

ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

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The Office of the Chief Scientist (OCS) of the Ministry of Industry and Trade is Israel's key government organization for promoting industry through research and development. With an annual budget of \$100 million, the OCS is the key funding source for major Israeli industrial R&D. Among its other important activities are majority participation in the cost of R&D for "startups," maintaining research in institutes and universities, promoting various binational cooperative R&D activities aimed at enlarging the R&D marketing base of Israeli industry.

While the OCS, due to its bureaucratic nature, often is the object of behind-the-scenes criticism, on balance it receives passable grades from recipients of its funding. However, in recent years the Ministry of Industry & Trade and the OCS have gotten involved in activities which should best be left to private enterprise. These include pre and post

R&D marketing and other activities not related purely to R&D that are stated to be aimed at increasing Israeli firms productivity and competitiveness.

We suggest that these activities are outside the scope of experience and understanding of even the most dedicated and qualified public servants. By the nature of their work, they lack practical business experience from which to offer experienced business judgement. By letting it be known that they will support not directly related R&D activities the OCS and the Ministry of Industry and Trade leave themselves open to manipulation by special-interest groups such as the Association of High-Tech Industries, among others. This association with its strong inner administrative core includes a high powered advocate. The funds which they are seeking are government funds earmarked strictly for R&D. It is a hard enough task to sort out which applicants among Israel's highly gifted and motivated scientists, researchers and entrepreneurs should receive the benefit of Government funding.

Will the current trend of increasing government involvement in financing of non- R&D activities result in a strangulation of personal initiative and rewards for those who are close to the "pot"? Will negative signals be sent to foreign investors, who are being told by officials that the 1990s will usher

a period of benign government support but minimal interference? We believe that this is already happening. The government should not put a finger in every pie, no matter how strong the pressure from outside pressure groups. And government funds should be channeled into worthwhile R&D projects, not collateral or unrelated activities which are properly the domain of private enterprise.

SUPER COMPUTERS VS. SUPER POLITICS

The Technion Institute of Technology is the center of Israeli engineering education. Its graduates provide the brains behind the country's industrial efforts and occupy many key positions in leading high-tech enterprises. Others graduates, possessing entrepreneurial qualities, establish new ventures. Many of these businesses become important contributors to Israel's export drive whose overriding aim is to create economic independence. Technion engineers are active in basic research in many projects, both internationally and locally sponsored.

Some of these projects are important to America's space and defense research. Over the years, the Technion has forged close links with American institutions and researchers.

The Technion's advanced standing in applied and basic research requires providing its staff with advanced computer capabilities. Some two years ago, the Technion decided to order a supercomputer. The decision was not lightly taken, since finding funding to cover the purchase cost was not easy. The Tech-

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nion, like other local institutes of higher learning, is financially troubled. A supercomputer represents a major capital outlay which arguably could be put to other uses.

We now learn that shipment of the supercomputer is being delayed because export permits have not been issued to the supplier. The U.S. Department of Defense has stated that it is not opposed to the sale. But a Technion official has pointed out that in spite of the Technion's declared willingness to permit on-site inspection - to allay any suspicion that the supercomputer might be used for non-peaceful research - permission to ship the computer is being withheld by American authorities.

Some U.S. politicians have suggested that Israel conceivably could use supercomputers for producing ballistic missiles, rockets, and nuclear or other weaponry. Many have expressed concern that Israel might share its research and technology with South Africa, contributing to that pariah state's military capabilities.

The nondelivery of the supercomputer only delays the progress of peaceful Israeli research and development. Aside from indicating that politics is coming to the forefront in scientific matters, it signals that Israel's special relationship with American policymakers and legislators is noticeably deteriorating. This is an unsettling development, for if current tensions continue they could seriously undermine the more than four-decade jointly shared U.S.-Israel determination to maintain a common front in the Middle East.

MEDAX 1989

At the Seventh International Exhibition of Medical Technology, held the week of November 7th in Jerusalem, 160 international companies (including Israelis) representing some 600 producers from various parts of the world exhibited their products. Organized by the Stier Group, "Medax 1989" is the largest medical event held in Israel.

