is nothing new to industry. Any company that has survived a major onslaught of competition is familiar with distance planning which must include forecasting. There are, however, some new tools which take much of the intuition and subjective opinions out of forecasts.

Brian explains: "As researchers and planners we avoid imagining what the future will be. We prefer to let objective facts tell us what the future might contain."

LOOKING INTO THE FUTURE: Ken Taylor (left), Market Research manager; Brian Brackle (center), Market Research and Planning director; and Paul Wittrock, manager of Forecasting, discuss the future as predicted through the techniques used by the Fairchild Market Research and Planning Department.





Dr. Early



Ronnie Bacon



Ed Tiagha

Let's hear it from Fairchild

Almost every hour of every day, someone somewhere around the world is telling the Fairchild story to one or more interested listeners. Potential customers, members of the industries in which the company is involved, other organizations, and even residents of our communities are told of Fairchild's history, its past accomplishments, its current endeavors, its organization and procedures by the people who know the story best—the company's employees.

Invitations pour into Fairchild offices throughout the world asking that a company representative speak at a dinner, a convention, a seminar or in a classroom.

Some invitations that arrive in Fairchild offices are for formal and prestigious conferences, such as the letter received this fall by Dr. Thomas A. Longo, vice president and general manager, Integrated Circuits Group, requesting that he be a featured speaker at the Sixth International Congress on Microelectronics held in Munich, Germany, November 25 through 27. Invitations such as this recognize Fairchild's position in the semiconductor industry and the contributions that individuals such as Dr. Longo have made to advancing technology.

The press of business sometimes prevents an executive from fulfilling a speaking engagement he or she has accepted, but as in the case of Munich, another Fairchild representative of stature can be substituted. In Munich, Dr. James Early, director of the group's R & D organization, presented the paper he co-authored with Dr. Longo. The audience included representatives of most European and multinational electronics companies, including our competitors as well as our customers.

Hours of work go into the material

and visual aids in order to present concisely information useful to the attendees. For example, in his talk, Dr. Early used tables comparing our products with those of our competitors, diagrams illustrating the advantages of the Isoplanar process and photographs of many of Fairchild's technologically leading products. He used these to illustrate the advances in integrated circuit structures and processes which have been and are creating Fairchild leadership in product areas such as Isoplanar memory, Isoplanar emitter coupled logic, Isoplanar CMOS, low-powered Schottky T²L, and Isoplanar CCD.

"It is natural that this conference, in seeking a speaker on semiconductor technology, would come to Fairchild," Jim says. "Fairchild has been and is the leader in technological innovations.

"The benefits of participation in meetings such as the Munich Congress far outweigh the efforts of preparation and presentation. Telling the European customers directly and forcefully in a technical atmosphere about Fairchild's product technology and the advantages it offers to them should help us gain market position in Europe, both by bringing specific products to their attention and by giving them a sense of Fairchild's leadership in technology."

Technology is not the only Fairchild subject in which members of the public are interested. Many organizations, new and established, request a look at Fairchild procedures or a talk with specific personnel in order to help them shape their own organization, work flow patterns or personnel programs. Ronnie Bacon, secretary to Greg Reyes, vice president and general manager, Discrete Products Group, was invited to be a panelist at a professional development workshop in October conducted for secretaries

of the San Francisco Bay Area's Handicapped Rehabilitation facilities. Ronnie discussed secretarial procedures at Fairchild and how these methods could be adapted to bring new efficiencies to rehabilitation offices. "The secretaries who attended the seminar work under incredible pressure," Ronnie says, "and were eager to receive any tips they could get on organizing their jobs. I used Fairchild's secretarial manual as an example of how uniform procedures and policies can make the secretarial task in any office more efficient."

Ronnie also has been invited to share her knowledge with other members of the California rehabilitation facilities in January in Sacramento.

Students offer another worthwhile platform for Fairchild. Freshman engineering students at City College of New York recently learned "What it is like to be an engineer" from Ed Tiagha, staff engineer of the Space and Defense Systems Division, when he visited the campus early this fall. "Some of the beginning engineering students at CCNY are from minority groups," Ed says, "and do not have anyone within their families who can describe the engineer's job. I had an interested audience which asked many far-reaching questions about the future of engineering and the opportunities in our industry."

"I graduated from CCNY in 1972 so I remember vividly the apprehensions of leaving the classroom for industry," he says. "I hope I can give the students a clearer picture of what business is like than I had when I left the campus."

Meetings and conferences like these are frequent, and they are vehicles through which Fairchild people can both share and benefit by passing on the company's story to interested members of the public.

Some secretaries desert typewriters; Others shun phones and filing

Secretaries who do not have typewriters.

Managers who do not have secretaries.

This is the most visible evidence of Word Processing, a new concept at Fairchild, which seeks to bring new efficiency to the traditional secretary's role.

Established by the Controller's organization, two Word Processing centers now serve the members of that department at corporate headquarters. Instead of being assigned to a single person or section, Word Processing secretaries handle the clerical needs of dozens of persons.

Correspondence secretaries devote their work day to transcribing tapes, typing (keyboarding) reports and preparing letters for mailing. These office assignments take on a futuristic flavor when they are accomplished on a typewriter with a memory. This modern-day office aid links the familiar typewriter keyboard to a small computer which stores everything that has been typed. Revisions to reports can be accomplished in minutes or seconds. A magnetic card that contains the information in the original document is pulled from the file, played into the typewriter and only the sections that are to be revised require attention from the secretary.

In a financial organization where the same set of figures may be required for numerous different reports, the storage of common information greatly reduces repetitive typing.

Surveys conducted before and after the introduction of Word Processing reveals startling increases in productivity. One executive secretary, who

formerly produced 23 pages of typed material each day, increased her output to 37 pages per day with the aid of memory equipment.

But it isn't equipment alone that makes possible this new-found efficiency. Correspondence secretaries are relieved of many distractions. They are removed from phones, the demands of sorting and distributing mail, setting up meetings, filing, and all other non-typing chores. The correspondence secretaries are located in an office apart from the organization they serve. This enables them to devote total attention to producing correspondence and reports.

Administration secretaries can be identified by the absence of typewriters at their desks. They answer telephones, sort and route mail, deliver telephone messages, arrange meetings, maintain appointment schedules, greet visitors, proof-read, make copies of typed material and handle the myriad of duties that make up the vast and diversified assignment of the secretary.

Louise Preston, administrative secretary in one of the Word Processing Centers, says she felt lost without a typewriter during the first few days of the new office organization. But, as the only administration secretary in the Management Information Section, other duties which make up her job quickly took her mind off typing.

"Few personal services, such as phone answering, are handled for the managers and supervisors in our group as a result of the Word Processing concept," Louise says, "but this loss is minor in relation to the

benefits gained. I believe Word Processing has resulted in a better flow of work, increased productivity and generally a more professional approach to organizing and performing clerical support functions." Louise and one correspondence secretary handle all of the clerical work for the MIS staff of 60.

Marilyn Swift, one of those behind a typewriter in one of the Word Processing Centers serving the Controller's headquarters, says that the correspondence secretary's assignment appeals to persons, such as herself, who receive a great deal of satisfaction out of seeing the results of a productive day. "With Word Processing, every day is productive because correspondence secretaries are sheltered from the continual office distractions that can destroy the best work plan."

Even filing is treated with new respect with the Word Processing approach. A professional records specialist, Helen Kopas, is responsible for developing a system to serve the entire Controller's organization, collecting, actual filing and—the true test of effectiveness—retrieving documents on request.

The company's first two Word Processing Centers are being watched closely and measured for their overall contribution. Statistics and attitudes about Word Processing are being carefully weighed to determine if similar centers can bring more efficiency to other company organizations as well as greater job enrichment to the traditional secretarial assignment.

TWO VARIETIES—Word Processing secretaries come in two types—as exemplified by Marilyn Swift (left), correspondence secretary, and Louise Preston, administrative secretary. Other word processing pioneers in Mountain View are: Janice Knapton, Bonnie Littlefield, Mary Lain, Carol McCart, Sharon Palmer, Becky Quinn, Diane Schaeffer, Mary Voss, led by Word Processing manager, Sandy Edmonston and assisted by Helen Kopas, records specialist.



... and, here, in the midst of the action we have--The Fairchild Engineer

He can be found in a laboratory

She's at a design table

He's behind a desk

She's working on the production floor

He's dealing with customers

She's fresh from the campus

He has 37 Fairchild years behind him

She's a scientist who enjoys solitary assignments in the advance development lab

He's a bearded dynamo who delights in solving problems on the assembly floor

These people share two characteristics: they're hard to categorize and they're Fairchild engineers. They include Ray Trent of the Industrial Products Division, Al Arena of Space and Defense, Niels Jackson of the Transistor Division, Terri Christensen of Research and Development, and hundreds more like them. They claim an assortment of specialties: some are concerned with things electrical; others mechanical; some focus on keeping production running smoothly; others devote their energies to uncovering new products or applications. Some engineers even spend their days selling . . . telling customers how

Fairchild's products can do the job better than anything else on the market.

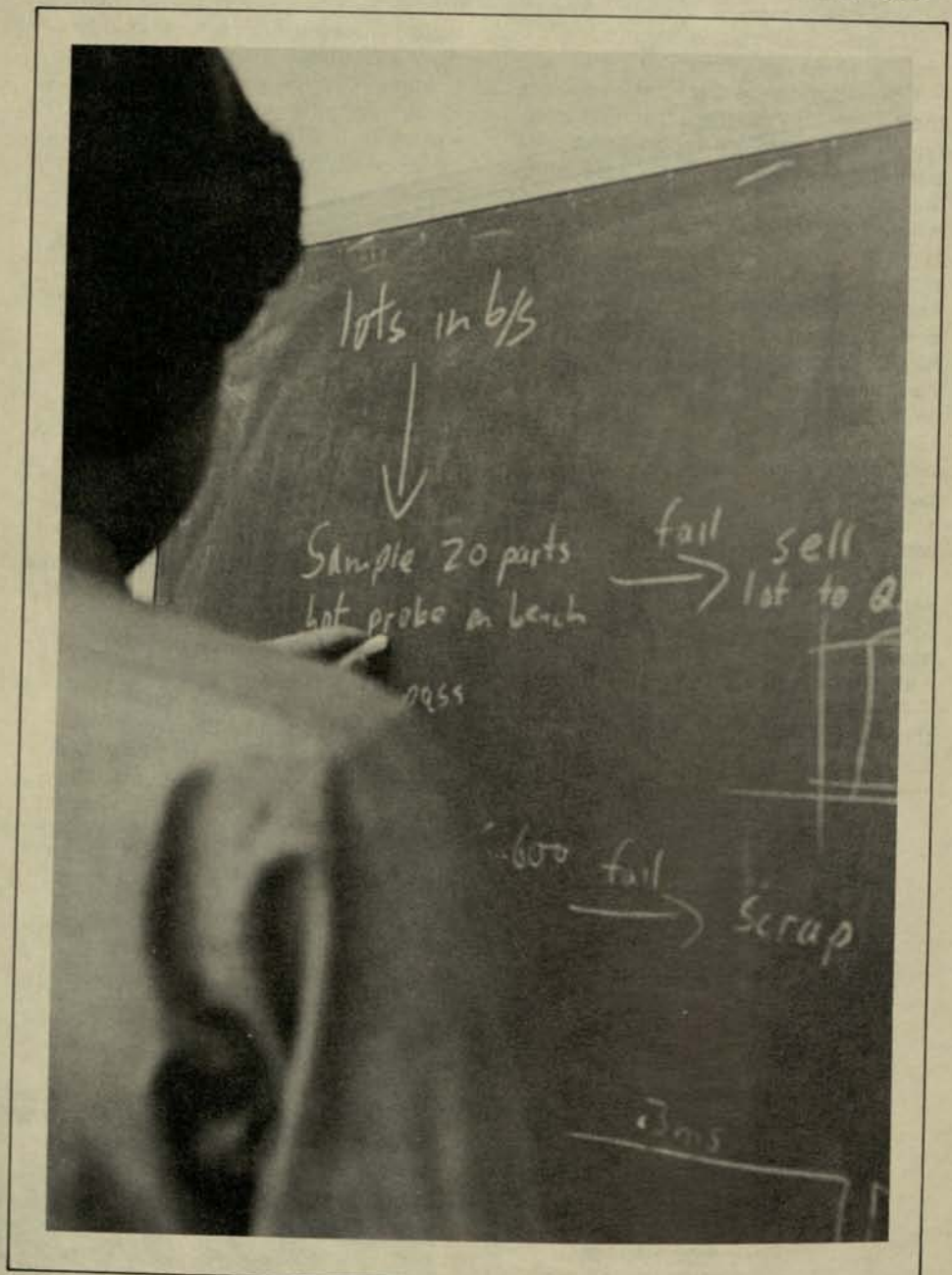
These people are the technical specialists around whom most Fairchild activities revolve. In an organization that bases its reputation and profit on its ability to advance technology and to produce highly complex products, an engineer is often in the middle of the action.

On their way to becoming vice presidents and general managers, the majority of Fairchild's top level

executives once held the title of engineer.

Attempts to get Fairchild engineers to reveal characteristics of their breed are difficult, but there is a third quality they also share: they thrive on the mental gymnastics of puzzling out problems to improve existing products and processes, as well as to bring things into being that never before existed.

Ray Trent's enthusiasm when he is ready to start a new project is representative of this trait that leads



men and women into engineering. Ray doesn't wait for flashes of genius before he settles down to the drawing board to begin designing new circuitry or control functions for Industrial Products Division's projectors and airborne equipment. "That kind of inspiration is rare," he says. Instead, he digs in, examines the project from a number of different angles, then narrows the possible approaches to the two or three most practical.

Ray's time is shared between his desk and the laboratory during the evolution of a new electronic design. The concept is detailed on paper, then brought to hardware in the lab. "We'll often develop three prototypes before selecting the most effective and reliable design for a new projector or system," he says. "Some ideas are great, but too costly. My first idea is often met with enthusiasm and the instruction, 'do the same at half the cost.'"

Ray emphasizes that few concepts work the first time they're tried. "If they did, I'd never learn anything." He adds that nothing spurs his interest more quickly than a task that is described as "virtually impossible."

Economics and Deadlines

Al Arena was a fledgling engineer with Fairchild 37 years ago, and he admits his management outlook has matured over the years. "I apply the same pressures and make the same demands my supervisors did when I entered engineering. There are the deadlines and the economics that simply can't be ignored. When I began my career, I believed that my managers and supervisors were unnecessarily demanding. Yet, I'm a much tougher supervisor than anyone for whom I ever worked.

"All of our engineering projects at Space and Defense must be completed against deadlines. I enjoy the time and money pressures. When you bring a project in on deadline, within budget, it provides a yardstick against which to measure success. No matter how we complain about pressure and dream about projects that have no time and price limitations, most engineers realize that the primary challenge is to develop a competitive product in a set period of time."

Production Harmony

The hum of a smooth running production line is the most soothing sound in the world to Niels Jackson. But it takes hundreds of variables working in concert to achieve it. As supervisor of production engineering for the power transistors, Niels finds

little time for paper work. He can usually be found on the assembly floor where, with the aid of other engineers and technicians, he chases the demons out of semiconductor production processes. The task is never quite complete because with each new product comes a new set of process demands. And there are production duties: enhancing yields . . . reducing processing costs . . . devising equipment improvements that will make the wafer fabrication or assembly more efficient. His job is structured on the premise that anything in production can be done better. This is the flavor of engineering that Niels most enjoys . . . supervising a section in the center of the action.

No Blue Sky Quiet

Terri Christensen, a design engineer in the CCD department, is also in the middle of fast-paced activity. She provides data to CCD memory product engineers which lets them measure the success of their designs. The atmosphere in which she works, though somewhat quieter than Niels', is not the stereotyped research environment. Though Terri's department is part of the Integrated Circuits Group's R&D effort, the CCD activity is difficult to distinguish from a full-bore production operation. Terri joined Fairchild shortly after receiving her BS in Physics two years ago. The urgency of activity that surrounds Terri's responsibility indicates that the CCD R&D people take their commitments to deadlines as seriously as those with products already in the marketplace. "There's no such thing as open-end engineering projects at Fairchild or anywhere else in the semiconductor industry. We're all racing to develop low-cost products ahead of the competition."

Terri, who worked as an assembler for a computer manufacturer before returning to school to obtain an undergraduate degree, had no illusions about the pace of work she would find in industry. "I enjoy being in the midst of a major new product effort," she says, "and accept the pressures that must accompany this type of work."

A good day for Terri? "When products pass the tests we subject them to . . . when everything runs smoothly and we accomplish a great deal."

Four engineers, not totally representative of the many hundreds Fairchild employs, yet their comments offer some insight into the responsibilities and satisfactions of that ubiquitous and crucial contributor—the Fairchild engineer.

At the end of a long road—a degree for Buxton

The pursuit of higher education is often difficult, but rarely is the chase as strenuous as Colin Buxton's.

Colin has been on the trail of a BS in Business Administration since 1968, when after three years with Fairchild at the South Portland plant, he had set his sights on manufacturing management. "Ever since I was discharged from the service in 1965, I toyed with the idea of beginning studies toward an engineering degree. It wasn't until I had some exposure to the workings of a technical plant, that I decided that my interests and skills were geared toward manufacturing management."

Colin's story is the usual one of husband-father-worker-student. The plot centers around night courses, one semester of day school while on the swing shift, children growing from infants to grade-schoolers, little time to spend with the family, limited social life, and understanding supervisors who hustled him off to classes even when the job underway was not completed.

Colin's endurance was really stretched last May when, less than two months from the end of his final semester of work toward his degree, he was transferred temporarily to the Wiesbaden, West Germany, facility. His assignment was to assist with the startup of a digital products test and finish operation.

With his degree almost in grasp, Colin couldn't let go. He found his way through an administrative maze at the University of Maine in Portland, and finally got his instructors and the records department to agree to his taking final exams long-distance.

The payoff came in the mail when he was listed among the June 1974 graduates of the University of Maine.

Looking back over the long road to his degree, Colin says he didn't go it alone. "I had Fairchild's Tuition Aid Program taking the financial pain out of the experience, plus some very supportive supervisors—Al St. Amand, Mike Morrisette, and Wayne Carlson. They sometimes juggled work schedules to allow me to attend classes."

Fairchild HORIZONS

published for the employees of the Fairchild Camera and Instrument Corporation.

Editor: Veronica Kane

Letter from the president:

1974 is coming to a close and we are entering the holiday season. I felt this would be an opportune time to share some thoughts with you, both about the year now ending and the outlook for our company in 1975.

It is now obvious to everyone—even the Administration—that our country is in a recession. The symptoms of economic stress appear daily in your newspaper: rising unemployment, lagging retail sales and factory orders, monthly drops in industrial production, a plunging stock market. All attest to the national, and worldwide, downturn.

I have spent considerable time with our customers, suppliers and various people in the financial and banking community, attempting to assess the magnitude and length of this recession. Conclusions are difficult to reach. In my judgment, it will not be over until June of 1975, and may last longer. I am confident that it will be concluded by the end of 1975, but the recovery will be gradual.

The recession is due to a host of adverse economic conditions which collided in 1974 on a worldwide scale: the quadrupling of oil prices, shortages of capital and materials, high interest rates, and the pervasive inflation which has affected all business activity.

Our industry, and our company, have not been immune from these forces. In some respects, the semiconductor industry was a leading indicator of this recession, being hit early and hard. As a result, 1974 has been one of our most difficult years.

It began at a tremendous rate, fueled by the unprecedented business boom of 1972-73. Shipments, order input and financial performance were all setting record highs through the first quarter, and 1974 looked like another banner year.

Very abruptly, in May, the situation changed. As each month passed, it became progressively more apparent that we were in a significant slowdown. Excess capacity has been aggravated by rapidly falling demand. All this has necessitated continuing cuts in our corporate spending, employment, and capital investment programs.

Business conditions at the end of the year remain soft. Surplus inventories in the hands of customers and manufacturers have to be worked down, and this will take most of the first half of 1975. As these inventories are reduced, business levels will stabilize, but prices will be lower. This presents a challenge which we all must meet—through increased efficiency, productivity and hard work.

We have reason to believe that Fairchild can do somewhat better than the industry as a whole during this cycle. As the world's second largest integrated circuit manufacturer and the third largest semiconductor company, we have made significant gains in the past several years. We came into the recession period in a strong financial position, with efficient plants, an excellent marketing organization, and a worldwide customer base. We were quick to react to the changed economic environment, and, although sales are somewhat reduced, we continue to do reasonably well.

The semiconductor portion of our business, like the industry itself, has an extremely bright future. 1975 will be a slow year, but in 1976 we expect a substantial resumption of growth. Our equipment businesses are on a solid foundation and performing well. We anticipate some slowing in these areas also, but not as



pronounced as we have seen in the semiconductor business.

It is important that we manage ourselves effectively through this downward business cycle. It is also important that we prepare for the inevitable recovery.

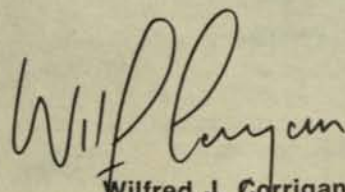
As one recent step to that end, we have begun a joint venture with Applied Materials, Inc. to manufacture polysilicon, the basic material required for all of our semiconductor products. This will ensure Fairchild against any future silicon shortage of the type which threatened to limit our growth in 1973.

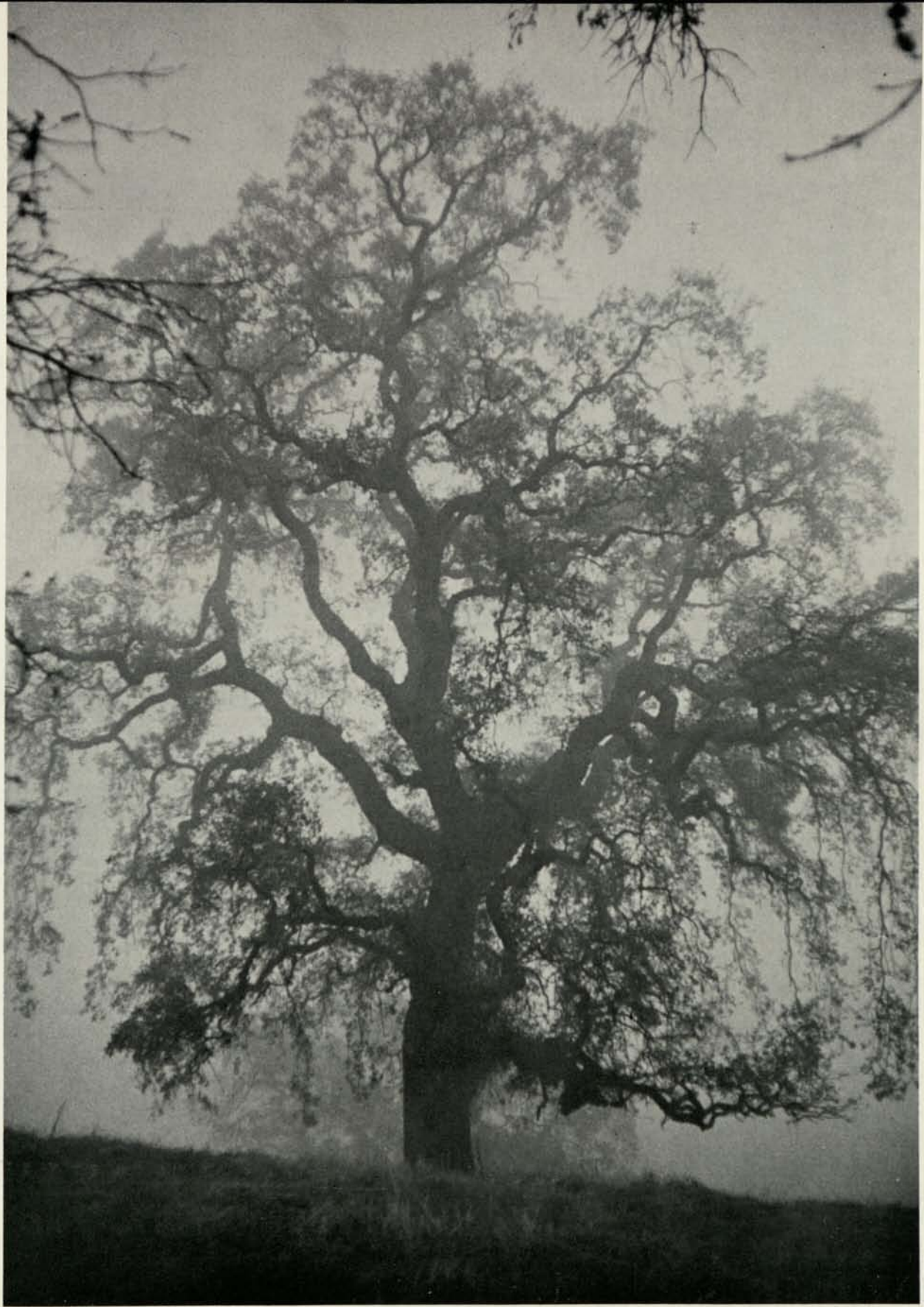
We are also completing our new integrated circuit test facility in Singapore, and our large assembly plant in Jakarta, Indonesia, both for occupancy during the first half of 1975.

Our new products are all being well received—CMOS, automotive ignition systems, bipolar memories, ECL, to name a few. We are also making tangible progress on our MOS product program, which will assure Fairchild's full participation in the fastest-growing segment of the semiconductor market. We will continue to spend a substantial amount of our revenues on research and development to ensure the future.

Despite the more difficult business picture, Fairchild will do well, both in the coming months and over the next several years. We have a sound balance sheet, a large cadre of competent and energetic people, an advanced technology base, and a worldwide marketing organization.

1975 will be the year to build a solid underpinning for major expansion in 1976. Our emphasis will be on control, cost reduction and new product development. I know all of you will contribute to these efforts, as you have in the past . . . and I wish you and your families a Happy Holiday Season, as well as a successful New Year.

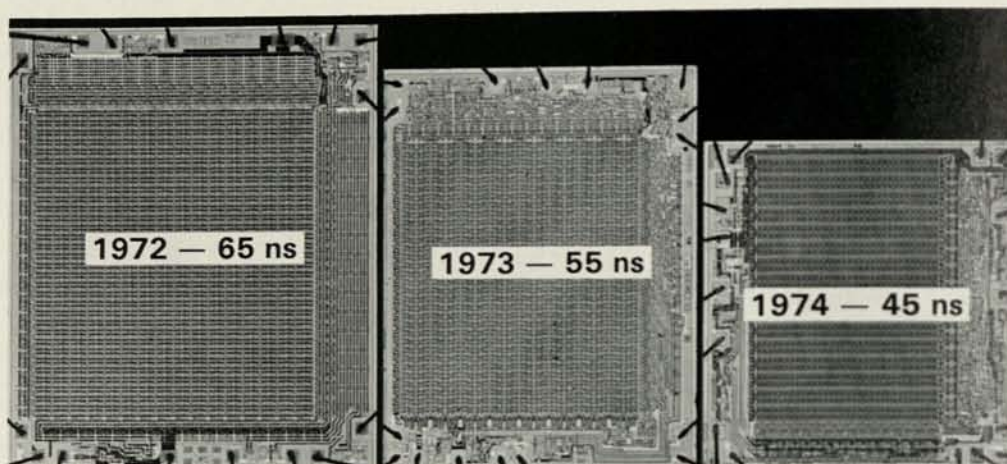

Wilfred J. Corrigan
President & Chief Executive Officer



FAIRCHILD
HORIZONS
Fall 1975

First place—scenic in 1975 HORIZONS photo contest. Photographer: Bob Patrie, Mountain View. Original: color slide. Other winners on pages 11 & 12

Commitment, not cobwebs influence technical creativity



Dramatic size reductions in memories are visible evidence of Fairchild's success in its quest for a denser product.

Cobwebs are not necessary for creativity.

Many significant accomplishments in the electronics industry can trace their origins to a dusty garage somewhere (including Fairchild's own semiconductor operations), suggesting that technical achievement somehow flourishes best under exposed rafters.

Though proving that cobwebs played no real role in semiconductor technology was not one of the objectives in Fairchild's quest for denser memories, it was one of the peripheral discoveries. In clean, air-conditioned offices and labs, engineers and scientists led by Bill Baker, in 1970 began a development project that was to match almost any in the industry in excitement and accomplishment. This story had all the hardships, human commitment and frustration that made the taste of victory as sweet as almost any previously recorded in the annals of semiconductor history.

To begin with, Bill was hired by Fairchild in 1969 as "the guy to build bipolar memory at Fairchild. That's still my job," he says, though divisional vice president and general manager have been added to his title since 1969. But, we get ahead of our story. In the fall of 1970, a group of engineers leaving the R&D operations, joined Bill to set up operations in Mountain View to develop a bipolar memory device which would exceed the density of memories then on the

market. "Can't be done and produced," was the consensus of respected technologists in the industry.

Remember, this was 1970. Sales of semiconductor devices had begun to drop steeply. There were more technical ideas available than there were resources to finance them.

"Fairchild faced the same difficult decisions every other semiconductor manufacturer confronted in 1970," Bill says. "Because R&D funds were drying up, the dollars that were available had to be directed toward those efforts that promised the quickest return. That bipolar memory work remained alive at Fairchild during that economic squeeze is a credit to the far-sightedness of company management. I can remember the budget reviews during our first months of operation. Our little group had as much reason to feel threatened as any other project within the company, yet critical needs were approved."

Within 12 months, the group had a marketable TTL (transistor-transistor logic) and ECL (emitter coupled logic) memory, the latter the world's first such device. Fairchild's bipolar effort also resulted in a functional 1024-bit TTL memory within 15 months. Competition was more than three years late in matching these efforts. And they didn't have Fairchild's Isoplanar technology, one of the most significant industry accomplishments

that also thrived without benefit of cobwebs.

What then is the recipe for technological creativity? "Commitment from managers and by the people working on the project," says Bill. "Our story is similar to any tale of technical achievements—long hours, dedication to a concept, the right mix of people and some fortunate breaks. Our progress was so rapid that when we began delivery of our first product, our competitors told customers that the bipolar memory device our ads described was a myth—couldn't possibly exist, it was diffused isolation.

"Being first has its drawbacks in our industry," he adds. "Because we were so far ahead of the competition, we were the sole source of supply for many advanced bipolar RAMs. Our major potential customers congratulated us on our achievement, but they were not willing to stake the future of new lines of computer equipment on a single supplier. Markets began to open up more rapidly when we could see some competition on the horizon. By 1974, Fairchild bipolar efforts had gained the dimensions that developed them into a full-fledged division. The company entered 1975 with a dozen bipolar memory devices. By mid-1975 the Division's offerings had grown to almost 40 bipolar memory parts which address applications in virtually any electronic product in which rapid

access to programmed information is a key requirement."

Many of the department heads in Bipolar Memory and ECL Products Division came to Bill from the R&D lab. They are now effectively managing parts of a multi-million dollar business and maintaining their technological lead while they confront and conquer the business problems that accompany such an endeavor.

