ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES — JOSEPH MORGENSTERN EDITOR

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EDITORIAL

THE IMPROVED U.S. TRADE DEFICIT: ITS IMPACT ON THE ISRAELI ECONOMY AND ON THE HIGH-TECH EXPORTER

Not surprisingly, the larger-than-expected reduction in the U.S. trade deficit was welcomed by Israel's policymakers as much as by their American counterparts. The U.S.trade gap for October 1987 was a record $17.63 billion. November's trade gap dropped to $13.22 billion, a 25% improvement that sent foreign currency dealers worldwide scrambling to snap up dollars. As a result, the American dollar strengthened by 3.5% against major European currencies on January 15, the day the new trade figures were announced.

Israel's Minister of Finance, Moshe Nissim, had reason to be relieved. Throughout the second half of 1987, as the American currency plummetted to new lows, he had been under immense pressure to devalue the Israeli shekel against the dollar. The Manufacturers Association of Israel led the campaign for devaluation, pointing to an eroding dollar/shekel exchange rate. The shekel started 1987 at NIS 1.65 to the dollar; by December the rate was NIS 1.54. Had Israel's rate of inflation been less than 5%, exporters would not have had a strong case for devaluation. But the annual rise in the 1987 Consumer Price Index came to 16%. The improved U.S. trade deficit and the advance in the value of the American dollar is good news for the Israeli economy. It reduces the pressures for devaluation and lessens the threat of devaluation-induced inflation, as experienced several years ago.

Throughout the year the performance of the American dollar had worried Israeli high-tech exporters. A growing number of high-tech companies were poised for an earnings upturn in 1987, but the dollar's weakness became a major drag on profits. Israeli firms that export to the U.S. but import raw materials and parts from Europe, were doubly affected. As the dollar weakened, manufacturers spent increasingly more shekels on imports denominated in European currency. Material and labor costs increased, while dollar income, when converted to Israeli currency, resulted in proportionally lower shekel earnings. Despite these negative factors, a number of major high-tech companies recorded profits for the first time in nearly three years. Results would have been even better had they not been affected by the weakness of the dollar.

Israel's economy in 1988 is expected to be export-driven. In 1987 exports totalled $14.2 billion, a rise of more than 17% over the preceding year. A stronger U.S. dollar will tend to increase Israeli efforts to export to the United States and thus strengthen the economy. It will positively affect the two-way flow of trade. It should give practical meaning to the Free Trade Area agreement, which so far has not materialized in an enhanced trade picture. However, if exports are to

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make a major contribution to Israel's economic independence, consumer imports should be reduced. Imports in 1987 grew at an even faster rate than exports. If private spending is checked and savings and investments rise, the Government may be able to liberalize its outlay on education and research and development, which has been seriously reduced over the past few years. High-tech enterprises favor high government R&D expenditures, since they tend to benefit from the creativity of institutes of higher learning.

Israel is poised for a challenging year in 1988, a year in which wise political decisions will be as critically important as those related to the economy. The recent improvement in the U.S. trade deficit, accompanied by a strengthened dollar, represents an outstandingly bright spot.

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AQUACULTURE: TECHNOLOGY TRANSFER OPPORTUNITY

Israel's aquaculture industry is highly developed. In the early years of the state, carp breeding provided an inexpensive and plentiful supply of fish for a growing population. Later on, a rise in the standard of living led to breeding the more expensive trout. St. Peter's fish, similar to the red snapper, is plentiful in the Sea of Galilee, and fresh water prawns are also bred. Israel's aquaculture technology is now available for transfer.

Introduction

In the United States, consumption of fish, mostly fresh water varieties, continues to increase, as red meat becomes less important in the American diet. The U.S. imports 1.7 million tons of fish per year, most of it from natural sources, rather than man-made fish ponds.

In the southern United States, there has been considerable activity in low-level development of aquaculture, namely the raising of catfish. Israeli aquaculture project developers feel that the southern U.S. and southern California are ready for "second generation aquaculture systems". They suggest a project based on the proven Israeli experience of modern methods of poly-culture, where fish and prawns are raised together for the same investment required to breed only one species.

In itself, the project is interesting. What makes it even more attractive is that it is to be implemented at a geothermal field site. Geothermal fields offer practically unlimited amounts of water at 140° F, which can be used for heating in winter time, or as needed.
The project proposes intensive industrial production of non-seasonal red tilapia fish, commonly known as St. Peter's fish, with the possible addition of shrimps at a later stage.

