

# ISRAEL HIGH-TECH & INVESTMENT REPORT

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### The Dwindling Human Resource: A Clue from the Classified Advertisement Section

The long, hot summer weekends were a convenient time for browsing through that old fashioned medium known as newspapers. Though Israel is ranked as one of the four most advanced countries in the use of Information Technology it is generally overlooked that the People of the Bible are also among the world's most avid newspaper readers. On Fridays the country's two major tabloids— Yediyot and Maariv, publish mammoth editions running into scores and scores of pages. The liberal paper Haaretz, Israel's counterpart of the New York or London Times also publishes a fat edition. Add to these the Jerusalem Post, the Arab language newspapers, and other non-Hebrew language newspapers, including at least six Russian language dailies, as well as city newspapers, everyone in this country is reachable by means of the written word. Classified advertisement sections are especially copious and serve individuals interested in employment or looking to buy or sell everything from automobiles, homes to used computers. I read the help wanted advertisements for a totally different reason. The number of the advertisements, the description of the individuals sought, the upbeat quality of the help wanted ads, to me are fairly important thermometers, barometers and divining

rods of the economic health of this country's high-technology industries. The appearance of a substantial number of advertisements looking for certain type of computer programmers is indicative of a vibrant software industry. Advertisements for software marketing specialists and technical writers more likely than not, indicate new contracts for existing companies or the arrival of company startup going on stream. If these advertisements are discontinued the chances are that the opening has been filled. A mental red light flashes if the same advertisements repeat themselves for several weeks. Is this not an indication that the positions offered are not filled? Is the employer finding it difficult to locate the personnel? The weekend newspapers have been reaping a bonanza from the overabundance of help wanted advertisements for technological help and it confirms that times are prosperous.

In checking official statistics my view is reinforced by the falling unemployment figures. Several years ago Israel's unemployment rate stood at more than 11%. The unemployment rate reached 6.6% earlier this year and shows no sign of rising, according to the Central Bureau of Statistics. A friend of mine runs a substantial large personnel agency. He has a site on Internet and last month alone, obtained 150 requests for software programmers by e-mail. "Israel is supplying software to the world and the need for software engineers is just greater than the supply," says Nat Gordon.

Telecommunications personnel whether technicians or engineers are also in great demand. I had an opportunity to convince myself that low engineer salaries" are a thing of the past. Steve, a 32, year old former New Yorker with several years of working experience for American Telephone and Telegraph as a telecommunications engineer is married to an Israeli. The young couple decided to live in Israel. Not less than six Israeli companies, variously active in telecommunications eagerly responded to his job application. He chose to work for a company at the cutting edge of satellite encryption. "The companies offered me American style salaries and in some instance stock options, as well. Remuneration is not the issue. I was able to choose my spot on the basis of professional preference. At a microprocessor based multiple

product company Genady and Alex, two program developers are former Russian engineers. Their technical background which they brought with them and their quick adapting, to the Israeli western approach to the technology business are a good mix, confirms the company's general manager. Through the Russian connection some of the company's research and development was farmed out to a scientist in Russia. All of this is good news. The bad news is that the further rapid development of new high tech businesses may well be held back by the lack of available personnel. The Russian immigration presently is small and can no longer be looked to as a source of manpower.

Perhaps a high growth technical education niche, with excellent growth prospects, is opening up for technical vocational schools. An instructor from an ORT Vocational School told me of the pre-army high school education workshops with lasers and optics which are a part of the school's curriculum. Many of the graduates will eventually opt for a lifetime career with the Israel Defense Forces. Only some will reach the private sector. Moreover, many young people are preparing themselves for careers in business and are reacting to the lure of high salaries offered to MBAs. I overheard at a cocktail party a local businessman urging the president of Tel Aviv University to double the number of the size of engineering courses. Our industry will provide the funds if you provide the education, pleaded the businessman. However, it is more than coincidental that the newly appointed Minister of Science Benjamin Begin recently stated that he will work towards a closer linkage of technological education with the world of science and business.

With as many as 1,700 young high-tech companies seeking a place in the business sun the demand for skilled personnel accelerates. Israel's contribution to science and technology is totally disproportionate to its size. Unlike emerging countries such as India and China it has a finite human resource pool. Replenishing that pool will reinforce and provide the basis for new achievements as we ready ourselves for the challenges of the 21st century.

#### **Internet Fax Startup**

Elron Electronic (NASDAQ:ELRON) and Arel Communications & Software Ltd. (NASDAQ:ARLCF) have formed a joint company "ArelNet Ltd.elroNet Associate", on a 20% /80 basis with a total investment of \$2.5 million. The new company is to exploit Elron's own technology for transmission of faxes over the Internet, and Arel's network message handling, switching and management system, that can receive a wide variety of telecommunication messages (fax, telex, telegram, e-mail or telephone) and retransmit them in the same or transformed protocol.

