

ISRAEL HIGH-TECH REPORT

A MONTHLY REPORT COVERING NEWS AND INVESTMENT OPPORTUNITIES

JOSEPH MORGENSTERN, EDITOR

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Double it Now

Israel's business community will perform better when a new Government is formed and provides economic leadership!

Statistics of the economy's performance in the first four months of 1990 show the need for concerted action. The growth in the Gross National Product which so far in 1990 is performing at an annual rate of 1%-1.5%, is well below forecasts of 5%-6% growth. Industrial output is lower, as are exports. The rate of unemployment is holding above 9%. Yet, imports, private consumption and inflation are all higher. The deficit in the balance of payments has increased to an unsatisfactory figure of \$ 1 billion.

Export industries, obviously must shoulder the burden of leading an economic upturn. This is to be accomplished while the global marketplace is increasingly more competitive and trade barriers are a limiting factor. Yet, Israeli innovative products penetrate international markets. Agro-technology, biotechnology, electro-optics, robotics, CAD/CAM systems, imaging technology, membrane systems, alternative energy forms, telecommunications, pesticides, pharmaceuticals, enzyme technology and medical equipment are fields strongly participating in Israel's total exports. These fields continue to account for a rising percentage of total exports. A common denominator to these industries is their use of in the house research and development. Another, is their tendency to contract basic research projects to Israel's institutes of higher learning.

How important is research and development to these industries? The contents of a recently published annual report covering the activities of Israel's leading imaging technology producer are instructive. Over the past five years the company has sold \$855 million worth of products, nearly all exports. \$85.5 million or 10% of the sales was spent on research and development with one third supplied by the Government. The vast majority of Israeli industrial exporting firms spend only a small fraction of total sales on research and development. Managers would like to allocate more money for

R&D but usually end up by increasing expenditures for marketing.

Can the Government help to increase exports in a manner which will be acceptable to all concerned? Perhaps, yes. It can help by bridging the gap between Israel's intellectual capital resources and the dearth of investment capital. In 1990 this historic gap is further imbalanced by the wave of immigration.

The incoming finance minister will wish to initiate a program aimed at rapid economic growth. His program should include a doubling of moneys budgeted for allocation for basic and applied research. The extra \$250 million is an investment in the future with two spinoff effects. One will result in managers employing additional staff, including new immigrants, for research and development activity.. The other is that additional research and development effort will increase the number of innovative products with an export potential. The end result will be a major boost to the country's economy.

The emergence of a global marketplace and the new dramatic political changes in East Europe bring exciting trading opportunities for Israeli industry. By increasing research and development spending the new Government will show it means business. Investing capital today in human resources will return high yields in the future.

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Attention: Mr. Robert M. Bruckenthal Tel.: 914- 723 8321 FAX 914-723 8340

ABIC PHARMACEUTICALS LTD.- a company report

Israel's Pharmaceutical Industry includes 25 companies producing a wide range of products. These are divided into four groups: ethical pharmaceuticals; veterinary drugs; pharmaceutical chemicals; and disposable products.

Sales in Israel are limited by the smallness of the local market which has not grown in real terms in recent years. Of a total of \$325 million sales in 1988 30% or \$100 million were exports. In 1989 sales including exports were nearly unchanged. The lack of business growth reflects the country's recessionary conditions. Yet the market for pharmaceuticals may change greatly as it responds to the new demand resulting from the increase in immigration.

While some members the local industry mark time ABIC Ltd. Pharmaceutical and Chemical Industries, in the Industrial Zone, Kiryat Nordau, Netanya boasts a 20-25% annual growth. Last year the company's worldwide sales exceeded \$60 million, 30% of which is exported to more than fifty countries. ABIC specializes in the research and development and production of ethical pharmaceuticals, veterinary products and fine chemicals.

ABIC's major product is Dilatam a medicine used by angina patients to relieve painful and painless reduction in the supply of blood to the heart. The Japanese Tanabe company, patent holders, consented to production by ABIC. Another product Abitren is an analgesic and antipyretic agent chemically identical to CIBA-GEIGY's Voltarene.

