JPRS L/10616

25 JUNE 1982

Japan Report

(FOUO 36/82)

FBIS FOREIGN BROADCAST INFORMATION SERVICE

FOR OFFICIAL USE ONLY

APPROVED FOR RELEASE: 2007/02/09: CIA-RDP82-00850R000500070062-1

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

APPROVED FOR RELEASE: 2007/02/09: CIA-RDP82-00850R000500070062-1

JPRS L/10616

25 June 1982

JAPAN REPORT

(FOUO 36/82)

CONTENTS

POLITICAL AND SOCIOLOGICAL

POSSIBILITY OF DIET DISSOLUTION ASSESSED

Tokyo MAINICHI DAILY NEWS in English 9 Jun 82 p 2

[From "Nagatacho Doings" column by Takehiko Takahashi: "Conditions for Diet Dissolution"]

[Text]

About two years after a general election, it is customary for voices to be heard asking when the next general election will take place. Following the unusually lengthy extension of the Diet session this time, a possible dissolution of the House of Representatives is being talked about.

The Komeito is strongly opposed to a revision of the House of Councillors' national constituency election system. That is why it opposed the lengthy extension of the Diet session, which was intended to carry out this revision. Its "anger" is continuing and it refused to accede to Prime Minister Zenko Suzuki's request for a meeting with Chairman Yoshikatsu Takeiri prior to the prime minister's attendance at the summit meeting.

Chairman Takeiri has declared that "a revision of the House of Councillors' national constituency election system should be referred to the people's judgment."

"To refer to the people's judgment" means, in the political world, to hold a general election in order to obtain the people's verdict on an issue.

In the case of the Komeito, it is being said that Chairman Takeiri's statement does not imply a desire for a dissolution of the House of Representatives.

This is because the lesson of the previous general election is being kept in mind. When a nonconfidence motion was presented by the Japan Socialist Party last time, many LDP Diet members were absent from the plenary session.

The JSP had never expected the nonconfidence motion to pass. But because of the unexpected development, the nonconfidence motion was approved and the House of Representatives was dissolved. As the result, although there had been a near equilibrium between the government party and opposition parties until then, the LDP won a sizable majority in both House of the Diet.

No Repetition

The Komeito does not want a repetition of such a situation. Ryosaku Sasaki, chairman of the Democratic Socialist Party has made a statement that is one step ahead of the Komeito.

Sasaki has declared that resignation en masse of the Suzuki cabinet or dissolution of the House of Representatives is possible.

This statement by Sasaki was made at a national meeting of DSP secretaries general held on June 1. The meeting was originally intended to prepare for next year's House of Councillors election but before that could be taken up, Chairman Sasaki issued his warning that the possibility of a dissolution of the House of Representatives and a general election has arisen.

It is said that the lengthy 94-day extension of the Diet session was not based on Prime Minister Suzuki's initiative but rather on the initiative of former Prime Minister Kakuei Tanaka. The greatest interest of the political world now is what was in the background of Tanaka's initiative? It is from here that the deduction has come that the House of Representatives might be dissolved. The reason is generally as follows:

"What Tanaka fears is the verdict in the Lockheed trial. The prosecution's argument, demanding punishment, will be made this autumn. It is believed that the judgment will be handed down in March or April. When the prosecution's attitude up to now is considered, the prosecution's argument, demanding punishment, can be expected to be very severe.

"At about that time the LDP's party presidential election will be taking place. Public opinion is likely to be quite critical of the movements of the Tanaka facton. Moreover, if a verdict of 'guilty' is handed down in March or April, this will be a big blow to both Tanaka and the Tanaka faction.

"The united local election and the House of Councillors election will follow. If dual elections are held for the House of Representatives and the House of Councillors at the same time, these will be elections under the worst conditions for the Tanaka faction.

"Therefore, after the revision of the House of Councillors' national constituency election system is passed forcibly during the current Diet session, when the opposition by labor unions to the administrative reform becomes brisk, the House of Representatives will be dissolved, with 'referring to the people's judgment' given as the reason.

"If then the efforts of the Tanaka faction are continued, it will be possible for the Tanaka faction, through strength of numbers, to overcome the conditions that may become disadvantageous for it."

Diet Dissolution

In addition, voices placing anticipation in a dissolution of the House of Representatives and the holding of a general election are being heard from among those connected with the Second Ad Hoc Council on Administrative Reform.

The reason for this is the belief that "it will not be possible for Prime Minister Suzuki with his strength to carry out the recommendations of the Second Ad Hoc Council. It is desirable for a new prime minister to handle the problem."

When voices for a "dissolution of the House of Representatives" and "the holding of a general election" start to be heard, these voices generally mount rapidly. Politicians become fidgety. It cannot be denied that the statement by DSP Chairman Sasaki will play the role of abetting this movement.

(The writer is an adviser to the Mainichi Newspapers and former chief editorial writer).

CSO: 4120/295

TANAKA FACTION'S RELATIONSHIP WITH KOMEITO EXAMINED

Tokyo MAINICHI DAILY NEWS in English 2 Jun 82 p 2

[Article by Takehiko Takahashi]

[Text] The Komeito is firmly opposed to a change of the election system for the House of Councillors' national constituency. Its attitude at present is one of thorough resistance.

The Komeito did not attend the opposition parties' Diet policy committee meeting held on May 25. Nor did it accept the Liberal-Democratic Party's proposal made afterward for a Diet policy committee meeting.

Not only that but the Komeito executives all went out to participate in street lectures expressing opposition to a revision of the House of Councillors election system. Its opposition is escalating.

