ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

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From the Editor's Desk

Public Here, Public There

For much of the past 2,000 years, starting, nurturing and passing on a business enterprise to their children has been one of the few ways in which Jews were able to have a degree of control over their destiny. In this context, the freedom and security offered by the reborn State of Israel have taken more than a little getting used to. For anyone who has dared, worried and labored to bring a business into existence, the prospect of "selling" part of their "baby" to a nameless public is a daunting one. It takes a certain amount of enlightenment and financial sophistication to "let go." Jewish businessmen, who for so long have had to operate in an environment where visible success was a dangerous thing, have found it hard to shed the habits of secrecy and obfuscation, preferring to keep their cards "close to the chest." The value of financial public relations, so long recognized by the world at large, has thus been largely ignored.

Yet the new Israeli generation, having come to maturity in one of the world's freest democracies, is less interested in due diligence than in capital gains, especially as these continue to be tax-free. But intelligent investing requires accurate, up-to-the-minute data - something still not readily available here. The amount of information which *is* made available to the public is minimal, often unreliable, and comes mostly from the press. So you have a society at once enthralled by the promise of the future, and haunted by the past. The history of Israeli investing is thus a reflection of the excitement that comes with taking part in the risks and rewards of the world at large, and a litany of the disastrous errors that come with inexperience in the field.

Until the 1980s, Israelis had little option but to invest their savings in mutual funds, or turn their funds over to brokers for management. At the end of the 1970s, most of the exchange financing was by the banks. They raised large sums of money for themselves, and were active in underwriting "initial public issues." Since then, Israeli business has experienced a boom, bust and boom cycle, and this has been reflected on the Tel Aviv Stock Exchange.

By 1982, a stock market boom was in progress as more and more companies eagerly sought money from an even more eager public. Vividly memorable was the case of Cyclone Aviation, a small aviation-related company which listed its shares in the early 80s. The company's owners were in near shock to find that their first-ever public financing was oversubscribed by more than 150 times the amount on offer!

Like American investors of the 1930s, Israelis just couldn't seem to get enough, but as happened in the U.S., the bubble had to burst.

The stock market crash of 1983, followed by the bank-share collapse, cooled the overheated atmosphere, and investors and speculators who saw their holdings ravaged lost their appetite for new issues, or for *any* issues. Major foreign investors such as Robert Maxwell and Charles Bronfman did the expected when they invested in Israel. They did so in public companies - firms listed in the United States, where strict laws governing investment meant that businesses were compelled to provide documentation which was clear and credible.

However, investor amnesia and the wiser Israel of the 1990s has seen a return of local investor activity. On the Tel Aviv Stock Exchange, more than 300 companies are now listed. After several lean years, the exchange has come very much alive, with the general share index advancing by nearly 70% in the first half of this year.Though share options and warrants are traded in Israeli shekels, recent figures put the value of all shares at $11.89 billion as of

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News and Views from the Universities and Research Institutes

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June 30 of this year. This represents a jump in value of $3.4 billion since the start of the year, and includes $245 million of new issue financing. In dollar terms, share values have appreciated by 44.5% since January 1. The valuations of many of the top Israeli high-tech companies have jumped by even greater percentages.

But lessons learned from the flight of investor capital to the U.S. have not been forgotten, and more and more Israeli firms have grown to the point where they can claim a spot on the world stage.There are 33 easily identifiable Israeli or Israeli-related companies whose shares are traded on U.S. stock exchanges. Their total market valuation as of June 30 was $4.4 billion. A number of seasoned companies such as Elbit Computers and Elron Electronic Industries have this summer sold tens of million of dollars of shares on the American exchanges. Last month BFV, a small but highly interesting airplane simulation company founded by two engineers who are former Israel Air Force pilots, was a sellout in the U.S. There are differences of opinion as to whether the current economic upswing is the beginning of a short- or longer-term trend.

Today, economists, government leaders and businessmen are promoting direct investment in Israel. Unfortunately, this is the most difficult investment to obtain. Investments in companies where publicly listed shares are involved offer the investor an important feature - *liquidity* .

Believing that there are still above-average opportunities for investors in the field of technology, *IHTR* is preparing analytical reports on the better and even lessor-known public companies listed on the American stock exchanges. These will be available to subscribers and other interested parties.

RECENT DEVELOPMENTS

Seed development contracts

The U.S. company Pioneer Vegetable Genetics has signed a $2.5 million contract with the Hebrew University Faculty of Agriculture in Rehovot and the Volcani Institute for the development of vegetable seeds for the U.S. market.