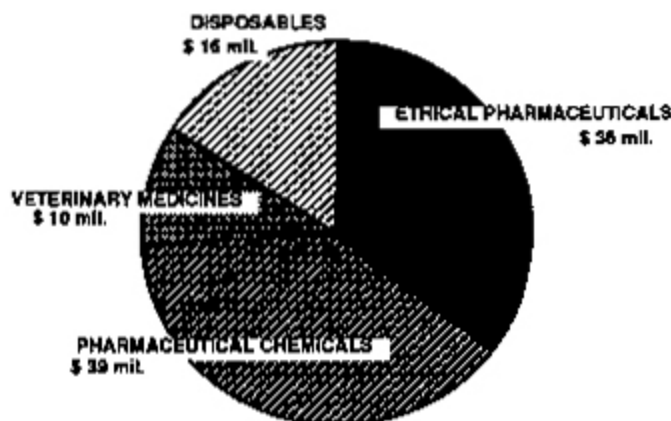
Besides, its major ethical products ABIC is Israel's largest veterinary product manufacturer.

Dr. Ezra Ouziel, pharmaceutical production manager says that two international regulatory agencies extend approval to ABIC's manufacturing facilities. They are the the U.S. Food and Drug Administration and the Department of Health and Social Security (U.K.).

Skillful exploitation of Israel's "compulsory licensing" statue has resulted in the company's rapid growth. The statute allows Israeli manufacturers to produce and sell pharmaceuticals covered by foreign patents if they can prove to the Israeli regulatory authorities that they can properly synthesize the basic

raw materials. Once this capability has been established the foreign manufacturer will find it difficult to prevent production by the Israeli manufacturer. "Compulsory licensing" is one of the underpinnings for ABIC's managerial decisions to enter research and development aimed at synthesizing products in the domain of such giants as the Swiss CIBA-Geigy (Voltarene) or the British Glaxo (Zontac). ABIC sells the Swiss Voltarene equivalent to the Kupat Holim Israel's socialized medical system and its version is one of the five best selling drugs in ABIC's line. These pharmaceuticals sell as generics.

PHARMACEUTICAL INDUSTRY EXPORTS



ABIC's President Eli Admoni, joined the company in 1982. Before his appointment he held senior management positions in Kupat Holim, Israel's socialized medical services system and as chief administrator of Beilinson Hospital. This experience gives him an in depth understanding of the workings of two of the most valued pharmaceutical customers in Israel. ABIC in 31 years has registered more than 70 patents. ABIC has prospered under Admoni's leadership with sales rising from \$17 million in 1982 to more than \$60 million in 1989.

The company's personnel's striving for excellence results in annual sales per employee of about \$145,000. Scientists and technicians active in research and development account for 10 per cent of the company's work-force.

Motorola's Largest and Most Complex Water Control System

The supply of computerized water and irrigation control systems to industrialized and third world countries is a major activity of Motorola Communications (Israel) Ltd. The company, a subsidiary of the American Motorola Inc., has built up an internationally valued know-how based on its accumulated experience in supplying solutions to Israel's continuous battle to stretch its meagre water resources.

Computerized water control systems developed by Motorola save energy and increase the efficient use of available water systems

Central computerized system management helps command of the water consumption at every point in the network. Last year alone the company's technicians installed municipal water control systems for Los Angeles and San Jose in California, and in Jacksonville, Florida as well as other projects in Europe, Latin America and Australia.

With Netafim, one of Israel's key drip irrigation systems suppliers, Motorola Communications is marketing computerized water control systems to China. A contract calls for the supply of a large scale irrigation project in Italy. Motorola Communications (Israel) will furnish computerized irrigation systems to supply water for some 10,000 hectares of agricultural land in Southern Italy, which suffers from acute water shortages.

Elisha Yanai, a Motorola executive has described the water control system devised for the Israeli Mekorot Water Co. Ltd. in Eilat and the Arava regions as the largest and most complex in the world. This system provides for remote control, with a personal computer, of all water gate valves in a water supply network. It follows preset programs, with the computer commanding the terminal units to supply the needed quantities of water to every user in the network. These systems also incorporate the possibility of supplying soil fertilizers through the irrigation waters, using sprinkler or drip devices. The water gate valves open by a radio commanded from the computer.