Chairman Yoshikatsu Takeiri and other executives of the Komeito are said to have a special relationship with former Prime Minister Kakuei Tanaka. Even when such a report appears in a newspaper, the Komeito does not file a protest. Accordingly, the existence of a close relationship between former Prime Minister Tanaka and the Komeito is accepted as a fact in the political world.

Tanaka is said to have been the driving force behind the very lengthy extension of the Diet session this time. Such a lengthy extension was not being considered by Prime Minister Zenko Suzuki at first. This can be imagined from the fact that Suzuki's return to his electoral district (Iwate Prefecture) was already scheduled.

If the lengthy extension of the Diet session was carried out under the leadership of former Prime Minister Tanaka, an atmosphere is brewing that the Komeito will find it necessary to sever the relationship maintained with Tanaka up to now.

Among the Komeito executives were those who felt that this relationship would have to be severed sooner or later. They hesitated about saying so positively, however, because doing so would have placed Chairman Takeiri in a painful position.

Dissatisfaction

In the terminal organizations of the Soka Gakkai, the parent organization of the Komeito, there is considerable dissatisfaction about having it said that the Komeito is close to the Tanaka faction. The Komeito executives are aware of this. They have felt that some kind of countermove is necessary.

Up to now it was believed that an opportunity for the Komeito to sever relations with the Tanaka faction would come if Tanaka is adjudged guilty in the Lockheed trial. The Komeito executives felt that in such a case, Chairman Takeiri would find it necessary to liquidate the relationship with Tanaka.

That opportunity has arisen, however, in an unexpected quarter, namely, the very lengthy extension of the Diet session. The Komeito would like to kill the revision of the House of Councillors national constituency election system by all means. It has acted along such a course. The Japan Socialist Party is in favor of a proportional representation system. Although belonging to the middle-of-the-road influence also, the Democratic Socialist Party and New Liberal Club differ from the Komeito in regard to this problem.

Although the DSP once expressed its opposition, its influential backer, Domei, is in favor of a revision. This is the same as in the case of Sohyo and the JSP.

The Komeito is the only party that is absolutely opposed to the revision. In view of the past relationship, the Komeito never thought that former Prime Minister Tanaka would adopt a

policy of pressuring the Komeito to such an extent as this. This prediction has now been overturned. There is strong consciousness that "we have been betrayed by the Tanaka faction." The Komeito has withdrawn into a shell, refusing to participate in a meeting of party leaders or a meeting of committee chairmen.

If Diet member Takayuko Sato is found guilty on June 8 in the Lockheed trial, the Komeito will undoubtedly seek Sato's resignation as a Diet member. Further, it will demand the setting up of a special committee in regard to political morals. Depending on the attitude that the LDP takes toward this, the Diet discussions will grind to a halt. The Komeito is desirous of making this useful in preventing a revision of the House of Councillors national constituency election system.

Up to now, even if Sato were adjudged guilty, the Komeito did not intend, because of the past relations with Tanaka, to press for Sato's resignation in consideration of Tanaka's case to follow.

Now, with the strong organization called Soka Gakkai behind it, the Komeito is likely to plunge into warfare with the LDP. If at such a time the Komeito severs its relations with the Tanaka faction, the effect that this will have on the political world from now on is bound to be great.

(The writer is an adviser to the Mainichi Newspapers and former chief editorial writer).

CSO: 4120/286

MILITARY

LAUNCHING OF MILITARY SATELLITE PROPOSED BY LDP

Tokyo NIHON KEIZAI SHINBUN in Japanese 5 Jun 1982 p 2

[Text] LDP's Space Development Special Committee (Chairman Taro Nakayama) drew up a proposal which seeks to revise the Basic Space Development Policy, and submitted their proposal yesterday to the Chief Cabinet Secretary Miyazawa. The LDP proposal states that "the use of military satellites would reduce defense costs" and requests that satellites be used not only for non-military purposes but also for defense purposes.

The Basic Space Development Policy was formed in 1978 by the Space Development Committee (Chairman, Director General of the Science and Technology Agency) with the objective to launch a 550kg-communications satellite with the H-1 rocket in 1992. However, the uses of satellites have multiplied since then and the United States has already launched communications satellites in the 1,000kg-class. Compared to these developments, the technological lag suffered by Japan is getting more conspicuous. Thus, the special committee has asked for a review of the Basic Policy and for a new effort to draw up a full-fledged space development plan.

The LDP proposal states that:

1. The Science and Technology Council should hammer out a clear space policy, keep in close contact with the Space Development Committee, and establish a horizontal cooperation system among government ministries and agencies;

2. The space development budget should be tripled (currently 100 billion yen for FY-82) to boost domestic technology;

3. Legislation for space development should be quickly established;

4. Japan should participate in joint research with the United States on the manned space station and space shuttle projects.

The focal point of the proposal is the objective to launch a military satellite.

The proposal states that the use of satellites in defense communications, marine surveillance and reconnaissance "will reduce defense costs because

"Japan's geographical location." However, the uses of satellites are defined as "limited to peaceful purposes only" by the plenary session of the Diet in May 1969 and the National Space Development Agency Act. Therefore, objection to the proposal is expected from opposition parties.

CSO: 4105/130-P

ECONOMIC

FARMERS SEEK 4.37 PERCENT BOOST IN RICE PRICES

Increase Smallest in History

Tokyo MAINICHI DAILY NEWS in English 4 Jun 82 p 1

[Text]

The Central Union of Agricultural Cooperatives, by far the largest organization of Japanese farmers, Thursday limited its demand for rice prices this year to a modest growth of 4.37 percent.

The rate of increase which the Japanese will have to purchase rice from farmers is the smallest in history since the central union began making demands to the government in 1950.