#### **New Role for the Bank of Israel**

Israel's Ministry of Finance and its Central Bank have agreed that the Bank of Israel will buy Government Bonds in the open market place when it feels the need to moderate sharp changes in the yields of bonds. This is the first step in an announced effort to maintain a stable capital market. It is likely that other steps may include reforming the guidelines for investments by pension funds. Some analysts have suggested that the Government may do away with preferential interest bond issues, and ease the restrictions which today allow these funds to invest only 2.5% of all assets in shares. The \$600 -700 million raised mid-year by Israeli companies on the American capital market, and to a small extent on the London AIM market, is much greater than the equity capital raised on the Tel Aviv Stock Exchange in the same period of time. This issue has to be addressed to assure a healthy capital market in Israel while new regulations concerning bond stabilization may be useful under unusual circumstances, which may be the case, if a flood of pension fund redemptions continues.

#### **Standard & Poor's Assigns AA- Risk Rating to Government Bonds**

For the first time, the Israeli bond market has received a risk rating. Standard & Poor's has rated Israel government bonds as AA-. At the same time, the company reconfirmed its credit rating of Israel bonds on the international capital. These ratings were assigned in January 1996 at A-. It should be noted that each country is assigned

two risk ratings: internal and external, the internal being higher than the external. Standard & Poor's pointed out that in its estimation, no changes are expected in Israel's risk rating, which will remain unchanged for the time being.

#### **IAI/McDonnell-Douglas Awarded US Air Force Program**

Israel Aircraft Industries and its US partner IAI/McDonnell-Douglas defeated Elbit Ltd. Defense Systems and Northrop-Grumman in a huge tender to upgrade the US Air-force's trainer aircraft.

The decision was announced by the US Department of Defense. The \$400 million first stage of the tender could eventually reach \$700 million, after training and maintenance systems have been included, and an option to upgrade additional aircraft of this type for other nations' airforces.

The Israel Aircraft Industries are a 50% participant in this project.

#### **Japan, Israel Considering Binational R&D Fund**

Japan and Israel are moving towards establishing a binational research and development fund similar to Bird-F, the Israel-US Binational R&D Fund, according to Ministry of Industry and Trade sources.

#### **...and Commercial Ties Expand**

Meanwhile, the huge Japanese firm Sumitomo Metal Mining is to open a permanent office in Israel as part of its program of significantly extending its operations in the country, according to Sumitomo's Deputy General Manager for Liaison with Europe, the Middle East and Africa.

#### **Japanese to Assist Israeli Hi-tech to Enter Japan**

The Japanese Takachiho Koheki (TK) has begun operations in Israel. The company's sales in 1995 reached \$220 million. TK specializes in the promotion and marketing of know-how intensive products in the Japanese market. The company has 45 years of experience and a wide marketing network serving clients like NTT, Mitsubishi, TDK, Honda and others. The company

announced expanded operations with Israeli companies. TK has in the past assisted Israeli firms Orkit and Scorpio in penetrating the Japanese market.

#### **Japanese Airline to use VCON's Video System**

Japanese software firm Nippon Systemware (NSW) was recently awarded Japan Airlines' \$250,000 video conferencing project, competing against industry leader PictureTel. NSW has chosen to implement the project using video conferencing equipment developed by VCON of Herzliya.

The Japanese-Israeli partnership succeeded in beating PictureTel by offering a combination of advantages, in terms of picture quality, tailor-made solutions, ISDN and LAN support, plus meeting a close deadline and offering local support (via the Japanese partner).

In the first stage, the system will be installed in every airport in Japan. At a more advanced stage, the company intends to install similar systems at all airports in which it operates worldwide.

#### **Honda Acquires \$1 Million of Development Tools**

Honda Japan has acquired \$1 million in development tools from Sapiens International. Sapiens shares are traded over the counter in New York. Sapiens' development is carried out in Israel. Honda is one of Japan's largest automobile manufacturers. Sapiens' ObjectPool 3.0 will be used to develop central applications on mainframe computers, including budgeting, accounts and warehouse management. "We believe that in the coming year, Sapiens will close \$5 million in deals, for Japan," stated Sapiens' Asia-Pacific manager.

#### **50% of Amos' Satellite Capacity leased to Hungary**

Antenna Hungary, the Hungarian satellite communications company, signed an agreement with the Israeli company SpaceCom whereby Antenna will lease half a responder, located on the Amos communications satellite. Antenna Hungary is setting up a satellite broadcasting station on a hill near Budapest. Upon its



completion, the agreement will go into effect, with broadcasting commencing in September or October 1996.

#### **Accent Develops Multilingual Plug-in to Netscape Navigator**

Accent of Jerusalem has developed Navigate with an Accent, a unique multilingual plug-in to Netscape Navigator and Navigator Gold 2.0 - 3.0. The program, based on a universal code technology, automatically detects the language of the page and displays it appropriately.

