

ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

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EDITORIAL COMMENTS

MIDDLE EAST ARMS BUILDUP UNDERScores NEED TO STRENGTHEN U.S./ISRAELI RELATIONS

One of the results of the more than eight year old Iran-Iraq conflict, is that various Persian Gulf states are reacting with increasing concern for their national security. Even if a ceasefire comes into effect, frayed nerves will not be calmed. One expression of these concerns is an acceleration of military spending.

The recently announced massive Saudi Arabian contract for \$12 billion worth of British-produced fighter airplanes and other weapons and weapons systems, is a sign of the times. It also highlights the massive buying power of Middle Eastern states, now a major marketplace for all types of weaponry. What makes this especially dangerous is that the Middle East is, for the most part, an area where democracy takes a back seat to totalitarianism and religious fundamentalism. In these circumstances, the trend towards massive acquisition of strategic military equipment by the Arab states is of major concern to Israel and its ally, the United States. The U.S. will continue to need Israel to be a strong ally in the Middle East.

Israel's Gross National Product over the past five years amounted to \$125 billion. In the same period of time, the total outlay for defense exceeded \$40 billion, or over \$12,300 for each citizen. Israelis, individuals and policymakers alike, would much prefer to have a reduction in defense spending and an increase for health and education. This is not happening, and there is little likelihood of a major shift in spending priorities after the forthcoming elections. The bitter battle over restructuring

the country's health system is a telltale indication. Despite the need for major budgetary allocations for health and education and in the aftermath of sharp cuts in the defense budget, Israel will have no choice but to continue to invest massively to maintain a strong defense posture. In order to maintain a minimally appropriate level of military power, Israel will continue to need and be a beneficiary of U.S. military aid.

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BLIPS IN WASHINGTON

Americans are exasperated with Israel's seeming inability to cope with the Palestinian uprising in a manner befitting a nation of democratic principles. Official and personal strains have been felt in both countries. Now, tensions have been heightened by a major investigation into alleged illegal procurement practices within the American defense establishment, where some \$150 billion are spent each year. The probe has already brought the names of two Israeli companies into the media. One of these is Soltam and the other is Mazlat, which is the object of a company report in this issue. The management of the Israeli companies mentioned in the

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A Company Report

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American investigation have publicly rejected allegations of wrongdoing.

The Mazlat mini-RPV's are amazingly useful systems which have been proven in the Bekaa Valley in 1982 and more recently in service on the USS Iowa in the Persian Gulf. Their adaptation by the American navy is confirmation that Israeli-produced RPV's represent a useful and economical solution to the American navy's needs.

Cooperation between the armed forces, which includes sharing the fruits of each other's technologies, is an important aspect of the American-Israeli relationship. This type of technological collaboration, both for defense and for non-defense applications, will continue to serve as an important bond between Israel and the U.S.

American Ambassador to Israel, Thomas Pickering, during recent celebrations of America's 212th Day of Independence, expressed reservations about Israel's policy in the occupied territories. Nevertheless, he confirmed the continuous existence of a strong bond between the two countries and its people who share a similar heritage.

The most recent events, including the prospects of an ending of hostilities between Iraq and Iran, and the massive arms build-up in the Middle East, are ominous for both Israel and the western world. The conclusion is that the strengthening of the bonds between Israel and the U.S will continue to serve the longer term best interests of both countries.

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HOW MUCH DOES ISRAEL WANT FOREIGN INVESTMENTS?

Intel's Israeli operations are considered to be a showcase. Intel's design center in Israel has developed the 80387 mathematics co-processor. Intel in the U.S. has recently unveiled what is claimed to be the world's fastest personal computer. One of the components was said to be designed and developed in Israel.

In 1987, Intel's Israeli units had exports of \$36 million and

expectations for 1988 are for \$80 million of exports.

The \$150 million facility in Jerusalem is part of an overall investment program of \$180 million. The anticipated return on investment is expected to occur within 4-5 years. Reliable reports indicate that the market for Intel's locally developed production is growing at a pace to warrant additional expansion.

But prospects of this taking place have been delayed by a dispute which has developed between Intel's management and the Ministry of Finance. There exists a fundamental desire on the part of the government to encourage foreign investment in Israel. At the time when companies are being courted to establish bases in Israel, the government has to approve conditions which are competitive with those being offered to foreign investors in other parts of the world. It is inappropriate that a number of years after approving a project, especially one which has developed as happily as at Intel, that second thoughts surface as to whether the foreign investor has been accorded an overly generous deal to establish operations in Israel. It is clear that Intel has a legitimate claim when it states that the conditions of the approved enterprise were subsequently changed long after the approval was granted. In the period ahead, the resolution of the dispute between Intel's management and the government may be delayed until after the elections in Israel.