A union spokesman said that in deciding the new demand, the organization had changed the old method of computing new rice prices. If the old method was maintained, the union would have demanded a 29.2 percent increase in price which at present is 17,487 yen per 60 kilograms, he explained.

In the new computation, recent increases in wages in other industrial sectors and other factors were taken into consideration.

The smallest increase reflects mounting foreign criticism of the protection provided to Japanese farmers and also the rising complaints from consumers over high rice prices, observers said.

In accepting the demand from union leaders, Minister of Agriculture, Forestry and Fisheries Kichiro Tazawa said he appreciated the union's efforts to trim down its demand adding, however, that it would even be difficult for the government to meet the modest demand.

The ministry has already decided to freeze the rice prices for farmers.

Rice Price Calculation Viewed

Tokyo MAINICHI DAILY NEWS in English 7 Jun 82 p 2

[Editorial: "Rice Price Calculation"]

[Text]

The National Central Council of Agricultural Cooperatives has decided on a rice price demand based on a new calculation method. According to the existing calculation system, the price would have to be raised by about 30 percent, but the council said the raise this time would be 4.37 percent under the new calculation.

The Ministry of Agriculture, Forestry and Fishery highly evaluated the attitude of the council, saying that the new rice price calculation method is a step forward toward a better understanding of the environment surrounding agriculture. It must be remembered, however, that the government is facing a severe fiscal condition and that the consumers' rice price is likely to be raised again next year under the prevailing fiscal situation. In this regard, we must say that understanding of the prevailing situation is still superficial. The time is now ripe for the most realistic calculation system to be worked out.

The council's new calculation method should be called a kind of index system, taking into account the rise of materials to be used for rice planting and labor cost. This is certainly a step forward compared with the demand of the All Japan Farmers Union calling for a 16.7 percent raise.

The rice price having so much to do with people's living must be something easy for us all to understand. But, the calculation involved in the rice price has been very complicated up to now. Moreover, it contained political considerations. Hence, we demand that the rice price calculation should be simple and rational.

It is also necessary to take into account the change in agriculture in working out a new calculation method. Rice used to be the major pillar of agricultural production and subsidizing the farmer's income by rice price has had a justifiable ground. But, things have changed quite a lot in the meantime. The recent rise in livestock production has lowered the position of rice. Rice production by part-time farmers has been on the increase.

It is quite anachronistic to accord favorable treatment to the rice price alone. The government should work out a balanced price policy in connection with rice, while the rice price should reflect the supply and demand situation of rice itself. The rice price calculation method must be changed drastically so that the nation's agricultural industry can be reconstructed.

CSO: 4120/289

ECONOMIC

JAPAN CAPITAL ABROAD REACHES RECORD IN FY81

Tokyo MAINICHI DAILY NEWS in English 6 Jun 82 p 3

[Text]

Japan's direct overseas investments in fiscal 1981, which ended March 31, hit a record high of $8,906 million, far surpassing the previous record of $4,995 million set in fiscal 1979, the Finance Ministry announced Friday.

The ministry said the figure represented a jump of 89.9 percent from fiscal 1980.

The sharp increase, the ministry said, partly reflected stepped-up investments for development of overseas natural resources.

But the main reason was that Japanese companies provided a large amount of low-interest loans to their overseas subsidiaries in the year in view of high interest rates abroad, it noted.

It said the amount of such funds alone is estimated at nearly $3 billion.

Indonesia led the list of regions attracting Japan's direct investments in fiscal 1981 and the United States ranked second.

Investments in Indonesia totaled $2,434 million, a 4.6-fold jump from fiscal 1980. The increase reflected stepped-up investments in a Japan-Indonesia joint project to develop natural gas deposits.

Investments in the United States aggregated $2,329 million, up 56 percent from the previous year.

Investments in European nations as a group amounted to $798 million, up 38 percent. Investments in Britain and France decreased but those in the Netherlands, Belgium and Luxembourg soared.

Investments in the Middle and Near East decreased 39 percent to $96 million, apparently due to the unstable situation in the region.

CSC: 4120/288

ECONOMIC

APRIL INDUSTRIAL OUTPUT DECLINED 0.9 PERCENT FROM MARCH

Tokyo MAINICHI DAILY NEWS in English 27 May 82 p 5

[Text]

Sluggish exports forced industrial production to decline 0.9 percent in April from the preceding month, the Ministry of International Trade and Industry said in a preliminary report Wednesday.

The April output at the nation's mines and factories, however, was up 2.8 percent from the same month of last year to stand at 148.8 against the 1975 base figure of 100, MITI said.

Shipments in April also fell 1.9 percent from March but remained unchanged compared to a year ago level with the index standing at 98.1.

On the other hand, inventory registered increases of 0.9 percent from March and 1.5 percent from a year ago to 117.3.

MITI said the April gain was the sixth straight monthly increase since November when the index stood at 100.

"Exports are certainly the No. 1 factor," a MITI official said in explaining the April drops in output and shipments. He said that of 14 industries covered in a governmental survey, seven industries, including transport machinery, metal products and electronics, sustained month-to-month losses in both production and shipments in April.

Precision instruments, pulp and chemicals were the sole industries to post increases in output and shipments, the official added.

Inventory in the transport equipment and nonferrous metal industries recorded drops of 2.2 percent and 3.7 percent last month while general machinery, steel and textiles showed increases of 1.8 percent, 1.5 percent and 2.5 percent over March.

"As a whole, Japanese industry is depressed and will remain so" the MITI official said.

The ministry predicted a 1.6 percent upturn in industrial production in the manufacturing sector in June after an estimated 1.8 percent drop in May.