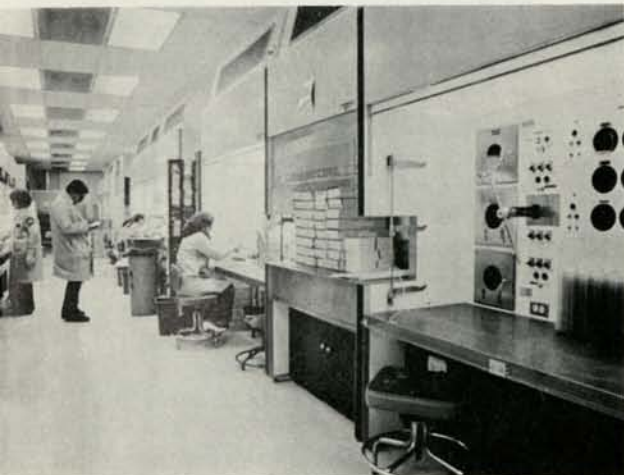
Matching people and jobs is another conscious effort Bill has made in structuring the Bipolar organization. "Being a manager or a supervisor need not be the only route toward career success," Bill explains. "Fairchild has created a personnel appraisal program that recognizes and rewards individual contribution, not title. This makes it comfortable for the person who is a technological individual contributor to perform in a job that

suits him or her best, not strive for a position in which their greatest skills would not be used.

"Individuals progress within Bipolar at their own speed," Bill says. "There's no pressure from my office insisting that engineers become managers. The opportunities are there, but the individual must pursue them. If a person has hit a frustrating point in his or her career path, I'd like to hear about it so that we can map out alternative routes that will be more satisfying. Because of our rapid growth," he says, "it is a natural tendency to heap more and more responsibility on supervisors and managers, perhaps stretching them beyond their capabilities of the moment. I hope that I have been successful in avoiding this. On the other hand, the opportunities to grow within a job have been limitless. Many titles within our division have not

changed over the past three years, yet the jobs they represent have expanded. As I've said, my job essentially remains the same as when I joined the company in 1969—to build bipolar memories. However, the demands in that assignment have increased a hundredfold in the past five years.

"Being number one in bipolar memory and logic development and manufacturing is a buoying factor for every member of our division," Bill believes. "We can all look back on our accomplishments. Maintaining the same commitment that will enable us to sustain and develop in this enviable industry position will require that we hold on to the same sense of challenge and achievement that has brought us to this point. I'm dedicated to doing whatever is needed to keeping this atmosphere in Bipolar operations."



There is no reliance on cobblers in the bipolar memory engineering and manufacturing facilities in Mountain View, yet the technical creativity of this group has outpaced all industry competition.

Home Address: U.S.A.

America as seen by her naturalized citizens

She is warm and embracing, or cool and aloof.
She shares her bountiful blessing, or withholds her promised dream.

She's been known to be fickle, bestowing her favors in no identifiable pattern. Effort and imagination seem to be what she asks, oblivious as she is to labels such as rich and poor, educated and unschooled.

Bright and beautiful as she nears her 200th birthday, this magnificence is often taken for granted. She's America and all that word implies.

Her citizens look upon her abundance as their due if they have never known life without it: homes in suburbia, education, amber waves of grain sufficient to feed her people and more, free speech, right of assembly, encouragement to question her leaders and freedom to express opinion. No single voice is too weak to be heard . . . if not heeded.

She suggests taxation and representation. Her every action stirs some of her citizens to outrage. She doesn't ask to be accepted with blind faith. Go ahead, question her motivations and her deeds. Examine her humanity and her foibles, but occasionally acknowledge her strengths. Her humanity is made up of persons who, through birth or naturalized citizenship, share the same name—Americans.

We are particularly respectful as she approaches her 200th year. We notice the beauty of her cultural pluralism, unmatched in any country in the world. She retains something of all the cultures that have been brought to her, while her own distinctive personality provides the adhesive which makes being an American a unique state of mind. Persons who have discovered her, never lose their awe of what she is and their objectivity on what she offers.



Joe Daszkowski

Ronda Beck



Chol Chong

Sullivan Chen



Joe Daszkowski, who came to the United States in 1951 as a political exile from Poland, by way of the Middle East, Italy and England, found in America a better life than he could imagine in any other part of the world. Arriving in New York City, he found people friendly and helpful in this, the city that is reputed to be the most aloof in the United States. He found work in an area in which he could use his engineering education. In a few years, he purchased his piece of the American dream—a house and its accompanying life style and mortgage, on lovely Long Island. "I had no misconceptions about America," Joe says. "My aunt and uncle lived here and their letters were filled with descriptions of their lives: days of hard work, rewards and freedom. I wasn't looking for streets lined with gold. I wanted the opportunity to build a life that would offer some measure of freedom and security."

Before coming to the United States, Joe had been in transition for more than 13 years. Forced out of his home by World War II in 1939, he went to the Middle East to serve in the British 8th Army, as part of a Polish contingent. He took part in the Italian Campaign and he went to England following his military service to complete his education. "I supposed I believed that I would return to Poland. Finally, I realized that this was not possible and looked for a permanent home. America was the most natural selection because my relatives were here to sponsor me and in this country I would be distant from the chaotic reminders of the war and able to establish a truly fresh life.

"One of the most striking differences I recall when I began to work in the United States was the informality in business. In Europe it might be years before you would be close enough to a fellow worker or a supervisor to discuss even the most superficial personal subjects. In the U.S., I was on a first name basis with virtually everyone at work within two days. I enjoy the relaxed social atmosphere because you don't spend unnecessary time in formalities. You devote most of your efforts to getting the job done." The job that Joe handles for Fairchild is that of a Senior Staff Engineer at Imaging Systems Division. "My children, who were born in the United

States, are privileged to have grown up with all of the benefits of America. Their expectations are great and I believe that they will be fulfilled. Surely, we have no need of material things. They have known only freedom and affluence, blessings that they cannot fully appreciate because they have nothing with which to contrast their lives. I trust that they never will learn how special it is to be an American."

What's a Korean native doing in New England? "Taking advantage of the opportunities America offers me and my family," answers **Chol Chong**, factory planner at Fairchild's South Portland, Maine, plant. Chol admits that it is rather unusual to find a Korean who has made the journey to the U.S. and settled in New England. "The major Korean communities, naturally, in this country are on the West Coast. I came to the U.S. to take a job with a friend in Maine. I worked for the U.S. Army in Korea as a civil service employee and when a former supervisor was returning to the States to open a business, he invited me to join him." Chol didn't hesitate. He had been dreaming about living in the U.S. for years. In fact, New England was no surprise to him. He probably knows more of its history than most of its residents. "I was a devoted student of American history and literature. The American Revolution and the frontiersmen were my favorite subjects. I believed what I read: that the country is wide open with opportunity and with some effort you can make it. I've never been disappointed."

A kind of modern day frontiersman himself, Chol found himself and his family in a new culture in which there were no fellow countrymen to share their first reactions and apprehensions. "We joined a church immediately and found, in the congregation, people who were eager to help us become established in the community. My wife learned English with the help of patient friends and my children picked up the language with the rapidity and ease of the very young."

Today, Chol is enrolled at the University of Maine working toward a B.S. degree in industrial technology and is helped along financially by Fairchild's Tuition Aid program. His two eldest children are performing well in grade school and his youngest has a few

years to wait before trying out the American educational system, which was one of the lures that drew Chol and his family to the U.S. When he speaks about his experience in America, he asks: "Where else could you arrive with \$100 and have no fears about your ability to earn a living? Where else could you buy a home within a year? Where else could you make friends immediately; persons who would welcome you and help you to become established?"

But U.S. life is not without its sacrifices. Chol misses the heated floors of Korean homes and plans some day to design and build a house that combines Eastern and Western architecture. He also reveals that his life style has changed immensely from what it was in Korea. "In my country, men do whatever they want. They meet with their friends for parties and sports. Home and family responsibilities are in their wives' hands." Today, Chol is the typical American father who reserves most of his free time for activities with his family. "We are much closer as a result," he says. "We discuss plans and share experiences."

This year, Chol made the greatest statement he could about living in the United States. He became a citizen.

Sullivan Chen, engineer at the Industrial Products Division, reports that he was a bit disappointed when he arrived in the United States on a family vacation ten years ago. "My only impression of the country," he explains, "had been gained from television and movies. It sounds childish, I know, but I thought that everything here was new and perfect. I was surprised to see automobiles with dents and some older buildings."

However, the important things—those that have significant influence on an individual's life—were just as Sullivan supposed they would be. "America has a world image of being a country in which opportunity is available to everyone and success is based on ability and persistence. This image has been reinforced in my years in this country."

Sullivan, who was born in Taiwan, moved with his parents to Peru just as he was completing grade school. His father, an expert in sugar manufacture, worked for a firm in Trujillo. Sullivan finished grade school and started high school in an American

academy in South America. During eight years in Peru he learned Spanish and English. "In my parents' home, all three languages are spoken, which can prove to be very confusing for visitors."

Sullivan came to the U.S. again in 1966 alone and went to Wheaton, Illinois for his final year of high school. He completed undergraduate studies in mechanical engineering at Rensselaer Polytechnic Institute in Troy, New York, and received his Masters degree in the same field from Cornell University. "My family and friends in other parts of the world emphasized that the best education to be obtained anywhere in the world was available in the United States. My experience has confirmed that. The opportunities for education are vast. There is more to choose from than one can handle." Comparing U.S. education to that in Taiwan and Peru, Sullivan says, "Unless you can pass very difficult entrance examinations there is no hope of continuing on to a university in Taiwan. In Peru, your family must be quite wealthy to afford to send you to college. In the U.S., everyone who has the desire for higher education can obtain it."

Sullivan believes, however, that the U.S. could benefit from some aspects of the two other cultures in which he has lived. "The Chinese respect for age and knowledge would be beneficial in the United States," he says. "The regard that children demonstrate for their parents and grandparents, students for their teachers, and employees for their supervisors, reflects an inner order in society," he says. "It may sound superficial to Americans accustomed to less structured relationships," he says, "but I believe it eliminates much of the chaos that results from interpersonal relations that have little social framework."

From South America, Sullivan would import the more relaxed view toward life. "I believe that similar results could be accomplished in the United States, even if persons would ease some of the pressures they place on themselves," he says.

On the other hand, to make life more fulfilling in China, Sullivan would will that those countries adapt the American tendency to view itself as a nation, rather than disparate groups

(Continued on page 8)



The moment of decision is about to occur.

A display catches the eye of a passerby. He stops. His glance quickly travels over the gleaming gold and rhodium watches and pauses, held by the attraction of one model. Is it the shape of the face, the subtle curve of the band, the smart interlocking links that attract him? Is it the ruby-like crystal? Or the overall image that the digital electronic watch conveys—fashionable and progressive? Or, is it the particular impression of the Fairchild watch—understated elegance, quality, accuracy—that holds his gaze?

The clerk lifts the watch from its velvet case and fastens it around the proffered wrist. He notes how perfectly it curves to fit as though made for him. He presses the button to run the watch through its five exercises. Suddenly, checking the time isn't a commonplace necessity, it's a special event. He's sold. But the final decision. The price tag. The reaction! Don't wrap it. He'll wear it.

Another Fairchild watch goes home with a customer whose self-image is a little different than it was when he entered that store. He sees himself as avant garde and adventurous. Note the brisk stride, the head a little higher than it was minutes before, the sidelong glances toward his wrist.

getting to know

the characteristics of the consumer

As surely as if he dogged in that customer's footsteps, Chuck McDonald, marketing manager for the Consumer Products Division, has captured every nuance in that "Customer Meets Fairchild Watch" scenario. He knows the emotions at play . . . because that's his job. That is consumer marketing. "Understanding the reactions at the sales counter, knowing that the purchase of a watch is more than obtaining a functional product, and addressing the emotions that will come into play in the purchase is the very foundation of consumer marketing," Chuck says.

"A year from now," he reports, "we'll be able to draw a profile of the Fairchild customer for every model in our watch line. We'll know how much money he or she earns, we'll know what they do with their free time, the kind of neighborhood they live in, whether they wear the same watch for all occasions or they like different styles for sports and dress. The age of the potential buyer and the part of the country or world in which he or she lives will also become part of the typical customer profile."

Chuck has lengthy experience in the study of consumers' habits and habitat which was gained in previous consumer marketing assignments with

Rockwell (hand-held calculators) and Polaroid Corporation. "The Fairchild watch, however, is the most personal consumer product that I've worked with. Purchases will be determined by esthetic appeal and the Fairchild image in the marketplace. Good taste combined with quality is the impression we want to achieve throughout our line.

"We have the product that can project this image. According to many buyers who viewed our line at the jewelry show in New York this summer, ours is the most elegant line of digital watches on the market. We know that we can back that exterior impression with the finest, most dependable, most versatile watch circuitry available anywhere. How our product is perceived will largely determine its position in the marketplace. Digital watches on the market today range in price from below \$50 to more than \$11,000. What are people buying at the high end of that range? They are buying image. They are buying a product that advertises their good taste and ability to afford the best. Our watches, which are in the mid-price range (\$115 to \$195), can project that same good taste at a lower price. In addition to providing the wearer with the correct time, they can

Serious students of the consumer (left to right) Chuck McDonald, Marketing Manager, Consumer Products Group; John Donatoni, National Accounts Manager, CPG; and Phil Conklin, National Sales Manager.



make a statement about his or her lifestyle and discriminating judgment of value. Purchases of this personal piece of jewelry will be based on intangibles as well as the need to tell the time."

To make the consumer aware that a product with such far-reaching influence exists, Fairchild will launch an extensive advertising campaign—including television spots and newspaper ads—in the fall. "Sales of wristwatches peak during the pre-Christmas shopping period," Chuck says, "then level off until spring when there's a big demand for graduation, and Mother's and Father's Day gifts." Fairchild will also begin running ads in major general circulation magazines.

Purchase of Fairchild watches will be made at fine jewelry stores and in the jewelry department of major department stores throughout the world. This creates an entirely new set of distribution challenges for Fairchild. New consumer products are usually first shown at large exhibitions, such as the Retail Jeweler's Show in New York. Buyers who represent major department stores, large jewelry store chains, or a number of independent jewelers examine the new product and, if interested, ask a salesperson to call on them. Orders are placed based on what the buyers believe will sell to their stores' clientele. "One store may carry the entire line, while another may order only the top of the line models," Chuck says.

Fairchild has recruited sales and distribution experts who have shaped their careers around the whims of consumers. Their success at outguessing fluctuations in taste, and knowing where this fickle marketplace will direct its interests next earned them top sales and marketing positions at some of the nation's major manufacturers of consumer products. Their decision to join Fairchild's consumer marketing effort is indicative of their impression of the Fairchild line of digital watches.

"No matter how intimately you know the thoughts and emotions of the consumer," Chuck cautions, "you must be prepared to back up the beautiful surface image with reliability. For there is no fury that matches that of the consumer with a product that doesn't live up to his or her expectations."

Fairchild LED wristwatches go On sale to employees at special prices

As soon as the Consumer Products Group hung out its nameplate, a barrage of questions about employee purchase of the Fairchild digital wristwatches began. Now, the Consumer Group is prepared to provide a satisfying response to those requests.

The first Fairchild LED watches to be offered to employees go on sale in a newly established Employees' Store in Mountain View on October 1, and can be purchased through the mail by personnel at locations outside Santa Clara County.

The first watches to be offered to employees are all in men's styles. Six models of the Fairchild thin-line series will be available in limited quantity. In addition, several models of Fairchild promotional watches in quantities sufficient to address anticipated employee demand will go on sale October 1. These watches, made by Fairchild and covered by a one-year warranty, were designed as promotional products for dealers and will cost about \$90.00 when major department and jewelry stores begin advertising them. The slim-line watches will retail from \$115.00 to \$195.00. Watches sold through the employee purchase plan will be available to personnel at up to 50 percent off retail prices.

Employees at Santa Clara facilities can place their orders and pick up the watches at the Employees' Store in the main lobby of the corporate headquarters building. The store will operate Wednesdays, 7:30 a.m. to

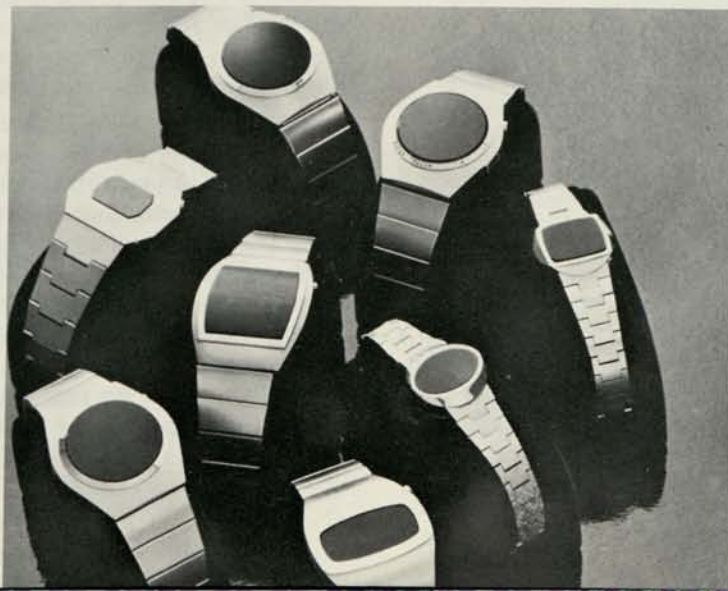
3 p.m. and Thursdays, 10 a.m. to 5 p.m. Central order sites will be established at all other domestic locations allowing employees to place mail orders for the watches with a small charge for mailing and handling. Announcements of the purchase method at all plant locations will be made through special bulletin board announcements at those sites.

According to Harvey Wagner, Consumer Products director of Accounting, who is managing the employee sales program, all models of slim-line watches will be available for employee purchase and delivery well before Christmas. "As inventories of each model in the watch line are built up to a level which will satisfy dealers, the watch will be offered through the employee purchase plan. We expect most models to be available about November 1," he said.

The program, which is designed as a benefit for employees, limits the number of watch purchases an individual can make to six each year. The watches obtained through this program should be for the employee's own use or that of the members of his or her immediate family. These restrictions in the purchase program are necessary because of this year's limited product availability.

As additional models of the slim-line watches are made available to employees, special bulletins describing the watches and their price will be issued at all domestic plant locations.

Fairchild's slim-line LED watches are capturing and holding consumer attention at major department and jewelry stores throughout the United States.



Sentry II shown in colorful setting

The new Sentry II computer-controlled test system developed by the Systems Technology Division made its first major public appearance at the 1975 WESCON Show in San Francisco September 16-19. The new Fairchild test system responds to the test needs of the semiconductor industry's most complex devices.

The Sentry II incorporates two new special purpose processors to minimize the need for additional memory and attendant software. The Sequence Processor handles address and timing sequences that test multi-state chips such as microprocessors. The Pattern Processor evaluates large-scale memory chips whose extensive cell patterns must be exercised fully.

The vivid Systems Technology WESCON island display in oranges and reds provided the perfect foil for the operating Sentry II which was accented by panels in Fairchild red. For the first time, Systems Technology offers customers a choice of colors in its large test systems. The Division's sales personnel, easily recognizable in red jackets which complemented the colorful display design, encouraged potential customers to put the new test system through its paces after brief instruction. Clearly one of the most outstanding product displays in the annual exhibition which draws members of the electronics industry from throughout the U.S., the Systems Technology booth was selected to be featured as part of a special report televised over local channels during the four-day exhibition and technical convention.



U.S.A. (continued)

of individuals. He believes that Nationalist China would benefit from a system which encourages accomplishment based on ability rather than ancestry and position in the community. For South America, he would improve life by encouraging residents of those countries to assume some of Americans' seriousness toward work and to view their individual actions in light of their contribution to their country.

But for Sullivan (whose first name was adopted when he prepared to come to the United States because its first syllable matched that in his Chinese name), America, as it is, provides him with a life closer to the ideal than he believes he could find in any other part of the world.

In 1945, a young woman said a tearful goodbye to her large family in the Philippines to head for Tulsa, Oklahoma. "I really didn't want to leave. I was homesick before I

boarded that plane," **Ronda Beck** remembers. But she was drawn by the strongest force in the world—love.

Ronda had met Leon Beck, a member of the U.S. Air Force, while he was stationed in the Philippines. They became engaged to be married before he returned to the United States. Immediately on her arrival in the U.S., Ronda missed her balmy home island where life was slower, the language was familiar and her family and friends were nearby. "Homesickness is a very real illness," she says.

Her knowledge of the United States was what she remembered from grade school American history classes. "If I had ever dreamed that I would live in the U.S. one day, I might have been more attentive in those classes," she says. "The weather was harsher than I had expected, the food strange, the language spoken was not the English I had been taught, the customs were different—I longed for my home."

Ronda's adjustment to the U.S. was made doubly difficult because she had no preparation for the household duties she was expected to assume as a new bride. From an affluent family, she had never learned the rudiments of housekeeping and cooking before she departed the Philippines. Her domestic education was gained in the home of her sympathetic mother-in-law. Ronda obviously excelled in her training as today she manages a home, attends to the needs of four teenage children and works a full shift each day as a lead person in the fabrication area of the Transistor Products Division.

Becoming an American was a gradual process for Ronda. Her initial homesickness faded and on a visit to the Philippines she found that she was anxious to get home. Home was the United States. "I found that I had begun to think as an American. I had adopted the American way of life."

News and Notes

Longo and Wells named Group Vice Presidents

Fairchild on September 11, announced organizational changes in two key product groups.

Thomas A. Longo, group vice president, will head the newly formed Memory and Logic Group, comprised of the Bipolar Memory, MOS Products and Digital Products divisions. He also has the charter to enter into end product areas utilizing Fairchild's memory and logic technology. Dr. Longo previously was vice president and general manager of the Integrated Circuits Group.

George Wells has been named group vice president of the Analog and Discrete Products Group. It will consist of the Linear Integrated Circuits Division, the Automotive Division,

the Diode Division and the Transistor Division. Mr. Wells previously was vice president and general manager of the Discrete Products Group.

The Memory and Logic Group includes Fairchild's component assembly plants in Singapore and Jakarta, Indonesia, as well as domestic fabrication facilities for the respective divisions. The research and development laboratories, headed by James M. Early, will continue to report to Dr. Longo.

The Linear Integrated Circuits and Automotive divisions were previously part of the Integrated Circuits Group, while the Diode and Transistor divisions comprised the Discrete Products Group.



Thomas Longo



George Wells

CCD camera to be used in mine rescues

Fairchild has been awarded a \$75,000 contract by the U.S. Bureau of Mines, Dept. of Interior, for an underground solid-state television camera system to aid trapped miners.

The system incorporates a 244 x 190 element charge-coupled device (CCD) image sensor and operates with a slow scan converter. Contained in a 2½" cylindrical housing, the camera will be integrated into an instrument

package by the U.S. Bureau of Mines. It will be lowered through a borehole during rescue attempts.

The camera system is capable of transmitting a signal over 24,000 feet of cable (approximately five miles). At the surface, the display system incorporates a scan converter and can be used with standard TV monitors and videotape recorders.

Imaging Systems Division formed; Palamenghi heads

The Federal Systems Group on August 15 announced formation of the Imaging Systems Division. Thomas J. Palamenghi has been named general manager.

The new division will incorporate the Electro-Optical Systems Operation and the photographic systems unit of the Space & Defense Systems Division.

Louis H. Pighi, vice president and general manager of the group, said, "The complementary nature of the photographic systems unit and the Electro-Optical Systems Operation makes their combination into a single division a logical step. The new division will have a highly competitive mix of imaging systems technology that will enhance our position in the marketplace."

Tom Palamenghi joined Fairchild in 1964. He has held successively responsible management positions and, in 1973, was named director of the Electro-Optical Systems Operation. He holds a BSEE degree from Columbia University.

The Fairchild Federal Systems Group is comprised of the Space & Defense Systems Division, the Imaging Systems Division and the Security and Surveillance Systems Operation.

Thomas Palamenghi



MOS Division shipping 4K, 16-pin memory

Fairchild announced it is shipping production quantities of a 16-pin, 4,096-bit N-channel dynamic random access memory circuit that features an access time of 250 nanoseconds.

"Our Isoplanar 4,096-bit memory is the best combination of speed, power and chip size in the industry," according to Dr. Thomas A. Longo, vice president - Memory and Logic Group.

"This development, which combines fast access time with small chip size and the lowest active access power dissipation, puts Fairchild heavily into the mainstream of the MOS memory business," Dr. Longo said.

The Fairchild memory, designated as the 4096, utilizes a single-transistor memory cell and silicon nitride capacitor technology. The part is available in two versions: the 40963 (250 nanosecond access time), and the 40964 (300 nanosecond access time). Both parts are packaged in a 16-pin ceramic DIP, and are fully TTL compatible. Power dissipation is specified at 250 milliwatts, and typical active access power is 120 mW.

A unique method of address multiplexing and latching allows the reduction in package size from the alternate 22-pin design available from other suppliers to the 16-pin standard package. This permits an 80 percent increase in packing density on memory boards, making the Fairchild 16-pin design even more cost effective. In the computer industry, memory boards often cost as much as the components used on the boards, Dr. Longo said.

Another advantage of the 16-pin design, according to Dr. Longo, is that it represents the first step toward the next major MOS memory product—the 16,000-bit RAM.

"In order to design a 16,000-bit MOS RAM in a package with a reasonable number of pins, you must use multiplexing techniques," Dr. Longo said.

"Much of the development work needed for the 16,000-bit RAM has been done during the development of the 4K part, and we expect to be able to supply a prototype 16K RAM by the end of 1976."

Fairchild TV system to be used in battlefield surveillance

A contract to incorporate a television system in an artillery shell for battlefield target location has been awarded the Imaging Systems Division by the Picatinny Arsenal, U.S. Army, Dover, N.J.

In operation, the TV system-equipped projectile would be fired over a desired area where the television equipment and a parachute would be expelled. The television camera, suspended from the parachute, would then televise terrain and ground action pictures to the command base. The real-time pictures could be viewed immediately or, if necessary, recorded for later detailed study.

Key element in the TV system is a miniature television camera which uses CCD (charge-coupled device) sensors in place of a vidicon tube. Because of its small size and ruggedness, the CCD camera is ideal for this application. In addition, it is highly sensitive, has a wide dynamic range, and consumes minimal power.

The total system is based on an existing illumination artillery projectile—the XM845 for the 155 MM gun—and utilizes many of its components. The new system incorporates the miniature TV camera, a power supply, an RF transmitter, and a self-destruct system in place of the illuminating canister.

SDS builds converter/synchronizer for Grumman

Space & Defense Systems Division, has been awarded a contract by Grumman Aerospace Corporation in the amount of three million dollars for the design and development of a Converter-Synchronizer Unit (CSU) to be incorporated in the Air Force EF-111A Jamming Subsystem.

The Converter-Synchronizer's function in the aircraft is to provide the capability of communication between the central computer and the other units of the jamming subsystem. Almost all of the computer communications from other aircraft units pass through the CSU.

The program covers six units to be delivered over 22 months and will include a complete qualification phase for the end product.

New shift register slated for communications applications

Fairchild has introduced a new charge-coupled analog shift register that has a wide range of application in analog information processing systems such as video and other communications equipment.

The new device, the CCD311, is a 130/260-bit integrated circuit which performs the function of a wide-range variable analog delay line. Delay is determined solely by the frequency of an external clock signal. The circuit utilizes Fairchild's buried-channel charge-coupled technology.

The CCD311 eliminates the need to convert analog signals to digital form for delay within a digital delay system and then to reconvert to analog form.

Applications for the CCD311 include use as a time base corrector for video tape recording systems to eliminate video distortion, as an analog delay line to construct complex analog filters eliminating the need for present complicated circuitry based on networks of resistors, capacitors and inductors, and delay equalization circuits for speech transmission or for speech scrambling in equipment such as mobile police receivers.

Grumman places add-on order for converters

Space & Defense Systems Division received a contract for \$3.9 million for additional A6E TRAM/CAINS AD/DA Converters from Grumman Aerospace Corporation, Bethpage, N.Y. The award is for the second full-scale production of the converter, and covers fiscal year 1976 aircraft requirements.

The converters were originally designed, developed, and qualified by SDS under a contract from Grumman in March 1973, followed by a pilot production order for three TRAM/CAINS Converters. The first full-scale production order was for sixty units.

Production and delivery of this current requirement will continue through August 1977. Projections for future requirements for this converter are for a continuing production of similar quantities during the next three to four years.

It was another mind-bending experience For Contest Judges

Roger Lajeunesse, Semiconductor graphics supervisor; Marty Lindquist, Semiconductor art director; and Bill Callahan, Semiconductor product publicity manager, who are normally agreeable and rather rational, turned aggressive, opinionated and irritable as they tried to select nine place winners from among the hundreds of entries received in the 1975 HORIZONS photo contest.

On-lookers could sympathize with their plight and be grateful that they did not confront the task of identifying the best photographs in the show. As the afternoon began to move into evening, the judges had narrowed the field to just over 20 photographs. Dozens of other excellent, creative photographs were, reluctantly, moved out of the running.

The judges stood toe-to-toe as they held out for their favorites. A rather elaborate point system through which the judges, independently, evaluated the finalists broke the deadlock, naming the following employees as place winners in the 1975 contest.

