

ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

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EDITORIAL

THE COMPLETE RATIONALE FOR FOREIGN INVESTMENT

The extent of foreign investment in Israel is highly visible even to the most casual observer. The fact that world class companies like Intel, National Semiconductor, Digital Equipment and others, recognized as leaders in their respective fields, have established a solid base in Israel, says a lot about doing business here. One can be sure that their decision to have a foothold in Israel is based on practical and level headed business considerations.

The quality of the country's institutes of higher learning and its researchers of international renown were, and continue to be, major factors in attracting startup science-based industries, as well as subsidiaries of foreign companies. Scientists and engineers at the Weizmann Institute and the Technion provide their talents and time to assist startup companies and establish entities. Heading towards the year 2,000, an institute of higher learning/industry connection is looked upon favorably by heads of most of Israel's academic institutions. Industrial managers, for their part, concur in this evaluation. This reflects our view that Israeli brainpower can endow the country with a very special relative advantage and build an export-driven economy as a result of a synergetic relationship between industry and academia.

The Government of Israel continues to consider the encouragement of foreign investment as a matter of the utmost priority. Regardless of which political party may be in power, investors continue to be offered "a financial incentives package", one which is matched or exceeded by only

a very few countries. It provides grants and tax benefits aimed at providing higher leverage, lower costs and risks.

If anything, Israelis have been known to criticize the Government's largesse, which is intended to attract multinational industrial firms. The recently issued state comptroller's report took exception to Intel Corp. having received \$60 million in investment aid, as well as tax benefits. The report revealed that the incentives included approval for development loans equal to half the amount of the investments, and that the rate of interest was near zero. At a time when Israeli policy makers are beginning to express concern about a brain drain, it is comforting to know that the Jerusalem facility employs 540 and is a profit source to Intel. Few countries, if any, of the size of Israel can point to plants actively employed in Very Large System Integrations (VLSIs) and microprocessors. Moreover, Intel is contemplating an expansion of its Jerusalem subsidiary.

Israel's greatest resource is its manpower and its brainpower. Its skilled technologists, engineers and scientists make it an above average attractive location for science-based industries.

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**THE INAUGURAL CONFERENCE
OF
ISRAEL'S HIGH TECHNOLOGY
INDUSTRY**

A HARBINGER OF THINGS TO COME

At the recent Inaugural Conference of Israel's High Technology Industries, much that was said reflected traditional thinking. The conference dealt with such subjects as the advantages and disadvantages of high-tech in Israel, the development of Israel's economy and the high-tech industry and the involvement of the Israeli government in developing and encouraging high technology. The presentations by speakers, who were among the most experienced industrialists, technocrats and financiers in Israel, were of the highest quality.

A new and refreshing attitude found expression in two specific and closely related ideas. One called, not just for marketing, but joint venture marketing, and the other expressed the desirability of offering to foreign investors an equity participation in profitable local concerns. The latter is a radical deviation from traditional thinking, which assumed that if you have something good, you keep it to yourself. The new idea reinforces the expectation that there will occur, in the foreseeable future, a number of major buy-ins into key science-based industry sectors such as electronics, biotechnology and lasers. If we are correct, there will be initial opposition to such alliances but, in the long run, it will prove to be a major step up in the development of Israel's industrial standing.

SOME VITAL CONFERENCE INFORMATION AND STATISTICS

Conference co-sponsored by the Israel High-Tech Report and the Israel Management Center.

192 attendees.

VIP's and overseas guests

Mr. Gad Yaacobi - Minister of Economy and Planning.

Mr. Thomas A. Pickering. U.S. Ambassador to Israel.

Dr. Leon Rieberman - Chairman, AEL Industries Inc.
Mr. John Westergaard, Director, Ladenburg, Thalmann & Co.
Media - Economic Editor of Jerusalem Post - Shlomo Maoz.
Journalists from Israeli Hebrew language Press and Itim.

Innovation

One hour Worldnet Satellite hookup and dialogue -
Representative George E. Brown Jr. and Dr. Jordan J. Baruch at Washington D.C. studios.
Messrs. Amit, Galil, Tolkowsky and Morgenstern in Tel Aviv studios.

AGRICULTURE IN ISRAEL:**FUTURE DIRECTIONS IN R&D**

In 1950 one farmer fed 17 Israelis; by 1985 he was feeding 65, according to Joseph Shalhevet, chief scientist and director of the Agricultural Research Organization. During that 35-year period, annual growth in agricultural output moved along at a pace of 7.3%. A deeper analysis of this figure indicates that 4.5% of the growth rate was due to technological advances. The Israeli farmer is not only brawny but is brainy and technologically well versed.