Until now, this type of display was possible only using Accent's browser. The company now offers a plug-in to the most popular of the web browsers, Netscape Navigator. The plug-in allows multi-lingual display without the use of an Accent stand-alone product.

#### **Reuters Aims to Integrate News into Israeli Internet Sites**

Reuters is offering Israeli Internet companies updated news services to be integrated into their sites. The company intends integrating its services into leading economic, business, finance and hi-tech sites. At present, news is available in the English language only, but the company is considering the possibility of providing Hebrew-language translation of part of the information. Reuters also intends offering private information services to the internal computer networks of organizations such as banks, brokerage firms and others. Reuters supplies hourly updated news on business, sport, entertainment and general topics.

#### **Siemens AG Seeks More Israeli Investments**

The German industrial giant Siemens is seeking more opportunities for investment in Israel. The company has already entered into partnership or acquisitions in Israel's communications, semiconductor and energy sectors, and is seeking more channels to enter the local market. These channels include R&D, subcontracting, joint-ventures and purchasing. Most recently Siemens AG and Elscint Ltd. have announced cooperation for computerized tomography components. The two companies expect to combine efforts in both R&D and in

manufacturing of components. A multi-year, joint development program that will aim at the development of state-of-the-art components for use in CT systems. "A faster time-to-market is essential to the success of our diagnostic imaging equipment under increased cost pressure in the business. The cooperation with Elscint is an important step to achieve this goal," says Erich Reinhart, President and Chairman of Siemens Medical Engineering Group.

The Medical Engineering Group of Siemens AG, with its activities concentrated on imaging systems and electromedicine, supplies health services worldwide as one of the largest suppliers of high-tech equipment, systems and services for medical diagnostic and therapy. "The cooperation with Siemens will help us achieve economies of scale for components critical to our medical imaging technology and both companies will benefit as we exchange engineering and manufacturing know-how," says Jonathan Adereth, President & CEO of Elscint Ltd.

Siemens has cooperative agreements in place with Ormat (geothermal energy and systems), Orbotech (printed circuits and LCD display testing systems), Tadiran (telecommunications and military communications systems). Additionally, Siemens has executed acquisitions of companies such as Ornet and established semiconductor design firm IC Com. Last year, total Israeli purchases from Siemens were \$168 million, and Siemens procurements from the Israeli market totaled \$130 million.

#### **Tower and WSI in Long-Term Agreement**

Tower Semiconductors announced a long term cooperation with WaferScale Integration (WSI), a fables semiconductor producer from Fremont California. WSI, specializes in non-volatile memory devices and field programmable devices, micro-controllers that take advantage of the low-power requirements, and fast, on-board memory on each device. Tower will utilize its new 0.6 micron technology for the production designed for WSI. The agreement between the companies includes certain capacities and technologies to be utilized in the project. WSI has a development center in Israel, and its close proximity to the Tower plant was a determining factor in its

decision. Michael Callahan, CEO of WSI said the company is seeking a long term relationship with Tower. He also said that the company is planning to add more engineers to its development and design center in Israel. Tower recently lost Hewlett Packard as a customer, and the company is currently seeking to expand its customer base to a more balanced mix.

#### **Kibbutz Maagan Michael Prepares IPO for Plasson in London**

Kibbutz Maagan Michael stands to make history when it sell its Plasson plastic factory shares outside of Israel. The plans are to have an IPO on the London stock exchange to raise \$30 million, based on an valuation of \$80-90 million. Plasson which has operated as a partnership, is one of the largest plastic companies in Israel. Turnover in 1995 reached \$80 million. Profits totaled some \$6,6 million. Most of the company's products are for export.

#### **Trans Scan Raises \$4.9 mil. in PP**

Trans Scan Research and Development has completed a \$4.9 million private placement. The company is a subsidiary of RSL Electronics, traded on the TASE. It develops and manufactures a new early detection system for breast cancer. A beta version of the new system is in advanced clinical testing both in Israel and abroad. The company is preparing to file for US FDA approval. The system has already been approved by Israel's Ministry of Health.

#### **HP Establishes Regional Sales**

Hewlett Packard is opening a regional sales office in Israel, responsible for part of its operations in the Middle East. The new office will include Israel, the Palestinian Autonomy and Jordan.



**VocalTec a Pioneer in Internet Telephony**  
A Washington Times review describes VocalTec's recent Internet Telephony MacIntosh product as "the most advanced and the most capable" telephony software package. VocalTec Ltd. is a public company which develops and markets software that enables voice and audio communications over the Internet. The company also is pioneering open systems to bridge the Internet to the public switched telephone network. VocalTec's core products include Internet Phone software introduced in February 1995 and the Internet Phone Telephony Gateway Server.

