

# ISRAEL HIGH-TECH & INVESTMENT REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

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## From the Editor's Desk

### Major and Minor Changes Announced in Taxation and Foreign Exchange Policies for 1994-1995

The move towards currency reform and financial deregulation was accelerated on August 16. The main points appear in the box. However welcome the foreign exchange reforms are, the day of complete currency convertibility appears as far away as it was before. The tax alleviation is also welcome, but the capital gains tax -- long overdue -- needs to be formulated as a law which will provide a level

Others may have losses, so a mutual fund unit holder may redeem the unit and realize a small overall profit. The 10% tax on the single gain would thus become a burden of several times the original intended tax, unless an allowance for capital losses is included in the calculation.

#### HIGHLIGHTS

##### Taxation

- Reduction of purchase tax by NIS 480 million (\$160 million) to reduce costs to the public and business sector
- Lowering of employers' taxes by 0.47% to lighten the cost of labor
- Imposition of a 10% tax on real (inflation-adjusted) stock exchange profits to enlarge the tax base

##### Foreign exchange control reform

- Companies may invest freely in foreign businesses
- Companies may now invest up to 10% of net worth of foreign securities or foreign bank deposits
- Foreign companies are offered the right, for the first time, to issue securities on the TASE
- Foreign currency allocations for the traveling public increase from \$3,000 to \$7,000
- Credit cards may be used freely abroad for the purchase of tourist goods and services

playing field for the individual and corporate investor. Many professionals have recognized that corporations will be double taxed -- since they are already liable to a tax on profits -- and individual gains from investments in mutual funds may also result in double the intended tax. In a mutual fund portfolio, one security may have a big capital gain.

##### Policy of extending exchange liberalization

The policy is to abolish restrictions in place since the new Exchange Control Law was enacted in 1978. Until the recent reforms were announced, local companies have been allowed to invest up to 40% of their share capital in related foreign companies. For outright financial investments, the deposit of funds in foreign banks or ownership of foreign securities were generally not allowed. These limitations have been removed.

Private individuals may now invest in foreign securities as long as they are left on deposit with local banks.

##### Infrastructure spending to continue

The total investment on infrastructure between 1994 and 1996 is estimated at \$8.5 billion. This figure includes the government's portion as well as investments by Bezek, Israel Electric Corporation

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- Mennen-Medical monitors \$28 mil. turnover but needs innovations

and transport companies. Yet drivers on Israeli roads will find that, though the surfaces are greatly improved, serious bottlenecks still need to be removed.

#### **Financial deregulation**

Over the past 10 years, the government has eliminated special credit facilities, removed a great deal of government control from foreign exchange, and permitted pension funds to invest in securities other than government bonds.

#### **Israel's trade policies are favorable**

Israel's international trade arrangements include GATT and free trade agreements with the European Union, the United States and the EFTA countries. Under the European agreements, Israel is totally exempt from EU import duties on all industrial exports. The European Investment Bank, under a special arrangement, makes funds available for approved projects. Israel is set to expand its participation in European science and technology programs.

The trade agreement with the US calls for the phasing out of all duties by the beginning of 1995, and it appears that, with the exception of a number of agricultural products, this will actually happen.

Under the EFTA agreements, benefits cover two-thirds of Israel's exports and three-quarters of its imports.

As a matter of policy, Israel seeks to expand trade pacts with countries already maintaining agreements with the EU, EFTA and the US. Most-favored nation agreements are expected to be announced with countries which previously did not trade with Israel.

#### **Privatization**

In the 1980s, the government decided to privatize many of the 250 companies it controlled. At the time, American investment banks estimated the value of these companies at \$10 billion. According to recent reports from the Ministry of Trade and its minister Micha Harish, privatization continues to be an important policy focus, with 170 government-owned companies listed as being available. Not all are suitable for privatization, however; by the government's own estimates, 40 fall into that category.

What has been the government's record on privatization? According to figures published by the ministry, between 1986 and 1993 the government sold all of its interest in seven companies, and realized \$1.2 billion. Seventeen privatization initiatives have been set in motion, as well as six privatizations of commercial banks. The privatized group includes service, real estate and industrial companies. Among them: Industrial Buildings Co.

Ltd., Jerusalem Economic Corp. Ltd., Maman Cargo Terminals & Handling Ltd., Paz Oil Co. Ltd., Beit Shemesh Engines Ltd., Haifa Chemicals Ltd. and Cables of Zion - United Works Ltd.

The government has begun to privatize Bezek, the Israel Telecommunications Corporations Ltd., Israel Chemicals Ltd., Shekem Ltd., Housing & Development for Israel Ltd., Nafta Israel Petroleum Corp. Ltd., Malam Systems Ltd., Tahal Engineers Advisors Ltd., and Magen Ltd.

In the eight-year period the government realized \$980 million from the sale of banks, which were privatized under a special arrangement in 1983.

Could a uniform method of privatization have been employed, and would it have yielded better results? The government has strayed from its preferred choice -- privatizing by selling shares on the Israeli capital market. Different methods have been employed in various transactions. One privatization candidate sold shares in private sales. The government agreed to transfer the management of another private company to a government corporation, extending an option to buy the company at a later stage. The government has also agreed to the pre-privatization merger of two companies, as well as to the closing of some others. As the fall season begins, the following companies are the most likely candidates for privatization. If conditions on the capital market are stable, there will be no reason for the government not to use the Tel Aviv Stock Exchange for raising money.

- Bezek Telecommunications Corp. Ltd. A telecommunications monopoly 75% state owned.
- El Al Israel Airlines. 100% state owned.
- Oil Refineries Ltd. A petroleum refining monopoly. 74% state owned.
- Israel Aircraft Industries Ltd. Israel's aircraft and aerospace producer, and the largest employer in the country. 100% state owned.
- Israel Military Industries. Israel's second-largest manufacturer of defense products. 100% state owned.
- Israel Electric Corporation. A monopoly controlling generation, transmission and distribution of electricity in Israel. It is a potential participant in major peace-related projects with Israel's neighbors. 100% state owned.
- Israel Chemicals Ltd. A group of companies responsible for the industrialization of most of Israel's natural resources, including potash, bromine. 75% state owned.
- Israel Shipyards Ltd. Builds civilian and military vessels and provides repair services. 100% state owned.
- Zim Israel Navigation Ltd. The country's national maritime shipping line. 48% state owned.
- Housing and Development for Israel Ltd. A major residential developer. 100% state owned.

