

ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

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EDITORIAL

LOOK EAST, LOOK WEST

Until very recently, Israel's relations with Japan were low key. The Arab oil embargo of the early 1970's made expectations of trade with Israel unrealistic. Japan was wholly dependent on middle eastern Arab oil and the Arab demands for "no trade with Israel" were duly followed. At that time, with the rare exception of Moshe Schnitzer, who pointed the Israeli diamond industry eastward, very few considered spending the time and effort to develop business connections with Japan. Few high-tech companies were in a position to establish meaningful contacts with leading Japanese companies in such key areas as consumer electronics, semiconductor memory chips, autoelectronics, industrial robots, CAD/CAM systems, office automation, home automation and biotechnology. Scitex, the premier Israeli computer graphics company, was among the exceptions that proved, rather than disproved, the rule.

In the early 1980's, here and there, some trade developed but care was taken by all involved not to publicize the business relations. Such was the case with Organics Ltd., a small company involved in diagnostics.

The Japanese manufacturers' great drive to export provided the wedge which has led to a "two-way open door policy". More specifically it was the Israelis' acceptance of the Japanese Subaru. It became the automobile of choice of the Israeli car buying public and, in 1987, represented 10% of all new car imports. A very meaningful figure in a highly fragmented car market.

Israeli Ministry of Trade officials were quick to notice the imbalance of trade which had developed between Israel and Japan. Requests and suggestions were passed on to the Japanese Embassy in Israel that the producers of the Subaru, purchase Israeli produced parts for automobiles, on a reciprocal basis. The request brought no positive response. As a result of an American/Israeli joint push for breaking down trade barriers, the long awaited initiation of formal trade relations was given impetus.

In just over a year, two major Israeli trade missions have visited Japan and one formal high level Japanese mission was hosted in Israel. Presently, not even optimists among the Israeli high-technology group can expect to become the beneficiaries, over the near term, of major capital investment such as the Japanese are making throughout the world. Yet, what was once a trickle of trade could now be turned into a widening window of opportunity for not only trade, but even more important, joint ventures whereby both sides stand to gain.

Looking westward, the situation is more complex. Politics and business,

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A Company Report

especially technology business, make poor bedfellows. American and European reaction and criticism of Israeli policies in the occupied lands has hindered Israeli entrepreneurs and businessmen who are seeking to attract investment capital to Israel and to establish commercial ties.

Israelis are well known "idea" people. They are also well known for the great energy that they expend in finding business connections and developing niches for specialized products.

Support for the establishing of marketing connections and joint ventures is recently coming from a number of highly specialized consulting firms whose core activity is locating "business partners" and pinpointing sources of investment capital. Executives of such firms talk about holding "the conviction that complex issues require integrated solutions". They examine feasibility and develop a strategy to implement the project.

While western connections are being maintained and pursued, Israelis are also looking eastwards. The eastward look exists and the Japanese/Israeli connection has been given official sanction by the recent visit of the Japanese Foreign Minister Sosuke Uno.

Current non-diamond exports to Japan will be less than \$200 million in 1988, leaving great scope for improvement. Israeli expertise and technological products such as Remotely Piloted Vehicles, night vision systems and specialized computer software should find a way to the shores of Japan. As a result, Israel's technology sector exports should become more balanced between east and west.

INTERFERON-BETA RECOMMENDED IN TREATMENT OF RECURRENT HERPES

Interferon-Beta, a product originating in research conducted at the Weizmann Institute of Science, has been shown to reduce the recurrence, duration and severity of attacks of genital and labial herpes

among high-risk patients, according to a report in the scientific journal Lancet.

Marketed as Frone by Ares-Serono and produced by Inter-Yeda of Nes Ziona, the drug was tested as part of a double-blind, two-year trial at the Soroka Medical Center in Beersheba.

The first trial involved 25 patients, 13 of whom received placebos and 12 who applied Interferon-Beta locally together with a 3% chloramphenicol antibiotic ointment. In the patients under treatment, the number of attacks per year dropped from an average of 6.6 to 1.6, while the duration was reduced from 7 to 4.5 days. Severity of symptoms was also reduced, with no ill side effects reported. No significant effects were noted in the placebo group.