Financing

The red tilapia project is based on a planned output of 2,400 tons per year, to be reached in four stages. The total required investment is $9 million and different financing options could lead to a return on equity of nearly 20% in the first year, double that amount the next year and even higher, subsequently.

Marketing

Marketing facilities exist in the U.S. and would be available. The aquaculture project is termed a "modular system" and lends itself to expansion. The project could become a major factor in the supply of fresh non-seasonal sea-food products to restaurants and supermarket chains. Its competitiveness is considered favorable. Fish filet currently retails in Florida supermarket chains at $4.50 - $4.90 per pound. The current cost of production of similar fish in Israel is about $0.60 per pound.
One of Israel's leading technological consulting and project agencies is promoting the scheme. Interested parties will be directed to them.

NEW PRODUCTS

New Video Surveillance System from Elbit

Elbit Computers Ltd. of Haifa has announced a new long-range L3TV observation system for target

recognition and inspection, the "Yuval D/N", which can provide 24-hour, night-and-day surveillance under all ambient light conditions. The system is based on state-of-the-art technological developments. It features recording of the real time television picture for analysis and debriefing and transmission at real time of the TV picture simultaneously to many users via wire or wireless.

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RPV'S FLY IN DIFFERENT DIRECTIONS

Pilotless Aircraft to Search Negev for Uranium

Mazlat Ltd., (IHTR-7/85) which is a joint venture of Israel Aircraft Industries (IAI) and Tadiran, produces pilotless aircraft and has developed equipment to be used in them for surveying the Negev desert for various mineral deposits, including uranium.

Mini-Remotely Powered Vehicles (mini-RPV's) are equipped with a gyro-stabilized remotely controlled TV camera. The models used for surveying mineral deposits transmit real-time pictures of the surveyed area to the ground control station and to other mobile receiving units located up to 60 miles away.

One of the attractive aspects of these mini-RPV's is that they may be configured in a variety of ways and used with sensors that can be developed to users' specifications.

The Mazlat Ltd. mini-RPV's are considered among the most advanced and cost effective systems of their kind in the world. A number of foreign firms have expressed interest in them.

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Inspectronic Israel Upgrades RPV

Inspectronic Israel, a Tel Aviv engineering firm, has developed a newly upgraded instructional mini-RPV, featuring optroelectronic equipment. The company's instructional mini-RPV "I 1" has been in use in the Israel Air Force for more than two years. The new "I 2" mini-RPV, with CCD sensors, and a new integrated ground station, can be used in air to ground, ground to ground, and ground to air monitoring.

On reconnaissance missions, the "I 2" mini-RPV transmits real time imaging while in line of sight of the ground station. It is designed to assist military commanders in intelligence gathering and target acquisition.

The "I 2" mini-RPV employs a long range, nearly 20 miles, optroelectronic surveillance system which positively identifies a target in real time in cloudy, hazy and turbulent weather conditions. It does so by using a TV camera, mounted on a stabilized platform, together with sophisticated signal processing to transmit the required TV picture on the operator's monitor.

ECONOMIC SUMMARY

KEY ECONOMIC DEVELOPMENTS IN 1987

Inflation - down from 20% to 16%.
Gross Domestic Product - advanced by 4.6%.
Business Activity - up by 6.2%. The growth is related to a rise in exports of 11.2% and a small gain in fixed investment.
Private Consumption - up by 7.3%.
Unemployment - down to 6.5%.
Real Wages - advanced by about 9%.
Foreign Currency Reserves - in excess of $5.2 billion.

EXPECTATIONS FOR 1988

Most economists expect a slow-down in most areas of economic activity in 1987. A rise in Gross Domestic Product of about 3% is projected. Exports are expected to advance by more than 5%, while imports will rise by about 3%. Estimates are that the annual trade gap will be about $5 billion with imports of $20 billion and exports of $15 billion. Real wages will rise as high as 5%. The Israeli currency is expected to devalue by 10% against the European currency basket and by about the same amount against the U.S. dollar. The key economic element to watch is the level of private consumption and the rate of inflation.