It could be pointed out to Ministry of Finance officials that decision-taking about such vital strategic planning as expansion of operations are taken within a limited time frame. The corporate personnel in the United States, in charge of deciding whether to expand Intel's activities in Israel, can not be expected to wait for months on end for clarification of government positions. Without an early decision, a possible major industrial expansion opportunity in Jerusalem may be missed.

ISRAEL'S ELECTRONICS INDUSTRY: A PROFILE

The total output of Israel's electronics industry in 1987 was valued at \$2.25 billion, which represented just under 10 percent of the Gross National Product. Electronics is a growth industry in terms of annual sales. In 1987, sales increased in dollar terms by 12.3% over 1986. Over the past decade, the industry has had an annual growth of 20%.

The major areas comprising Israel's electronics industry are electrooptics, telecommunications, computers and peripheral equipment, communications systems, data communications, image processing, medical electronics, tactical electronic equipment, electronics devices, semiconductors, components, computer aided systems for technological training and instruction and skill development.

The table below indicates that the annual output of the Israeli electronics industry has grown by more than 140% since 1981 and exports have more than tripled. Until 1984, electronics devices were traditionally less than 50% of the total output. Since 1985, annual exports have grown from \$985 million to \$1.35 billion. In 1987, exports accounted for 60% of all electronic production.

Sales (in millions of dollars)

Year	Total Sales	Exports	Exports, as % of total sales
1987	2.250	1.350	60%
1986	2.003	1.113	56%
1985	1.908	.985	52%
1984	1.783	.895	50%
1983	1.415	.678	48%
1982	1.160	.520	45%
1981	.930	.400	43%

Number of Employees

Since 1981, the number of employees in the electronics industry has grown by nearly 40%, to a total of 35,500 in 1987. Over 50% were technicians, engineers and scientists. More than 4,600 employees are active in research and development.

High Added Value

The electronics industry in 1987 included 68% added value, which is considerably higher than the 42% added value for all other industries taken together.

Profitability

Profitability has been poor among the participants in Israel's electronics industry. At the beginning of 1988, an analysis of seven major science-based and high-tech companies, carried out by IHTR, indicated that low profitability is a major problem of the industry. Industrialists blame the government, claiming that its economic policies, aimed at curbing inflation and maintaining the rate of exchange, have put a major crimp in profitability, and on dollar denominated sales. The industrialists also correctly pointed out that profits were hurt due to drastic reductions in Defense budget. The government, for its part, calls on the industry to increase efficiency and productivity.

Sales, Exports, Profit and Loss of Seven High-Tech Firms

(in millions of dollars)

	Total Sales	Exports	% Exports of Total Sales	Profit and Loss
TADIRAN	740	266	36.0	- 9.8
ELBIT	176	110	62.5	+16.1
SCITEX	159	150	94.0	- 4.6
ELSCINT	133	125	94.0	-60.0
OPTROTECH	41.6	35	84.0	+ 2.8
LASER	35	30	86.0	+ 2.5
ECI TELECOM	24.5	20	81.0	+ 0.8
TOTAL	1,309.1	736	57.00	-52.1

Our analysis indicates that by the early 1990's, the annual output of Israel's electronics industry should exceed \$3.03 billion and increasing penetration of international markets for its products should result in annual exports of \$2 billion. Profitability should improve due to a more manageable level of inflation in Israel, a stronger dollar on the international currency markets and a streamlining of many of the country's electronic companies.