Physiological instrumentation development

SRD Shorashim Medical is planning to introduce three new products in 1991-92 at a total investment of $3 million, including expected government R&D grants estimated at $1 million. These include a new-generation EEG monitor for use in the operating room, a patented signal acquisition method, and the drug Alyzer – a non-invasive means for detecting drug-induced impairment.

Canon and EFI color for desktop computing

Canon Inc. and Electronics for Imaging, Inc. (EFI) last month announced a cross licensing agreement. EFI will license to Canon several patents governing EFI's U.S. Patent 4,500,919.

EFI will adopt the Fiery controller - a semiconductor chip-set supplied by Canon that makes possible compatible color rendering in Canon's CLC series of color laser copiers.

Canon also has agreed to the marketing of EFI's Fiery controller for use with Canon CLC-1 and CLC- 500 copiers.

EFI was started in 1989 by Mr. Efraim Arazi, founder of Scitex Corporation Ltd. EFI developed its Fiery controller for the desktop color computing industry. EFI's Fiery product is a controller that converts a color copier/printer into a networked color PostScript® printer as well as a color scanner/printer.

Orders for the military

Aviation Week reports that an Israeli-developed night vision system designated NTS is being tested in the U.S. The system was developed by Israel Aircraft Industries subsidiary Tamam in conjunction with Rafael for the Super Cobra helicopter, and enables pilots to operate the helicopter's weapons systems at night.

Defense and Foreign Affairs writes that since the beginning of the year, Israel has sold UAV's (unmanned aerial vehicles) to the Singapore army and Boeing 707 in-flight refueling aircraft to Venezuela. *International Defense Review* says Elbit Computers has been awarded a tender estimated at $150 million from the Singapore Air Force to upgrade avionic systems of its F-5 aircraft.

General Dynamics signs agreement with Mikrokim Ltd.

General Dynamics Corporation, through its Electronics Division (GDE), has signed an agreement with Microkim Ltd., a Haifa-based company, for cooperation in the manufacturing and worldwide sales of portable field testers developed by Mikrokim for electronic warfare (EW) airborne equipment. Microkim specializes in high-frequency electronics. Dr. Hillel Wainstein, President of Microkim, said his company has successfully completed the development of the RSS-2000, a Radar Signal

Simulator used to test airborne EW receivers by imitating various electronic threats on the runway.

Dr. Terry Straeter, General Dynamics Corporate Vice-President and GDE General Manager, said "GDE is interested in distributing the RSS products throughout the world, and will cooperate further with Microkim in developing new products." Dr. Straeter also stated that GDE is interested in widening its role with the Israeli electronic industry.

GDE and Microkim forecast sales of more than 300 RSS units in the next four years.

Microkim has 75 employees and ended 1990 with $5.5 million in sales.

The electronics division of GD develops sophisticated electronic systems in communications, aircraft testing equipment, electronic warfare, intelligence systems and simulators. GD sales in 1990 reached $10.2 billion.

AATKS Ventures Investment activity

AATKS Ventures Limited, the venture-capital fund established last fall by the Anglo-American Corporation of South Africa and some of its associates, and managed by the Tel Aviv-Brussels management company Tolkowsky, Kaufmann & van der Schueren (TKS), recently made its fifth investment in an Israeli high-tech company.

The fund's most recent venture is in Medicano Systems Ltd, a new Nes Ziona-based company founded by two Soviet immigrants to develop a novel device for the diagnosis of osteoporosis, a bone diseases particularly common in older women.

New Intel chip

Intel has introduced its new chip, the I80860XP, which was developed at the Intel Semiconductors Haifa facility. The chip is claimed to be the fastest in the world as well as the densest, with more than 2.5 million transistors on a single silicon wafer. The chip is designed for high-speed computers, and can perform 100 million arithmetic operations per second. Intel Israel Managing Director Dov Fruman says development of the new chip is an example of the relative advantages of Israel – superior manpower with the ability to meet deadlines.

ISRAELI COMPANIES ON WALL STREET

Xsirius Update: Investment Prospect In Israel's Superconductivity Effort

A year ago you read about "Xsirius, Israel's First Entry into High Temperature Superconductivity". The local subsidiary of the American company Xsirius Superconductivity Inc. (NASDAQ: XSCIA) clearly appeared to have world class potential for developing and marketing thin film superconductors. Jerusalem based it employed the talents of some of the best scientists in Israel. As with other start-ups a key issue surfaced. Would the parent American company consider the pace of developments sufficiently rapid at its Jerusalem based subsidiary and continue to finance ongoing research and development until cash began to flow. Earlier this year IHTR met with the former Xsirius President Dr. Gerald C. Dr. Charles M. Kupperman as president and ceo of the parent company. Dr.Kupperman recently visited and indicated satisfaction with progress. As a result until cash begins to flow from anticipated sales the local unit will have a mix of Government R&D grant money, some income and backing from its American parent.

