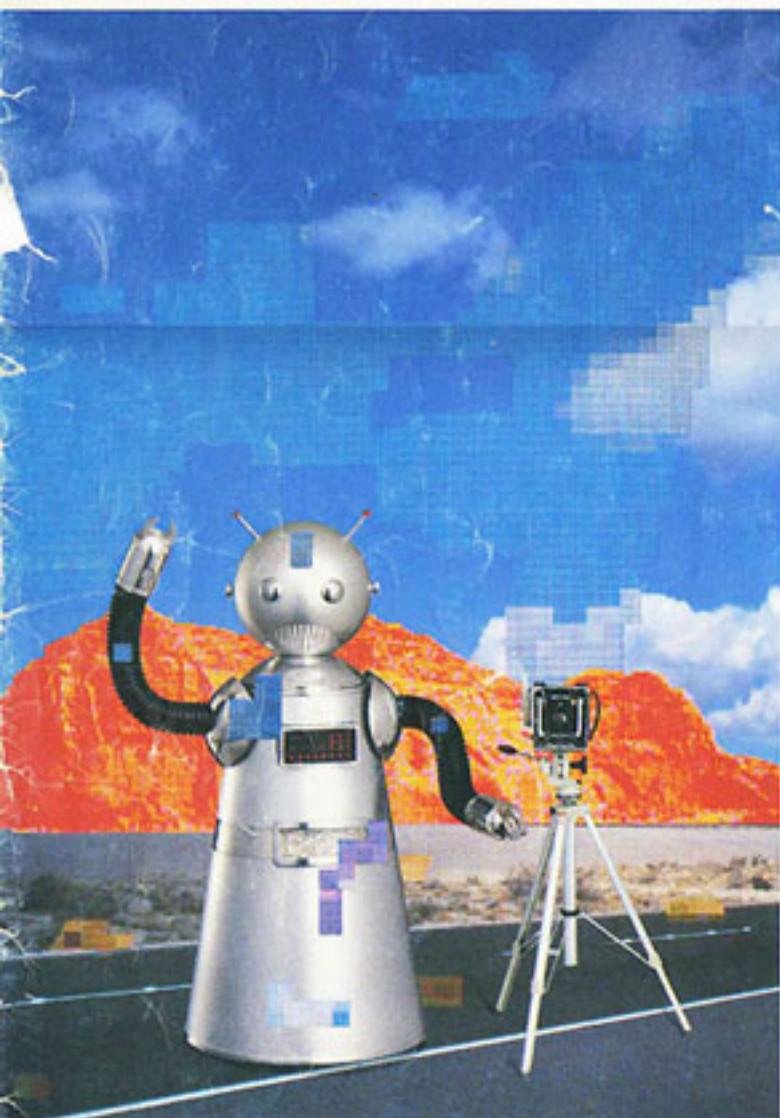


AN INTRODUCTION TO SEIYU-NOKENDAI

A New Shop System for The 21st Century



いまが、未来だ。

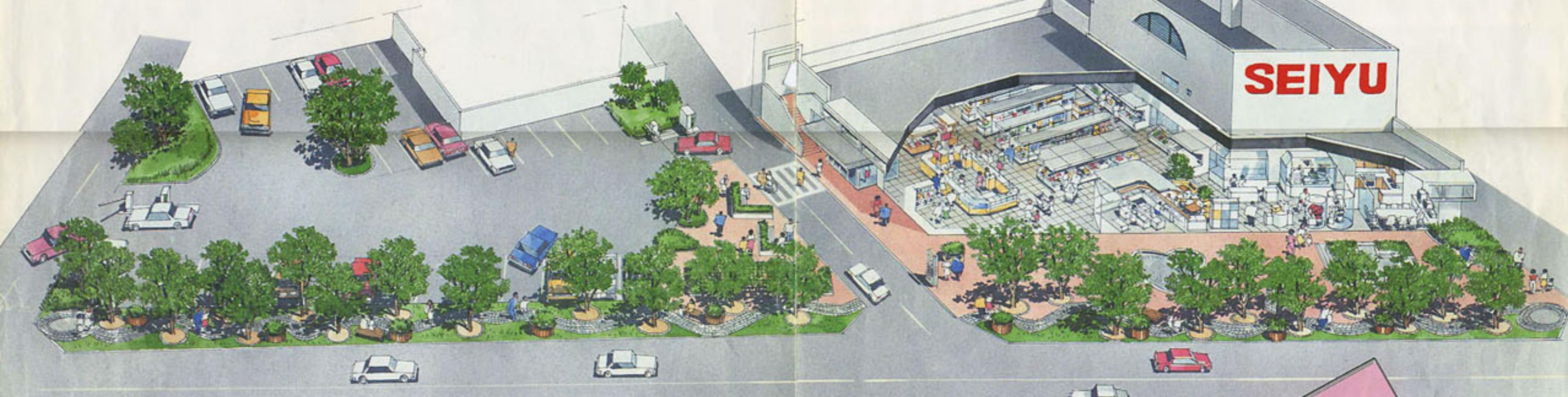


SEIYU

A Totally New System An Interface Between Technology and People

We live in an era of accelerating change. Sometimes it seems that we are being overtaken and left behind by the very technology that was supposed to multiply the strength and speed of human arms and legs. It is as if our dreams and aspirations for the future are being eroded away in the name of concepts like productivity, rationalization and efficiency as science ploughs forward under its own momentum. Today society is reexamining the values of a culture based on rapid economic growth and mass consumerism.

At Seiyu-Nokendai we have created a futuristic new system based on a total reexamination of the relationships between man and his technology in today's world. We are proud of this system, for we believe that it provides a realistic indication of the ways in which people and technology will interrelate in the new worlds of tomorrow.



A New Concept in Store Design