But the MITI official said the increase will be "negligible" if the current depressed state of Japanese industrial production is taken into account.

CSO: 4120/287

SCIENCE AND TECHNOLOGY

SEARCH FOR REVIVAL IN VARIOUS INDUSTRIES DISCUSSED

Tokyo NIHON KEIZAI SHIMBUN in Japanese 1-3, 6-8 Apr 82

[1 Apr 82 p 7]

[Text] Automobile Industry

To Eat or To Be Eaten; Survival Depends on Domestic Sales

"A period of readjustment has arrived in the automobile industry, in which automakers are obliged to consider long-range strategies with a premise of reduced production" (Kiyoshi Kawashima, president of Honda Technological Research Industry).

"Japan's automobile industry has not experienced competition in the true sense. Strict capital theory is expected to play a more important role in the survival of the industry in the future" (Takashi Ishihara, president of Nissan Motor Co).

The automobile industry is harassed by trouble from within and from without. From outside, Japan's automobile industry is labeled the "culprit" of the trade friction, and under the name of self-regulation, automobile exports are being placed under the control of the other party. From within, Japan's automobile industry is suffering from slow demand as a result of the mature consumer market and the sluggish growth in net industrial income. A high growth rate cannot be expected in either exports or domestic demand, so a drastic strategy for survival is about to be unfolded under reduced growth rate.

Exports Are About To Crash

The 1981 automobile exports (partial prospect) fell short of the results of the previous year for the first time in 3 years, since 1978, with a reduction of 6.3 percent to 3,809,700. This was laregely due to the self-regulated export policy with regard to the United States implemented since April 1981, with a reduction of 6.7 percent in that of the previous year, to 1,680,000. Exports to Europe are not bright either. The yen remained high with respect to the European currencies, and the export competitive edge was dulled sharply. The sales were so slow that the frame of the European import

restrictions could not be broken. Exports to the developing nations, which used to make up for the reduction in exports to European nations, have also lost momentum since last fall. The actual sales results in 1981 (January to December) showed growth only in two regions: Africa (46.6 percent increase over those of the previous year) and Oceania (23.0 percent increase over those of the previous year).

The loss in export momentum became more marked this year. The passenger car exports in January and February suffered a loss of 16.4 percent from those in the same period of the previous year, to 618,400. Nothing exciting can be reported up to April either. This is so partly because the 1982 exports to the United States have been restricted to 1,600,000, the same number as the previous year. Although automakers are accepting orders in the hope that the regulation frame may be readjusted during the latter half of the year, when the U.S. market may pick up activity, it is not likely that this will be realized. As long as the world market remains stagnant, the import regulation of the United States and the European nations will not be relaxed, while exports to the developing nations cannot be expected to grow rapidly either.

According to an unofficial forecast made by the Japanese automobile industry, its 1982 exports are expected to remain on the same level as the previous year. However, this figure is based on the premise that the U.S. economy will improve, so there is still danger of there being a drop in the previous year's ratio 2 years in a row.

However, export profits are in good shape. As a result of an increase in the exchange differential profit due to the relatively cheap yen and a shift to exporting cars with larger added values, the amount of money taken in increased even though the number of cars exported decreased. The high profits of the automakers are in practice supported by the cheap yen.

"Domestic Market" Not Optimistic Either

On the other hand, bitter battles are being fought on the domestic sales front. The forecast made by the Automotive Industry Association for domestic demand in passenger cars is an increase of 3.1 percent over that of the previous year, to 2,962,000. However, the total sum for all automakers came to more than 9.6 percent. Beginning with a 10-percent increase introduced by the Toyota Motor Co and its sales department, all other automakers are equally aggressive in their plans. The idea is to make up for export losses by domestic sales, but the situation is severe.

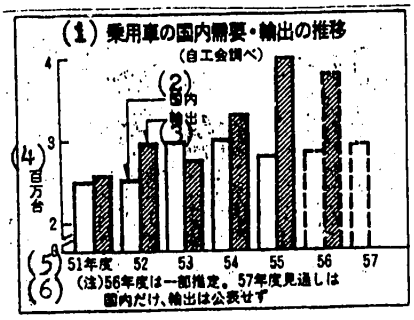
The growth in disposable income since January 1981 is either on the decline or holding at the same level, and personal consumption is still in a long dark tunnel. "Personal consumption will improve by the fall, and 3.1 percent growth in passenger cars can be assured" (Toshio Nakamura, executive director of the Automotive Industry Association). Although there are a number of optimistic observations, postponement of the purchase of automobile in the latter half period as the official automobile inspection period is extended may become widespread, so the situation cannot be too optimistic.

Capital Power Still Counts

Automakers are putting all their energies into domestic sales in this unfavorable environment. "Cars with larger added values for exports and less expensive cars for domestic sales will be the 1982 sales strategy" (Kaichi Kaneo, vice president of Nissan Motor Co).

"To be sure, there will be a price war, but we are prepared" (Hideo Tojo, president of Mitsubishi Automotive Industry). They are all showing a fight not only to secure their own share but also to cut into the shares of the other parties.

Beginning with its Sunday opening policy, Toyota is strengthening its tactical measures, including visiting the dealerships by the company staff and cultivating new sales channels. Under the circumstances in which the pie will not become larger, the only way to increase the number of cars sold is to capture the rivals' markets. Capital power is the thing that can back up this effort. If by taking advantage of its superior capital power Toyota launches itself into the domestic market, then confusion will be unavoidable. The automobile industry is about to enter into an era in which superiority will settle the matter.



