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A.T.&T. UNLEASHED

Under the terms of the U.S. Justice Department's settlement with American Telephone and Telegraph, Western Electric, the phone company's manufacturing branch, will be free to compete in the merchant semiconductor market. Producing solely for AT&T's in-house needs, Western Electric is already one of the world's largest makers of chips. Despite its size, it ranks as one of the most advanced semiconductor producers as well.

Western Electric's entry into semiconductor sales, if pursued actively by AT&T executives, could sharply alter the structure of the U.S. industry. In fact, many observers credit 1950's anti-trust restrictions, which prevented Western Electric from marketing transistors, with the creation of the highly competitive semiconductor marketplace. AT&T - whose Bell Labs invented the transistor - actively disseminated solid-state technology to potential manufacturers.

Meanwhile, Western Electric has delayed the completion of its Orlando, Florida VLSI (very large scale integrated) circuit plant. Market surveys for the company's digital customer-premises equipment showed reduced in-house requirements for the circuits. Currently Western Electric manufactures integrated circuits at Allentown and Reading, Pennsylvania.

CHINA

China is opening selected areas along its southern coast to foreign investment. Foreign companies are being given unprecedented (for Communist China) privileges in these "special zones." Thus far Shenzhen, a zone adjacent to overcrowded Hong Kong, "has attracted \$1 billion in 800 separate deals, mostly small processing and assembly operations" owned by Hong Kong-based and other "overseas" Chinese. No U.S. electronics companies have yet made any plans for the zones, but Pepsi-Cola is building a plant at Shenzhen to serve the Hong Kong market as well as the Shenzhen zone itself. (*Business Week*, January 11, 1982)

Meanwhile, about thirty U.S.-based firms have received U.S. approval to export older versions of wafer fabrication equipment to China, for installation in Wuxi, Jiangsu province. Suppliers include GCA, Varian, Thermalloy, and Applied Materials. Monsanto will supply Silicon material. (*Electronics News*, November 2, 1981)

Two consultants from Integrated Circuit Engineering recently returned from a Chinese tour, sponsored by the Bank of America. According to *Electronics* (January 27, 1982), they place Chinese technology at the U.S. level of 1972. In certain processes, they concluded, the Chinese have reached the 1976 level. The consultants were impressed by China's advances.

CONTRACT ASSEMBLY

In "The Role of Contract Assembly," Pieter Burggraaf, Associate Editor of **Semiconductor International** (December, 1981), discusses the role of semiconductor assembly subcontractors, both in the U.S. and Asia. He lists 20 separate subcontractors.

Subcontractors serve companies with small assembly needs and larger firms which need fluctuating capacity. For customers concerned that a subcontractor will not pay adequate attention to their particular specifications, many subcontractors offer "dedicated" lines, which assemble only for that customer.

Burggraaf cites Silicon Valley consultant Dan Rose, who says subcontracting is less expensive than in-house assembly when the manufacturer (wafer fab house) has less than 600 employees. Rose states, "The switch from total use of contract assembly usually occurs when a semiconductor manufacturer is using a contract work force of 200 people spread over several manufacturers."

TANDON

Tandon, the Southern California manufacturer of peripheral memory parts, plans to eventually produce very low cost personal computers. Supplying Apple, Tandy, BASF, and Control Data, among others, it grossed \$54.2 million last year.

Tandon is headed by Sirjang Lal "Jugi" Tandon, who owns 24% of the company and draws a comparatively low salary of \$65,000. After working at IBM, Memorex, and Pertec, he formed Tandon in 1975. He had been unable to convince his bosses to enter the nascent personal computer market.

Tandon cut costs by establishing an assembly plant in Jugi's native India. Now it is setting up operations in Singapore. Both offshore facilities are managed by Jugi's brothers. (Associated Press, **San Jose Mercury**, December 3, 1981)

ASSEMBLY AUTOMATION

Semiconductor International (Ted Bettes, "Assembly Automation Trends," December, 1981) surveys the state of assembly automation in U.S. semiconductor production. Individual steps are gradually being automated, but overall automation has been prevented by the difficulties in automating inspection and handling. In addition, U.S.-owned assembly plants, with an average of 1000 or more employees and a large product mix, are much more difficult to automate than Japanese plants, which are much smaller - with perhaps 200 employees - and assemble a single product.

