

# ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

JOSEPH MORGENSTERN, EDITOR

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## EDITORIAL

### INVESTMENT CAPITAL: WHO HAS IT? WHERE WILL IT COME FROM? WHO WILL GET IT?

The greatest opportunities for investment in 1988 will most certainly lie in medical products. Diagnostic kits, aimed at market segments generally considered too small to merit investment by multinational pharmaceutical companies, are the choice of a number of small Israeli firms with exciting growth potential.

Companies active in this area have utilized the research and development efforts of the country's institutes of higher learning and have licensed the know-how, often including the use of patent rights. The kits have also benefitted from extensive clinical testing in Israeli hospitals. Injection of venture capital and the support for which venture capitalists are so well known will enhance the overall prospects for those active in medical products.

Investments in the equity of such companies conform to the general strategy currently in practice by U.S. venture capitalists, namely of applying small doses of capital and seeking a return on the investment in a relatively short time and without resorting to public financing. The venture capitalists are clearly opting for investment in areas which are not overly capital-intensive.

Israeli entrepreneurs are quick to seize upon the lessons of the past and are showing a sensitivity to the winds of change on the American venture capital market. They know that undercapitalization can unsettle the profit and loss picture early in the game. They do not want to get into the position where spotty

financing can threaten a company's very existence. The unhappy experiences of some high-tech public companies serve as case histories. Financial restructuring, staff dismissals and management shakeups during the turbulent 1985-1987 period provide economic and financial lessons that have made an impact on general managers, chief financial officers and entrepreneurs. As a result, more effort than ever is being exerted by companies and individuals to obtain proper financing for their activities.

The stock market crash last October 19 dashed prospects of raising equity capital from initial public offerings. It is one option which, for the time being at least, has been shelved, and this is as true for the U.S. capital markets as it is for the Tel Aviv Stock Exchange. In a delayed reaction to other falling stock markets, the TASE dropped by more than nine per cent in the first two months of 1988. Israel capital market prospects continue to be clouded by economic and political uncertainty.

Israeli banks have recently announced unexpectedly high profits for 1987. Yet the banks continue to maintain an extremely conservative stance and are not seen as an

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Attention: Mr. Robert M. Bruckenthal.  
Editorial Offices: Asia House, 4 Weizman Street, Tel Aviv 64239, Israel.  
Tel: - 972-3-430817. Tlx: 33511 EISGR IL. Fax: - 972-3-255816.

important source of equity capital for science-based companies. At least one investment firm connected to a major bank is unhappy due to losses resulting from investments in high-tech companies. It will take some time, if ever, before it considers reentering the field

The American venture capital industry, we are told, will this year maintain its 1987 level of total investment, \$3 billion. For Israeli companies, American venture capital firms continue to be a major target for equity funding. In evaluating investment opportunities in Israel, U.S. venture capitalists will find greater values than ever. Our extensive contacts with Israeli high technology firms clearly indicate that local managers are lowering the value of their companies, hoping to make them more attractive for venture capital investments. At these lower valuations new equity investments can be found at historically reasonable levels. A combination of circumstances resulting from the stock market crash and an evolving area of local expertise in diagnostic kits and other medical products may provide a new opportunity to link local innovation with American venture capital.

For creative Israeli medical product companies, the pendulum will swing from the public offering marketplace to that of venture capital. The more American venture capitalists are exposed to those exciting areas of scientific and technological effort, the more the likelihood of a partnership between American capital and Israeli technology.

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#### **R&D IN INSTITUTES OF HIGHER LEARNING: FROM LABORATORY TO THE MARKET PLACE**

##### **MUSHROOMS ON COTTON STRAW**

In the United States, Europe and Israel, the only mushroom species cultivated was the champignon - the button mushroom. Its relative high cost is due to the special treatment

required, which includes a compost base and highly regulated conditions of temperature and humidity. Outdoor conditions in Israel were never suitable for cultivating the champignons, which are grown in climate-controlled hothouses. This method considerably adds to the expense of the final product.

Basic research by three scientists at the Hebrew University's Faculty of Agriculture in Rehovot led to an innovative method of growing mushrooms. It all started when the scientists, Prof. Yigal Henis, Prof. Ilan Chet and doctoral student Mark Platt, discovered a fungus that breaks down the lignin in cotton. This reaction has the effect of changing the woody bush left after cotton-picking into nutritious animal fodder. As a result, what was once a bothersome waste product has now become a useful material.