Individual countries - including Canada, the U.K. and Hungary - featured their own national exhibits. Israeli Government officials attending the opening, included the managing director of the Ministry of Industry & Trade, Yoram Belizovsky, and the managing director of the Israel Export Institute, David Litwak.

The event was considered sufficiently important to receive international media coverage. Medax is sponsored by the Israel Medical Association and the

veloped a computer program called "Zoom I" for people with impaired vision. This software, which resides in the memory of a personal computer, enlarges characters which appear on the screen and enables the user to choose from four standard sizes of letters plus one to his own specifications. The program also has a text location device for those with impaired sight. The package costs \$490.

Diagnostic Kits Are a Booming Business

Tens of millions of dollars in sales are the result of the work of Israeli medical researchers who are developing a broad variety of diagnostic kits. The profits, however, are generally reaped by the foreign investors who provide their financing, whether in seed money or by sponsoring research. After they have become convinced that the products are marketable, the foreign backers cover the research and undertake the marketing functions, an acknowledged Israeli weak point.

Most Israeli researchers in the health-care field, who represent an increasingly visible and capable pocket of research and development strength, understand that products emerging from their laboratories require strong marketing efforts by specialists in over-the-counter sales. The growing awareness of the need for joint efforts has made researchers more willing to enter into special agreements with commercial enterprises. Israeli and American joint ventures may also benefit from funding by the Binational Research and Development (BIRD) Foundation, having recently boasted its 100th approved project. The Office of the Chief Scientist of the Ministry of Industry & Trade also has a deep pocket and a willingness to back health-care R&D. In fact, the government makes available \$100 million annually for industrial R&D. Recent scientific agreements with Spain, France and West Germany offer additional opportunities for tapping local skills.

One example of Israeli diagnostic-kit development is the work of Prof. I. Sarov, head of the Virology Unit of the Faculty of Health Sciences at Ben-Gurion University. Prof. Sarov, studied chlamydia trachomatis, a sexually transmitted infection commonly found among sexually active women. Eventually, the basic research spun off a diagnostic system for identifying the virus. This technological breakthrough has spawned a rapidly growing company called Savyon Diagnostics which was established by Israeli investors to capitalise on what they saw as an outstanding business opportunity. Israeli names in the health-care field include International Diagnostic Laboratories Ltd., Eldan-Tech Technologies Co. Ltd., Istec Industries & Technologies Ltd. and Orgenics.

A company which appears to be making progress and could serve as a model is Diatech Diagnostica Ltd. Founded by a former Weizmann Institute scientist and currently managed by a Weizmann Institute-trained immunologist with 15 years of diagnostic experience. This emerging growth company employs professional graduate academicians for research, production and quality control. Diatech has developed, among other projects, kits which immediately screen for a number of urinary tract infections. Test results appear within one to three minutes after collecting the urine sample and costs just an affordable \$0.35-\$0.40 per test. The National Council of Research and Development is seeking for Diatech an equity investor and a marketing arm or partner. Funds for Diatech's development have been provided by its owner Diatech Inc., a U.S. company whose principal investors are Adler & Co. and Athena Venture Partners. (The latter is a U.S. venture capital partnership with offices in Israel.

NEW CONTRACTS

Elbit Moves into Paramilitary Market

An unnamed Western country has awarded Elbit Computers Ltd a multi-million-dollar contract for paramilitary applications.

Under the terms of the contract, Elbit will improve the surveillance, command and control systems used by the nation's border police.

In cooperation with the customer, Elbit will develop operational concepts, support training and procurement, and provide command and control equipment, including the latest surveillance and detection systems. The project will enable border police to more effectively detect and prevent drug traffic and other forms of smuggling.

ISRAELI COMPANIES ON WALL STREET

Oshap Technology has been awarded a contract by the Ford Motor Company for worldwide installation of its Robcad CAD/CAM Computer Aided

Design/Computer Aided Manufacturing system. Robcad uses graphics simulation to allow planning and programming production. Oshap recorded a net profit of \$1.1 million for the first six months of 1989 on sales of \$11.8 million, as compared with a loss of \$700,000. in the first half of 1988.