Key:

1. Changes in domestic demand and export of passenger cars (based on an investigation made by the Automotive Industry Association)
2. Domestic
3. Export
4. Million cars
5. Year: 1976, 1977, 1978, 1979, 1980, 1981, 1982
6. (Note) 1981 figures are based on a partial estimate. The 1982 forecast refers to the domestic market only. Exports are not given.

[2 Apr 82 p 6]

[Text] Food Industry

Heavy Pressure Exerted by Reduction in Income; Betting on Timely Products

"The outstanding hit merchandise in recent years includes only the high-quality instant noodles" (Tadao Suzuki, vice president of Ajinomoto Co). The food industry, which was expected to escape the recession, deepened its worried look when no movement in demand was perceived after the new year.

Ham sausage is a typical example. Sales of ham sausage, which kept up a double-digit growth rate riding on the tide of Westernized dining habit, has lost demand. The 1981 total production was 411,000 tons, with only the slight increase of 2 percent over the previous year's ratio. The 1980 growth rate was also only about 1 percent, so an almost no-growth situation has continued for 2 years already. "The goods does not sell even when it is put on sale in the supermarket at reduced prices" (Joji Nawada, executive director of Yukijirushi Food Co). Every maker is at a loss.

Reduction in Quality and Bad Cycle

Reduction in demand for popular pressed ham is particularly significant. Its sales showed a significant drop last year, with a 17-percent reduction from the previous year. As a result, the price also plunged. The price was successfully raised to an average of 7 percent last May with great difficulty, but today it has plunged to the level before the price rise.

In order to maintain profits, some are even making the painful choice of lowering the quality lately. As a result, inferior ham is put on the market, which further spurs customers to stay away from ham products, and the price of ham is forced to drop again. A vicious cycle has been set into motion. "The pass rate of JAS (Japanese Agricultural and Forestry Regulation) inspection, which used to be nearly 100 percent, is now down to 90 percent." The worsening quality is a matter of concern.

The reason for slow demand is due mainly to sluggish growth in net personal income. According to an investigation carried out by a private organization, meat consumption, more than any other food item, is most sensitive to personal income. Since there is no prospect for a significant increase in net personal income, the pessimistic viewpoint that "we will not be able to get out of this tunnel for some time to come" is permeating the industry.

Worse, the hoof and mouth disease among Denmark's hogs is creating an even worse environment in which to operate. Imports of pork from Denmark have been banned since 1 March. Danish pork occupies approximately 30 percent of all pork imported by Japan. This imported pork constitutes the raw material for bacon and roast ham. The hoof and mouth disease has spread widely, and the industry estimates that "the import ban may not be lifted for the next 5 years." If so, the price of pork is bound to rise. Taking into consideration the cheap yen of late, the cost is expected to rise approximately

10 percent. "Previously, it rained softly; since April, it has poured" (Toyoharu Adachi, president of Prima Ham Co). The outlook is getting even cloudier.

Changes in Consumption Structure, Too

The impact of dull demand on the meat industry is felt even by the industries related to animal husbandry. For example, the mixed feed industry registered negative growth for 2 years, 1980 and 1981, and there is no sign of recovery this year. The impact is further felt by the oil industry, which supplies soybean residues to the feed industry and their profits are worsening rapidly. "A structural depression may be setting in" (Mitsuo Fukawa, Nissei Oil Co).

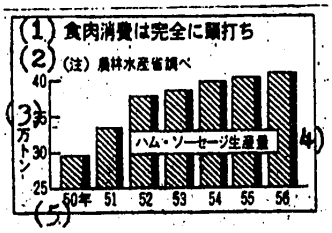
The sense of depression is felt not only by the industry related to animal husbandry. Instant noodles, which peaked in 1979 with 3.8 billion servings (the number inspected by JAS), experienced negative growth in 1980 and 1981, 2 years in a row. Bread is also experiencing a low growth rate of 1-2 percent since 1978. In the case of the instant noodle industry, January production suffered a reduction, due to a warm winter, of 18.5 percent from that of January the previous year. The industry is enveloped in an eerie atmosphere: "Some significant changes may be taking place in our consumption structure" (Nobuo Ida, vice president of Sanyo Food Co). In the field of instant noodles, the sales of high-quality instant noodles with a complicated procedure are going well, and health drinks, yogurt, and soybean milk are also selling well. The sales of these products are expected to show a strong increase of 20-30 percent over that of the previous year. In the field of meat products, which are in bad shape in general, high-grade roast ham sales are showing a healthy growth of 10 percent over those of the previous year, and the prospect is said to be bright for this year also.

Short-Lived Hit Products

It would be fine if consumption of food as a whole could be stimulated by these popular items of merchandise, but the reality is quite bitter. To the extent that the hit products are gaining in popularity, some other existing products are losing popularity and ground. The population has reached 110 million and is not growing appreciably any more. The per capita caloric intake has also peaked at 2,100 kilocalories a day. So if the net personal income does not increase, then it is no mystery that demand for foodstuffs cannot increase any more.

What is more troublesome is the fact that consumers have been capricious lately, so the life cycle of a product is getting shorter and shorter. A hit product this year does not necessarily sell well the following year. "We have entered an era in which the food producer is in need of a technology with which to somehow predict the likes and dislikes of the consumer and produce timely new products, and management and production forces that will carry out this feat" (Mr Suzuki).

In any case, the "food industry has entered into a zero sum society; from now on, it is either eat, or be eaten" (Takayuki Nagamochi, president of Shinriken Vitamin). Recently, a chorus demanding "income tax reduction" has been heard from the industry. They have come to a point where, even with this measure, they may have difficulty in getting out of the trouble.



