

# Contact

ERICSSON 

## MANAGEMENT

INFORMATION FOR ERICSSON MANAGERS WORLDWIDE

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### INSIDE

- Björn Svedberg and the management of telecom technology.
- An "image-related" campaign for the MD 110.
- Ericsson products at exhibitions in Singapore and Rio de Janeiro.
- Collaboration venture with Siemens opens up new vistas.
- Another first, a 4x4 integrated optical switching matrix.
- EDS, the mind and memory of the corporation.
- Latin America, a business and economic appraisal.

## New Sweden: A Royal Tour

The celebrations of the "Year of New Sweden" in the United States got off to a flying start with the royal tour in April when the Swedish king and queen toured 14 American cities. Seminars, exhibitions and cultural events will continue throughout the year.

The year 1988 marks the 350th anniversary of the first Swedish settlement in what has since become Delaware, Pennsylvania and New Jersey.

In 1638, two ships, the Kalmar Nyckel (Key of Kalmar) and Fogel Grip (Griffin Bird), landed in today's Wilmington, Del., where the settlers formed the New Sweden colony.

When the Lenape Indians in 1642 met with the first Swedish governor, Johan Printz, all 400

pounds of him, they immediately nicknamed him Wallocksheah, or Big Belly, and thereafter they got along quite well.

But New Sweden did not last for very long. It was just 15 years before the Dutch conquered the only Swedish colony on the American continent.

The Swedes stayed on, though, and many more arrived. Today some four million Americans claim Swedish ancestry, and many Swedes were instrumental in founding the United States. John Morton of Pennsylvania signed the Declaration of Independence, and John Hanson of Maryland presided over the Continental Congress in 1781 and 1782.

President Ronald Reagan, who has officially proclaimed 1988 as

the Year of New Sweden, met with the Swedish royal couple at the White House in April when King Carl XVI Gustaf and Queen Silvia started their 17-day tour of the United States.

The Swedish influx in the United States did not stop with New Sweden. More than one million Swedes arrived in the United

*Continued on page 4*

## MD 110 Network For Phoenix, Ariz.

Ericsson has been awarded a contract to provide the city of Phoenix, Arizona, with an MD110 intelligent Network, integrated voice/data system. The \$7.6 million contract is the largest ever received by Ericsson's Communications Systems division in the U.S. The system will serve over 8,000 municipal employees and will be wired to accommodate over 10,000 lines. The system will consist of 40 LIMs at 20 locations.

Features to be provided include telemanagement, broadband networking, voice mail and automatic call distribution.

An important MD110 order has also been received from the West German airline Lufthansa. This will be one of the largest digital private telephone systems in West Germany with its 5,500 extensions.



Senior Vice President Magnus Lemmel with officials of the Saudi Ministry of Telecommunications.

## \$ 90 Million Saudi Expansion

Saudi Arabia has awarded Ericsson an order worth approximately USD 90 million to supply the kingdom with switching and transmission equipment as well as buildings. The order also includes expansion of telecommunications operations and maintenance center equipment.

The order will expand on the existing Saudi telephone network, which was purchased in 1977 and at the time was the largest order in telecommunications history.

Ericsson has been a major partner in the creation of the kingdom's telecommunications network over a period of close to a quarter of a century. At the height of the oil boom in 1977, the Saudi government awarded a contract for expansion of its automatic telephone network to an international consortium comprising Ericsson, N.V. Philips and Bell Canada. The total value of the contract was estimated at USD 3.1 billion.

Ericsson and Philips provided equipment and installation, while Bell Canada provided management and maintenance training. The project was designed to modernize the Saudi Arabian telephone system and to add 470,000 new automatic switch lines.

The current phase of expansion draws primarily on the Ericsson AXE system, which is used in many different types of applications throughout the Gulf in general and Saudi Arabia in particular. The unusual flexibility of the AXE makes it ideally suited to the kingdom's needs for ordinary local exchanges, metropolitan exchanges, rural remote switching units, international exchanges, combined local and trunk exchanges and tandem applications.

Magnus Lemmel, Ericsson Senior Vice President for Corporate Market Coordination, in a recent visit to Riyadh, where he met with government officials from the Ministry of Posts, Telegraphs and Telecommunications, paid homage to the kingdom's accomplishments when he described it as one of the world's most advanced in telecommunications technology.

Referring to the latest Ericsson contract from the Saudis, Kjell

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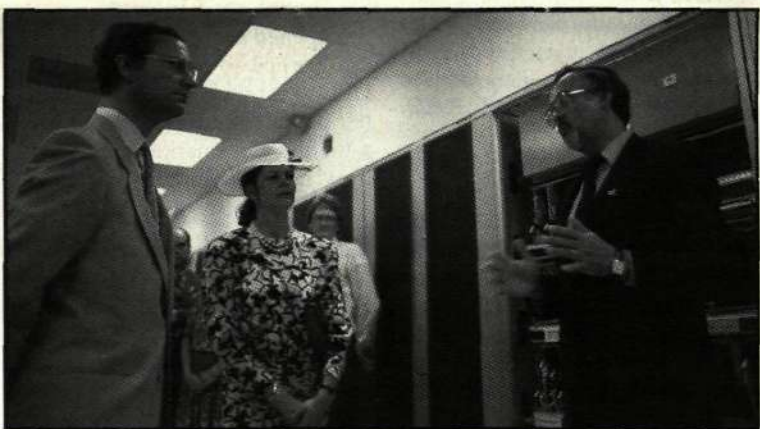
## Fiber Optics Divides Unit

The Board of Directors of Ericsson Fiber Optics AB (EFO) has determined that the activities in EFO will be divided and will be transferred to other companies within Ericsson. All employees will be offered continued employment, and changes will take place as soon as feasible.

Since reorganization six months ago, a number of factors have influenced the development for EFO. Today, better possibilities exist for the EFO products and activities in other parts of the Ericsson organization.

The most significant event influencing the decision was the sale of EIS' Data Division to Nokia. The data network activities of EFO are a natural fit in the new Business Area Business Communications, (EBC), and will be transferred there.

The fiber splicing activities within EFO will be transferred to Ericsson Cables. Other products within the network material area, consisting primarily of deliveries for Saudi Arabia, will be transferred to Ericsson Network Engineering AB (ENS).



King Carl XVI Gustaf and Queen Silvia at Ericsson headquarters in Richardson, Texas, with Gunnar Eriksson, Director of Development and Services, Network Systems.

## A New 4x4 Channel Switch Matrix

Two years after it unveiled the laboratory development of the world's first 8x8 channel integrated optical switch, Ericsson has announced another new development that brings the prospect of commercially practical and viable optical switching networks one step nearer.

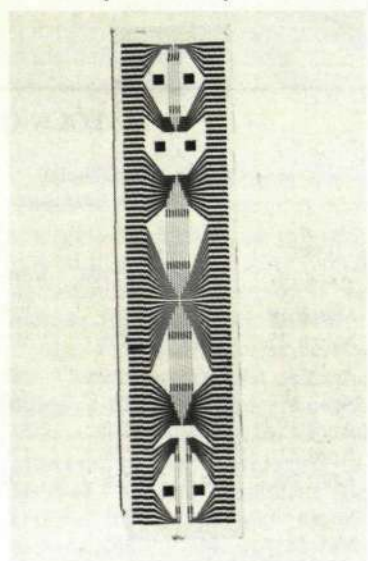
The company's researchers in Stockholm have successfully developed a new integrated optical switching device that can be interfaced directly to standard single-mode optical fibers.