David Tocher

First place—Animals
original: color print



John Lai Fai

Second place—People
original: color slide



Alan Thompson

Second place—scenic
original: color slide



Nick Volpi

First place—people
original: color print



Denise DiAndrea

Second place—Animals
original: color print



Christine Fitton

Third place—Animals
original: color print



more winners next page

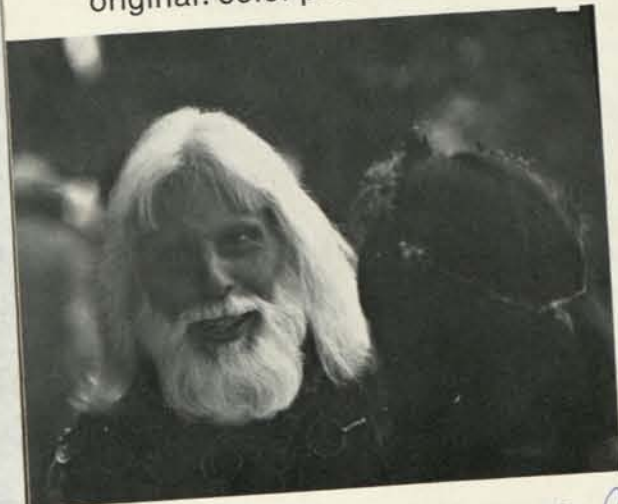


Rolf Dries
Third place—People
original: color print

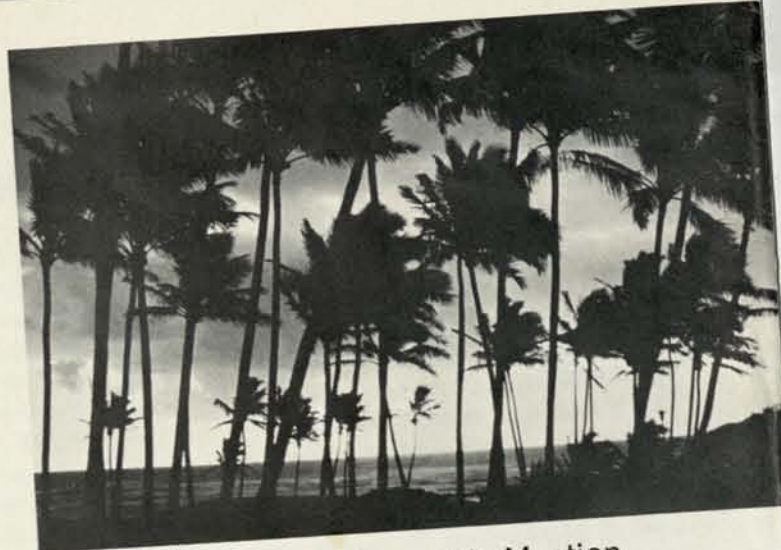
John Efstathioo
Third place—Scenic
original: black and white print



David Tocher—Honorable Mention
original: color print



Qui Hadley
650-327-4224



Nick Volpi—Honorable Mention
original: color slide



Bob Patrie—Honorable Mention
original: color slide

David Tocher—Honorable Mention
original: color print



David Tocher—Honorable Mention
original: color print



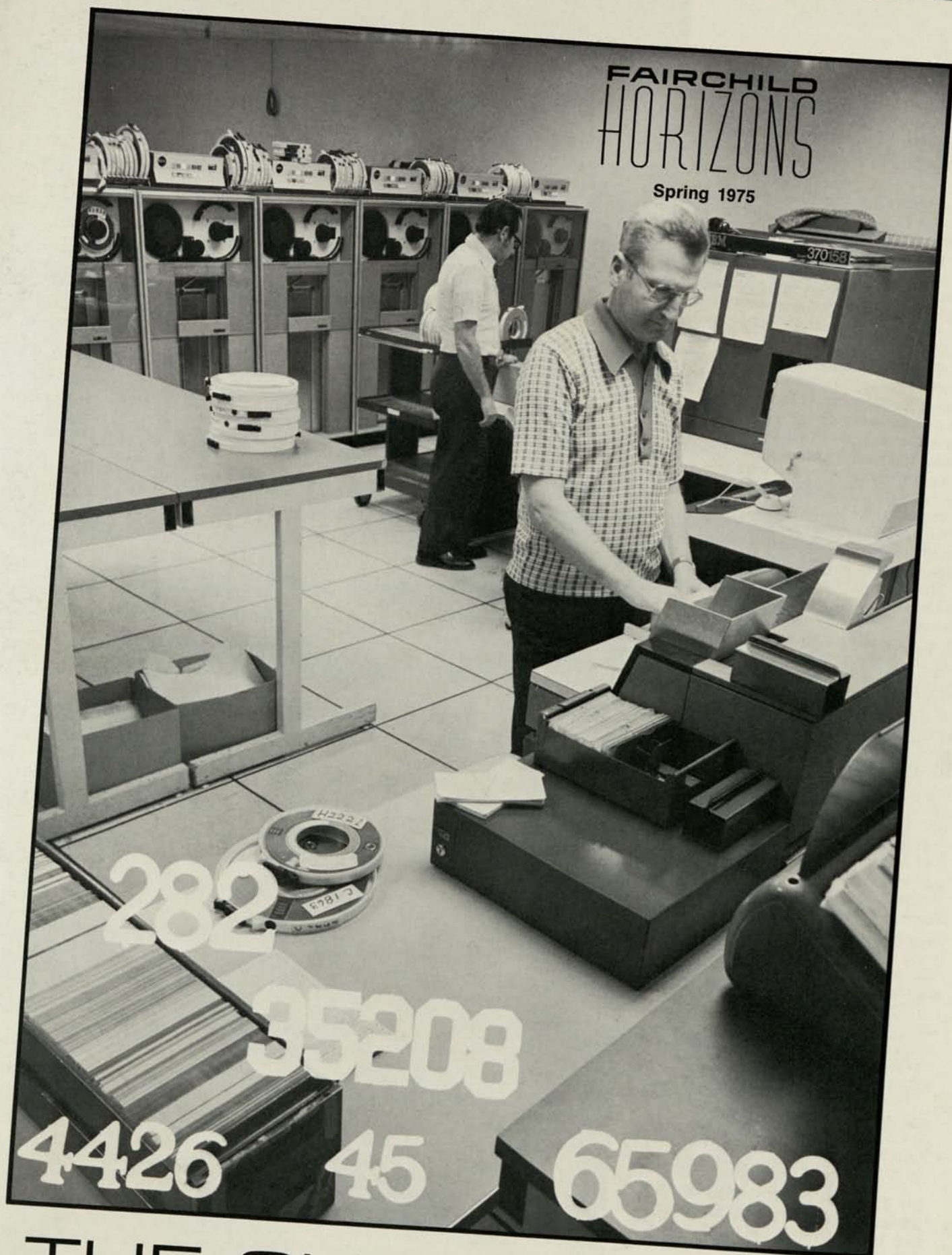
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Spring 1975



THE SUMMING UP

Learning by The Numbers

Your birth date, your telephone number, your Social Security number, your checkbook balance, your height and weight... your life is punctuated with numbers that have particular significance to you. Combinations of some of these numbers such as your birth date, height and weight, tell a little bit about you.

Combinations of numbers tell something about a company, too. The most revealing corporate numbers are annual sales and earnings figures. These digits, when compared with similar numbers from previous years in the company's history, tell how an organization is doing. Is it progressing? Are its products or services reaching wider markets? Are its affairs being managed so that it realizes a profit from its efforts?

This month, Fairchild stockholders will scrutinize closely significant Fairchild numbers of 1974 to learn what they tell about the operations of our company during that year.

This is what they will learn: The Fairchild annual report for 1974 tells of a profitable but difficult year. Within the figures contained in the company financial charts for the 12 months there is the story of how Fairchild people confronted and overcame the obstacles of an erratic economy. It tells of the adjustments that had to be made in employment and expenses in order to maintain profitability.

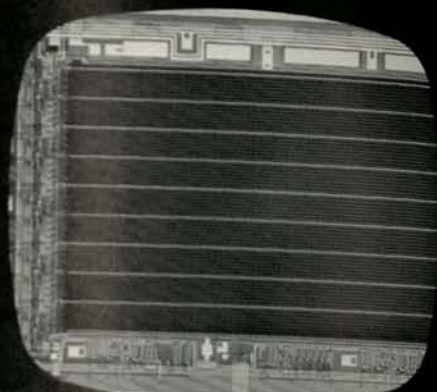
The 1974 figures also tell of a company that did not lose sight of the future while it wrestled with the problems of the present. More than 200 products were introduced during 1974 and the first quarter of 1975; an indication that Fairchild's objective to maintain its position in each of the product areas it serves never flagged even in the face of economic pressures.

The highlights of what stockholders and other persons outside of our company will read in the 1974 Fairchild annual report are described on this and the following pages.

ON THE COVER—The Mountain View computer center where financial and inventory information from Fairchild plants around the globe is compiled into corporate reports. Computer operators are Leon Tate, foreground; and Julius Gefferth.



F8 microprocessor will be used in a hand-held merchandise wand.



A greatly enlarged photograph of the CCD450 memory circuit.



IPD's new Synchromatic projector.



Qualifier '901 bench top tester.



MV-101 CCD Camera



E-100 Auto Ignition Module



CCD mail sack reader

More than any other single influence, advancing semiconductor technology has fueled the electronic explosion of the past 15 years. The increasing level of engineering and scientific sophistication which surrounds the industry plus the cost reduction realized through increasingly efficient manufacturing methods has resulted in more complex, smaller, less costly devices. These size and cost reductions have brought the marvels of semiconductor performance within the range of manufacturers of equipment for the home, office, and industry.

It's difficult to go through a day without calling on the power of a semiconductor. The clock that tells you it is time to start for work may be dependent on solid state devices. That shirt or blouse was laundered in a machine that depends on semiconductors for its automatic operation. The coffee pot may use a semiconductor device to tell it when to start and stop. Even your oven and stove may rely on semiconductors to regulate their temperature. The radio or television which carries the morning's news contains transistors and integrated circuits. Your automobile radio, its seatbelt system, perhaps even the ignition are dependent on the intelligence of semiconductor devices. That streetlight that controls traffic flow is programmed through solid state circuits. The highway patrol car depends on a semiconductor-controlled radar system to detect speeders.

Once you arrive at the office or plant, semiconductors help to make your job more efficient as they assume some of the less creative chores that keep business and industry moving. At the heart of every major company is a computer processing center which collects information on product orders, accounts receivable, payroll figures, inventory data and a myriad of other information vital to the operation of a business organization. Within the computing equipment in these information centers is a collection of semiconductor devices of vast variety and complexity.

In manufacturing areas, machines are controlled by semiconductor intelligence. Employees check the time on their new digital watches which, you guessed it, depend on semiconductors. Production figures, sales orders, and inventory levels are tallied on hand-held calculators powered by a single semiconductor chip.

Using the lunch period for a

quick shopping trip, you may visit a department store in which the tag on the item you're purchasing will be run through a hand-held reader—again operated by semiconductor intelligence. The reader saves you time and money. It instantaneously logs the type and price of your purchase into inventory records while entering the cost on the cash register. This electronic inventory control is less costly and more efficient than manual methods enabling the store to reduce overhead costs while



improving customer service.

A stop at the supermarket may be necessary after work; there your purchase may pass through an electronic monitoring station where information contained in the stamped International Product Code—price, size and type—will be relayed to the cash register while the store's inventory records are updated. Again, electronic maintenance of inventory is more efficient and less costly than manual record-keeping, so that more of your grocery bill represents food, not overhead costs.

Push a button or flip a switch and, chances are, you're telling a semiconductor device to go into action.

The changes that semiconductors have brought to our lives have arrived in ever growing waves with each passing year. We've learned to expect new products made possible by semiconductor technology and new safety and convenience in traditional products through the applications of semiconductors' unique characteristics and low cost.

Yet, in spite of the accepted position semiconductors have assumed in our lives, each year has brought advancing technology that never fails to fascinate. And the past year was no exception. Solid-state technology moved ahead at

Fairchild, leaving in its path more than 200 new products.

Some of the most imaginative and far-reaching products to come out of Fairchild engineering and research laboratories during the past year are described here.

F8 Microprocessor

The F8 Microprocessor packs more capability on two tiny chips of silicon than any other similar product on the market. Designed and produced by the MOS Products Division, this product will be the brain in the hand-held reader used by department stores, the main module in supermarket electronic monitoring stations, the intelligence in multi-step industry controls, the electronics in low-cost home security systems, and the controls in automobile monitoring systems.

The F8 brings the information storage and processing capability available only in huge, expensive data processing systems a decade ago, within the price range of products for the home and small businesses.

CCD450 Memory

Computer processing systems contain various types of memory storage media in main and peripheral equipment. Each medium is selected for its prime characteristics. Bipolar, MOS and magnetic core devices are used where fast access to stored information is the prime demand. As a rule of thumb, fast access usually means high cost. At the other end of the scale, drum and disk memory devices are used when density, the amount of information that can be stored in the same relative space, is the key requirement. In 1975, Fairchild introduced a memory using Fairchild-developed buried channel CCD technology that extends computer manufacturer's options in the selection of memory media. The new CCD450 memory device offers a significant advancement in solid state memory with performance characteristics that place it between slower electro-mechanical disk and drum secondary memory systems and fast bipolar, MOS and magnetic core media.

The CCD450 represents the first entry in a planned family of CCD memory devices aimed at use in computer terminal buffers, video display and computer terminals which contain memory. The CCD450 is the first memory product to be manufactured using CCD technology developed at Fairchild.

Synchromatic 110

The Industrial Products Division

has applied the latest semiconductor technology to create a sound synchronized filmstrip projector, the first product of its type to be marketed. Using a digital control electronic system with Fairchild integrated circuits, the projector allows users to rewind, stop and start filmstrip programs at any point and maintain perfect sound synchronization. Previously, to maintain picture-sound synchronization, a filmstrip had to be run from beginning to end. The ability to manipulate the program material to the users' needs is particularly vital in training situations, the key application for filmstrip programs. With the Synchromatic 110's capability, training material can be paced to the student's or classes' needs, allowing material to be reviewed in any sequence as often as necessary.

Industrial Products Division accomplished this by reading the code from the magnetic tape and comparing this with an optical code between the picture frames. The Synchromatic 110 uses a Fairchild-developed Synchro-Pak Cassette which combines the filmstrip and magnetic tape in a single package which is small enough to fit in a shirt pocket.

MV-101 Television Camera

A semiconductor product, the Fairchild CCD imaging element with 10,000 photosensors, is the heart of the Space and Defense Systems Division's new hand-held television camera. All of the electronics necessary to capture and transmit images are contained in a single charge coupled device manufactured by the Integrated Circuits Group, making possible a miniature television camera ideal for closed circuit applications where conventional television cameras could not be used. The broad dynamic range of the CCD image sensor enables the lens to adjust to the extreme fluctuations in light levels which might be confronted in law enforcement, industrial surveillance and medical instrumentation applications.

Mail Sack Reader

Space and Defense Systems Division is also using Fairchild CCD image sensors in a newly-developed mail sack label reader delivered to the United States Postal Service. A model of the reader is currently under evaluation at the nation's main Post Office, Washington, D.C. The reader scans the destination bar code printed on the sack label and directs the mail bag to the appropriate conveyor line. The mail sack label reader uses an experimental 1,000-element CCD photo sensor line array

developed by the Fairchild Integrated Circuits Group.

E-100 Ignition Module

Fairchild semiconductor devices are helping to improve automobile performance through new electronic ignition modules which are standard equipment on some 1975 model cars. Owners of older automobiles are enhancing the operation of their car's ignition system through the purchase of electronic ignition modules at auto parts dealers. A Fairchild module, the E-100, is now being test marketed in auto parts stores in California. The E-100 offers improved gas mileage and reduces auto maintenance costs by prolonging engine condition. These are the same benefits offered in the factory-installed systems. Semiconductor devices used in the ignition modules produced by the Fairchild Automotive Strategic Business Unit are supplied by the company's Transistor Division.

Qualifier* 901 Tester

Systems Technology Division during 1974 brought the capability of automatic testing of semiconductor devices to a broader range of customers through the introduction of its Qualifier 901 test system. The small, low cost tester offers semiconductor users rapid test capability at incoming inspection stations and in some final test applications.

The Qualifier 901 uses an optically-coded plastic card to change the systems' test parameters to meet the test needs of DTL, TTL and CMOS devices. The Qualifier is easier to use and substantially less expensive than any other competitive system on the market.

Semiconductor users, prior to the introduction of the Qualifier, depended on test equipment that required trained operators and a change of circuit boards to alter test parameters to suit more than one type of device.

An interchange of ideas and technology between product divisions has resulted in many of the new Fairchild products that appeared on the scene in 1974 and early 1975. Space and Defense Systems employs CCD technology to expand its offering of camera systems; IPD uses integrated circuits to improve the operation of a new projector; and Systems Technology calls on advanced semiconductor devices produced by several Fairchild divisions to bring a new bench top tester to wide range of customers at a price they can afford.

*TM-Fairchild Camera & Instrument Corporation

Shortly after employees receive this issue of HORIZONS, stockholders will be reading their copies of the 1974 Fairchild annual report. This publication gives company investors and potential investors a capsule view of the company's operations during 1974 and compares

Financial Management and Control

balancing resources and objectives

that year's performance with previous years.

More than simply describing the amount of sales and earnings realized, the pages of figures contained in the report relate a very telling story. The difference between what the company achieved in sales revenue and what remains on the bottom line of the consolidated financial statement, relates how successful Fairchild was in managing the resources available to it.

"That figure in the profit column is extremely descriptive to anyone who is interested in our company," states Jim Unruh, director of corporate planning and analysis. "Profit together with a balance sheet analysis," he explains, "tells investors whether or not we are in a position to finance the future of our operations. Fairchild reinvests the greatest portion of its earnings in its own operations to pay for research and engineering projects that will result in future products, and facilities and new equipment that will enable us to meet increased demand for new and existing products. An astute stockholder,"

Unruh continued, "looks beyond sales and earnings to see how much the company has directed toward research and engineering. That figure, in an industry such as ours which is dependent on continually advancing technology, gives an indication of how prepared the company will be to address competition in the future."

"Fairchild's 1974 report," Unruh continued, "describes a year of

must decide on how resource allocations will be made.

"Even in the most stable economic times, each division's formal budgets receive a semi-annual management review," Unruh explains. "In addition, reviews are conducted more frequently to determine if there are any changes in the operating conditions or business outlook that would require a replanning of the



Jim Unruh, director of corporate planning and analysis

financial and technological advances which were accomplished in a very difficult economic environment. By correctly anticipating changes in our major markets and adjusting our operations to the new, lower level of demand for products in the final half of the year, we were able to maintain our major objectives intact."

In Fairchild's financial planning system, each division operates as a semi-autonomous entity with its own sales and profit objectives. "The objectives are established," Unruh explains, "out of each division's plans, which have been developed from studies of its market potential, its needs for funding to realize that potential and its current operational status." At least once each year, all of Fairchild's divisions present an operating plan to corporate management. If the combined plans result in a demand for corporate resources that exceed the company's financial capability, members of management

division's strategy. In times such as exist now," he adds, "these reviews are conducted monthly or even more frequently, if needed, in order to maintain a definitive reading on our corporate-wide financial position at all times.

"A single profit center and a centralized reporting system would be unworkable for a company with the scope of Fairchild," Unruh explains. "Rather, a number of separate profit centers gives greater insight into the segments of our business and allows for rapid reaction

to the opportunities and problems surfacing in any area of the business. This also gives each division greater control over its own destiny. The ability to identify changes in the company's outlook allows management valuable time in which to weigh the alternatives available to it in adjusting to those changes. The recent plant shutdowns in many of our semiconductor operations are examples of being able to exercise alternatives. Management confronted the fact that Fairchild could not fully use its workforce over a several month period because of inadequate product orders to sustain the level of employment. This problem was identified well enough in advance to consider remedies other than lay-off. Our financial projections indicate that we would soon require most of our current employees to satisfy the demand for our products. Therefore, a short-term, temporary closedown of some of our plants was determined to be the most acceptable solution to the problem.

"Financial performance and planning are tied to all aspects of the company—its people, products and facilities; not just abstract numbers," Unruh states. "When we finally look at profits, we are measuring the total company performance within its economic environment and to a great extent its value to our customers."



What those numbers say:

FAIRCHILD CAMERA & INSTRUMENT CORPORATION AND SUBSIDIARIES

Consolidated Statement of Income

(Amounts in thousands except per share data)

Among all the financial charts in the 1974 annual report, the consolidated statement of income will receive the greatest amount of attention from the greatest number of people. Here's what it tells:

	12 Months Ended	
	12/29/74	12/30/73
Revenues:		
Net sales	\$384,933	\$351,171
Royalties and other income	10,619	10,397
	<u>395,552</u>	<u>361,568</u>
Costs and expenses:		
Cost of sales	264,194	245,450
Administrative and selling	75,882	61,975
Interest	3,868	3,661
	<u>343,944</u>	<u>311,086</u>
Income before income taxes and extraordinary credit	51,608	50,482
Provision for income taxes	24,576	23,733
Income before extraordinary credit	<u>27,032</u>	<u>26,749</u>
Extraordinary credit—income tax reduction from carryforward of prior years' operating losses	—	14,410
Net income	<u>\$ 27,032</u>	<u>\$ 41,159</u>
Per share of common stock:		
Income before extraordinary credit	\$ 5.17	\$ 5.12
Extraordinary credit	—	2.76
Net income	<u>\$ 5.17</u>	<u>\$ 7.88</u>
Average number of common and common equivalent shares outstanding	5,228,523	5,224,826
Per share of common stock, assuming full dilution:		
Income before extraordinary credit	\$ 5.00	\$ 4.94
Extraordinary credit	—	2.57
Net income	<u>\$ 5.00</u>	<u>\$ 7.51</u>
Fully diluted shares	5,559,472	5,594,151

Revenues: The two figures under this heading represent the amount of money the company has received as the result of sales of semiconductor devices, aerial cameras, rear screen projectors, semiconductor test systems and other Fairchild products. The figures under royalties and other income represent the amount of money other companies paid to Fairchild to use its patented processes such as Planar fabrication techniques.

Costs and Expenses: These figures total the amount of money which had to be spent in order to produce and sell our products. **Cost of sales** includes the wages, salaries and benefits for employees in product-related jobs, the amount paid for materials to manufacture our products, the cost of office supplies, and the numerous other services and materials which are required to produce our products and to keep our facilities operating.

Administrative and selling: This figure includes the wages, salaries and benefits programs for employees in jobs not directly related to manufacturing.

Interest: When Fairchild borrows to finance new facilities or needed expansion, it pays interest for the use of that money as a cost of doing business.

Income before income taxes and extraordinary credit: After Fairchild made all of those sales, and incurred all of those expenses, what was the net results of our efforts over the year? The first figure represents what was left of revenues after we paid our bills. More than 85 percent of all the money Fairchild received from sales and royalties was needed to operate our plants and offices and build our products.

Provision for income tax: Fairchild pays national and local taxes in every country in which it operates—an amount which represents almost 50 percent of the company's total income.

Net income: Here's the result of all the efforts in 1974—\$27,032,000. That figure represents seven percent of the sales revenues the company realized over the year.

Fairchild Closes Shiprock Plant

Fairchild announced on March 12 that it is closing its semiconductor assembly plant on the Navajo Reservation at Shiprock, New Mexico.

Wilfred J. Corrigan, president and chief executive officer, said the decision was reached "with great reluctance and regret, particularly in the light of Fairchild's ten-year association with the Navajo community."

"However, a combination of circumstances—including events of the past few weeks—has dictated this decision."

The Navajo-owned plant was seized February 24 and occupied for more than a week by an armed band of American Indians, most of whom left with their weapons. The intruders returned the facility to tribal police March 3, and Fairchild obtained access two days later.

"Since then, we have been assessing the damages and evaluating the long-term implications of this seizure," Mr. Corrigan said.

"After thorough discussions with Chairman MacDonald and other officials of the Navajo Nation—whose efforts we appreciate—Fairchild has concluded that it could not be reasonably assured that future disruptions would not occur."

Mr. Corrigan added that arrangements had already been made to meet customer requirements for Shiprock-based production at other Fairchild facilities in the United States.

Fairchild began operations on the Navajo Reservation in 1965 in temporary quarters. A permanent facility, financed by the U.S. government and built to Fairchild specifications, was completed in 1969 and leased by Fairchild from the Navajo Nation.

Fairchild STAN Systems Ordered by Aer Lingus And Pakistan International

Fairchild Industrial Products Division has been awarded contracts by Aer Lingus and Pakistan International to equip their fleets of Boeing aircraft with STAN* aircraft integral weight and balance systems.

Aer Lingus has ordered six STAN systems plus spares for its 707 and 737 planes. Pakistan International will equip seven 707 aircraft with STAN systems. Deliveries have started and will be completed by mid-1975.

*TM FC&I



BIGGER AND BETTER. One of Systems Technology's newest products, the S1200, knocks the old adage that good things come in small packages. The Sentry 1200 is contained in a huge package and its performance matches its size. The largest semiconductor test system ever built, the S1200 has twice the capacity of its closest relative, the Sentry 600. Two of the large systems have been constructed and delivered to customers in the U.S. and Japan. Ed Chang, project manager, checks on the progress of the build-up of the third S1200 in the Systems Technology assembly area.

One of the favorite diversions of members of the Optoelectronics Division in recent weeks is showing off a Zero Defects Award received from Fairchild customer, Hughes Aircraft Company. The coveted award was presented in recognition of the consistently high performance of dice supplied by Opto for use in Hughes digital watch modules. Hughes is the largest supplier of these modules to the world's major watch manufacturers. Fairchild, in turn, is the largest supplier of LED dice for watches as Hughes' prime source for these components. The Zero Defects award acknowledges Fairchild's performance in product reliability over the past year. Flanking the award are (below, left to right) Bert Iwanaka, Paul Legan, Steve Carmichael, Bruce Crockett and Lenny Erskine. Darrel Sand, a member of the team which earned the award was not available for this photo.



H. Dell Foster Receives Fairchild Photogrammetric Award

H. Dell Foster of H. Dell Foster Company, San Antonio, Texas, is the recipient of the 1974 Sherman Mills Fairchild Photogrammetric Award.

The award was presented in Washington on Wednesday, March 12, 1975, at the American Society of Photogrammetry Convention by Irving W. Doyle, technical director of the Space & Defense Systems Division of Fairchild. Mr. Doyle also presented Dr. H. M. Karara, 1973 award winner, with a permanent replica of the award.

Mr. Foster is being recognized for his accomplishments in the field of photogrammetry. In selecting him, the

committee noted his personal leadership in the design, prototyping and manufacturing of mechanical, optical and electronic instruments.

One of the highest honors bestowed by the American Society of Photogrammetry, the Sherman Mills Fairchild Photogrammetric Award is sponsored by the Space & Defense Systems Division of Fairchild Camera & Instrument Corporation. Since 1943, it has been presented annually to a member for an outstanding invention or design, or for research that contributes to the general advancement of the art of aerial photogrammetry.

Cost Reduction

"What can I do" becomes "can do"



Uli Hegel and Jaime Bayan of the Transistor Division



Ed Kuebert



Value Engineering team members at Systems Technology: (seated, left to right) Phil Noyes and Bryan Clausen; (standing, left to right) Ron Wagner, Steve Nata, Y. B. Chau, Larry Gerould and Gene Shao.

Does the spectre of a chaotic world economy make you want to go into hiding?

If so, you're not alone. Recent surveys by public opinion pollsters reveal that most people feel powerless when confronted with rising costs and a weakening economy.

However, "What could I possibly do to help?" quickly becomes "can do" when individuals realize that they can have some control over economic fate.

This attitude has been evidenced throughout Fairchild over the past year as every division, along with the rest of the business world, faced eroding markets and increased competition. Instead of hiding their heads and hoping the problem would go away, Fairchild employees determined that the most obvious way in which to positively influence the company's financial future is to deliver superior products at the lowest possible price.

So, "Cut unnecessary costs" became the war cry of Fairchild economic fighters in every operation around the globe. Every battle started at the same point: defining what constitutes unnecessary costs.

Virtually everything that adds to the price of a product falls under the scrutiny of Design-to-Cost manager Ed Kuebert, Photographic Systems Department, Space and Defense Systems Division. "I don't make many friends in my pursuit of ways to do things less expensively," he says. "Nothing is sacred in our attempts to deliver a product at a lower cost," he explains. "I'm always asking people to take another look ... to see if there is some other, less expensive, way to accomplish the same end."

Ed is the advance guard in the



Industrial Products Division's finely tuned production line

manufacturing cycle. It is his job to determine if Space and Defense can develop and deliver a product at a price the market will bear. "Suppose," he explains, "that our marketing research group has determined that there are customers for a camera that sells in the \$1,000.00 range. The question is, 'Can we manufacture such a product and make an adequate margin of profit?'" Ed maps out every step of the engineering-manufacturing process that would be necessary to bring the product to reality. He prices every material and man-hour along the way. "We are constantly making trade-offs for cost reduction," he reveals. "We determine the most important performance characteristics and these features remain inviolate. However, anything that doesn't affect that basic performance is fair game for cost reduction. We suggest alternate materials, ask for different design approaches and generally try to squeeze every extra penny out of the construction costs. Our incentive is the possibility that we will be able to deliver a product that meets the needs of a market we know exists. However, we never try to fool ourselves. If the project can't be done profitably, we don't invest a great deal of time and effort in engineering before we discover that the job is not within our scope."

Ed's efforts are just a single example of the cost consciousness of the Space and Defense Systems Division. This organization has a long history of cost effective performance. However, Ed claims: "Never before

in my 38 years of engineering at Fairchild have we worked in such a competitive environment. Attention to costs is greater than ever before."

Individual Ingenuity

Divisional efforts in cost savings such as those of Ed Kuebert are bolstered by the incentive and ingenuity of other individuals at the Syosset, New York, plant. Every month a number of the organization's employees are recognized for their cost savings suggestions. Hank Carter and Nick Francischelli of the Division's Finishing Shop were recently top suggestors as a result of cost savings procedures they implemented in their jobs. Hank designed a rubber mask that protects the underside of printed boards from the spray of buffer coating when the boards are being finished. Use of the protective mask saves many hours of clean-up and therefore, reduces fabrication expense. Nick was recently recognized for a cost savings suggestion that eliminated much of the rejects and rework that result from air bubbles which develop while circuit boards are being finished with a coating material. Experimenting to resolve the problem, Hank discovered that coating and baking the tops and bottoms of the boards separately eliminates the bubbles. These are but two of the suggestions made daily at worldwide Fairchild plants that enable the company to keep product costs stable in the face of inflation.

Value Engineering

The Systems Technology Division in San Jose, California, eight months ago focused total management atten-

tion on squeezing all of the superfluous costs out of its products. In a program called Value Engineering, every product the division manufactures receives careful cost analysis by a small group of personnel, supervised by Gene Shao. Applying Value Engineering principles to one of the Division's well established products, the 5000C, Systems Technology was able to realize a significant savings on materials and labor. Gene describes the way in which the Division pursues such profitable cost reductions:

"In our approach, we don't usually attack the basic function of the equipment. With that in mind, we isolate the major cost items represented in the finished product. Naturally, the biggest expenses receive the most attention, but before we're through we'll examine everything that adds to the price of the product. We begin by studying the way the product is put together. Perhaps altering the production flow will cut down on labor hours, or just doing things in a different way will add up to a small savings in time or materials. The cost reductions on the 5000C were the result of numerous small efficiencies and the substitution of lower cost materials.

A small group of people spend a major part of their work day in pursuit of cost savings in production and engineering at Systems Technology. Not all projects are as ambitious as the 5000C effort, yet all Value Engineering tasks yield results. "When you're studying a unit that will be produced in volume," Gene

Ron Burley, Diode Division's cost reduction leader.



IPD mailman and cost counselor Fred Smith.



says, "a savings of ten or even five percent adds up. Naturally," he adds, "we benefit directly from cost reductions realized by the company's semiconductor divisions. As they trim their costs, they pass the savings on to us and we use a large volume of Fairchild solid state devices in our testers."

All that glitters isn't gold

Symbolic of the cost reduction efforts within the semiconductor divisions, is the Transistor Division's intensive drive to bring down the cost of its devices. This division began its search for economies by finding a substitute for the gold used in its products. "Two years ago," states Jaime Bayan, who heads this Division's cost reduction effort, "gold was approximately one-fourth the price it is today. Always an expensive item in semiconductor manufacturing, by 1973 it had become the single, greatest cost item in every transistor. Our goal," Jaime states, "was to find a metal that would perform as effectively yet cost a fraction of gold's price. Today, you won't find gold in many transistor products. It has been replaced with a much less expensive metal that offers the stability and solderability of the more costly metal. Many alternate metals were tried until Uli Hegel, transistor assembly engineering manager, came across the proper combination. The use of gold has long been subject to question," Uli says, "but it was not until its price quadrupled that the incentive was there to completely revamp production procedures to accept another metal."