**Major statistical indicators for Israel in 1993**

(Statistics on economic development are normally issued on a percentage-change basis from year to year. The table provides these statistics in absolute figures.)

Gross Domestic Product (GDP)	65,495 \$ mil.
Business sector GDP	45,174 \$ mil.
GDP per capita	12,468 \$
Investment in fixed capital	13,960 \$ mil.
Imports of goods	20,519 \$ mil.
Exports of goods	14,070 \$ mil.
Industrial exports	13,173 \$ mil.
Imports* of goods and services	30,136 \$ mil.
Exports* of goods and services	22,496 \$ mil.
Import surplus (of goods and services)	7,640 \$ mil.
External debt (net)**	16,400 \$ mil.
Population - average (thousands)	5,253
Employment (thousands)	1,751
Unemployment rate	10.0%
Inflation rate	11.2%

**Free Trade Area**

FTA agreements with EU, USA and EFTA

Shares of total exports (%) 63

Shares of total imports (%) 76

All figures are estimates.

\*Imports and exports are on F.O.B. basis

\*\*End of September.

**Xenograft Technologies**

In 30 years, biotechnology has transformed the world of medicine. The prospect that biogenetically engineered substances can cure disease offers the challenge to develop new technologies.

The normal reaction of a healthy body attacked by disease is to sound an internal alarm which activates the immune system. The system then creates and releases agents which attack the invader and destroy it.

But what happens when the immune system is weakened or non-existent? This issue has been dealt with by scientists, doctors and immunologists.

**STATE BUDGET (1994) 37,100 \$mil.**

of which:

Civilian consumption	16.1%	5,973 \$ mil.
Transfer payments & subsidies	26.1%	9,683 \$ mil.
Investment - incl. credit	7.1%	2,634 \$ mil.
Defense expenditure	17.4%	6,455 \$ mil.
Debt repayment	33.3%	12,355 \$ mil.

Source: Ministry of Industry and Trade

As new technologies emerge, the medical and commercial prospects for the widespread use of monoclonal antibodies are on the rise. The goal is to create antibodies that will be more effective in cancer therapy and viral infections, among others.

Nearly 20 years ago the team of Kohler and Milstein, working at the Molecular Biology Lab in Cambridge, produced the first monoclonal antibodies – “cultures of fused, cell secreting antibodies of predefined specificity.” They made use of cultured mouse cell lines. Some progress was achieved as the ability to grow cultures from immunized mice was refined. But the results so far have had only limited applications.

However, there is a scientific consensus that human antibodies transplanted into mice have a greater potential than other forms of monoclonal antibodies in fighting disease.

IHTIR recently visited Xenograft Technologies, which in June was transferring basic research from the Weizmann Institute to its new laboratories for development. (IHTIR 4/94) Prof. Yair Reisner, an internationally recognized specialist in bone marrow transplants, has developed a new method for making antibodies in mice.

“To create useful antibodies is a very daunting task,” explains General Manager Dr. Zachi Berger. The aim is to isolate specific antibodies and then clone them. Dr. Berger estimates that it may take from two to six months for Xenograft to clone its first antibody. The newly installed equipment, including a system for growing human tissue cultures, and freezing equipment capable of operating at -80 C is in place. The equipment is advanced, obviously expensive. I was told that it cost about \$200,000.

“We are very careful how we spend our money,” says Zachi Berger. Though Xenograft is well funded by a group of venture capitalists, with \$8 million raised, it may be a while before it realizes its first income. Part of the funds were spent to obtain the development rights for certain scientific work. The budget allows for a staff of ten, including four post doctorate scientists, three research associates and three administrative personnel. Generous allowance must also be made for the communications and travel needed to establish international marketing contacts. “European and American companies are showing interest in our technology, and we are holding talks with them,” points out Berger.

I met Dr. Shlomo Dagan, a biochemist and Xenograft's chief scientist. Prior to assuming the position, he worked for five years at American Imclone Systems, which specialized in cloning and chimerizing mouse-human monoclonal antibodies. “We aim to create mice that can be transplanted with human tissues and a human immune system. Such mice can be used as models for human diseases,

allowing for new drug discoveries and facilitating testing. Drug companies are offered these models, and Xenograft is willing to start drug screening with them in order to discover effective treatment."

At the same time, development work aims at producing specific human monoclonal antibodies for the treatment of Hodgkin's disease, now handled with chemotherapy, and for Hepatitis B virus in treating liver transplant patients. Such human monoclonal antibodies will allow for drug testing with increased dosages and a longer period for treatment.

The market potential is vast. However, though the technique for the creation of antibodies is known, much depends on the skill of the scientists.

The "chimeric" mice are immunized with specific antigens in order to raise specific human antibodies produced by their human B cells. The cells are then "immortalized," immortalization being the final step after fusion, screening and cloning.

In the months ahead, international pharmaceutical companies will get their first opportunity to determine the validity of human antibodies produced by Xenograft's new technology.

### **Immigrants and incubators**

Incubator companies are part of a major program for developing technologies and products while making use of immigrant know-how and experience.

The national program covers 29 technological incubators, and was put on display for the government on the same day that Minister of Trade & Industry Micha Harish tabled his economic report for the past year and a projection of the ministry's activities for 1994/1995.

*IHTIR* was there to cover the event, and met project leaders and exhibitors. There are 230 operational projects in these incubators, staffed equally by Israelis and new immigrants. Approximately 10 new projects are approved each month under the auspices of the Chief Scientist. Liberal funding (*IHTIR-7/94*) allows these programs to develop during a period when there is no income but plenty of startup expenses.

