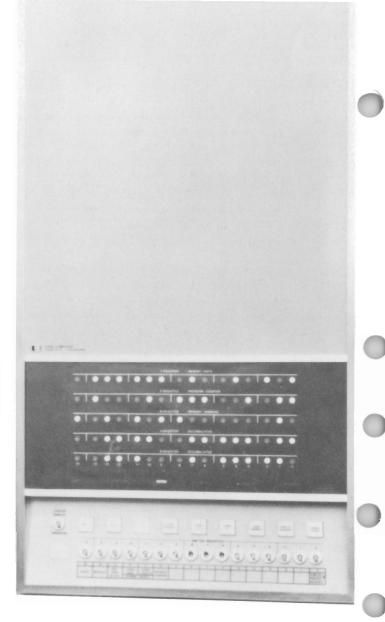


# Measure

For the men and women of Hewlett-Packard / JANUARY 1967

### Introducing the 2116A

Now an HP computer for instrumentation systems





Backplane of computer is automatically wired by tape-controlled machine which makes some 4,000 wire connections for over 500 different circuits in 3½ hours, saving days of tedious and highly complex hand wiring. Bob Hoshii is operator.



Computer engineering group includes, from left: Bob Gray, memory; Roy Clay, programming; Gene Stinson, logic; Kay Magleby, computer engineering manager; John Koudela, applications (standing); Ed Holland, logic; Dick Reyna, input/output.



☐ Fanciful though it may seem, if the same rate at which computers were developed over the past decade could possibly have been applied to automotive improvements, then the world could now have a 30,000 mph car priced at only \$1.00 f.o.b. Detroit.

That's just one estimate of how far and fast the products of the computer industry have moved in recent years. Today, electronic computers are everyday tools of business, industry, government, and science. And with its new computer—Model 2116A—HP has helped to expand the field of computer capability further by developing the first system tailored for use with measuring instruments.

The 2116A was first introduced to industry at the Fall Joint Computer Conference in San Francisco last November. In a statement to the press covering the event, Noel Eldred, marketing vice president, said: "What is really different about the HP computer is that it will save thousands of dollars and months of time for the user who wants to computerize his instrument system. We have done this by solving his interface problems for him, in advance. Basically, these interfaces are those between the user and the computer, and those between the computer and the instruments. What is more, we have built this computer to stand up to the same working environment that instruments must face."

The 2116A is highly versatile in terms of the types of instruments with which it will interface. These include such standard laboratory instruments as electronic counters, nuclear scalers, electronic thermometers, digital voltmeters, ac/ohms converters, data amplifiers, and input scanners.

Available along with the basic 2116A computer and peripheral input-output equipment system (keyboards, magnetic tapes, etc.) is a complete and proven inventory of instrument control "software" (prearranged operating instructions for the computer and the instruments — stored on punched paper tape). Also available are the interface hard-

ware and software that permit immediate connection to the input and output devices.

The new computer enables a user to receive measurement data immediately in comprehensible form. Price tags for typical computer instrumentation systems range from \$25,000 up to \$50,000.

HP's computer project got underway rather quietly about 30 months ago. Dymec, in investigating new directions for data acquisition systems, came to the conclusion that the heart of an instrumentation system should be a computer. During this same period of time, HP Labs had outlined the design of just such a computer. Inter-division discussions that followed led to the decision to proceed with the overall concept, and 17 months ago a number of key people formed the nucleus of the present computer team of engineers, programmers, and manufacturing and marketing personnel.

Two aspects of the 2116A project are considered outstanding. One is the rapid speed of the final development of the hardware—far faster than the industry average for systems of such complexity. Second is the fact that the software has been made available simultaneously with the hardware—a unique achievement, according to observers.

Indications are that the 2116A will be very well received. Field engineering specialists have been trained, assigned to each of the four sales regions, and equipped with a 2116A which is transported in a station wagon for on-location customer demonstrations—a unique approach for computer marketing. Service personnel have also completed training, and a program to provide intensified computer training to each HP field engineer is under development.