Xsirius Israel is at a new stage. Xsirius Israel managing director Dr. Menachem Lewinsky is pursuing a strategy of forging strategic joint development ventures. It has resulted in the formation of a consortium which includes Galram, part of Rafael, Elisra and a group of scientists from Tel Aviv University, the Technion and the Jerusalem College of Technology. Israel's Ministry of Trade and Industry agrees that the consortium has the research and development strength to create practical solutions which would positively impact national security as well as result in commercial applications. The research which would be mostly Government backed is valued at approximately $500,000.

Dr.Lee Riebman ceo of the American based AEL Laboratories is participating in a joint development project with Superconductivity Inc.The ties between the two companies came about through the initiative of IHTR which identified AEL Laboratories and Xsirius as potential joint developers of unique niches in specialized markets for superconductivity products.

Of Xsirius' ongoing development projects that with Elisra for the development of a Ultra High Frequency High Power Cavity Filter may have the greatest potential. The filter is intended used in the Elisra RF Fast Switching System. Major sales could follow if the prototype, scheduled for completion early in 1992 meets with expectations.

Xsirius Superconductivity Inc. started activities in May 1989 and in the summer of that year became a public company when it raised $ 7 million, of which the greatest part was raised by an American public offering.

Israeli Companies on Wall Street

Selected income and earnings summaries for the quarters as noted , unless otherwise indicated. Nearly all of these companies are intensively export oriented. Prices are as of July 16, 1991 and the price changes relate to those a month ago.

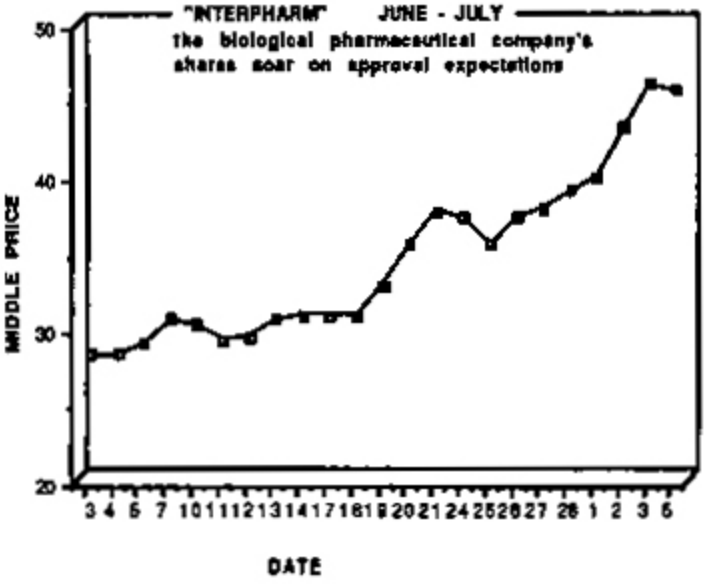
Company	Revs (in $ mil.)	Net Income (in $ thou.)	Price (in $)	Net Change
ELBIT COMPUTERS Defense electronics ELBTF OTC	95,775 Q1	5,733	23.000	+1.625
ECI TELECOM Telecommunications ECILF OTC	22,368 Q1	5,070	35.000	+5.125
ELSCINT Medical imaging ELT NYSE	45,173 Q1	3,200	5.500	+1.000
FIBRONICS Fiberoptics FBRX OTC	14,047 Q1	362	5.625	-3.000
INTERPHARM LAB. Biological products IPLLF OTC	7,894 Q1	924	44.250	+13.750
LASER INDUSTRIES Surgical lasers LAS ASE	8,605 Q1	81	4.000	-1.750
OPTROTECH Electro-optical systems OPTKF OTC	19,491 Q1	126	9.250	+1.250
SCITEX LTD. Computer graphics SCIXF OTC	97,800 Q1	22,534	32.750	+2.125
IIS INTELL. Computer peripherals IISLF OTC	9,826 Q1	1,167	17.750	+0.625
TEVA PHARMACEUT. Pharmaceuticals TEVYF OTC	80,817 Q1	6,848	14.250	+0.625
ELRON ELECTRON. ELRNF OTC	96,000 Q1	3,000	13.750	+0.375

OSHAP Technologies

Oshap has a diversified product (OSHF) mix which includes CAE workstations, machinery systems and automation products. It has a small share in the medical field as a manufacturer of hyperthermia equipment. It also develops software for electronic money transfers. Oshap earned nearly $3 million on sales of $40 million in 1990. However, the rate of sales dropped noticeably in the first quarter, and the company reported a loss of just under half a million dollars.