### **Business Opportunities**

#### **Zamir Recognition Systems Ltd. Jerusalem**

A thief hotwires a car and approaches the exit point of a 3,000-car parking lot. The barrier arm goes up automatically. Less than five minutes later, a police officer stops the car and apprehends the driver. Science fiction? No. It is a technology developed in Israel and being marketed here and in Europe by Zamir Recognition Systems Ltd.

The product, named Centurion, is the brain-child of Israeli inventor Naftali Schweizer, Zamir's chief

scientist. It uses a novel technology for license plate recognition in real time for either stationary or moving vehicles. It can compare a number with numbers stored in client databases. Its capacity of 10 million license plates is much greater than needed for most applications.

Only one year after leaving the incubator, Zamir Recognition Systems Ltd. is marketing Centurion. Development took place at the Jerusalem-based Partir Industrial Incubator.

The product's potential is very broad, and it can be used in connection with gate, traffic light control, directional signs, computers, and so forth. The main advantage is the speed and economics of monitoring and managing traffic flow. To achieve its purpose the Centurion contains three major components: (1) the trigger, which senses the nearness of a vehicle (2) the eye, which photographs the license plate area, and (3) the controller, which reads and identifies the characters and allows entry or exit of a vehicle to or from a closed area. The response time claimed by the company is one second. The system is friendly, as it works day or night, and under any weather conditions. With a large market potential, according to Mark Simon, Director of Business Development, Zamir is concentrating on the vehicle access control market. The Israeli police are using the Centurion on open roads, where the system registers passing cars and license plate numbers. This information is passed instantaneously to a control center. The numbers of missing or stolen cars exist in the user base, and when the Centurion matches the number of a stolen vehicle it immediately issues an alert. In parking areas, the system identifies vehicles by date, time, location and authorized personnel, and can generate billing at an hourly rate. The units are sold abroad for US\$16,000 FOB.

#### **Easing the search for bacteria**

This year the Ministry of Industry and Trade has awarded a prize for novel technological products to Drs. Roman and Simon Feldberg of the Incubator for Technological Entrepreneurship at Kiryat Weizmann Ltd., under the directorship of Dr. Shmuel Yerushalmi.

The two brothers have developed a device which spots bacteria that have survived the pasteurization of milk. *The technology may prove to be a replacement for biological or spectrometric tests. Tests for blood or wine contamination may also replace current methods.*

Testing for surviving bacteria commonly takes two days, by which time milk has found its way into the market place. A Weizmann Incubator for Technological Entrepreneurship company, **Sirotech**, led by the Feldbergs, developed the system. The bacteria counter records the electrical

impedance of milk, which varies in relation to the presence or absence of bacteria. The sensitivity of the test is so great that it can detect bacteria in a large vat of milk. Applications in the dairy industry are many, and at various stages of supply and production. Long-lasting milk badly needs such "no bacteria" confirmation.

#### **Samot Engineering Ltd.**

The company was founded by Russian immigrants and scientists, and its R&D manager is Alexander Sromin. The first product developed is a DC, fast-response, brushless "pancake" motor with permanent magnets. I was told that the motor's attractiveness is due to its quality and highly competitive price. With a patent pending, the motors will be offered in a market estimated at \$230 million in the US alone. The initial line is made up of ten sizes suitable for robotics and aircraft, where small size and power are advantages. Samot has identified Mavilor Europe Motors as the only major competitor for the conventional DC motors market.

#### **Mag-Pulse Tech Ltd., YTB Technological Enterprises, Ariel**

Cladding is a process of bonding a metal to an unlike metal core by using explosive force. This traditional method is being replaced by the use of an intense pulsed magnetic field. The Ariel project is not a unique technology, but a brilliant approach to minimizing the size of equipment required -- to the size of a workbench. "Many weeks were spent finding the capacitors to bring it down in size," recalls Naftali Raz, director of the Ariel incubator. Yuri Lifschitz, a Russian immigrant, with a team of five others, developed the downsized machine, which can join, form or assemble small parts silently. As an example, we viewed an electrical grounding rod consisting of steel wires for strength and copper for conductivity. When these two unlike metals were placed in a very strong magnetic field, they combined to become a single unit. The machine will shortly be on the market.

#### **Distek Ltd., YTB Technological Enterprises, Ariel**

The company, a technological chick about to leave the incubator, will begin its business life by applying zinc coatings to metallic parts such as nuts and bolts. Parts generally require cleaning or descaling before they are treated. Yitzhak Shtikan, a recent immigrant from the former Soviet Union, has applied thermal diffusion technology. Besides eliminating some of the steps conventionally used in coating such parts, this system creates no pollution problems, and results in a highly uniform coating.

This particular project received a total of \$290,000 in funding from the Office of the Chief Scientist, except

for \$50,000 from external sources.

#### **PolyLasers, Soreq Technology Center, Yavne**

Until now, creating lasers has generally required the use of liquid, crystalline or gaseous materials. A small group of technologists and scientists at the Soreq Technology Centre has created the world's first commercially available tunable polymer laser, an all-solid-state dye laser.

"Vladimir Nichitay was born with a sense of capitalism," says Tzion Azar, General Manager of PolyOptics Ltd. The former Russian, who immigrated to Israel five years ago, is an electro optics expert and was instrumental in developing unique polymer materials. PolyOptics, though very young, already has a past, and an exciting future which includes projected sales of \$2-\$3 million in three years.

The American Coherent Company has partnered with PolyOptics to manufacture and distribute the world's first available tunable polymer laser. The polymer materials developed by Nichitay and his team have been treated with laser dyes, and have superior optical characteristics compared to standard materials. They are used in laser cavities in the form of expandable laser rods, the dye colors being imparted to the laser rod, tuning it to operate at different wavelengths. The use of tunable polymer lasers in certain systems eliminates the need for cooling or electrical connections. The company employs five people -- two laser physicists, two engineers and one chemist. The \$1.2 million provided for development of the polymer materials was derived equally from the OCS, the BIRD Foundation and private investors. Coherent's Bob Gelber is enthusiastic. Among the many advantages of this system is the possibility of disposing of the polymer which has caused a problem for many customers. The little cubes containing the laser polymer are returnable for a \$300 credit. A new one sells for \$550. Another American company, Laserscope, will be marketing medical polymer lasers for use in dermatology applications.