This polarization independence is claimed by Ericsson to be another world first, and represents a significant advance on earlier switching matrices.

Another interesting feature of the new switch is that it can be used as a non-blocking point-to-point switch. The switch architecture also means that it can be used

as a broadcast switch, with one input channel able to broadcast to all outputs.

The device, demonstrated as a laboratory version by Ericsson, is



a 4x4 channel switch matrix, implemented in lithium niobate and operating at the telecom industry standard wavelength of 1.3 micrometers. The optical signals are switched entirely in the optical domain, with electronic signals controlling the switching.

The new device uses a completely different switching mechanism from the switch matrix unveiled by Ericsson two years ago, although that, too, was implemented in lithium niobate.

The optical switch technique it uses can be electronically tuned so that high performance can be achieved with lower fabrication tolerances. This, coupled with an extremely low crosstalk between channels of less than -35dB (optical), augurs well for the development of more complex photonic switching networks.



## Transcending Boundaries

# Managing Information And Telecom Technology

The following article, outlining Ericsson's business approach, is excerpted from a speech given in Washington by Chief Executive Officer Björn Svedberg on "The Management of Information and Telecom Technology."

A European industrialist giving a lecture in Washington on how to manage information and telecommunications technology may seem like a tortoise trying to teach a rabbit how to win the race. The more agile, active and homogeneous markets over here, the very size of them and the fair climate for innovation and business, all this offers a great many advantages over the Old World patchwork of nation states.

On the other hand, different conditions create different problems and advantages; and thus foster their own, particular forms of competence. And I am talking about a business that transcends all boundaries, a business where cross-cultural aspects grow progressively more important. In light of modern systems theory, we can conclude that the more my practical corporate experience differs from that of my American colleagues, the more information I can transmit. (Since one of the most clever definitions of information is that it's a difference that makes a difference.

Not that Sweden can't boast an acceptable record. After all, it has more telephones per capita than any country in the world. And after Norway, more cellular mobile phones. In this field, the U.S. and Japan have less than one-tenth of the Nordic density. Swedish tele tariffs rank among the lowest anywhere. Furthermore, Sweden stands out as one of the most heavily computerized countries on earth. Swedes have twice as many computers per person as any other Europeans.

Now, what cultural qualities made Sweden, of all countries, the cradle of so many international high-tech industries? I have two favorite explanations; besides

the conventional references to the Protestant heritage, with its ethics of hard work and industriousness.

One is that Sweden in the early 19th century established a system of schools for all, "den svenska folkskolan," thus raising the general level of education. Another is the fact that our home market is so small that Swedish industries were virtually forced to go abroad from the very start.

Thus, Lars Magnus Ericsson, founder of the company I'm working for, set up shop in Stockholm in 1876, just three weeks after Alexander Graham Bell got his patent. He started Russian subsidiaries in the nineties and did business in the U.S. in 1904.

Well then, what's the present state of the art he pioneered, and left for me and my colleagues to manage?

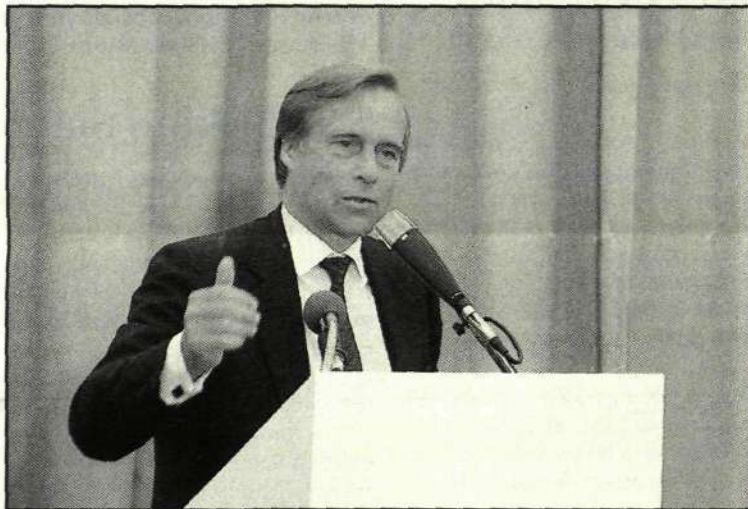
First of all, it's rather misleading to talk about a "state", it's a

You must, however, always develop by yourself your own key capabilities.

Strategic cooperations must be analyzed deeply. Such links may block future arrangements that could be more interesting.

At times strategic cooperation without ownership links is the only way to cooperate. One reason could be national pride or regulations that prohibit foreign ownership.

With this background, the information industry needs managers who conduct orchestras rather than lead armies. And they must be able to play in concert with bands other than their own. Not even the giant transnationals can afford to go forth alone any longer. Mergers, structural groupings, license agreements, cooperative deals etc. have become commonplace events. The industry is evolving into a global



Chief Executive Officer Björn Svedberg

flowing process, and a dizzyingly swift one at that.

For the last few decades, information technology has developed explosively.

Its progress is hard to understand and handle, even for highly qualified teams of professionals. Moreover, its exponential curve of growth is expected to go on accelerating for no one knows how long. It is highly likely that the period of really fundamental change is ahead of us.

How do we manage technology and how do we plan to meet the challenges created by the accelerating speed of change?

The quick changes of product generation, new design techniques and new technologies require more retraining of people during their work life than before.

Managing technology means dealing with the productivity of people. This demands continuous learning and education.

The width of the field, the investments and the risks lead to strategic cooperations or relations.

We will see this increasing. A spider's web of links that will change the industrial structure.

web of mutual give-and-take never seen before. It represents a new level of transnational integration.

In a world of constant change, no set of data will serve you for the rest of your life. Whether we like it or not, the new technologies have turned us all into life-long learners. Continual retraining has become indispensable.

Ericsson has responded to this both by working more closely with universities, and by establishing departments for continual retraining within the company. We have had to take the responsibility for many activities that society previously used to cater for.

To avoid the Peter's Principle trap that makes brilliant engineers become lousy administrators for reasons of hierarchy, we have also established alternative career paths for technicians.

One of my junior colleagues recently remarked that there is now a generation gap between his 20-year-old age group and school-children he knows. Parents are often taught the new skills by their children. There is also a distinct generation gap between younger and older executives.

These trends open for new managerial challenges. Managerial work never ends.

Today, software productivity lags far behind the progress in hardware. Software is becoming ever more complex, and usually represents a much larger cost than the hardware part. Parallel processing and network solutions call for new systems, standards, conversions and supervisory software.

Training and retraining will be a key also in this area.

The projects are often very large. This means that we have developed management in project organizations more than line structures. Also emphasis is put

I do believe that many Swedish industries in high tech have learned to be close to the market the hard way. Volvo, ASEA and Ericsson very early saw the small size of the domestic market.

Getting involved in major telecommunication projects in foreign countries requires more than technology and standard marketing.

Large telecom projects require a combination of long-term planning and patience on the one hand and quick responsiveness on the other.