Koor Industries, as part of its restructuring program, has sold its shares in Aryt Optical Industries to David Kolitz for a reported \$3 million. Previously, Mr. Kolitz paid \$1 million to acquire Koor's 50% stake in Elul Technologies and become the sole owner of Elul, a defense contractor.

QUARTERLY FINANCIAL REPORTS and LATEST NEWS ROUNDUP

In the month under review the ISRAEL HIGH-TECH REPORT INDEX soared by 16.2%. The index is weighted and consists of the valuations of the publicly traded shares of the country's leading high technology companies. Base= 100 as of on September 30, 1984.

On a month-to-month basis the stock market capitalization of several companies appreciated meaningfully. Scitex Ltd. saw its market capitalization advance by more than 14% to \$ 129 million.

The market capitalization of ECI Telecom advanced at an even greater rate of 23.5% to nearly \$66 million.

As IHTR went to press a number of companies reported their unaudited third quarter 1989 results.

Scitex in sharp profit advance

Net profit for Scitex jumped by 122% to \$8.5 million. This was notable since the third quarter results included a \$4 million unrealized loss on Scitex's holding of De La Rue shares, acquired when it tried to enter negotiations to acquire Crossfield Electronics.

Elscont Ltd. for the first nine months of 1989 reported sales of \$ 108 million and profits of just under \$1 million. However, management maintained cutting back of Elscont's operations which allowed to create a positive cash flow of \$7 million.

Abic acquisition Swells Teva's Sales

Teva reported nearly \$12 million profits for the first nine months of 1989 as sales advanced sharply and reflected the ABIC acquisition.

As Teva applies more funds to R&D new products are envisaged. Teva's R&D expenditure is 5.4% of its sales.

ISRAELI COMPANIES ON WALL STREET

Selected income and earnings summaries for the 9 months ended September 30, 1989, unless otherwise indicated.

Nearly all of these companies are intensively export orientated. Prices are as of November 15, 1989 and the price changes relate to those a month ago.

Company	Revs (in\$ mil.)	Net Income (in \$thou.)	Price	Net Change
<u>ELBIT COMPUTERS</u> Defense electronics ELBTF OTC	117,200.	8,750.	8.750	+0.375
<u>ECI TELECOM</u> Telecommunications ECIL OTC	38,745.	3,671.	13.125	+2.500
<u>ELSCINT</u> Medical imaging ELT NYSE	108,000.	0,987.	2.500	+0.875
<u>FIBRONICS</u> Fiberoptics FBRX OTC	34,160.	1,450.	6.500	+0.875
<u>INTERPHARM LAB.</u> Biological products for health care IPLLF OTC	7,812.*	0,236.	3.250	n.c.
<u>LASER INDUSTRIES</u> Surgical lasers LAS ASE	na	na	2.625	-0.125
<u>OPTROTECH</u> Electro-optical systems OPTKF OTC	52,920.	3,330.	8.375	+0.750
<u>SCITEX LTD.</u> Computer graphics SCIXF OTC	170,550	21,687.	12.875	+1.625
<u>IIS INTELL.</u> Computer peripherals IISLF OTC	8,173.*	2,007.	4.625	+0.250
<u>TEVA PHARMACEUT.</u> Pharmaceuticals TEVYF OTC	191,250	11,980.	11.00	+1.375

* Results for 6 months ended June 30, 1989

Elbit's Results Satisfactory

Elbit Computers Ltd. continued to maintain a high level of sales. After nine months of calendar 1989 Elbit's sales stood at \$ 117 million. Elbit profits totaled \$8.75 million.

The company's order book backlog was \$330 million. Exports to the US are 80% of total exports which represent two-thirds of all Elbit's sales.

Optrotech Results Exceed Expectations

After nine month's Optrotech sales totalled \$53 million and profits advanced sharply to \$ 3.33 million. Third quarter earnings were up by 52% over last year's results leading to expectations of a continuing upward trend in sales and profits.

Unconfirmed reports state that the Canadian based Seagram through its Claridge investment company are showing keen interest in acquiring a stake in Optrotech. The company's management in the past has been interested in off-the-balance sheet R&D investment but expectations are that Dr. Shlomo Barak and the board would welcome the Bronfmans as partners.