Diagnosing Alzheimer's Disease

Can an early diagnosis of Alzheimer's disease be achieved by a simple to apply immunological test? So far modern medicine

has failed to come up with a satisfactory answer. However, hopes are being raised as a result of a joint venture agreement entered into by Ramot, the commercializing arm of Tel Aviv University, and an American company specializing in the medical testing field.

The first step of the three stage program will be to carry out further development work at Tel Aviv University. Ramot's general manager Zvi Shoshan is satisfied that the agreement will provide the possibility of exploiting a highly promising project. The initial work will determine whether it is feasible to develop a serological test for diagnosing Alzheimer's.

This stage, according to Shoshan, may take up to three years. At TAU the first part of the program will be carried out by the project's principal investigator Prof. Daniel M. Michaelson, Department of Biochemistry, Tel Aviv University.

Alzheimer's patients produce antineuronal antibodies. However, at this point in time modern science has only succeeded to diagnose Alzheimer's disease, with certainty, after death. Prof. Michaelson has already identified a neuronal antigen which is recognized by antibodies specific to Alzheimer's disease. A widely held view by the medical profession is that the earliest possible discovery of a disease increases the chance for a cure. The research to be carried out will concentrate on constructing an immunological assay for the detection of these antineuronal antibodies and thus allow for the rapid and direct diagnosis of Alzheimer's disease.

Optrotech Stumbles

Optrotech Ltd. producer of computerized electro-optical systems for the production of printed circuit boards reported lower earnings. Competitor Orbot Ltd., about to go public in the United States is one of the reasons for the lower earnings. Orbot has been challenging Optrotech for supremacy in this industrial specialty and is probably providing the "stiff competition" mentioned by Optrotech in reporting a 6.7% fall in quarterly earnings to \$866,830. Dr. Shlomo Barak in reply to questions stated that Optrotech is doing well. He did not comment about rumours that 10 per cent of the 600 strong staff will be shortly released as part of cost cutting moves. In view of these comments the second quarter results could also reflect a further deterioration in profitability.

Israeli Companies on Wall Street

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

<u>Company</u>	<u>Revs</u> (in \$ mil.)	<u>Net Income</u> (in \$ thou.)	<u>Price</u>	<u>Net Change</u>
ELBIT COMPUTERS Defense electronics ELBTF OTC	84,972.	5,068.	11.50	+1.625
ECI TELECOM Telecommunications ECILF OTC	17,253.	3,591.	22.125	+8.375
ELSCINT Medical imaging ELT NYSE	35,583.	2,339.	3.50	+1.00
FIBRONICS Fiberoptics FBRX OTC	14,677.	848.0.	8.125	+1.00.
INTERPHARM LAB. Biological products IPLLF OTC	n.a.	n.a.	3.75	+1.00
LASER INDUSTRIES Surgical lasers LAS ASE	na	na	5.75	+2.375
OPTROTECH Electro-optical systems OPTKF OTC	20,239.	867.	7.50	-2.875
SCITEX LTD. Computer graphics SCIXF OTC	70,005.	14,149.	37.50	+10.875
IIS INTELL. Computer peripherals IISLF OTC	n.a.	n.a.	4.75	+0.25
TEVA PHARMACEUT. Pharmaceuticals TEVYF OTC	n.a.	n.a.	10.75	- 0.50
ELRON ELECTRON. ELRNF OTC	n.a.	n.a.	7.00	+0.25

Elscint Sales Unchanged but Net Rises

The manufacturer of medical diagnostic equipment reported nearly unchanged sales of \$35.5 million with a net of \$2.34 million. A year earlier Elscint was in the red. Of the total revenues sales totalled \$24 million and the balance was "service income". Elscint has 70.6 million outstanding shares as a result of the exercise of warrants and conversion of preference shares.

The lack of a broader market for the company's products and inadequate R&D effort as compared to its international competitors, according to some observers continue to be negatives. In the past year Phillips succeeded in selling a scanner to an Israeli hospital. The hospital's first scanner was supplied by Elscint and lost the sale to the Dutch company. Elscint has been fully restructured and its results are now included in those of Elbit.