Eliminating the precious metal didn't satisfy Transistor's appetites for lower cost products, however. The division has also made considerable progress in reducing the size of die needed for transistor circuits. Smaller dice mean more units per silicon wafer, and, therefore less cost per unit. Attacking the cost problem from all angles, the division has also increased the size of silicon wafers it uses in fabrication in order to produce more dice with no accompanying increase in effort. Transistor's economy efforts have paid off in decreases of up to 45 percent on the manufacturing costs of some of its products. The Mountain View and Far Eastern operations of the Transistor Division have worked closely in the cost, process and equipment improvement program.

Packaging for profit

A Diode Division cost reduction team, led by engineering manager Ron Burley, was successful over the past year in cutting costs of some of its products up to 50 percent. Ron points to the Zener diode group's efforts as most outstanding. "Through the use of a new packaging approach for this product we are not only able to reduce costs significantly, but improve the yield rate and product reliability at the same time."

Over the past 18 months, Diode Division management has devoted unprecedented effort and resources toward squeezing every extra cent out of product costs. This concern has had its result throughout the Diode product line in the elimination of gold, reduction of piece parts, wafer size increases and die dimension reductions. The division's objective was to be unquestionably price competitive in every market area it serves.

With an economic squeeze on, many cost items that are taken for granted in boom times are receiving new attention. Everyone, everywhere throughout the corporation has the ability to control costs in some way. Employees are thinking twice before they pick up a telephone receiver, because telephone costs, particularly long distance and toll charges, add quickly, and our telephone bill is reflected in the price of our products. All office materials—photo copies, stationery and supplies—are being handled with new respect, because of the expense they represent in the company's cost of doing business.

Production line balance

Communication between sales, inventory and production departments has been stepped up at the Industrial Products Division in Commack, New York, in order to schedule the longest possible runs of a single product at one time. Lengthy assembly runs of the same models of IPD projectors cut down on the expenses

involved in assembly line change-over from one product to another. At the same time, periodic checks of assembly line work balance are continued to assure that procedures represent the most efficient and economical way in which to get the job done.

IPD's economic concentration is not limited to the assembly line. Nothing that adds to the price of its products escapes the examination of IPD cost sleuths. Even the commonplace cardboard carton has come under question as the division looks for ways in which to reduce the cost of packaging its products.

IPD mailman Fred Smith conducts his own cost reduction campaign by counselling secretaries on the least expensive way to mail letters and packages. "Did you know, for instance, that if you include correspondence in a package of literature mailed abroad, the cost is more than twice what it would be if you mailed the literature separately? Send your letter," he advises, "in a separate envelope and you'll cut your postage bill without any sacrifice in delivery time."

Suggestions such as Fred's postage savers are being shared throughout the corporation among "can do" employees who are having their positive influence on Fairchild's economic position.

Authors Awarded

Fairchild employees who write articles relating to the company's business interests which appear in business, industry and general circulation publications, are eligible to receive cash Author's Awards. Over the past six months, the following Fairchild authors have received recognition for Fairchild-related articles which appeared in print:

SPACE AND DEFENSE SYSTEMS DIVISION

Kenneth Hoagland—"Applications Techniques for CCD-TV Image Sensors" presented at the *Electro-Optics '74 Conference*.

Herbert J. Friedman—"A Multi-Kilowatt Decade Bandwidth, Solid State Communications Jammer Transmitter" presented at the *1974 Association of Old Crows Symposium*.

Thomas Ryan—"New Fairchild Receiver Contains Microprocessor" published in *Electronic Warfare*.

Jerome Kleifgen and Clarence Yutkowitz—"Brazil's Watchful Tower" published in *Optical Spectra*, November 1974.

SYSTEMS TECHNOLOGY DIVISION

Robert Huston—"Microprocessor Function Test Generation on the Sentry 600" presented at the *1974 IEEE Symposium* and published in the *Symposium Digest of Papers*.

SEMICONDUCTOR COMPONENTS

Russell Apfel—"A Fast-Settling Monolithic Operational Amplifier Using Doublet Compression Techniques," published in the *IEEE Journal of Solid State Circuits*, December 1974.

Kenneth Stafford—"A Completely Monolithic Sample/Hold Amplifier" *IEEE Journal of Solid State Circuits*, December 1974.

Paolo Gargini—"High Voltage Simultaneous Diffusion Silicon Gate CMOS" published in the *IEEE Journal of Solid State Circuits*.

Cliff Roe—"Trends in Semiconductor Materials Production" published in *Electronic Packaging and Production*, April 1974.

Gene Miles and Curt Phillips—"Building High Speed Memories" published in *Electronic Equipment News*.

Robert Hood, Andy Adamian and Herman Ebenhoech—"Control Switching—Transients" published in *Instrument and Control Systems*, June 1974.

Eric Breeze, Joseph Rothstein, Peter Alfke and Halfon Hamaoui—"A Frequency Synthesizer for Television Receivers" *IEEE Transactions, Broadcasting Television/Radio*, November 1974.

Will Alexander—"Computer Analyzes RF Circuits with Generalized Smith Charts," *Electronics*, March 1974.

Howard Murphy and Will Steffe—"Monolithic Integration for a Camera Control System," *IEEE Journal of Solid-State Circuits*.

John Archer and George Bechtel—"A Low-Noise Integrated S-Band Amplifier," *Microwave Journal*.

Robert Hood—"Automotive Electronics, sponsored by IEEE and Society of Automotive Engineers; and "Electronic Penetration in Autos—Systems on Wheels" *IEEE Proceedings*, February 1974.

Jim Holt—"A Two-Quadrant Analog Multiplier Integrated Circuit" *IEEE Journal of Solid-State Circuits*.

Peter Alfke—"Den Nakna Sanningen Om Digitala IC" *Elektronik (Sweden)*.

Eric Breeze—"Novel Electronic TV Touch Tuning Systems Using Digital Circuit Techniques," *IEEE Transactions*, May 1974.

Rob Walker—"Microprocessors in Perspective," *Digital Design*, April 1974; and *Electronics & Power*, July 1974.

Peter Alfke—"Low Cost 7-Segment-to-BCD Converter is Simple, Fast," *EDN*, July 1974.

Rob Walker and Ken Evanger—"Shifting the Dot Matrix," *Digital Design*, April 1974.

Peter Alfke—"A Logical Approach to MSI," *Electronics Products Magazine*.

Rob Walker—"C-MOS Specifications: Don't Take Them for Granted," *Electronics*, January 1975.

Fairchild employees can earn author's incentive awards of up to \$200 for a published article or paper providing that the manuscript has been reviewed and approved by the Corporate Patent Department.

Dr. Bill Smith-- Master Builder

Dr. Bill Smith, research and development director for the Systems Technology Division, can be found on Saturday mornings scouring local San Francisco Bay Area wallpaper and fabric stores looking for just the right patterns and colors for his house. Clerks are often taken aback by his purchases when he does arrive at a decision. A few inches of this fabric or a small square of that wall paper will do the job nicely.

Though Bill's purchases are small, his concern for the tastefulness of the interior decoration of the houses he constructs is great. "It doesn't take much fabric or wallpaper to cover the surfaces in the houses I build," Bill explains, "because they are constructed on a scale of 1:12 inches. However, when you are decorating the tiny rooms, a paper that might serve well in a full-sized house would overwhelm the eye." A few inches of velvet becomes a room-sized lush carpet. A small square of paper with a tiny pattern becomes a dramatic background in one of the small rooms. Window shutters, less than two inches in length have been individually carved to frame the numerous windows in Bill's first construction project, an eight-room colonial house with a pillared entrance and shake roof.

His homebuilding-decorating endeavors are roundly encouraged by his two daughters who follow anxiously the progress of the doll houses. One house and two daughters added up to an impossible equation Bill discovered before the paint was dry on his first project. So, construction was begun on a Victorian house; an even more demanding project as Bill will faithfully reproduce the gingerbread facade of homes of this style.



Dr. Smith and his first house-building project.

Walter Burke to retire As Board Chairman; Roswell Gilpatric to succeed him



Walter Burke

Walter Burke, chairman of the Fairchild Board of Directors, announced in January that he would retire as board chairman and Fairchild director following the annual shareholders' meeting on May 2, to pursue personal interests.

He said he will be succeeded by Roswell L. Gilpatric, former deputy secretary of defense and a Fairchild board member since 1967. Mr. Gilpatric is presiding partner of Cravath, Swaine & Moore, the New York law firm which has served for many years as the company's outside counsel.

Mr. Burke became chairman four years ago, upon the death of founder Sherman M. Fairchild, to whom he had been financial advisor for nearly 20 years. He said he will continue his interest in the company both as a substantial stockholder and as president of the Sherman Fairchild Foundation, Inc., which owns 13 percent of the outstanding shares of Fairchild Camera.

Referring to his decision to pursue other interests, Mr. Burke commented that he was also not standing for reelection as a director of several other public companies. He stated that he wished to be free to consider other areas of activity, including business, charitable or other types of public service.



Roswell L. Gilpatric

Mr. Gilpatric, who is also a director of the Sherman Fairchild Foundation, served as deputy secretary of defense from 1961 to 1964. He was assistant secretary of the Air Force in 1951, and undersecretary from 1951 to 1953.

A native of New York, he was graduated from Yale University, Phi Beta Kappa, in 1928 and from Yale Law School in 1931. Mr. Gilpatric has been a partner in Cravath since 1940, except for periods of government and industry service.

Donald Brettner Named General Manager for Europe

Donald M. Brettner has been promoted to general manager—Europe for Fairchild, it was announced in January by David J. Marriott, vice president and general manager—International Division.

Mr. Brettner is headquartered at the company's plant in Wiesbaden, West Germany, and is responsible for Fairchild European activities, involving offices in London, Stockholm, Paris and Milan. He replaces Arthur M. Massicott, who has been named regional sales manager for Boston.

A five-year Fairchild veteran, Brettner has held significant operating posts with the company, including direction of the silicon materials plant and central reliability and quality assurance operations. For the past two years he has had direct responsibility for the company's Far Eastern assembly plants.

Fairchild Lenses In Earth Study

Fairchild lenses, designed and created by the Precision Optics facility of the Fairchild Space and Defense Systems Division, are helping to expand our knowledge of the earth's resources. The high resolution lenses are part of the RCA return beam video three-camera system aboard the NASA Earth Resources Technology Satellite (LANDSAT-2) which was launched in January.

LANDSAT-2 teams up with the original Earth Resources Technology Satellite (ERTS-1) which has been in operation since July 1972, to provide continuing multispectral scanning of almost the entire globe. Images relayed from the satellites to the NASA Goddard Spaceflight Center, Greenbelt, Md., provide the basis for study of the world's forests, land use, minerals, environment and marine resources. The studies are used in mapping and resource management projects.

The 1165-pound LANDSAT-2 is in a 570-mile near-polar orbit. Circling the globe every 103 minutes, the spacecraft's remote sensors view a 115-mile wide strip of the earth running nearly north-to-south at an angle to the equator of 99°. The globe is covered every 18 days.

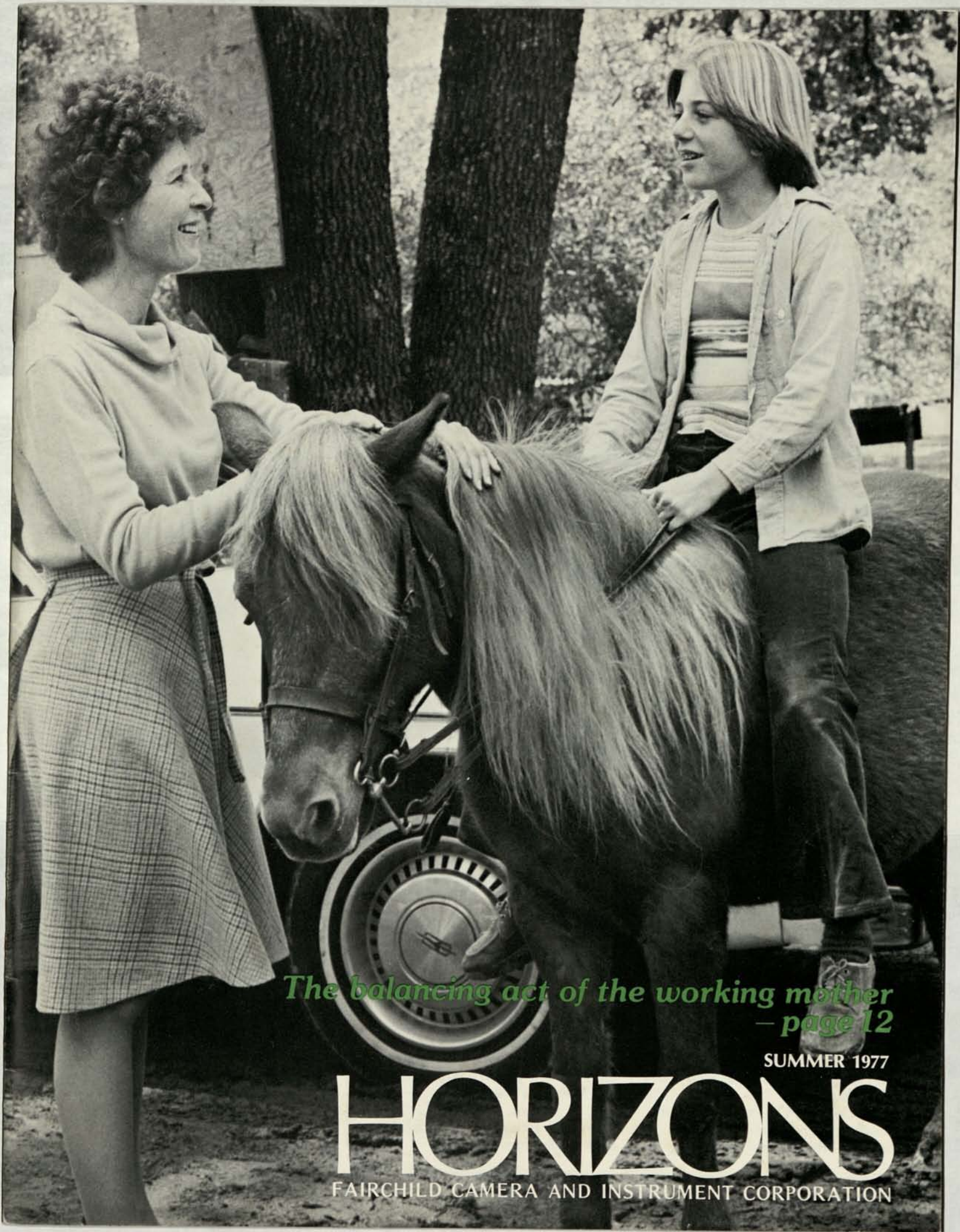
An RCA technician checks out the LANDSAT-2 camera system with Fairchild lenses.



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*The balancing act of the working mother
— page 12*

SUMMER 1977

HORIZONS

FAIRCHILD CAMERA AND INSTRUMENT CORPORATION

HORIZONS

SUMMER 1977



Cover: One of the last stops in Tat Blesch's busy day is the stable, where she picks up her daughter, Kris. Tat is one of four Fairchild working mothers who discuss how they meet their many obligations in *Breadwinners and Breadmakers*, beginning on page 12.



EDITOR

Lyn Christenson

CONTRIBUTING EDITOR

Neal Rosen

CORRESPONDENTS

West Coast: *Healdsburg*—George Coppinger; *San Jose*—Jan Dahlin; *San Rafael*—Rob Bussell; *Palo Alto*—Teddi Kush

East Coast: *IPD*—Peg Schinnerer; *South Portland*—Peter Wyberg; *Syosset*—Ruth Miller

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FAIRCHILD REPORTS FIRST QUARTER RESULTS

First quarter earnings of \$2,229,000 or 41 cents per share, on total sales of \$114,988,000 were reported by the company April 28.

Earnings were up from \$197,000, or 4 cents per share in 1976. Sales increased 21.5 percent from \$94,624,000 last year.

Profitability for the quarter, although considerably ahead of last year, was below planned levels, according to Wilfred J. Corrigan, President. "This was due mainly to a sharp, seasonal drop in digital watch demand, compounded by erratic pricing in the marketplace," he said.

"All other areas of the corporation improved, and total order input of \$135 million was the highest since the fourth quarter of 1973."

Wilf cited strong improvements in bipolar memories and MOS products, particularly 4K RAMs. He also noted that initial manufacturing has begun on Fairchild's 16K MOS RAMs and 65K CCD memories.

"In spite of less-than-anticipated growth in the electronics sector of the economy, sales and margins continued to improve in the commodity component area," he said.

End-equipment businesses, including federal systems, industrial products and instrumentation, increased in profitability from the year-earlier period.

"Although we have lowered our projections for this year's digital watch market, we perceive a continuing swing to electronic, as against mechanical, timepieces in the U.S. and abroad," he said. "This represents a significant, long-term business opportunity for Fairchild."

NEWSCLIPS

IMAGING SYSTEMS AWARDED POSTAL SERVICE ELECTRONIC MESSAGE SYSTEM CONTRACT

The U.S. Postal Service has awarded Imaging Systems Division a contract for exploratory development of a model scanner subsystem for the Electronic Message Service System program.

The \$500,000 contract covers development of a scanner which will demonstrate the feasibility of high-speed electronic "reading" of incoming mail. Such a system would speed mail delivery by allowing preferential handling of business and personal correspondence and by permitting nearly instantaneous transmission of mail from a Post Office near the sender to one near the recipient.

Testing is scheduled for 1977-1979, and could lead to the development of an operational system in the 1980s.

SOUTH PORTLAND WINS IBM CONTRACT

Fairchild has reached agreement with IBM Corporation to assemble memory and logic modules for IBM data processing equipment.

The agreement, which extends over four years, involves assembly services to be done at the Digital Products Division's South Portland, Maine plant. Completed modules will be used in IBM's manufacturing operations at Burlington, Vermont.

FAIRCHILD SIGNS AGREEMENT WITH MAJOR ITALIAN SEMI- CONDUCTOR FIRM

SGS-ATES of Agrate, Italy, the largest Italian semiconductor manufacturer and a leading European supplier of linear integrated circuits, will be an alternate source for the F8™ microprocessor and for Fairchild's medium and small scale low power Schottky devices.

Fairchild will receive financial compensation in exchange for technical information required to enable SGS-ATES to start production.

The agreements are non-exclusive and cover a 10-year period.

SEMICONDUCTOR INDUSTRY TRADE ASSOCIATION FORMED

Five major semiconductor manufacturers, including Fairchild, have announced formation of the Semiconductor Industry Association, a trade organization that will focus on critical government relations and gathering of industry statistics.

The executive committee of the SIA includes chief executives of Fairchild, Advanced Micro Devices, Intel, National Semiconductor and the Motorola Semiconductor Group.

FAIRCHILD MOVES UP IN FORTUNE 500

Fairchild had the sixth largest increase in sales of any of the 500 largest industrial corporations in the country last year, according to Fortune magazine's annual survey of U.S. industries. Fairchild sales of \$443.2 million were up 52 percent from 1975 sales of \$291.5 million.

The company achieved an overall ranking of 404 in the annual Fortune 500 survey, based on the company's sales. Fairchild moved up from a position of 511 last year.

AUTOMOTIVE/HYBRID UNIT NAMED DIVISION


Components Group has raised its Automotive/Hybrid Products organization to divisional status. Rodney Smith has been named General Manager of the Division.

Formerly a unit within the Linear Integrated Circuits Division, the division manufactures and markets modular solid-state subsystems, including ignition modules, for automotive and other applications.

IPD PROJECTOR CHOSEN FOR NATION- WIDE PROGRAM

Industrial Products Division's Galaxy 990 Super 8 motion picture projector has been selected by the National Retail Hardware Association for a nationwide customer and employee training program.

The NRHA noted it considers the Galaxy 990 superior to anything else on the market, and said its audio-visual program will include films for point-of-purchase and consumer do-it-yourself information and employee training.



Shareholders, directors and Fairchild employees heard that, with a reasonable economy, the company should exceed \$500 million in sales this year.

Corrigan elected Board Chairman

Company Financial Position Strong, 1977 Annual Meeting Told

"From a financial standpoint, Fairchild has never been stronger," President Wilfred J. Corrigan told the 1977 Annual Meeting May 6.

"Our balance sheet at the end of the first quarter showed working capital at \$113,754,000, shareholder's equity \$173,834,000 and cash and short-term securities \$33,742,000," he said.

Speaking to an audience of shareholders, directors, and employees at Rickey's Hyatt House in Palo Alto, Wilf said that, with a reasonable economy, 1977, our 50th anniversary year, will be the year Fairchild sales exceed \$500 million for the first time. "We have set our objective for a billion dollars in net annual sales by the early 1980s."

Following the meeting, he was elected Chairman of the Board of Fairchild. He succeeds Roswell L. Gilpatric, chairman since 1975, who will continue as a director. Former Board Chairman Walter Burke, President of the Sherman Fairchild Foundation, was elected to the Board, replacing J. Bradford Wharton, who has retired.

While profits in the first quarter were below planned levels, mainly due to a seasonal drop in digital watch demand, compounded by depressed watch pricing in the marketplace, Wilf said that all other areas of the corporation improved.

"Semiconductor orders, which had been stagnant for two quarters increased each month during the period. Total corporate order input of \$135 million was the highest since the fourth quarter of 1973.

"Our overall corporate strategy is to evolve from being simply a semiconductor manufacturer to a balanced electronics company—using LSI as

our base, participating on a multinational basis in the burgeoning worldwide electronics marketplace," Wilf said.

He noted that Fairchild today is divided into four basic business areas: LSI, or advanced solid-state devices; commodity semiconductor components; systems and equipment and consumer end products.

Large-scale integration products were cited as one of the key growth areas for the company. Bipolar memory shipments nearly doubled over a year ago, Wilf said. Results in MOS products further strengthened, and initial production has now begun on 16K MOS random access memories and 65K CCD memories.

Shareholders were told Fairchild now holds a dominant position in the bipolar memory marketplace, and is in a position to assume leadership in MOS memories. The new South San Jose LSI plant, now in operation, embodies the most advanced LSI production technology available, including four-inch wafer fabrication.

Wilf noted that microprocessors and microcomputers are another important growth area for the company. He cited the strong market position of the F8™ microprocessor, for which single-chip versions will be pro-



President and Chief Executive Officer Wilfred Corrigan, who was elected Chairman of the Board following the meeting, gave the main shareholders address. Listening to the speech are, seated from left, Douglas Norby, Vice President—Finance, Dr. C. Lester Hogan, Vice Chairman of the Board, retiring Board Chairman Roswell Gilpatrick and Nelson Stone, Vice President, General Counsel and Secretary.



Shareholders review the 1977 Annual Report following adjournment of the Annual Meeting.

duced this year, and the introduction in early 1977 of the 9440 minicomputer on a chip, which operates about twice as fast as comparable systems. "Commodity components improved

continually throughout 1976, both in contribution to profits and return on assets," he said. "While corporate sales grew 52 percent last year, inventories increased only four percent. In the commodity segment, inventories declined substantially."

In commenting on the consumer products business Wilf said that the arrival of full seasonality in the digital watch business, compounded by the departure of several companies from the electronic timepiece market, had caused a pricing pressure on digital watches. "Fairchild entered this business in recognition both of its risks and its long-term growth potential," he said. "We have established a major market position, which we expect to maintain." He added that the company sees a continuing swing to electronic timepieces worldwide, and this represents a significant long-term business opportunity for Fairchild.

First quarter shipments of Fairchild's programmable Video Entertainment



Mike Hatcher, right, Video Games Product Manager, coaches two Fairchild shareholders on winning strategy on the Video Entertainment System.

System, based on the F8 micro-processor, increased over the previous quarter, Wilf noted. He commented on the first educational Videocarts™, called Math Quiz I and II, which will be valuable tools in teaching youngsters basic mathematic skills. "With Math Quiz," he said, "we begin to demonstrate the power of a computer-in-the-home, with its associated display terminal, your TV set."

Discussing other areas of growing importance to Fairchild, Wilf cited miniature CCD cameras for military applications, test equipment and the broadening range of Fairchild's audio visual products.

Concluding his remarks, Wilf stated that "Overall, we look on 1977 as a healthy business year. Our major task will be to improve our margins, to execute our plans for further LSI product introductions, and to carry forward our total strategy of becoming a balanced, high technology electronics company in the future."

Most of Fairchild's silicon wafers come from our Healdsburg Plant, in the California wine country

Vineyard-laden Sonoma County, Calif., an area known for its export of wine, seems an unlikely setting for a major electronics company. Yet, for the past four years, Healdsburg, a town of 6500 in the northern end of the county, has been home for Fairchild's Semiconductor Materials plant, where silicon wafers—from which most semiconductor devices come—are made.

The plant, which employs more than 200 people, is Fairchild's primary wafer manufacturing facility. From there, the wafers go through a number of masking and diffusion processes—which give them their electrical properties—and are cut into die, or chips.

In contrast to the idyllic surroundings, it has been a feverish four years at the plant: years of hard work, rapid change and "very gratifying success" in the words of Plant Manager Jack Callahan, who opened the plant in mid-1973.

Jack is no stranger to new operations, having been involved in the set-up of semiconductor assembly lines in Mountain View and Fairchild's assembly plant in Jakarta, Indonesia. "We chose this location for a number of reasons," Jack said. "We wanted a site that was easily accessible to Mountain View (two hours away by car), had abundant electrical power and a good water supply."

However, Jack said, the most important attraction was the potential work force in the area. "There was an untapped labor pool here, even though the local people were unfamiliar with electronics technology."

Echoing Jack's sentiments is George Coppinger, Industrial Relations Manager at Healdsburg. One of George's major responsibilities when the plant

opened was to establish rapport with the Healdsburg city government and its citizens.

"It was very important that we establish a good working relationship with the people here. As an electronics company, we were a new kind of citizen in the community," George said.

"The philosophy of the community and the attitudes of its citizens blended with our approach. Because of our efforts in working with the city and hiring local people, our relationship here is an excellent one."

However, before there was any need for employees, Jack and his staff had a major task in turning the former Sunsweet prune warehouse into a modern wafer producing facility.

"The place was stacked to the ceiling with prunes," recalls Plant Facilities Manager Chet Lauchner, who was project engineer during remodeling of the building. "In fact, one of the first things we did was a series of tests to determine if the smell or residue from the prunes would have any effect on our wafer operations."

The Healdsburg Semiconductor Materials Plant. Where It All Starts.



Finding no apparent ill effects from the building's previous occupants, the crew charged with putting the plant into production went to work. By mid-1973, one of the wafer operations—polishing—was moved from Mountain View and set up in trailers on the new plant site. As remodeling was completed, the remaining wafer production operations were moved piece by piece to Healdsburg and employment opportunities for local residents became a reality.

"Those first couple of months we were interviewing people night and day," George recalls. "As people were hired, we had an enormous training task since they were totally unfamiliar with our technology and processes."

The wafer fabrication process (see pg. 9) is the key at the Healdsburg plant. "We produce the major portion of the wafers used by Fairchild's product divisions," said Mike Reilly, Production Control Manager, "and we use truckloads of raw polycrystalline silicon every week. The remaining wafers are purchased from other producers and used for either test control purposes or when a product group wants to compare wafers from Fairchild and other producers."

As the fragile crystal passes through the various processes, quality and "yield"—getting the most wafers from each crystal—are the overriding concern. Obtaining a higher yield is the primary responsibility of two men—Carl Bindhammer, Manager of Quality Control and Quality Assurance, and Chuck Weaver, Engineering Manager. They monitor the success of the processing areas and their effects on wafer yield.

"We have four ways of inspecting the production process," Carl said. "We check the raw material coming into the plant, monitor the processes,

inspect the material as it's built and sample the finished lots to see if they meet the customer's specifications."

Carl said the objective is preventing substandard quality, as opposed to discovering it. "Our overall return rate from here is quite low, an indication that we're doing a good job. However, we're still targeting on greater yield and quality, and, bit by bit, it's improving."

As Engineering Manager, Chuck's role is one of both policing existing processes and overseeing the development of new ones. "The engineering department monitors the functioning of equipment and processes and their effect on yields. We look at the production methods from the standpoint of the equipment and the people using it."

Chuck also oversees development work in the plant's laboratory, where new techniques to increase yields on the production lines are being tested. "We're looking at a number of new methods designed to make a flatter and stronger wafer. We're also developing automatic testing programs and exploring the use of microprocessors in the crystal growers to fully automate and control the growing process."

Underpinning activities at the plant is a new business plan developed by Jack and his staff that was put into effect late last year. "The plan," Jack said, "is designed to meet the cyclical demand at the plant and to upgrade training procedures."

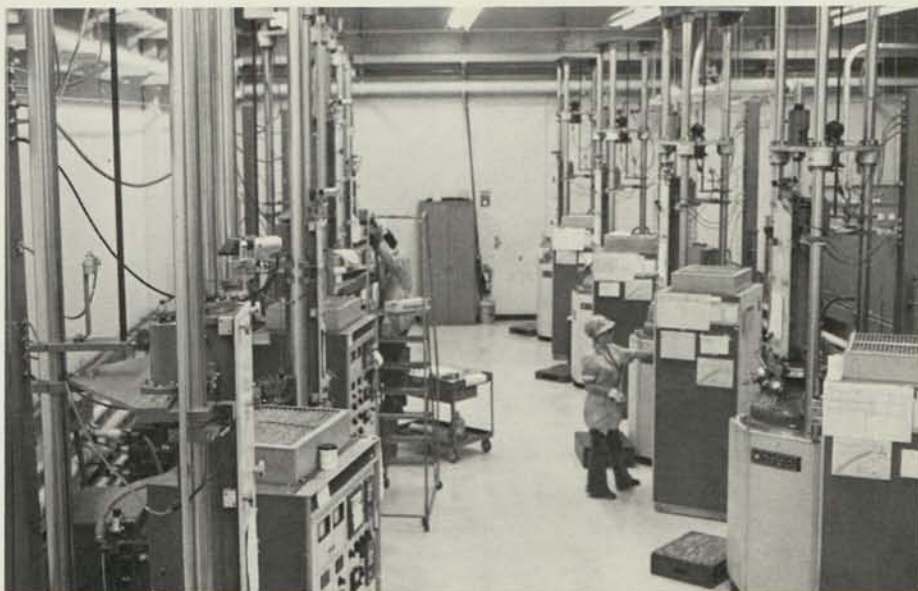
"In the past, our production, based on demand, was like an accordion.



Industrial Relations Manager George Coppinger talks to Healdsburg High School seniors about job opportunities at Fairchild. George visits area schools frequently as part of the Healdsburg plant's strong community relations effort.

We were running at either very high or very low levels. With the new plan, we can stay ahead and not be surprised by spurts in demand. We've built a posture with the product groups that allows us to better control our own operations."

Plant Controller Ray Carey, responsible for financial planning and analysis, says the new program makes it easier to plan future goals and objectives at Healdsburg. "The production people are not constantly chasing demand and they're better able to control expenses. It also has allowed the plant to establish a firm base from which we can meet demands brought by any of the product groups."



A view of a portion of the crystal growing area.