One example is how Ericsson came in as the second system supplier in the U.K. It took us 13 years but when it happened we

## The information industry needs managers who conduct orchestras rather than lead armies. And they must be able to play in concert with bands other than their own.

on generating profit consciousness all the way down in groups of thousands of people.

The choice of technology is no longer a simple engineering or purchasing matter. It affects all functions and levels of management. Not only the ways and means, but the very structure and styles. Lack of management involvement and support of technological projects will almost certainly end in failures.

We must also learn better how to manage creativity. This implies more than an expanded R&D budget and a relaxation of controls. Management involvement and thorough appraisal of constraints help to direct creativity towards the relevant goals.

We are tools. The choice of tools is a strategic decision for management in high-tech companies.

The markets are gradually adapting to this vigorous new world of engineering, which of course means they also are in flux. So far, technology has been the main force pushing things forward. Now, the forces of the market increasingly pull in their various directions.

To plan for heavy expansions in an accelerating technology development and for almost unknown customer requirements requires a high level of flexibility and nearness to the marketplace.

expanded local production in a very short time.

Locations for R/D should be where you have a suitable cradle of technology. Or where you can see a leading market development, such as for telecommunications now in the U.S.

Certainly the new market conditions will require a quicker and quicker response. We are organizing for this.

I opened my speech by comparing Europe to a tortoise and the U.S. to a rabbit. A growing number of Europeans realize that only a unified Euromarket has the critical mass required to compete successfully. But the road to that goal is full of obstacles. Due to national shortsightedness Europe has already lost the worldwide computer and space industries.

Almost by nature, the U.S. manager of telecom is more alert to market changes because of his experience of a nonregulated marketplace. This is normally also more aggressive in a positive way.

Let's hope that the American rabbit can teach the European tortoise that it will make no real progress unless it sticks its neck out, even further out.

On the other hand, we Swedish tortoises are known to be long-lived. Maybe we can teach the rabbit something about the virtues of flexibility and dedication.

We are tools.  
The choice of tools is a strategic decision for management in high-tech companies.

### STOCK QUOTATIONS

1988 Week of:	Stockholm Stock Exchange			NASDAQ		
	SEK HIGH	SEK LOW	USD VOLUME	HIGH	LOW	VOLUME
March 18	224	213	726,620	37¼	36⅞	163,900
March 25	235	226	599,413	39⅞	37¾	292,000
April 1	241	226	294,600	40⅞	38⅞	340,600
April 8	254	236	308,548	41¼	40⅞	442,100
April 15	249	222	827,103	41⅞	39⅞	236,200
April 22	232	228	179,994	39⅞	38½	139,400
April 29	241	226	294,600	41¼	38⅞	223,000
May 6	246	235	188,000	41⅞	41⅞	83,600
May 13	241	235	241,500	40¾	38⅞	205,700







# New Sweden: A Royal Tour in Texas

Continued from page 1

States in the late 19th and early 20th centuries, a quarter of Sweden's total population.

Since then more than 200 Swedish companies have established themselves in the United States. While Alfa-Laval arrived as early as 1885, most Swedish companies did not begin operations here until after World War II. Ericsson hasn't been here more than eight years.

Ericsson has won four AXE contracts so far. A breakthrough could come with Nynex later this year.

Ericsson arrived just in time for the opening of the cellular phone market.

The royal tour, of course, has

While visiting, the king told local media that "Ericsson is a very important company that shows what we [Sweden] can do when it comes to high tech."

After the tour, Thomas said that the king showed a genuine interest in the technology and Ericsson's presence in Texas, adding that the monarch was quite surprised to learn that more than 200 Swedes work there.

The king and queen, Count Wilhelm Wachtmeister, the Swedish ambassador to the United States, and other dignitaries went on to shake hands with more than 150 of Ericsson's employees in Richardson.

Thomas, who is the chairman of the local Dallas New Sweden

ning, which made front-page headlines in the local newspapers.

One purpose of New Sweden '88 is to increase the understanding between the two nations in industry, technology, the arts and education.

In order to do so, an extensive seminar program has been scheduled.

The Swedish Academy of Engineering Sciences has organized a series of five seminars in conjunction with the royal tour.

In Washington, D.C., the theme was "Cooperation in Science and Technology for the Future," where Björn Svedberg, president and CEO, Ericsson, lectured on "Management of Information and Telecommunication Technology."

In Chicago, a week later, the theme was slightly changed to "Information and Communication Technology - Tools for the Future." This time Ericsson was represented by Lars Ramqvist, Executive Vice President.

Other themes were "Molecular Biology - Potentials for the Future," in Princeton, N.J.; "The Availability of Risk Capital," in New York City; and "Sweden - Science and Technology for the Future," in Los Angeles.

John Meurling, Vice President, Ericsson Telecom, spoke at another seminar, one of more than 100 in a series called "Sweden Works - Industry in Transition." It was hosted by the Center for Telecommunications Management in Dallas and the title was "International Competition in Telecommunication Products and Services."

In the same series of seminars, Ericsson's Örjan Mattsson, General manager, lectured on "Opto Electronics Devices and Applications," at the Massachusetts Institute of Technology (MIT) in Cambridge, Mass.

Ericsson supplies high-tech products to the Swedish aviation and space industry, and at the seminar it was noted that the new multi-role combat aircraft JAS 39 Gripen is being equipped with an entirely new computer concept by Ericsson.

Other events under the New Sweden umbrella include a number of exhibitions, from the Royal Swedish Armory to "It's Swedish," an exhibition of Swedish inventions, including the Ericsson telephone receiver.

All in all, New Sweden '88, sponsored in part by Swedish corporations through the Swedish Federation of Industries, is a chance to enhance the Swedish presence in both the past and present United States.

And in a country with such tremendous protectionist pressures as the United States, because of the enormous trade deficit, Ericsson can point to the fact that the company's trade balance between America and Sweden generates a surplus for the United States.

*Björn Anders Olsson is a correspondent for affärsvärlden based in New York.*



Customer Service Center, computers and applications, Right, Bernt Malmkvist, President of EDS.



At the Princeton University symposium, Kjell Sorme, VP, Technology, Ericsson Telecom speaks on Telecom speaks on Telecommunications in the '90s. Sunnar Svala, center, of the American Society of Swedish Engineers, and Manfred Buchmayer, right, head of Ericsson Radio in the U.S., also participated.

dominated the New Sweden agenda so far. Ericsson got its share of the excitement April 22 when the King and Queen visited the Ericsson headquarters in Richardson, Texas.

The couple toured the AXE laboratories, guided by Peter Thomas, President and CEO, Ericsson, Inc. They later held a press conference in the headquarters' museum and attended an outdoor reception.

committee, had prepared an extensive program for the royal couple's one-day visit. The only night the king and queen spent in Dallas, he had arranged for them to visit a "Barbecue and Rodeo" at the nearby Mesquite Rodeo Arena.

King Carl Gustaf in jeans and Queen Silvia in the Stetson hat she received earlier at Ericsson truly enjoyed this exciting eve-

## Circling the Globe With EDS

It may be the modest size of Ericsson Data Service with its 530 employees, or its Stockholm location in the shadow of other Ericsson companies, or its singular position outside the business area structure, but whatever the cause, it's a shame to hear this vital company described as "the best kept secret in the corporation."