Whether the company can reach its stated goal of $100 million in sales and a 10% profit margin by 1994-95 will depend on integration into the European market by 1992, and on the ability of its management. At current market ratios, the goal works out to a share price of $20.

One can expect stronger sales and a return to profitability later this year. However, a steady flow of profits for several consecutive quarters would create a greater degree of confidence.



BVR IPO oversubscribed

BVR Technologies - developers and manufacturers of combat pilot simulators - raised $2.4 million on NASDAQ through a 25% issue of shares and options. Underwriter is the U.S. brokerage firm Ballis & Zorn. Thirty-one and 33% of shares are held by company President Yaron Sheinman and Vice President Aviv Tzidon respectively, both of whom are engineers and ex-fighter pilots. At this writing, the issue was oversubscribed and was being quotes under the symbol BVRUF at $7.25.

Situated near Tel Aviv, the high-tech company manufactures its "Hotshot" avionic simulator which imitates air-to-air and air-to-ground battle scenarios on front-line combat aircraft, including F-15s and F-16s, as well as a range of other combat avionic systems.

Geotek to stock market

Geotek, manufacturer of electronic fuses and civilian communications products, is planning a share issue with Palm Capital Markets and Investments. The issue is intended to raise up to $5 million for the establishment of a development/manufacturing facility for communication products. ARYT Optronics Industries is the major shareholder in Geotek, with a 17% holding. In addition, Geotek's shares are traded over-the-counter in New York.

Geotek is considered a growth company; sales grew from $21.5 million in 1989 to $45 million in 1990. In the first quarter of 1991, the company registered an operating profit and had a positive cash flow. The company employs 200 people at two plants in Israel, and 300 in three U.S. factories.

New OTC Exchange

The Association of High-Tech Industries has registered a company called the Over-the-Counter Stock Exchange, which will operate as a second exchange for small and growing companies. The association is planning to locate the exchange in the industrial area of Har Hotzvim, Jerusalem.

Fibronics Apollo/HP Domain traffic support

Fibronics has introduced its Apollo/HP Domain protocol support for its FDDI product line, System Finex. The FX8210 Translation Bridge now provides transparent communications between HP FDDI direct attached workstations and workstations on Ethernet subnets, furthering the multivendor environment in which the Fibronics equipment operates.

More sales of Scitex shares

Clal Electronics Industries and Discount Investment Corporation (through PEC Israel Economic Corporation) sold shares of computerized printing systems manufacturer Scitex during regular trading on Wall Street. Clal sold 265,000 shares at prices ranging from $28 to $32 per share, while Discount sold 175,000 shares at around $30 per share. The total value of shares sold is some $13 million. Scitex shares are traded OTC in New York.

ECI Telecom Ltd. (NASDAQ/NMS Symbol: ECILF), announced last month that the company's

wholly owned subsidiary, ECI Telecom GmbH, has received an order for its new Synchronous Digital Hierarchy (SDH) systems, which transport digital information at the rate of 155 Mbps (Megabits per second). The order for DM 11,500,000 (approximately $6.5 million) was received from Deutsche Bundespost Telekom.

The SDH systems, which are to be delivered over an eight-month period beginning in the second quarter of 1992, will be among the first of their type in the world.

SDH equipment provides a means to multiplex (combine), monitor and manage different forms of digital payloads, primarily on fiberoptic transmission facilities. With SDH, the user's access to the network is simplified compared with existing networks, enabling information to be routed to and from various destinations much more efficiently.

El Op telescope in Paris Air Show

El Op Electro Optics Industries exhibited its prototype ultraviolet satellite telescope at the Paris Air Show. The telescope is being developed together with Tel Aviv University for the Ofek satellite.

THE WORLDWIDE SEMICONDUCTOR INDUSTRY: A BACKGROUND REPORT

Today's semiconductor industry, which produces the microcircuitry used in all modern electronics products, has grown to global proportions since pioneering scientists at Bell Telephone Laboratories invented the first transistor 40 years ago. The advent of semiconductor technology revolutionized electronics, making products more compact, lighter and more energy efficient. Soon semiconductor chip makers, who originally designed and built their own production equipment, found that rapid changes in technology and increasing product demand required them to focus on device production.