Meanwhile, the Dymec computer engineering group headed by Kay Magleby is on the trail of other related computer developments. The 2116A looks like a brilliant beginning in this promising new field of instrumentation. □



Production models of the 2116A are tested mear and of manufacturing line. At rear, Computer Production Supervisor Dave Weibel confers with Engineer Harlan Andrews. In foreground, Test Supervisor Larry Dassow checks with Test Technician Tony Hunt.



Donated by HP to Stanford University, this 2116A is used by the school's computer science department. Admiring gift, from left, Dr. John Herriot, department's acting executive head, and Dr. William McKeeman, faculty coordinator, with HP's W. F. Cavier, vice president and secretary.

Special report:



### Latin America—a market of increasing

Among the many bright spots in HP's record 1966 was the continuing growth of international sales. One area of increasing significance is that of Latin America, where sales nearly doubled over 1965. To gain broader insight into this important market, Measure interviewed Bill Doolittle, vice president for international operations.

#### Q: Just how important to HP is the Latin American market?

A: It's very important. Our international orders expanded by 30 percent in 1966. Western Europe has been our largest international market, but the rate of growth of its economy — while still climbing significantly — has slowed down. Our relative growth rate there has similarly decelerated. So, while Western Europe orders were up 28 percent last year, there was an increase of nearly 50 percent in other international markets.

With that as a background, you can appreciate the importance of Latin America to HP when you realize that our 1966 order rate there was up 96 percent over 1965.

#### Q: How extensively do we market in Latin America?

A: HP products are sold, usually through distributors, in all 38 free nations of Latin America, from Mexico south

to Tierra del Fuego, and including all the West Indies except Cuba.

#### Q: Where are our most important markets in Latin America?

A: Well, Brazil is by far our largest market, followed by Argentina, Mexico, and Venezuela. By product line, our electronic instruments account for more than half of income in Latin America, and medical instruments bring another third. We enjoy a much higher ratio of medical sales to electronic sales in Latin America because of Latin America's deep involvement in socialized medicine, and by the fact that at this stage of development Latin America less need for highly sophisticated electronic gear.

Chemical instrument sales make up a relatively small percentage of our sales there. However, the need for this equipment is growing and we forecast a sizeable increase for HP in that area.

### Q: What are our over-all projections for HP growth in Latin America?

A: We are looking forward to a strong growth rate in 1967. In fact, we expect that the rate will equal the growth we experienced in 1966. Longer range, we anticipate that by 1971 our sales in Latin America will be as large as were our total international sales in 1961.

### Q: Will any special marketing activities be required to achieve this growth?

A: You will remember that last year we augme our usual marketing techniques with a new one that has proved highly successful—the "showboat." The first two



"... there are many signs of progress in Latin America."



". . . HP instruments are playing a contributory role."



"... shipboard exhibits generated widespread interest."

### importance for Hewlett-Packard

vovages with our shipboard exhibits generated widespread rest in HP medical and electronic instruments.

Consequently, early this year we are planning a third voyage to demonstrate biomedical instruments and to show a color motion picture, now in production, featuring our new cardiac patient monitoring system.

Other methods that should help us increase our market letration in Latin America are direct marketing in Mexico, with the establishment of HP Mexicana on January 1, and intensified distributor support programs.

Also, we have found that financing has occasionally been a problem for our Latin American customers, so we've n taking a look at ways that we might assist in this area. Right now, we're seriously considering direct financing by HP.

Q: We've heard about the runaway inflation in Brazil. Are there other economic obstacles that HP marketers must overcome?

A: Yes, there are. Inflation has been a serious problem, but it is slowing down. Perhaps more difficult are the problems that go hand in hand with importing instruments into some of the Latin American countries. These countries have great national pride, and as they develop their own production capabilities for various products they often, in effect, close their borders to competitive imports.

Although this helps them build up the local economy it does pose problems—not only for importers such as HP, for the purchaser in Latin America as well. For exple, a U.S.-model car built in one South American country, with locally produced materials and parts, costs

more than three times as much as the comparable model purchased in the U.S.