Ericsson Data Service (EDS) is small by corporate standards, but manages one of Europe's largest computer centers and a data communication network stretching from Melbourne to Madrid to Mexico City.

The "applications" written and supported by Ericsson Data are the mind and memory of the corporation, keeping track of everything from the weight of micro-components to the proper sequence of documentation for an entire AXE installation.

Ericsson Data is the only private company in Sweden allowed to install and run its own telephone network. EDS supplies the telephone services for giant Ericsson Telecom.

EDS rates impressively high in number of installed MIPS (millions of instructions per second) available. MIPS are an inexact measure of processing capacity; the amount of "real work" done depends on such factors as the efficiency of the programs used. Nevertheless, computers and

computer centers are often rated in MIPS, inviting comparison.

The people at Ericsson Data Services think that sufficient capacity and availability are better ways to judge a computer center. Your programs and systems require a certain amount of processing power. As long as sufficient capacity is guaranteed, additional MIPS are a wasted and expensive resource.

EDS has been working toward this philosophy: the highest efficiency and lowest unit cost should be available from the computer center that can best adapt its storage and processing capacity to the ebb and flow of customer requirements and business cycles.

Availability means that your terminal works, that the network is intact and that programs you need are running when you want them. The Customer Service Center at EDS is now manned on a 24 hour basis and can monitor machines, systems and network from the same central location. The telephone number in Sweden, +46 8-276 2700.

EDS started marketing Memo internally a little more than 4 years ago and the ensuing period has seen unparalleled growth. Memo today serves more than 13,000 Ericsson users, and through EDS' subsidiary Scandinavian Info Link we anticipate the interconnection of numerous corporate Memo systems.

## Ericsson Participation

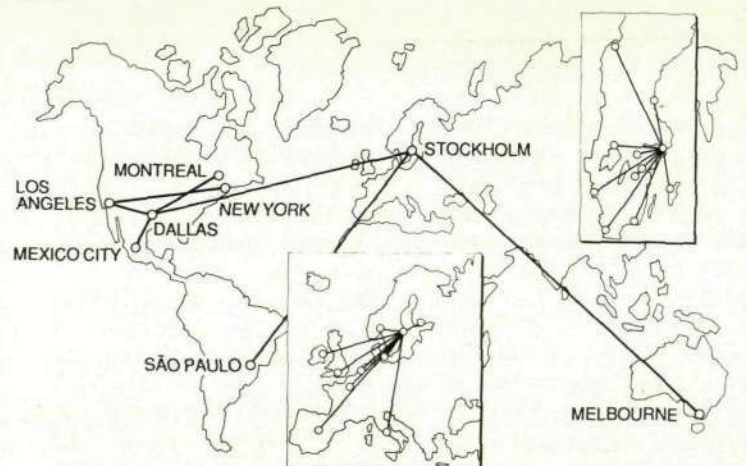
During this year a number of Swedish activities will take place in the U.S., as 1988 has been proclaimed "The New Sweden Year," marking the founding of the first Swedish colony 350 years ago in Delaware.

All major Swedish companies are participating through the Federation of Swedish Industry (Industriförbundet), which is paying a substantial share of the costs. This is financed by extra taxes levied on member companies, including Ericsson. We are paying at total sum of approximately 1 million SEK over three years.

In order to get as much return as possible, we have been active in the planning committees in order to increase promotion of industrial activities within the official program. Also, we have tried to get Ericsson participation in the most important industrial and technological activities, especially those that provide good publicity. We have submitted articles and photos to joint publications and brochures. Björn Svedberg has been a member of the project group "Sweden Works - industry in Transition."

We have rejected activities requiring additional payments, such as sponsorship and advertising, unless there have been very specific reasons for participation.

Most of the preparations have been made in Stockholm, where corporate Relations has coordinated Ericsson activities in cooperation with Ericsson in Richardson, Texas, and in New York.



Leased lines to major manufacturing and development facilities.



# BCT, an Offshoot From Paging

In the town of Lund in southern Sweden, a team of Dutchmen and Swedes are busy working on the new wireless telephone BCT. Fundamentally, this telephone is an offshoot from our paging system; the letters BCT stand for Business Cordless Telephones. A network of strategically located base stations on a company's premises or an exhibition hall will enable those phoning to walk about in the area while engaged in a telephone conversation.

"Our customers are primarily small and medium-sized companies that want ten to thirty portable units," says Michael Kornby, who has been on the project since it started just over a year ago. This means about 70 percent of all companies.

On the other hand, there will be no sales drive focusing on households; the system is too expensive so far for individual users. But it will be further developed and expanded.

"We've secured a relatively strong foothold in countries that have shown a keen interest in our system, says Kornby, adding that ours is more sophisticated than

our competitors' systems.

Concurrently with the Lund development work, Dag Åkerberg, operating in Stockholm, is calling on Telecommunications Administrations and CEPT, the European PTT association, to obtain acceptance for our systems and permission to market it in different countries.

Åkerberg is a member of some CEPT working parties, cooperating with other representatives of European Telecom Administrations and private enterprises. "At a demonstration last fall, we showed that our BCT version is a well functioning one, which has led to CEPT recommending a system built on our technology," Kornby says.

"Let's imagine a medium-sized company with a local exchange. Today, wires are run from the exchange to each extension — and in the opposite direction, towards the telecommunications network.

The BCT system means that the exchange wires are run to a central unit, from which lines are extended to a number of base stations. A base station, in this case, is about the size of a fire detector;

it may be mounted in a corridor, for example, having a coverage of 20 to 30 meters. It's estimated that three or four base stations will be capable of coping with about 30 portable phones. Communication is by radio, 900 MHz.

The normal broadcasting procedure is that of each call using its own frequency, or a radio channel (the FDMA, Frequency Division Multiple Access) system. BCT operates on only one frequency, but those engaged in conversation are allotted a "time slot" within this frequency. A time slot recurs at regular intervals; typically each tenth millisecond. This is the TDMA system.

The principle of TDMA, Time Division Multiple Access, means that a number of conversations are allowed to go on simultaneously. If the base stations — and those phoning — are properly distributed, the system should be efficient. But it would be overloaded if all the portable phones were kept going in some sort of a cluster.

The BCT telephone will hardly mean that today's paging systems go out of use; they will rather be a supplement.

## Mohlin Retires After 40 Years



Arne Mohlin

Arne Mohlin, Executive Vice President, retired from Ericsson April 30, after a long and versatile career spanning close to 40 years.

Mr. Mohlin, a member of the Corporate Executive Committee and of the Board of Directors of Telefonaktiebolaget LM Ericsson, joined the company in 1949 in the Work Study Department, shortly after graduating from the Royal In-

stitute of Technology in Stockholm.

During his tenure at Ericsson, he has been a key link in the progression from electro-mechanic to electronic systems, including production of the AXE. He has been a driving force in the development of equipment and in the training of personnel, guiding programs that prepared them for the changing professional environment.

His engineering background, coupled with a flair for management, endeared Mr. Mohlin to the technicians and others that came under his charge, from his days as head of the Transmission Factory to his role as manager of Ericsson's main production facility.

Mr. Mohlin, who is currently serving as Chairman of the Swedish Standards Institution, is a member of the Royal Swedish Academy of Engineering Sciences.