Quantitative consumerism is no longer a satisfactory goal in this era of massive change, and people are instead seeking qualitative satisfaction. It is also self-evident that the retail industry is today faced with the need to adapt to these new conditions. One of the most important questions facing us was how those involved in retailing could respond to the need to provide consumers with higher quality services.

The initial goal of this project for us was to bring about a qualitative change in the nature of work,

liberating ourselves from physical labor, which is monotonous and therefore mentally fatiguing, or from extremely hazardous work, and directing our interest instead to the improvement of the quality of service. Our approach to the Seiyu-Nokendai concept was based on a program designed to attain an identity stemming from the human attributes that we share with our customers. We set out to achieve this by introducing into the store situation technology from such rapidly advancing fields as electronics, mechatronics and

new materials.

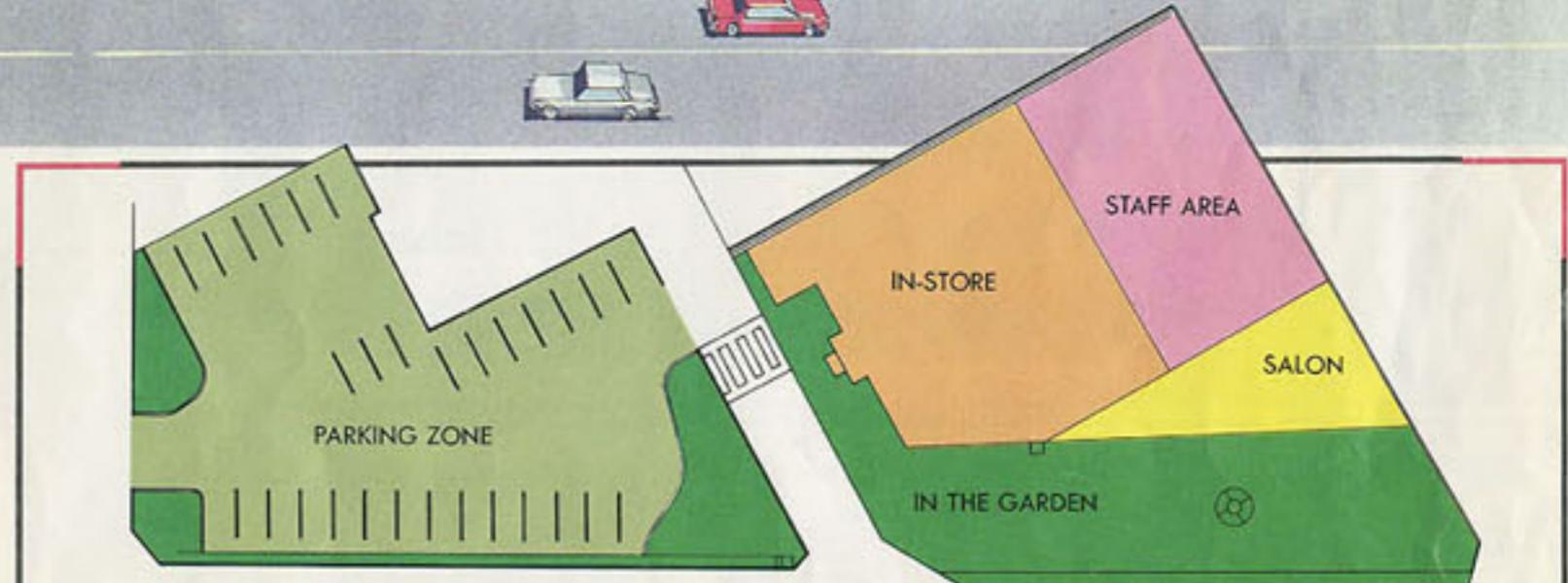
The experimental shop system that is presented here is an entirely new concept designed by us to satisfy all the needs of consumers and of those involved in retailing, including ourselves.

