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# GLOBAL ELECTRONICS

# INFORMATION NEWSLETTER

Number 38

December, 1983

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## BUY-OUT AND MOVE

In at least two recent instances, corporate mergers are apparently prompting an offshore shift in the production of computer equipment. In December, 1983, Ampex announced that it would purchase ECS Microsystems, a producer of IBM-compatible terminals. In the past, ECS has sent its manufacturing out to domestic subcontractors, but Ampex plans to build ECS products at its Taiwan facility. Both companies are based in Silicon Valley. (*Electronics News*, December 19, 1983)

Meanwhile, Esprit Systems of Melville, New York, has agreed to acquire Percom, a Dallas-based manufacturer of local area networks. Esprit's president said that the company "might move production of its products to some off-shore vendors which manufacture Esprit's terminal" - Advanced Datum Information Corp. of Taiwan and Samsung, the South Korean conglomerate. (*Electronics News*, January 2, 1984)

## TRADING NON-SECRETS

In Silicon Valley, the word "trade" in "trade secrets" is a verb, not an adjective. The Valley has flourished largely because of the free flow of technical information. One of the most common forms of technology transfer is the spin-off, in which an engineer or manager

leaves one company to start another, taking knowledge developed at the old employer. Since 1959, when Fairchild employees left to form Rheem Semiconductor, this process has generated a great deal of civil litigation.

Last year the Santa Clara County District Attorney's office filed criminal charges against Paul Magnuson and two colleagues. Magnuson, who had founded financially troubled Magnuson Computer Systems in 1977, formed Prodigy in 1982 to build competing machines. Shortly thereafter he was charged with stealing trade secrets from his former company. This November, however, the DA's office dropped charges, following a three-week closed preliminary hearing. Assistant District Attorney Doug Southard said that the evidence was insufficient.

Southard explained that neither his office nor sheriff's investigators had the technical expertise to evaluate fully the evidence in advance of the preliminary hearing. Magnuson's attorney suggested that the prolonged case could have been avoided if independent consultants had been asked to review the evidence.

In any case, the Magnuson experience illustrates how difficult it is for non-technical law enforcement personnel to regulate the handling of industrial and even military secrets that are technical in nature. (*San Jose Mercury-News*, November 9, 1983)

## BRAZIL

Brazil, with its large domestic market, is still pursuing a policy of import substitution. In 1977, it extended its trade barriers to small computers and terminals, and later it restricted imports of software, other peripherals, and chips. The Brazilian share of the computer hardware industry rose to 16.9% in 1980 and 67% in 1982. Though Philco (a Ford subsidiary) and RCA have a joint chip-making venture in Brazil, the government has restricted it to linear chips. The government designated two domestic firms, Itau and Docas de Santos, as sole manufacturers of digital chips, but neither has shown an interest in purchasing the foreign-owned plant. (*Electronics*, December 15, 1983; *Business Week*, December 19, 1983)

## PUERTO RICO

The Puerto Rican operations of computer manufacturers continue to grow. The number of plants producing computers, peripherals, and sub-assemblies rose from 5 in 1977 to 32 in 1983. Employment jumped from 3,077 to 7,262 in the same period. The largest employers are Digital Equipment Corporation (DEC) and ITT Qume, both of which employ 1,001-3000 workers. Applied Magnetics employs over 1,000, and Documation, Hewlett-Packard, Information Magnetics, and Storage Technology each have more than 250 on their Puerto Rican payrolls. (*Puerto Rico Business Review*, September, 1983, and "The Electronics and Related Industries in Puerto Rico," FOMENTO Office of Economic Research, May, 1983)

## TUBE TRADE

Though semiconductors have taken over most of the market for electronic tubes, the tube business, particularly cathode ray tubes (CRT's) and power amplifiers, is still flourishing. In 1982 U.S. production of tubes approached \$1.9 billion. One hundred firms remained in the business, including 15 making CRT's, 40 producing power and special-

purpose tubes, 2 manufacturing virtually obsolete radio receiving tubes, and the remainder producing parts or rebuilt tubes.

In each of the past five years, at least, the U.S. has run a positive trade balance in tubes, although in 1982 CRT imports exceeded exports. Japan is the largest foreign supplier of tubes, with over half the U.S. import market. Re-imports under item 807 of the tariff code accounted for one sixth of U.S. tube imports in 1982, with Mexico accounting for over one third of such re-imports. Canada and the United Kingdom, followed by Japan and other Western European countries, are the largest importers of U.S.-made tubes.