He will continue to serve as a member of eight Ericsson boards of directors.

## Ad Campaigns for MD 110 Reflect a Unified Image

Continued from page 3

ented headline based on U.S. references. The body copy tells the Ericsson story by division, by product line, emphasizing customer benefits while retaining the theme line from previous campaigns, "we're here when you need us." In some cases it has included a "call to action" and free offer of more information.

The media schedule for 1988 includes 10 publications, 9 trade books and 1 general business book, Business Week, for a total of 113 insertions, generating over 36.4 million gross impressions in national U.S. media.

According to Kowynia, the in-

formation collected will not only be used for advertising but also for collateral materials, internal communications, trade shows, press relations, investor relations, community relations and special events and promotions.

Summing up the marketing communications campaign from the U.S., Kowynia said "it was designed to provide a cohesive framework and a unifying sense of direction to continue building our awareness, enhancing our image and creating a preference for reliable quality products, a full line offering and responsive service orientation."

## Teradyne To Link 4TEL And AXE System

Ericsson and Teradyne have agreed to jointly develop an interface of the Teradyne 4TEL Automated Subscriber Line Test System to the Ericsson AXE family of digital switches. This interface meets today's requirements and is designed to enhance forward compatibility with future generations of both 4TEL and the AXE.

A field trial of the interface is planned for the third quarter of 1989; commercial availability is

scheduled for the fourth quarter of 1989.

Teradyne 4TEL automatically performs nightly tests of subscriber loops and executes a wide range of on-demand tests and computer-guided fault location sequences. These tests provide telephone companies with fast, accurate information for maintaining and controlling the quality of outside plant equipment.

The 4TEL, with 28 million lines under test, is a leading commercial line test system. It is used extensively in independent telephone companies in the United States and in major telephone networks in Canada, Europe, the United Kingdom and the Far East.

## Töcksfors Seat Heaters For Porsche

Porsche has selected Ericsson Cables' subsidiary Töcksfors Verkstads AB as their supplier for car seat heaters, an order worth approximately SEK 5 million annually, in the first stage.

This news comes during the same month as a major breakthrough in the German market when Opel decided to equip more than 165,000 cars with Töcksfors' seat heaters. The Opel order is valued at SEK 20 million.

Porsche buys their car seats from the well-known producer Recaro which supplies most of the luxury cars' seats. The order will be an important reference in the demanding luxury car market. Töcksfors now has 50 percent of the world market for seat heaters.

## Mobile Contract From Tijuana

Ericsson Radio Systems has been awarded a Cellular Mobile Telephone System contract for Tijuana in Mexico at 6 million USD.

The order was signed with TELMEX, the telecom administration of Mexico and includes 1 AXE mobile telephone exchange and 5 radio base stations and will serve 3,000 subscribers.

Mexico is the 28th country to choose Ericsson's mobile telephone system, and the second country in Latin America.

## Taking Over From Consultants

For many years the Swedish Division of Ericsson Network Engineering has supplied and installed tele-signalling networks in new buildings.

Much of this work has been done to specifications issued by consultants working for the principal. These networks have often been a subcontracted part of the electrical installation.

"This is not an ideal situation," says Jan Löfberg, General Manager, Swedish Division. "The specifications were not always up to date or suited to our products. A lot of re-engineering took place. And being a subcontractor to the electrical installer meant our margins got squeezed."

How could Ericsson take over the role of the consultant? After all, it usually has a much broader technical knowledge of all the various systems that make up an in-house tele-signalling network than most consultants. Therefore, it should be able to produce a better specification the first time around. This should save the client both time and money.

However, Ericsson doing the "consultancy" should not in any way preclude us from supplying the network," Löfberg says.

"If we reach our goal we can provide and get paid for the engineering of the total network," he says. "We can also supply and install the network at good margins as we have cut out the middle man and have already had the cost of preparing the offer paid for."

"The client can have any product he wants, but we always propose Ericsson products as the first choice," "Products that Ericsson knows best, that will add strength to our installed base. In this way we can include products EDS and

so on from the very beginning."

A number of activities had to be carried out to achieve this goal.

Obviously, Ericsson looked at our present customer base first. Those customers with whom it has had a long business relationship were its main target.

Special "key account" type seminars and training programs were devised for sales people, installation and service technicians as well as seminars for clients.

The internal training programs were aimed at becoming business oriented and at identifying business opportunities, making sure that everybody in the whole organization participated in this process. The programs also included training in new technology, for example data networks.

"Our existing customer base is our most valuable asset," Löfberg says. "Some of our Swedish branches are dependent on a few major accounts. A special package of activities were designed with this in mind."

The program is now being used at branches in Gothenburg and Malmö. The aim is to strengthen Ericsson's position and to give it a profile as "experts in new technology," for example datacom networks.

Apart from special technical and applications training, both sales staff and technicians have attended seminars in business oriented subjects. Much attention has also been given to the special requirements in dealing with large key accounts.

"All these efforts strengthen the bond to our main customers, who now should see us as an essential partner for establishing modern up to date tele and data communications," says Löfberg.



# Thriving on an Image Of Aggressive Activity

Combine ASEA (before its merger with Switzerland's Brown Boveri), Electrolux and Ericsson, and you will get a rough picture of Siemens - Ericsson's long-standing competitor and now also partner within mobile telephony.

For the last two years, Ericsson has been actively seeking to strengthen its position on the world's telecommunications markets with a wider network of collaboration ventures. One of the most recent in the line of partners in collaboration is West Germany's Siemens, with yearly sales of 180 billion SEK and 360,000 employees.

*This article is one in a series on Ericsson's competitors and partners.*

Siemens is one of Europe's largest companies - "a bank" that deals in electronics on the side, according to some West Germans. Siemens is awash with money, with between 60 and 70 billion SEK in its coffers. It has long been considered rather undynamic in style.

But Karl Heinz Kaske, president since 1981, is working to change the group's image. More aggressive activity in the world market (which even Ericsson has felt), investments in spectacular research projects, and a series of company acquisitions have all played a part.

For many years and in many markets around the world, Ericsson has met Siemens as a competitor for the sale of public telephony systems. Nowadays, Ericsson's AXE switch fights with Siemens ESXD switch - a product that is respected for its highly advanced technology.

Especially exciting is the battle in the U.S., where Ericsson and Siemens, together with the Japanese NEC, stand in the first rank as suppliers after the two established North American companies AT&T and Northern Telecom.

It is a fight with high stakes. Both companies are investing bil-

ions to adapt their systems to the American market. Both have received several test orders. Both hope to take up to 10 percent of delivered public lines.

Despite this grinding competition in the U.S. and in other markets around the world, Ericsson and Siemens have agreed to work together. Together with, among others, the French Matra, they have formed a consortium to develop and market the next generation mobile telephone system for the European market.

Ericsson is already the world leading developer and manufacturer of mobile telephone systems, thanks in large part to the rapid development of the Nordic network, NMT. Their total share of the world market is estimated at 40 percent.

Authorities and manufacturers in West Germany were late out, which meant that development has dragged. Siemens has a long way to go before it can boast Ericsson's experience and sales volumes.