A second trial, conducted without a placebo control group under field conditions among 91 genital and 25 facial herpes patients, involved application of Interferon-Beta cream six times daily when eruptions appeared. In the majority of patients, recurrence decreased five-fold in genital herpes, and 4.4-fold in facial herpes. Reduced symptoms, as well as reduced severity and fewer lesions were evident.

BRACKISH WATER USEFUL FOR IRRIGATION IF NITRATES ADDED

By adding nitrate fertilizer to brackish (moderately saline) water, researchers at the Hebrew University of Jerusalem's Faculty of Agriculture have proven salty water useful for irrigation of avocados. Irrigating saplings grown from seed with brackish water containing different levels of nitrate and chloride (salt), the scientists found that the higher the concentration of nitrate, the better the avocado plants were able to withstand the harmful effect of the chloride.

The project was based on previous results indicating an antagonism between uptake of nitrates and chloride by plants. The technique could provide a means of using local water for agriculture in Israel's coastal region, where water quality

is declining because of the encroachment of sea water.

For arid areas in Israel and worldwide, the method could lead to development of agriculture based on use of brackish groundwater hitherto deemed too saline for irrigation purposes.

WEIZMANN INSTITUTE AWARDS 114 DEGREES

At the graduation ceremony of the Weizmann Institute's Feinberg Graduate School, 45 doctorates and 59 Master of Science degrees were awarded. One out of every five recipients was a foreign student. Of the three recipients of Master of Science degrees from Ghana, one of them is continuing studies at Feinberg towards a doctorate.

PFAYF TO MARKET SHENKAR DEVELOPED ROBOT SEWING SYSTEM

Aerobit, an Israeli firm affiliated with the American LSB Industries, has obtained a license to manufacture a flexible automatic sewing system. The specialized robot system is based on designs from Shenkar College of Textile Technology and Fashion and results in an integrated system of robotics and computerized controllers.

Pfaff, of West Germany, a worldwide leader in the manufacture of sewing systems, will market and distribute complete workstations and modular components using the Shenkar system with Pfaff sewing equipment.

The Shenkar system possesses advantages over automatic sewing systems currently in use. It is flexible rather than dedicated to a single operation. Flexible automation means that the system can be easily converted from one operation to another according to production requirements. As a result, investment and production costs are lowered for the user. Operational units are available for demonstration.

Shenkar College, since it was founded in 1970, has graduated over 1,100 students. The college is known for its curriculum and research in

textile technology, textile chemistry, production management and textile and fashion design.

WORMING TO A MORE YOUTHFUL STATE

Basing themselves on experimental success in retarding the aging in simple round worms by the introducing of Vitamin E, researchers at the Technion - Israeli Institute of Technology, specializing in molecular and cellular aspects of aging, point to oxidation as a mechanism of utmost importance in the aging process in animals and humans. The Technion research has shown that Vitamin E is effective in retarding aging when introduced during the early stages of the worm's growth development. Vitamin E is an antioxidant and it reduces cell damage in the case of nematode worms, the species used by the Technion scientists. It has also increased the worm's life span. The paradox of the research is found in humans that while oxygen is a must to maintain life, it is also a source of aging because of oxygen damage caused to protein coating of some cells.

6TH INTERNATIONAL LEADERSHIP CONFERENCE AT WEIZMANN INSTITUTE WELL ATTENDED

150 supporters from 18 countries attended the recent 6th International Leadership Conference of Weizmann Institute whose theme was "Towards 2001". Israel High-Tech Report joined the participants. The conference was the most informative ever of its kind to be held in Israel. Institute scientists delivered lectures in easy-to-understand, yet scientific terms, on such complex subjects as Computers and Artificial Intelligence, Closing in on Cancer and Trace Metals and Your Health. The highlight of the talks was a session on AIDS which featured a panel made up of Weizmann Institute research scientists Profs Michael Sela and Michael Feldman, Kaplan Hospital physician Prof. Zvi Bentwich, one of Israel's foremost authorities on AIDS and Talmudist, author and lecturer Rabbi Adin Steinsalz. Another panel dealt with the subject of the transformation of research into industrial projects. This panel featured Profs. Ephraim Katzir, Shimon Ullman and David Mirelman, in addition to Teva's managing director, Eli Hurwitz.