Elbit Computers Net Exceeds \$5 million

Israel's major defense producer has included Elscint's results to reflect the consolidation of a 62% interest in the medical imaging company. Sales were at \$85 million with a net profit of \$5.0 million.

Fibronics Improves Sales and Profits

The fiberoptic communications company reported higher earnings of \$848,000 on sales of \$14.7 million.

Teva Improves Exports

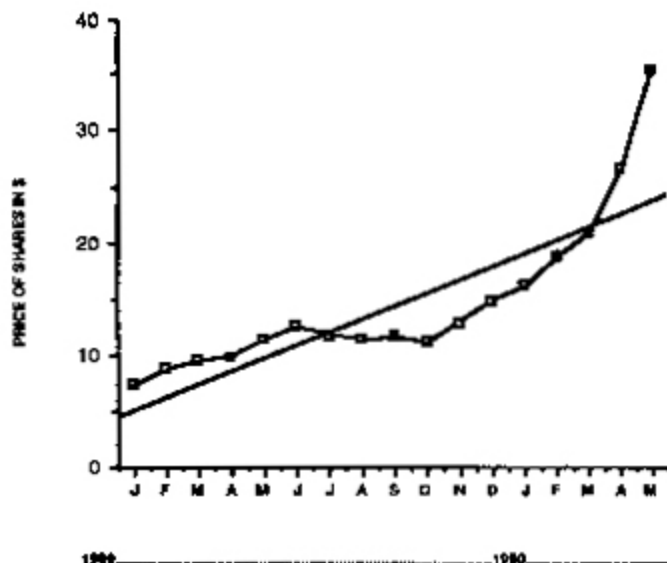
Teva after a period of acquisitions and strengthening of its financial position appears to be consolidating its position as Israel's largest and leading pharmaceutical concern. While American companies have been experiencing sluggish business conditions TAG Pharmaceuticals Teva's jointly owned U.S. subsidiary increased its sales to a record \$16.6 million. Teva's quarterly sales were slightly higher to \$70.5 million but net profits of \$4.9 million were slightly lower than in the same quarter a year ago.

Quarterly Reports Sparkle

Scitex and ECI Telecom are 1990's undisputed leaders in sales growth and profitability among Israeli publicly owned companies. Scitex producer of interactive computer imaging systems reported \$70 million sales for the first quarter of the year and more impressively a net profit of \$14 million. ECI

Telecom producer of telecommunication systems using digital speech processing technology reported first quarter sales of \$17 million and a net income of \$3.6 million.

SCITEX LTD. -SCIXF:NASDAQ



Performance of Scitex Shares Since 1989

In both instances the results of Scitex and ECI Telecom include profit margins of 20%. These margins are historically the highest ever recorded by any of Israeli companies with public international ownership.

Israel High-Tech Report Index*

138.2 + 43.1%

*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

New Financing Issues

Orbot Systems Ltd. of Rehovot is in the process of a first time ever financing issue. The company is a leading producer of automated inspection systems for printed circuit boards. Sales have developed rapidly, i.e. 1987- \$26m., 1988-\$46.1m. and 1989-\$60m. In 1989 Orbot's profits were \$16m. The underwriters for the offering are Shearson Lehman Hutton Inc. and Alex Brown.

Rada Electronic Industries is seeking to raise \$5 million in the United States. In the past two years Rada has successfully overcome the loss of business due to the Lavi cancellation, and last year earned \$1.2 million on sales of \$22.2 million. The company produces computers and avionics systems.

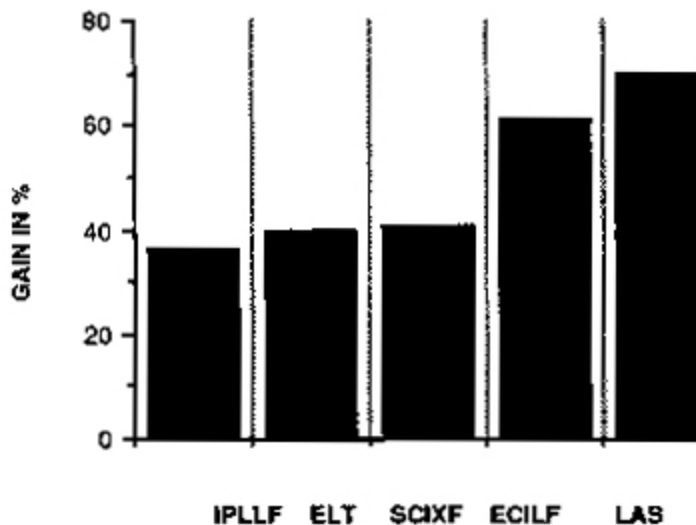
of Oprototech whose price fell by 28%.