#### **Ofakim Innovative Technologies Incubator**

Attempts at developing alternatives to the internal combustion road engine have yet to succeed in replacing the piston. At Ofakim Innovative Technologies Incubator, Tour Benjamin has created a prototype rotary combustion engine which, if tests being conducted by an American aerospace specialist prove it feasible, will be 30% more efficient than the engines now used in generators and air compressors.

#### **Granot Incubator**

At 57, "Shmil" Lorman is designing a line of walkers that will help an individual walk up and down stairs.

Lorman's walker is supported by four rollers, and a braking system is activated by pressing down. Rear supports and additional handles allow users to climb stairs unaided.

In order to be commercially attractive, it needs to be light, portable and inexpensive. These qualities are being developed in the field and in the incubator at Granot, as well as in a center for the disabled in Jerusalem.

We spoke to the engineer, who emigrated from Kiev two years ago. Lorman recalls that his grandparents were slaughtered at Babi Yar. After being denied entrance to the technical high school in Kiev, he was eventually accepted at Lwow. He continued his studies in Moscow, where he earned a doctorate in mechanics. The knowledge was put to good use ten years ago, when his mother broke her leg. Only then realizing the major drawbacks to commercially available walkers, Lorman began the search for a better way.

In six months a line of walkers will be completed and the project will move into industrial commercialization. In order to attract a strategic partner in the form of an international company with marketing and distribution capabilities, Lorman is working to lower the price and improve the design. The project is sponsored by Tzora Furniture Industries. The kibbutz enterprise has diversified into orthopedic equipment, and became a 20% partner in the company. Lorman is a majority owner, with 28% divided between other employees and the incubator.

#### **Scientific Incubators Co. Ltd., Jerusalem**

MediClick develops medical courseware for hospitals and medical schools. Its products are interactive videos which provide instruction in various aspects of medical care and surgery. The videos incorporate the experience of top medical men from the Hadassah Medical Organization. Hadassah is the main shareholder in the company, which is Israeli owned and headed by Dr. Amnon Shabu. It has a staff of five, including Americans, former Russian immigrants and Israelis. The videos are offered at a cost of between \$500 and \$5,000. Individual software packages, the management points out, have been well accepted. MediClick is seeking marketing representation or a strategic partnership which would broaden its marketing outreach.

#### **Incubator for Technological Entrepreneurship Kiryat Weizmann Ltd.**

At the end of July 1994, Teva Pharmaceutical Industries (Teva) requested from the US Food & Drug Administration registration of its novel drug COPEXONE (COP-1). There are still many ifs and buts before COP-1 can be offered as a blocker of the

underlying disease mechanism of multiple sclerosis. However, clinical trials in 11 medical centers confirm the basic work which began at the Weizmann Institute nearly 25 years ago. Then Professors Michael Sela and Ruth Arnon developed a synthetic protein model copying the basic protein which serves as a coating for nerves, and which tended to suppress multiple sclerosis after its appearance. Their findings were confirmed by small-scale studies at the Hadassah Hebrew University Medical Center in Jerusalem and by Dr. Murray Bronstein at the Albert Einstein College of Medicine in New York. In 1987 Teva licensed COP-1 from the Weizmann Institute's Yeda Research & Development Foundation. The product was patented and its development, production and marketing rights are now owned by Teva.

Teva recently announced its business results for the second quarter of 1994 -- a strong rise in sales to \$147 million from \$125 million a year ago, and an even stronger gain in net profits of \$18.1 million, up by 30% from \$14 million.

Teva has already become an important supplier of generic medicine in the American market, but when the new license is approved it will be squarely among the small group of companies able to develop a medically important drug from basic research to the market place.

#### **Israel's first doctoral student from Egypt**

Twenty-nine-year-old Dr. Khaled El-Shami, holder of a PhD from Egypt and a Masters Degree in Molecular Biology from England, will spend the next four years at the Weizmann Institute studying genetic engineering in cancer therapy.

El-Shami's decided to study at Weizmann, because "during my research on the genetic basis of breast cancer for my Master's thesis I realized, from the numerous papers published by Weizmann researchers, that they are doing world-class work." He aims to do postdoctoral research in the United States, and then set up a research team at an Egyptian university.

#### **Interferon receptor pioneering research**

The discovery, isolation and cloning of the Type I interferon receptor, the membrane protein that helps cells bind interferon, has recently been described in *Cell*. The work of Professor Menachem Rubinstein and Drs. Novick and Cohen of the Weizmann Institute is expected to lead to drugs which can bind and neutralize interferon, offering a new approach to treatment of auto-immune diseases. Professor Rubinstein, in 1979, was the first to isolate and characterize interferon alpha, which subsequently became a major drug produced by the Roche Institute.

**International biotech conference**

On October 30, Jerusalem will host the first major international conference in biotechnology in Israel. The aim is to introduce international leaders in industry and academia to Israel's growing capabilities, and establish internationally based research and development centers, thus opening international marketing channels. The conference organizers -- leading industrial, government and academic personnel in the field -- will provide special sessions for those interested in R&D licensing and co-ventures in development, production, finance or marketing.

For further details about this unique opportunity, contact the National Steering Committee for Biotechnology in Tel Aviv at Tel: 972 -3 -5173668 or Fax: 972 -3 -5106724.

**Venture capital and diversified funds**

In our June issue we pinpointed 11 international and local R&D funds, with total capitalization of more than \$765 million. According to a study by the Giza Financial Group of Tel Aviv, there are now 32 venture capital funds either operating or starting up, and an additional 25 - 27 diversified funds with a total capitalization of \$1.2 billion.

At the beginning of 1994, a number of leading venture capitalists in Israel pointed to an "inflation" in the sums sought by startup or developing companies. Dr. A. Mlavsky, president of the Gemini Fund, recently noted that as conditions have worsened for capital formation on the TASE and on the American stock markets, the pricing of venture capital proposals has become more reasonable. The Gemini Israel Fund includes Discount Investment, Yosma Ventures and Advent International among its founding partners. At the outset of 1994, Gemini had \$26 million under its management. Of the six companies in Gemini's portfolio, five are in software and one is in optics.