The best available figure for total annual agricultural output was recently released by the Central Bureau of Statistics: \$2.7 billion for the year ending 9/87. Its value to the Israeli economy is considerable, since less than 40% of the total is sufficient to fill the needs of the local market. The rest is exported.

BARD (the United States-Israel Binational Agricultural Research and Development Fund) recently celebrated its first decade of operation. In that period, 1,488 proposals for funding were submitted. More than 400 were approved and no fewer than 260 projects were completed. All observers of BARD's activities agree that the \$72 million invested in research and development projects was money well spent.

One project of mutual interest to Israeli and American farmers focused

on methods of producing virus-free strawberry plantlets. The strawberry mild yellow-edge virus is a major yield reducing disease affecting strawberry crops in both countries. The object of the research program was to assure that stock material used in vegetative propagation be truly virus-free. The traditional test consists of taking leaves from a strawberry plant and grafting them to indicator plants. This test was transferred and used in Israel. Locally, it was discovered that even stock assumed to be virus-free, still tested positively for the destructive disease. A more sophisticated immunoassay technique was developed and a double stranded RNS, indicative of infected plant tissue, has been isolated, purified and identified by electrophoresis. The research made it possible to distinguish clearly between clean and infected plant material. Further down the line it is expected that monoclonal antibodies and a DNA probe for the virus will be fully developed. The economic benefits of reducing or eliminating the virus run into tens of millions of dollars each season.

Sometimes research moves in the direction of making agriculture more efficient. Such was the goal of the potato/clod separator. The simple-to-use equipment was based on the well-known principle that when a harvested potato and a soil clod, gently dropped together from a conveyor onto an angled metal plate, will bounce different distances. The BARD sponsored separator is capable of handling high flow rates without causing damage to the potato. The separator, used as a pre-cleaning device, is now employed in seven countries.

Generally, much of Israeli technology is transferred to other countries. The ornamental plant and flower industry in Israel has been given major impetus by diversified experimentation leading to unusual and original varieties of flowers and off-season marketing. In 1968, the export of Israeli flowers barely nudged the \$1 million mark. In the current year, flower exports are expected to surpass \$150 million. A number of growers in South American

countries have adopted Israeli techniques or are growing flowers as part of joint ventures.

Yet, all is far from well in the farming sector. There are problems around the corner, such as the expectation that Israel's water supply will worsen and that the quality of the water will deteriorate. Also, there is little doubt that environmental pollution of water and soil is on the increase, according to Meir Ben-Meir, director general of the Ministry of Agriculture. But science is expected to yield suitable solutions. The application of genetic technology should counteract and avoid many of the problems connected with environmental pollution. The broadening use of tissue culture should enhance quality by developing virus free strains. Gene manipulation and cell fusions will be other scientific approaches to producing new breeds and qualities. It is understood that research results will be quickly and accurately transferred to the farmer. The Israeli farmer has a proven record of adapting readily to innovation.

ISRAELI HIGH-TECH SECTOR INCREASES SALES TO IBM

We understand that IBM has increased, by more than 40% in 1987, its purchase of high-tech products from such companies as Fibronics, Orbot and Optrotech. Most of the products are destined for IBM Europe, with a small portion going to the United States division and some to Japan. Elisra, a member of the Koor Industries Group, has begun to supply power sources and Intel Israel will be supplying microprocessors.

SEEING THE UNSEEN

The National Broadcasting Company is utilizing Israeli technology in its coverage of events at night in South America. NBC television crews have been scooping some of their competitors by their ability to film events in conditions of total darkness. They have accomplished this feat by using the Nitecam Cameras produced by the emerging Israeli growth company, International Technologies (Lasers) Ltd. (IHTR-5/88)