The continued revival of the prices of the shares of these companies are explained by a number of factors. The shares have been recognized as being undervalued. Israeli mutual funds have been allowed to invest 10% of their holdings in shares traded on foreign markets and are choosing to invest in the companies which they can easily follow.

There is also the possibility that an Israel Country Fund is in formation and the fund manager is beginning to buy these shares.

These developments are in line with global investor focus on smaller stock exchanges. Major advances have been recorded on Vienna, Santiago, Istanbul and Jakarta stock exchanges.

HOW THE TOP FIVE PERFORMED



\$ 100,000 Wolf Foundation Prizes

The prestigious Wolf Foundation prizes of \$100,000 each were recently awarded at a ceremony in Israel's Parliament building. Jozef Stefan Schell of West Germany's Max Planck Institute received the prize for his work in the genetic transformation of plants. The Italian Ennio de Gioris of the Scuola Normale Superiore, Italy shared the prize in mathematics with Ilya Piatetski-Shapiro of Tel Aviv University. Maelyn McCarty of the Rockefeller University, New York was awarded the prize in medicine relating to work connecting genetic material with DNA. The physics prize was won jointly by Pierre-Gilles de Gennes of France and the American David J. Thouless for their work on complex condensed matter systems.

Environmentalists Warn of Transmitter Danger

The proposed site of the Voice of America radio transmitter in the Arava Valley is at edge of bird migration routes. Tel Aviv Professor Yoram Yom-Tov has raised the issue of the potential damage to be caused to the birds' navigational abilities by the powerful magnetic fields to be produced by the station.

The dangers cited include: collision with antennas; heating from radiation and disorientation. Of the 450 species of birds observed in Israel only 90 are year around residents. Of the balance some other summer or winter residents, regular migrants, vagrants and occasional breeders.

IHTR INDEX RECORD GAIN

The Israel High Tech Report Index 1984 has recorded the single highest gain since it was first published in October 1984. In the period beginning April 18 and ending May 22, 1990 the index composed of the leading shares of Israeli high technology companies soared by 43.1%.

The index includes the following companies: Elbit Computers, ECI Telecom, Elron Electronic, Elscint, Fibronics, InterPharm, Laser Industries, Oprototech and Scitex.

The above graph shows how the "top five" performed. All shares part of the Index advanced with the exception

Motorola's New Chip "96002"

Motorola Israel Semiconductor Israel Ltd. has developed a new chip whose applications include a variety of consumer and industrial electronic products. The chip developed over three years at the local design center is said to have the technical qualities required for the development of color facsimile and color laser printers.

Superconductivity Startup

Israel's efforts in the worldwide efforts in the field of superconductivity until now have been in the realm of academic endeavor. Xsirius Superconductivity, Inc. after a two year gestation period is in the transition stage from "startup" to a producer. The Jerusalem based company has developed components suitable for systems requiring high temperature superconducting parts. Venture capital financing has provided \$1 million for the first stage of development. The next round of financing calls for \$3 million for the establishing of production lines.

Sleepy Conference

Sleep disturbances known as sleep apnea have been the subject of a recently held conference dealing with the subject. Sufferers tend to wake up for a short period, with 300-400 such incidents in the course of one night. Cell damage, headaches, fatigue and increase in blood pressure can result. Discussion of treatment of the apnea syndrome concentrated on the use of medication, dieting and operative procedures to clear the breathing passages. A new development has been the application of an air mask which the sufferer wears during the night and which forces air into the lungs. Professor Peretz Lavie, head of Technion Institute of Technology's sleep research laboratory reports that a study of 150 patients using the mask most symptoms disappeared.