Located on 9.5 acres, Fairchild's Semiconductor Materials Plant in Healdsburg lies next to the Russian River and is surrounded by the hills of Sonoma County. The plant contains nearly 90,000 square feet of manufacturing and administrative areas and is the source of nearly all Fairchild's silicon wafers—the first step in the semiconductor process.

A large part of the task of implementing the plan fell to Production Manager Rich Valente. "Jack's program to stabilize our business has been successful. We found that our demand varied greatly from week to week. Under the new plan, production is controlled within a narrow band about the midpoint of the range of demand."

The advantages, Rich said, include more stable planning and organization and reduced costs in the areas of training and maintenance of equipment. "We're getting a consistent rate of production," Jack added. "By looking at the capability of the plant and establishing a line of balance, we reduce the trauma of fluctuation in demand. We're trying to work smarter, and harder."

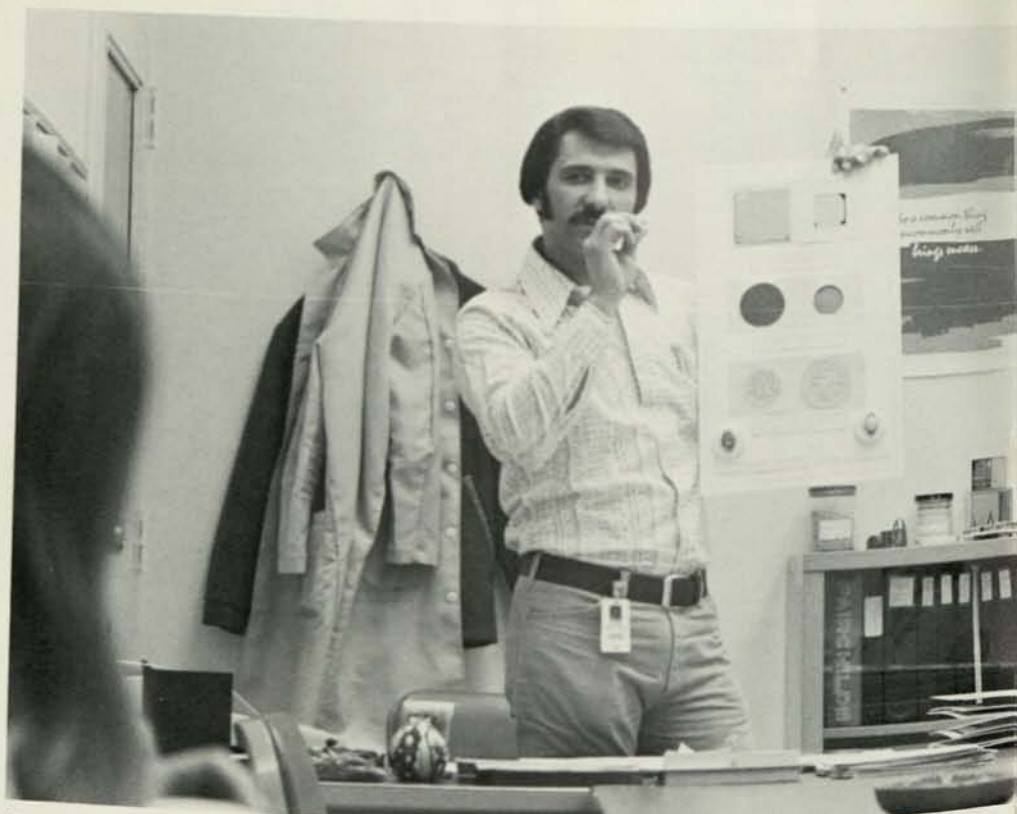
An integral part of the new business plan is a more formalized training program for employees at all levels in the plant. "In the past, we used repetition and osmosis, which ends up working 99 percent of the time," Jack said. "But there's no substitution for a formal training program, using first line supervisors and management people."

Rich said the training program is based on a concept developed in Mountain View. "It's designed to teach the manufacturing skills needed in our processes under the guidance of a central supervisor. The quality of people here is very good; they're concerned and willing to learn. We feel the training program will help them do their job better and improve the plant's overall performance."

As Jack and his staff at Healdsburg conquer the present, they're preparing to meet the future. "We're two years ahead of the technology in demand and ready to supply wafers for Fairchild as a billion dollar company," Jack said. "I'm very gratified by what our people have done and I look to a continuing good relationship with our employees and the citizens of the area."



Carol Armstrong loads wafers nearing completion into large polishers. Wafers are mounted on round metal plates with heated wax in preparation for polishing.



Healdsburg supervisors hold small group meetings on a monthly basis for employees. Above, Production Manager Rich Valente explains wafer assembly procedures to a group of employees.

Care to give us a piece of your mind



The polycrystalline silicon and dopants are placed in a solid quartz bowl, called a crucible, and put into a crystal grower. Two types of growers are used at Healdsburg. The smaller growers produce a crystal three inches in diameter and 15-20 inches long. The larger growers are used for four-inch wafers and reproduce crystals 30-40 inches long.



Kathleen Kolb readies polycrystalline silicon for the crystal grower.

Once the crucible is lowered into the grower, heat reaching more than 1400 degrees Centigrade is radiated into the crucible. After about an hour, the silicon melts and a long, narrow

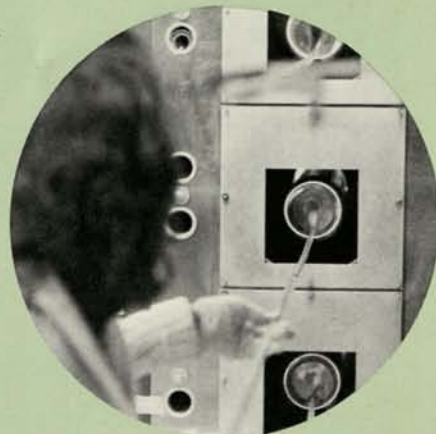
to the specified diameter, and x-rayed to determine the crystallographic structure. A flat reference area is ground into the crystal for mask alignment purposes. Finally, the crystal goes to an etching station where the shiny surface is obtained. The etching removes microscopic damage and improves the slicing yield.



Sandy Carlson receives processed crystals in the production control area.

Next, the wafer must be sliced. The crystal is laid in a box and set into a special slicer. A ten-inch crystal requires about eight hours for slicing.

it has a defect.



Darlene Fenk loads wafers into the oxidation furnaces.

About half of the wafers passing this final test are then finished and ready to be shipped to product groups. However, wafers destined for the DIC, LIC and Bipolar areas go through an additional oxidation process.

**Using IPD Projectors,
Products Practically
Sell Themselves**

SELF SERVICE SELLING

Having the great idea is only the beginning. You must be able to sell it.

George Ballas' great idea occurred to him in 1970, when he was frustrated trying to keep the lawn around two large oak tree roots trimmed. He threaded fishing line through holes punched in a discarded popcorn can, then bolted the can to the rotating shaft of his electric grass edger. It was noisy and a little jerky, but it trimmed the grass, and the Weed Eater was born. In 1972, he founded Weed Eater, Inc., in Houston, Texas, to manufacture his invention, which he claimed was the first practical device which eliminated hand-trimming of weeds around fences and trees.

Shoppers examining the contraption were doubtful, according to Ballas' son, Buck. "If you don't see a Weed Eater really cutting, you won't believe it can happen." So four months after he founded the company, George Ballas bought his first Fairchild Super 8 point-of-purchase rear-screen projector. Today, nearly 5000 Super 8 portable projectors, manufactured by Industrial Products Division, are demonstrating the Weed Eater nationwide. And Weed Eater sales have grown from \$600,000 in 1972 to \$41 million last year.

Fairchild projectors first demonstrated the Weed Eater's capabilities at the National Hardware Show in 1972, and the fledgling manufacturer discovered that for customers, to watch was to buy. "Nobody knew who we were until we put our product on the screen," George Ballas says. "We had a Fairchild projector and a good idea, and the competition has never caught up."

Weed Eater advertising today combines all major print and broadcast media, both nationally and through local retailers, but the Super 8 sound-and-color film at the point-of-purchase



A Chicago storeowner reads a Formby's furniture care products display which features a do-it-yourself demonstration on a Fairchild projector.



IPD projectors helped Weed Eater's lawn care products to become nationally known in 1972.

remains the final visual that puts the product over. A buyer for a major Houston department store chain, one which sold more than 21,000 Weed Eaters last year, reports that the "Fairchild projector is the most successful consumer education tool we have."

The Weed Eater company's success with the Fairchild Super 8 is common among manufacturers and retailers who have incorporated their use into their product promotion campaigns, according to Steve Blucher, IPD's Audio-Visual Products Marketing Manager.

"It's an attempt to automate selling," he says, "and it has been our major marketing aim for the past two years. An on-the-spot product demonstration has always been the best way to sell,

and installing one of our projectors is the least expensive way for a manufacturer to get that selling advantage."

About the size of a briefcase, the Fairchild projector opens up to a 8½"x11" diameter screen. Underneath is a slot which holds the manufacturer's color-and-sound presentation on a seven-minute tape cassette. When shoppers stop at a product display featuring the Fairchild projector, they just press a green button to start the show.

Sound projectors have been manufactured by IPD at Commack, N.Y. since 1960, and are part of a varied line of audio visual products which includes film strip as well as motion picture projectors. IPD Vice President and General Manager Ray Hennessey holds patents on the first sound cart-

ridge projector, which he developed in 1959.

Sales have quadrupled for Mississippi's Formby's Refinishing Products since the company offered a Fairchild Super 8 as part of a promotion of Formby furniture cleaners and refinishers last year. Homer Formby, a master refinisher with 30 years experience restoring antiques, demonstrates his techniques in thousands of stores through the Fairchild projector, thus reaching a large market of do-it-yourselfers. He founded Formby's in 1970 around furniture care products he developed which don't burn the skin, damage wood or create unpleasant odors.

"We're aiming at a market of non-professionals," says the company's Vice President - Merchandising, Richard Formby. "We want them to know that furniture care doesn't have to be difficult or messy, and that our products are worth their investment. All we have to do to sell is show them how to use Formby's products."

"Successfully demonstrating these furniture care properties can only be done visually," he adds. Formby's attributes its increase in sales largely to the adoption of the Super 8 at the point of purchase.

"The same thing has happened at Sears," says Steve. "Recently, they started a promotion with a line of tools, but found they couldn't demonstrate the full capabilities of saws and rototillers in the store. They installed some of our projectors, and detailed tests showed sales skyrocketed in stores with the films, compared to other stores with the same tool exhibit but no Super 8."

A major Industrial Products marketing and engineering victory came last February, when the National Retail Hardware Association announced that the newest Super 8, the Galaxy 990, had been selected for the association's nationwide customer and employee training program.

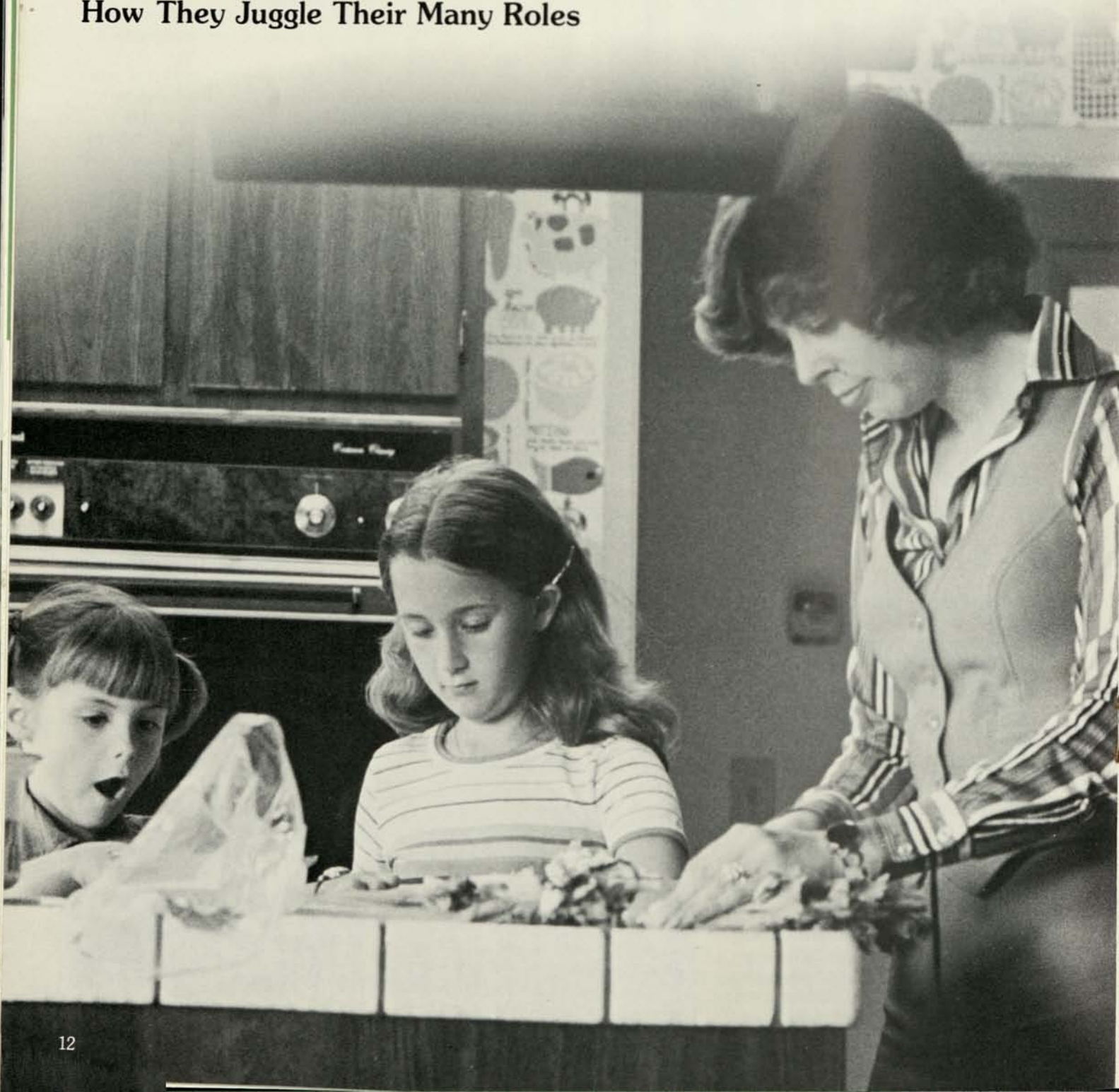
The NRHA's audio-visual program will include employee training films and manufacturer-produced consumer information films for use in the association's thousands of member retail stores.

"The NHRA spent nearly a year studying all comparable products available," says Steve, "and they concluded the Galaxy 990 was definitely superior to anything else on the market."

Breadwinners and Breadmakers

**Four Fairchild Working Mothers Tell
How They Juggle Their Many Roles**

Ruth Lyon posted a list on her refrigerator door during a recent final exam period. On it, Ruth, a Systems Analyst and Senior Staff Engineer at Federal Systems Group, wrote all the things she had to do after her exams in the Masters in Business Administration program at C.W. Post College were over. Her two teenagers got the message, too—instead of asking mom to do something, they just wrote it on the list.



More than half of all mothers in the United States are now employed. Lists and disrupted schedules are facts of life for them, as are the frustrations of finding quality child care and the rewards of pursuing something uniquely theirs—a career.

The representation of women in Fairchild's work force parallels the national average. Nearly 60 percent of our U.S. employees are women, and 61 percent of this group are, like Ruth Lyon, single heads of households.

Four Fairchild women, all working mothers, recently shared views on their lives with *Horizons*. Two were married, two were single heads of households, and between them they were raising 14 children. One had been with Fairchild 3 years, another 16. Though in different company divisions and widely divergent jobs, each dealt with the dual demands of home and job, in the words of one, "by sheer bullheadedness that I was going to make it work."

A Labor Department survey recently revealed that the "typical" American family with a husband breadwinner, a homemaker wife and two children now represents only seven percent of the nation's families. Full-time working wives are now contributing 39 percent of the average family income.

The Bureau of Labor Statistics numerical picture of the female work force reveals 42 percent of working women are either single or divorced, separated or widowed. Many of these women are supporting children. These statistics reflect an important economic and social trend—these women, and their predecessors, are working because they have to.

Economic necessity or not, morning comes early for Tat Blesch. Up at 6 a.m., Tat, a divorced mother of three teenagers, gets her children fed

and off to school before starting her job in Corporate Labor Relations in Mountain View. After putting in a full day administering Fairchild's equal employment opportunity programs, she attends a class one night a week as part of a B.S.B.A. program offered through Fairchild's Career Center. Several evenings a month, Tat also does volunteer counseling at her church near the family home in Saratoga, Calif. And her schedule is not unusual.

Tat came to work at Fairchild five years ago as a secretary, and recalls the logistical headaches involved with getting herself to work, and two daughters and a son to piano and riding lessons and baseball practice.

"The problems become horrendous when you're the only one responsible for the whole day's schedule for four people. It took a tremendous amount of physical and emotional energy just to keep things going from day to day."

Finding people qualified to care for children and deal with day-to-day emergencies is probably the biggest single obstacle facing working mothers.



Tori pictured her mother's office this way after a visit during a San Jose open house.

Despite several proposals, large-scale federal funds for child care have yet to be approved by Congress. Private facilities are expensive, scarce and vary widely in quality.

Sue Renwick, an executive secretary at Instrumentation and Systems Group, considers herself fortunate to have located quality day care for her two young daughters when Sue returned to work four years ago following a divorce.

"I felt very strongly that I wanted to have my daughters well cared for, and I didn't want to have to worry for one minute of my workday about the kind of care they were getting.

"My oldest one was entering first grade, so she was in school all day. I put the younger one in a day care center where she had an academic session, a hot lunch, even a nap.

Dinner's a family project for Sue Renwick and daughters Tori, left, and Leanne.

Breadwinners and Breadmakers

"It cost money to set this up," she says. "Good day care centers are expensive, no matter how you look at it." Sue has remarried and her sister-in-law, a student at a local college, is living with the family in San Jose, Calif., and helping Sue with transportation and babysitting.

Relying on the help of another family member is frequently the only way some women can handle a job outside the home. Marge Guzman, a work leader in a fabrication area of the Bipolar Memory & ECL Products Division, came to Fairchild 12 years ago after the birth of her seventh child. Marge's father lived with the Guzman family at their home in Sunnyvale, Calif., and took care of the children while Marge and her husband were at work. Expenses for such a large family made two paychecks a necessity, Marge says.

The need for day care facilities sponsored by industry or government is becoming increasingly severe and will probably not be relieved until federal funds can be allocated for them.

"From time to time, we are contacted by other companies interested in providing an intra-company cooperative center," Tat says, "but it has never been feasible because there aren't any federally-matching funds. There is a tremendous need for these centers."

Child care fees, extra transportation costs and other household expenses frequently don't leave much left to pay for housecleaning help. Ruth, who lives in Plainview, N.Y., typifies the response to doing housework when she says, "Whatever you do, you have to do it efficiently, or you don't get to it at all. Frankly, I don't worry about housework as much as I used to—I just don't have the time."

Marge agrees. "After I started working, I would often be up cleaning the house after everyone else had gone to bed. Now I do the best I can during the normal day."

When Sue remarried, she and her new husband, Jim, discussed how



It's all in the family for Marge Guzman, right. Three of her daughters, including Mary Ann, above, also work for Fairchild.

they would divide the household chores. "It's still amazing to me how many men expect their working wives to do just about everything at home," she says.

A number of studies have shown children of working mothers generally become independent and self-reliant much earlier than other children, and all four mothers agreed this has been a positive result of their job holding.

"When you're at home all day, it's easier to pick up something yourself than to tell your kids to do it over and over," Sue says. "I don't think I would have been as firm about the girls taking on responsibility if I hadn't gone to work."

Less susceptibility to male-female occupational stereotypes is another emerging characteristic of children of

working mothers. This has been particularly obvious to Ruth because of the four years difference in her children's ages. Ruth's daughter, Kathy is 16, and her son, Tommy is 12.

"In one of Tommy's classes, the teacher was discussing possible vocations and did not suggest that girls should become nurses while boys became doctors. This was not true when my daughter was in that grade. The attitudes about future vocations are definitely changing, and I give teachers a lot of credit for making their students aware of this."

The positive effects of being a working mother tend to be somewhat long range in their realization. In the short-term, every working mother has had to deal with the guilt she feels about leaving her children in some-



Planning sessions such as this with Frank Palazzo, seated and Harold Murphy of Imaging Systems Division occupy a lot of Ruth Lyon's time as a Systems Analyst at Federal Systems.



Some of the family pets ham it up for Tat, Kris, Fred and Alison Blesch.

one else's care for most of the day.

Traditional social attitudes dictating that any absence of the mother was bad for her children and could lead to severe behavioral problems have fostered this feeling. But recent studies on the large numbers of children now receiving day care outside the home have begun to show this traditional attitude is based more on folklore than fact.

The most startling results come from a Harvard University study completed in 1975. The Harvard research and five concurrent studies explored the development of children who spend their days with babysitters or in day care centers. Development of intelligence, language and social skills were measured scientifically in youngsters ranging in age from newborn to school-age.

Results showed that even if substitute care began when the child was three months old, the differences were insignificant among children cared for full time by the mother or those receiving day care outside the home.

Psychologists suggest that these results cast serious doubts on the traditional view that there is a period in a child's early life when the mother's constant presence is indispensable.

In the 1974 book *Working Mothers*, the authors say the key seems to be the mother's happiness with her situation. If she derives personal satisfaction from her job and has adequate

child care arrangements, she is likely to perform as well as a non-employed mother or better.

Reconciling the problems and demands of child rearing is only the first major obstacle working mothers confront. As more and more women enter the professional ranks, they are running up against the barriers of traditional attitudes about women's abilities. These can not only thwart career advancement, but can deprive a company of needed, but unrecognized, resources.

Making people aware of the letter and the spirit of the Equal Employment Opportunity Act is a big part of Tat's job, and she has found one of the most effective places to identify and address this problem is in Supervisory Training classes.

"I ask everyone in the room to call out attributes of women, then of men, and I list them. Then we go over them to see if, in fact, these words only apply to one sex. Frequently, for example, women are identified as 'tender.' But men can be that, too. Or athletic, or active. What it really comes down to is childbirth—that's the only difference. The rest is simply culturalization."

While equal opportunity legislation and the women's movement have made both sexes more willing to rethink old attitudes, ingrained perceptions are hard to change. Ruth, who has been with Fairchild 16 years, got in on the ground floor of the computer industry during the Korean War, when

she had a job at MIT. "In those days," she recalls, "I think you had to perform better than a man to get a job in the field in the first place. The situation is certainly better than it was then, but in many areas in business and industry, I do not feel we have yet reached the point where opportunities are equal."

"The women's movement can't help but affect your attitudes," Sue says. "I started out four years ago underestimating myself. I hadn't worked in eight years, and I didn't think I was worth too much. Fortunately, I went to work for someone who helped me advance, so when I came to Fairchild and this promotion to executive secretary opened up, I had gained the experience and confidence I needed to get the job."

In doing employee counseling, Tat frequently finds working women underestimating their potential. "Women are just becoming aware that they have the experience that qualifies them for management. Anyone who has been head of a household, managed finances, negotiated sibling rivalries and maintained an acceptable level of performance in either a job or the community should be considered qualified to manage. The most important thing we, as working women, must remember is that we can take charge. We can succeed."

Bill Herndon, Bipolar, Helps Make Solar Energy Use Practical.

Nearly 10,000 chilly Denver residents, stunned by both the severity of the winter and the rise in their fuel bills, swamped a development of solar heated homes one weekend last February and snapped up 22 houses their first day on the market.

A homeowner in Oklahoma, living in the state's first modern solar house, pays half what his neighbors do for utilities. Last year, a San Francisco Bay area resident whose house is equipped with solar heating, received a March gas bill for \$1.97.

Solar energy systems, which were novelties only a few years ago, are quickly becoming practical alternatives to conventional gas and electric heating systems. At least 2000 houses constructed in the United States this year will use solar energy as their primary heating source. To convince homebuilders and buyers that solar systems work, the Energy Research and Development Administration (ERDA) is currently footing the energy bill for more than 4000 solar-heated homes and commercial buildings.

The lucky man receiving the \$1.97 gas bill was the president of Alten Corporation, a solar energy equipment firm located in Mountain View, California, near Fairchild corporate headquarters.

Alten Corp. was formed in 1976 to take advantage of increasing interest in residential and commercial solar energy systems. It is the brainchild of Alten Associates, a non-profit group of scientists and engineers organized in 1975 to devise practical ways to harness the sun's energy.

Bill Herndon, a product line design manager for the Bipolar Memory & ECL Products Division in Mountain View, was one of the 57 founding members of Alten Associates. While the corporation has stockholders and paid employees, Alten Associates remains a separate scientific advisory panel with most of the members donating their time and talents to investigate what could become a major alternative energy source in the next two decades.

"Solar energy is the most environmentally sound energy source," Bill says, "and our goal was to present actual working equipment and systems that would put this energy to use."

I was attracted to the group from a personal standpoint because it gave me an opportunity to build something that does the planet some good, and to follow a project all the way through. Normally, I concentrate on designing random-access memories for Bipolar. Someone else builds them or sells

them. Working with the solar products, I could follow the project through the whole production and marketing process, and I found that very interesting."

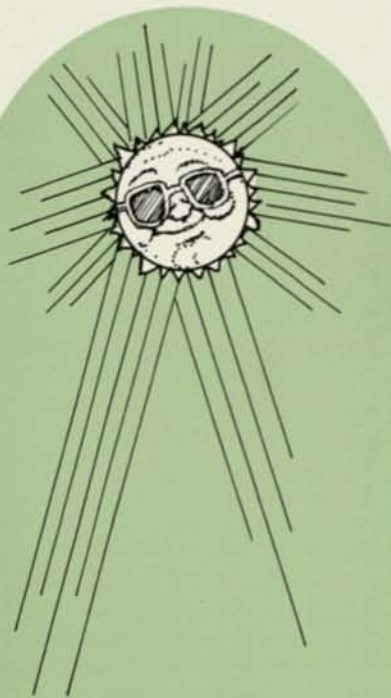
Bill's initial responsibility was designing and installing electronic control systems for Alten's home heating systems. Within its first year of operation, Alten Associates developed and installed 50 swimming pool heaters, heating, and water heating systems for a number of homes.

When word of the new group's work began to spread, and numerous orders started coming in, the original associates recommended formation of Alten Corporation to handle manufacturing, marketing and service. Alten Associates continued to advise the new company, and to help develop new products.

The corporation is currently installing a solar heating and cooling system for a savings and loan building in the Sierras, where new gas hookups are unavailable in some areas. It's also bidding on a solar system for several Olympic-sized school swimming pools, which, given the current annual rise in gas prices, should pay for themselves in about seven years of reduced gas use. Pacific Gas and Electric Co. has chosen Alten to do the solar heating and cooling systems in a demonstration home to be constructed this year.

Solar energy can be captured various ways, with varying degrees of success. Round silicon solar cells, made of alternate layers of semiconducting material that form a continuous, light-sensitive junction, can convert about 12 percent of the solar power collected to electric power.

Gallium arsenide solar cells efficiency can exceed 20 percent, with concentration 100 times the maximum intensity of the sun. Solar energy can also be converted directly into heat through using black absorber material, which reflects little light and thus converts most of the light which hits it to heat. Air, water, or a liquid such as an antifreeze solution is then heated from the collected sun energy and used to heat buildings.



Getting
more
from the
SUN
than
a tan!

1. Do you read *Horizons* ☐ regularly ☐ often ☐ sometimes ☐ once in a while
2. How much of *Horizons* do you read? ☐ all ☐ most ☐ about half ☐ less than half
3. These articles appear in this issue. Would you let us know your interest in them?

	Interesting	Somewhat Interesting	Not Read
The 1977 Annual Meeting	_____	_____	_____
Healdsburg Plant Profile	_____	_____	_____
Self Service Selling (IPD)	_____	_____	_____
Breadwinners and Breadmakers	_____	_____	_____
Getting More Than A Tan From The Sun	_____	_____	_____
What Would We Do Without It? (Conservation)	_____	_____	_____

4. Recently, you received a 1976 Annual Report to Employees. We'd like to know your response to the report.

	Interesting	Somewhat Interesting	Not Read
Annual Report Overall	_____	_____	_____
Use of our Revenue Dollars	_____	_____	_____
Group Reports	_____	_____	_____
Financial Results (Net Sales, Income, etc.)	_____	_____	_____

5. What subjects would you be interested in reading about in future issues of *Horizons*? _____

6. Please share with us any other comments which would help us make *Horizons* better. _____



Bill Herndon, right, discusses installation of a solar panel with Alten associates William Cutler, left, and Klaus Heinemann.

Mattress-shaped glass covered panels are currently the most widely-used collectors in solar energy systems, according to Bill, and they operate on the relatively simple direct-conversion principle. Light passes through the glass glazing, is converted to heat when it hits the insulated black absorber material, and is then confined to the enclosed glass area. Water or air is circulated over the hot surface, heated, then passed through the home's traditional heating system via special adapters or stored for later use. Use of air or water depends on the heating system already available in the home. A solar heating system can be designed to work through whatever is already installed.

In a California home heated with a system like that available from Alten Corp., Bill estimates that solar energy could provide 60-80 percent of an

average family's energy needs. In colder climates, the percentage would be lower, but still substantial. An ERDA-sponsored solar heating system at a county park building in New Jersey, for instance, is expected to supply nearly 55 percent of the structure's annual heating needs.

"Solar energy systems will not replace conventional furnaces, but can substantially reduce their use," Bill says. "A back-up system is necessary in conventionally constructed homes for winter months and long periods of rainy or cloudy days when collectors can't operate at full capacity."

Even with the substantial energy savings enjoyed by solar-equipped homes, many consumers have been reluctant to install solar systems because of high initial cost. Do-it-yourself home solar heating projects can cost up to \$5000, double that if installation

is done by a contractor or solar energy equipment firm. "Home heating is something we take for granted," Bill says. "People like to realize a payback right away for something like this, but the average payback period for solar installation is six or seven years and can run up to 20."

"The higher the cost of fossil fuels goes, the more interest there will be in solar energy. You can buy a conventional furnace today for less than a do-it-yourself solar heating system costs, but that furnace isn't going to do you much good if there's a severely limited supply of oil and natural gas to run it."

The U.S. government apparently agrees. The Carter Administration is proposing expenditures of \$305 million on solar energy research and development in fiscal 1978, light years from the \$4 million spent just five years ago.