The Role of Robots and Other Technology in the Seiyu-Nokendai System

The Seiyu-Nokendai system brings robots and other types of technology right into the selling context. Our system was created as a futuristic experiment in shop design, and we intend to continue our efforts to develop new types of robots and new systems to meet needs that are likely to arise in the future. Many people have expressed a keen desire to incorporate the systems (hardware and software) and robots developed by us into their own shops and factories, and we are eager to cooperate with these people in future

research and development. Companies in the Seibu distribution group are ready to provide those introducing our systems with total assistance in such facets as finance, leasing and insurance. Moreover, users are assured of reliable maintenance and other services thanks to our selection of leading corporations in the various industrial fields involved to cooperate with us in the development of these systems and robots. Please feel free to consult us about your needs.

Enquiries should be directed to:
The Seiyu Ltd. Strategic Business Division,
Distribution Engineering Department
The techno-consulting service in the Seiyu-Nokendai store will also provide advice.



*The layout of systems
and robots in the
Seiyu-Nokendai Store*

PARKING ZONE/IN THE GARDEN
<IN THE GARDEN>
The Seiyu Parking Robot (part of the Automatic
Parking System)
Simplified Communication System (part of the
Automatic Parking System)

<IN THE GARDEN>
Amorphous Solar Battery Clock
Amorphous Charger
Sales Robot — The Egg Seller

IN-STORE/SALON/STAFF AREA
<IN-STORE>
Unmanned Transporters (part of the
Unmanned Transportation System)
The In-Store Monorail...Ten-RAIL
Automatic Ham Slicer...SR-1
POS-Linked Liquid Crystal Display Panels
(to be introduced in Jan. 1984)
<STAFF AREA>
Sterile Kitchens and Refrigerators
S-Stacker (Automatic retail store Warehouse
System)
Auto-Traverse Charger (part of the Unmanned
Transportation System)
Auto Loading Truck