**Military spin-off in the operating room**

At the Hadassah Medical Center, cardiac surgeon Prof. Gideon Marin has carried out bypass surgery with the aid of new "eyes." In open-heart surgery, doctors have had to depend on their own vision, touch and experience. This may change as a military vision enhancer finds new uses in the civilian world. In the 1980s Opgal Ltd. was formed to create military spinoff products for the civilian market. One of the areas explored was the thermal imaging used by tank crews and other troops who need to carry out activities when visibility is limited.

I experienced a feeling of wonder when glasses fitted out with the Mark I infrared system allowed me to see clearly what was invisible to the naked eye. Opgal Medical, a subsidiary of Rafael, Israel's

leading company in the manufacture and development of the advanced weapon systems and Elop, advanced optical specialists, have not only completed the design of a unit suitable for bypass surgery, but have received praise for the achievement.

Israel's Health Ministry quickly consented to a Mark I unit at the Hadassah Medical Center. In the United States, St. Luke's Medical Center is also conducting clinical testing.

Dr. Menachem Zucker, one of the managers of Opgal Medical, says there is definite commercial interest in the equipment in Germany. "The engineering and development began to move rapidly only in 1989, when papers about the technology were published by physicians from Mt. Sinai Hospital in Los Angeles. The units are priced from \$100 to \$200,000, which may not be too much, considering the extra vision they provide during difficult open-heart procedures. The principals and the state of Israel have backed the research and development of the Mark I unit. Nearly \$2 million has been invested.

The question remains whether Mark I is a market leader or just another player in the field.

**Prestigious prize in theoretical computer science**

Prof. Avi Wigderson, of the Institute of Computer Science at the Hebrew University of Jerusalem, is the winner of the 1994 Rolf Nevalinna Prize, considered the world's most prestigious in theoretical computer science.

**Where can one get a better R&D deal?**

The Israel-US Binational Industrial Research & Development (BIRD) Foundation is an important supplier of funds for binational commercial projects. Since 1977, the 400 projects in which BIRD has invested \$120 million have yielded about \$1.8 billion in exports and an equivalent amount of value added in the United States. *IHTIR* has wondered why growing numbers of American companies seek to carry out R&D projects in Israel.

There are two main factors. One is the high quality of researchers in this country. The other is the high leverage which American corporations enjoy here. A \$2 million R&D project typically sees the American partner putting up only \$400,000. The total project is divided on a 40% American / 60% Israeli budget. The BIRD Foundation then provides each participant with 50% of its share. The American company can thus obtain \$5 of research for each \$1 it invests. "BIRD's board of governors," reports Dan Wilensky, its Executive Director "approved 13 full-scale projects involving 21 new-to-BIRD companies, including 11 American corporations." Of these, ten involve American companies which do not have common Israeli ownership.

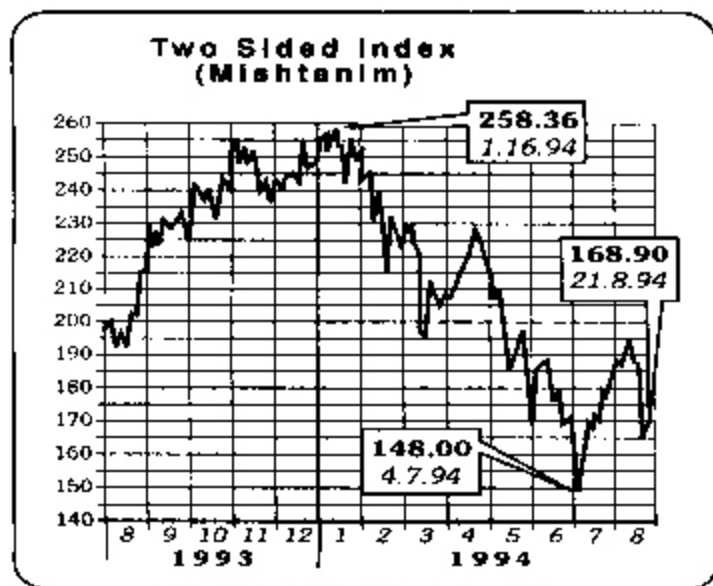
## The Capital Market

### Comments:

On July 4th it appeared that the various indices had reached bottom.

The Mishtanim Index, composed of the top 100 most liquid shares, touched the 148 level, while the Maof index, composed of the 125 highest capitalization shares, hovered just above the 150 mark and the computerized call market index touched the 145 level.

All three indices were above the 170 index level on July 19th, after a nearly two-week rally. The rally was interrupted by a sell-off due to the outbreak of violence in the autonomous area of Gaza, but the market responded positively to the beginning of the Jordan-Israel peace negotiations. The market is still shaky after the recent sell-off, but longer-term investors are looking forward to improved corporate results in the third quarter.



### The share market during the first seven months of the year

At the outset of 1994, share prices on the TASE were still moving higher, propelled by the optimism generated by a four-year-old bull market. However, by the end of June prices had suffered a serious decline. Though the number of companies listed on the TASE has risen by more than 60 since the end of 1993, to 625, the total market capitalization of all shares fell from \$50 billion to \$30 billion. Numerous factors are cited for the precipitous drop, the major ones being security incidents such as the Hebron shooting and two terrorist attacks on Israeli communities, the slow movement of the peace process and various stock fraud investigations by the

Securities Authority. Moreover, the weakness of the dollar, the international fall in stock prices and other lesser factors assisted the decline. By the end of June the general share index had dropped by 42% and the 100 most heavily traded shares as calculated by the Mishtanim index fell by 36%, while the Karam computerized call market index fell 52%.

In July, share prices began an upswing, the general index advancing by 17%, the Mishtanim by 16% and the Karam by 20%. In the first part of August, prices continued to move higher, influenced by the Israeli-Jordan accord.

### Review of the share market on a monthly basis

#### January

Prices rose. Expectations were high as Clinton met Assad in Geneva, and the Mishtanim peaked at a record 258. The lack of a breakthrough at the Clinton-Assad meeting caused a fall in prices. Near the end of the month, the TASE Chairman's statements regarding the high level of share prices led to a sharp drop.