The company is based in Herzliya, Israel, but concentrates its marketing thrust in the US. Product development is carried out in Israel. In Herzliya, management recently introduced me to its flagship product which allows full-duplex (two way) telephone communication, over the Internet. Software which allows the user to use the Internet as a telephone is alluring from the consumer's point of view--"the appeal is cheap telephone calls". Through the Internet instead of Ma Bell, calls can be made anywhere in the world, and they cost nothing beyond the local Internet connection charge," says International Data Corporation's Analyst Mark Winther. As early as December 1995 the IDC consultancy noted that Internet voice telephony products are becoming readily available in electronic stores in the US. The quality of the conversation over the Internet does not compare with that of American Telephone, Germany's Deutsche Telecom or Israel's Bezek. The technology which is spawning a new generation of products is likely to develop into a major threat to the \$70 billion US voice market. Ohad Finkelstein, VocalTec's, Vice President of International Sales established an Internet connection between himself and a colleague. The quality of the voice was good, though as yet not up to the quality of the local telephone vendor but a vast improvement over its quality last November. This gives rise to the expectations that quality will be further improved in forthcoming upgrades.

### **The Technology of Internet Voice Transmission**

Sending speech over the phone requires its compression before it is transmitted. A further requirement, apparently overcome this summer is the need for both parties to have the same Internet software and be on-line at the same time.

On August 1 VocalTec introduced its new product the Telephony Gateway which gives it a leg up on the use of Internet for telephone communications. Using its basic communication Internet Phone software technology, it extends its reach of telecommunication systems beyond the Public Switched Telephone Networks (PSTN) while reducing long-distance phone charge. The new Telephony Gateway enables the convenience of initiating calls from either PCs or telephones, and the ability to communicate with anybody with a telephone via the Public Switched Telephone Networks.

### **Corporate strategy**

To be the de facto standard for voice communication by obtaining large market share, VocalTec by the end of 1995 had the largest customer base in its field and reportedly some 1 million people have tried its software. It is expected that it will reach several million by the end of the current year. It has aggressively used the Internet to obtain sales. It also pursues OEM deal such as with Cirrus Logic Inc's Crystal Semiconductor subsidiary to bundle Internet software with its audio and modem chips.

### **Financials**

VocalTec(TM) Ltd. (Nasdaq: VOCLF), announced early August revenues of \$1.8 million for the second quarter ended June 30, 1996, an increase of 295 percent over revenues of \$0.46 million for the corresponding period in 1995.

Revenues for the quarter increased 40 percent over the \$1.3 million reported for the first quarter ended March 31, 1996.

The second quarter 1996 net loss, before a one-time charge of \$1.3 million related to the acquisition of Insitu Inc. in April 1996, was \$0.898 million or 10 cents per share. Net loss for the second quarter of 1996 after the charge was \$2.2 million or 25 cents per share based on 8.6

million weighted average shares outstanding. Net loss for the second quarter of 1995 was \$0.21 million or 4 cents per share based on 6.0 million weighted average shares outstanding. Net loss for the

first quarter of 1996 was \$0.6 million or 8 cents per share. Gross margins during the latest quarter were similar to the second quarter of 1995. The operating loss in the second quarter of 1996 increased primarily due to the acceleration of spending on additional sales and marketing personnel, advertising aimed at broadening the user base and the introduction of new products. Earlier this year VocalTec sold shares by way of its IPO. The share issue raised over \$30 million but along with other high tech issues its priced declined sharply to its recent level of \$5-7.

### **Murata Fax Machines Adopts Aliroo's Encoding Software**

The Japanese fax manufacturer Murata will integrate the firm's encoding system into all its fax machines. Murata, which manufactures close to 1 million fax machines annually, will integrate Aliroo's PrivaSuite encoding system into all 1997 and subsequent models. Aliroo will receive royalties from the sales of products fitted with its software. Murata's new fax machine will be able to encode and to decode facsimile messages and documents transmitted directly by fax machines, independent of any computer. Decoding takes place by means of repeat scanning ("copy"), similar to the operation of photography. Messages will also be able to be decoded by means of a computer. The encoding key can be selected using the facsimile's machine dialing keys. Murata anticipates that processors fitted into the 1997 model fax machines will have the capacity to operate the new encoding systems.

### **Bezeq Purchases a Bonanza for Tadiran Telecommunications**

Tadiran Telecommunications buoyant sales to Bezeq and to the Israeli market resulted in 34% increase in revenues to \$141.4 million and an 83% jump in profits to \$16.6 million. Export sales rose by 16% to \$40 million.

### 25,000 Win95 Copies Sold in first 60 Days

25,000 copies of "Win95" in the Hebrew version, were sold in the two months since Microsoft unveiled the new operating system. Microsoft Israel estimates that sales in the first year will reach approximately 150,000 copies. Of the Hebrew version already sold, 9,000 copies are upgrades sold for existing systems and 16,000 copies sold with new computers in OEM agreements. The company charges about \$80 for each OEM copy. Microsoft estimates that the volume of sales of Win95 in Hebrew testifies to the market's rapid adaptation to the new operating system. By contrast in the first year of the launch of Windows 3.1 in Hebrew, only about 50,000 copies of that operating system were sold.

