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LATE

Regular subscribers may have noticed that this newsletter has been gradually slipping behind schedule. Newsletter editor Lenny Siegel has had too many other writing and speaking responsibilities to keep up. For that reason, we have called this issue Number 42, the April-May, 1984 edition. Please rest assured that all subscriptions will be honored for the proper number of issues.

MASSACHUSETTS

At last there is a well documented, critical report describing the second largest high-tech industrial center in the world, the Route 128 complex around Boston. The 80-page study, "Massachusetts High-Tech: The Promise and the Reality," may be ordered for \$8.00 from the High Technology Research Group, P.O. Box 441001, West Somerville, MA, 02144.

To those who have followed Silicon Valley in this and other PSC publications, the history and impact of the Boston complex are remarkably familiar. The authors argue, however, that Massachusetts high-tech industry pays its workers less than high-tech employers nationwide and consequently reap higher profits.

JAPANESE WELCOME

Japan's mighty MITI [Ministry of International Trade and Industry], historically the instrument and guide of Japan's large corporations, has rolled out the welcome mat for foreign high-tech firms. In 1983 MITI mimicked other Asian and European governments by organizing a promotional tour by representatives from Kyushu Island's seven prefectures. The delegates visited New York, Chicago, Los Angeles, and Silicon Valley, offering tax holidays and loan assistance. To date, only a handful of high-tech companies, including Materials Research, Fairchild, and Applied Materials, have taken bait, but others may follow.

Fortune (May 28, 1984) reports that MITI has reversed its previous hostility to foreign investors because they pose little threat today to their well established Japanese competitors, and more important, because MITI is responsible for distributing industrial development throughout Japan. Although several Japanese electronics firms have set up shop on Kyushu, most Japanese firms still prefer to locate in the "300-mile industrial corridor from Tokyo to Osaka," on Honshu. **Fortune** writes, "The industrial parks scattered around Japan's 47 prefectures began to look like industrial wilderness areas."

CHINA COMPUTES

China has negotiated at least two joint ventures, which if approved by the U.S. government will bring modern American computers to China. Hewlett-Packard will build computers and instruments from its current product lines at a joint venture near Peking, but it will not manufacture state-of-the-art products there. In September, 1983, H-P's board of directors held a meeting in China. (**San Jose Mercury News**, April 20, 1984)

ComputerLand, with more than 650 stores the world's largest retail computer chain, has won U.S. approval for a personal computer exhibition that it will open in Peking this July, but it awaits approval for its stores. The **San Jose Mercury News** reports, "American officials have voiced concern over wholesale transfer of American technology, but McConnell [a ComputerLand exec] said, 'all the products we're asking to ship to China are readily available in retail stores in Hong Kong.'"

The Chinese market for computers may eventually be large, but the country is too poor to develop a mass consumer microcomputer market. ComputerLand doesn't expect private hackers to meander into its Chinese stores. Its customers will be employees of state-owned enterprises.

INWARD INVESTMENT

French data processing manufacturer Bull, which is controlled by the French government, has purchased 10% of Silicon Valley's Ridge Computers. Bull not only obtained stock, but it also bought the rights to Ridge's technology. It will produce Ridge's machine at Echirolles, near Grenoble.

Meanwhile, British-based Applied Computer Techniques, which markets the Apricot computer as well as Victor Technologies products, has bought out the computer operations of the bankrupt Victor, which is based just outside Silicon Valley in Scotts Valley, California.

CHINESE OFFICE WORK

In the last issue, we described the new but potentially large shift of labor intensive office work to offshore locations, in that particular instance Barbados. Dallas-based Pacific Data Services has linked up with what potentially is the largest source of cheap labor in the world. It has contracted with QingHua (Tsinghua) University, a leading Chinese technical institute, in Beijing for data entry services. The company employs more than 200 data entry operators, who understand the English alphabet, but not the English language.

PDS advertises that it has a capacity of five billion or more keystrokes annually on a Sperry-Univac computer that the company provided to the university. PDS claims a cost saving of fifty percent on data entry work with "lenient time frames (3-4) weeks." Rush orders are done in the U.S. PDS/China references include retailer-importer Pier One and information service supplier Mead Data Central.

Pier One uses (or has used) PDS to input mailing lists. A Pier One spokeswoman told the **Fort Worth Star** (December 8, 1982), "The Chinese are very accurate - more accurate than other services we looked at,' including one run by the Nevada State prison, where prison inmates type information into the computer . . ."