FAIRCHILD'S BOSS

When oilfield instruments-maker Schlumberger took over Fairchild Camera and Instrument - parent firm of Fairchild Semiconductor - in 1979, the French-owned firm placed Tom Roberts, its vice-president for finance, at the helm. Roberts slashed the company's international payroll from 32,000 to 23,000, and he cut the corporate staff to less than 100 from more than 600. Roberts has brought in new management, but to discourage the turnover which has plagued the company in the past, he has given preference to university graduates in hiring. Seventy percent of Fairchild's new professional employees are coming straight from college.

Roberts is stressing long-range planning in corporate decision-making. When an executive urged Roberts to close an un-named Far Eastern assembly plant because of labor problems, Roberts refused, apparently in the belief that the short-term benefits of closure were outweighed by long-term negative consequences. (**San Jose Mercury**, November 23, 1981)

BATAAN

The Bataan Export Processing Zone in the Philippines, at Mariveles, was the island nation's first such zone. Because of its distance from Manila's international airport, it has not been a prime site for microelectronics assembly.

A model for other EPZ's in the Philippines, Bataan is no model of socio-economic success. The Center for the Progress of People's **Labour Communication** (December, 1981) reports that 58 factories in the BEPZ employ a total of 26,000 workers. Eighty percent are women from age 15 to 24. Half are listed as "casual" employees or trainees, not entitled to benefits.

Mariveles has open sewers that overflow in the rainy season, and CPP reports that poor sanitation is a major cause of the community's high child mortality rate. Because housing is in short supply, young single women share tiny rooms hardly big enough for one person, while married couples frequently must live separately in dormitories.

A.M.D. PAY CUT

Advanced Micro Devices, the Silicon Valley-based chip-maker, recruited employees not too long ago with the slogan, "Catch the Wave." There turned out to be a **catch** in the wave. The company is ordering about half of its 4,500 employees in Sunnyvale to work four hours extra each week, without additional pay, or take a pay cut. The order affects all salaried employees, from clerks and secretaries to engineers and managers. Less than 100 AMD employees in Austin, Texas are also affected by the order.

The order will fall heaviest on low-paid non-exempt workers such as secretaries and clerks. Even in normal times, "exempt" professionals are expected to work long hours without extra compensation if they want to advance, but state law mandates overtime pay for "non-exempts." To satisfy state law, AMD will pay those employees overtime, but will reduce their base pay 13% to compensate. (**San Jose Mercury**, January 27, 1982)

MOTOROLA - FOUR PHASE

Motorola, already a manufacturer of communications equipment and semiconductors, has agreed to acquire Silicon Valley computer-maker Four Phase Systems. Motorola currently employs 71,000, compared to 2,200 at Four Phase. Motorola won the approval of Four Phase officials by promising autonomy and offering to pay a stock price well above Four Phase's current market value. Four Phase manufactures distributed processing equipment.

TOSHIBA - L.S.I. LOGIC

Japanese semiconductor manufacturers, masters of mass production, lag in both the design of logic chips (both custom circuits and microprocessors) and the programming of chips and computers. To overcome the design and software gap, the Japanese are buying American technology.

In one such venture, Toshiba has established a cooperative program with Silicon Valley newcomer, LSI Logic. LSI Logic, headed by Wilfred Corrigan, former head of Fairchild, will supply the program with its LDS I design automation system. (**Semiconductor International**, October, 1981)

THAI SYNERTEK ACTION

Synertek, the Silicon Valley semiconductor subsidiary of Honeywell, locked out employees at its Nava Nakorn, Thailand assembly plant for more than a month last October and November when the workers demanded higher pay and better working conditions. Workers were allowed back under an agreement generally considered a victory for the company. (**Center for the Progress of Peoples, Labour Communication**, December, 1981)

HONEYWELL - FRANCE

In Issue No. 15, in the article about Trilogy Ltd., we mentioned Honeywell's negotiations with the French government over the nationalization of computer-maker CII-Honeywell Bull. **Business Week** (December 7, 1981) reports that Honeywell has proposed selling part of its 47% interest in CII-Honeywell Bull to the French government. It has suggested a price of about US\$150 million for 27% of the firm's equity. Honeywell wants to keep its link with the French joint venture, since it sells CII-HB \$130 million in computer parts each year. However, the Minneapolis computer-maker can improve its earnings report by selling off a substantial portion of money-losing CII-Honeywell Bull.

MILITARY MARKET

In contrast to other projections of the military market for integrated circuits, Integrated Circuit Engineering estimated 1982 military and military contractor purchases to total only \$700 million, a little over 10% of the U.S. market. High reliability "mil spec" circuits should total only \$70 million. (**Semiconductor International**, October, 1981)

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