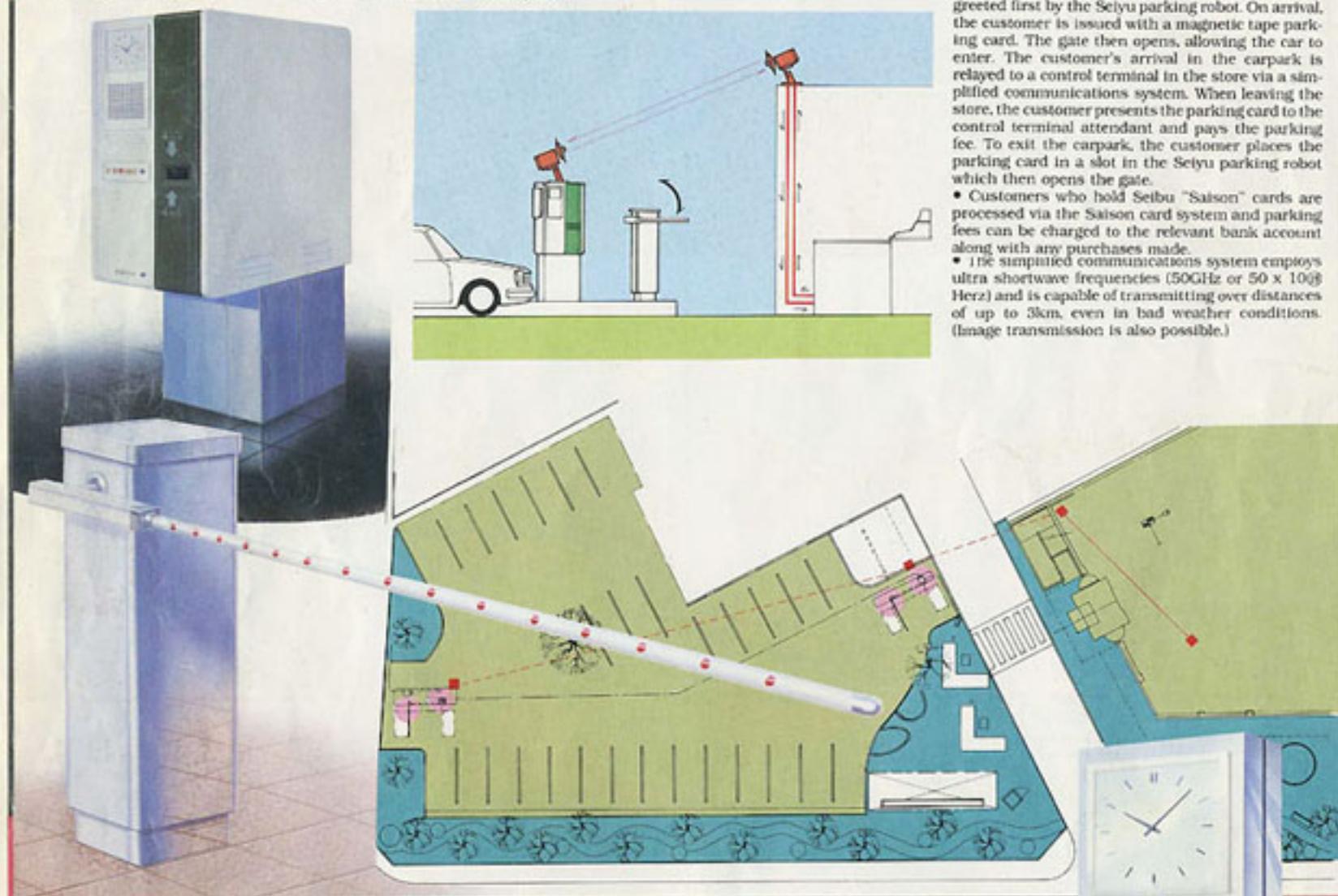
<IN-STORE>
Video Disk Games for parents and children
New Materials Corner

Store Management — No Longer a Task for Those Concerned Solely with Reducing Labor Req

A retail store exists as an interface between the retailing industry and the consumer. Even with the most systematic management, a store is useless without contact at the human level. The satisfaction of customer needs was always paramount in our minds during the development of the systems that we are about to introduce.

Automatic Parking System

■ The Seiyu Parking Robot ■ Simplified Communications System



Customers entering the Nokendai carpark are greeted first by the Seiyu parking robot. On arrival, the customer is issued with a magnetic tape parking card. The gate then opens, allowing the car to enter. The customer's arrival in the carpark is relayed to a control terminal in the store via a simplified communications system. When leaving the store, the customer presents the parking card to the control terminal attendant and pays the parking fee. To exit the carpark, the customer places the parking card in a slot in the Seiyu parking robot which then opens the gate.

- Customers who hold Seibu "Saison" cards are processed via the Saison card system and parking fees can be charged to the relevant bank account along with any purchases made.
- The simplified communications system employs ultra shortwave frequencies (50GHz or 50×10^9 Hz) and is capable of transmitting over distances of up to 3km, even in bad weather conditions. (Image transmission is also possible.)

Equipment Based on Amorphous Technology

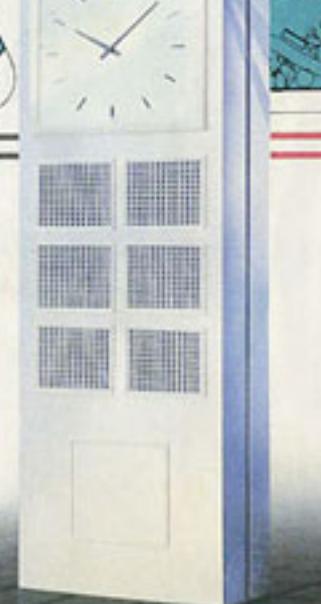
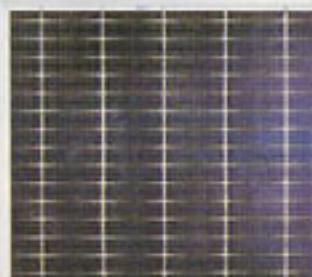
■ Amorphous Solar Battery Clock

This is an entirely new type of quartz clock in which amorphous (non-crystalline) silicon, a newly developed material, is used to convert the sun's rays directly into electricity. No external current is needed, and the clock will continue to run accurately at night or in poor weather conditions on energy stored in its secondary batteries.