#### February

Prices fell throughout the month. The declines came in the aftermath of the shooting in Hebron. Further price declines came when it was announced that the Security Authority was investigating many traders and banks on suspicion of share manipulation. The Mishtanim index was down 13% -- back to levels seen at the beginning of the year. Share turnovers, which averaged between NIS 400-500 million and sometimes exceeded NIS 600 million, were sharply lower at the end of February. Karam turnovers by the end of February dipped to just over NIS 100 million -- about half that of the Mishtanim market.

#### March

Prices were very volatile, moving up sharply one day and falling the next. The closing of the territories during this month affected trading results. Daily trading volume continued to fall, to NIS 200 million.

#### April

Prices rose. Good business reports for 1993 and positive economic indicators, including a rise of 1.9% in the "S" index, helped the upward trend. The impact of two terrorist attacks was limited.

#### May

The Bank of Israel raised lending rates. A rash of poorer-than-expected financial results for the first quarter led to a 19% drop in the general share index.

#### June

Prices continued to fall, reverting to levels seen last at the end of 1992. A weak dollar, rising local



interest rates and new obstacles in the peace process all contributed to push the market to record lows.

#### July

The Mishtanim index rose by 16% and the Karam index was up by 20%. Various economic and business leaders remarked that share prices were now below their true value, and expectations raised by the Israel-Jordan accord also helped the market. Fears of poor trading results in the second quarter tended to have a downturn effect.

#### Was there a bottom

	8/16/94	7/19/94
General Share Index	184.33	173.05
Mishtanim Index	183.48	176.65
Maof Index	183.60	178.53
Karam Index	183.21	173.22

#### August

On August 16 the Minister of Finance, in a reversal of past statements, announced a capital gains tax on "real" profits of 10%. At the time there was no allowance made for losses. Trading was suspended for the balance of the week to prevent a panic-inspired collapse. Prior to the re-opening, price-limit orders and business sell orders totalled a record NIS 2 billion. Then, 90 minutes into what was expected to be "Black Sunday," the government agreed that profits could be offset against losses. In all, the markets slid 10% that day, with the Maof reaching 165 on a relatively low trading turnover of NIS 390 million (\$130 million).

The bond market was down by 2%. The "clear-cut" definition of the tax was repeated over and over by the finance minister, but professional investors were of the opinion that the tax was not properly thought out, leaving them with "uncertainty."

#### Summary of second-quarter results

**ECI Telecon Ltd.** has successfully completed the installation of one of its systems for the Beijing Telecommunications Authority. It also obtained a first-time ever order from Russia's National Telecon service provider -- Rostelecom Ltd. -- for its service multiplication equipment.

Overall business results were impressive, with a record profit of \$18.9 million, a rise of 29% when compared with \$14.7 million a year ago. Sales in the quarter jumped 32% from \$71 million to \$93.89 million.

ECI shares are currently trading for between \$16 and \$18 a share, or 23 times the 1993 earnings.

However, the potential exists for earnings in 1994 of

over \$2.00 a share. Like many other Israeli technology companies, ECI shares have been trading sharply lower recently, and are down 33% since January 1st 1994.

**Elbit Computers Ltd.** a major defense, electronic, medical imaging and commercial electronic systems producer, has increased its sales for the first six months of 1994 to \$339 million, compared with \$256 million last year. Net income in 1994 is \$17 million, compared with \$19.5 million in 1993. However, management pointed out that last year's results included \$5.6 million in non-operating and non-recurring income. In the second quarter of 1994, the company's net income was \$9.9 million, as compared with \$7.5 million in 1993, for a gain of more than 32%.

#### Aladdin's genie protects Quark Xpress

Quark Inc., the Denver-based world leader in desktop publishing, has ordered Aladdin Knowledge Systems' MacHASP and MemoHASP software protection keys to guard its leading product, Quark Xpress. Other Aladdin software products enable Quark to protect its software on Macintosh, IBM PC, PowerMac and network environments.

According to David Glassman, Aladdin's Vice-President for Sales & Marketing, the Business Software Alliance estimates that 77% of software in use worldwide was obtained illegally; the loss in potential revenues in 1993 was over \$12 billion. The order, because of its size and the reputation of Quark, represents a major breakthrough for Aladdin, a public company traded on NASDAQ.

#### Introducing the stent

In angioplasty procedures, a cardiac specialist generally uses an inflated balloon to open blood vessels which may have been partially blocked. Dr. Hyltom Miller, Director of Catheterization at Tel Aviv's Sourasky Medical Center, has used stents for this purpose since 1989. "The stent is mounted on a balloon, which is inserted and inflated. When the balloon is withdrawn, the stent remains in place, gradually becoming incorporated into the inner lining of the blood vessel. The stent is an alternative to the balloon, and accounts for about 5% of all procedures in my department. Stents may grow in use because under certain conditions there is less stenosis (recurrence of blockage)," said Dr. Miller. But it seems that a device which can ease the passage of blood in constricted vessels may also find a use in opening blocked air passages. The bronchi carry air into the lungs. Partial blockage necessitates complicated surgical procedures, and can lead to a variety of respiratory ailments. At the Lung Institute of the Hadassah Hebrew University Medical Center, Ein Kerem, Jerusalem, a technique has been developed which could replace major surgical

intervention. The new technique employs a stent - a metal mesh which can be enlarged to five times its collapsed diameter, and can remain in the bronchial tube as long as required.

The procedure was applied recently in a lung transplant operation, with the stent inserted by means of a bronchoscope. Dr. Mordechai Kremmer pointed to the impressive results.

#### **Shenkar/Elbit police vests**

At the Shenkar College of Technology and Fashion, a simulator has been developed to determine fabric's resistance to stabbing and similar attacks. The object of the simulator is to assist in the development of textiles for use in protective garments. The protective vests currently in use by police are extremely uncomfortable and bulky, and it is hoped that these will be replaced by lighter but equally effective materials.