### M-Systems Raises \$12.0 Million

M-Systems, flash disk pioneers, recently succeeded in completing its second share issue in the US. The company sold 2.22 million shares at \$6 per share. The share issue was managed by investment banks Hambrecht & Quist, and Oppenheimer. At the time of the filing of the prospectus the M-Systems shares were trading at \$15. When American technology shares were sold heavily the company's shares declined as well and to the \$6 level, at which the issue was completed.

### A Wire and Cable-less World

What emerging investing theme looks exciting but safe? Long term, the Israel High-Tech & Investment Report is excited about the wireless area. For major companies like L.M. Ericsson, Motorola, and Nokia and a compound annual earnings growth of 20% to 30%, over the next five years, is predicted. It's now estimated that by the end of the decade the number of cellular subscribers worldwide will be 350 million to 400 million, compared with about 85 million currently. Infrastructure buildup around the world is accelerating, according to estimates from Smith Barney, US investment banker's analysts. Experience in intelligence and development abilities in communications, software and hardware are related to Israeli military background and have found full expression in the rapidly growing field of data communications. Some

leading companies include Fibronics, Lannet, Omet, NiceCom and Scorpio. New entrants include RDC, BreezeCom, previously LannAir) and WaveAccess previously AirAccess. They aim to make the communications network infrastructure for a wireless and cableless world. Yet, communications network transmissions, such as Fast Internet and ATM (Asynchronous Transfer Mode) will prevent that occurrence. However, industry observers point out that the key word is portability. Over one-half of personal computers sales are portables. (the percentage in Israel is considerably lower) Users desire to be free from plugging into a network, or even a work station. This is a definite trend and the newcomers to the field aim to capture a share of the \$150 million market for WLAN (wireless local area network).

### BreezeCom

BreezeCom, a Lannet spin-off, was established in 1992. Lannet was the developer of the LANswitch which was named the world's top Ethernet switch. The company aims to become both the leader and de-facto standard in terms of infrastructure, access points and WLANS, according to a company executive. BreezeCom employs 40 people and is one of the leaders in its field in Israel. It is focusing its marketing efforts primarily on the US. The company's products were first marketed in October 1995 and are being delivered at a monthly rate of \$500,000. Shareholders include Madge, Arpal, the Star and Mofet funds, Clal Venture Capital and the RAD group. Altogether \$20 million has been raised by the company.

### US Robotics Purchases Israeli Scorpio for \$80m.

US Robotics one of the largest modem manufacturers in the world, with expected 1996 sales of \$1 billion has signed an agreement to purchase outright Scorpio for \$80 million in shares.

Scorpio develops, manufactures and markets switching systems in communication networks, primarily ATM switchboards. US Robotics, will operate Scorpio as an independent subsidiary in Israel. Scorpio began operations only three years

ago and employs 35. It began to market its products only recently. Other shareholders include a number of venture capital firms among them: BEA Funds of the US, the Mofet Fund, the Polaris Fund, Oscar Gruss and Dovrat-Shrem. The closing of the deal has been scheduled for late September.

#### Who will Waltz Next on Wall Street?

Investment analysts, Wall Street bankers and candidates for initial public offerings on the American capital market are explaining away why "the window of opportunity" is closing for small high tech companies. The closing window refers to the willingness of investors to put up capital for the equities of young untried companies. The Israeli hopefuls anxious to reach the American market, may have to either postpone their debut or rethink the valuations and be ready to accept less money. Yet a group of local companies have decided to go ahead with their planned financing issues. Some of these feel that their business activities are in fashion on Wall Street and will attract popular public interest.

One of these is Orckit, which has been valued at \$150 million and is working through Alex Brown and Montgomery. Orckit enables telephone carriers such as Bezeq, to provide rapid Internet access based on their existing copper cables infrastructure.

A non-Israeli company, Aware was floated in August at \$10 at a valuation of \$180 million and its shares gained in the secondary market 50%. Orckit filed a registration statement relating to a proposed IPO, with the US Securities and Exchange Commission (SEC), and is due to file a public prospectus and go on its road show. Radcom, of the RAD group, manufactures equipment for the testing of local area networks, which already is being sold mainly to developers of telecommunications equipment. The company hopes to complete its IPO by the beginning of October. The company, which has developed equipment for testing ATM networks, is due to make its IPO at a value of \$85 million. Montgomery and Robertson Stephens are reported to be handling the issue.

Others hoping to get to the starting block include Orad, partially owned by Ormat, which has

developed a virtual television studio plus a software package, allowing advertising billboards to be used at sporting events for numerous simultaneous advertisements. The technology will allow internationally televised events to allow different nations to view different advertisements. Smith Barney, Lehman Brothers and Prudential investment bankers are expected to underwrite the issue which is rumored to evaluate the company at over \$180 million. The issue is being planned for October. The company's annual sales are about \$8 million and the order book is growing.