By the late 1950s, chip makers were beginning to contract outside vendors to supply the equipment used to produce their miniaturized devices. As this trend gained momentum, the semiconductor equipment industry was born.

Today, the semiconductor industry has a dramatic impact not only on the end-product industries that use semiconductors, but on national cultures and economies around the world, with strong international markets and industries in the U.S., Japan, Europe and, more recently, Asian countries including Korea, Taiwan and the People's Republic of China.

The Global Semiconductor Market

The semiconductor industry has been characterized by cycles of growth and retrenchment. But since there is no foreseeable replacement for semiconductor chips, each cycle has been progressive; the market bottoms have risen steadily. In 1984, semiconductor sales soared a record 45% to $26 billion worldwide. Increased demand for semiconductors led many end-users to order more than they actually needed in an attempt to ensure availability. Faced with heightened demand, chip makers increased their equipment orders, sending their own suppliers – the equipment industry – into a strong upturn. The following year, over-stocked inventories caused markets to soften, and end users typically cancelled orders that were already over-inflated. Chip makers, suddenly faced with an *excess* of installed manufacturing capacity, reacted by sharply curtailing production and cancelling orders for new manufacturing systems, sending the equipment industry into its worst recession ever.

In 1985, worldwide semiconductor sales dropped 17.2%, a dramatic turnaround from the 45% growth seen in 1984. The resulting shock waves plunged the industry into a three-year downturn.

Beginning in late 1987 and continuing through 1989, the semiconductor industry again entered a period of robust health. Many chip makers' equipment use rose to critical levels, prompting them to again invest heavily in capital equipment, with a goal of producing the next generation of ULSI (ultra-large-scale integration) semiconductor devices.

While today's market has improved greatly, both users and suppliers remain cognizant of the cyclical nature of the business.

Today's Semiconductor Business

For at least the past 10 years, the global semiconductor industry has been characterized by rapid competitive changes. While technological advances remain an industry hallmark, the 1985-87 downturn forced companies to re-emphasize solid, cost-effective business practices. This resurgence in basic business sensibility spawned industry-wide interest in long-term relationships between vendors and users. This "partnering" philosophy, developed in response to the complex information needs of equipment suppliers and users, harkens back to the industry's early years when equipment users were actively involved in system design.

When purchasing equipment today, chip makers consider not only equipment performance, but also the ability of vendors to work with their customers worldwide to meet specific needs and ensure that the

equipment will continue to perform within its original specifications.

Trends In Manufacturing Technology

As the industry continues to produce smaller and smaller circuits, the tolerance for particulate contamination also shrinks. The need for virtually contaminant-free manufacturing environments, combined with competitive pressures to be more cost-effective, has caused profound changes in the industry.

One such change is the trend towards through-the-wall equipment design, in which manufacturing equipment is encased in an airtight shell –effectively a self-contained "cleanroom" – and installed behind the cleanroom wall with only an access port connecting the equipment to the wafer fabrication facility, called the fab.

This strategy offers two key advantages:

(1) It allows through-the-wall equipment to be serviced by technicians working outside the cleanroom while other equipment in the fab continues to operate as usual, and

(2) It minimizes the amount of floor space the equipment occupies in the cleanroom, which is very costly to build and maintain.

Increasing competition has also created a need for vendors to provide customer service to ensure equipment reliability. Equipment reliability is critical to chip makers trying to remain profitable in an industry in which manufacturing equipment can cost millions of dollars and products sell for as little as a few dollars per unit.

To be competitive, vendors must be able to meet and maintain high productivity and reliability specifications. To guarantee these operating parameters, vendors are providing services ranging from scheduled preventive maintenance to overnight availability of spare parts.

Worldwide Markets

The costs of competing in the worldwide semiconductor and equipment markets are high, but so are the rewards. Despite the periodic downturns, international demand for semiconductor devices continues to increase. Today's approximately $60 billion world market is expected to reach over $110 billion by 1995, according to forecasts by the Semiconductor Industry Association.

Sales of capital equipment within Applied's markets are forecast to grow from 1990's level of $2.0 billion to $4.2 billion by 1994, according to Dataquest, a leading market research firm.

AN INSIDER'S VIEW OF HEART SURGERY

With 1,010 beds, Sourasky is Israel's second-largest hospital, and performs 12 heart operations weekly. A key issue behind the current push for privatization of Israel's National Health System is the two-year wait for elective heart surgery. Testimony given at a national commission of inquiry reveals that there are 1,000 patients awaiting surgery and according to evidence collected the wait results 150 unnecessary yearly deaths.