Shenkar personnel, cooperating with Elbit Computers, are developing a system for maintaining a high level of quality control when cloth is being produced at high speeds, because when production is taking place at 20 meters per minute, inspectors cannot identify faults with any degree of accuracy.

The new system is capable of identifying even small faults by means of a camera and computer.

The system at this stage is limited to smooth fabrics, working best on unfinished and unprinted materials.

The next generation will allow for the automatic quality testing of printed fabrics as well.

Is this the ultimate answer to quality control in the textile industry?

#### **Arab boycott is shown the gate**

One of the many positive aspects of the peace process is the de facto weakening of the Arab boycott. The Finnish firm Autokomfo is one of the world's largest manufacturers of magnetic gates used for security checks at airports and border crossings. Autokomfo has recently supplied these gates directly to Israel, in open disregard of the boycott. The gates have been installed at Israel's main airport and at the border between the new autonomous area of Gaza and Israel.

#### **Mennen-Medical Inc.**

"Forget the past, restore stability and initiate an era of growth" has become the motto for managers and employees at Mennen-Medical Incorporated. For 30 years, the American company has been active in Israel. The bulk of its research and development, design and production is housed in a modern building at the far end of the Kiryat Weizmann Science Based Industries Park.

It has a niche for its products in the patient monitoring, cardiac catheter lab and medical

information systems markets. It is a "small" operation, competing in a field populated with such megabuck companies as Hewlett Packard and Siemens. Nevertheless, Mennen's yearly sales at the outset of the 1990s ranged between \$25.9 million to \$27.9 million.

A group of investors headed by Dr. Ehud Geller assumed control several years ago. Geller previously served in upper management at Teva and then at InterPharm Laboratories. The group attempted to change the marketing methods at Mennen, concentrating on the American and European market. The group's policies did not show immediate results, so the expenses did not generate additional revenues and created a dent in the bottom line.

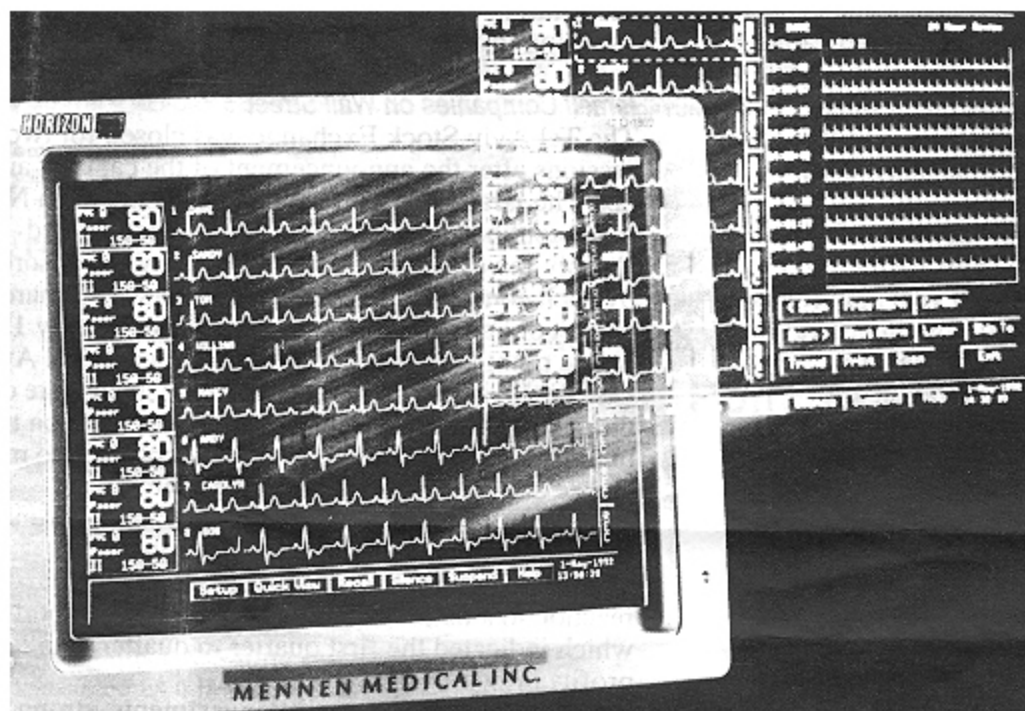
At the end of 1993 the Geller group sold its holdings in Mennen to Clal Electronics Industries of Israel (CEI). The savvy holding company took over a 51% holding with a 29% holding by the investment group of Dovrat-Shrem and 20% by Odyssey partners and others. The holding company is a long-time investor in ECI Telecom. It also has holdings in Scitex, International Technologies and Mercury Interactive, all public companies. Holdings in mature companies besides Mennen include Opal, Cubital and two high-tech start-ups. The board includes Mair Laiser, experienced and well-connected in the field of electronics.

CEI is more likely to be viewed by Mennen as a strategic investor than as a sleeping partner.

Product Manager Alan Schwebel says Mennen innovates in its field. "Besides adhering to standards, monitors can be differentiated by appearance, ease of use and algorithms. The Mercury portable unit and the Horizon 1100 monitor vital signs during operations or in intensive care rooms. The Horizon 9000 is the standard for catheterization labs. Mennen introduced color to its monitors, and another innovation is the InfoCard, which collects and stores vital data on patients as they are moved from one point to another in the hospital and switched from one monitor to another," says Schwebel.

The monitoring industry is highly competitive. In intensive care departments a unit covers 12 beds, and represents 25% of the department's costs. Income from the beds rarely covers such equipment costs. As a result, hospitals are very price conscious in their choice of monitoring equipment.

I have seen the equipment in operation in Israeli hospitals and witnessed the satisfaction of the users. However, Mennen is not known as an innovator. One user mentioned reliability and cost effectiveness, but the impression remained that Mennen is a somewhat slow-moving participant in a dynamic international industry. Its systems are installed in more than 100 countries, and \$250 million of its equipment has been sold worldwide. But while



reliability and price flexibility can maintain sales long enough for Mennen to "come of age," the company will probably need to adopt a more daring R&D policy aimed at the provision of leading-edge products to differentiate itself from producers of similar systems.