Summit Design is also moving ahead towards an IPO. Summit is an American company connected to the Israeli DCL company, which holds 20% of its share capital. Summit has already filed a public prospectus with the US SEC, and expects to begin its road show at the beginning of September. The company is being valued at \$115 million and Robertson Stephens is managing the offering.

Other names include ITI Jerusalem, which manufactures peripheral computer equipment for making calls through the Internet. The company will be seeking \$21 million. The issue is being managed by the little known firm National Securities.

Enigma, a rising potential star in the electronic book publishing field, has apparently delayed its plans for an IPO this year.

Montgomery and Robertson Stephens are said to be replacing Bear Stearns as underwriters for Eurocom Cellular Telecommunications Initial public offerings and secondary issues, for some companies are becoming somewhat elusive. Accent appears likely to cancel its secondary issue.

NetVision the Internet service provider may temporarily forego its planned issue. The company is one of Israel's fastest growing suppliers of these services. The Israel High-Tech Investment Report is one of NetVision's clients. From our experience NetVision's support services" are at the top of the field.



### **New Drug Delivery System May Help Fight Rheumatoid Arthritis**

A potential method for treating rheumatoid arthritis, Crohn's disease and other chronic inflammatory disorders has been developed in an animal study conducted by Weizmann Institute and Ben-Gurion University researchers.

This approach -- described in a recent issue of *Cytokine* -- may also be used to control excessive weight loss such as that occurring in cancer, AIDS and tuberculosis.

The method consists of a new delivery system that provides the organism with a steady supply of a natural therapeutic substance. It was developed by Prof. David Wallach of the Weizmann Institute together with Prof. Joseph Kost and graduate student Rom Eliaz of Ben-Gurion University of the Negev. People with rheumatoid arthritis and other autoimmune disorders characterized by chronic inflammation produce increased amounts of tumor necrosis factor, or TNF. While TNF normally kills diseased cells and controls inflammation, it can sometimes get out of hand, causing a variety of illnesses. High levels of TNF are also responsible for excessive disease-related weight loss. Previous studies have shown that injecting soluble TNF receptors -- free-floating molecules that bind with NF -- helps relieve the symptoms in human patients because the receptors absorb NF. But the benefits are short-lived, as these receptors are quickly cleared from the body. Attempts to keep them in the blood longer by modifying them prior to injection, may fail because the organism is likely to perceive the modified molecules as foreign and develop antibodies against them. In their research on mice suffering from rheumatoid arthritis and/or excessive weight loss, Wallach and colleagues managed to maintain a steady level of natural NF receptors in the blood, thereby imitating the process that normally occurs in the body when it tries to ward off the knockout punches of NF. They achieved this by developing a polymer delivery system that contains NF receptors and continuously releases them in small amounts. Mice remained free of symptoms for several weeks after receiving injections of polymer-coated NF receptors, while those that did not receive the injections developed joint swelling, impaired leg

movement or lethal weight loss. In addition to being effective, this method is also economical because the costly NF receptors are released gradually in very small amounts.

Prof. Wallach has studied NF receptors for some 14 years and -- together with his Weizmann Institute colleagues -- was among the first researchers in the world to clone them.

This study was supported in part by InterLab, Nes Ziona, Israel; Ares Trading S.A., Switzerland, and Israel's Ministry of Science and the Arts.

### **3-D Glasses for the Robot**

The trouble with many robots and other automated systems equipped with artificial vision is that their eyes "see" the world as two dimensional. As a result, they have great difficulty in assessing the relative positions of objects. Existing ways for robots to reconstruct 3-D images tend to be slow and cumbersome, but Weizmann Institute physicists have developed a 3-D imaging technique that greatly speeds up and simplifies this process. The system, developed by Drs. Daniel Zajfman and Oded Heber - of the Particle Physics Department, uses two regular video cameras, a light source and a transparent fluorescent screen placed between the cameras and the object to be filmed. When light is reflected off the object, it strikes the screen and creates a flash that the cameras record along with the image of the object. One camera films continuously, while the other has a shutter that opens for only a billionth of a second at a time registering just a minute fraction of the light particles emitted by the flashes. Because both the speed of light and the time that it takes for the flashes to fade on the screen are known, it is possible to determine the exact distance between the screen and each point on the object's surface. This information, in turn, is combined with data from the 2-D picture of the filmed object to form a 3-D image.

The new 3-D imaging system can be applied in such diverse fields as aerial photography, cartography and surveying. A patent application for the invention has been filed by Yeda, Research and Development Company Ltd., the company which deals with the commercialization of Weizmann Institute research.

### **An Open and Shut Case**

Some plants may have an easier time "waking up" than many people do, thanks to a, built-in biological clock- that causes them to open their leaves in the morning and fold them at night. Now a Weizmann Institute researcher has discovered a biochemical "switch" that appears to control this opening and closing action. Leaf movements are produced by changes in the volume of motor cells on opposite sides of the pulveinus, a thickened area at the base of each leaf stalk that acts as the leaf-moving organ. At dawn, cells in the lower half of the pulveinus swell and those in the upper half shrink, opening the leaves, while at dusk the reverse process occurs.