Unlike offshore offices in Barbados, Chinese-keyed data is not beamed directly via satellite to computers in the U.S. Magnetic tapes generated by Tsinghua employees are air-freighted to foreign customers.

DOMESTIC CHIP ASSEMBLY

Intel announced this March that it plans to follow the example of Fairchild and Motorola in assembling some of its chips within the U.S. Applied Micro Circuits, a semi-custom chip-maker based in San Diego, California, has begun domestic assembly as well.

But don't count out foreign assembly plants yet. Offshore chip assembly is still growing, too. The automated production techniques which are making domestic assembly feasible can be used abroad as well. Automated plants do require a greater percentage of technicians, compared to assemblers, than labor intensive facilities, but many offshore sites offer cheap technical labor as well as a large semi-skilled workforce.

When the next semiconductor industry downturn occurs, look for a re-alignment in the international division of labor, but it might not be a shift back to the U.S. Rather, those sites - Indonesia, for instance - which remain labor intensive because of the shortage of low cost technicians and skilled workers, may lose work to other offshore locales.

Kras Corp., a manufacturer of automatic encapsulation equipment, is betting on Far Eastern assembly. It is closing its Silicon Valley production site, laying off 50 workers, and shifting production to Fairless Hills, Pennsylvania, where it is headquartered, and to Hong Kong, to be closer to its customers. (**Electronics News**, March 5, 1984)

Meanwhile, chemical manufacturer Olin has purchased 45% of Indy Electronics, which is the only established U.S. semiconductor assembly subcontractor. Olin is already involved in the semiconductor industry as a supplier of chemical and metallic inputs.

Four-year old Indy currently employs 750 people in Manteca, about 50 miles East of Silicon Valley. It plans to build a new assembly plant in Scotland this year, as well. Indy serves computer manufacturers, such as NCR and DEC, which fabricate their own chips. (**Electronics News**, March 19, 1984)

SPAIN

In Spain, a special industrial commission has proposed a three-year, US\$1.15 billion plan to bolster the domestic production of advanced electronics components and equipment. **Electronics** (March 22, 1984) reports that Spain imports the majority of its high-tech goods. In 1982, Spain imported data processing equipment valued at US\$695 million into a market totalling only \$872 million. Domestic assumption exceeded the difference, however, since almost half of the \$318 million in domestic production was exported, primarily by the local branches of multinational corporations such as IBM and Olivetti.

More than 25% of Spain's \$527 million telecommunications equipment market was satisfied by internal producers, and half of the country's \$468 million semiconductor consumption came from domestic sources. Spain, however, has no integrated circuit fabrication plants, so domestic semiconductor production consists entirely of transistors and other discrete components, most of which are made by Barcelona-based Piher, SA.

TRILOGY AGAIN

Control Data has joined CII Honeywell Bull, Sperry, and DEC as a backer of Trilogy. Control Data has agreed to pay \$2 million upfront plus royalties for access to Trilogy's "wafer scale integration" technology. Like its competitors, Control Data has promised not to use the technology in the IBM "plug-compatible" market. Trilogy plans to market its own plug-compatible machine in mid-1986, 18 months behind schedule. Rather than design a computer containing many distinct integrated circuits, Trilogy plans to squeeze its semiconductor circuits onto a single wafer, two-and-one-half inches in diameter. (**Peninsula Times Tribune**, March 20, 1984.)

DEC WEST

Massachusetts-based Digital Equipment Corporation is setting up its second research laboratory in Silicon Valley. It hired Robert Taylor, a former research manager from Xerox's creative Palo Alto Research Center, to head DEC's new Systems Research Center in Palo Alto. The Center expects to hire 50 top computer science Ph.D's to research distributed information systems. Taylor already has fifteen professionals on board, including six from PARC.

Silicon Valley not only is home to many of the top scientists and engineers in high-tech, but its climate continues to attract them. The **San Jose Mercury News** (May 14, 1984) reports, "not all engineers want to move to New England and its notoriously cold winters." It continues, "'For the first 20 years, we were happy in New England,' said Sam Fuller, DEC's vice president for research. 'But as we talk to graduates, half the engineers are willing to relocate to New England, half are not.'" To attract them, DEC has set up labs in Los Altos (also in Silicon Valley), Sacramento, Seattle, Colorado Springs, and Albuquerque.

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