ISRAEL HIGH-TECH SHARES TRADED IN THE USA

	P-E Ratio	Price as of 1/15/88	Change since 12/15/87		Earnings per share 1986/7	1987/8
[illegible] OTC						
BIO-TECH GENERAL Biological products for health care	d	4 1/2	+ 1/4	9 Mo Sep	d 0.65	d 0.80
[illegible] OTC						
ELBIT COMPUTERS Defense electronics	8	4 5/8	- 3/8	6 Mo Sep	0.50	0.37
[illegible] OTC						
ECI TELECOM LTD. Telecommunication Systems	d	3	+ 1/2	6 Mo Jun	d 0.58	0.03
[illegible] OTC						
ELRON ELECTRONICS Company investing in high technology		3 7/8	+ 5/8	6 Mo Sep	0.20	d 0.08
[illegible] NYSE						
ELSCINT Full range medical imaging	d	1 3/8	+ 3/8	6 Mo Sep	d 1.16	1.23*
[illegible] OTC						
FIBRONICS INT'L Fiberoptic communications	d	2 1/8	+1	9 Mo Sep	d 0.20	d 0.14
[illegible] OTC						
INTERPHARM LAB. Biological products for health care	d	3	+ 1/4	9 Mo Sep	0.38	d 0.34
[illegible] ASE						
LASER INDUSTRIES Surgical laser systems	19	7 1/4	+1 1/8	6 Mo Sep	0.47	0.44
[illegible] OTC						
OPTROTECH Electro-optical systems for PCB	7	4 3/4	-1	9 Mo Sep	0.09	0.39
[illegible] OTC						
SCITEX Computer graphics	d	3	+ 3/4	9 Mo Sep	d 1.63	d 0.59
[illegible] OTC						
I.I.S. Computer peripheral equipment	6	2 7/8	+ 1/8	9 Mo Sep	0.48	0.56
[illegible] OTC						
S.P.I SUSPENSION - PARTS INDUSTRIES Military components	7	1 5/8	n.c.	9 Mo Sep	0.23	0.08

d = deficit
* includes $32.7 million extraordinary income from debt restructuring

LASER INDUSTRIES DEBENTURE REPURCHASE

Laser Industries Ltd.has repurchased $1,670,000 aggregate principal amount of its 8% convertible subordinated debentures due Sept.15,2006. The purchases were made at an average price of $700 per $1,000 debenture, representing a discount of 30%. The debentures are traded on the over the counter market in the United States and are quoted on the NASDAQ. Laser Industries' President David Meridor termed the purchase an excellent investment.

FIBRONICS ENTERS THE MILITARY MARKETPLACE

Fibronics International Inc. has announced that one of its subsidiaries has signed a $1.8 million contract, with a large Western European System integrator, for a fiberoptic voice and data network. The end user is the Armed Force of a NATO country. Completion and delivery of the contract is scheduled for the end of June 1988.

Fiberoptics technology allows for the secure and tamper-free transfer and distribution of sensitive information. This characteristic increases the attractiveness of fiberoptic communication systems for military applications.

ELSCINT RECORDS FIRST OPERATING INCOME SINCE MARCH '85

Elscint Ltd. (NYSE:ELT), manufacturer of medical imaging equipment, is beginning to show the results of ongoing efforts to restructure the company's finances.

In its second fiscal quarter, ending September 30, Elscint reported an operating profit of $1 million. Its sales for that quarter were $38.7 million and $71.2 million for six months. The company continues to be hampered by lack of capital and is searching for new sources, whether from a major investor or from sale of assets.

The availability of government-backed performance bonds to Elscint's customers, enhances sales of high performance imaging products in the fields of magnetic resonance, computerized tomography, nuclear medicine, ultrasound and mammography.

25% ADVANCE IN PRICE OF SCITEX SHARES

James Lennane, chairman of System Integrators (NASDAQ:SINT) has acquired 605,000 shares of Scitex Ltd., (NASDAQ;SCIXF) at an approximate price of $2.50 per share. At this price, Scitex had a modest market capitalization of about $25 million. In response to this announcement, the price of Scitex shares advanced by 25%.

System Integrators are manufacturers of text, editing and processing systems and are doing business in Israel. The purchase of these shares may represent an "engagement before marriage" between the two companies. In the past,it has been mentioned that Scitex was looking for partners.

ISRAEL HIGH-TECH REPORT INDEX AND MODEL PORTFOLIO

The Israel High-Tech Report Index, in the month ending Jan 15, 1988, advanced by 9.1%. A $0.375 rise in the price of Elscint shares reflected the company's improved business results.

We are discontinuing the publishing of the Israel High-Tech Report Model Portfolio because of limited reader interest as well as the need for space for the inclusion of new features of scientific, technological and business interest.