ISRAEL HIGH-TECH SHARES TRADED IN THE USA

	P-E Ratio	Price as of 5/15/88	Change since 4/15/88		Earnings per share	
					1986/7	1987/8
HEBEC OTC BIO-TECH GENERAL Biological products for health care	d	4 1/4	- 1/4	3 Mo Sep	d 0.38	d 0.47
ELBIT OTC ELBIT COMPUTERS Defense electronics	8	5 1/8	+ 3/8	3 Mo Mar	0.41	0.18
ECI OTC ECI TELECOM LTD. Telecommunication systems		2 3/4	- 1/8	3 Mo Mar	0.01	0.10
ELRON OTC ELRON ELECTRONICS Company investing in high technology		3 7/8	+ 3/8	3 Mo Mar	d 1.33	0.07
ELSCINT NYSE ELSCINT Full range medical imaging	d	1 1/4	- 1/8	9 Mo Dec	3.10	1.23
FIBRONIX OTC FIBRONIX INT'L Fiberoptic communications	d	3 1/4	- 3/8	3 Mo Mar	0.03	d 0.15
INTERPHARM OTC INTERPHARM LAB. Biological products for health care	d	3 1/2	+ 1/2	12 Mo Dec	0.13	d 0.25
LASER ASE LASER INDUSTRIES Surgical laser systems	19	5 7/8	+ 1/8	9 Mo Dec	0.71	0.53
OPTROTECH OTC OPTROTECH Electro-optical systems for PCB	7	4 1/2	-1 1/4	3 Mo Mar	0.09	0.09
SCITEX OTC SCITEX Computer graphics	d	4 5/8	+ 3/8	3 Mo Mar	d 0.45	0.23
I.I.S. OTC I.I.S. Computer peripheral equipment	6	3 7/8	+ 1/8	12 Mo Dec	0.95	1.17
S.P.I. OTC S.P.I. SUSPENSION - PARTS INDUSTRIES Military components	7	1 1/4	- 1/8	12 Mo Dec	0.33	0.03

d = deficit

ECI TELECOM INCOME AND MARGIN SIGNIFICANTLY HIGHER

ECI Telecom Ltd. (NASDAQ;ECILF) has reported net sales of \$7.5 million for the three month period ending March 31, 1988. Its operating profit was a satisfactory \$3.2 million, as compared with \$2.2 million in the same period of 1987. Net profit was just under \$500,000. The results were clearly a reflection of the company's reorganization.

ECI's quarterly earnings were impressive when compared with the total earnings for 1987 of \$860,000. However, in 1985 and 1986, ECI incurred losses of nearly \$11.5 million.

With its order book filling up again, the company will be rationalizing its production facilities by moving its currently scattered units to an 11,000 sq.m. rented industrial building facility in Petach Tikva, adjacent to Tel Aviv.

FIBRONICS FAILS TO EMERGE FROM LOSSES

Fibronics Ltd. (NASDAQ;FBRX), which, in 1987, reported a net loss of \$2.87 million, has reported a loss of more than \$850,000 in the first quarter of 1988. Part of the problem appears to be the inability to establish profitability in high-bandwidth information transfer and distribution systems.

Current market valuation of \$18 million appears to have more than discounted the accumulated losses. A year ago, when Fibronics' shares were quoted at \$7, the market capitalization was 1.3 times what it is today, but the company was narrowly in the black.

INTERPHARM UPDATE

InterPharm Laboratories Ltd. (NASDAQ: IPLL), on the strength of a strong fourth quarter, reported 1987 sales of \$9.2 million. The fourth quarter profit of \$452,000 is insufficient to bring the company into the black for all of 1987, when it recorded a loss of \$1.2 million.

The yet unpublished results for the first quarter of 1988 and for the

second quarter of fiscal 1988 will go a long way to indicate whether InterPharm is moving ahead on the road to more stable profit growth.

OPTROTECH SALES SOAR

Sales of \$13.9 million by Optrotech Ltd. (NASDAQ/NMS;OPTKF) for the three months ending March 31, 1988 exceeded all expectations by wide margins. Earnings for the quarter of \$471,000 were disappointing, but not surprising in view of the effect of the weakness of the U.S. dollar. The weakness of the dollar and Israel's higher than Western European inflation were factors in the "substantial increases in the cost of R&D". Optrotech's financing expenses were also higher and probably impacted by relatively high rates of interest in Israel.

If the company succeeds in accessing relatively low cost R&D financing and the dollar continues to increase in value, earnings can be expected to resume the recently strong upward trend.

SCITEX EARNINGS ADVANCE SHARPLY FOR THIRD CONSECUTIVE QUARTER

Scitex Corporation Ltd. (NASDAQ;SCIXF) has announced a net profit of \$2.5 million for the quarter ending March 31, 1988. A non-recurring one time profit of \$1.5 million resulted from the company's sale to the Japanese Toyo Inc. of its worldwide distribution rights to Scitex's Quantum system for the printed circuit board industry. Sales advanced sharply to \$47.9 million.

	5/15/88	4/15/88
DJIA	1990.55	2005.64
S&P 500	256.78	259.75
NYSE INDUSTRIALS	176.34	179.12
ASE MARKET VALUE	297.94	298.94
NASDAQ INDUSTR'LS	383.94	383.43
ISRAEL HIGH-TECH REPORT INDEX*	38.07	38.01

*ISRAEL HIGH-TECH REPORT INDEX is a weighted index made up of the shares of 10 leading high-tech companies.
Base=100 as of 9/30/84

In 1984, Scitex recorded its best year with a net income of \$12 million. But over the following two-year period, it incurred losses of not less than \$56.3 million. Scitex finally emerged from red ink in the third quarter of 1987.