Heart attacks and strokes occur as the result of a high level of fats or cholesterol in the body, which leads to deposits of fatty tissue on the inner wall of the arteries, particularly at the point where the arteries branch. The diminished space within the arteries hinders the flow of blood. This leads to a rise in blood pressure, which in turns heightens the risk of stroke or heart attack. If other means fail - such as anticoagulants, controlled exercise or drugs to dilate the arteries - then surgery may be required. The obstructed piece of artery is removed and replaced by a vein or synthetic graft. " Not always so," says Dr. Yakirevich. Arteries known as *mammary arteries*' are now sometimes taken from the chest.

"The mortality rate in open heart surgery is in the order of 0.5%-1%. If the left ventricle is deteriorated or in poor functional order, then mortality is likely to rise to 3%," says Dr. Yakirevich."A number of recent advances in surgical techniques and myocardial protection are responsible for these impressive figures", he adds.

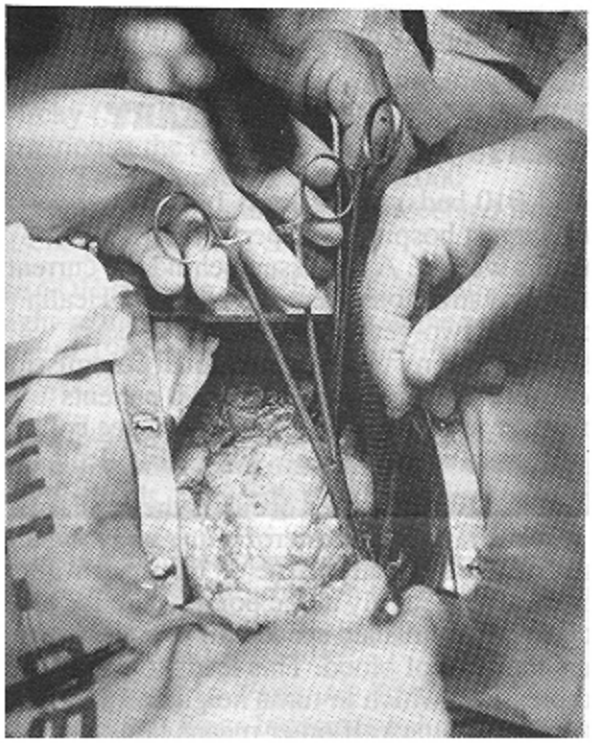
The Buzzword is DMIG

A number of years ago it became statistically clear that vein grafts were not the ultimate long-term solution, and a new approach was sought. The answer was internal mammary grafting, and the

Israel High-Tech Report Index*

309.14 + 10.80 %

*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



Dr. Yakirevich and surgical team about to complete grafting inner mamary artery

results are impressive. Because of its improved results in bypass procedures, "Double Internal Mammary Grafting" (DIMG) is a buzzword at Sourasky. Single-graft cardiac surgery is routine in major medical centers in America, Israel and other countries. However, only a few medical centers in the United States practice Double Internal Mammary Grafting. At Sourasky, more than 150 operations using DIMG have been exhaustively documented, proving that 'double' is better than 'single.'

"In five years, almost all grafts will be internal", predicts Dr. Yakirevich. "We started slowly with the procedure, and now even three grafts are doable," he says. Confidence in this procedure is so great that DIMG surgery is practiced on patients well into their fifties and early sixties.

Why use an internal mammary? "It is the only vessel available without atherosclerosis lesions," states Dr. Yakirevich. "The rate of graft patency or openness of graft is nearly 95% after 10 years when using internal mammary artery techniques."

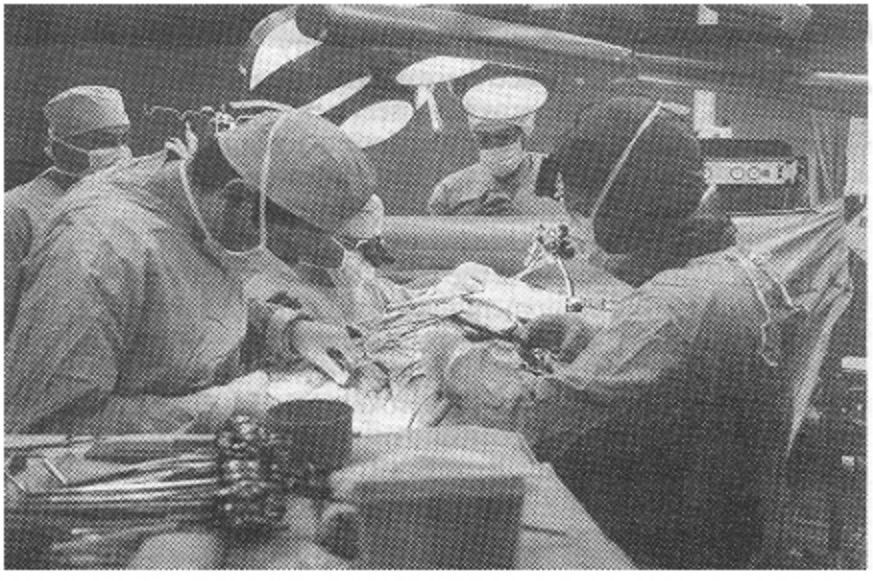
Other surgeons in Israel and abroad may be using similar procedures, but Dr. Yakirevich has performed the greatest number of these procedures.