On November 7, in an expected announcement Elbit stated that it is negotiating the acquisition of a controlling interest in Elscint. Subsequently, the Jerusalem Post carried an article entitled "The New Look for the Group and Everyone Benefits in Elron Deal". This created some raised eyebrows as apparently not everyone is convinced that Elscint would flourish under the Elbit umbrella. Elscint management would have preferred to have a partner or parent who could improve the company's rumors are a European company has expressed interest in bidding for the country's leading medical imaging company. The position will be clarified after the Elscint board concludes its meetings that were scheduled for the end of November.

Supporters of the acquisition point to Elbit's financial strength and to the business experience and managerial capabilities of leading executives from Elron and Elbit. Some negatives are: Elbit's lack of marketing experience in areas outside the defense sector.

Biotechnology General Completes Exchange Offer

As a result it has reduced its debt burden by eliminating the need to make cash interest payments.

Elron Nearly in the Black

Elron Electronic Industries Ltd. reported that its third quarter loss was under \$100,000, and prospects that it will return to profitability in the fourth quarter of 1989.

Rada Electronic Industries Ltd.

Nine months sales at \$16.3 million on which it earned just over \$1 million.

ECI Telecom Results Exceed IHTR's Expectations: Earnings Estimate Revised Upwards

In our IHTR 2/89 issue we estimated that ECI Telecom could reach annual sales of \$ 50 million. IHTR's analysis was more optimistic than Drexel Burnham Lambert's which forecasted sales of \$ 47 million and net profits of \$ 3.75 million.

After nine months of activity ECI Telecom is comfortably running ahead of both forecasts as it has achieved nine months sales of \$38.75 million and net profits of \$3.76 million.

We are revising our previous forecasts and now estimate that for calendar 1989 ECI Telecom should achieve sales of \$52.5 million and a net profits of \$5.1 million.

If these estimates hold, then ECI Telecom's earnings per share will be \$0.90. At current market levels of \$13 the Price/Earnings Ratio is just under 15 when calculated on anticipated 1989 results. Technically the charts indicate that resistance would be encountered at levels of \$16. The future performance and market valuation of ECI Telecom will hinge on management's abilities to market a new generation of products now in various stages of development.

Israel High-Tech Report Index*

74.70 + 16.2%

*ISRAEL HIGH-TECH REPORT INDEX is a weighted index made up of the shares of leading high-tech companies.
BASE=100 AS OF SEP.30,1984

The FAX box is the key which could provide benefits for facsimile transmission similar to the message multiplication DTX-240 terminal systems of 6000 units have already installed worldwide.

Fibronics International Ltd. reported a net profit of \$510,000, or \$0.08/share for the quarter ending September 30. In the comparable quarter in 1988, FBRX earned \$723,000 or \$0.12/share. The drop in profitability came despite a sales advance to nearly \$12 million for the quarter. While Fibronics remains one of the fast growing companies in the United States, its profit picture continues to be effected by very strong competition in the fiber optic communication sector.

RECENT DEVELOPMENTS

Kibbutz Netafim Sprinkler Exports to Spain and Portugal total \$5 Million. Netafim has recently obtained a contract to install lawn irrigation systems for the 1992 Barcelona Olympics. Among its other sales to Spain, Netafim has to its credit the installation of water sprinklers on farms owned by the Spanish royal family.

New Venture Capital Fund

Yuval Binur, formerly of the Fred Adler Venture Capital Group, and Yoram Rosenfeld, Chairman of Yisum Holdings, have teamed up to form Perceval, a company for providing capital.

The two financiers point to a dearth of venture capital and a slowing of high-tech financing opportunities on Wall Street.

The financing offered is a combination of loans in exchange for collateral usually unacceptable to banks such as patents and technologies. The loans bear interest rates higher than those at banks. Mr. Binur says that he can guarantee a 20%-30% annual rate of return for those investing capital.

The BIRD-F (U.S. Bi-National Research and Development Foundation) is cheering again as it marks milestone.

Dr. Ed Mlavsky, a BIRD chief, has announced the launching of a computer program which enhances the power of super-mini-computers. The program was developed by TIKI Software Systems together with Anchor Computers Company of the U.S.

