

# ISRAEL HIGH-TECH REPORT

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## From the Editor

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### The Russian Newcomers Pose a Major Challenge

The headlong rush of events in Russia and Eastern Europe are having a profound effect on the people and the government of those parts of the world. The United States for the present is not being directly affected by the radical changes taking place in East European countries. But in Europe West Germany is feeling the effects of the dismantling of the Berlin Wall. It is readying for the the merging of the two Germanies..

It is evident that Israel though geographically apart from Europe is likely to undergo major changes resulting from the glasnost policies of Mikhail Gorbachev. Glasnost includes a policy whereby Russian minorities, including the Jewish minority, are being allowed to emigrate from Russia, practically without restriction. Rising nationalist feelings in Russia and ongoing economic hardships are giving impetus to the emigration of Russian Jews. They are arriving daily in Israel totaling several thousands each week. Internal pressures within Russia are speeding up the emigration process. There is a real concern that the glasnost policies may be rolled back and the doors of Russia may be again either partially or totally closed.

The Russian newcomers to Israel need to be absorbed in terms of housing and employment. Ironically they are arriving in Israel at a point in time when the housing supply is at a watershed low and unemployment is at a ten year high of 9 per cent. Estimates are that 120,000 Russian immigrants will arrive in Israel in 1990. The newcomers will represent 2.6 per cent of the current population, the highest percentage level in the last quarter of a century. Economists and demography experts are pointing at a net immigration balance of 90,000 to 100,000 a year over the next five years. It is estimated that Israel's population by 1993 will stand at 5.3 million.

Many of the newly arriving Russians are young and eager to begin a new way of life. A survey based on 100,000 applicants for emigration from Russia to Israel identified 43,000 professionals, the majority of whom have academic training. More than twenty per cent have technical vocations. The others have training in commerce and services and allied occupations.

The first challenge will be to provide housing solutions. Housing starts are insufficient to meet the surging demand. It is probable that short of importing prefabs no simple answer can be found to the growing housing shortage. The Israeli housing industry is unprepared and can not gear up to provide three and a half times the 20,000 units, which represents the normal annual demand..

A large percentage of the arriving Russians have academic training. Job openings associated with advanced training and skills will be high on the job wanted list.. 60,000 new jobs, according to estimates, will have to be created each year that the immigration stream is continued. The capital investment needed to create this number of new jobs is \$3.5 billion. Investors will need to inject this amount of money into many economic sectors.. One area which could constructively apply the skills of the new immigrants is research and development.

Experience teaches that it takes three to four years for immigrants to become absorbed. Academically trained Russian immigrants can view with a degree of personal hopefulness some previous

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## In this Issue

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**The Russian Newcomers Pose a Major Challenge: Editorial Comment**  
**Recent Developments.....**  
**Agricultural Technology Preview**  
**Israeli Companies on Wall Street: Statistics and Latest News**  
**News of Research Developments from the Institutes of Higher Learning**  
**Latest News.....**



neutralizes and paralyzes bugs planted on communications lines. Yigal Tunik, an electronics engineer in the commercial and military fields, established the company four years ago.

Savyon sales soar. Savyon Diagnostics' sales from its Beersheba factory continued to rise in 1989. Much of the growth came from penetrating new markets in Japan and Spain, as well as increasing sales to Italy and France. Savyon recently signed an exclusive distribution agreement with I.C.N. in the U.S. for sales of its Chlamydia diagnostic kit. I.C.N. has agreed to buy \$3 million of the kits over the next five years. Chlamydia diagnostic kits had required extensive blood tests to detect the sexually transmitted disease, but the Savyon product tests for the disease in two hours. Savyon is owned by the Yissum Research and Development Co. of Hebrew University.

Alzheimer treatment. Bar Ilan University researchers have developed a new drug to treat Alzheimer's disease. According to psychology department Professor Shlomo Yehuda, the drug arrested the disease and the general condition improved in 70% of the 160 patients treated with the drug.

The drug is almost free of side effects, but still requires Ministry of Health approval before it can be marketed in Israel. Clinical testing in the U.S. is scheduled to begin shortly.