Key:
1. Meat consumption levels off
2. (Note) Ministry of Agriculture, Forestry, and Fishery data
3. 10,000 tons
4. Ham sausage production
5. Year: 1977, 1978, 1979, 1980, 1981

[3 Apr 82 p 6]

[Text] Paper and Pulp Industry

Complaint of Foreign Offensive; Implementation of Structural Renovation

Demands Level Off

On the 1st of this month, MITI revealed to the paper and pulp industry its 1982 prospect for domestic demand (guideline) for three kinds of paper, including court paper, which have made up a depression cartel so far. According to this forecast, the growth rate over the previous year is 2 percent for the top grade paper, 4 percent for court paper, and minus 4 percent for craft paper. Of these, the top grade paper and court paper, among numerous paper and pulp products, are considered to have surplus power for growth. If these two kinds of paper can expect only so much increase in demand, then either "the industry as a whole can expect at best an increase of 2-3 percent, or the industry should resign itself to zero growth" (Paper Industry Division of MITI).

The painful struggle the paper and pulp industry is experiencing today is due in part to the expansion competition it carried on even after the first oil shock. As a result, it is said to be 5 years behind, compared with other industries, in switching over to a reduced production system today. Each company is aggressively solidifying its own system "to build an enterprise which can go into the black with 60 percent operation" (Oji Paper Co); "to be in the black with 75 percent operation" (Sanyo Kokusaku Pulp Co); "to pay back 200 billion yen in loans in 2 years" (Daishowa Paper). But the fact is that the past bills are not so easy to pay back.

However, as a result of drastic measures implemented last year, including formation of a depression cartel and easing up on construction of new facilities, the prospect is bright now that they may be able one way or another to ride out this adversity, which has been termed "the worst since the war." "The industry will coordinate more closely on matters related to production and sales. No one will act recklessly any more as they did in the past" (Fumio Tanaka, president of Oji Paper Co). It is the common understanding of the industry that the business performance has hit the bottom and, though very slowly, it is beginning to make an upturn.

However, just as the constitutional transformation toward low growth began gradually to take shape, a new problem cropped up suddenly. Large quantities of imports poured in from the United States, Canada, Korea and Taiwan. In spite of the cheap yen, imported goods continue to flood the market this year.

For example, customs statistics of February specifically tell the frightful story: newspaper stock, 24,900 tons (34.9 times that of the same month last year); craft paper, 1,700 tons (1.6 times); jute liner for corrugated cardboard, 4,600 tons (1.8 times); and craft liner, 15,500 tons (1.7 times). The import volume of newspaper stock and craft liner reached 13-16 percent of the domestic production in February.

The United States Demands Open Market

In addition, the U.S. Government demands that the domestic protection measures, such as administrative directive and depression cartel, be discontinued and paper and pulp products be included in the 14 open market items. MITI would like to avoid responding to the U.S. demand, using the fact that imports are increasing steadily as an excuse, but it is not yet clear how this problem will eventually be settled.

Moreover, recently, U.S. and Canadian enterprises, which are in a decisively superior position on matters related to energy and the cost of the raw material chips, are more actively making inroads into the Japanese market. The largest exporter of chips to Japan, Weyerhaeuser Company of the United States, revealed that it is going to establish sales headquarters of corrugated cardboard (craft liner) in Tokyo and Osaka in July. The corrugated cardboard industry speculates that "many firms will probably jump at the imported goods if the price is 10 percent cheaper than the domestic product."

The largest Canadian paper and pulp producer, McMillan Brodel Co, also made public its intention to export its main product, newspaper stock, to Japan. "Supply bases will be set up in various major cities, so that the newspaper companies will not be bothered by a port strike."

After two oil shocks and the subsequent inflation of the imported chip price, the paper and pulp industry expected and worried about a sudden increase in imported goods. Their worries materialized at a faster pace than they anticipated.

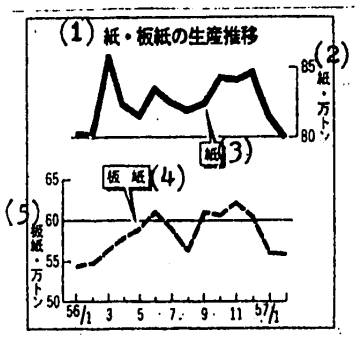
Repeating the Same Mistakes Made by the Aluminum Industry

Imports from Korea and Taiwan are maintained in part by Japan's stable market condition. The present import pace will be maintained unless the market conditions experience a significant decline. The export offensive taken by the U.S. and Canadian industries are due in part to the pressure building up in each country as a result of the tremendous rash of facility expansions that are taking place in each country. No doubt, this export offensive is expected to last a long time.

The structural reform measure (surplus facility disposition measure) prepared by the paper and pulp industry as its trump card for the survival of the industry is to be automatically carried over one more year, because MITI's specific depressed industries temporary treatment measure, in which the paper and pulp industry is included, is to be extended one more year. This was probably a stroke of good luck for the industry.

The structural renovation measure the industry has been studying internally since last year has a strong coloration of being a measure which attempts to balance the demand and supply of the domestic market only. Now that a steady flow of imported goods has become a fact, this fact must also be taken into consideration. In the meantime, "strengthening the international competitive edge" will probably be the biggest theme, and the question of reorganizing the industry may also be raised.

Unless it is handled very carefully, this industry may repeat the same mistakes made by the aluminum industry and the petrochemical industry whose livelihood was all but shut off by the foreign offensive. As such, this structural renovation measure has profound significance for Japan's paper and pulp industry.