An American aircraft manufacturer recently placed orders for the software.

Su-Keet, Specialist in Plastics, Has Developed a Way to Make Big Bucks from Unusable Waste

The company buys plastic waste from Dutch General Electric uses it as a raw material to produce plastic loading pallets, and sells them back to the supplier. Su-Keet has received funding in the amount of \$750,000 from the Dutch Office of the Chief Scientist. In another project, Su-Keet joined with Tsag Plastics Engineering Company and Kibbutz Gaash to develop a plastic street lamp, said to be 40% cheaper than those made from conventional materials. General Electric has already placed orders for more than \$10 million worth of street lamps.

Can Scitex Achieve A Turn Around of its Falling Sales to Japan?

Scitex sales to the Japanese market dropped sharply during the first half of 1989, totalling \$11.1 million. In all of 1988, Scitex sales to Japan reached \$82 million.

Fuji and DuPont acquired Crossfields Electronics Ltd. - a Scitex acquisition target - from Del La Rue; and along with Konica, are strong competitors boasting new products for the Japanese pre-print market

Briefly Noted

Behind-the-scenes negotiations between Tadiran's management and A.E.L. Laboratories should lead to a revision of the agreement whereby the American company can put shares valued at about \$30 million to Tadiran. A.E.L., led by Dr. Lee Rieberman, acquired the Tadiran shares in a swap for its majority holding in Elisra, which Tadiran had wished to control.

Three years ago the U.S. and Israel entered into a Free Trade Area Agreement. Although, it has not been all smooth sailing for either side, efforts are being made to iron out problems. Most recently, U.S. Government officials complained that Israel still places customs duties averaging 5% on 1,900 American products. Senior American international trade officials are expected to negotiate with their Israeli counterparts to undo what are viewed as unfair trade practices.

Tiny Du Keren, a subsidiary of Eitam Investments, has picked up an initial \$100,000 order from the U.S. Army for a microwave system. The company is

struggling to become profitable has proved its technical competence by having among its clients Elta Electronics, Israel Aircraft Industries, the Ministry of Defense, Israel Air Force and Rafael.

While on the subject of Elta Electronics; it is apparent that I.A.I. is negotiating to sell Elta its top electronics defense concern. Elta is one of the most successful companies in its field. Its annual R & D budget totals nearly \$10 million. By the end of August the company had an order backlog of \$455 million.

Elisra Electronic Systems has announced that new customers for its high-frequency electronic systems include Toshiba, Mitsubishi and Japan Radio. Japanese companies purchase microwave components from Elisra.

THE JAPANESE IMITATE ISRAELI MEDICAL INNOVATION

At the 52-year-old Kibbutz Ginosar, members established an industrial plant to produce electronic equipment for pain relief and muscle rehabilitation. The Agar Ginosar Electronic and Metal Products plant on the shores of the Sea of Galilee now produces and markets worldwide several models of Transcutaneous Electrical Nerve Stimulators (tens). Pain relief devices are based on patents derived from the work of Dr. Tenenbaum's department at the Medical Electronics and Anaesthesiology and Physical Medicine Rehabilitation at the Hadassah Medical Center of Jerusalem.

A Japanese company has copied the Agar pain killing unit. At the recent Medax 1989, the Seventh International Exhibition of Medical Technology, the Epsilon Medical Company - representing some of the leading medical equipment manufacturers in the world - offered a product called the "Dual Channel Tens", which in turn is called the "Friendly Performer". While it may not be identical in appearance to the device produced by the kibbutzniks at Ginosar, proof of the imitation of Agar's product by the ITO Co. Ltd. of Japan was provided by Steve Fodor of Epsilon who explained the qualities of the Japanese model.

Dr. Tenenbaum had invented a pain-killing current wave form which he called the "modulated current form". The Japanese employ exactly the same technique, they call it "wave forms modulation". "This is the most effective way to stop pain," stated Fodor. Ironically, according to Epsilon, the Japanese "Friendly Performer" is being sold in large quantities

in Israel for \$200 - half the acceptable price in the United States. (There is no protective duty for medical imports such as the "Friendly Performer".)