Official statistics can be misleading, however, since CRT's assembled into television sets or computer terminals are omitted from the figures. In fact, International Trade Commission analysts point out that U.S. CRT imports declined in 1982 when a major Japanese supplier started to assemble its tubes into television kits in Mexico before shipping to the U.S. ("Summary of Trade and Tariff Information: Electronic Tubes and Parts," US International Trade Commission Publication 841, Control No.6-5-16 (Supp.), October, 1983)

### Historical Tube Trade (millions of US dollars)

Year	Product.	Exports	Imports
1978	1,664	252	156
1979	1,708	284	202
1980	1,815	320	226
1981	1,999	314	249
1982	1,874	268	201

### 1982 Trade by Product Line (millions of US dollars)

	Product.	Export	Imports
Cathode Ray	890	115	138
Receiving	76	33	8
Power/Special	908	119	54

## HIGH-TECH TOXICS

High-tech manufacturers, like heavy industries, generate significant volumes of toxic sewage, containing heavy metals, cyanides, and organic compounds. In the U.S. industrial waste generators are required by law to pre-treat their sewage, removing the bulk of the toxic substances before discharging sewage into the waste stream processed by publicly owned treatment works.

A recent review of toxic industrial discharges in the San Francisco Bay Area showed there is widespread violation of pre-treatment standards. "Electroplaters and electronic component manufacturers are the primary violators of these standards." Of the 543 Silicon Valley industrial dischargers monitored for release of toxics or oil and grease in 1982, 25% (135) were cited for one or more violations. At least three other Bay Area sewage districts had worse records, but the Silicon Valley (including the San Jose, Sunnyvale, and Palo Alto treatment works) record still represents a significant hazard to the environment and public health. ("Toxics in the Bay," Citizens for a Better Environment, 942 Market St., Suite 505, San Francisco, CA, 94102, December, 1983. The CBE report is available for \$25; a summary may be ordered for \$2.)

## E.P.Z. REPORT

The **Far Eastern Economic Review** (September 15, 1983) summarizes a working paper prepared for the International Labour Organisation on the impact of export processing zones in the Asian region. **Employment and Multinationals in Asian Export Processing Zones**, written by Rudy Maex of the Asian Regional Team for Employment Promotion, argues that EPZ's have not lived up to their image.

Maex concludes that EPZ's provide only a fraction of total employment in Asian countries, and that they have done little to alleviate widespread unemployment. Those who

do find work at EPZ's face long hours, low pay, and minimal job security. Gross export figures exaggerate the balance of payments earnings of EPZ's. In fact, the flow may be negative during the zone's initial operations. Since assembly or garment work uses few skills, little technology is transferred. Finally, "While any increased income of an EPZ workforce may benefit the local economy by raising domestic purchasing power, it also contributes to shortages and spurs inflation."

## FAIRCHILD AUTOMATES

Backed by funds from Schlumberger, the oilfield instrument-maker that bought it in 1979, semiconductor industry pioneer Fairchild Camera and Instrument is re-organizing and modernizing its production facilities. **Business Week** ("Is the Worst Over for Fairchild Camera?", November 14, 1983) reports that Fairchild's South Portland, Maine-based digital products division, the company's largest and most profitable division, has established a fully automated assembly facility. The division general manager told **Business Week** that the automated plant would replace Far Eastern facilities: "By the end of this year 100% of the product we [this particular division] ship will be from the U.S., compared with only 5% before."

## A.M.D. OFFSHORE

While some semiconductor makers are moving offshore assembly to the U.S. or other developed country sites, Advanced Micro Devices, a major merchant producer based in Silicon Valley, is expanding its overseas assembly operations. AMD is building a new plant in Penang, Malaysia. (**San Jose Mercury News**, October 28, 1984)

## SILTEC-RHONE

Siltec, a Silicon Valley-based producer of silicon wafers for semiconductor production, has reached a cooperative agreement with Rhone-Poulenc, a conglomerate owned by the French government. The two firms will build a \$30 million plant in France to supply wafers to European semiconductor operations. Rhone-Poulenc will buy a 10% share of Siltec and get one seat on Siltec's board of directors. In return for research and development funds, Rhone-Poulenc will gain access to Siltec's new technology. The French enterprise, however, cannot take over Siltec. It has agreed to limit its holdings in Siltec to 15%, unless certain agreed-upon conditions are met. (**Wall Street Journal**, October 21, 1983; **Electronics News**, October 24, 1983)

## WANG - VLSI

In a move reminiscent of IBM's nibbling at the stock of Intel, Wang Laboratories, the Lowell, Massachusetts manufacturer of office automation equipment, has announced plans to purchase a 15% share in VLSI Technology, a Silicon Valley custom semiconductor start-up. Like IBM, VLSI is expected to agree to limit its investment, and it will gain a seat on the VLSI board of directors. (**San Jose Mercury-News**, November 22, 1983)

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