The Editor Gets an Insider's View of Open-Heart Bypass Surgery

The procedure is demanding, and calls for the highest technical expertise and excruciating patience. The time to complete the operation took a full three hours. It was described as a fairly difficult surgical case. The patient, Hanna, a 68-year-old woman, at 90 kg is greatly overweight. She was previously operated on 10 years ago, with grafts supplied from a vein taken from the inside of her leg. The grafted vein had become blocked, creating another life-threatening condition - a "redo," in the jargon of the surgeon.

The patient's heart was exposed after the chest was opened. It was no surprise that the heart seemed unusually large; pre-op diagnosis found that the organ was enlarged. Resorting to the use of a leg vein as well as an internal mammary artery, Dr. Yakirevich, assisted by two other surgeons, a chief nurse and half a dozen supporting staff which included an anesthetist and blood pump technicians, performed the intricate surgery.

What are the high points during the three hour long operation? Many, but most impressive is the surgeon's skill which is strikingly evident during the grafting procedure. Connecting the artery taken from the chest area to the heart artery he painstakingly joins the two ends of the arteries, whose size is a fraction of the diameter of a normal drinking straw. Another took place when two electrodes were used to electrically stimulate the heart back into action. Yet another was the application ice cold water, from a pitcher filled with ice, on the heart to bring down its temperature. And then suddenly it was over! I



Dr. Yakirevich (background left) prepares for grafting vein which is being taken from patient's leg

excused myself and recovered from the tension of watching the performance of life preserving surgery. It was the first time in years that I took a stiff drink at high noon.

The next morning Hanna I visited Hannah who cheerfully responded to my greetings. For Dr. Yakirevich she reserved a smile of gratitude which said more than any words could convey.

AIDS threat boosts "Bloodless Heart Surgery"

The risk of AIDS and infectious hepatitis has made the use of other people's blood a major worry. Patients prefer to accumulate their own blood prior to surgery. This is not always possible or convenient in emergency or even elective surgery.

Generally in open heart surgery, six to eight 500 ml units of blood are used. The total amount of blood in the human body is four to five liters, or approximately 10 units. The goal is thus to minimize blood loss.

Dr. Yakirevich explains that at the outset of surgery he collects 500 ml of the patient's blood, which is reintroduced at the end to compensate for any loss. In May 1990, Dr. Yakirevich began to use Tarsilol. "Thrombocytes are constituents in the blood which are needed for normal clotting.

Circulating the blood during surgery tends to destroy the thrombocytes, and Tarsilol can reduce the need for additional blood in some cases, while in others it can eliminate it altogether," he explains. The technique is considered topnotch, as it cuts blood loss during surgery to 150 ml, where 600 ml is considered normal.

An Immigrant Surgeon Who Made Good

Born in Leningrad, Yakirevich immigrated to Israel in 1975. The aborted effort by a group of Russian Jews to highjack a plane here stirred his feelings about leaving Russia. A major consideration was his wish to bring up his two children in Israel. He received his medical education at the Lenigrad Medical School and surgical training at the Leningrad Medical Military Academy. In 1973, at the age of 36, he was awarded a Doctorate of Philosophy, and was appointed head of the Thoracic Surgical department of the Leningrad Medical Academy.

Dr.Yakirevich's success is accompanied by peer respect. His surgical skill and advanced procedures move colleagues to put him at the leading edge of cardiac surgery.

"He is my cardiac surgeon of choice because of his skill, patience and capacity for work," states Dr. Hylton Miller, Sourasky cardiologist and head of the hospital's catheterization laboratory. His department carries out approximately 300 angioplasty procedures every year.