Key:
1. Changes in paper and cardboard production
2. Paper, 10,000 tons
3. Paper
4. Cardboard
5. Cardboard, 10,000 tons

[6 Apr 82 p 8]

[Text] Fiber Industry

Synthetic Fiber Export Prospects Dark; Novelty Wins Fabric Market

Big Offensive From Korea and Taiwan

The synthetic fiber industry, which is having a hard time due to slow domestic demand, has encountered another source of headache. "At any rate, it is like having a Naruto whirlpool in your backyard" (Osamu Uno, president of Japanese Chemical Fiber Association and president of Toyo Textile). "While Japan is holding back on investment in facilities, Korea and Taiwan are expanding rapidly. Nothing is the matter, but it is like scooping water with a bamboo basket" (Tsugihide Fujiyoshi, president of Toray). The leaders of the big synthetic fiber companies are disgusted with the Korean and Taiwan facility expansion offensive. The importation of cotton yarn from Korea and Pakistan has increased so significantly that trade friction just opposite to that of automobile exports is already taking place. The industry is apprehensive that what happened to cotton yarn "could also happen to synthetic fibers..." (President Uno).

Moreover, with this happening at a time when Japanese exports have hit a slump, the countenance of the industry can only darken further. The year before last and also last year, Japan's fiber exports (chemical fibers occupying approximately 70 percent) were very strong, breaking the previous record. The synthetic fiber industry, which was shrinking and balancing due to the residual symptom of a long depression brought about by the oil shock, somehow managed to make up for the inactive domestic demand by active exports. Since September last year, however, the export situation has worsened rapidly and the monthly amount of signed sales contracts suffered a 10-15 percent decrease over that of the previous year for the same month. This state of affairs continued until the first quarter of this year, when China, Japan's major export target, discontinued its contract. The declining trend thus became even more acute.

"If the opportunity arises, a recovery may be made that is as rapid as the fall was hard; this is the hope held by the synthetic fiber industry, but it is also feared that such an opportunity may never come" (Setsuo Taura, director of fiber headquarters, executive director of Sumitomo Shoji). Even if a recovery can be made during the latter half period, the sales are not expected to exceed the level of the year before last, that is, approximately $6.3 billion.

Middle and Far Eastern Countries Withhold Purchases

The worsening export situation is due mainly to the worsening depression in the advanced nations and consequent reduction in demand. Moreover, Middle and Far Eastern nations are withholding purchases because oil money has become scarce due to a reduction in oil sales, while China, where the import rights have been delegated to the local government, is in the process of

sorting out the past excess of imported goods. It is feared that the prospects for synthetic fiber exports during the second quarter period on the basis of the monetary amount will be 20 percent less than the previous year--the worst situation so far.

As a result, the matter of reduced production has surfaced in the Hokuriku area, where polyester long fiber fabrics are manufactured. Since April, the Fukui plant has been operating at a 20 percent reduced rate. After the textile plant introduced the waterjet loom, which is termed a revolutionary weaving machine, its cloth production capacity increased significantly. And now exports are declining, so it has ended up with a considerable amount of excess capacity.

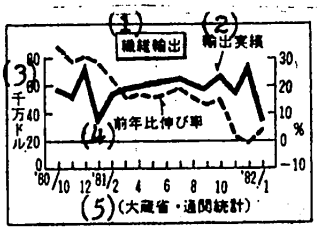
Unlike the synthetic fiber industry which is suffering from inactive exports, the cotton textile industry is just about at the breaking point, thanks to a sudden increase in imported goods. The cotton yarn import during the months of January and February this year was 60,000 bales each, setting the highest record in history. Even after September last year when the depression cartel was called off, the industry was voluntarily reducing production by approximately 15 percent and, in order to regulate imports, requesting MITI to initiate MFA (agreement on an international trade in fiber products). However, MITI's attitude was that "it is difficult to implement an exceptional protective trade policy for the fiber industry only." Therefore, industrial circles feel powerless: "The cotton yarn industry cannot help but sink in a quagmire."

If you look at clothing materials, you can note a shortage of bright materials. An increase in the sum received from sales may be expected due to a higher unit price, but there is no sign of an increase in demand itself, because the consumers have chests full of stockpiled materials. Therefore, a movement to introduce a novelty such as a foreign brand is becoming active, but only a small fraction will succeed and many attempts will make a poor showing.

The total February sales of fabrics, which occupy 40 percent of the total sales, in department stores nationwide registered only a mild increase of 3.7 percent over those of the previous year. However, even this figure is considered exaggerated. A certain mainstay apparel maker is said to have dispatched its staff to the store front and scrutinized the sales situation of the fabrics. They found out that the results were not that good in reality. "Although we cannot say this for all department stores, it appears that there are sales unrelated to the true demand. This is like 'an Imperial Headquarters announcement,'" said a person connected with the apparel maker with a forced smile.

The sales of fabrics recently may be characterized as "clearly limping" (Hiromichi Inegawa, president of Renown Incorporated). While those items of merchandise in high demand are showing a high growth rate of a 20-30 percent increase over the previous year, those items for which demand is low are showing extremely poor results. Roughly speaking, lightweight fabrics (pants, blouses, sweaters, and jogging-suits) are doing well, while heavy fabrics (suits, coats) are not.

The sales of apparel fluctuate widely not only according to the item of merchandise, but also according to the maker and retail store. This phenomenon depends on whether the dealer was able to anticipate the line of goods in high demand, and whether the maker took the risk by betting on the line of goods in high demand. The fact that the big makers are doing satisfactorily while the medium and small makers are fighting a desperate battle for survival is attributable to the difference in the ability to gather information and also to the robust constitution of the big makers, which can take risks.