■ Amorphous Charger

This device uses amorphous (non-crystalline) silicon to convert rays from electrical lighting directly into electricity which is then used to charge emergency lighting. A special feature of this system is its ability to recycle artificial light.

- Amorphous materials are extremely versatile and can be shaped and processed into any form. They are expected to play a major role in the technology of the future as means of converting and reproducing energy.

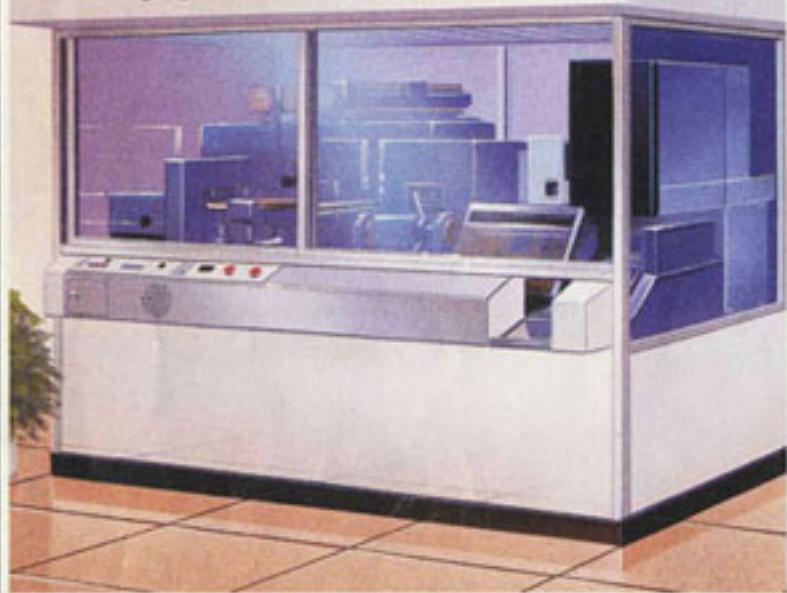


Requirements



Automatic Ham Slicer — SR-1

AUTO SLICER

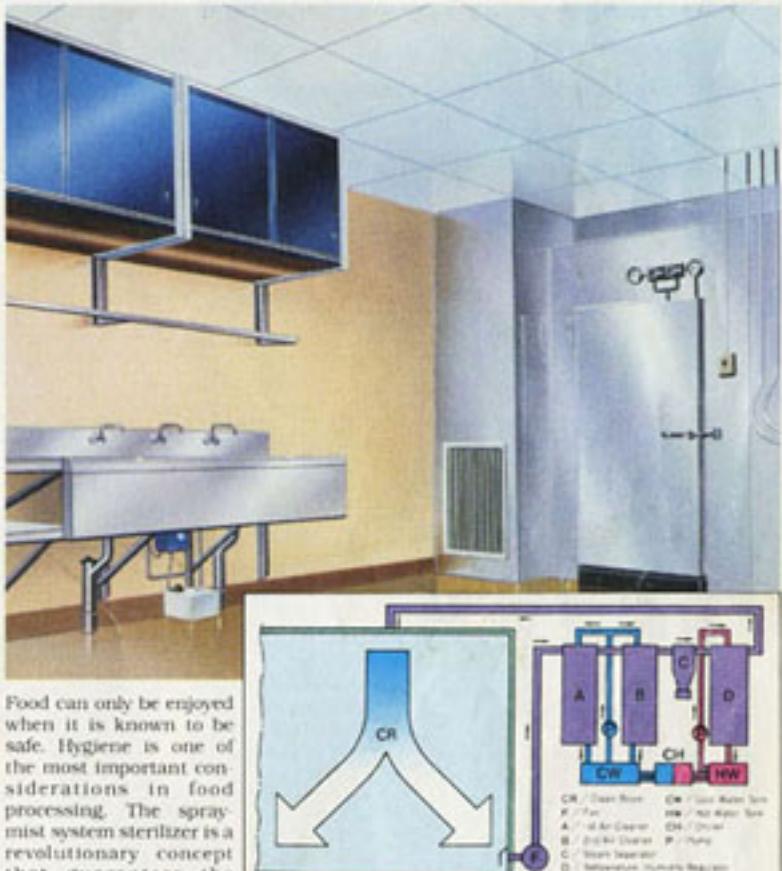


The robot ham slicer is designed for installation in a frozen foods or dairy products corner. It enables the customer to select the desired type of ham and thickness of slice and the required number of slices. The customer is guided in his or her selection by a synthesized female voice and flashing lights. The estimated price of the order is also displayed, allowing the customer to change his or her mind. If the customer is happy with the

price, he or she simply pressed a button. The machine then automatically slices, weighs, wraps and prices the order. All processing is carried out in a clean environment and the ham is untouched by human hand.