Lyn Christenson, Editor

Horizons

M.S. 20-2260

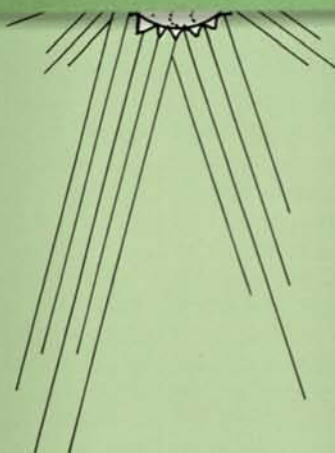
Mountain View

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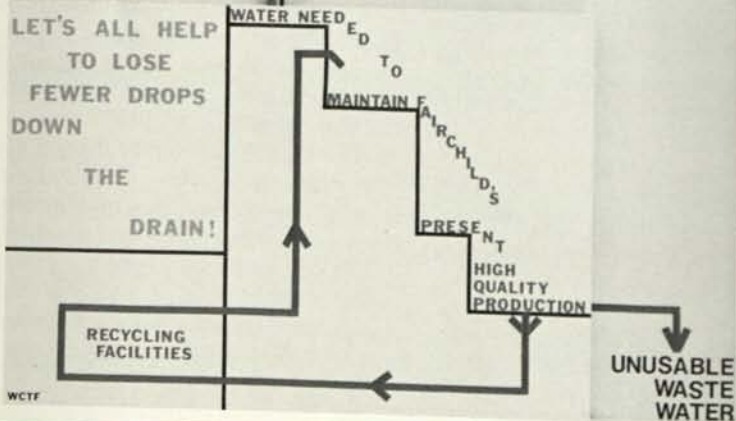
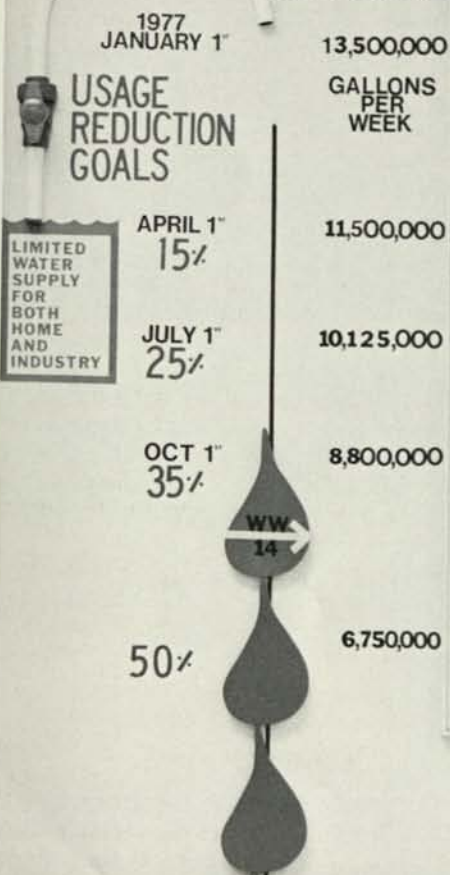
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FAIRCHILD

WATER CONSERVATION EFFORTS



FAIRCHILD WATER WAGON

COMMUNITY WATER NEWS

Mother Nature dealt the country a double whammy of shortages this year. The bitter winter that hit the East Coast hadn't yet thawed when many Californians began to realize what state water officials already knew—the state was in the midst of the worst drought in its history.

Since nearly all Fairchild U.S. plants are located in areas affected by last winter's energy shortage or the present drought, conservation measures have been put into effect. According to Fairchild plant facilities managers, West Coast water conservation efforts being taken reflect both compliance with local rationing plans and additional efforts to achieve voluntary reductions. In the East, normal operations were possible during the winter thanks to conservation plans instituted since the 1974 energy crisis.

Tracking Mountain View's water conservation efforts is this prominent display in the Corporate Headquarters Building.

would

FAIRCHILD

Optimum reductions in water use at Fairchild California facilities depend on requirements of the location's water district, but all plants have achieved reductions through increased use of recycling systems, less water flow in production areas, hardware changes including installation of short-flush valves in restrooms, equipment shutdowns during off hours, minimum landscape irrigation and campaigns making employees aware of ways to save water at work and home. At several plants, Fairchild is also considering digging wells to provide an alternate water supply.

The San Rafael plant was hit first and hardest by the drought. San Rafael is located just north of San Francisco in Marin County, which was the first county forced to impose water rationing. Dave Zahniser, San Rafael's Facilities Maintenance Engineering Manager, reports an impressive 75 percent drop in water use over the past year, going from an average use of eight million gallons a month last winter to just over two million gallons this past February.

Mountain View and Palo Alto, which ultimately receive water from dwindling reservoirs in the Sierra Nevada mountains, began conservation programs in February which have resulted in savings well above city-requested goals.

Bill Evans, Facilities Director, reports that a seven-phase conservation plan put into effect in February has already achieved a 35 percent reduction in Mountain View water use—a goal originally set for October.

Al Jankowski, Equipment and Facilities Manager for Palo Alto and Exetron, says cooperation on lowering water use has resulted in a 15 percent drop at those two plants.

Total water consumption at Fairchild's Instrumentation and Systems plant in San Jose has also been reduced substantially, down 20 percent from February, according to Dick Ditlevson, Manager of Plant Engineering.

Lack of water was not the problem for Fairchild's East Coast plants this winter—snow was everywhere, blocking roads and stalling traffic. The snow was accompanied by some of the coldest temperatures experienced in the area for many years, which caused severe fuel shortages.

None of the four Fairchild plants in New York and Maine suffered energy cutoffs, so all were able to maintain

basically normal operations during the freeze. Each plant did benefit from energy conservation programs instituted since the energy crisis.

South Portland was hardest hit by massive snowstorms. Plant Services and Facilities Manager Bob Nault recalls shoveling an accumulation of 35 pounds of snow off the roof, but says the plant was only forced to close down for one afternoon during the worst of the blizzards. Though 94 inches of snow fell there, South Portland suffered no power cutbacks, since 60 percent of Maine's electrical needs are supplied from a nuclear generating plant. They were also able to conserve available energy thanks to a three-year-old conservation program that has reduced energy costs by more than \$250,000.

At Wappingers Falls, Facilities Manager Harry Bridges was able to burn more oil and less natural gas last winter because additional boilers installed a year ago that could operate on either type of fuel.

"When not in use, save the juice" is the motto at IPD's Commack, N.Y. plant, according to John Cali, Plant Facilities Manager. An energy conservation program underway for about six years at IPD helped the plant maintain normal operations and fuel efficiency. As the winter became more severe, John's department added 300 feet of plastic insulation to the plant roof to keep heat in.

At Federal Systems Group in Syosset, N.Y., Plant Services Manager Rudy Underwood says an energy plan instituted over the last year helped the plant weather the winter with no major problems. One of the most important conservation measures turned out to be a switch to a grade of fuel oil which required no preheating. Rudy reports this resulted in cleaner, more efficient fuel use, and substantial savings. He also recalls that during the worst of the cold spell, he did a lot of praying that the boilers would keep going.

What we do without it?

PLANTS CONSERVE SCARCE WATER, ENERGY

CLOSEUPS

newsmakers...

C. LESTER HOGAN, Vice Chairman of the Board, was one of 92 engineers in the United States recently elected to membership in the National Academy of Engineering. Election to the NAE is the highest professional distinction in engineering. Dr. Hogan has also been appointed to the Advisory Council of the Stanford School of Engineering. The council advises the school's administration on staffing, research and program planning. . . **JERRY SCHOONHOVEN** has been appointed Manager, Corporate Analysis in the Treasury and Corporate Planning organization. Jerry was previously Consumer Products Group Manager of Materials and Distribution. . . **GEORGE URBANI** has been named to the new post of Manager of Strategic Marketing and Planning for the Linear Integrated Circuits Division. His responsibilities will include identification and penetration of potential LIC markets as well as long range business planning. . . **JACK MATTIS** succeeds George as LIC Division Marketing Manager. Jack had previously been Domestic Sales Support Manager for Linear. . . **STAN SCOTT** and **MARIA DIAZ-CHRISTIANS** are the 1976 recipients of the Consumer Products Sales Awards. Stan, Northeast Regional Manager of National Accounts, is based in New York and received the Field Sales Award. Maria, honored with the Sales Support Award, is Material Requirements Manager for CPG. . . **ROBERT BOWEN** is manager of the newly-established Consumer

Products operation in Canada. Both Fairchild and Timeband™ watches will be sold from the Toronto-based organization as soon as government approval is received. . . **JACK KIEWIT** has been appointed National Sales Manager for Distributors (Video Entertainment Systems and Timepieces) by the Consumer Products Group. Jack was previously a consumer electronics manufacturers' representative. . . Consumer Components Marketing has been reorganized into a single operation under **RALPH MILLER**. **DON STAUB** will be Domestic Manager, with **TERRY LEEDER** handling International. . . **LOU PIGHI**, Vice President and General Manager, Federal Systems Group, has received the Most Significant Achievement award from the Long Island chapter of the Air Force Association. The award honors FSG's development of CCD cameras. . . **JOHN MANNIELLO** has been named Director of the Federal Systems Group Regional Office in Washington, D.C. John was formerly Vice President and Director of Government Operations for the CBS Laboratories Division of CBS, Inc. He is a member of the advisory panel of *Electronics Magazine*. . . **MARK HENDERSON** has been appointed Southeast Regional Manager for the Industrial Products Division. He will be headquartered in Atlanta, Ga., and will be responsible for sales of IPD's 8mm, 110 filmstrip and 35mm rear screen sound projectors.



Jan Dahlin, left and Tat Blesch discuss the First Lady's speech with Jim Kay, Executive Secretary of the California Governor's Committee on Employment of the Handicapped.

A Capitol Time

Two members of Fairchild's Industrial Relations staff were among the 4000 people attending the annual conference of the President's Committee on Employment of the Handicapped in Washington last month.

Tat Blesch, Industrial Relations Specialist for Corporate Labor Relations and Jan Dahlin, Instrumentation and Systems Group Industrial Relations Specialist, represented Fairchild during the three-day meeting of business, education and government representatives called to help formulate federal guidelines for employment of the handicapped.

First Lady Rosalynn Carter addressed the conference's opening session. Former champion skier Jill Kinmont, subject of the movie, *The Other Side of the Mountain* which chronicled her life until injuries from a skiing accident confined her to a wheelchair, keynoted the final banquet.

"She emphasized handicapped people must first see themselves as qualified, before they can expect to be seen that way by employers," Tat commented. "Her training as a competitor helped her overcome her handicap, and lead a productive life as a teacher."

"The conference produced a valuable exchange of ideas on problems in this employment area," Jan said. "We realized that California is way out in front in developing ways to help handicapped people as well as in promoting awareness of the laws assuring them equal opportunity."



The Sherman Fairchild Center is a four-story science building and connected auditorium. It houses the Departments of Structural Biology and Neurobiology. The top floor, yet to be completed, will house the Division of Immunology.

Stanford University Dedicates Sherman Fairchild Center

Nearly 400 guests from Fairchild, the Fairchild Foundation and Stanford University attended the March dedication of the Sherman Fairchild Center at the Stanford Medical Center. University Medical School departments of Structural Biology and in Neurobiology and the Division of Immunology will be housed in the main four-story Sherman Fairchild Science Building, which contains laboratories, conference facilities and offices. A 386-seat auditorium to be used for Medical School lectures and public events



An atrium opens most rooms in the Fairchild Science Building to natural light.

has been built adjoining the science building.

The Fairchild Center is primarily the result of an \$8.25 million gift from the Sherman Fairchild Foundation, headquartered in Greenwich, Conn. Foundation President Walter Burke, a director of Fairchild Camera and Instrument Corporation, officially presented the Center to Stanford during the dedication ceremonies. Several Fairchild officers and directors attending the opening toured the center following the official dedication.

1977

Sherman Fairchild Scholars Chosen

Six winners of 1977 Sherman Fairchild Scholarships were selected in April. Recipients include four San Francisco Bay Area students and two from Long Island, New York.

Their diverse career choices include law, engineering, medicine and commercial art. The winners' parents are employed in the Transistor, Exetron, Industrial Products and Imaging Systems Divisions and at Corporate.

Each student will receive a scholarship covering tuition, fees, food and lodging for up to four years of undergraduate study at any accredited U.S. college or university.

The scholarship program was established in 1973 by the Fairchild Foundation, Inc., for the children of Fairchild Camera and Instrument Corporation employees. Thirty-six students are currently attending school under the program.

The scholarships are in honor of the late Sherman Mills Fairchild, founder of the company.

Winners are selected on the basis of scholastic achievement, community and school involvement and scores on the College Entrance Examination Board's Scholastic Aptitude Test. Selection was made by a committee of educators chosen by the Educational Testing Service, administrator of the scholarship fund.

WEST COAST WINNERS

Barbara Basford. Barbara is the daughter of Helen Basford, Senior Staff Administrator for the Transistor Division. She is currently attending the California College of Arts and Crafts, and plans to become a commercial artist.



Marc Franklin. This fall, Marc will enroll at Claremont Men's College. He hopes to major in political science and economics, and plans to pursue law as a career. Marc is the son of Dick Franklin, Director of the Corporate Legal Department.



David Guerrero. The son of Luz Guerrero, a Reliability and Quality Assurance Inspector for the Transistor Division, David will enter Stanford University this fall. He plans to major in electrical engineering and eventually become a computer engineer.



Jack Race. This fall, Jack will enter Stanford University to study biochemistry. He plans a career in psychiatry or neurology. Jack's mother, Kuwa Race, is a Test Specialist at Exetron Division, Santa Clara.



EAST COAST WINNERS

Rocco Spagna. Rocco is the son of Lena Spagna, an Export Billing Clerk at Industrial Products Division, Commack. He is currently in his second year at Georgetown University, where he is studying political science and international affairs in preparation for a career as a lawyer.



Matthew Thompson. This fall, Matt plans to enter the Massachusetts Institute of Technology, where he will major in physics and engineering. He hopes to become either a physicist or an aeronautical or electrical engineer. Matt's father, William Thompson, is a Senior Designer for the Imaging Systems Division in Syosset.



Medical/Dental, Hourly Pension Plan Expanded

A boost in the company pension program for hourly employees and expanded coverage under the Comprehensive Medical/Dental Plan are now in effect. Both new programs are for employees who are not members of a bargaining unit.

The new pension program raises pension benefits from \$2.80 per month per year of service to \$7 per month per year of service for those employees on the hourly payroll or those retired from the hourly payroll.

This increase is the latest in a series of improvements of pension plans for all classifications of employees. Last year, for example, the length of service required for vesting was greatly reduced for both salaried and hourly employees.

The increase is company paid with no contributions from employees or retirees necessary. The increase is retroactive to January 1, 1977 for persons employed as of that date and for those retirees receiving a company pension on that

date. For new hourly employees, the new benefits will be effective the first day of employment.

The expanded coverage under the Comprehensive Medical/Dental Plan was effective June 1. In addition, due to increased medical costs and the expanded coverage, the Benefits Department also announced increased employee contribution rates.

Elements of the new coverage include: increased individual lifetime maximum coverage of \$150,000 for employees with less than three years of service and \$250,000 for those with three or more years, coverage for routine preventive EKGs and blood pressure and diabetes tests for employees and dependents age 40 or over up to a maximum use of once per year per procedure.

In addition, coverage will be provided for prescribed birth control procedures such as interuterine loops, diaphragm fittings, vasectomies, tubal ligations and the like for employees and dependents and birth control prescriptions. Pap smears

for all female employees and covered female dependents will be covered under the new benefits.

The new employee contribution rates for dependent coverage, effective June 1, are \$1.62 per week for employees with one dependent and \$2.77 a week for those with two or more dependents.

Also available June 1 is a new dependent coverage designed to provide optional coverage for the children of the spouse of an employee. Children are eligible for coverage if they live in the same household as the employee and are under age 19, or are registered full-time students from ages 19-23 and regularly attending school.

Complete details of the new benefits are set forth in the text of the plan, which of course will govern with respect to benefits and coverage.

Contact your Benefits office or Industrial Relations Manager for full information and enrollment instructions.

Technical Writing Awards

Fairchild employees authoring technical articles for presentations or publication in appropriate professional journals receive cash awards as part of the Technical Writing Incentive Awards Program. To qualify, get approval of your idea from your supervisor, then submit the final article to your Division General Manager, the Corporate Communications Department and the Patent Department for approval.

Technical Writing Awards appearing below were given from January-April, 1977.

Analog Products Division

Larry Kendall
"Analog to Digital Conversion in Microprocessor Based Automotive Control System" 1977 SAE International Automotive Engineering Congress and Exposition

Bipolar Memory/ECL Products Division

William Herndon, Roger Ramirez, Wally Ho
"A 4096 X 1 Static Bipolar RAM"
Digest of Technical Papers—1977 IEEE International Solid-State Circuits Conference
Krishna Rallapalli
"Programmable Bit Rate Generator System"
Electronic Design

Exetron Division

Dennis W. Hess
"Effects of Oxidation and Nitrogen Annealing on Ion-Implantation-Induced Interface States in the Silicon-Silicon Dioxide System"
Journal of Applied Physics

Imaging Systems Division

Robert Bashe
"CCD Imaging Applications"
SPSE Meeting
Robert Bashe and Harvey Balopole
"Electronic Gunsight Camera"
U.S. Air Force Air-to-Air Fire Control Review Conference

MOS/CCD Division

Chris Peterson
"CCD Memory Technology"
Comcon Spring 77

Research and Development

R. C. Olberg and J. L. Bozarth
"Factors Contributing to the Corrosion of the Aluminum Metal on Semiconductor Devices Packaged in Plastics"
Microelectronics and Reliability

Systems Technology Division

Steve Gale
"Instructional Television Rationale"
Educational Broadcasting

Jim Healy

"The Distributed System Concept: Its ATE Implications"
EXTEL

"Using Microprocessors in Test Equipment"
Ljubljana Conference

Patents

Fairchild's technological leadership depends, to a great extent, on the creativity of its people. Inventors listed on patents issued to Fairchild from January-April, 1977 appear below.

Digital Products Division

Peter H. Alfke, Charles H. Alford, Eric G. Breeze
Phase-locked loop frequency synthesizer

Analog Products Division

James Ren-Jke Kuo
Monostable multivibrator having minimal recovery time

MOS/CCD Division

Gilbert F. Amelio and Kamleshwar C. Gunsagar
Line-addressable random-access memory

Howard Murphy
High voltage transient protection circuit for voltage regulators

What's Behind the Buck Slip

by Charles R. McConnell

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Do you work in an organization where countless documents flow steadily among dozens of people? If so, perhaps you've come to regard the instruction, "Read, date, and pass on" as meaning, "Let's see who sits on this one longest."

No doubt you're familiar with the buck slip, that little piece of paper telling you what to do with the larger paper it's stapled to. It may be a slip pre-printed with several stock instructions to check, or it may be someone's note paper bearing a few scrawled words. It could even be no slip at all, just a brief instruction penciled in a corner of the document.

What follows is a brief compilation of some common buck-slip instructions. Provided for each are one or more fairly straight-forward interpretations.

I FYI

- ☐ **For your information**—better this clutters your files than mine.
- ☐ **File**—put this away somewhere until it's old enough to qualify as trash.
- ☐ **Future reference**—here's hoping we can manage to lose this one.
- ☐ **When convenient**—lose it.
- ☐ **For your action**—I wouldn't touch this with a sharp stick.
- ☐ **Analyze and comment**—can you figure what this is all about?
- ☐ **Note, initial, and pass on**—let's distribute the blame equally.
- ☐ **Urgent**—bail me out, quickly!
- ☐ **For your recommendation**—I want to see if someone agrees with me before I reveal my decision.
- ☐ **For your response**—I don't know what to tell him, and anyway you know how I hate to write letters.
- ☐ **Please advise**—I don't know what to do with this one, either.

The preceding items came from a pair of pre-printed buck-slips used in one organization. Of equal interest are the personal notes you'll find penciled on circulating documents without benefit of pre-printed slips. Some examples:

- ☐ **I think this is yours**—I'm only certain I don't want it.
- ☐ **Interesting idea. What do you think**—I haven't the foggiest notion what this is all about.
- ☐ **What do you make of this?**—I want you to make up my mind for me.
- ☐ **Let's discuss over lunch**—I couldn't begin to touch this before my second martini (and you're buying).



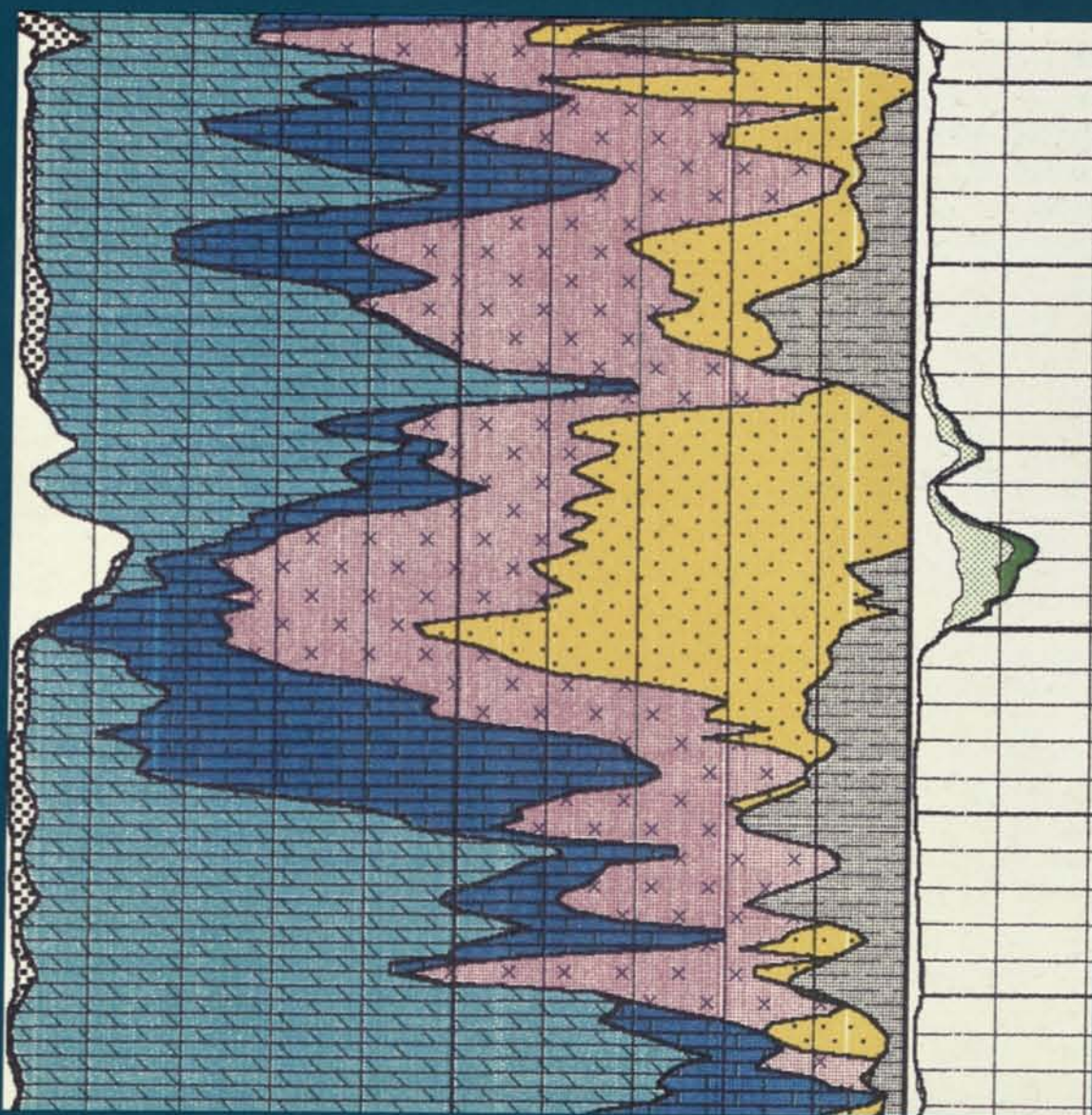
Cut along
dotted line
and route.

HORIZONS

A MAGAZINE FOR FAIRCHILD PEOPLE AROUND THE WORLD ■ ISSUE II ■ 1986

Expanding Leadership in Oil
A Visit to Schlumberger Wireline

Fairchild Turns Problems
into Opportunities



Editor: Francine Grace Plaza

Design: Arias & Sarraillé Design Group

Staff Photographers: Steve Allen
Ed Garrigues

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Editor's letter:

Fairchild's continuing vitality depends on our ability to introduce new products. This year we've set our corporate *High Ground* goal at over 200 new product introductions. That's very aggressive and requires determination and precise focus of resources. Semiconductor technology is advancing so rapidly that standing still means losing ground to competitors. By 1988 over 40 percent of our revenue will come from products that didn't exist before 1985. Thirty-two new high-performance, high-power Fairchild products came to market during the first quarter of this year. *HORIZONS* applauds the men and women whose dedication and skill realized that accomplishment. Now we need to redouble our efforts. Fairchild's ability to provide the new, advanced technology semiconductors our customers demand and to lead our industry with innovative products are key to our profitability.

In previous issues of *HORIZONS* we tracked our highly successful *High Ground* public relations and advertising campaign as it unfolded in the electronics trade press. Recently employees have been able to share in the excitement as *High Ground* activities moved in-house. Red and white buttons proclaiming *We're Taking the High Ground*—in languages Fairchild speaks around the world—made their debut in plants, laboratories and offices. Many thanks to the Fairchild people who provided the expert translations.

Fairchild is a truly international manufacturing and marketing business as we see from a customer service model described in this issue. It's quite common for us to interact with fellow employees half-way around the planet during the course of normal business. This global agility paid off recently for us. Fairchild teams in Singapore, Hong Kong, California and Maine jumped on a customer problem and turned it into a victory.

We'd like you to give us a piece of your mind and we'll give you a great gift in return. Kindly flip to the inside back cover and fill out the *HORIZONS* reader survey. Your cooperation will help us tailor *HORIZONS* to your interests. Thanks for your help.

Francine Grace Plaza
Editor

HORIZONS

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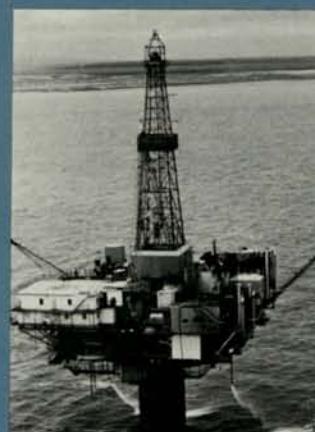
Quick attention turns problems into opportunities



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A stylized illustration of a person in a dark suit, white shirt, and tie, holding a dark briefcase. The person's hand is visible, gripping the handle of the briefcase. The illustration is rendered in a graphic, almost woodcut-like style with bold lines and shading.

Investing in the right people — as well as in equipment and facilities — is how Fairchild stays a technology leader. Recruiting outstanding graduates from U.S. universities is a key part of that policy.

INVESTING IN PEOPLE

Fairchild's college recruitment program reflects Schlumberger's philosophy of attracting "people whose intelligence, skills and leadership are above average," according to Tom Clark, a Schlumberger director of personnel coordinating college recruitment activities across Schlumberger.

In 1985 some 35 Schlumberger units in North America recruited 623 graduates from more than 100 universities. Of these 623, 524 held bachelor of science degrees, 73 master of science degrees and 26 doctorates.

"We feel we can identify, attract and hire the best students



Mike Hernandez talks to University of Santa Clara student Greg Capitolo during a recruitment visit.

graduating from top universities," said Clark. "It's important—and a tremendous responsibility—to take these wonderfully curious, eager, intelligent people and teach them our philosophies, principles and ways of doing business."

MANAGEMENT COMMITMENT

Every spring and fall, Fairchild personnel managers travel to nearly 50 colleges nationwide to interview graduating students. The company's top 10 colleges for new hires in 1985 were: University of California (UC), Davis; UC, Berkeley; California Polytechnic State University; Stanford University, California; Rensselaer Polytechnic Institute, New York; Cornell University, New York; Massachusetts Institute of Technology; Georgia Tech; Rochester Institute, New York; and Northeastern University, Massachusetts.

Each Division is responsible for meeting its college recruiting goal. Since 1982, the percentage of U.S. college hires from the total number of professional hires has increased steadily: 25 percent in 1982 and 1983 and 33 percent in 1984. In 1985, a recessionary year for the semi-

conductor industry, the percentage dropped to 30 percent.

According to Richard Johanson, a Fairchild manager who coordinates college relations, "We draw students because we're a leader in high-performance technology, and they can develop as scientists and engineers. Intellectually, there are no limits here. Also, we offer career opportunities not only in engineering, but in other disciplines as well, such as manufacturing, finance and sales."

We provide current information about Fairchild through publications such as company brochures, annual reports and data books on file in college placement offices. Fairchild is featured in the *College Relations Placement Annual*, a book that reaches more than 1,100 colleges nationwide describing major companies and career opportunities available.

TECHNICALLY SHARP

One of the Fairchild recruiters is Sales and Marketing Personnel Manager Mike Hernandez, who recently traveled to campuses to interview students for technical sales positions. He visited Ohio State

University; Rensselaer; University of Santa Clara, California; and Texas Tech and Texas A&M Universities—to name a few.

Hernandez said, "We look for people who are outgoing and business- and technically-oriented. We train and keep them technically sharp. They are Fairchild in the eyes of customers and key semiconductor purchasing decision makers."

Fairchild is committed to developing and retaining these new hires. In the last four years, less than one percent of new college hires left the company. What keeps them here?

"It's dedication to creating an exciting technological environment that stimulates and challenges along with providing the resources to meet those challenges," said Fairchild Personnel Director Ken Rohner.

Hernandez attributes our success to top management's commitment in funding ongoing recruitment training efforts. He said, "The students come to us with good integrated circuit backgrounds. We help develop them through exposure to different disciplines and job opportunities."

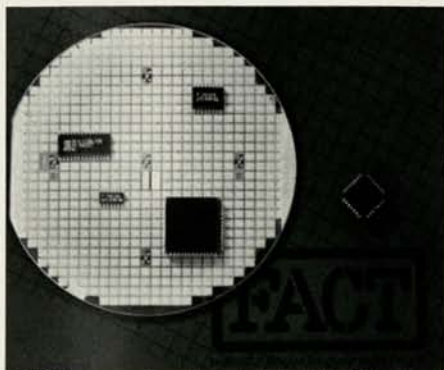
Top management also lends a personal touch. For example, John Migliore, vice president of sales and marketing, sends personal letters of thanks to deserving new college hires. When Hernandez visits the field sales offices, he makes a point to spend time with each college hire during his visit.

"In my opinion," said Hernandez, "the difference lies in top-level commitment and in doing the little things which pay off in the long run."

"We draw students because we're a leader in high-performance technology, and they can develop as scientists and engineers."

SURFACE MOUNT TECHNOLOGY

by Larry Forcier, Applications Engineering Manager, Digital Unit



SOIC (three smaller units) and plastic leaded chip carrier (two square units) surface mounted packages.

Fairchild is actively participating in the Surface Mount Technology (SMT) arena with high-speed circuits quickly gaining popularity among electronic equipment manufacturers in their drive to build small, better performing equipment.

In the "older" plated through-hole technology—currently the dominant printed circuit board manufacturing technique—the components' leads are inserted into copper-plated (for better electrical conduction) predrilled holes. They are then soldered to the bottomsides of the board. The SMT approach does not require predrilled holes, so components (for example, integrated circuits, resistors, capacitors, switches) can be soldered to both sides of the board. As a result, more components can be packed into a given area and smaller packages can be used to house the components, significantly enhancing electrical and thermal performances. For the past 20 years, system designers have looked to SMT to increase circuit board density—more functional capability on a given board or the same capability on a smaller board—and to lower assembly costs.