However, the enormous development potential of mobile telephony is evident everywhere. It is, therefore, no accident that the leading countries in the Common Market intend to start a Pan-European digital mobile telephone network in 1991, with the expectation that the network can really take shape in 1992 and 1993 when the Common Market's far-reaching project for one common market for goods and services will be completed.

Several different consortiums will be competing for this market, of which Siemens and Ericsson count among the foremost. Ericsson has already been active with providing technical advice, which was probably decisive in determining that the Pan-European network will be narrow instead of wide band.

With the enormous development resources they have in common, Ericsson and Siemens have excellent chances for delivering to the Pan-European network in a few years.

What does this giant of a collaborator and competitor look like, anyway?

Both Ericsson and Siemens belong to the generation of companies that were born with the industrial revolution in their home countries.

While Ericsson developed into a telecommunications specialist, Siemens has expanded into a number of different business areas so that the company today can be most nearly compared to a combined Ericsson, ASEA (now fused with Brown Boveri) and Electrolux. The three Swedish giants' combined sales is still, however, not up to the level of Siemens 180 billion SEK. Within the Munich-based company, there is, among others, a large business

area for medical technology and another for car electronics.

Siemens has eight different business areas, of which at least two correspond to strategic main activities for Ericsson: communications and data technology with approximately 19 percent of total sales, and telecommunications with approximately 18 percent.

The largest sector is energy and automation technology, which, with its 24 percent of sales, compares most closely to ASEA's areas of activity. Siemens household products, which compete with Electrolux, are in a company jointly owned with Bosch.

Siemens communications and data technology develop, manufacture and sell a quite complete line of computers, as well as communication systems for private markets.

This is one of the fastest growing business areas within Siemens, with a doubling of invoicing during the 1980s to approximately 35 billion SEK today. Siemens is especially proud of its Hicom sys-



A breakthrough in Chinese characters.

tem. This area would have hardly shown any growth for the fiscal year 1986/87 (Siemens has a broken fiscal year) if it were not for the purchase of the American GTE's activities in Belgium, Italy and Taiwan.

The year before, Siemens bought 80 percent of GTE's foreign holdings for 430 million USD and thereby received an extra sales volume of approximately a half billion USD per year. The purchase is part of Siemens strategy of building a wider international base for its sales of public switches.

This strategy has been in focus during the whole of the 1980s, and its background is that the large,

in the range of billions of SEK. But deliveries to five of the seven largest telecommunications buyers in the U.S. have given Siemens hope. The management has now decided to build a factory in the U.S.

But even if it's a question of billions in losses, these are absorbed rather easily into the large resources Siemens has at its disposal. Last year's profits, after taxes, declined by 13 percent, but still reached 4.5 billion SEK. According to management, this was primarily due to unfavorable developments on the money market.

This means that Siemens' profits, from a high level, have declined two years in a row. Even sales have stagnated. But nothing indicates that the company is in any danger. Siemens financial position is secure, to say the least very solvent and with cash reserves of nearly 70 billion SEK.

This can also be seen in the company's rate of investment, which, even if it declined by 22 percent, still reached 18.5 billion SEK. Over and above this come the research and development efforts, which rose by 13 percent to nearly 22 billion SEK.

These figures bear witness to the seriousness with which Siemens works to retain and better its position as one of the world's largest telecom suppliers. Ericsson will be keeping company with a competitor and partner with large resources and staying power.



The HF 2301 Mini Fax machine.

tem, the counterpart to Ericsson's MD110. According to Siemens advertising, Hicom was one of the first in the world with ISDN (Integrated Service Digital Network), the new integrated user possibility for speech and data.

Siemens invests large amounts in the research and development of data technology and participates in a number of spectacular projects like the development of superchips in competition with the very successful Japanese. Development of this so-called Megaproject takes place in the Component Group a business area similar to Ericsson's unit of the same name. In this group Siemens manufactures circuits both for its own use and for sale outside the company.

The Telecommunications business area has a sales volume of about as much as Communications and Data Technology 35 billion

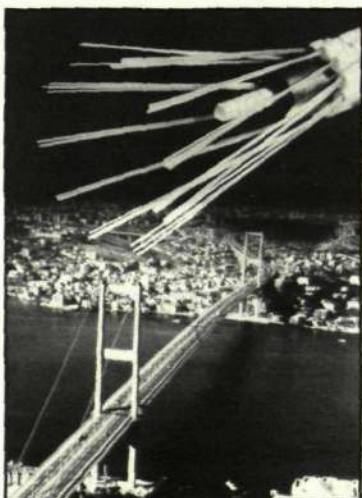
secure homemarket in West Germany, which Siemens splits fairly evenly with the French-dominated Alcatel, soon will not be so secure. Many expect that the market will be opened for outside tenders before 1990.

Siemens has gone out into the world and has had no small success with its installations in 30 countries. In total they supply approximately 1.6 million lines per year and have about 7 million on order.

Above all, Siemens' efforts to get a foot in the giant American market for public switches must be admired. Despite the fact that the D-mark has risen considerably in value in relation to the dollar, the company has invested adamantly in the U.S.

Siemens management has had to suffer large losses within this sector in the U.S.. American business analysts estimate them to be

Both Ericsson and Siemens belong to the generation of companies that were born with the industrial revolution in their home countries.



Bridging communications.



## IN PRINT

The following materials are now or will soon be available:

- **Ericsson in Sweden.** Brochure to be available for distribution in June by Corporate Relations, Stockholm.
- **Ericsson in Asia and the Pacific.** Brochure to be available for distribution in June by Corporate Relations, Stockholm.
- **Our North American Presence.** Brochure to be available for distribution in June by Corporate Relations.
- **Quality — The Ericsson Approach.** Describes our quality culture and its impact on our functions, marketing, design and production as well as specific information on our products and services. The book is available in Swedish (in June) and English by contacting the Corporate Quality Department, Stockholm.
- **Pocket Facts.** Will be available during May. Copies may be obtained by contacting Corporate Relations Telefonplan, HF/LME/DI. Booklet available in both Swedish and English.
- **Ericsson Presentation.** The presentation materials have been completed and are being distributed to members of the EEC group without charge.
- **Annual Report.** Published in mid-April, has been distributed to all shareholders automatically, including those who have purchased convertible debentures.
- **Our Corporate Name and Our Corporate Logotype.** Provides details on the proper use of our corporate logotype. To be distributed in May by Corporate Relations, Stockholm.

# On Dealing With the Media

"Don't wait for the journalists to call before you do your homework" says Nils Ingvar Lundin, the man behind the Mass Media Seminars that Ericsson sponsors for its managers. The better we as business people understand how journalists think and operate and where their responsibility stops the better able we are to handle those contacts," Lundin says.

"Whether we are in a crisis situation or just want to get a message out on our new product, we must be prepared to respond.

"We must prepare ourselves well to paint the most appropriate picture of Ericsson in the media as possible and that is the rationale behind the more than fifteen Mass Media Seminars offered for Ericsson's top executives over the last two years."

"I have participated in two mass media seminars, and besides the fact that I found them extremely fun, I found them very useful," notes Jan Stenberg, head of Public Telecommunications.

"First of all I think we all have to consider why there is an interest for good and sometimes for bad about our company and our activities. Secondly, I think we need to understand better how the journalists are actually working in order to understand how to serve them in the best way and also how to avoid possible misunderstandings and wrongly conceived attitudes. Thirdly, as the mass

media seminars include a substantial part of training in how to make public appearances, I think it is very good for everyone having the responsibility to communicate internally or externally," continues Stenberg.