The fungus that does the job is the large, edible, oyster mushroom. This discovery, originally developed in the laboratory and subsequently in hothouses, resulted in the establishment of a new agricultural industry. The oyster mushroom, trade named Yarden, is sold to discriminating Israelis and is finding export markets. Oyster mushrooms are so named because when they are steamed they smell like oysters. Gourmets have declared their taste to be equivalent to that of the champignon.

The demand for the Yarden mushroom was sufficiently strong to have led several kibbutzim to join in establishing a sophisticated plant in Kiryat Shmona, in northern Israel, at an investment of \$3.5 million. A group of five kibbutzim has licensed the process and it is available for licensing outside Israel. At the present time, a number of corporations outside Israel have shown an interest in this project.

The Yarden has been nicknamed the "double-barreled" mushroom - converting cotton straw into animal feed as it grows into a palatable gourmet vegetable now enjoying spreading popularity in various parts of the world.

**ISRAEL HIGH-TECH REPORT SPONSORS  
INTERNATIONAL HIGH-TECH  
CONFERENCE**

The Israel High-Tech Report, jointly with the Israel Management Center, is sponsoring an International High-Tech Conference, to take place in Tel Aviv on April 28. Four panels will deal with all aspects of high technology in Israel, past, present and future; the panelists' names read like a list of "Who's Who in High-Tech". The conference is designed for top management entrepreneurs, businessmen and project managers active in various sectors of technology.

The panelists include many of the personalities featured in the Israel High-Tech Report including:-  
Dan Tolkowsky, Athena Venture Capital; Meir Amit, General Satellite Corporation; Uzia Galil, Elron Electronics; Efraim Arazi, Scitex; David Meridor, Laser Ind.; Shlomo Barak, Optrotech, and Prof. Menachem Rubinstein, InterPharm.

Special guest participant Mr. Gad Ya'acobi, Minister of Economics and Planning, will deliver a lecture on the "Development of Israel's Economy and The High-Tech Industry". Overseas panelists include:-  
Dr. Leon Riebman, Chairman and CEO of AEL Industries Inc, and John Westergaard, managing director of Ladenburg, Thalmann & Co. Inc, Investment Bankers.

The United States Ambassador to Israel, Thomas Pickering, will address the conference and the Ambassador and his wife Alice will host a party for the panelists at their residence.

In cooperation with the United States Information Service, Worldnet's revolutionary satellite television services will connect Washington and Tel Aviv in real time as high-tech leaders exchange views on various aspects of high-technology.

**NEW APPOINTMENTS**

Scitex Corp. (NASDAQ:SCIXF). has appointed Yair Shamir as its new executive vice-president and general manager of the company's Israel

Operations. Shamir, son of the Israeli Prime Minister, joins the company after completing 25 years of service in the Israel Air Force, where he headed major scientific and engineering projects. In his new post, he will be responsible for the management and operation of the Scitex Corp. in Israel and coordinate R&D industrial operations in Israel with subsidiaries abroad.

\*

Fibronics International Inc. (NASDAQ:NMS:FBRX). has named John L. Hale as president and CEO. He replaces Joseph Maayan who held the post of president since 1984. Hale brings with him more than 25 years of experience in the computer and telecommunications industry. Recently, he served as president and CEO of Intellogic Trace Inc., a \$150 million data communications service company with more than 1,800 employees.

\*

Teva Pharmaceuticals Industries Ltd. (NASDAQ:TEVIY) announced the election of three new directors at its annual meeting in December 1987. They are Prof. Elon Kohlberg of the Harvard Business School; Prof. Michael Sela, Deputy Chairman and former president of the Weizmann Institute; and Prof. Moshe Many, president of Tel Aviv University and department head at Tel Hashomer Hospital. Moshe Shamir, president of Vishay Israel Ltd. and vice president of Vishay Intertechnology, Inc. was elected chairman of the board.

**NEW CONTRACT**

Ormat Turbines Ltd. has received a \$3 million contract to supply three power units with a capacity of 3.6 MW. The order has been placed by the Sudurnes Regional Heating Corp., an Icelandic regional electricity and energy company. Deliveries are to begin this year and to be completed in 1989. Sudurnes has received an option to purchase up to six additional units.

Nearly all Iceland's heating requirements are geothermally based. The Ormat units will generate electricity from the readily available low temperature steam. Ormat Turbines Ltd. has already installed 10 power plants worldwide, the largest of these being 30 MW.