For example, by using nearly all SMT in constructing its new artificial intelligence computer, a major electronics company built a unit that could fit onto a desktop.

Without surface mounting, it would have taken the space of an entire desk.

Fairchild, committed to supplying the customer with a cost effective packaging technology, currently offers products in surface mount packages called SOICs (small outline integrated circuits). In February, Fairchild began offering its FAST (Fairchild Advanced Schottky TTL) and LS (Low-Power Schottky) families of digital logic devices in space-saving SOIC packages at prices equivalent to DIPs (dual in-line packages). Fairchild SOIC packages were developed by the Digital Unit in South Portland, Maine. Today, Fairchild digital and analog devices are packaged in SOICs in manufacturing locations including Singapore and Seoul, Korea.

An SOIC package consists of a die from a chosen family mounted on a lead frame and encapsulated within an electrically nonconductive plastic compound. The compound can withstand soldering temperatures for brief periods, with no deformation, and device performance remains constant when operated in high humidity conditions.

Fairchild adheres strictly to SMT industry standards. In fact, Fairchild's manufacturing tolerance standards exceed those set by JEDEC, an industry standards organization which prescribes package types.

Today SMT's applications spread over a wide range of industries—telecommunications, computers, military and consumer electronics among them. Driving its prevalence are market demand for smaller size products, automated manufacturing techniques and advances in integrated circuit packaging.

"SMT provides many advantages over the currently dominant through-hole technology," said James Notman, Digital Unit package development manager, "including smaller size, higher packaging density, faster circuit performance, improved reliability and lower costs for electronic assemblies. Although SMT will not totally

replace through-hole techniques, it may capture anywhere from 20 to 30 percent of the market by 1990."

Although a few U.S. manufacturers produce 100 percent surface-mounted boards, most combine surface mounted devices and through-hole components. According to *Electronic Packaging and Production* magazine, today approximately 50 to 70 percent of the lower power memory, digital, microprocessor/microcomputer and linear products—among others—are available in at least one surface-mountable package.

"SMT is the next generation in packaging technology," said Notman. "It's crucial that we have SMT capability because of its suitability for automated assembly methods. SMT is central to our struggle in driving down manufacturing costs. Without high-level automation, we can never be competitive in system assembly."



From Digital Unit Marketing: The first of technical sales brochures on SOIC packages and their qualifications. Future brochures will include FACT SOIC product listings. Coming later will be sales sample boxes of 10 (four 14-pin, four 16-pin, two 20-pin) SOIC packages.





POWER OF INFORMATION

What patents is the competition filing this year? What are the latest telecommunications applications in fiber optics? Japan's GNP?

These questions evoke a common answer at Fairchild Research: "No problem." Fairchild's information/communication resource, the Technical Information Center (TIC) located at Schlumberger Palo Alto Research—Fairchild in California, is hard at work keeping research scientists, engineers and strategic marketers ahead in their fields. Well-informed employees are vital to a company's success. Increasingly, companies see the importance of providing efficient access methods to vital information for employees.

We visited Sandie Crabtree, TIC manager and information

**"Effective
employees are
well-informed
ones. Fairchild's
recent successes
in the marketplace
have depended
heavily on good
communications!"**

"Armed with subject knowledge and information-retrieval expertise, we actually save a lot of time and frustration, as well as uncover materials that otherwise you may not have found?"

specialist who facilitates idea transfer and informed decision-making among Fairchild employees. If Sandie can't find an answer on the well-stocked shelves in Palo Alto, the TIC will tap into a richly-resourced network—including more than 500 online database files—for a fast, accurate response.

Q What kind of services are available at the Technical Information Center?



John Pierce, Research Center scientist and TIC committee member, in front of extensive current journal collection.

A TIC houses an extensive collection of materials. For example, we have an internal library of more than 450 current periodicals, 10,000 volumes of books and conference proceedings, 2,000 reports, a highly-selective collection of standards and patents, published papers and articles from Fairchild/Schlumberger, 25 years of Fairchild archives and over 1,000 Fairchild technical reports and memoranda. These materials cover a wide subject area including semiconductor processing and design, mathematics, physics, chemistry, computing, artificial intelligence and testing. Interlibrary loan arrangements within Schlumberger and with outside services and local educational institutions further expand our capability. We also provide both reference and data searches to all major electronic databases such as Dialog, BRS and Dow Jones. We can even track down experts in highly specialized fields. Extensive onsite archival material is also available. More than half of the collection is listed through an online catalog called DATALIB. This catalog lists all materials acquired since February 1985 and over 50 percent of the Center's

historical collection. The balance of the historical collection will be added to DATALIB in 1986, except for journal articles and conference papers already cataloged on commercially available online databases. DATALIB is accessible from any office with access to the Schlumberger information network (call us for log-on details).

Q Who can use the TIC and what are the procedures of getting information?

A We are open to the Fairchild and Schlumberger community. If you need information about a topic, call on us. We may even have done it before! We are four *information specialists* at TIC. You can say we're navigators in a sea of information. We qualify your question, find strategies for answers, and inform you of limitations of our tools and techniques. We search for and select relevant and timely information. Armed with subject knowledge and information-retrieval expertise, we actually save a lot of time and frustration, as well as uncover materials that otherwise you may not have found.



Frank Chien, bipolar process development manager, asks information specialist Sherry Cook to obtain material not available in-house.

Q To what databases do we have access?

A To begin with, a database is a collection of references to journal articles, patents or conference papers. Most scientific or technical databases contain bibliographic references which typically include a 100-word description of the contents. We can access commercial database systems that are scattered throughout the world and are heavily used internationally. In fact, since the West Coast is sand-

wiched between Japan, the East Coast and Europe, there are only about three to four hours when such systems are sufficiently lightly-loaded for cost-effective searches. We have access to these files, or stored references, through database suppliers called online vendors. Files may be subject-specific, such as Chemical Abstracts or Computer Index; or specific according to the type of information, such as World Patent Index or Science Citation Index. Many are equivalent to printed indices or abstracts. More than 500 different files from six main vendors are available for our searches. Typically the TIC staff regularly use 40 to 50 different files.



Betty Whitney reshelves periodicals.

Our main vendor is Dialog. Keeping up with new files and developments in the various systems is a formidable task, even for the information specialists. The list is considerable and expands on a weekly basis. Like any tool or technique, the expertise lies in knowing when and how such a search would be most beneficial. These databases can be searched in a variety of ways and allows for creativity and fun.



Kumara Swamy, research engineer, explains technical background to Sandie and Mary Solomon before literature search can begin.

Q Why do we have a Technical Information Center?

A Effective employees are well-informed ones. Fairchild's recent successes in the marketplace have depended heavily on good communications among all the Units, as well as between Fairchild and its present and potential customers. We are one of the conduits of information at Fairchild. Tony Ley, vice president of research and engineering, is a strong communications advocate.

Q Can you give us some examples of the types of information you retrieve that reflects the spectrum of your resources?



Sandie Crabtree (far right) and Mary Solomon (standing, center) assist employees with information research needs.

A The questions really run the gamut. Most of them are technology-specific. For example, what four-transistor SRAM cell designs are currently in use? Which gases are used to dilute what primary plasma etchants? Others are marketing related. Who is filing patents in Japan in a specified technology? We've been asked for major competitors' complete portfolios, including application information, technical papers, patents and press releases. Our competitors look carefully at what we are doing.

Q What other services do you offer?

A We provide an interlibrary loan service where we can obtain copies of any published material that's not available in-house through both cooperative and commercial services. Also we can borrow circulating items from outside libraries, for example, from Stanford and University of California at Berkeley. We have at the Center a public terminal permanently

connected to our DATALIB catalog, a photocopier and microfiche reader. We regularly publish our new accessions list and any Fairchild employee can be put on our mailing list. We also give special group tours.



Patty Grimm posts the latest magazine articles on bulletin board outside the TIC.

Q Putting aside the mechanisms of data storage, access and retrieval for a moment, what makes the system effective?

A I think we have excellent, qualified information specialists here. Four of us are involved in the day-to-day operations. Sherry Cook, who is responsible for the Center's general operations, has a master's in library science. Patty Grimm handles new acquisitions; she has an English literature degree. Mary Solomon does technical searches; she holds an engineering degree, has taught physics and worked in microwave engineering. I have a master's in physics and information science and came to Fairchild after 10 years with Schlumberger Measurement and Control in England. We also have an advisory committee of about a dozen people representing various organizations within the research facility and other company divisions. They make general recommendations and are also a conduit for employees' comments and suggestions.

Q How can people get in touch with the TIC?

A We are open between 8:00 a.m. and 6:00 p.m. at 4001 Miranda Ave., Palo Alto, CA 94304; telephone: (415) 858-4296.

HIGH TECHNOLOGY PARTNERSHIPS

"Success in a high-technology market no longer depends solely on technology leadership. Building key customer partnerships through comprehensive communication and information sharing is vital!"

[EDITOR'S NOTE: The following is an excerpt from Fairchild President Don Brook's presentation to key business executives at the 1986 National Science Foundation Conference on Industrial Science and Technological Innovation in San Antonio, Texas, last April.]

The subject of my discussion is how we at Fairchild create and maintain customer loyalty in a high-technology market characterized by intense global competition and new product development. I will do that in the backdrop of semiconductor trends and their implications for management.

Success in the semiconductor business no longer depends solely on technology leadership. Increasingly it lies in building long-term partnerships with key customers.

When a customer decides to build equipment based on a Fairchild integrated circuit, he is literally basing the success of his product on our ability to be a reliable, long-term supplier. We help the customer minimize this risk by forming a broad-ranging relationship—a partnership with our customer.

Fairchild is an active partner with customers in developing new products. We work closely with them, sharing information, technology and equipment. Fairchild components are designed into our customer's equipment early in the customer's development cycle, so it's important that we supply the information he needs to make that crucial decision.

We must make new technologies available to our customer such that he develops his equipment concurrent with the development of these new semiconductor technologies. In other words, his end equipment development cycle must happen concurrently with the semiconductor development cycle.

One factor driving Fairchild toward partnerships is growing customer demand for systems and subsystems that solve a particular problem. That is, rather than

buying an assortment of components, customers want a systems solution.

When Fairchild forms partnerships with customers, we provide technology and service to help them reach two very important goals:

- Reduce the time it takes to bring his product to market, and
- Differentiate his products from those of competitors.

The need to form effective customer relationships is particularly compelling in the face of stiff international competition. Fairchild and other U.S. manufacturing industries are facing.

The U.S. has been steadily losing market share in the communications equipment, office machines, instrumentation and computing equipment fields.

Our declining strength in the computing equipment area is perhaps most alarming since computers drive the competitive positioning of the entire U.S. industrial base in world markets.

We must reverse that trend. It is a national imperative.

We believe the fundamental issue, however, is not technology. It is time to

market, truly a business issue.

We must not become victims of a premeditated life cycle compression. Win-win relationships can be developed to manage risk in creative ways and cut time to market dramatically.

Delivering Fairchild technology to the customer will require a quality management job, and the heart of that is good and systematic communications. We are developing special integrated management information systems. They include three elements:

- Electronic Data Interchange (EDI) to create a comprehensive communication channel;
- Computer Aided Design (CAD) systems that give Fairchild and our customers access to common technologies in building products;
- And, at the heart of these systems, Computer Integrated Manufacturing (CIM) to provide management a continuous stream of information and feedback on manufacturing conditions, quality and reliability.

It's the combination of EDI, CAD and CIM that will help us forge strong customer partnerships to help our customers achieve their goals.

To summarize, success in a high-technology market no longer depends solely on technology leadership. Building key customer partnerships through comprehensive communication and information sharing is vital.

The successful commercialization of high-performance VLSI semiconductors will be an experience shared by customer and vendor. Through the development of integrated management information systems, I believe both Fairchild and our customers can achieve total quality management and accountability.

Fairchild develops special integrated management information systems such as EDI, CAD and CIM for good and systematic communications with customers. ▶

COMMUNICATIONS**TOTAL QUALITY MANAGEMENT**

EDI • Electronic Data Interchange
CAD • Computer Aided Design
CIM • Computer Integrated Manufacturing

FAMILY ARTS DAY



Families view Biennial exhibit.

Fairchild recently helped celebrate one of the most important 1986 arts events in California's South Bay Area, "The First San Jose Biennial." A visual arts exhibit recognizing Silicon Valley artists, the biennial represents the shared efforts of the San Jose Museum of Art (SJMA), San Jose Art League, San Jose Institute of Contemporary Art, San Jose State University Art Department galleries and WORKS/San Jose.

The biennial opened with Fairchild-sponsored *Family Arts Day*; a host of special events complemented the exhibition, including artists' studio tours, performances and a lecture series. When was the last time you took the whole family to see an art exhibit? *Family Arts Day* encouraged such an outing. Entertainment and light refreshments were featured throughout the afternoon.



Vers
l'excellence

FAIRCHILD
Une Société Schlumberger

We're taking
the
high ground.

FAIRCHILD
A Schlumberger Company

尖端科技
再創高峰

¡Nos estamos
conquistando
o nivel superior.

FAIRCHILD
A Schlumberger Company

A la cumbre
con
Fairchild.

FAIRCHILD
A Schlumberger Company

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FAIRCHILD
A Schlumberger Company

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¡Nos estamos
conquistando
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FAIRCHILD
A Schlumberger Company

We're taking
the
high ground

A la cumbre
con
Fairchild.

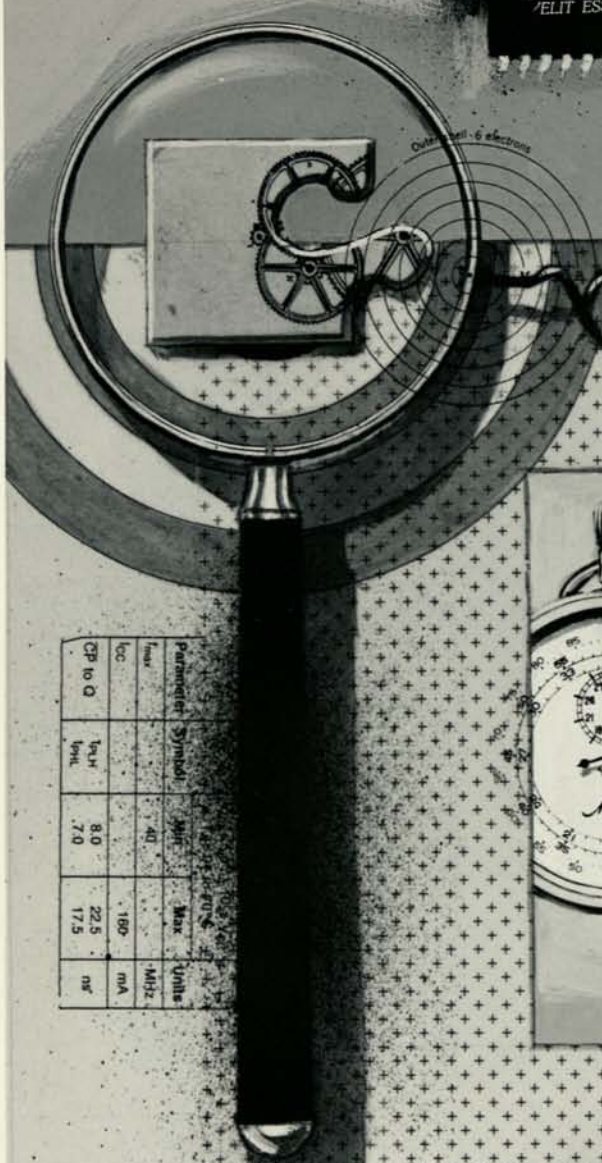
UPDATE:

Fairchild aims to introduce more than 200 new high-performance products in 1986. To generate employee understanding and support for our *High Ground* goal, we've been spreading the message around the company through bold buttons and a videotape.

Red and white buttons declaring "We're Taking the High Ground" in the languages Fairchild people speak around the world—English, Japanese, Korean, Chinese, French, and Portuguese—were recently distributed. We went to our own Fairchild language experts to help us translate the phrase for the buttons. We thank all these employees for their enthusiastic response.

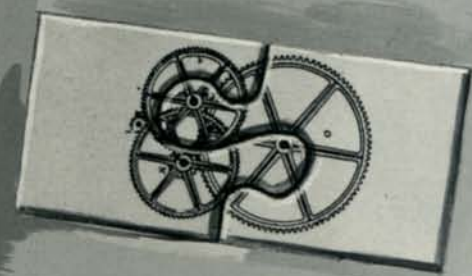
Fairchild's videotape, "We're Taking the High Ground," made its worldwide debut. Starring Fairchild employees, the videotape covers our latest products and successes in customer service. President Don Brooks has a strong presence throughout with a message about a "dynamic new Fairchild." The videotape is being viewed in employee communication meetings worldwide.

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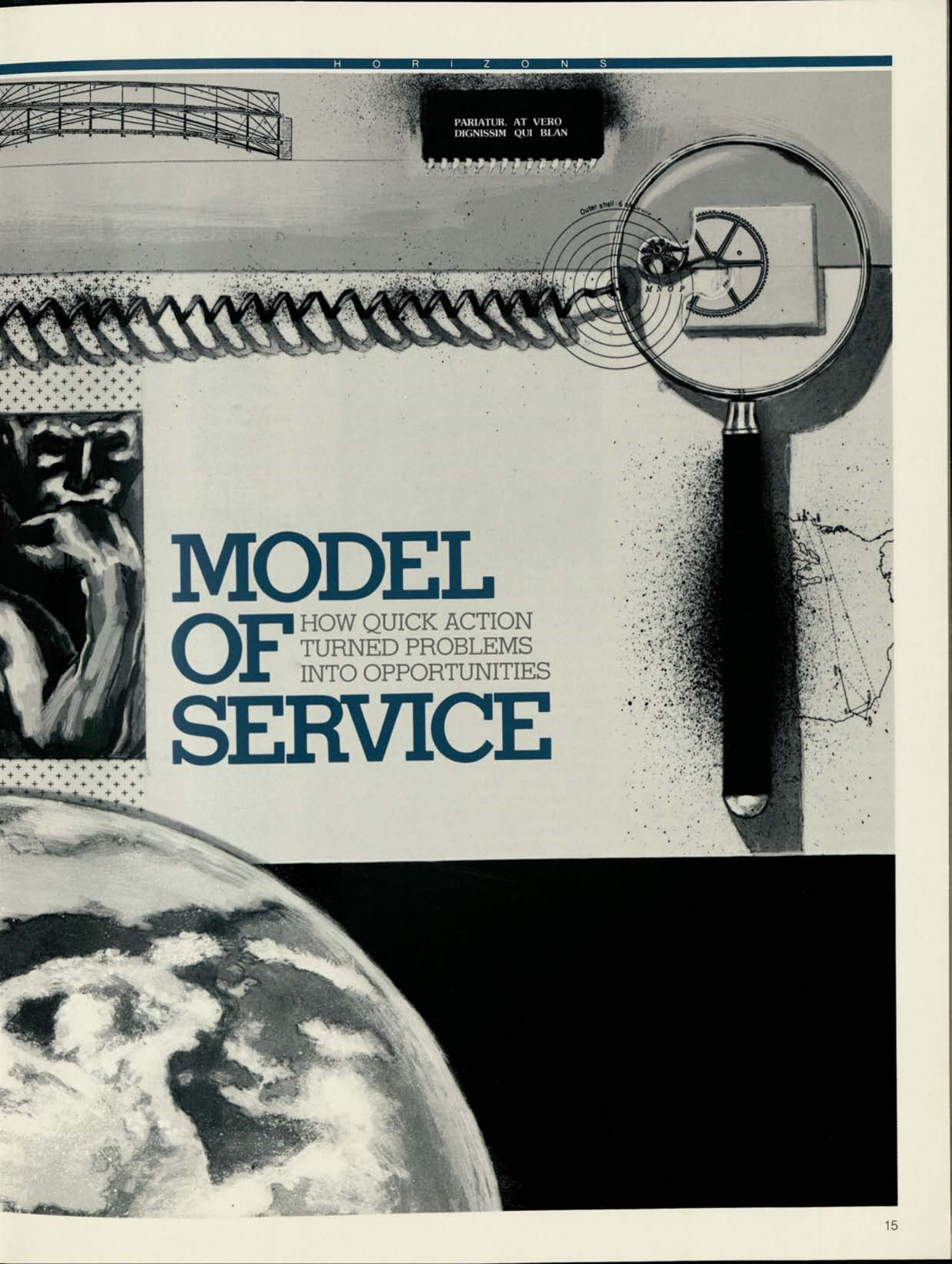


Output - 6 electrons

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			7.0	17.5	ms



PARIATUR. AT VERO
DIGNISSIM QUI BLAN



MODEL OF SERVICE

HOW QUICK ACTION
TURNED PROBLEMS
INTO OPPORTUNITIES

**We are in partnership
with our customers.
They make a big in-
vestment in Fairchild
when they design in
our parts. The success
of our customers
rests on Fairchild's
ability to be a reliable
supplier.**

Dark clouds loomed on the Singapore horizon. The weather mirrored the mood of the manufacturing engineer of a major computer peripherals company based in California. He was fed up! He had just pinpointed the cause of the technical failure in the firm's disk controller board. His company designed the system in the San Francisco Bay Area and manufactured it in Singapore at a major worldwide subcontract firm using Fairchild digital logic chips.

Convinced that Fairchild semiconductors were at fault, he angrily grabbed the phone. He was ready to disqualify Fairchild as a supplier of this system. He called his contractor—one of Digital Logic Division's largest U.S. customers which built personal computers, as well as a major Fairchild Singapore customer—to disqualify the Fairchild part and to cancel all orders.

His first call was to A. B. Lee, sales manager for Singapore and Southeast Asia.

"We have a major problem with your circuits" he told Lee. Lee quickly got Neil Mathison, manager of Fairchild Southeast Asia, involved. Lee and Mathison sprung into action.

Twenty-four hours and many phone calls later, a Fairchild team around the world was homing in on the problem. The calls began with a direct contact to the Division and the local sales office counterparts in the U.S. Soon George Robillard, Western Area sales manager in Cupertino, California, and John Hambidge, vice president and general manager of the Digital Logic Division in South Portland, Maine, were directly plugged in.

In the next few days, Fairchild people across these organizations were coordinated in a search for a solution. Among the sales staff called upon in addition to the local manager A. B. Lee, were Paul Novak, district sales manager; Ron Hebron and Don Sherman, applications engineers; and Dave Diedrich, sales

engineer, all part of Robillard's Western Region sales and support team.

Following immediate direct telephone contact and commitment of full support from Hambidge, Laurenz Schmidt, Digital Logic Division quality assurance manager, swung into action. After visiting the customer to delve into the problem, he captioned the detailed research of quality and reliability records. Fairchild constantly runs product quality and reliability tests during the manufacturing cycle and keeps complete records for future reference. These are key tools in assisting the customer in understanding the problem.

After painstaking data gathering and analysis, Laurenz presented his findings. Laurenz and the local California field application engineers were able to assist the customer in identifying a system application anomaly that caused the Fairchild part to be operated outside of its performance specifications. This product was subsequently requalified.

In just four weeks, the problem was not only resolved, but Fairchild emerged as a stronger, more credible vendor with both customers. "Fairchild reacted so quickly and with such a well coordinated worldwide customer support effort," said Mathison, "that we not only retained the

current customer engagement, we turned the problem into an opportunity, gaining new business in the process."

"The keys were open communication and timeliness," said Robillard. "Good communication can be very difficult in an industry characterized by U.S. engineering facilities and offshore assembly plants. Early on we recognized this was an issue. Prompt action followed. We let the customer know we were concerned and that we would do everything possible to correct it in a timely fashion. In short, we backed our good intentions with fast action, drawing on Fairchild expertise around the globe. The feedback we got after the incident was very positive."

We are in partnership with our customers. They make a big investment in Fairchild when they design in our parts. The success of our customers rests on Fairchild's ability to be a reliable supplier.

"Everybody gets in trouble at one time or another; what counts is how you solve it," said Robillard. "In addressing it up front, we received a sideline benefit. It opened other opportunities for current and future business. In our dedication to customer service, we were able to establish a supportive relationship."

Mathison added, "Ironically, you learn more about a customer's business when he's in trouble—and of course he also learns a lot about Fairchild. It's unfortunate for us when a problem occurs, but it's important that we work to insure the end result is positive for the customer and for Fairchild."

In the process of problem solving, Fairchild positioned itself as a responsive, dependable and professional supplier.

"We got closer to the customer through good communication and mutual assistance. This should teach us that we can all turn lemons into lemonade," concluded Robillard.

FAIRCHILD JOINS BROOKTREE

IN MANUFACTURING/SECOND-SOURCING PARTNERSHIP



Don Brooks (right) and Brooktree President James Bixby.

Fairchild joins Brooktree Corporation in a broad-ranging partnership involving product second-sourcing, manufacturing and a major financial investment by Fairchild in Brooktree. Fairchild paid \$3.6 million for stock representing five percent ownership of the San Diego-based designer of an advanced line of CMOS (Complementary Metal Oxide Semiconductor) and ECL VLSI (Emitter Coupled Logic Very Large Scale Integration) circuit devices. Founded in 1982, Brooktree markets a new line of high

precision digital-to-analog and analog-to-digital converters critical to the development of new generations of such products as graphics workstations, telecommunications and automatic test equipment. The devices are characterized by high speed and reduced power consumption at relatively low cost, using advanced CMOS and bipolar fabrication processes.

At a luncheon in April announcing the partnership attended by Brooktree President James Bixby, Fairchild executives and press members, Fairchild President Don Brooks said, "We're very excited about this alliance. Fairchild's objective is to supply high-performance semiconductors for such applications as computers, workstations, telecommunications systems, aerospace and defense. Brooktree converters are breakthrough devices ideally positioned to exploit these markets. Our investment goes beyond the usual second-source agreement; it's a vote of confidence in the company's design technology. In this way, Brooktree's success becomes our success."

Under the terms of agreement, Fairchild will provide manufacturing services for a majority of new Brooktree products. In return, Fairchild will gain exclusive second-source rights to more than 20 existing and future Brooktree offerings and to products introduced over the next two years.

Brooks said, "It's an extremely balanced contract in terms of what it will bring to both parties. We provide advanced process technologies and manufacturing, and receive high-performance products and new customers. Brooktree brings systems knowledge and design capability, and gains investment capital for new product development and sales and marketing expansion."

Brooktree will design certain standard-cell elements using Fairchild's 1.2-micron CMOS gate array technology. These cells will be offered to customers of Fairchild's Gate Array Division for custom designs of mixed analog and digital chips.

"We sought Fairchild as a partner because it is an established worldwide leader in high-performance bipolar semiconductor processing technology and advanced CMOS processes," said Bixby. "Only Fairchild combines these two technologies in a way suited to our current and future product design."

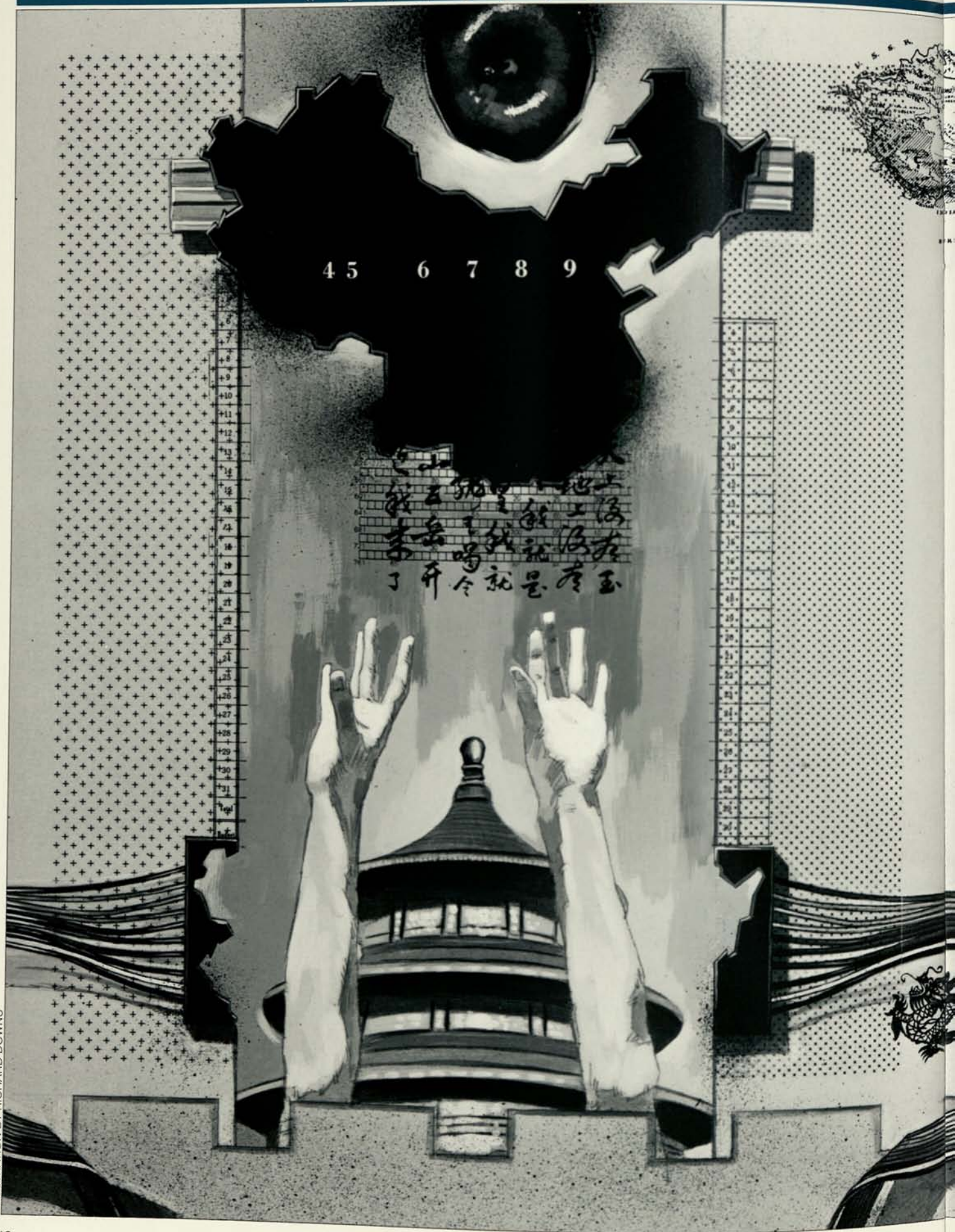


ILLUSTRATION BY RICHARD DOWNS



快捷在中國

FAIRCHILD IN CHINA

by Helene Senkowski, Marketing Communications Manager
Power & Discrete Division



"Let a monument of stone be erected on this coast,
In memory of Meng Chiang Nu, who jumped into the sea
And now make ready, my chariot royal
For I will upon return, into my Court."



"The width of the wall was several times ten feet
To east and west you could never see the end of it"

中國



Don Brooks presents a High Ground button in Chinese to Li Tieying as Yuan Shuxun, MEI Deputy Director of Foreign Affairs, watches.