Because of this "buy locally" philosophy, we have found that import duties on HP products run as high as 200 percent of our factory price.

Q: Latin America, perhaps more than any other area, has the reputation of being a land of strikingly modern, beautiful cities which contrast sharply with extreme poverty in many rural areas. If this impression is true, are HP instruments helping to improve conditions?

A: I was fortunate enough to visit Latin America extensively late last year, and I'm happy to report that dedicated leaders of government, business, the professions, and education there are making considerable progress in their continuing effort to improve conditions.

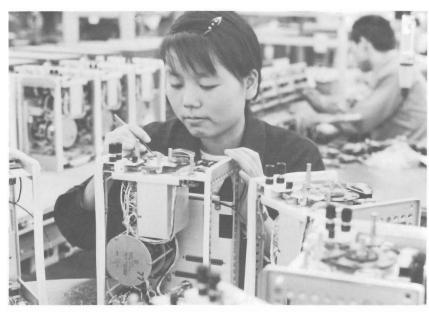
I came away from Latin America impressed by its many accomplishments. It is certainly possible to point out instances of poverty there—we can do that here in our country, too—but there are many signs of progress in Latin America, and there are many fields in which it leads the world.

Latin American doctors, for example, are in the forefront in open-heart surgery and fetal heartbeat detection. And, Latin American communication experts are bypassing the cable transmission methods so common here, and instead are using sophisticated microwave equipment to bridge the long distances between remote locations.

I'm happy to say that HP instruments are playing a contributory role in many of these achievements.



Perspective: Y-HP



Toshiko Nakada checks gear mechanism of 4260A universal bridge. The bridge was the first instrument developed by Y-HP for the world-wide market.



Harue Furuya displays the skill required to operate a Japanese typewriter.

## A new nee

☐ Who could help but be attracted to an industrial organization that offers off-duty Employee Club activities such as Flower Arrangement and the Tea Ceremony; that makes lunches available for about 17 cents each; and where payday is the 23rd of each month—all in cash.

Well, there you have Y-HP—Yokogawa-Hewlett-Packard, Ltd.—the joint venture of Yokogawa Electric Works (YEW) and Hewlett-Packard. Or, rather, there you have just a few of the interesting and subtle differences in routine and tradition that distinguish this Japanese affiliate from other HP operations.

Y-HP headquarters and manufacturing facilities are situated in Hachioji-shi ("Eight Princes City") some 30 miles to the west of Tokyo. The grounds are attractively landscaped and many of the shrubs and plants were presents from industrial neighbors at the time of the Y-HP facility opening two years ago. The rose bushes that form the perimeter of the Y-HP property also have a special significance. At the time of the plant dedication, each Y-HP employee gave a rose plant as a gift to commemorate the occasion. Adding additional beauty to the location is snow-capped Mount Fuji, visible in the distance.

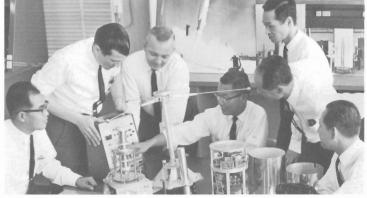
Currently, there are 220 employees at the Y-HP Hachiojishi facility, and the Tokyo main sales office and the branch sales offices in Osaka and Nagoya are staffed by 45 marketing people.

Now into its fourth year of operation, Y-HP is exhibiting a strong pattern of growth in sales and production. Its mis-

sion is essentially the same today as at the time of its establishment: to manufacture and market the electronic type of instruments formerly produced by YEW; to manufacture and market in Japan a number of HP-developed instruments; to market in Japan instruments produced at oth HP manufacturing locations; and to develop an instrument product line of its own. As a result, the present product lineup of 35 instruments and 32 accessories produced at Hachioji-shi includes representatives of the two parent companies as well as contributions from Y-HP's own research and development.

The top five sellers in this line, in terms of dollar volume, are the 4260A universal bridge, 716B klystron power supply, 203A variable phase function generator, 5245L electronic counter, and the 4340A Q-meter. The universal bridge is the first Y-HP product developed for the world-wide market. Another product for world-wide sale, the 4204A oscillator, went into production late in 1966.