	1/15/88	12/15/87
DJIA	1956.07	1932.86
S&P 500	252.05	242.19
NYSE INDUSTRIALS	169.55	162.95
ASE MARKET VALUE	268.31	247.17
NASDAQ INDUSTR'LS	346.71	314.22
ISRAEL HIGH-TECH REPORT INDEX*	36.63	33.10

*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

MERGERS AND ACQUISITIONS

InterPharm Buys Inter-Yeda
The bio-pharmaceutical company InterPharm Laboratories Ltd. of Ness-Ziona, Israel, has signed an agreement to acquire 100% of Inter-Yeda Ltd., a firm specializing in the research and manufacture of various interferons and other biologicals. InterPharm already had a 60% interest in Inter-Yeda, which was 40% owned by Yeda Ltd., the company dealing with technology commercialization at the Weizmann Institute. The terms of the purchase were not disclosed.
The transaction includes the purchase of expanded rights in the licenses which Inter-Yeda holds from the Weizmann Institute via Yeda Ltd., on the various patented bio-pharmaceutical products. Inter-Yeda holds exclusive worldwide licenses on patents for native and genetically engineered products, including alpha, beta, and gamma interferons and various immunological reagents.
Inter-Yeda sales for 1987 will total about $6 million, mainly from marketing of beta native interferon. Inter-Yeda will continue to fund research at the Weizmann Institute, especially on beta-2 interferon and advanced facets of the gamma interferon project.

I.I.S. - SLOWLY BUT SURELY
I.I.S.- Intelligent Information Systems Ltd. (NASDAQ-IISLF), in the quarter ending September 30, reported quarterly sales of $3.15 million. It marked the 19th consecutive advance in quarter- to-quarter comparable sales. In the September quarter, the company earned $759,000. It was the fourth consecutive quarter of improved quarter-to-quarter earnings results.
I.I.S. continues to expand sales, both at home and abroad, for its computer peripherals and communications equipment for use with medium and large IBM and IBM compatible mainframe computer systems.

ASIAN AEROSPACE IN SINGAPORE
Israeli aerospace and defense industries continue to utilize the annual Asian Aerospace show in Singapore as a window for exhibiting their products and technologies.
The Israeli exhibitors range from suppliers of spare parts and sophisticated subsystems, to manufacturers of complete weapons systems and ground, naval and air equipment. The knowledge that the Israeli products have a record of "proven performance" continues to be a major sales point.
At this year's show, held in January, the Israel Pavillion included the following exhibitors :-

El-Op Electro-Optics Industries Ltd., (IHTR-10/85) a developer and manufacturer of military systems employing major optic technologies. El-Op's product lines include tank fire control systems, laser systems, thermal imaging systems, avionics systems, infantry sights and night vision equipment. El-Op products are world class in their field.

Elbit Computers Ltd., (IHTR-3/85) specializes in military computer systems for air, ground and naval applications. Elbit's expertise has developed from its role as a supplier of avionics for all combat aircraft of the Israeli Air Force. Recent product introductions include HALO, advanced helicopter avionics; DASH, Display and Sight Helmet and OPHER, a low-cost terminal guidance kit.

Inspectronic Israel exhibited its line of mini-RPV's (see separate item).

Israel Aircraft Industries Ltd., (IHTR-11/85) showed its line of military and civil aircraft, missiles, systems and capabilities for retrofit overhaul and testing of aircraft.

Rafael, (IHTR-6/86) Israel's largest R&D house for weapons systems. Major products exhibited included Python-3 air-to-air combat missiles and point defense missiles. Recent new products introduced by Rafael include avionic infrared targetting and navigation parts and guided low-cost precision glide bombs.
Cyclone Aviation Products (IHTR-9/87) manufactures aircraft components.
In addition to the above, another ten companies appeared at the Show and exhibited a variety of products, but of a less sophisticated nature.

NEW FEATURE

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

In extensive meetings with leading researchers at Israel's institutes of higher learning, the Israel High-Tech Report has been exposed to a broad spectrum of ongoing research projects, publications and patents. With the help of the heads of these institutions' R&D authorities, we have compiled a list of outstanding research projects, which will be described in forthcoming issues. These projects require financial investment entitling investors to participate in the fruits of commercialization of the research.

Tel Aviv University is Israel's largest university with nine faculties and an academic staff of over 1,900, with more than 500 holding the rank of professor or associate professor.