"I believe these seminars should be compulsory for everyone who has to meet the press, from our CEO down," concludes Stenberg.



Participants at a recent mass media seminar in Richardson, Texas.

## \$90 Million Saudi Expansion

Continued from page 1

contract from the Saudis. Kjell Nilsson, Manager for Africa and Middle East Operations for Ericsson Telecom, said it was a major breakthrough, strengthening Ericsson's position as a leading supplier of communications equipment to the Middle East.

"This is a vote of satisfaction and of confidence," Nilsson said. "We are optimistic that this will open the door for further orders over the next few years, not only in Saudi Arabia but also in neighboring Gulf countries."

"The AXE system has given us

a base in Saudi telecommunications, which had the potential to expand as the kingdom embarks on development planning over the next decade," Nilsson said, adding that the versatility of the AXE system was very much in keeping with Saudi plans for a diversified telecommunications network.

All AXE equipment for the latest Saudi order will be supplied by Ericsson from Sweden, and installation is scheduled to be completed over the next two and a half years.

## Annual General Meeting

Telefonaktiebolaget L M Ericsson held its Annual General Meeting in Stockholm on Thursday, May 19, 1988.

The income statement and balance sheet were approved and the Board of Directors and the President were discharged from liability for their administration during the fiscal year ended December 31, 1987.

A dividend of SEK 9.00 per share was approved. The dividend is payable to shareholders who on May 25, 1988, are recorded in the share register kept by Vårdepapperscentralen VPC AB (Swedish Securities Register Center), which is expected to pay the dividends on June 1, 1988.

The members of the Board of Directors were re-elected except for the Board Member Sten Rudholm, who declined re-election.

The auditors were re-elected with the exception of Jörgen Eskilson, who declined re-election. Olof Herolf, former deputy auditor, was elected new auditor and Stefan Tolsjot, new deputy auditor.

In his speech to the Annual General Meeting, Chief Executive Officer Björn Svedberg

stated that a total of SEK 16 billion has been invested in Ericsson's future during the past three years, of which SEK 9 billion in research and development, SEK 6 billion in fixed assets and SEK 1.5 billion for company acquisitions. In addition, the Company has made major market investments.

Despite the serious consequences of the labor market conflict at the beginning of the year, Svedberg could confirm the forecast of continued improved income.

"We expect a continued improvement in income during 1988," he said. "Profits should be favorably affected by improved operating income and better net financial items."

"I make this statement with the knowledge that order bookings for comparable units rose 20 percent during the first four months of the year, and that income improved distinctly during the first quarter of this year, compared with the same period in 1987."

"I am confident that all Ericsson employees now feel increased optimism for the future, which in the long-term should benefit our shareholders."

## Ericsson Updates

### Mobitex Terminals For Sweden Post

Ericsson Radio Systems AB, has received an order for 1,500 "Mobitex" mobile radio terminals for installation in vehicles of the Swedish post office administration, Sweden Post.

Sweden Post is planning to equip most of its vehicles with Mobitex terminals for voice and data communications, as well as alarm transmission. Ericsson will also supply mobile printers and text displays, as well as provide installation and service.

Mobitex is the first voice, data and alarm communications network of its type in the world. Because interest in the system is growing outside Sweden, Ericsson Radio Systems and the Swedish telecom administration recently formed a jointly owned company, Eritel, to further develop Mobitex technology for application outside Sweden. Ericsson Radio Systems is responsible for the marketing of the Mobitex concept internationally.

### EIS Becomes EBC

As of April 15, 1988, Ericsson Information Systems AB changed its name to Ericsson Business Communications AB.

After the divestiture of the office equipment division and the data division, EBC will be concentrating resources to communication of voice and data for the business communication field.

### Ericsson, Nokia Sign Final Accord

Ericsson and Nokia have now signed the final agreement on the divestiture of Ericsson Information Systems' data division. Nokia is paying SEK 1.3 billion for the units involved. Final government approval has also been received.

### 4.8 Million AXE Lines

The total number of AXE lines ordered last year reached 4.8 million, an increase of 50 percent over 1986 figures.

During 1987, 3.5 million lines of AXE were installed worldwide, compared with 3.1 million during 1986. This total included 325 new AXE exchanges. Most of the lines (about 2.7 million) were for local exchanges.

### Greece Plans AXE Order

The Greek Telephone Administration is to use AXE in the modernization of their national telecommunications network, making it the 71st country to choose the AXE. The initial order, for approximately SEK 166 million (USD 28 million), is for nine transit and local AXE exchanges for the Athens area. The order includes the APZ 212 processor and the AOM 101 network management system.

Transfer of technology and local manufacture of the AXE system are an important part of the contract. First deliveries are scheduled this year for service in early 1989.

"We are well placed to win about 50 percent of the future Greek public exchange business. With the new expansion program, the Greek PTT's future needs are estimated to be at least 200,000

lines per year," says Ingemar Gryth, Regional Manager for Southern Europe, Ericsson Telecom.

### Ericsson, Matra Bid For Mobile System

Ericsson and Matra have jointly released bids to twelve major European operators of mobile telephone systems for digital mobile communications systems.

These bids, released on May 16, come after a request by these operating companies for offers based on the previously established joint European specifications, GSM (Groupe Speciale Mobile).

The commercial launching of this extensive system is scheduled for mid-1991. At that time, it will be possible to use the same portable mobile radio telephone terminals everywhere in Europe.

"We are well prepared for this major project after the establishment of specialized technical and marketing teams," says Ulf J. Johansson, head of Business Unit Mobile Telephones. "We're confident about the competitiveness of our proposed solutions."

This project is being managed as part of a joint effort with Matra Communications of France, following our April 1987 agreement. The operating companies' decisions are expected prior to August 1988.

## Corporate Ad Campaign

A corporate advertising campaign is scheduled for release in early June in all major Swedish newspapers.

The objective is to enhance employees corporate commitment and to position Ericsson as one of the leading international companies in Sweden.

"All employees are ambassadors for Ericsson," says Nils Ingvar Lundin, who is responsible for the campaign's implementation.

Possibilities are being considered for similar campaigns in other countries.



# Restructuring for Growth To Cope With the Nineties

One of the most enduring principles of world commerce is that investors place their bets on the countries that look most promising for growth and for a return on investment. In the simplest terms, the potential for a good investment is judged by the countries' government, with political stability as a primary factor, by the general environment for business, the market potential, and by the quality of the work force. Investors will go where the highest promise, lowest risk ratio prevails.

Ericsson placed its bets on Latin America quite a few years ago, as early as 1897 to be exact. That year, Ericsson's sales in Latin America were already greater than its sales to such next door countries as Holland, Germany or Spain. By 1905, the company was working not merely as a supplier to Latin America but as a network operator (as it still is in Argentina). In Mexico a telephone was often referred to as an "Ericsson."

Ericsson's practice has always been to achieve maximum integration into the host country. This also meant integration in terms of its scope of activities, with a sales and service organization and as extensive production facilities as the market potential would allow.

This kind of national organization integration is ideally suited to Latin America. The strong nationalism of these countries permit few alternatives to this kind of business approach.