- The robot can be set for three types of ham: roast, boneless and sausage. Three slice thicknesses are available: 0.8mm, 1.5mm and 2.5mm. An entire order can be processed in 30~45 seconds.

Sterile Kitchens and Refrigerators



Food can only be enjoyed when it is known to be safe. Hygiene is one of the most important considerations in food processing. The spray-mist system sterilizer is a revolutionary concept that guarantees the cleanliness of the store's processing areas.

The air in these areas is cleaned repeatedly by spray-mist devices which also control humidity and temperature. A number of new ideas have also been developed to ensure the cleanliness of work benches and sinks, and refrigerators are also equipped with sterilization devices.

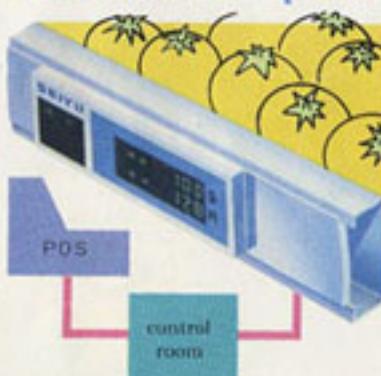
- The use of sterilization equipment obviously enhances the freshness of food products. And Customers can enjoy the superior flavor of real fresh-caught fish.

Sales Robot — The EGG Seller

The robot egg seller is an ultra-compact, lightweight application of industrial robot technology. It is a high-precision device capable of working at speeds much faster than human beings. Here we see two units working in tandem using sensor devices in a sorting demonstration in which they are separating real and dummy eggs. We regard these highly flexible devices as an indication of various possibilities for the future.



POS-Linked Liquid Crystal Display Panels



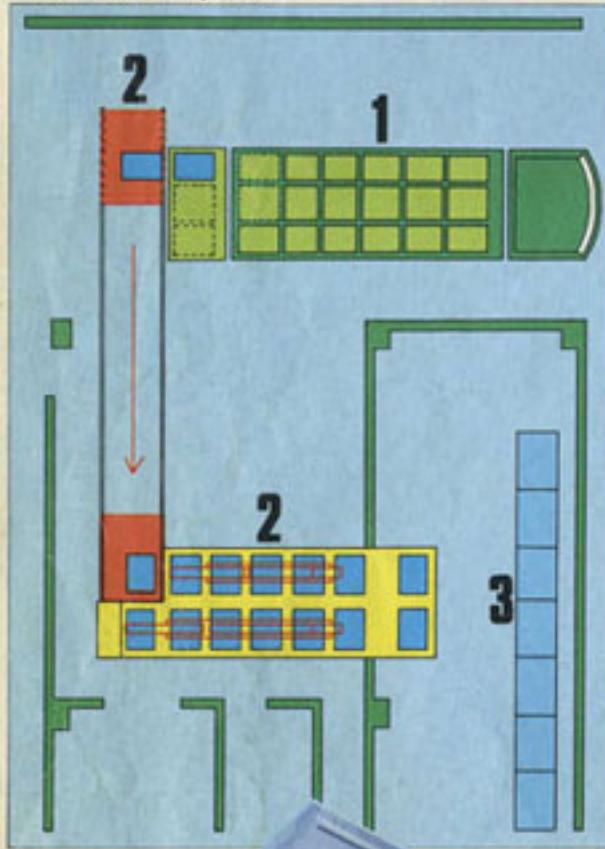
The incorporation of transmission-type liquid crystal panels has greatly improved the efficiency of a task which until now involved the manual insertion of one price card for each item. Since these panels can be linked to computers or to a POS system (cash registers, etc.), the digital display in each panel can be altered at will. This greatly reduces the time now required to rewrite or replace price cards during special service times or to keep up with seasonal price fluctuations. (This system is to be introduced in January 1984).

The Approach of the 21st Century — An Era When Dreams Are Realized Through Technology

The warmth of a human smile is important to human beings on both sides of the counter. Many of the hopes and dreams that people have cherished in the past are today being realized in various forms thanks to technological progress.