As reported in IHTR in June 1989, the Agar products are FDA approved and sold in the United States. If imitation is the sincerest form of flattery, then the members of Kibbutz Ginosar should be highly pleased that their product has been copied in Japan.. However, the Japanese producers are apparently so efficient that they now brazenly compete with Argon products, not only in other parts of the world, but even in Israel.

Those who follow the technology sector have never doubted Israel's outstanding ability to innovate. We ourselves have often suggested that foreign companies take advantage of this proven R & D capability in medical computers and other fields.

Israelis, on the other hand, would do well to seek such external partners to provide worldwide marketing support, financing when necessary, and, in due course, the capability to transfer production from Israel to other parts of the world when production economies would be best achieved elsewhere.

ISRAEL HIGH-TECH REPORT

NEWS AND INVESTMENT OPPORTUNITIES

Written for venture capitalists, investment bankers, international traders, industrial researchers, business men, underwriters, private and institutional investors, policy makers, offset specialists, technology scouts and individuals whose interests include following scientific and technological developments and for those who specifically wish to maintain insights into Israel's dynamic high technology fields.

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DIGITAL ISRAEL

VLSI, the acronym for VERY LARGE SCALE INTEGRATION, refers to integrated circuits with a component density in the order of 10,000 devices on a single chip. During a visit to the recently inaugurated Digital Design and Development Center in Jerusalem, I was shown Israeli designed chips

that carried more than 200,000; such chips take 50 man-years to develop. Engineers expect to squeeze 1,000,000 transistors onto a single chip in two to three years. The devices are so small that they require a microscope for proper viewing.

The Digital Design and Development Center, a unit of Digital Equipment Corporation (D.E.C.), is staffed by 50 personnel, nearly all electronic and software engineers. The center was established at a cost of \$10 million. At the time of its formation, Jerusalem was designated as Zone B, so D.E.C. was accorded a modest government investment grant of 20% of its investment. Zone A enterprises can obtain government investment assistance on the order of 38%.

Digital's Jerusalem and Japanese subsidiaries are its only chip design centers outside of the U.S. The local unit is part of the company's U.S. semiconductor group.

Digital also maintains sales offices in Israel staffed by 50.

Locally designed chips are intended for use in D.E.C. computer systems.

More projects are being assigned to the Jerusalem center, says general manager Avraham Menachem (another Technion graduate), because it now is recognized as having the capability.

Why have American chip makers including D.E.C., Intel and National Semiconductor, chosen Israel to establish their development center? Certainly, other countries wishing to attract multi-national corporate investments, such as Ireland, offer considerably more attractive incentives than Israel.

We find that in most instances Israel's special advantage is that its engineers are at least as good as the best to be found in America. Also Israelis exhibit more job stability and less mobility. An analysis of personnel costs at Digital Israel has concluded that

the total cost per Israeli engineer is 15% lower than that of an American counterpart.

In addition, Israeli engineers demonstrate innovative talent and their dedication to work has been compared to that of the Japanese. As many of D.E.C.'s engineers maintain computers or terminals at home, they can readily tap into the central computer.

RESEARCH DEVELOPMENTS FROM THE INSTITUTES OF HIGHER LEARNING

Novel Method of Achieving Drug Release

At Ben Gurion University, research has shown ultrasound to be effective in raising the release rate of drugs implanted under the skin of laboratory rats. The goal is to develop methods by which patients with subdermal implants can themselves control the release of drugs into their systems.

Dr. Joseph Kost, of the Chemical Engineering Department and head of the university's bio-medical engineering unit, states that "the technique of

using subdermal implants for drug release control has proven very successful. This is especially apparent when inducing ovulation among certain fish who cease spawning in captivity." This research is being applied to develop a method of administering insulin into a diabetic which imitates the action of a healthy pancreas. The amount of insulin released into the system varies in response to the body's fluctuating glucose concentration. The novelty of the research that an enzyme which converts glucose into gluconic acid is injected into an acid-sensitive polymeric matrix implanted subdermally, causing the polymer to swell and release insulin into the bloodstream when the glucose concentration rises.

On behalf of the editor, the editorial and circulation staff we wish all of our readers a Happy, Prosperous and Peaceful 1990.