ISRAEL HIGH-TECH SHARES TRADED IN THE USA

	<u>P-E</u> <u>Ratio</u>	<u>Price</u> <u>as of</u> <u>7/15/88</u>	<u>Change</u> <u>since</u> <u>6/15/88</u>		<u>Earnings per</u> <u>share</u>	
					<u>1986/7</u>	<u>1987/8</u>
8828 OTC BIO-TECH GENERAL	d	4 1/8	+ 1/4	3 Mo Mar	d 0.38	d 0.47
Biological products for health care						
8887 OTC ELBIT COMPUTERS	6	4	- 3/8	3 Mo Mar	0.41	0.18
Defense electronics						
8887 OTC ECI TELECOM LTD.	9	3 5/8	+ 1/8	3 Mo Mar	0.01	0.10
Telecommunication Systems						
8887 OTC ELRON ELECTRONICS	11	2 7/8	- 1/4	3 Mo Mar	d 1.33	0.07
Company investing in high technology						
8887 NYSE ELSCINT		1 1/8	n.a.	9 Mo Dec	3.10	1.23
Full range medical imaging						
8887 OTC FIBRONICS INT'L	d	3 1/2	n.a.	3 Mo Mar	0.03	d 0.15
Fiberoptic communications						
8887 OTC INTERPHARM LAB.		3 3/8	- 3/8	3 Mo Mar	d 0.09	0.02
Biological products for health care						
8887 ASE LASER INDUSTRIES	d	4 1/2	+ 1/2	3 Mo Mar	0.29	d 0.09
Surgical laser systems						
8887 OTC OPTROTECH	11	3 3/4	- 1/4	3 Mo Mar	0.09	0.09
Electro-optical systems for PCB						
8887 OTC SCITEX	5	6 3/8	+1 1/2	3 Mo Mar	d 0.45	0.23
Computer graphics						
8887 OTC I.I.S.	5	4 1/2	+ 3/4	3 Mo Mar	0.18	0.23
Computer peripheral equipment						
8887 OTC S.P.I SUSPENSION - PARTS INDUSTRIES	9	1 5/8	- 1/2	3 Mo Mar	0.07	0.04
Military components						

d = deficit

ISRAEL HIGH-TECH REPORT INDEX NUGGES SLIGHTLY HIGHER

On July 15, the Israel High-Tech Report Index was at 36.91, up 2.8% since June 15. The advance did not represent an across-the-board gain for the 10 high-technology companies making up the index.

However, there was a major advance in the shares of Scitex Ltd., Israel's premier manufacturer of inter-active computerized imaging systems, used for electronic color pre-press applications in printing and publishing. Scitex's market valuation advanced to \$63.9 million as of July 15, compared with \$48.8 million, a month earlier. In four trading sessions on the "over the counter" market, more than 500,000 shares of Scitex changed hands. IHTR has been reporting rises in Scitex earnings for a good number of months. The recent sharp rise in the shares appears to be connected to more than just Scitex's upward trend in earnings and its entrance into desk top publishing. It could also be connected with unannounced purchases of additional shares by James Lennane, chairman of System Integrators (NASDAQ:SINT) (HTR-2/88).

At the recent price of \$3.75, the shares of Optrotech Ltd. (NASDAQ/NMS:OPTKF), with a proven record for innovation and growth in sales, are at the lowest market capitalization in the past six months.

Among biotechnology companies, Bio-Technology General Corporation (OTC:BTGC), at \$4.125, has a market capitalization of just over \$22 million. This is very much in keeping with developments in the biotechnology industry, where short positions continue to rise. According to Linda Miller of PaineWebber, in mid-May, BTGC had a 7.1% ratio of "short sales" to shares outstanding.

ELBIT GETS NOD FROM ROCKWELL

Rockwell International, a major American manufacturer of military electronics and aerospace vehicle parts, has informed Elbit Ltd. that it has passed its "authorization review". The 98 grade, achieved by

Elbit, is said to be very high when compared with the ratings accorded by Rockwell to American suppliers. The authorization will allow Elbit to make its own decisions regarding the use of materials for projects destined for Rockwell. Elbit is supplying airborne power supplies for Rockwell's missile division.

GALIL HONORED BY TECHNION

Uzia Galil, Chairman of the Board of Governors of the Technion-Israel Institute of Technology, and President of Elron Electronic Industries, received the first Fellow of the S. Neaman Institute award at the tenth anniversary celebrations of the Neaman Institute. Mr. Galil was honored for his activities as a member of the Institute's Board of Directors since its establishment, and in appreciation for his contribution to Israeli industry.

DIVIDEND

I.I.S. Intelligent Information Systems Ltd. (NASDAQ:IISLF) paid \$0.04 cash dividend to its shareholders on June 30. I.I.S. first began to pay cash dividends in 1985 and has increased the annual payments every year. The annual indicated dividend rate in 1988 is \$0.16.

CORRECTION

In the July 1988 issue, it was incorrectly stated that I.I.S. Intelligent Information Systems earned \$902,000 over the past two years. In fact, I.I.S. earned \$902,000 in the quarter ending March 31, 1988.