Hebrew spell-check. Idan Software is marketing the first ever Hebrew spell-check program. Named "Magia", the program sells for \$99, not included V.A.T. and can be used on IBM-compatible and MacIntosh computers.

Software exports to grow. Israeli software exports are expected to grow to \$65 million in 1990, up from \$55 million in 1989 and \$25 million in 1987. Most of the sales are exported to Europe and the U.S.

Ekross in China. The Chinese Economic Information Service and Ekross, a technological information company, have agreed to form an international company to provide Israeli businesses with information on Chinese industry and economy. The Chinese information service is owned by

Xinhua, the official government news agency.

Grabbing at Binational Science Foundation's research dollars. BSF is a grant awarding institution which promotes research cooperation between scientists from the US and Israel. Since its founding in 1974 1,800 binational research collaborations have been initiated. In 1989 life science projects accounted for 37 per cent of the total, more than twice the three nearest rivaling areas of mathematics, physics and chemistry.

In 1989 156 grants awarded totaled \$ 5.0 million and an average budget per grant of \$ 32,000.

New yeast application prevents citrus fruit spoilage. Israel's consumption of yeast will be growing appreciably as a new technique for the application of yeast to fruit begins to become widespread. Agricultural researchers at the Volcani Center have completed research which has led to the commercial production of a liquid spray consisting of natural yeast cells and which is said to be nearly full-proof in the prevention of spoilage in citrus fruits. The Volcani project was headed by Dr S. Daroobi and the formulation has received American patent protection.

Digital Equipment is planning to expand local operations with investments of \$40 million. Land and buildings valued at \$ 11 million are being sought by Digital's Jerusalem based VLSI unit. to replace its existing facilities which no longer satisfy expanding business. An additional project is the Digital Campus slated for suburban Tel Aviv and is to meet office space requirements.

## Agricultural Technology Preview>>

In advance of AGRITECH, the International Agricultural Exhibition to be held in Tel Aviv March 25-29, we are previewing some of the products and systems which will be featured. A follow-up review of the Exhibition itself will appear in a later issue.

Plassin is unveiling a self-compensating dripper which enhances farmers' ability to achieve maximum yields from fruit orchards, citrus groves, vineyards and row crops. The new dripper allows fields previously unsuitable because of adverse soil and topographical conditions to be irrigated efficiently and cost-effectively. Plassin claims for its product a significant advantage in that it uses initial pressure for irrigation with particularly long laterals. The dripper is inserted into the irrigation pipe and is not built in as an integral part. This flexibility allows the insertion of the dripper at intervals which

## Israeli Companies on Wall Street

Selected income and earnings summaries for the 9 months ended September 30, 1989, unless otherwise indicated. Nearly all of these companies are intensively export oriented. Prices are as of February 22, 1990 and the price changes relate to those a month ago.

<u>Company</u>	<u>Revenues</u> (in \$ mil.)	<u>Net Income</u> (in \$ thou.)	<u>Price</u>	<u>Net</u> <u>Change</u>
ELBIT COMPUTERS Defense electronics ELBTF OTC	117,200.	8,750.	9.25	-0.625
ECI TELECOM full year Telecommunications ECILF OTC	52,667.	5,284.	11.25	nc
ELSCINT Medical imaging ELT NYSE	108,000.	0,987.	2.375	-0.375
FIBRONICS Fiberoptics FBRX OTC	34,160.	1,450.	5.625	-0.375
INTERPHARM LAB. Biological products for health care IPLLF OTC	7,812.	0,236.	2.75	-0.25
LASER INDUSTRIES Surgical lasers LAS ASE	na	na	3.75	-0.875
OPTROTECH Electro-optical systems OPTKF OTC	52,920.	3,330.	8.75	-0.625.
SCITEX LTD. full year Computer graphics SCIXF OTC	196,572.	35,436.	18.875	+2.75
IIS INTELL. Computer peripherals IISLF OTC	12,608.	2,983.	4.25	+0.125
TEVA PHARMACEUT. Pharmaceuticals TEVYF OTC	191,250	11,980.	11.00	-0.25
ELRON ELECTRONICS ELRNF OTC			7.00	-1.00

can be adapted to the specific requirements of the crop which is being irrigated. Additional features include a built in micro-filter for self-filtration. Self-cleaning is achieved when the pressure is cut off, the diaphragm leaves the outlet allowing the dirt to be cleaned out.