The swelling and shrinking are made possible by the flow of charged salt particles called ions through special channels in the motor cell membrane.

Dr. Nava Moran of the Neurobiology Department has shown that certain ion channels open up only if they, or other nearby proteins, acquire phosphate. In a study reported in the August issue of *Plant Physiology*, she was able to use this biological "switch" to control the opening and closing of the channels.

Borrowing a technique known as the patch clamp from neurobiological research, Moran, immersed a tiny strip of membrane in a solution where phosphate could be added or removed, and observed the opening and closing of the channels. Since ion channels probably underlie not only leaf movements, including those produced in response to light or touch, but also other vital processes in plants, the improved understanding of the movement control mechanism may one day have such diverse applications as preventing the wilting of crops during drought, or altering the time of flowering and fruition.

### **Dialogic Israel Develops System Supporting 12 -16 Internet Calls Simultaneously**

Dialogic Israel, a fully owned subsidiary of the New Jersey-based Dialogic Inc., has completed the development of a system capable of

supporting the simultaneous transfer of several calls over the Internet.

Integration of the Dialogic card with existing Internet telephony software, such as Vocaltec's Internet Phone, enables 12 -16 phone lines to use the same card at once.

Until now, all software developed for Internet telephony supported only one call at a time. The new integrated system may be connected to private business exchanges, in order to carry on several international calls at once, each at the cost of one local call.

Dialogic Israel, located at the Tefen Industrial Park, has been active in Israel for three years. The parent company is the world leader in the development, manufacture and marketing of computer telephony components.

### **Makhteshim: Profit \$10.9 mil.**

Agricultural chemicals manufacturer Makhteshim, of the Koor group, has posted a sharp rise in profitability for the second quarter of 1996. Makhteshim ended the quarter with a 39% rise in net profits at \$ 10.9 million as compared with \$ 7.8 million in the parallel 1995 period. The group's sales for the reported period surged to \$ 128.3 million, as compared with \$ 117.8 million in Q2 '95.

Makhteshim profits also increased, for the half year period, though not as dramatically, posting 1996 six month net profits of \$ 23.3 million as compared with \$20.8 million last year. Sales were \$303.0 million as compared with \$ 274.0 million in the parallel period.

### **Teva Profits Drop**

Pharmaceuticals manufacturer Teva ended the second quarter with sharp drop in profits. Last year the company earned \$18.3 million as compared with \$605,000 in the parallel 1996 period.

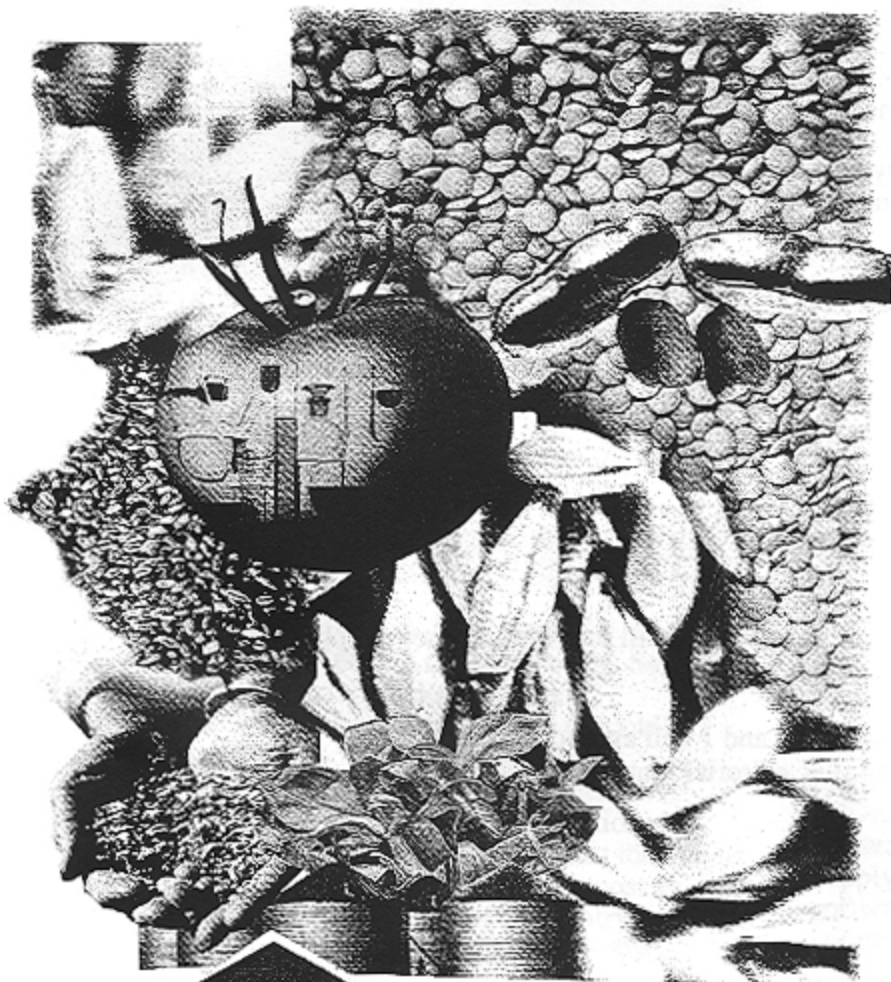
Figuring prominently in the results was the \$14.9 million one-time write off recorded by Teva in connection with its acquisition of US generic drug manufacturer BioCraft. Eagerly awaited is the FDA's review of Teva's application for approval of its potential block buster drug copaxone