Recurrent managerial shakeups have taken place, but founder Efraim Arazi appears to be well positioned to maintain the turnaround. The company has shown an ability to maintain leadership in its core pre-press technology, and is now wedding it to such high growth fields as desktop publishing. This should allow Scitex to capitalize by marketing its interactive computerized imaging systems to areas which the company could previously not access.

BTGC RECORDS A NET LOSS OF \$2.7 MILLION: LICENSING FEES AND CONTRACT INCOME AT \$380,000

For the three month period ending March 31, 1988, Bio-Technology General Corporation (OTC:BTGC) recorded a net loss of \$2.7 million. The loss included interest expenses of \$592,000, while G & A expenses were \$867,000. As of the end of the quarter, BTGC had an accumulated deficit of \$26.3 million, or 30% more than in the preceding fiscal year. On the more positive side, licensing fees and contract revenues were \$380,000, as compared with \$96,000 last year. The income was derived from sales of experimental quantities of hSOD to Bristol-Myers, sales of experimental quantities of hyaluronic acid to Pharmacia AB and research funding by Dupont Critical Care and American Cyanamid.

Research and development spending increased to \$1.9 million, as compared with \$1.5 million a year ago. The company's activities at the recently inaugurated center in Rehovot, Israel, are in full swing.

It is our view that 1988 will turn out to be a critical year in the history of the company: barring some innovative financing, its flow of income will not generate sufficient capital to offset rising overall expenses. One of the ways the firm can help itself in mobilizing

additional capital, until the atmosphere on Wall Street becomes more favorable to public financing, is to sell off some segments of its developed technology.

ELBIT WEATHERS LAVI FALLOUT BETTER THAN MOST

Elbit Computers Ltd. (OTC:ELBTF) has reported sales of \$43.2 million for the three months ending March 31, 1988 and a net profit of \$2.5 million. Future results will not be related to the cancellation of the Lavi project. Management has stated that it had "implemented appropriate organizational measures" so as not to have any further fallout.

Elbit has maintained its recent policy of paying dividends by announcing a quarterly dividend of \$0.45. The company's export projections remain at about 70% of all sales.

ELRON REDUCES LOSSES

Reflecting the results of Elbit Computers Ltd., its most important subsidiary, Elron Electronic Industries Ltd., (NASDAQ: ELRNF) reported consolidated income of \$43.4 million for the three months ending March 31, 1988. Nevertheless, Elron suffered a net loss of \$735,000. The main contributions to Elron's Profit and Loss statement were that of Elbit of \$1.4 million and of Optrotech of \$175,000.

On the flip side, a loss of \$272,000 was attributed to Elron's Fibronica subsidiary.

AXIOM CAPITAL BEGINS ACTIVITIES

New York based Axiom Capital Corporation has begun operations, focusing on serving "the capital needs of Israeli companies in the United States and the needs of American investors in Israel".

Israel Makov, former president of InterPharm and Jonathan Ben-Cnaan are founders of Axiom, which includes prominent financial people in the United States. Mr. Makov reports that Axiom is already fully active in private placements, mergers and acquisitions and merchant banking.

NEW PRODUCT

MENAGE A TROIS:

SCITEX, QUARK AND MACINTOSH
Scitex Corp. Ltd. (NASDAQ: SCIXF), together with Quark Inc., have jointly developed the industry's first Apple Macintosh based software program. This software uses the Scitex HANDSHAKE format for digital data exchange in conjunction with the well-known desktop publishing QuarkXPress. This is a special layout and composition software package of Quarks which allows for the inputting of Scitex's well-known Response electronic color pre-press systems.

The product HANDSHAKE Xpress allows the designer to lay out pages, compose text, add desired graphics and then directly transfer the data to Scitex systems. This is the first time that Scitex's leading edge technology will be available to users of Macintosh systems.

*

In a related development, Scitex has entered into a development program with Adobe Systems Inc. to develop compatibility between Scitex Response systems and the device independent PostScript page description language. The program will be to provide commercial printers with access to the desktop publishing market.

JOINT VENTURE IN DATA SECURITY

The commercial arm of Israel's Weizmann Institute of Science and Rupert Murdoch's News Corporation have joined forces in a venture called News Data Security Products Limited, which will develop products designed to provide security against fraudulent computer access and related violations.