### Controlled-Release Fertilizer

Haifa Chemicals a world leader in specialty fertilizers based on natural resources found in Israel, is exhibiting Multicote, a resin-coated fertilizer available in various formulations. The fertilizer is made up of various high quality chlorine-free fertilizer granules blended together to create the desired formula. The release of the nutrients is temperature controlled. As the growth of the plant is accelerated under warm conditions the needs of the plant are met with additional nutrients. Multicote suits the needs for turf and lawn vegetables, nurseries and ornamentals.

### Mechanical Protection Eliminates Need for Insecticides

The Bemisia-tabaci insect which is a carrier of the tomato yellow leaf-curl virus is a cause of extensive damage to tomatoes, cucumbers and many other vegetables. Farmers wishing to avoid the damage of this blight have traditionally resorted to the use of costly and hazardous chemicals in greenhouses. The use of insecticides may prove to be harmful to the eventual consumer and additionally lose their effectiveness as the insects acquire resistance to chemicals.

The Klayman Meteor a virus proof 50 mesh netting which was developed in cooperation with the virology department of the Vulcani Agricultural Research prevents small insects and flies from entering the greenhouses. Tests carried out by the Department of Plant Protection of the Israel Ministry of Agriculture have proven that it completely blocks out the penetration of the Bemisia-tabaci insects. The netting is used widely throughout Israel either on greenhouse walls and all over the greenhouse including roof and sides which allows maximum ventilation during hot spell periods.

Field results are encouraging as the use of insecticides has been completely eliminated in all of the sites and without any damage to the plants.

### Evaporation System to Protect Water Resources

Ormat Turbines Ltd. developers of the use of geothermal energy to create electricity are exhibiting its own developed technology which multiplies five times the rate of evaporation of pond surface area. The technology provides a system for the prevention of salination and contamination of water resources. Under this system water is sprayed from a specially designed modular elementary spray system which creates a larger evaporation surface of falling droplets with minimal environmental effects and thus creates an effective alternative to conventional evaporation ponds. The technology initially developed for applications such as mineral extraction and energy production has already been applied in the treatment of industrial effluents.

### Israeli Companies on Wall Street

#### Scitex Reports Results and an Acquisition

Scitex Ltd. is purchasing Iris Graphic, world leader in the manufacture and sales of high quality digital printers, for \$24 million in cash. Iris Graphics' continuous flow ink jet systems are employed as peripherals for high resolution color electronic pre-press systems in the preparation of pages for printing and publishing. These systems are in the print industry to generate digital filmless proofs. Iris Graphics, which employs 90, after the transaction is consummated will become a wholly-owned subsidiary of Scitex.

Scitex results for fiscal 1989 included records sales and service revenues of \$238 million and record net income of \$35.4 million. Impressive was

Israel High-Tech Report Index\*

81.39 - 2.65%

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

the high 14.9 per cent profit margin. In the early 1980s Scitex margins were in the order of 12 per cent. Research and development outlays for the first time in the companies history exceeded \$ 20 million, an impressive 8.7 per cent of sales.

### ECI Telecom Ends Year Positively

In 1989 ECI Telecom achieved record turnover and profits. Our estimates which appeared in IHTR-12/89 were right on target as ECI announced net sales of \$52.7 million on which it earned \$5.28 million, or \$0.90 per share. Efficiencies were achieved by consolidating production under one roof in the new plant near Tel Aviv. Part of this was expressed in the \$1.0 million savings achieved in the cost of sales at \$7.2 million as compared with \$8.2 million in 1988. "Nearly every long distance telecommunications carrier in the world appears on our repeat order books for digital circuit multiplication systems, says Meir Laiser," ECI's president.

However, ECI's future growth will be linked to the market for its newest products which are capable of transmitting six "fax" calls over a single digital satellite (DTX-240F). Another product engineered for thin traffic digital satellite routes will allow for the transmission of up to 60 simultaneous data, facsimile or voice calls over 15 channels. These two products are scheduled for shipment in the second half of the year. Messrs. Laiser and Ollswang, presented ECI's results in the U.S. where they met with brokers, investment bankers and visited ECI's Florida subsidiary.