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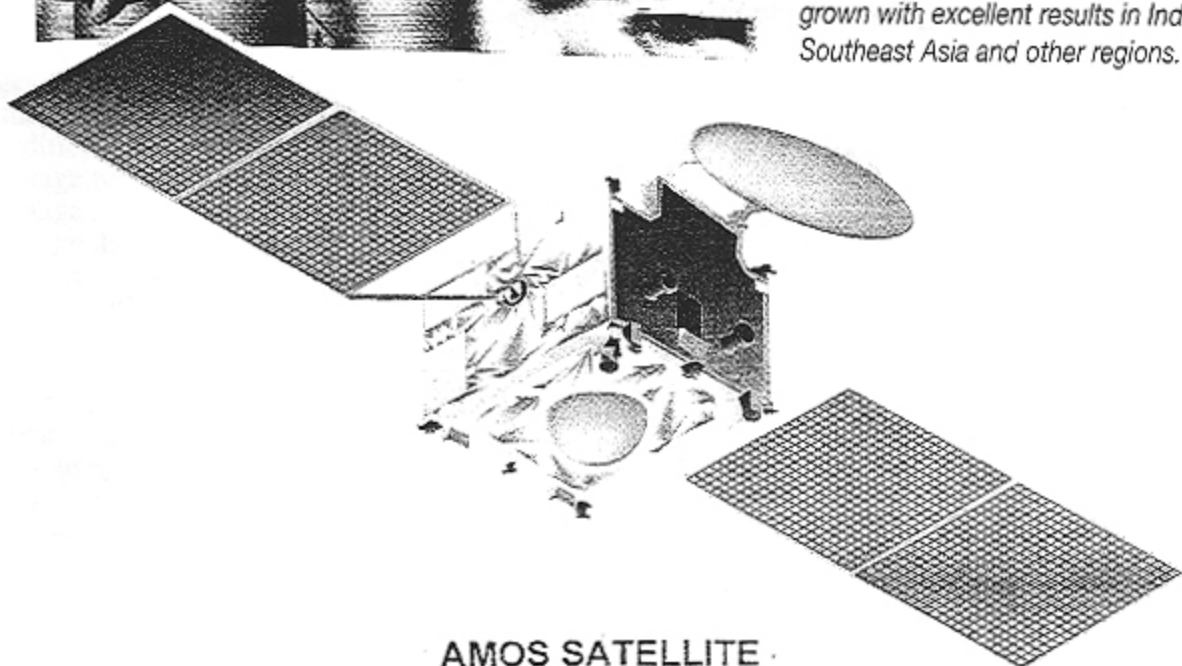


*A recent development is the saucer-shaped yellow zucchini, destined for world markets and for home gardening.*

*Another invention is the black watermelon, aimed at the European and American markets.*

*Following the transition to organically grown, chemical-free products, Israel has developed naturally coloured cotton, so that in addition to white cotton, brown and green cotton can now be grown.*

*A variety of hybrid cotton has recently been developed. Characterized by longer and stronger fibres, it is typically a high yield-per-area crop, requiring less water. It has been grown with excellent results in India, Southeast Asia and other regions.*



AMOS SATELLITE

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September 1996

Dear Subscriber:

Your newsletter is viewed in Israel by high-tech companies as a vital vehicle for reaching an important audience in various parts of the world.

These companies are not only anxious to be noted by our readership but wish to expose their products to you.

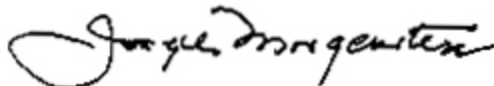
In this month's report we feature VocalTec, a pioneer in Internet telephony. This exciting new field of communications is explained in detail in our coverage of the company.

Compliments of VocalTec, you will find enclosed with this report, their software product and registration number. This software allows inexpensive long distance call from the computer.

The company will shortly have a new version which will provide Internet telephony from a pc or a telephone to anybody with a telephone.

It is my pleasure to extend this product to you and I will appreciate hearing any comments that you may have about the new editorial emphasis on Internet and related subjects.

Sincerely yours,



Joseph Morgenstern  
Publisher