	7/15/88	6/15/88
DJIA	2114.51	2131.40
S&P 500	270.23	276.14
NYSE INDUSTRIALS	184.91	188.18
ASE MARKET VALUE	308.11	308.88
NASDAQ INDUSTR'LS	410.75	402.75
ISRAEL HIGH-TECH REPORT INDEX*	36.91	35.69
*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		

ISRAELI INTERFERON PRODUCTION ACCELERATES

Production and sales of beta-interferon are accelerating at InterPharm Laboratories (NASDAQ: IPLL) at the Science-Based Industrial Park at Kiryat Weizmann. Going into the second half of 1988, it would appear that estimates of total annual sales of \$18 million for all products are very much a possibility. What appears to be more certain is that beta-interferon sales could reach \$13-\$15 million for the current calendar year, marking an all time one-year high of interferon production and sales in this country.

InterPharm's interferon is of the native beta variety which is a relatively expensive process. The company is in the process of moving towards the production of this product as a recombinant beta interferon. INTR would expect to see InterPharm's profit margins become more stable as it perfects its tissue culture technology.

Most observers agree that genetically engineered beta-interferon will result in a far less costly alternative for the currently produced native beta-interferon. When InterPharm begins to produce all its interferon by the recombinant method, profit margins will become much more reliable.

InterPharm is an affiliate of Ares-Serono, an international developer and marketer of diagnostic and pharmaceutical products in the fields of human fertility, human growth, immunology, cardiology and virology. Based in Geneva, Switzerland, Ares-Serono has its headquarters in Boston, Massachusetts. In 1987, it had sales of \$327.6 million.

Ares-Serono serves as a marketer of InterPharm's interferon and, over the years, has controlled the sales price of the Israeli produced interferon. This policy has prevented the local company from passing salary increases on to the price of its products. This, plus the fact that InterPharm purchases much of its raw materials in European currencies but is paid in American dollars, places a premium on

productivity so as to achieve a reasonable level of profitability.

The current market valuation for InterPharm is \$17 million. This is nearly \$3 million more than its lowest valuation in the period in the aftermath of the stock market crash of October 1987.

BTGC'S HGH TO BE MARKETED BY SMITHKLINE BECKMAN CORP.

Bio-Technology General Corporation (OTC:BTGC), as part of its strategy to penetrate non-American markets for its products has entered into an agreement with SmithKline Beckman Corp., whereby the latter will market the human growth hormone in countries outside of the U.S. and Canada. BTGC already has an agreement with DuPont Critical Care and ARI Bio-Technology to market its human growth hormone in the U.S. and Canada.

This strategy of marketing products outside of the world's greatest market is connected with the possibility of obtaining approvals in Europe for new pharmaceuticals and biotechnological products more quickly than it is possible in the United States

TENDER

Israel Aircraft Industries (IAI) has won a tender valued at \$33 million to convert four Boeing 707's to "fuel injection" for the Australian air force. The Israeli developed system allows fighter jets to be refuelled in flight with the use of a pipe. Modifications to the Boeings will be conducted in Australia by Israeli engineers and technicians.

BAR ILAN UNIVERSITY

Bar Ilan University is encouraging its scientists to take their research into the marketplace, and enjoying a growing income from patents as a result. The increased resources are helping to maintain high academic standards.

Professor Michael Albeck, President of Bar Ilan, is himself a chemist

with major achievements in theoretical and applied science. He has promoted the idea of applying for patents on Bar Ilan research discoveries, and increased the motivation of his researchers by offering them a percentage of the income resulting from the patents. In some cases, they could receive up to half the proceeds. This policy has put Bar Ilan's patent income on a comparable level to that of the Hebrew University of Jerusalem.

One such product emerging from the laboratories of Bar Ilan is a face cream called Respirar O2, which tends to slow down the aging process of the skin. Reylon produces this non-toxic, water soluble anti-oxidant, developed by Albeck with Professor Shlomo Grossman.

Another health care development is that of AS-101, now in Phase I clinical trials in patients with AIDS and cancer and in bone marrow transplant recipients. This new synthetic compound induces proliferation and Interleuken 2 (IL-2) production of human lymphocytes in vitro, and enhances production of IL-2 and colony stimulating factor (CSF) by mouse spleen cells. AS-101 has immunomodulating properties similar to IL-2. It was synthesized by Professors Albeck and Sredni when selenium and tellurium were substituted for the platinum in the anti-tumor agent cisplatin.