Unmanned Transportation System

- Auto-Loading Truck
- Auto-Traverse Charger
- S-Stacker (automatic retail store warehouse system)
- Unmanned transporters



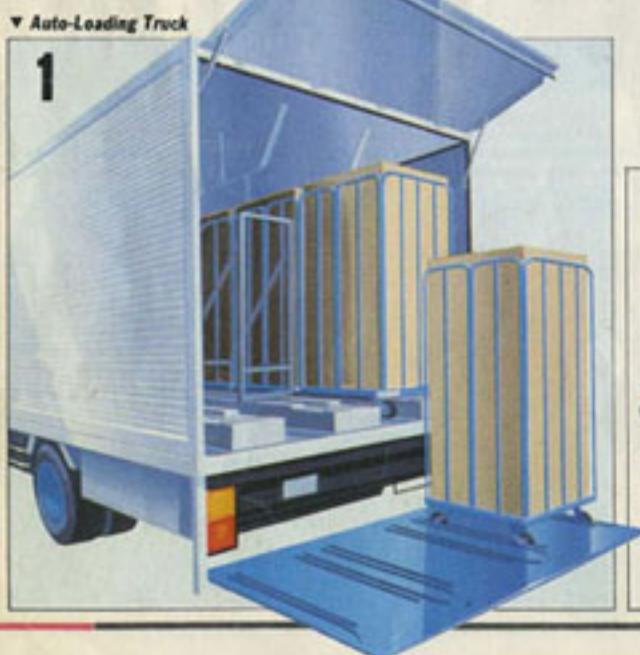
Goods arriving by truck from distribution centers, manufacturers or wholesalers are normally unloaded in a cargo yard or similar area and placed in a warehouse for temporary storage. The goods are then shipped as required and transported to the appropriate display shelves within the store. Our unmanned transportation system represents the successful automation of this entire process from the unloading of trucks to the movement of goods to the shelves. By using this system, it is possible to liberate human beings from back troubles and other occupational health hazards associated with the movement of goods. Their efforts can then be devoted instead to serving customers. The actual steps involved are outlined below.

- 1) The goods are unloaded by means of auto-loading trucks (patent pending).
- 2) The auto-traverse charger transfers the goods on carts to the S-stacker entrance for storage.
- 3) The S-stacker takes the goods from the entrance and stores them in the appropriate location within the multi-tier S-stacker system. The goods are subsequently transferred to the store delivery exit as required.

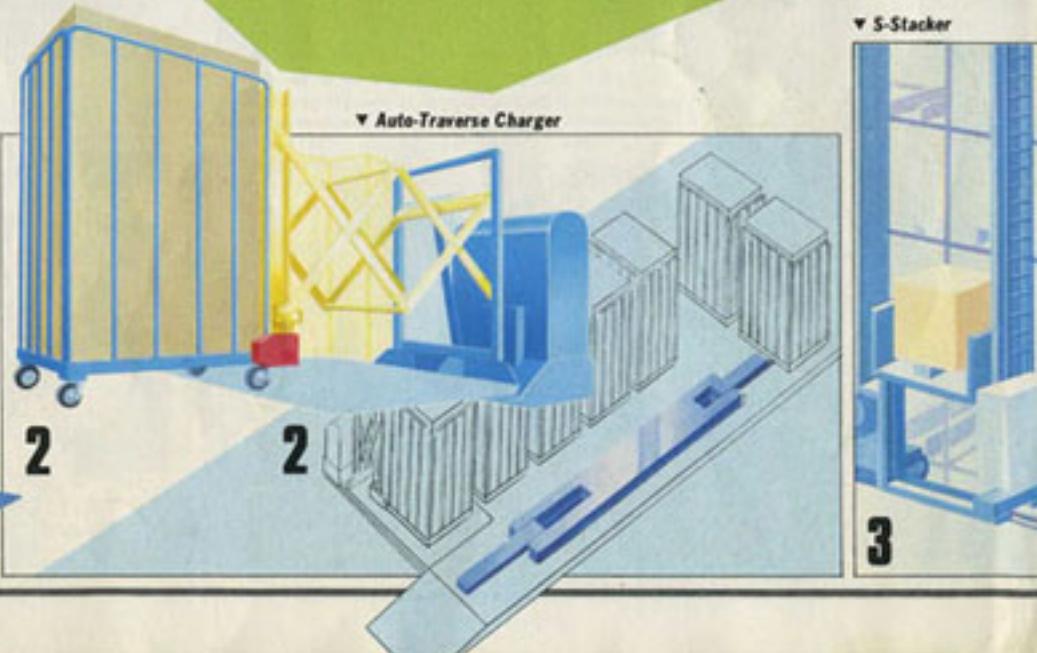
4) The unmanned transporters transfer goods deposited at the exit to the appropriate display station within the store. The unmanned transporters are linked with the S-stacker and carry out this task at night when the store is deserted according to pre-programmed data.