Murdoch is investing \$5 million in the new firm, which will trade as News Datacom. News Corporation and Yeda Research and Development (the Weizmann commercial arm) are major stockholders. Development activities will be carried out by an Israeli subsidiary company, News Datacom Research and Development Limited.

Products will be based on the

inventions of Prof. Adi Shamir and other Weizmann scientists. Initial developments will use the Fiat-Shamir algorithm, patented by Yeda and under exclusive license to News Datacom, to provide identification, authentication and digital signature facilities using "zero-knowledge" proof techniques. The method is said to be particularly well suited to Smart Card and PC applications.

ELECTRIC TURBINE POWERED BY WATER PRESSURE

Mekorot, Israel's water company, has started operation of its turbine electric generator, the first of its kind in the world to produce electricity by pressure of water which is pumped into the ground. The electric producing plant was first active in April 1987 and since then has produced 466,000 kilowatts per hour over a period of 2,700 work hours.

Total investment in the plant was less than \$100,000 and Mekorot has stated that the energy yield for one work year totalled 530,000 kilowatts per hour.

ISRAEL HIGH-TECH REPORT
NEWS AND INVESTMENT OPPORTUNITIES

Written for venture capitalists, investment bankers and bankers active in international trade, industrial researchers, business men, security analysts and portfolio managers, underwriters, private and institutional investors and individuals who need to maintain insights into Israel's evolving and dynamic high-technology field. Enroll me as a subscriber to the ISRAEL HIGH-TECH REPORT, the monthly report on high-technology. Annual subscription fee for 12 issues \$125. TO SUBSCRIBE FILL OUT THE FORM BELOW AND MAIL TODAY WITH CHECK TO:
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A STEP UP IN THE INTERNATIONAL GEOTHERMAL ENERGY MARKET LADDER

The dedication of the world's largest binary geothermal plant took place recently in California. Ormat Turbines Ltd., (IHTR - 4/88 and 5/88) based in Yavneh, considers the American installation its most outstanding achievement to date and further proof of the viability and financial feasibility of geothermal heat as a source of electricity.

The Ormesa I and Ormesa II power plants have a total capacity of 50 MWs and are supplying electricity, around the clock, to 50,000 residents of southern California. Ormesa I is a modular plant which uses 26 Ormat designed and produced power units and 11 geothermal production wells which supply hot water.

The geothermal water is pumped up through wells, the heat is extracted, and the cooled water is returned to the earth without negatively affecting the environment.

A modular power plant includes one or more turbines, tradenamed Ormat Energy Converters (OECs). This technology is known as a binary system, whereby a primary fluid, such as geothermal water, is used to vaporize a secondary working fluid, which is contained in the power plant heat exchanges. These, in turn, drive a turbogenerator, which produces electricity.

Other aspects of the system are production wells, reinjection wells and a source of cooling water. Geothermal water is pumped up through the wells; the heat is taken out and used in the OEC; and the cooled water is returned to the earth. After the operation of the turbine is completed, the used up vapor is condensed and recycled in a closed loop system. The process is repeated as long as a heat source is applied.

Ormat was responsible for the total engineering and the geophysical and

drilling operations in the southern California project. Construction work at the site was carried out by Harbert International Inc. Bankers Trust Company of New York arranged for the construction financing of the plants. An investment group was led by Constellation Investment Company, a subsidiary of Baltimore Gas and Electric Company, and included LFC Financial Corp. and a number of insurance companies.

Ormat already has to its credit South America's first geothermal power plant, in Argentina. The company has an order from Iceland for the installation of power units and an agreement with Mexico for an electricity-producing geothermal power plant.

The company's accumulated technological experience is finding increased outlets in applications which allow for the use of low to moderate temperature geothermal sources. A more traditional manner has been to generate electricity from geothermal high temperature steam. A step up on this technology is the use, for the same purpose, of low to moderate temperature water found in underground pockets but hereto inaccessible and not useful because of a lack of appropriate technology to utilize the source of energy.

ISRAELI SCIENTISTS PREFER REHOVOT

Professors Lee Segel, head of the Mathematics Faculty at the Weizmann Institute, has an uncanny ability to return Israeli scientists to their home base at the W.I. at Rehovot. This was the case with Professors David Harel, Shimon Ullman and Adi Shamir. They had been carrying out research at the Massachusetts Institute of Technology and returned to the W.I. Professor Segel has fostered an atmosphere whereby young scientists like the above have been given the freedom to carry out basic scientific work as well as encouraging relationships with computer industry related companies.