Clinical testing of AS-101 is moving ahead in the U.S. After the U.S. Food and Drugs Administration grant approval, it will result in bringing into the market a new drug which will prolong the life of victims of AIDS and cancer sufferers. Treating AIDS patients in Mexico with AS-101 has resulted in positive clinical evidence to this effect.

**MAELAT LTD. - MINI-RPV SYSTEMS:
A COMPANY REPORT**

Mini-RPV's - What They Are and What They Can Do
Mini-Remotely Piloted Vehicle Systems (mini-RPV's) were developed for reconnaissance and special missions.

The eye-in-the-sky, or Peeping Tom, as the mini-RPV's have been called, employ artificial intelligence, fine electronics, optics and robotics.

Civilian uses include monitoring of crowds and traffic, coast guard surveillance and rescue operations. But their greatest potential is in defense applications. The system's ability to transfer intelligence data in real time; its usefulness in secret long-range flights; and its ability to participate in electronic warfare by aiming weapons on targets, make the mini-RPV a potent factor on the modern battlefield.

Pioneer, the third generation of mini-RPV's produced in Israel, is the expression of the most up-to-date technologies of propulsion, payloads, data links, flight control and mission management. Development of the mini-RPV's began 15 years ago, originating in the Israel Aircraft Industries and Tadiran Ltd Scout and Mastiff programs. As part of their separate programs, the two firms developed second generation vehicles and payloads.

ISRAEL HIGH-TECH REPORT
NEWS AND INVESTMENT OPPORTUNITIES

Written for venture capitalists, investment bankers and bankers active in international trade, industrial researchers, business men, security analysts and portfolio managers, underwriters, private and institutional investors and individuals who need to maintain insights into Israel's evolving and dynamic high-technology field.

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In 1984, IAI and Tadiran jointly created Mazlat Ltd., a subsidiary company, which has since been developing, producing, marketing and maintaining active after-sales support of mini-RPV systems. Mazlat is in partnership with an American company, AAI Corp., in Baltimore, Maryland, which aims to expand Mazlat's activities in the United States market and to utilize AAI's experience in high technology, electronic and mechanical systems.

Pioneer systems have been delivered to the U.S. Navy and have been used by the USS Iowa during its service in the Strait of Hormuz. The Mazlat-U.S. Navy program began in October 1984 at a Pre-Bidders Conference in China Lake, California.

In the 13-month period leading to the test flight date, AAI and Mazlat customized, developed and completed the system in keeping with the requirements of the U.S. Navy. Built into the system, in addition to the U.S. Navy requirements, was the accumulated tactical operating experience acquired under various operative situations. One of the most publicized was its employment in the Bekaa Valley, Lebanon, in 1982.

According to published reports, the Pioneer system delivered to the U.S. Navy had an endurance of up to 9 hours, a launching ability with a weight of more than 400 lbs, and a flight range of more than 100 nautical miles.

A basic Pioneer system consists of a ground control station, up to six mini-RPV's and an integrated logistic support system. The Pioneer I's payload compartment is capable of carrying up to 100 lbs of dedicated payloads in an 11 cu.ft space.

The Importance of mini-RPV's to Naval Forces

Naval forces demand from air vehicles the capacity for on-the-spot takeoff

and landing. The vehicles must also work in correlation with the ship's radar, and be able to interpret the radar signals emitted by a hostile weapons system or installation. The mini-RPV's vertical takeoff and landing ability is a must for naval applications.

Back in 1985, Aviation Week and Space Technology reported that 30 mini-RPV systems had been sold and were operating in the field, with 200 units flying, and that more than 4,000 hours of flight experience had been gained.

Current development work in Israel calls for a mini-RPV that could take off from a small ship. It would be equipped with a TV camera, half the size of the one now being used on Mazlat's Pioneer Short-range RPV. The unit is to have the capacity of performing missions of 4-5 hrs at close ranges, with a payload of about 25 lbs.

Summary

Israel has achieved a high degree of expertise in developing systems employing a combination of electronics, optics and sensors. The Pioneer mini-RPV is currently supplied with an optional TV system or with an infrared day-night system developed by El-Op. Additional capabilities could come as the result of a multi-optical stabilized payload (MOSP) which is being developed under the Allied Cooperative Research and Development Program. The MOSP is to include a TV, an optical sensor and a laser designator.

The Mazlat company has an order backlog of about \$100 million, mostly for the American market, after supplying the U.S. Navy with systems valued at about \$150 million. As European countries recognize the importance of mini-RPV's, they could form an additional marketplace for Mazlat.