Though Mennen Medical spends about \$2.5 million a year on research and development, there is some doubt as to whether it can generate a truly new product. Alan Schwebel hints at a new product near the end of the development cycle. It may be unveiled at the International Conference on Anesthesiology to be held in Jerusalem this fall.

#### **Sigma Israel Chemical**

I could not find a listing of owners for Sigma Israel chemicals Ltd. During my visit at its offices in Kiryat Weizmann I learned that this company once named BioMakor, since 1986 is a fully owned subsidiary of the publicly owned American Sigma Chemicals Co. of St. Louis. A medium sized company by American standards its annual sales exceed \$800 million. In Israel it would be among the top 15 largest companies. In discussions with its managing director he impressed me that what sets the local company apart from other science based industries in Israel is the breadth and complexity of its product line and an independent approach in its policies.

Sigma Israel has production facilities in Rehovot and Jerusalem and warehousing and a distribution point just outside of Tel Aviv. The Rehovot production is spread out in 25 small buildings, the size of Quonset huts and scattered over the Science Based Industries

Park. The staff is motivated by an American business culture. Customers are advised that any chemical ordered from the catalogue is shipped the next day. In the course of a year, the 65 member Rehovot staff produces and ships not less than 900 chemicals for customers in America and other countries. On the average each year, 80 chemicals, are developed and added to the line. Knowing what the market needs, supplying it at once or developing what may be the "fashionable chemical of the day" is the mandate stresses the manager.

Sigma's Rehovot products numbering couple of

thousand of immunochemicals, are listed in detail in a 375 page full color catalogue. They are sold to the trade for use in biomedical assays to study the structure and function of normal cells and the mechanisms responsible for pathological disorders. In contrast to industrial chemicals consumed in massive quantities and shipped by the ton, the immunochemicals are produced and supplied in minute quantities of milliliters commonly priced at \$100 or more, a milliliter. The products are marketed worldwide by Sigma Chemicals of St. Louis Missouri by Sigma Israel and European subsidiaries.

"The chemicals are for testing and research purposes but not for human consumption," stresses Dr. Charles Hexter. The scientist manager, came to Israel from America in the 1970s on a post doctoral fellowship at the Weizmann Institute. He decided to make Israel his home. He serves as managing director of the Rehovot unit.

*Though it is innovative and has an active development program management, in 1994 untypical of Israeli science based companies, did not seek for Sigma R&D funding from the Government of Israel or other financing sources such as the BIRD Foundation. The funds came from its own budget. How is it all done in such small facilities with a staff of only 65 people? "To identify new products management solicits suggestions from its team of scientists, it listens to the needs of the customer and is attuned to what Sigma's marketing department suggests. Besides the Israeli subsidiary Sigma has either production and/or marketing facilities in the US, UK, France and Germany. To keep the shelves perpetually stocked Sigma Israel uses the American*

computerized network. It is available on local computers to the Israeli subsidiary on line indicating what qualities are or shortly will be out of stock. Since the chemicals are complex and their quality is guaranteed to the buyer their production is in the hands of academically trained individuals mostly chemists with advanced degrees.

Among the immunochemicals are monoclonal antibodies of nearly every type. They are the speciality of the company. Nearly 30 years old it has the expertise in the most advanced immunoassay systems, in molecular biology techniques for antibody engineering. "The first generation are animal produced polyclonals. The Hybridoma method is more advanced and the next step will be for us to use new recombinant technologies with DNA," says Dr. Hexter.

The Israeli Group does not reveal how many millions of dollars it produces and how profitable it is but the production of chemicals include high added value. Expansion is taking place and plans are to move the units by 1996 into a \$10 million facility in the under construction Tamar Science Based Industrial Park, an extension of the present park and bordering on the Weizmann Institute of Science.

#### **Healthcare Technologies announces poor results**

Of the Israeli public companies HCT is one of the largest producers of diagnostic kits. At length we reported the company's marketing efforts and their recently received long-term \$15 million contract. "Healthcare Technologies is Israel's premier diagnostic company, and last year its sales were just under \$6 million. But the best is yet to come. The firm has just received a \$15 million, 24-month contract for its HIV rapid sero test.

The contract, signed with the New Jersey-based Majesco, is for the Far Eastern markets, including Japan. This is the single largest contract in the company's history, and could increase its annual sales to over \$10 million, with another dramatic rise to follow in 1995".

Company president Dr. Yakir Yeshayahu confirmed that the order will be produced on its new semi-automatic production lines, and there will be no difficulty in shipping the initial \$ 2.0 million worth of product by the end of 1994. (IHTIR 7/94)

Yet the recent announcement that in the first half of 1994 the company's reported a loss of NIS 1.68 million (approx. \$560,000) in comparison of a profit of NIS 171,000 (approx. \$57,000) for the same period in 1993. Of the 1994 loss NIS 1.3 million was the loss in value in the company's securities portfolio.

It came as a surprise since the company's business is in diagnostic kits and not investing on the Exchange. Will the third quarter be as bad since there was a

sharp fall in values or has the company already sold its losing investments?

#### **Israeli Companies on Wall Street**

The Tel Aviv Stock Exchange was closed for two sessions after the announcement of the capital gains tax. The Israeli companies with shares listed in New York continued to be traded. Initially they moved sharply lower. The bulk of the losses were absorbed by such companies as Elbit Computers with shares in New York and in Tel Aviv. Elbit was down by 13% at one point on when trading was halted in Tel Aviv. One dealer in Tel Aviv reported that Israeli were on the selling side and American investors were on the buying side. The American shares continued to move higher and their upward movement brought confidence to the local investment community and prices continued to advance in Tel Aviv.

The Scitex shares continued to rise in apparent reaction to a better than expected quarterly report which indicated the first quarter to quarter gain in profits in two years.

With buyers seeking quality investments, strong demand was noted for ECI shares which traded at the top of their recent trading range of \$16-\$18. The recovery was felt among other companies including Tadiran and Teva. However Elscint was at its lower range and its price was down to \$2. Again it appears that it is either the lower price shares that enjoyed demand while longer term investors used the opportunity to buy the Israeli quality companies.

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