In seeking to establish its own marketing policies, Y-HP has confronted some business practices and attitudes not common to other HP markets. For example, buying at a discount is universally accepted in Japan both at the industrial and consumer levels. Because Japanese purchasing personnel achieve merit according to the volume of discounts they obtain, their departments acquire extraordinary stain the business structure. Thus, when Y-HP announced now-famous "no discount" policy, the reaction was strong.





In photo at left, part of Y-HP management is shown discussing resonance probe. From left: Akinori Aono, finance; Karl Schwartz, manufacturing; George Newman, vice president; Shozo Yokogawa, president; Toshio Muraoka, manufacturing; Giichi Yokoyama, research and development; Tsunenobu Ishida, advance planning. In photo at right, Marketing Manager Mori Katagami (right) and Co-manager Harry Lang discuss sales promotion activities.

# optimism the City of Eight Princes

"But," says Marketing Manager Mori Katagami, "through our continuous effort of pushing this policy along with good customer service and quality, there has been a gradual recognition of the policy as the more modern and reasonable by of selling."

For President Shozo Yokogawa and his staff, the quest is increasingly directed toward the development of Y-HP's own products and business systems. To this end, the firm has issued its own "Company Objectives." There is a resemblance the HP Corporate Objectives, particularly in the area of scressing individual employee initiative in the creation of productive goals—an interesting new concept for the Japanese industrial society.

And so, while there are many similarities between Y-HP and the other members of the world-wide HP family, the Japanese affiliate still retains a uniqueness of its own. Production line girls average 17 to 18 years of age; rather than a Christmas holiday as celebrated at other HP locations, Y-HP people, by tradition, have a six-day holiday from December 30 to January 4; and, the plant rugby team regularly lands several players on Japan's all-star squad.

As the child of two outstanding but very different parents, Y-HP is working hard to combine the best of both and at the retime maintain an individuality of its own. The line it draw to succeed will be as delicate as the stroke of a Japanese brush artist.



Kimie Kanoh winds transformer coils. Components group also provides printed circuit boards.



Sumio Sakamoto operates highly accurate milling machine. Off-hours he is a rugby all-star.



Electric welding of extremely fine resistance wire is performed with care by Masatoshi Ishikawa.



Printed circuit board destined for Tokyo University's newest rocket is finished by Osamu Sato.

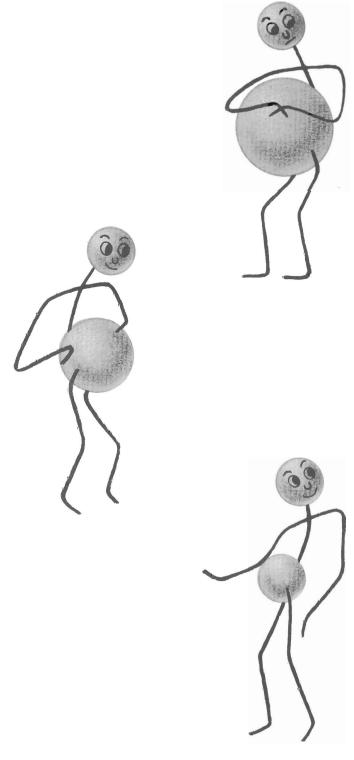


Y-HP upholds HP reputation for highest quality instruments. Here, Shinobu Takeuchi tests 4260A.



Busy field engineers Hiromichi Fujishiro (Jeft) and Takeo Shimizu discuss quotations with secretary.

# PHYSICAL FITNESS: Who needs it?



- · Keep your 600 muscles toned up through activity
- · Exercise equal to a four-mile walk daily will do it
- · Even a 15-minute walk will burn up 100 calories

□ In some ways, it seems harder to keep in shape than it used to be. Back in the good old days, most people didn't have to make any resolutions about keeping fit. They got a fair amount of exercise just doing their daily tasks—chopping wood, pumping water, shovelling coal, and so forth And for most people, getting from here to there meant walking, or if they were lucky, riding a horse.