Today, in the face of an aggravated debt burden, the approach to business in the hemisphere must inevitably undergo some change.

As far as Ericsson is concerned, each investment is being scrutinized much more now, says Alfred Svensson, Director of Corporate Market Coordination, Latin America. However, Ericsson's presence in the market is seen on a long-term basis and does require certain investments, he added.

Ericsson's penetration of mar-

kets — and a rather successful one at that — in a region where American companies have always had a ready access because of its proximity can be attributed to several factors. First among these is the Viking spirit, Svensson says, noting that Swedes like to travel to distant shores. Another contributory element to Ericsson's success is the fact that markets close to Sweden were already saturated, he says, thereby compelling the company to seek out new markets.

Equally important, Svensson notes, is that Ericsson equipment is designed to adapt to a variety of environments.

The American equipment was designed for the huge U.S. market, and not for some small far away market in its early stages of

There is a general restructuring going on in the region, and Ericsson is shaping its policy to ride with this change.

development, he points out. "Moreover, the U.S. companies did not know how to sell outside its borders and were not very interested in doing so."

The major markets for Ericsson in the region are Brazil and Mexico. In both countries, Ericsson

has huge factories that supply the domestic market and export to other countries within the region, and to Africa as well. In some cases, they also export to Sweden.

There is a general restructuring going on in the region aimed at growth in the 1990s, which has been called the decisive decade for a Latin American economic takeoff. Naturally, Ericsson is shaping its policy to ride with this change.

"We are approaching this in several ways," Svensson says. "Most companies in the region have been trimmed and restructured to better fit into the new technology and in their role as suppliers. New investments to increase efficiency in production and handling are on the way. Alternative sources for financing are explored and applied with regard to suppliers both inside and outside the region."

Pointing to Brazil's recent enactment of information laws to protect home industries from foreign competition, Svensson says that Ericsson is not adversely affected by this form of protectionism.

"We have been able to adapt to the new condition," he says. Moreover, Brazil has eased its stance on the matter since the issue was very heavily criticized, especially by the U.S."

The standard manner of handling the Latin American debt problem — austerity measures and muddling through — has come to an end. The political reality of extreme costs is one reason; global trade problems are another.

In their bid to overcome the current deadlock, Latin American debtor countries and the lending institutions are mapping strategies that would keep political stability intact and at the same time give industry a boost.

Overall the indebted countries, from Mexico to Argentina, have improved their current-account and trade positions. They also



Alfred Svensson

have cut their public sector deficits and have resumed growth.

No doubt there will be challenges ahead for industry in Latin America, especially with the uncertain macroeconomic outlook.

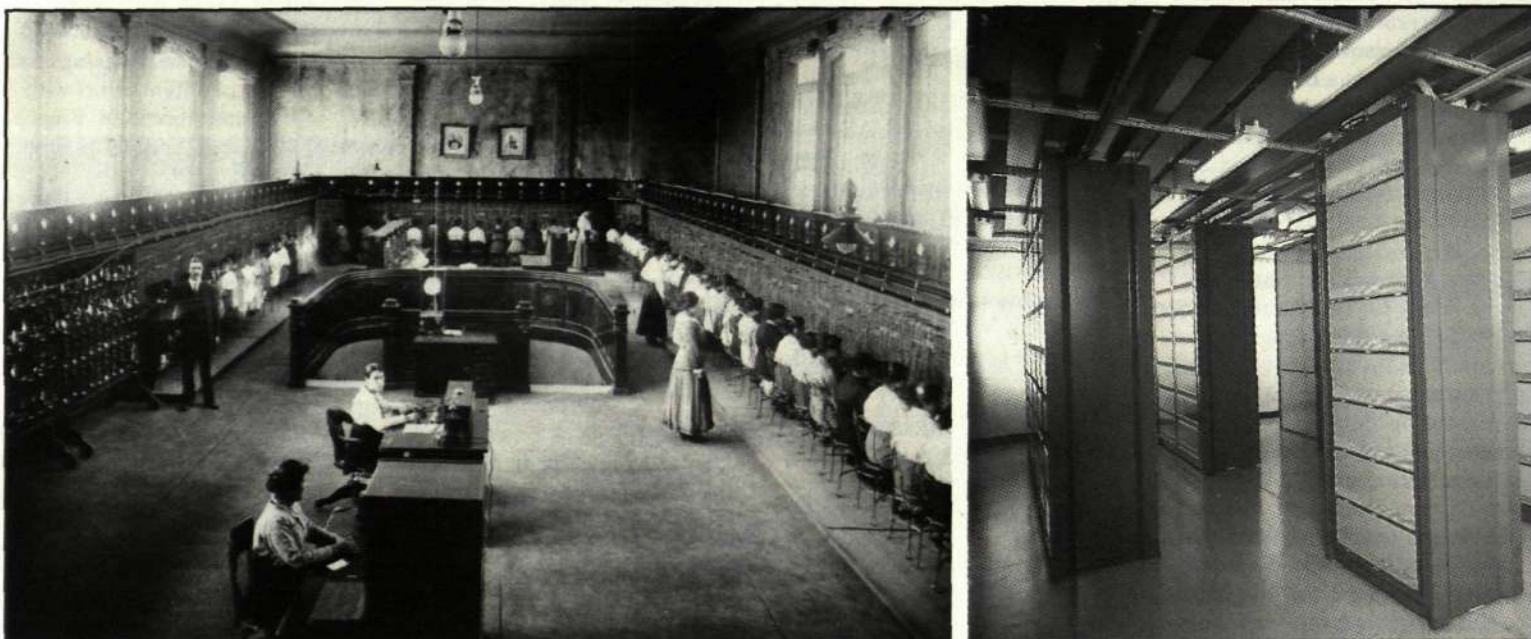
Still, Latin America, with its vast natural resources and growing population, continues to have the bloom of promise about it. The natural resources, dynamism, demand for infrastructure and the GNP growth are strong positive factors in its favor. There is the potential, given these factors, for Latin America to develop into a key player in world economic affairs.

Peter Drucker, the well-known American management expert, recently put forward an interesting theory. He states that traditionally investment has followed trade. But now trade is increasingly following investment. He also notes that at least one-third of all world trade in manufactured goods may now be intracompany trade.

If Drucker is correct — and there are many in the business world who believe he is — Latin America has to plug in to the world trading circle. It will need outside investment to do so. Today is not too soon for Latin America to tackle the obstacles standing in the way of the investments foreigners would like to make there.

In the process of revitalization, foreign investment will be called upon to play a major dual role: as a source of additional capital to expand productive capacity and as a vehicle to enhance technological capability. Both aspects attain particular relevance at a time when the availability of external credit, and countries' ability to absorb it, are seriously constrained, and when important processes of industrial redeployment on a global scale are under way.

The nations of Latin America are beginning to recognize that only by following their mutual interests will their separate interests be served, which is to resolve their debt problem and to secure renewed growth.



Progress in perspective. Left, Central Victoria system, set up in Mexico, 1912; right, an AXE system, Tijuana, in 1980.

## Contact

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Box 32073  
S-126 11 Stockholm  
Sweden

Editor-in-Chief:  
A. Michele Schmidt  
(Responsible under Swedish  
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