ORAL ORTHOPEDIC IMPLANTS: OVERCOMING LIMITATIONS OF EXISTING STATE-OF-THE-ART

Dr. Sandu Pitaro, of the School of Dental Medicine, in the Sackler Faculty of Medicine of Tel Aviv University, and Dr. Matityahu Noff of Kaplan Hospital, Rehovot, have combined their experience in developing an improved artifical implant. Their objective was to develop a long-lasting, self-renewing, non-rigid, biological anchorage to overcome the limitation of current state-of-the-art dental and orthopedic implants.

The majority of artificial implants in clinical use are made of inert biocompatible materials that are not recognized by the host as an integral part of the body. They are affixed to the surrounding tissues by mechanical means. The differences between the mechanical properties of the implant and those of the host tissues bring about implant loosening and its ultimate failure. Consequently, this type of implant remains functional only for a limited period of time. The disadvantages and deficiencies associated with the mechanically anchoraged implants led to the development of a new concept, whose main principles are:

1. The implant is affixed to the surrounding tissue by a biological non-rigid anchorage system, and
2. The biological components of the anchorage system renew themselves continuously.

The implant's surface is a biological substrate which can induce the formation of a mediating tissue that anchors the implant in a non-rigid way to the surrounding tissues of the host. This creates a biological anchorage and allows integration of the implant with the surrounding tissues. The self-renewal of both the biological component and the anchorage mediating tissue secures a permanent biological anchorage of the implant. The mediating tissue also acts as a buffer system that absorbs the functional forces exerted on the implant. This advantage is particularly important for implants designated to be anchored to bone, where it has been established that functional forces transmitted through the mechanically anchored implant to the bone are the main cause of bone destruction and implant fracture.

The implant envisaged will be suitable in a number of fields of reconstructive surgery, primarily for orthopedics (partial or total joint replacement), dentistry (artifical teeth implantation) and plastic surgery. The annual market for such implants in the United States alone is estimated to be in excess of $600 million.

At the current stage of the project, experimental implants have been developed and tested successfully, both in vitro and in vivo rat model systems. Currently, they are being tested on larger animals, dogs and cats. Patents are pending. The target goals are the development of a prototype dental implant and an orthopedic implant. The anticipated five-year program should bring it to industrial scaling-up production and is calculated to cost $2.5 million.

Ben-Gurion University, located in Beersheva and Sde Boker, has a student body of more than 6,000 and a diversified staff of scientists, professors and scholars, some of whom are outstanding in their respective fields.

The University continues to play a leading role in establishing new industry in the Negev. Its outstanding practical work is connected with desert projects which have spearheaded the development of the Negev. Internationally, the experience has been applied to the worldwide struggle against spreading deserts.

PRESSURE SORE PREVENTION SYSTEM FOR PARAPLEGICS

Paraplegics and quadraplegics research has led to a useful development. It is a practical system for preventing pressure sores in paraplegics, developed by Dr. Lior Rosenberg, 42, a plastic surgeon. Two years ago, Dr. Rosenberg was the recipient of the prestigious Juludan Prize by the Technion.

The Pressure Sore Prevention System for Paraplegics (PSPSP) is based on reproducing the natural biofeedback mechanisms of the human body. The system consists of basic air or liquid-filled modules on which the patient lies. Each module is connected to a small balloon which compresses an area of healthy skin with normal sensation. When the balloon presses on the "feeling area" it is a sign for the patient that he is to move his body to prevent pressure sores in the unfeeling areas. The system effectively frees the patient from dependence on bothersome external devices and on nursing personnel.

This research has aroused international interest and medical centers taking part in the advanced stages of the clinical trials include Queen Victoria Hospital, Mayo Clinic and Harvard.

DEFENSE RESEARCH & DEVELOPMENT

NEAR ZERO ACCURACY DEVIATION

Vishay Intertechnology Inc., manufactures stress management devices and high precision resistors. In addition to its U.S. based manufacturing operations, it has plants in Israel, France, England, Mexico and Japan. Part of its $3 million R&D budget is devoted to developing thermal gun-barrel "sleeves" which are used to improve the firing accuracy of armored tanks.

According to the U.S. Dow Jones News Service, the sleeves, costing about $2,000 apiece, have been ordered to equip the entire Israeli army, which has used them effectively against Syria. The report states that at a distance of over half a mile from the target, the sleeve consistently improves shooting accuracy to within a range of 10 inches of the intended target, compared to a plus or minus 10 feet without the sleeve.