### Claridge has High Expectations

Jonathan Kolber of Claridge Israel Inc. is looking forward to a 15% return on its investment in Optrotech Ltd. Claridge Israel is investing \$16 million in Optrotech which is a world leading manufacturer of integrated solutions for the automation of inspection for the printed circuit board industry. The deal calls for Claridge to purchase \$6 million new shares at \$9 per share and \$10 Million convertible notes paying 4% annual interest carrying \$11 conversion price with an average term of five years.

Claridge Israel Inc. is a Canadian based investment company controlled by Charles Bronfman and

Kolber. Bronfman is co-chairman of Seagram Co. Ltd. and a Director of Dupont, 25% owned by Seagram. The same group has investments in Egypt and it could lead to further economic cooperation between that country and Israel

### News from the Institutes of Higher Learning

#### Hebrew University Scientists Conclude that Drinking Milk and Cola Reduces harmful effects of cola.

The results of recently announced research adds an additional wrinkle to what we have known about milk products and the prevention of tooth decay. The consumption of milk and milk products prevents tooth decay. However, the team has now come up with scientific evidence that you can drink your favorite cola without eroding tooth enamel. The research team's experiments proved that drinking a glass of milk or chewing a piece of cheese for five minutes restores the mineral level of enamel to the state in which it was before it was lowered by the drinking of cola.

#### Magnetohydrodynamic Technology Developments: Israelis and Russians Meet at BGU

The Ben Gurion University of the Negev for more than a decade has been a leader in the development of liquid metal magnetohydrodynamic technology..

Will this become one day a major source of alternative energy? Professor Herman Branover, BGU scientist and an internationally recognized figure in this field thinks this is the case. He sees liquid metal magnetohydrodynamic technology as a novel, economically attractive and ecologically sound method of direct conversion of heat into electricity with no rotating machinery. In simplistic terms the process consists of adding heat to a liquid metal with vapor or gas introduced from the outside so that a two-phase mixture of liquid and gas is formed. The mixture is claimed to perform a thermodynamic cycle whereby the heat is converted to mechanical energy and from the liquid metal it is converted into electrical power. Russian scientists are keenly interested in these developments and are coming to Israel at the beginning of March to coordinate and plan joint Israel - Russian projects. Can Professor Branover make his point? Israel's Ministry of Industry and Commerce along with the UK based Solmeics is

funding the development of an MHD-operated power plant. If the power plant lives up to expectations it would mark a major breakthrough in the field of alternative sources of energy.

### Anchors Away

Can Israeli scientists tell us with any degree of certainty about events in the third century B.C.E.? Yes, says Dr. Arie Nussenbaum of the Weizmann Institute. Recently-found stones in the form of anchors have been dated to the third century.

Dr. Nussenbaum, has little doubt that these stone anchors confirm historical knowledge of ancient boat traffic on the Dead Sea 2,300 years ago. He has pinpointed the date of the origin of the anchors as 312 BCE when a naval battle took place. The King of Syria, Antigonus, was out to seize the monopoly on collection of Dead Sea asphalt from the local inhabitants. Antigonus lost the war in what has been termed as the first battle for control of oil sources.

How is it possible for the rope tied to the anchors to be preserved for so many years? Simple, answers Dr. Nussenbaum, "the excellent state of the rope is due to the high salt content of the water which serves as a preservative." The Weizmann Institute Carbon-14 lab is the best source in Israel for analyzing archaeological finds. It has identified the "Jesus Boat" found in the Sea of Galilee, dated to 74 B.C.E.

### Unsticking Clogged-Up Pipes

Israel is a world leader in drip irrigation. Even so, Hebrew University scientists are working on making drip irrigation even more efficient. Farmers using drip irrigation use more and more recycled waste water. While they save money on the cost of water, recycled water contains fine particles suspended in the water. These eventually collect on the inside of the drippers and clog the holes.