- These unmanned transporters operate at night when there are no customers in the store. Video tapes of the system in operation during the night are displayed during business hours as part of an appeal to customers.
- The actual arrangement of goods on the shelves has not been automated as we regard this task as an important point of contact between staff and customers.

- The system can also be operated in (4)-(3)-(2)-(1) order, and individual steps can be utilized separately.



▼ Auto-Loading Truck



▼ Auto-Traverse Charger

▼ S-Stacker

3



The In-Store Monorail System — Ten-Rail

A monorail system has been installed to link the register counters with the control room. Trucks move along this system, which is based on advanced transportation technology, carrying invoices and other documentation.



▼ Unmanned transporters



Video Disk Games for Parents and Children

These are home education programs designed to foster creativity and sensitivity in young children. Mothers and children are today separated by a widening communication gap. We developed these games to enable parents and children to learn and play together using personal computers and video disks. Children can learn English vocabulary or draw pictures, etc., simply by pressing the screen.

• Jungle Game

This is a participation game in which the player, guided by a Masai chief, searches for animals hiding in the jungle, along the river banks or on the savannah. Each time the player makes a correct guess, the name of the animal appears together with a description. (For children aged 3-4 onwards; 19 minutes, 32 seconds)



• Star Words

This is an English vocabulary spelling game in the form of a space game. The player, guided by a space pilot whose part is narrated by British poet Chris Mosdell, attempts to answer a number of questions. The words used are taken mainly from everyday vocabulary, so the game can be enjoyed by both children and adults. Whenever a correct answer is given, the word is spoken in precise Queen's English, along with a Japanese translation. (8 minutes, 58 seconds)



• Both games together require 28 minutes, 30 seconds.

New Materials Corner — Frontier Technology In Day-To-Day Living

This corner shows how new technology resulting from today's frontier science is being incorporated into our ordinary lifestyles and introduces products based on new ceramics and other advanced materials.

- The photograph shows a record player with a new ceramic turntable.



**Manufacturers Involved in the Development of
The Seiyu-Nokendai Shop System**

Ishikawajima-Harima Heavy Industries Co., Ltd.
Ishida Scales Mfg. Co., Ltd.
Izumi Laboratory
Omori Machinery Co., Ltd.
Institute of Scientifically Synchronized with Newlife
Kikutake Architect and Associates Co., Ltd.
Kyocera Corporation
Modern Information Research Institute
Sanyo Vending Machine Corporation
Sharp Corporation
Super Studio, Inc.
Seibu Construction Co., Ltd.
Daiel Industry Co., Ltd.
Dainichi Kiko Robotics
Daifuku Machinery Works, Ltd.
Chuo Kagaku Co., Ltd.
Tokuhisa Seisakujo
Tone Manufacturing Co., Ltd.
Namco, Ltd.
Nippon Electric Co., Ltd.
Nippon Business Automation Co., Ltd.
Fujitsu Limited.
Matsushita Electric Ind. Co., Ltd.
Mitsubishi Precision Co., Ltd.
Mitsubishi Rayon Engineering Co., Ltd.
Yamato Electric Industry Co., Ltd.
Pioneer Electric Corporation
Japan Business Automation Co., Ltd.

Planning and development:

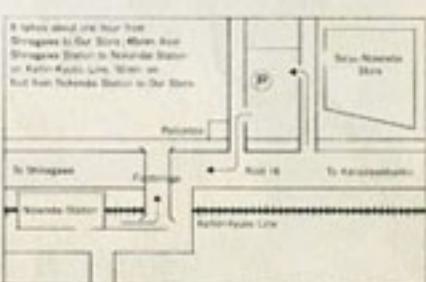
Technology To Tomorrow, Inc.
Address: 41F Sunshine 60, 1-1 Higashi-Ikebukuro 3-Chome,
Toshima-ku, Tokyo, Japan 170
Telephone: (03) 989-5315

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Telephone: (03) 989-5384
Description of business: Sales of systems and robots

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Kanagawa-ken, Japan
Telephone: (045) 701-6361
Hours of business: 10am~7pm



SEIYU