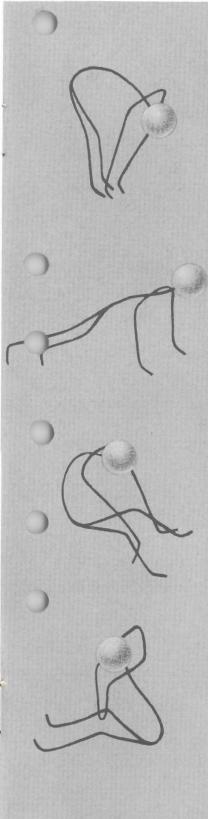
Today, our society is so highly mechanized and automated that most of us have only to lift a finger to get from place to place or get the day's work done. As a result, we don have the "advantage" of all the physical exercise that was thrust on our grandparents. We have to make a conscious effort to get the regular exercise we need—or pay the price of neglecting it in the form of excess weight, a tired-all-over feeling, and increased susceptibility to heart and other ailments.

If you're like the majority of HP employees, you spend most of your working day sitting at an assembly line or behind a desk. This means you have to look to your non-working hours for the physical activity you need. Sometimes you can take advantage of recreational facilities during breaks and lunch hour, but even these can supply only a part of the exercise most people need.

Of course, keeping physically fit means more than just getting enough exercise; a proper diet, good health habits, and enough sleep and relaxation are also important. But of all the factors that contribute to physical fitness, exerci undoubtedly is the most neglected in America today.

Unfortunately, the word "exercise" has a connotation of work for some people, who immediately think of it in terms of grueling calisthenics. However, just a few minutes of moderate calisthenics on arising in the morning can help keep you in excellent condition. And, there are lots of ways you can get enough exercise and have fun at the same time. Some of the most obvious are sports like golf, swimming, tennis, and bowling.

Dr. Wilhelm Raab, a world authority on physical rehabilitation, recently stated that everyone needs daily activity equivalent to walking four miles. You can get this activity in a number of ways, but one of the best is simply to walk four miles.



The pumping action of the arms and legs during walking (or running, cycling, skating, etc.) helps return used blood from the extremities to the heart, and the massaging action exerted on the blood vessels by the muscles helps keep these vital carriers pliable and elastic. This type of exercise is also an excellent weight control measure. You burn up about 100 calories in a brisk 15-minute walk. Since 3,500 calories are equivalent to a pound of fat, daily walks can take offor keep off-ten pounds in a year's time.

You may be wondering, "What does exercise really do for me? Why is it necessary?" The answer begins with the fact that the human body contains more than 600 muscles; in fact, overall it is more than half muscle. Wherever there is muscle, there is need of movement. When they are not used, or not used enough, they deteriorate. If we are habitually inactive-if we succumb to easy living-we pay the price

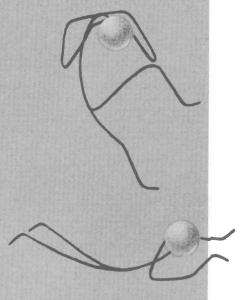
in decreased efficiency.

Doctors are becoming increasingly convinced that, to a great degree, we are what our muscles make us-weak or strong, lethargic or vigorous. A former president of the American Medical Association has said, "It begins to appear that exercise is the master conditioner for the healthy and the major therapy for the ill." A recent survey of a cross section of the nation's physicians showed that nearly all now believe that positive health benefits, both physical and mental, accompany physical fitness resulting from regular, moderate exercise. The survey also revealed that the great majority of doctors are convinced that physical fitness programs, which have been largely aimed at children, are even more necessary for adults.

Research shows that in addition to firming flabby muscles, exercise also benefits the heart, lungs, and circulatory system. The heart beat becomes stronger and steadier, breathing becomes deeper, and circulation improves. The old-fashioned idea that exercise is bad for the heart has been shown to be without scientific foundation. In fact, a noted heart specialist recently commented, "The best insurance against coronary (heart) disease is exercise-lots of it." A growing body of scientific evidence shows generally lower cholesterol values in active people, faster clearing of fats from the blood after meals, and sharply reduced heart attack rates. A recent study of 120,000 railroad employees showed the heart attack incidence among sedentary office workers to be almost twice that of men working in the yards. Studies also indicate that, when a heart attack occurs, the physically active person is more likely to recover.