Some scientists have concluded that algae are responsible but Professor Avner Adin of the Hebrew University suggests that the problem is the build-up of "biofilm" on the inside of the drippers. The biofilm acts as a glue which binds particles suspended in the water. A method to neutralize the formation of the biofilm will allow for the smooth passage of water through the pipes and the drippers.

### Genetic Pioneer to Receive the \$100,000 Wolf Foundation Prize

Professor (Emeritus) Maclyn McCarty of Rockefeller University, New York has been chosen as the recipient of the Wolf Prize for 1990 in Medicine. Prof. McCarty was awarded the prize for his part in the "demonstration that the transforming factor in bacteria is due to DNA and that genetic material is composed on DNA."

### Latest News>>>>>

The Weizmann Institute has been awarded a \$750,000 two year grant from the Chicago based MacArthur Foundation to continue advanced research on the biology of parasite caused diseases. The large grant is aimed to attack a massive problem as it is estimated that more than a billion people, most of them in less developed countries are suffering from parasitic diseases. "This area of research has been neglected until some ten years ago," says Prof. David Mirelman, senior researcher at the Institute. The funds will be used to further basic molecular biology of parasites and the knowledge thus gained will be used create better parasitic drugs and vaccines. If expectations are running high as to the prospects of this program it should not be surprising. The WI research center specialty is research dealing

#### ISRAEL HIGH-TECH REPORT

##### NEWS AND INVESTMENT OPPORTUNITIES

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with parasites responsible for amoebic dysentery, bilharziasis and leishmaniasis. The center has a number of impressive accomplishments to date including: the development of sensitive DNA probes for the diagnosis of amoebic infections, a novel drug delivery system effective in eradicating intestinal amoebas in laboratory animals and an early diagnostic test for the fatal form of leishmaniasis. Researchers have uncovered an antibody which reacts strongly against the parasite responsible for bilharziasis. The Weizmann Institute is one of three recipients of grants for parasitic research outside of the US. of a total of eleven. The results of such research have been applied in developing countries including those on the African Continent..

Tel Aviv University has signed academic cooperation agreements with the Russian Institute of Control Sciences and the Polish Wroclaw University

The agreement with the Poles calls for the promotion of joint activities in fields as far ranging as mathematics, physics and chemistry. Information will be exchanged, on the administrative, scientific and research level. The agreement signed with the Russian Institute of Control Sciences not only deals with theoretical research such as mathematical theory and optimization methods but also in the applied area. Some of the key subjects include mathematical modeling in transportation systems, industry and agriculture and developing effective software for applied problems. The software area is still relatively small but it is growing at a rapid pace as exports have exceeded \$60 million in 1989.

### Venturing into New Fields

Clal Electronics Industries would like to enter into the field of venture capital. EI has substantial holdings in Scitex and ECI Telecom but recently has sold a chunk of ECI to Claridge Israel. The strategy is to sell parts of its matured holdings while investing in new projects.

Yaacob Hannes has assumed the position of Venture Funds Manager. Hannes for many years has served as vice-president of finance of Elron Electronic Industries. He is now negotiating to sign up an American general partner..

The DSP Group headquartered in Emeryville, California which maintains R & D facilities in Israel will be carrying out the development of a highly advanced digital signal processing (DSP) chip set for an integrated fax machine. The funding has come from BIRD Israel-U.S. Binational Development Foundation.

The chip which is being developed will be designed to be used in the next generation of facsimile machines which enhances information processing and improves communications combining speakerphone, voice dialing and answering devices.

The Ministry of Science and Technology marking increased attention in Israel to the subject of superconductivity sponsored a conference dealing with that subject. A number of research projects between Israeli and overseas academicians are in progress but achievements in this field so far have been minimal.

Symatron CAD/CAM Systems Ltd. manufacturers and exporters of CAD/CAM systems for mechanical design CVC production have sold these systems to HONMA KOHAKO a Japanese producer of automobile engines. For Symatron it was a breakthrough in the Japanese market. Its systems are in use in Europe and North America.

Israel Aircraft Industries - In the aftermath of the visit of Illinois Governor, James Thompson, a loan grant package of \$1.2 million will be used by IAI to establish a facility to repair helicopters in St. Louis close to the primary U.S. Air Force helicopter service center.

### From the Laboratory to the Market Place

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