ISRAEL HIGH-TECH SHARES TRADED IN THE USA

	P-E Ratio	Price as of 6/15/88	Change since 5/15/88		Earnings per share	
					1986/7	1987/8
EBDC OTC						
BIO-TECH GENERAL Biological products for health care	d	3 7/8	- 3/8	3 Mo Mar	d 0.38	d 0.47
ELBIT OTC						
ELBIT COMPUTERS Defense electronics	6	4 3/8	- 3/4	3 Mo Mar	0.41	0.18
ECI OTC						
ECI TELECOM LTD. Telecommunication Systems	9	3 1/2	+ 3/4	3 Mo Mar	0.01	0.10
ELRON OTC						
ELRON ELECTRONICS Company investing in high technology	11	3 1/8	- 3/4	3 Mo Mar	d 1.33	0.07
ELSCINT NYSE						
ELSCINT Full range medical imaging		1 1/8	- 1/8	9 Mo Dec	3.10	1.23
FIBRONIX OTC						
FIBRONIX INT'L Fiberoptic communications	d	3 1/2	+ 1/4	3 Mo Mar	0.03	d 0.15
INTERPHARM OTC						
INTERPHARM LAB. Biological products for health care		3 3/4	+ 1/4	3 Mo Mar	d 0.09	0.02
LASER ASE						
LASER INDUSTRIES Surgical laser systems	d	4	-1 7/8	3 Mo Mar	0.29	d 0.09
OPTROTECH OTC						
OPTROTECH Electro-optical systems for PCB	11	4	- 1/2	3 Mo Mar	0.09	0.09
SCITEX OTC						
SCITEX Computer graphics	5	4 7/8	+ 1/4	3 Mo Mar	d 0.45	0.23
I.I.S. OTC						
I.I.S. Computer peripheral equipment	5	4 5/8	+ 3/4	3 Mo Mar	0.18	0.23
S.P.I. OTC						
S.P.I. SUSPENSION - PARTS INDUSTRIES Military components	9	2 1/8	+ 7/8	3 Mo Mar	0.07	0.04

d = deficit

NEW DEVELOPMENTS

Net sales at Laser Industries Ltd. (ASE: LAS) of \$8.75 million, for the first quarter ending March 31, 1988, were nearly identical to those in the same quarter a year earlier. The company sustained a loss of \$405,000, attributed to the stability of the exchange rate between the Israeli shekel and the United States dollar, while locally incurred costs increased due to inflation.

*

InterPharm Laboratories Ltd. (NASDAQ; IPLL) reported net sales of \$4 million for the first quarter ending March 31, 1988, a figure which exceeded expectations. Net earnings of \$105,000, reflecting margins of less than 3%, appear to be unduly low. Sales of beta native interferon accounted for 70% of all sales with human growth hormone sales representing the balance.

*

I.I.S. Intelligent Information Systems Ltd. (NASDAQ; IISLF) achieved record sales of \$4.5 million for the first quarter ending March 31, 1988. Over the past two years, I.I.S. earned \$902,000. The results represent the seventh consecutive quarter in which sales and earnings increased over the comparable quarter in the preceding year. Expectations are for continuation of the upward trend.

*

Shipments of a part of the United States Army \$34.5 million contract with S.P.I. - Suspension and Parts Industries Ltd. (NASDAQ; SPILF) was reflected in the record sales of \$5.0 million for the three month period ending March 31, 1988. The company earned \$151,000 for the quarter. This marked a return to profitability. In the past 15 months, S.P.I. has increased its work staff from 100 to 107 and it has installed new equipment to deal with the large orders for the U.S. Army. Backlog, at the end of the quarter, stood at \$36 million.

AMERICAN GELMAN SCIENCES OPENS JERUSALEM PLANTS

Gelman Sciences Inc. (ASE: GSC) based in Ann Arbor, Michigan, recently opened a 1,300 sq. m. facility in the Atarot industrial zone of Jerusalem. The plant will be producing a microporous membrane, on a continuous production basis, developed in the laboratories at Kiryat Weizmann Science Based Industrial Park. The research began in the early 1980's and resulted in the development of a porous plastic membrane. The production is nearly automated and only four people are employed. Dr. Gerald Tanny, who heads the local venture, has stated that the work force will grow to 13 over the foreseeable future.

The 450,000 sq. meter production capacity will allow Gelman Sciences, which has annual sales of filters of about \$60 million, to test market and supply users of laminates using the locally developed membrane. The small production capacity appears to reflect a conservative approach towards market sectors whose requirements run into millions of meters a year.