## ISRAEL HIGH-TECH SHARES TRADED IN THE OGA

	<u>P-E</u> <u>Ratio</u>	<u>Price</u> <u>as of</u> <u>3/15/88</u>	<u>Change</u> <u>since</u> <u>2/15/88</u>		<u>Earnings per</u> <u>share</u>	
					<u>1986/7</u>	<u>1987/8</u>
<b>BIOS</b> OTC BIO-TECH GENERAL Biological products for health care	d	6 5/8	+ 1/2	9 Mo Sep	d 0.65	d 0.80
<b>ELBIT</b> OTC ELBIT COMPUTERS Defense electronics	8	4 5/8	n.c.	9 Mo Dec	0.80	0.51
<b>ECI</b> OTC ECI TELECOM LTD. Telecommunication systems		3 1/8	+1	12 Mo Dec	d 1.59	0.17
<b>ELRON</b> OTC ELRON ELECTRONICS Company investing in high technology		3 7/8	+ 5/8	6 Mo Sep	0.20	d 0.08
<b>ELSCINT</b> NYSE Full range medical imaging		1 1/2	+ 3/8	9 Mo Dec	3.10	1.23
<b>FIBRONICS</b> OTC FIBRONICS INT'L Fiberoptic communications	d	4 1/8	+1 5/8	12 Mo Dec	d 0.34	d 0.46
<b>INTERPHARM</b> OTC INTERPHARM LAB. Biological products for health care	d	3	-1	9 Mo Sep	0.38	d 0.34
<b>LASER</b> ASX LASER INDUSTRIES Surgical laser systems	19	8 1/8	+1 3/8	6 Mo Sep	0.47	0.44
<b>OPTROTECH</b> OTC OPTROTECH Electro-optical systems for PCB	10	5 1/2	+ 1/4	12 Mo Dec	0.13	0.55
<b>SCITEX</b> OTC SCITEX Computer graphics	d	4 3/4	+1 3/4	12 Mo Dec	d 3.08	d 0.42
<b>I.I.B.</b> OTC I.I.B. Computer peripheral equipment	6	3 1/2	+ 3/4	9 Mo Sep	0.48	0.56
<b>S.P.I</b> OTC S.P.I SUSPENSION - PARTS INDUSTRIES Military components	7	1 3/8	n.c.	12 Mo Dec	0.33	0.03

d = deficit

**SCITEX-PROFITABLE FOURTH QUARTER AND RECORD ANNUAL SALES**

Scitex Corporation Ltd. (NASDAQ:SCIXF) reported a profit of \$1.8 million for the fourth quarter of 1987. A year earlier, it reported a loss of \$5.0 million. For the whole year, the company's sales were at a record high at \$159.3 million, up 20% over 1986.

In the last quarter, shipments of the new Smartscanner began. The product is a user-friendly artificial intelligence color scanner and is Scitex's latest product to come from its R&D program.

Distribution of sales in the last quarter of 1987, saw more than 50 percent being made to Europe and Japan and only 33 percent to the United States, with the balance to various other markets. The strength of European currencies was a factor in achieving these favorable results.

Scitex is in the interactive computerized imaging business, with the printing and publishing industry being its main customers.

**OPTROTECH REPORTS RECORD REVENUES AND EARNINGS**

Optrotech Ltd. (NASDAQ/NMS:OPTKF) had sales of \$41.6 million in 1987, in contrast to \$26.4 million the preceding year. Net after-tax profits of \$2.8 million, or \$0.55 per share, were even higher than IHTR's optimistic forecasts of "earnings of \$0.50 a decided possibility" (IHTR-8/87).

The company's Vision 206 Automated Optical Inspection system has proved to be the most popular selling product in its six year history. Optrotech's R&D was responsible for upgrading its older Vision 105 system, now called Vision 107, allowing for an expansion of sales. The same was true for its Image 2002 CAD/CAM system.

Optrotech is the leader in the development, manufacture, sale and service of computerized electro-optical inspection and CAD/CAM systems for automating production of printed circuit boards.

**WRITE-DOWNS LEAD TO \$2.8 MILLION LOSS AT FIBRONICS**

Fibronics International Inc. (NASDAQ/NMS:FBRX) had a \$2.8 million loss in 1987, as compared with a loss of \$2.0 million in the preceding year. The past year's loss saw management setting aside reserves of \$1.3 million to take account of the write-down of inventories and software.

In the last quarter of the year, inventories were revised downward by more than \$500,000. Nevertheless, Fibronics had record sales of \$36.5 million, as compared with \$30.1 million in the previous year.

Fibronics International Inc. designs, manufactures, sells, installs and services fiberoptic and other high-speed information transfer and distributions systems.