One caution before starting your 1967 fitness program: the President's Council on Physical Fitness says that a full physical checkup is advisable, particularly if you are a man over 40 and haven't had an examination during the past year.

Meanwhile, you others: one-two, three-four . . . one-two, three-four. . . .



"Adult Physical Fitness" a 64page booklet, provides simple, progressive home exercise plans for men and women. You can obtain copies, at 35¢ each, by writ-

Superintendent of Documents Government Printing Office Washington, D.C. 20402

(send check or money order, with return address)

For other information on physical fitness write to:

The President's Council on Physical Fitness Room 1031, GAO Building 441 G Street NW Washington, D.C. 20203

#### HP news in brief . . .

Palo Alto—Some 30 senior government officials from all over the U.S. visited the HP Palo Alto facilities in December. The tour, arranged by the Brookings Institution of Washington, D.C., was part of a three-day Conference for Federal Executives on Business Operation held in San Francisco.

Colorado Springs — The Colorado Springs Division was awarded a \$1.6 million contract from the U.S. Navy for 1967 delivery of the new 180A oscilloscope system.

Palo Alto — The Company distributed more than \$2,013,000 to eligible employees under the HP cash profit-sharing plan. This brought the year's total distribution to more than \$3,872,000.

Washington, D.C.—Dave Packard was elected a vice chairman of The Business Council at the group's December meeting. He has been a member of the Council since 1963.

Englewood, N.J. — The Eastern Sales Region has announced the opening of sales offices in Norwalk and East Hartford, Conn. These offices replace the now-closed Middletown office and serve the Connecticut, Vermont, and western Massachusetts area.

Palo Alto—HP reported record sales and earnings for the fiscal year ended October 31, 1966. Sales totaled \$203.3 million, and net earnings were \$17.4 million. These were increases of 24% and 28% respectively over FY 1965 figures. Salt Lake City—The Neely Salt Lake City office staff has moved into a new 1,800-square-foot facility on South Main Street. The building more than doubles the space available at the previous location.

Montreal, Quebec — Employees of HP (Canada) Ltd. moved into their new sales headquarters near Montreal early in January. The building is located in the Point Claire Industrial Park.

Palo Alto — A photograph furnished by Hewlett-Packard appears on the cover of a new mathematics textbook recently published by the Houghton Mifflin Company. The photo, one that appeared on a MEASURE cover several months ago, shows an HP Spectrum Analyzer being used in a laser experiment at Stanford University.

Milan, Italy—Employees of HP Italiana have each given a half-day of their pay to the Italian flood relief drive. Franco Mariotti, manager of HP Italiana, reports the need is still critical and that an American Committee for Flood Relief in Italy has been initiated by U.S. Ambassador Reinhardt. HP people in the U.S. who would like to make a donation can do so by sending contributions directly to the First National City Bank, New York City. Donations are tax deductible.

#### People on the move

HP-Palo Alto — Bernard Daines, data processing—to corporate process engineer; Roland Glaser, F&T engineering staff — to product training, corporate Marketing; Chris Longfellow, secretary, corporate manufacturing engineering—to library staff; Roger Swan, production control, Microwave Division—to Programming.

Dymec — Phil Lacy, corporate manufacturing engineering — to production engineer, Dymec.

F&M Scientific — Ron Galli, manager of sales, chemical instrumentation, Midwest Sales Region—to sales manager, F&M Scientific Division; Wayne Mehl, corporate manufacturing engineering—to in-plant engineering, F&M Scientific.

Loveland — Dick Henshaw, field engineer, Neely Sales (Salt Lake City) — to marketing engineer, Loveland; Bill McCullough, regional sales engineer—to marketing product manager, digital and calibration instruments; PenDell Pittman, sales engineer, Southern Sales Region (Dallas)—to marketing product manager, signal sources and analog instruments, Loveland.