NEW APPOINTMENT

Aryeh Rosenfeld has been appointed the CEO of Scitex Corporation Ltd. He replaces Ephraim Arazi, founder and President. The latter will serve as chairman of the board of directors of the company.

	6/15/88	5/15/88
DJIA	2131.40	1990.55
S&P 500	276.14	256.78
NYSE INDUSTRIALS	188.18	176.34
ASE MARKET VALUE	308.88	297.94
NASDAQ INDUSTRLS	402.75	383.94
ISRAEL HIGH-TECH REPORT INDEX*	88.00	80.07
*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		

**HY LABORATORIES LTD. ("HY-LABS"):
A COMPANY REPORT****Introduction**

HY LABORATORIES LTD ("HY-LABS") is a privately owned corporation. The company's primary business is the development and production of ready-for-use bacteriological culture media and diagnostic materials and kits for medical and health care, veterinary, food and industrial applications. HY-LABS is a recognized supplier to the Israel Defense Forces. Its products are widely accepted on the Israeli health market which includes Government hospitals, Kupat Holim infirmaries and clinics and private laboratories. HY-LABS is exporting a growing percentage of its sales, mainly to European countries.

History

HY-LABS was founded in 1974 by Dr. Tsvi Hirshfeld. The company's operating facilities are located in the Kiryat Weizmann Science Based Industries Park, Rehovot. The companies new premises are being made ready for occupation by mid-1989.

Since its inception, HY-LABS has grown steadily and established itself as a supplier to the Israeli market with a reputation for quality products and reliable service.

Products

HY-LABS manufactures and sells "Ready-for-Use Microbiological Media". This includes media in Petri dishes and test tubes. The other major product line supplied by HY-LABS is jellified media paddles and a unique all-plastic blood culture system. HY-LAB's "Ready-for-Use Microbiological Media," represents an important improvement over what had been previously considered acceptable. Formerly most laboratories generally bought dehydrated powders and made up their own media by variously rehydrating, steam sterilizing, adding ingredients such as blood, egg yolk, antibiotics, as was necessary. The advent of production facilities, such as used by HY-LABS, though not exclusively, put an end to this procedure. The market was provided with a product ready for immediate use, backed up with a full quality control service.

Petri Dishes

Petri dishes are used to isolate bacteria from the test sample. The dishes are the bacteriologists' basic tool. They hold all types of agar media for isolating samples submitted to medical, veterinary, food, pharmaceutical, industrial, agricultural and research laboratories.

Test Tubes

Media filled test tubes are supplied to the bacteriology laboratories which use them for either general culture of bacteria in broth or to identify bacteria isolated from Petri dishes.

Paddles

The paddles are made of plastic and are suspended from the cap and so positioned in a plastic container. Each side of the paddle is coated with a jellified medium layer specific to the individual test. The paddle is either dipped into the test liquid or the test sample is applied directly to the paddle. The paddles are then incubated at the appropriate temperature and the results are easily presented and can be understood by non-skilled technicians. This test procedure is simple, standard and can be carried out conveniently at any location.

HY-URITEST

HY-LABS developed HY-URITEST jointly with the Israeli Atomic Energy Authority and under an R&D program financed by the Office of the Chief Scientist of the Israeli Ministry of Trade & Commerce. HY-URITEST is sold in Israel as well as in a number of European countries among them; Norway, Spain and France. The world market is estimated to be in excess of \$200 million. A similar product is offered by a number of competitors. The basic system is the most widely accepted method of testing urinary tract infections. The market is not overcrowded, according to market feedback. HY-LABS considers the "Doctors' Office" market in the U.S. as an appealing target market.

HY-GONOTEST AND HY-CANDI-GONOTEST

These products were also developed in the Office of the Chief Scientist R&D program and only recently has the

product been used in the overseas market. The Israeli Health System cannot afford the price of this product. Gonorrhoea is one of the major sexually transmitted diseases. There has always been a problem in collecting and transporting samples to the laboratory in a viable state. **HY-GONOTEST** is a solution to this problem since the bacteria are placed in a highly nutritive medium and are immediately under optimum conditions at the sight of taking the specimen and only then are they transported to the laboratory.

HI-CANDI-GONOTEST answers the need to identify Candida infections (yeast type pathogens) as well as gonorrhoea. The total estimated U.S. market for gonorrhoea testing in 1996 is \$67.6 million. Royalties for this product are due only to the Office of the Chief Scientist.