**ISRAEL HIGH-TECH REPORT INDEX**

The Israel High-Tech Report Index, for the month ending March 15, registered a sharp gain of 17.6% to 43.00. Of all the other indices compared in the box below, the highest performer was the NASDAQ Industrial Index, which most closely resembles our IHTR index; it advanced by just over 10%.

**ECI TELECOM RECORDS EARNINGS TURNAROUND**

For the first time in three years, ECI Telecom Ltd. (OTC:ECILF) has reported a meaningful profit for the year ending December 31, 1987. The company reported sales of

	3/15/88	2/15/88
DJIA	2050.07	1983.26
S&P 500	266.37	257.63
NYSE INDUSTRIALS	182.05	173.22
ASE MARKET VALUE	296.94	277.00
NASDAQ INDUSTR'L S	389.21	353.53
<b>ISRAEL HIGH-TECH REPORT INDEX*</b>	<b>43.00</b>	<b>36.57</b>
*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		

\$24.5 million and a net income of \$860,000, compared with sales of \$19.1 million in 1986 and a net loss of \$8.0 million.

In the current year, ECI increased its sales and reduced its labor costs, overhead and financial expenses. At the year's end, the company had a backlog of firm orders of more than \$50 million for delivery in 1988 and 1989.

ECI Telecom is a leader in the field of telecommunications systems that house digital speech processing, switch technologies and Integrated Services Digital Network compatible technologies.

#### **ELSCINT UPDATE**

Elscint Ltd. (NYSE:ELT) is expanding production in 1988 of its EXEL Line 2-second CT Scanners from five to eight per month. Altogether the company has sold 19 of its GYREX Line Superconductive All-Organ MRI Systems.

Currently Elscint employs 1900 and could increase production and sales by another 20 percent without increasing its staff.

Elscint is a manufacturer of medical imaging systems, specializing in MRI, ultrasound, CT Scanners and digital gamma camera technology.

#### **ARYT'S NINE MONTHS SALES HIGHER: PROFITS FLAT.**

In the nine months ending December 31, 1987, Aryt Optronics' (OTC:ARYUF) sales advanced by 21 percent to \$6.7 million. Net profits of \$735,000 were nearly unchanged from the preceding year.

Company sources have indicated that profits were negatively affected by increased R&D spending in a laser affiliate, a loss sustained in its Swiss operation, and increased expenses associated with accelerated marketing efforts.

Increased profits can be expected from the West Coast subsidiary, which produces simulators for F-16s. Aryt continues to add to its order backlog which stood at \$6.5 million at the end of the calendar year.

#### **ELOR OPTRONICS LTD: - A PRIVATELY OWNED EMERGING GROWTH COMPANY SPECIALIZING IN NON- CONTACT OPTO-ELECTRONIC GAUGING AND MEASUREMENT**

An estimated \$5 billion market for automated optical inspection systems for in-process quality control has attracted some 200 companies in the United States alone. All are trying to develop an answer to the requirements of various industries for reliable, cost efficient production of large quantities of precision parts. The industry is in its infancy and at present only one company, with sales in excess of \$15 million, is turning a profit.

The reason for this rush into automated optical inspection systems is that in some industrial sectors such as defense manufacturing, the cost of quality control represents up to 25 percent of each sales dollar. Therefore, any system which can be integrated into the production cycle and, as a result, reduce production costs, increase productivity and enhance quality, should be able to participate in an exciting, potentially highly rewarding, technological area.

ELOR Optronics Ltd., though less than three years old, has, in our estimation, the technological base, the personnel and the financing to establish a niche for its three major systems which could take it from the current year's estimated \$2 million sales to \$6 million the following year and a further doubling in 1990.

The major market target area for ELOR's products is the metal working industry which, compared to the electronics industry, is extremely conservative. This will work against rapid market penetration, but on the positive side, industry observers acknowledge that there is great scope for improving its quality control and assurance programs.

#### **Technology**

ELOR employs vision techniques for precision measurement of a variety of machine and manufacturing parts. The technologies employed in its systems are rooted in Israel's proven experience in the field of lasers,

optical lenses and digital solid state sensors. These technologies, combined with very smart software, have been used in ELOR's VIDI, VINA and VIGA systems.

#### Products

Gauging is an industrial inspection task which confirms that the dimensions of a manufactured part agree with design data. Gauging applications in industrial quality control systems represent about 30% of all automated optical inspection systems.