NEWS AND VIEWS FROM THE UNIVERSITIES AND RESEARCH INSTITUTES

Method could remove toxic metals from polluted waters

Mercury could eventually be removed from contaminated waters, and certain commercially valuable metals mined from the sea, thanks to a filtration method developed at the Weizmann Institute of Science.

The procedure, developed by Dr. Abraham Warshawsky of the Weizmann Institute's Department of Organic Chemistry, is being adapted in collaboration with Dr. Sandro Degetto of Italy's National Council of Research in Padova to remove specific metals from the Adriatic Sea and from inland bodies of water in Sardinia.

Dr. Degetto approached Dr. Warshawsky in 1983 to see whether the Weizmann Institute scientist's method could be modified in order to "mine" uranium from the Adriatic Sea - which, like many bodies of salt water, contains this valuable metal in dilute form.

The technique Warshawsky developed was shown to work in laboratory experiments conducted in Padova with water samples from the Adriatic Sea.

Warshawsky was then asked to modify his method to extract toxic mercury from Sardinian waters so they can be used for breeding shellfish. Most systems for extracting mercury are not able to reduce concentrations to tolerable levels. In laboratory experiments conducted at the Weizmann Institute, Warshawsky reduced mercury concentration of polluted water to about 40 parts per billion – sufficient to make fish-breeding viable.

The two researchers recently signed a three-year collaboration agreement to further test and refine the mercury-removing technique in Sardinian waters. The Weizmann Institute scientist says the method could be modified to work in any body of water with high concentrations of mercury.

Weizmann and Oxford to cooperate on tumor analysis

New ways of using magnetic resonance spectroscopy and imaging to investigate tumors and

their response to chemicals or radiation are being explored in an exchange program between Oxford University and the Weizmann Institute of Science. Involved in this venture, sponsored by the British Medical Research Council (MCR) - are the MCR Biochemical and Clinical Magnetic Resonance Unit at Oxford University, headed by Prof. George Radda, and the Nuclear Magnetic Resonance (NMR) Imaging and Spectroscopy Unit at the Weizmann Institute, led by Prof. Hadassa Degani of the Department of Chemical Physics.

By measuring phosphorous and carbon compounds that supply the energy for cell biochemistry, NMR techniques provide a unique tool for diagnosing the metabolism of normal and malignant tissues in living animals. They can be used for a variety of other purposes as well, such as following the progress of experimental brain tissue transplants, studying geological specimens, or evaluating blood flow in the heart.

Soviet scientist chooses Israel over America

When Mark Safro decided to leave the Soviet Union, the top-ranking scientist was inundated with offers from European and American research centers. But he chose to come to Israel's Weizmann Institute instead.

Safro is one of 30 outstanding scientists from the Soviet Union who have recently joined the Weizmann staff. Another 50 talented Soviet Jewish immigrants are enrolled at the Institute's Feinberg Graduate School, 42 of them in the past year alone.

Safro, formerly associated with the Institute of Molecular Biology of the Soviet Academy of Sciences, was first spotted by Weizmann Institute Prof. Ada Yonath at an international conference. Impressed with the young scientist, Yonath arranged for him to work with her at a specially equipped laboratory in Hamburg, where many of the world's leading protein crystallography experts conduct their experiments.

New software for photovoltaic system design

Small calculators or radios powered directly from solar radiation are in widespread use today, since the design of small solar-cell systems is now relatively simple. However, the design of photovoltaic power stations using large-scale solar cells is considerably more complicated. Researchers, designers and economic assessors of such systems have to develop their own computer software, tailor-made for the specific application.

Most of the design difficulties have been eliminated with the creation of PVISRAEL, a user-friendly software package for personal computers, designed by Howard Wenger under the supervision of Professor Jeff Gordon of the Center for Energy and Environmental Physics at Ben-Gurion University's Jacob Blaustein Institute for Desert Research. PVISRAEL is geared towards the detailed design and analysis of PV power stations feeding electricity directly into the utility grid, and is also a valuable educational tool for student training.

Professor Gordon has used the new software package to provide consultation to the Israel Electricity Corporation and the Paz and Pimat companies in designing their central PV systems at the Ben-Gurion Solar Testing Site at Sede Boqer in the Negev.

PVISRAEL has also been adopted by the Pacific Gas and Electricity Corporation in Northern California as its sole design program for central PV systems. The corporation is using PVISRAEL for the design of a 500kw plant in California, a 3,000kw system for the Italian electricity grid, and for local PV systems to be installed in Africa.

Scientists at the University of Colorado are using PVISRAEL both for system design and for the training of research students, and the Northeastern Brazil Utility Company is using it for the design of four central stations generating a total of 100kw peak power.