Last May Fairchild participated in China's Electronics Technical Seminar authorized by the Industrial and Technological Cooperation Accord (ITCA) signed by President Reagan and Premier Zhao in 1984. Upon an invitation from the U.S. Department of Commerce in conjunction with the Chinese Ministry of Electronics (MEI), Fairchild sent Ray Bregar, Power & Discrete Division's power product line manager, to speak at this high level meeting. Bregar presented a six-hour talk on "Discrete Components and Application Specific Software" in the cities of Beijing, Chengdu and Shanghai.

The seminar's primary objective is to translate the general commitment of China's leaders to develop the nation's electronics industry into specific business opportunities for American electronic firms and their Chinese counterparts. This joint venture emphasizes access to key Chinese officials and facilities that U.S.

government sponsorship can most effectively provide. From the Chinese perspective, it places China's electronics industry managers in direct contact with potential American business partners.

In China's current five-year economic plan (1986-1990), goals are to quadruple electronics industry production to \$19 billion by 1990, targeting attainment of late 70's and early 80's international standards of product and process technology.

Chinese interest in cooperating with U.S. firms includes licensing arrangements, co-production efforts and joint venture agreements. The main thrust will be in standard, as opposed to "leading edge," electronics technologies.

Bregar spoke on the following topics: Discrete Marketplace; Devices and Design Rules; Materials and Fab Processing; Assembly and Test; Reliability and QA Levels; Yield and Statistical Process Control; and Cost for Manufacturing Modules.



Chinese Ministry of Electronics (MEI) Minister Li Tieying (center) with delegates. Fairchild representatives (left to right) are Scott Seifert, Linear Division international marketing manager; Stav Prodromou, Analog Unit vice president and general manager; Ray Bregar; and George DeBakey, U.S. Department of Commerce deputy assistant secretary of science and electronics, whose agency organized the mission to China.

Here are some interesting points taken from the *Electronic Business* March 15 article on "Doing Business in China":

- The U.S. exported a total of \$269 million in electronics to China in 1984, up from \$79 million in 1979. The electronic components sector comprised \$3 million in 1984 of the total, up from \$1.3 million in 1979.
- Through 1987, the Chinese government expects to spend about \$31 billion on "technical renovation," including \$5.2 billion for imported technology and equipment.
- Sino-U.S. trade volume reached about \$7 billion in 1985, an increase of \$900 million over 1984's level, making the U.S. China's third largest trading partner after Japan and Hong Kong.
- China, with a population of 1 billion people, has a fairly strong technological base—some 3,000 enterprises staffed by 1.5 million employees. This includes 130,000 technological personnel, more than 100 scientific research institutions and four institutions of higher learning.
- Recommended reading on those 18-hour flights to China: *Doing Business in China*, published by the U.S. Government Printing Office; Arthur Anderson & Company's *The People's Republic of China* and *The Accounting System of the People's Republic of China for Joint Ventures Using Chinese and Foreign Investment*.

WIRELIN NORTH AMERICA

EXPANDING LEADERSHIP IN OIL



Photo by Karin Knapp/Sonde Off

24-hour service to clients in the oilfield.

White marsh herons flew gracefully across the highway. Armadillos crawled out in the heat onto the road. We saw handlettered signs, *Live Crawfish*, every few miles driving south from New Orleans in Mississippi delta country. Recently *HORIZONS* visited Schlumberger oilfield service people of the North American Wireline (NAM) at work in the marshlands and gulf coastal waters of Louisiana. Every day they make multi-million dollar decisions about the presence of oil and gas in the subsoil.

Virtually all engineers are hired straight out of universities; rarely do engineers join Wireline from other companies. A rigorous system of Wireline training alternates classroom and hands-on programs. It turns college graduate electrical, mechanical and physical engineers into Schlumberger Junior Field Engineers (JFE). Following an apprenticeship period the JFE *breaks-out* and is qualified to work without supervision. He or she spends another year as a *worm* or new engineer. The *worm* can draw on experienced Wireline managers who all have come up in the ranks from the field. More exams and technical papers bring career advancement. Then the coveted titles of *Senior Field Engineer* and *General Field Engineer* can be earned after more years on the job. Management, technical and sales posts are typically filled from the Field.

Open-faced, adventuresome, jeans- and t-shirt-clad young engineers look more like kids at a barbecue than the recent Dean's list graduate engineers that they are. At Fairchild their counterparts would probably dress in clean room garb or coats and ties. But despite the rugged attire of the oil rig, these engineers command great professional respect.

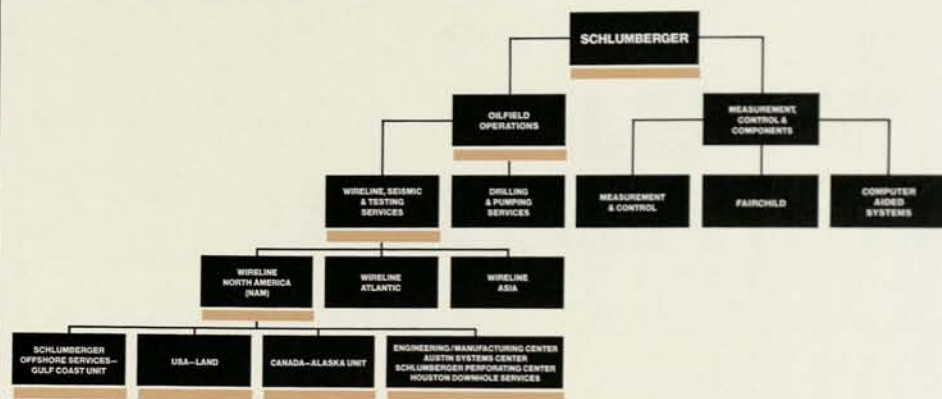
Schlumberger Wireline crews consist of an engineer and two operators who attend the equipment. They can be found riding work boats through five hours of choppy Gulf waters or flying helicopters to offshore rigs. Their computerized offshore unit and a selection of sensitive downhole monitoring tools are already aboard the rig. Once they have arrived, they spend hours assembling the equipment to take precise readings as deep as four miles into the earth where temperatures can reach 350 degrees Fahrenheit.

Precise Readings

They lower measuring instruments to the bottom of the drill hole on an armored electrical cable called a *wireline*. These instruments, encased in a slim cylindrical tool known as a *sonde*, are then pulled slowly back to the surface, measuring continuously the physical parameters of the rock formations. The data are transmitted on the *wireline* and measurements are plotted on a graph called a *log*, which helps determine the nature of the formations and whether they contain hydrocarbons or water.

On land the engineers take self-contained, computerized Schlumberger logging trucks over miles of rugged terrain, into swamps and onto barges to serve customers. Wireline data satisfies clients' pressing need to decide quickly whether to plug and abandon a dry hole and thereby cut losses, to put a well into production, or keep a mature well at peak performance.

Schlumberger Wireline engineers hope for a *slick* or problem-free job. Fees are based on the number of different tools run in



Victor Grijalva, president, North American Wireline.

the hole and the depth of the well. A problem such as a tool stuck in the hole can easily add 10 or more hours of tedious and unprofitable *cut and thread* rescue operations to the job.

Field engineers know that once on the oil rig they will be awake for two or three days without rest until the log is complete. It typically costs the customer \$3,000 an hour or more, 24 hours a day to operate a drill rig. In some places, rigs can cost \$100,000 per day.

Service Attitude

"You're always thinking of how cost effectively you can do your job. The less time you can tie up the rig, the faster you can answer the client's questions—then the more valuable you are," said Scott Alexander, General Field Engineer with the Westbank Offshore District in Belle Chasse. "It's important to know the tools well and be able to suggest to the client the right equipment and services to answer his technical questions. Our business depends on forming good relationships with customers based on mutual respect and confidence. The better we understand his business the more successful we will be," added Scott, a 1981 mechanical engineering graduate from Tennessee.

Engineers can run basic computer analyses of logging data at the wellsite onboard the CSU (Cyber Service Unit) truck. For more complex interpretations data is sent via Schlumberger's LOGNET Satellite Communications Network or via DART, high frequency digital-to-analog radio transmission, to Schlumberger computing

centers located throughout North America. The data can go directly to the client's office as well.

The oilwell logging services that NAM provides from approximately 200 locations in the U.S. and Canada represent only an average of two to four percent of the total \$800,000 plus it can cost the client to develop a producing well. The data is critical, however, in the client's decision-making.

Blue Blood

Wireline engineers are proud of their Schlumberger *blue blood*. It's not uncommon to encounter employees with over 25 years of service. At the Belle Chasse Renovation Center located 17 miles across the Mississippi River from New Orleans rusted logging units—worn down by severe weather and salt water—are renovated into top performance machines, retrofit or upgraded to the latest standards. Then they are replaced in service or stored as market conditions dictate.

"There are many good reasons for top maintenance, including equipment performance and preservation of the Schlumberger image," says Gus Schroeder, a 27-year employee and the center's manager. "Cosmetic and mechanical maintenance are essential. Our oilfield customers think if you have dirty equipment, you have unreliable equipment. We want to dazzle the clients with our paint jobs," noted Gus as he showed us proudly into the spray booth.

Field engineers we met at Wireline land and offshore districts in Louisiana shared their feelings openly. Charlene Federoff, a University of Pittsburgh chemical and petroleum engineering graduate, *broke out* in February of 1985. She likes the professional feeling others regard her role as field engineer of the Belle Chasse Open Hole District.

Scott Alexander says it's adrenaline and determination that sustain him through two or three days without sleep and the continuous attention it takes to log a well.

"Where else can a young engineer feel such a sense of accomplishment? When you finish a job you know that you have impacted a major financial decision. You're rated on dollars saved for services rendered. Your data and your judgment prevail. It's thrilling," said Mark Whitaker, manager of the Houma Open Hole District.

And Gus Schroeder proudly pointed out his unit's three recent President's Awards. These plaques go to Wireline districts for 150,000 work-hours free of vehicle accidents and lost-time injuries. The program dates back to 1952. Safety seems always on the minds of Wireline engineers who work around heavy, fast-moving

"Our people are our main asset. Their motivation comes from being respected as individuals and having goals of professional excellence which encourage them to develop their full potential!"

equipment in harsh environments.

The Wireline is proud and protective of its field engineers. They are high calibre individuals with excellent education and experience. Right now it's important to point out what's right at NAM. With a depressed oil business cycle it's all too easy to focus on what's wrong in the oilfield. The rig count—the barometer of health in the oil business, akin to the semiconductor industry's book-to-bill ratio—has declined from an all-time high of 4,500 in 1981 to approximately 800 in North America. 1985 and the first half of 1986 have been difficult for the oil industry and for Schlumberger. We face an overall climate of uncertainty because oil supply outstrips worldwide demand.

Directions 1986

During 1985, Wireline management worldwide, under the direction of Euan Baird, Wireline, Seismic & Testing Services executive vice president, outlined its values. They are:

"Our customer is a person, a set of attitudes, a culture, a way of doing business. We need to understand all these aspects to be able to deliver the tailor-made service he or she expects.

"Our people are our main asset. Their motivation comes from being respected as individuals and having goals of professional excellence which encourage them to develop their full potential.

"Our commitment is to be the market leader in our industry through technical excellence, impeccable business ethics and strong financial results."

Oilwell logging has become a very high-technology industry where a fast tool development cycle can spell market penetration. It's a highly competitive business that values cost-effectiveness and customer relationships. Schlumberger has gained market share in the current downturn—a goal it continues to pursue. A painful 24 percent reduction in head count from May 1985 to May 1986 has helped keep NAM healthy and still the industry leader.

NAM President Victor Grijalva and members of Wireline's management team communicated these and other issues to employees this spring in a videotape, "Directions '86." Grijalva, who worked at Fairchild ATE Component Test Systems four years ago and is familiar with Silicon Valley, became president of NAM Wireline last fall.

"Schlumberger has always taken the long-term view. We don't just ride the rig count up and down," said Grijalva. "Our commitment to technology and training intensifies in the downturn. We are sending some of our field engineers to university refresher courses."

We met with Grijalva at Wireline headquarters in Houston and



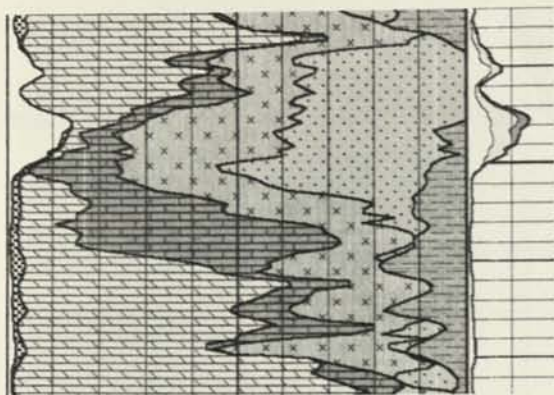
General Field Engineer Scott Alexander tracking the log inside the self-contained computerized logging CSU.



Rigging up a logging tool on location outside Midland, Texas.



Mark Whitaker, district manager, Houma Open Hole District (right), and Senior Field Engineer Malcolm Theobald discuss logging tools stored on rack in front of them.



Section of computer processed interpretation of a well log.

asked for his overview of the current oil business slump. "I feel we are now at the low point of the downturn since oil prices show signals of bottoming out and the normal, seasonal decline is almost over." NAM is preparing for the inevitable moment when oil prices and rig count begin to rise. The entire organization is focused on its goal to gain market share in the upturn by becoming the most cost effective company in the wireline business, decreasing the tool development cycle by 50 percent, increasing marketing and sales effectiveness, and placing top priority on people development.

Grijalva feels the current oversupply situation might end "sooner than most people think." He has seen many oil industry cycles during his 22 years with Schlumberger. Grijalva began as a design engineer at the Houston engineering group in the mid-1960's. The sharp curtailment of exploration, especially by the large oil companies, means that fewer new fields will be found. In addition fewer mature, more costly-to-operate wells will be kept in production in North America.

Overabundance will gradually increase demand and consumption here, in Grijalva's view. The dependence of the United States on imported oil is likely to increase dramatically in the next five to 10 years as a result. "There are currently 700 billion barrels of known reserves worldwide, with over half located in the Middle East," Grijalva pointed out. "The world will consume 300 billion barrels by the year 2000 so we must add 300 billion barrels of new reserves by then to replace the supply. That means a lot of exploration."

New Tools

This year and next will be very prolific for new tool introduction. Despite personnel and expenditure cutbacks in recent years, Wireline has continued research and development at a high level. Wireline research and engineering centers in Houston, Paris and Tokyo design, develop and manufacture sophisticated electromagnetic, acoustic and nuclear tools. The Schlumberger Perforating Center in Rosharon, Texas—30 miles south of Houston—designs and manufactures shaped charges. These are explosives used in perforating well liners to extract oil. They also develop new mechanical tools and evaluate truck design.

The Austin Systems Center researches and develops acquisition, interpretation and communications systems to support wireline activities.

Schlumberger Doll Research (SDR) in Ridgefield, Connecticut, looks to advanced technology to enhance Wireline's oilfield ser-

vices. An artificial intelligence program named Dipmeter Advisor—currently in use by customers—was developed at Ridgefield. Scientists spent 18 months learning Schlumberger master-logger Al Gilreath's logic rules for interpreting data from the dipmeter tool, which helps define reservoir structure. They built them into a commercial expert system software program to help engineers interpret data. Bob Langley, advanced application development engineer for Wireline, explained to us in Houston.

Marketing and sales have been reorganized to streamline management and increase responsiveness to the client. Schlumberger's oilfield services companies have been linked in joint marketing efforts to provide the customer a complete package of services from well drilling, open hole logging, well completion, production and maintenance.

"We are dealing with a changing technology in a dynamic marketplace. Our clients are experiencing powerful internal changes and that's a challenge for the management of our own company," said Clint McMath, vice president and general manager of Schlumberger Offshore Services—Gulf Coast, whom we met at the Houston Offshore Technology Conference (something like Wescon to the semiconductor business).

The Whole Nut

Schlumberger companies grouped together for a show of force on the exhibition floor of the Astrodome where the OTC is traditionally held. Sales representatives were passing out walnuts with informational materials to emphasize that clients get the whole nut with QUANTIPAC. The combined marketing thrust unites Schlumberger oilfield services companies—which often competed for business in better markets—into the total gravel pack completion package. One-stop-shopping for wireline logging, cementing and gravel packing, perforating and well testing.

The Schlumberger field engineer is responsible for the acquisition and interpretation of wellsite data. He influences millions of dollars of business decisions in the course of his daily work. He must work wherever oil is sought whether it be Saudi Arabia, Alaska, the North Sea or the Mississippi Delta. The field engineer is often the only representative the client sees. He *is* the company.

The Wireline field engineer must be a manager of people, an expert technician, an athlete with stamina and a sales representative. Knowing that costly decisions will be made based solely on the quality and quantity of his information, he learns very quickly the importance of independent decision-making and what a decentralized business is really all about.

"Our customer is a person, a set of attitudes, a culture, a way of doing business. We need to understand all these aspects to be able to deliver the tailor-made service he or she expects!"



Checking shaped charges used in well development at the Schlumberger Perforating Center in Rosharon, Texas.



A monopod oil rig in Cook Inlet, Alaska.



Engineer Charlene Federoff adjusts portable satellite transmission equipment.



Blue bloods at the Belle Chasse Renovation Center (from left): Steve Gros, mechanical coordinator, 29 years of service; Gus Schroeder, manager, 27 years of service; and William Curley, maintenance support-leaderman, 37 years of service.



Scott Alexander and Senior Electronics Technician Peter Thomas discuss repair of logging tool at the Westbank Offshore District in Belle Chasse, Louisiana.



Linear Division graduates of the Juran Program on quality improvement.

Quality was the theme of the Juran Training Program that Linear Division managers recently completed. Based on the methodologies of Dr. Joseph Juran, world-renowned quality expert, the program provides managers technical and management methods to bring about change. The managers participated in more than 30 hours of formal sessions that included brainstorming, formulating and testing theories, collecting data, analyzing causes and effects of actions, and developing problem solving projects.

"With the large investments required in our business, it's imperative that we get maximum possible yields and utilization of our physical assets," said Pepe Piedra, vice president and general manager of the Linear Division. "By improving quality via an awareness and involvement program, we can achieve optimum yields, improve capacity and above all, become the supplier of choice to our customers. It's essential to survival in our highly competitive industry."

A key element in the Juran approach is step-by-step problem-solving: identifying and diagnosing problems; formulating alternatives and remedial actions; implementing those actions, usually through specific projects; and devising and monitoring controls to keep the gains accomplished through these methods.

"It takes time, money and effort to install programs like these," said Piedra. "The Juran Program is not a panacea, but we're committed to shipping products without defects that conform to the customer's requirements. Quality is everyone's business, and it is good business."

As a result of the Juran Program, managers have undertaken nine projects targeted at improving quality and reducing material, production and labor costs.

More than 250 Fairchild scientists and engineers from around the world gathered for the 1986 Fairchild Research and Engineering Technical Seminar last June in Palo Alto, California. The sessions provided the attendees the chance to discuss and share technology developments underway at the operating divisions and at Schlumberger Palo Alto Research—Fairchild.

Tony Ley, vice president for research and engineering and director of the Research Center, emphasized the importance of company-wide cooperation and communication among research and

engineering personnel, in which the Seminar plays a critical role.

Prior to the Seminar, papers on semiconductor technology topics were solicited throughout Fairchild and selected by the Seminar Committee, headed by Seminar Chairman Bruce Deal of the Research Center. The Committee includes Bruce Cairns, Bill Herndon and John Pierce of the Research Center; Steve Goodspeed of Digital; Jim Holt and Jay Shideler of Analog and Microprocessor; and Bob Proebsting of Memory & High Speed Logic. Ib Larsen and Ed Garrigues from the Research Center coordinated the visual aids.

Presentations covered computer aided design (CAD), BiMOS (mixed bipolar and metal oxide semiconductor process that produces faster and denser integrated circuits than either technology can do alone), automation and process control, circuit design, process and device modeling, silicon and gallium arsenide technology, and advances in submicron VLSI (Very Large Scale Integration). The attendees were selected based on interest and responsibility in selected areas.

Dr. Eugene Gordon, chairman and chief executive officer of Lytel, Inc. of Somerville, New Jersey, gave one of the keynote addresses on *Some Light on Fiber Optic Communications Systems and Components*. Professor James Plummer of Stanford University's electrical engineering department gave the other keynote address on *Process Physics in Submicron Silicon Structures*. Don Brooks talked on the state of Fairchild and the semiconductor industry.



Bruce Deal and research staff member Attila Shelley discuss CMOS isolation technology at Technical Seminar.

Electro '86, a major electronics trade show for design, manufacturing and test engineers, featured Fairchild's new product and software announcements. More than 70 companies gathered in Boston, Massachusetts, in May to exhibit their latest product innovations in components, microelectronics, instrumentation and test equipment.

Among Fairchild's product introductions at *Electro* were:

- **CLIPPER** Cross Support Package, a set of advanced software development and simulation tools that permits simultaneous hardware and software design of computer systems based on CLIPPER, Fairchild's 32-bit microprocessor. The software package runs in VAX minicomputer and MICROVAX-II host environments.
- The first **FACT** (Fairchild Advanced CMOS Technology) family of CMOS (Complementary Metal Oxide Semiconductor) digital logic devices fully compliant with the MIL-STD-883C high-reliability specification published by the Department of Defense's Electronics Supply Center.
- Seven new **FACT** digital logic circuit devices, including three gates available in both commercial and military versions and four devices in commercial versions.
- The **FGE0050**, a small ECL (Emitter-Coupled Logic) gate array, designed for special logic functions and performance levels unavailable in standard F100K or F10K logic devices. The FGE0050 is an ideal complement to standard logic cases where custom high-speed functions or *glue arrays* in large ECL array-based systems are required.
- **FASTPLA**, the extension of the **FAST** (Fairchild Advanced Schottky TTL), standard logic family, fully pin-to-pin compatible with standard medium 20-pin programmable array logic devices.

Excellent, effective and very professional; I learned a great deal. Keep up the good work.

I'm impressed by Fairchild's efforts for strong vendor-supplier relationships.

I have a better perception of Fairchild. Outstanding format.

These are comments culled from participant response forms following Fairchild's *Discovery 86 Technology*



Discovery 86 customer demonstrations highlighted Fairchild's high-performance products.

Symposium, which recently ended a nine-city U.S. tour. More than 2,000 design engineers and engineering managers—Fairchild customers and potential customers—attended the day-long program to learn about the company's latest semiconductor technology and high-performance products.

When asked how they perceived Fairchild before and after the symposium, the majority of participants rated Fairchild much higher after having attended the seminars.

Neal Chandra, director of technology marketing whose team conceived and directed the symposium, succeeded in positioning Fairchild as a semiconductor technology leader.

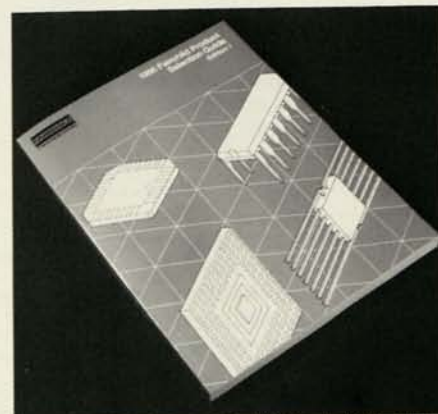
"We're very excited and pleased with the results," said Chandra. "The seminars positioned Fairchild's technological capabilities and familiarized the engineering community with our new product families. Distributors have been very impressed with what we've accomplished through the symposium. But probably of equal significance is the sense of pride that Fairchild people now feel toward their company."

Finally, Bill Densham, Fairchild symposium manager, expressed his appreciation for the cooperation and enthusiasm of the field and the divisions in support of *Discovery 86*.

A 200-page selection guide to all Fairchild products is available now for free from the company. The *1986 Fairchild Product Selection Guide* provides basic product features and specifications to help users select the devices that best meet their application needs.

The first reference catalog to encompass the company's entire product line, the guide also includes packaging and ordering information, a device cross-reference index, and listings of Fairchild's division locations, technology centers, sales offices and distributors.

Copies of the guide are available by calling Fairchild's Customer Information Center (1-800-554-4443).



Free copies of the 1986 Fairchild Product Selection Guide are available now.



The Fairchild Redskins

Fairchild distributor Hamilton/Avnet held its annual Super Bowl event, the company's largest promotional activity of the year, in Palm Springs, Florida. Fairchild sales staff competed with other companies for awards for outstanding sales performance in October, November and December.

Baltimore Orioles catcher Rick Dempsey (center, above sign), joined the Redskins, comprised of Fairchild and Hamilton/Avnet members, who took 7th place among 17 teams. Members pictured are, back row, left to right: Mike Hartsford, Don Moorehouse, Carle Hallen, Karl Williams, Kevin Janssen, Keith LaPointe, Ernie Dudley, Frank Macri, Bob Brown, and Bruce Swaider; front row: Steve Cooper, Ann Bohmfalk, Jennifer Snyder, Nancye Beck, Sara Rubens, Fay Small, Lea Ann McHale and Denny Betz. Not pictured is Jim Bell.

Fairchild has made tremendous strides in its industry-wide Technical Articles Program. According to the Heller Report, a quarterly survey of semiconductor advertising, Fairchild reached seventh place among 80 companies in the 1985 fourth quarter, up from last place in 1984.

As of April 1986, the following articles written by Fairchild engineers and scientists have appeared in print:

"A Two-Micron Metal Interconnect Process," *Semiconductor International*, by F. C. Chien, R. L. Brown, G. N. Burton and M. B. Vora.

"FACT Family Introduction," *Electronic Design*, by Steve Goodspeed and Martin Baynes.

"FPLA Interfaces Four-Digit Counter & Microprocessor," *EDN*, by Robert Hartwig.

"F1600 64K SRAM Introduction," *Electronic Design*, by Robert Hartwig, Kurt Knorpp, Jim Mears and Maha Osman.

"Programmable Digital Filter Introduction," *Electronic Design*, by Paul Loewenstein.

"Cache Techniques for Microprocessors," *Computer Design*, by Howard Sachs.

"Design Tools for PDF," *Electronic Design*, by Paul Loewenstein.

"On Chip Testability Circuits for CMOS Gate Arrays," *VLSI Systems Design*, by Kunau Chen.

"Architecture Decisions Increase 32-Bit Processor Performance," *Computer Design*, by Tom Miller.

"Floating-Point Methods Combine to Boost Performance," *Computer Design*, by Kent Porter and James Kath.

"What's Ahead for 32-Bit Micros," *Canadian Datasystems*, by Tom Miller and Gary Baum.

"Bus Structural Considerations for 32-Bit Microprocessors," *Electronic Engineering Times*, by Tom Miller.

Low-cost information gathering over telephone lines has just become easier to accomplish. Fairchild's Advanced Signal Processing Division has moved to minimize engineers' design-cycle time in the growing number of products using modems.

Prospective users of Fairchild's μ A212A single-chip modem integrated circuit can now evaluate the potential of designing the device into their system-level products with the newly introduced μ A212A Design Kit.

The kit contains the μ A212A chip, microcontroller, EPROM (Electrically Programmable Read-Only Memory) and DAA (Data Access Arrangement) with Federal Communications Commission Part 68 approval—fully integrated onto a board that demonstrates all its features. A 5¼-inch floppy disk, with microcontroller source-code listings and utilities, is included for reference or editing to specific design requirements.

"Modems, once used chiefly in data communication terminals, are now being designed into everything from portable computers to inventory-control systems," said Richard Padovani, product manager for the Advanced Signal Processing Division. "The kit helps the design engineer unfamiliar with the intricacies of modem design quickly evaluate and design in the modem. For example, the Hayes™ AT-Command-Set-compatible intelligent modem design would be suitable to using the Design Kit."

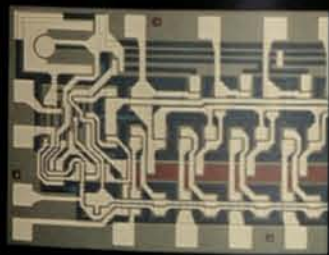
Available through Fairchild distributors, the kit comes with complete documentation that includes a summary of board features, interface requirements and modem architecture, as well as a demonstration program to assist designers in developing application-specific firmware for μ A212A-based products.

Introduced in March 1985, the μ A212A was the first single-chip modem IC that met the Bell 212A industry standard for 1200-bit-per-second full duplex (simultaneous two-way) transmission.



The new μ A212A Design Kit contains (left to right) User's Manual; Data Sheets and Theory of Operations application note; modem board; and software.

GIVE US A PIECE OF YOUR MIND AND WE'LL GIVE YOU A GREAT GIFT



HORIZONS READER'S SURVEY

We would like your opinions of *HORIZONS*. In return for completing the survey by October 15, 1986, we will send you a beautifully bound book, *A Solid State of Progress*. A collector's item, this full-color portfolio contains high quality photographs of some of Fairchild's most important technical milestones, from the first Planar transistor to Very Large Scale Integrated circuits. It traces the evolution of Fairchild's silicon technology and portrays an industry—and a company—in the making.

Success in the semiconductor industry depends on employees' creativity and enthusiasm. Employees need to understand and support company goals for the company to succeed. *HORIZONS* links Fairchild's research centers, factories and offices in North America, Europe, Asia and Latin America through information.

Your responses are confidential. The survey results will be published in a future issue. Thanks for your time!

1. What subjects interest you? Please rank each item.

	Very Interested	Interested	Not Interested
Business strategies and updates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Community relations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Division profiles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Features on countries where Fairchild works	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Industry news	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Legislation and regulations affecting our business	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New contracts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
New products and technological developments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sales, marketing and advertising	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Schlumberger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Upper-management news	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. What do you think of the features and departments that regularly appear in *HORIZONS*? Please rank each feature or department.

	Very Interested	Interested	Not Interested
New products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Day in the Life of a Fairchild employee	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Editor's Letter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annual Photo contest	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Quality of graphics in general	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. I am interested in ☐ writing ☐ reading a story about _____
If you would like to write a story, you can be reached at: _____

4. *HORIZONS* is currently published quarterly (four times a year). I would like to see it published:
☐ more often ☐ quarterly (same frequency) ☐ not at all

5. When I have finished reading my copy of *HORIZONS*, I:
☐ Pass it on to another Fairchild employee ☐ Throw it away
☐ Pass it on to a non-Fairchild colleague or friend ☐ Save it
☐ Pass it on to a family member ☐ Other _____

6. I prefer to get my information about Fairchild through (please check three):
☐ My supervisor ☐ Office bulletins
☐ The grapevine ☐ Letters and memos from Fairchild
☐ *HORIZONS* ☐ Other _____
☐ News appearing in local papers

7. I have been with Fairchild _____ year(s).

8. What type of work do you do (please check one)?
☐ Managerial ☐ Administration ☐ Supervisory
☐ Production ☐ Technical ☐ Clerical ☐ Other

9. Additional comments: _____

THANK YOU FOR COMPLETING THE SURVEY!

☐ YES, please mail me a copy of *A Solid State of Progress*:

Mr./Ms. _____
Fairchild Address _____

Return to: Reader Survey, Fairchild Corporate Communications Dept.,
10400 Ridgeview Court, Cupertino, CA 95014

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