"TPS" True Potato Seeds

A cost effective method of producing hybrid seed, already applied to the breeding of hybrid tobacco in Japan and hybrid rape-seeds in other countries has been developed by two Weizmann Institute scientists. The method is based on a plant-cell manipulation procedure involving the fusing of the plant cells. One of the longer term objects of the research is to produce virus free potatoes or TPS - true potato seeds. The cell manipulation known as donor recipient protoplast fusion was developed by

Prof. Esra Galun dean of biology at the Weizmann Institute and in collaboration with Dr. Dvora Aviv of the Institute's Plant Genetics Department.

Laser Industries Wins FDA Approval

The U.S. Food and Drug Administration has given its approval to Laser Industries Ltd. to market its surgical laser system for gall-bladder operations.

The system uses laparoscopes which allow for minimizing infection probability when operating with conventional methods. The operation is carried out by sending a carbon dioxide laser beam directly through a highly polished steel tube to the operative area.

Hy Labs Ltd. Seeking Cash in Vancouver

Hy-Laboratories Ltd. a 16 year old company continues to struggle in its effort to efficiently produce its culture media and diagnostic materials and kits products. Reportedly Hy-Labs is seeking C\$1 million in a public offering on the Vancouver Stock Exchange.

The Vancouver Exchange known for "penny stocks" has been provided capital for a number of Israeli companies who could not meet the requirements of an American O-T-C listing.

ISRAEL HIGH-TECH REPORT

NEWS AND INVESTMENT OPPORTUNITIES

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Dental Root Implantation Moves Ahead

What is new in the field of dental root prostheses? Professor Shmuel Shoshan of the Hebrew University has developed a technique which is claimed to be a major advance in restorative dental surgery. The method for implanting synthetic tooth roots uses collagen, a special protein preparation which is a major protein constituent of connective tissue. A U.S. patent has been awarded to Professor Shoshan. It covers the process of coating plastic with collagen. His work has concentrated on coating collagen on roots made of synthetic polymers such as acrylics.

International Conference Features Leeches

Scientists from all parts of the world met recently to discuss developments in leech research. The use of leeches for medicinal purposes has declined since the 18th and 19th century when their popularity peaked.

Yet, leeches are raised and used in some parts of the world in medical applications. Current interest in leeches is because of their proven ability in preventing blood clotting. Hebrew University researchers Professors Meir Rigbi and Anuram Eldor have discovered that the leech produces at least ten different substances which serve to prevent blood clotting.

\$16m. Order for Robot Systems

A laser based cutting and welding system for use by the automobile industry has been developed by Robomatix Ltd. An unnamed U.S. manufacturer has ordered ten such systems with the contract valued at \$16 million. Robomatix after years of unprofitable operations is poised to record its first profitable year on estimated sales of \$6 million.

VISITING SCIENTISTS

In New Guinea wild plants are used to treat cuts, burns, stomach aches and even gonorrhoea. Visiting scientist at Weizmann Institute Dr. Topul Raliis working to synthesize derivatives of a plant extract with potent anti-viral properties. The concept behind the experimental work being carried out by the scientist from New Guinea is that if the plants are successfully used on humans it should be possible to analyze and isolate the medicinal properties of the plants.

Dr. Mangala Devi Manandhar is at the Institute hoping to acquire scientific know-how whereby her native Nepal become even more advanced in the cultivation and processing of medicinal plants. Nepal, a country where plants are used widely for medicinal purposes.

Moshe Porath Mathematics Chair

Professor Yosef Yomdin, known for his work on numerical analysis, dynamical systems, semi-algebraic geometry and robotics has been named first incumbent of the newly established Moshe Porath Professorial Chair at the Weizmann Institute of Science. Prior to leaving the Soviet Union Professor Yomdin held a key position at the Tashkent Polytechnic Institute. Prior to his appointment he spent a year as a Visiting Professor at Princeton's Institute for Advanced Studies.

NEW PRODUCTS

Digi-Word is a pocket-sized computerized dictionary which translates English into Hebrew and vice versa. Digi-Word features 72,000 entries and this single language dictionary has a synthesized voice. The inventor claims that he has found a way to mimic the human voice by electronically replicated the brain waves which result in speech.

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Joseph Morgenstern,

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