HP (France) — Michael Bady, Personnel (in training)—to engineering staff, HP (France).

HP Ltd. — Peter Carmichael, project manager, R&D — to chief engineer; Michael Lee, sales engineer, S.E. England — to service manager, marketing division (Slough); Gordon Roberts, project manager, R&D — to technical manager, R&D; Hugh Smith, service manager, marketing division (Slough) —to sales service support group (South Queensferry).

Eastern Sales Region — Jim Bricker, sales manager, F&M Scientific Division — to chemical instrumentation sales representative, Eastern Sales Region (West Conshohocken); Lynn Lafferty, staff engineer (Englewood) — to staff engineer (New York City); Fred Lender, region component product specialist—to field engineer (Roslyn); Vic Rodriguez, staff assistant—to staff engineer (New York City).

Midwest Sales Region - Ron Rosen, administrative clerk-to office services.

Neely Sales Region — Bill Hilliard, product training, corporate Marketing — to staff engineer, Neely-Palo Alto (training program).



#### from the chairman's desk

Figures for our 1966 fiscal year are now compiled, and the annual report to stockholders which will be issued near the end of this month will show that we had a good year. Sales and orders passed the \$200-million mark for the first time in company history, and net earnings kept pace.

Specifically, sales rose to \$203.3-million, up 24 percent over FY 1965; orders amounted to \$214.2-million, 27 percent higher than the previous year; and net earnings increased 28 percent, equaling \$1.42 a share.

International business, with orders up 30 percent, continued to grow more rapidly than our domestic business. Orders rose 28 percent in Western Europe and nearly 50 percent in other non-domestic markets. With a predicted slowing of the European economy's rate of growth, our business there might not continue to advance as rapidly as in recent years. However, this will very likely be more than offset by the great sales potential for our products, particularly medical instruments, in Latin American, Canadian, and Asian markets.

Our after-tax profit margin showed only moderate gain. It was 8.6 cents per sales dollar, as compared with 8.4 cents in 1965. We might have done better but as the year moved on we had some increases in costs, not all of which were anticipated. We borrowed over twenty million dollars to cover inventory and capital spending, and the cost of this financing at the prime rate of 6 percent was in excess of a million dollars a year. The expansion of the Social Security program also cost the company nearly a million dollars more in 1966.

In addition to these rather significant figures, we found that materials were higher and of course wages and salaries were also up. Finally, we spent more in proportion on engineering and new product development.

However, in balance, I believe we made a very good showing in 1966 and in doing so strengthened our position for the future.

Looking to 1967, we should have another good year. Our order rate is starting off strong, including orders for several new products we introduced late in 1966. We expect military expenditures to continue at a high level, and even though our direct military business is small we have a large amount of business from government prime contractors. The domestic economy is expected to remain strong, though it may not grow as much in 1967 as it did in 1966.

Orders are now running ahead of shipments in most divisions and this means there will be added emphasis on production in 1967. Quality will receive continuing attention as it always must in our business.

We are anxious to keep costs in line and still get our work done in the best possible way. Clearly, we have a big job facing us in 1967. We expect each of you in your individual endeavors will measure up to the task just as you always have in the past. If we each do our job as best we can, we are bound to have another good report to make a year from now.

David Packard

MEASURE

EDITOR, Merle Mas:

ASSOCIATE ENTOR. Les Carpenter

ART DIRECTOR, Tom Martin



CONTRIBUTING EDITORS — COLORADO SPRINGS, Jane Shareigh DATAMEC, Mickey Chase DYMEC, Bill Dallenbach ASTERN SALES, New England area, Ruth Ambrose New York City area, Dorothy Clink Philadelphia area, Barrie Wilmarth Syra Se area, Ann Ash Washington, D.C., 2 16, Colleen Mollneu F&M SCIENTIFIC, Charles Butter PREQUENCY & Tithe AMBROSH OF A STATE OF A STA

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