Dimensional data is obtained by the use of remote non-contact techniques. ELOR's VIDI system does exactly that with the use of non-contact laser products. The sophisticated software and state-of-the-art servo-scan technology are employed in an integrated work station which performs tri-dimensional non-contact gauging. The software is claimed to be the first successful application of complex mathematical theories governing dimensional gauging. When applied as an airfoil measurement system, VIDI requires only 20 seconds to obtain all data recorded on the airfoil section being inspected, and conveniently displays, either on a screen or as a plot or printout, the actual dimensions versus those of the prepared design.

The VIDI system utilizes a laser and a microscopic CCD camera fixed on a positioning table. The airfoil to be examined is fixed on a vertically travelling turntable. The camera receives images which have been illuminated by the scanning laser and are evaluated by microcomputers working in parallel. The VIDI system has an important target customer, Iscar Blades, a world class company in Israel.

VINA is a system which may well be an expression of a unique concept in visual ammunition inspection. The VINA system has been and continues to be developed in connection with Israel Military Industries (IMI). Small arms ammunition inspecting and sorting is a highly labor intensive activity, involving manual sorting. The VINA system can examine, with nearly 100 percent sorting

reliability, up to 300 cartridges per minute. VINA includes all feeding, handling and ejection sub-systems, an operator console with menu driven control, an operating sub-system and an image processing computer. It operates so as to be able to meet the U.S. MIL O 9858 specifications.

ELOR's VIGA series is a high precision non-contact gauging system with a major area of application being end mill gauging. The system is capable of gauging parts at an accuracy of plus or minus 5 microns and at a speed of 300 measurements per second.

#### Ownership and Financing

ELOR is equally owned by Elron Electronic Industries Ltd., Clal Electronic Industries Ltd. and the West German company, Schneider Optica GMBH. The financing for the company's activities has been provided by the three partners and the Office of the Chief Scientist of the Ministry of Trade and Industry, which covered some 30 percent of the development cost.

Management is planning to use income from ongoing sales for further

#### ISRAEL HIGH-TECH REPORT NEWS AND INVESTMENT OPPORTUNITIES

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development prior to the next major financing, which is likely to take place in the next one or two years. It is our impression that ELOR would not turn down a new equity participation from an industrial group which is an experienced participant in the metalworking industry.

#### Management

Shmuel Alkon serves as general manager. Alkon earned his electronic engineering degree at the Technion-Israel Institute of Technology and completed his Masters in electronic engineering and business administration at Tel Aviv University. He has a rich background in the high technology management of defense industries, including several years at Rafael, Israel's Armament Development Authority and 20 years at Israel Aircraft Industries, where he served as project and general manager of some of the major divisions of IAI.

ELOR employs 35 people; 20 have advanced degrees in engineering and other sciences, 10 are advanced level technicians and five are employed in marketing.

Due to the experience and standing of its investors, ELOR can draw on the experience and connections of the two investment holding companies and their acknowledged expertise and on the business connections of the German group.

#### Marketing

Since ELOR produces technologically sophisticated systems, the product line does not lend itself to sale by representatives. A highly qualified sales force, which thoroughly understands the systems and understands production problems, is a must. At this stage of development, the company is carrying out the marketing functions.

Funding and establishing the proper marketing organization will prove to be a major challenge for management. The fact that Israel is serving as a beta-site for the company's products

is and still continues to be the major strategic marketing asset.

#### Profitability

If we take VIDI as an example, the use of this system in one application replaces 12 Q&A personnel and pays for itself (at current price levels) in 18-24 months. The imported components in ELOR systems represent 15-20 percent of the selling price. This is a favorably low figure and our analysis points to healthy profit margins. Over the next two to three years, overall profitability of ELOR will be very much affected by the high level of expense required for continuous R&D and the high cost of establishing itself in its markets.

#### ACQUISITION

Teva Pharmaceutical Industries Ltd. (NASDAQ:TEVIY), Israel's largest pharmaceutical company, is paying \$8.3 million for Travenol Laboratories (Israel) Ltd. The acquisition could add an additional \$20 million in sales.

#### MAIS OUI! FOIS GRAS ISRAELI!

Local food technology advances have increased the size and quality of goose livers, while reducing the number of days required to force feed the birds. The average weight of Israeli goose liver is 800 gms, as compared with 700 gms in France and 500 gms in Hungary. France has become Israel's main customer for goose liver, the ultimate French delicacy. In 1986, 300 tons of liver were exported and in 1987 the figure was considerably surpassed.

A new source of supply of fatty liver for the production of pate-de-fois-gras originates from the Israeli mullard, a cross breed between the Muscovy drake and Peking duck. Israeli mullard is sterile and has a high growth rate. It also produces a high quality of liver weighing some 750 gms after being force fed for a period of only 17-20 days.