HY-FOOD TEST

This line of food tests has been specifically designed for bacterial quality control in the food industry where tests must be made beginning with the raw material and right until the finished product.

FISH PATHOGEN TESTS

HY-LABS developed for Bionor of Norway, one of its overseas customers, a test system for the detection of pathogens which heavily affect the salmon and trout farms of Norway as well as in other parts of the world where aquaculture is practised. The damage caused by bacterial pathogens to the salmon and trout industry runs into tens of millions of dollars per annum in Norway alone. The systems developed by HY-LABS for Bionor are unique and should contribute to early detection of the disease, while still in the sub-lethal stage. HY-LABS believes that this family of products should result in sales of more than \$1 million over the foreseeable future.

HY-PBC-FLASK

It incorporates a method for isolating bacteria from blood and other sterile fluids. It was developed under a highly dedicated program sponsored by an American limited partnership and with the

backing of the Office of the Chief Scientist of the Ministry of Trade and Commerce. The program has only recently begun to be marketed.

Buyers of the HY-PBC-FLASK, in view of increasing danger of the spread of AIDS, are expressing a preference for the HY-LABS product due to its unique, unbreakable plastic structure.

Sales and Marketing

The company supplies the majority of the Israeli market with its products. It sells to hospital, non-hospital, clinical, private, food industry and veterinary and dairy laboratories.

Besides of its very strong position in the Israeli market, HY-LABS is selling its products to Greece, Italy, Spain, France, Norway, Denmark, the United Kingdom, Portugal, West Germany, Holland, Belgium, the United States and Canada. HY-LABS has filed 510 K product equivalency applications with the U.S. Food and Drug Administration (FDA).

Other pioneers in the field include

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Patents

The unique sterilization process developed by the Israel Atomic Commission has been granted patent protection in the U.K., the U.S.A, Canada and Israel.

HY-PBC-FLASK has been granted patent protection in Israel, West Germany, France and Switzerland. In the U.S., U.K. and Canada, patent protection is still pending.

Regulations

HY-LABS' service laboratory is licensed by the Israel Ministry of Health. It has been favourably inspected and "without comment" by the American FDA and by the United Kingdom Health and Social Services.

Employees and Staff

HY-LABS today employs 36 including 8 highly skilled technicians.

Summary

HY-LABS' sales are expected to be at the \$1.2 million level in 1988. The company's plan projects sales of \$8 million in 1992. The sales mix is expected to be made up of nearly three dollars of exports for each dollar in local Israeli sales.

As part of its business strategy HY-LABS is now holding discussions relating to a joint venture/partnership agreement with an overseas investor. Its management views this approach as an important part of its program to accelerate HY-LABS growth.

If you are interested in receiving a copy of the **ISRAEL HIGH-TECH REPORT** in **JAPANESE**, please send your request to the Circulation Office.

M-SYSTEMS DEVELOPS SOFTWARE FOR BLIND USERS

Moran Systems is a private company specializing in the development of systems built around the IBM-PC computer family. One of the developments of the company is software which allows the blind to run an application on a personal computer. The contents on the screen and any text that is typed on the keyboard is read aloud by the computer. The software, named TalkPC, is developed by M-Systems under the guidance of the Educational Technology Center and is partly financed by the Israeli Defense Ministry Rehabilitation Department.

M-Systems has maintained the marketing rights outside of Israel. Along with the TalkPC software, the firm has developed a unique word processor for blind PC users. Dependent on market reaction, a special version of the computerized switchboard for blind users may be made available by M-Systems.

NASA SENSORS USED BY ARCHAEOLOGISTS IN ISRAEL

Remote sensing equipment used by NASA in satellites and on the Space Shuttle is being employed by archaeologists in Israel to carry out preliminary surveys. The detection equipment has been praised as being an invaluable tool in identifying boundaries of areas of archaeological interest.

NEW ORDER

JAPAN AND SPAIN ORDER TCM SYSTEMS

ECI Telecom Ltd. (NASDAQ: ECILF) have been awarded orders by the Spanish PTT (Telefonica) for its TLD-30 systems. They will be incorporated into the Spanish domestic telephone network and double the capacity of the existing submarine cables between the mainland and Spanish islands in the Atlantic and Mediterranean. ECI has also received a \$1.7 million order from Japan, a first time ever order from that country.