Key:
1. Fiber exports
2. Export results
3. $10 million
4. Previous year growth rate
5. (Ministry of Finance, Customs statistics)

[7 Apr 82 p 7]

[Text] Oil Industry

Painful Cheap Yen, Reduced Demand; Cannot Await Improved Constitution

After a month-long hesitation, the oil industry raised the price of oil products by 3,000 yen per kiloliter. The price rise this time does not have a "just cause" such as a crude oil price rise caused by OPEC. The only reason for the rise is the rise in crude oil cost due to the cheap yen. While the prospect for recovery from a large amount of red ink incurred in early 1981 is not yet certain, the industry has encountered another difficulty brought about by the cheap yen. Within the industry is a sense of urgency: "We must brace ourselves for what is to come."

At the Limit of Weakened Constitution

Since the first shock that occurred in late 1973, the oil industry has been continuously troubled by two "external factors": the crude oil price rise effected by OPEC and the unusually high yen exchange rate. The difficulty encountered this time is slightly different in nature from those of the past. While the crude oil price based on the U.S. dollar is falling as a result of the oil glut, the crude oil cost based on the yen is rising as a result of changes in the yen exchange rate.

The industry has to ride out a painful situation consisting of "a price rise as a result of the oil glut." What is worse is the fact that the strength of the industry has been weakened almost to the limit. During the period from April to September, the industry accumulated huge losses amounting to a total of approximately 500 billion yen in operating costs due to poor sales activities, which is compounded by the exchange losses.

The oil industry has had the experience of being in the red 2 years in a row. In 1974, immediately after the oil shock, 28 oil companies lost a total of approximately 79 billion yen, and another 84 billion yen in 1975. At that time, they were able to balance the books by selling some of their properties. Today, they are in such a state that "the red ink can no longer be made up because they are running out of properties to sell" (Zentaro Nakayama, president of Daikyo Oil).

Industrial Demand Plunges

There are further reasons for anxiety. One is the fact that the drop in demand for oil products which became apparent in 1980 is still going on. What is pulling the entire market down is the reduction in industrial demand for naphtha and type C heavy oil. The demand for type C heavy oil was most significantly affected by the conversion to burning coal by the cement industry and the halt to burning oil in the blast furnaces by the iron and steel industry. The sales of type C heavy oil in 1981 (January-December) was only 65 million kiloliters, a drop of 25 percent from the peak established in 1979. Sales of naphtha were also significantly affected by the cheaper imports, and the 1981 sales experienced a drop of 31.3 percent from the peak established in 1978.

The 1981 gasoline sales experienced a small increase, 1.9 percent, over that of the previous year, but showed no appreciable fluctuations in the past 2 years. According to a tentative forecast made by the Resource and Energy Office of MITI, the demand for fuel oil in the first half period (April-September) of 1982 is expected to drop 2.9 percent over that of the same period of the previous year. The reduction in demand for naphtha (3.9 percent) and type C heavy oil (4.5 percent), in particular, is expected to continue.

Prospect Is Dark for Reduction in Facilities

Surrounded by difficulties including the cheap yen and reduced demand, the industry is resigned to the fact that "we cannot do anything but to implement measures within our own power to improve our own constitution" (Kazuo Okita, president of Shell Oil). The first problem the industry must tackle is the disposition of the surplus facilities. The Resource and Energy Office of MITI is planning to ask each oil company to present its own disposition plan by the end of June based on an oil supply plan (for 1982-86) which is to be published in May.

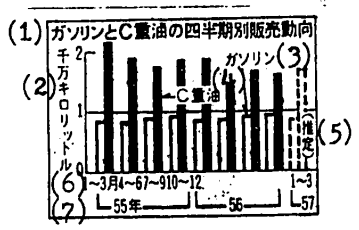
The total capacity of normal pressure distillation (crude oil treatment) facilities owned by the industry is 5.94 million barrels a day

(1 barrel = 159 liters), and the average operation rate in 1981 was only 60.9 percent. According to the tentative supply plan of the Resource and Energy Office, the average operation rate during the period April to September this year will drop further to 53.7 percent. This office forecasts, therefore, a long-range daily need of no more than about 1 million barrels, so that approximately 15 percent of the facilities will become unnecessary.

Against this background, members of the industry, in groups centered around the big wholesale companies, have taken up discussion of the optimum operation rate of each refinery. However, this is the first time the oil industry has been forced to trim the excess fat by its own hand, and there are many uncertainties including the employment problem and the local reaction associated with the disposition of the facilities. There is no knowing how far and how deliberatively each company will carry out the countermeasures in order to rebuild a new production system.

Another problem concerns the structural renovation of the circulation department. Among the wholesale companies is a growing realization that the presence of "more than 60,000 gasoline stations nationwide constitutes a hotbed for improper competition." However, the special firms that handle the distribution are almost all independent operators, so the idea of the wholesalers may not readily permeate to the terminals, and thus rationalization of circulation and improvement of efficiency is expected to take a long time.

The oil industry was pressed by increasing demand during a period of rapid growth, so its attention was caught by the rash of price rises after the first oil shock. And now, all the hidden problems that have accumulated have erupted all at once. The industry is treading a thorny path with the awareness that "zero growth in oil demand will continue for a long time to come" (Tokio Nagayama, president of the Oil League).



Key:
1. Gasoline and type C heavy oil sales movement over four half periods
2. 10 million kiloliters
3. Gasoline
4. Type C heavy oil
5. Estimate
6. Months (quarters)
7. Years: 1980, 1981, 1982

[8 Apr 82 p 7]

[Text] Petrochemical Industry

Troubled by Demand for Lower Price; Reorganization of Industry Unavoidable

"Polystyrene, which used to be an honor student even during the depression, also failed. Since then, all petrochemical products have become delinquents" (Takeshi Dokata, president of Sumitomo Chemical Industry).

Polystyrene is one of the five major synthetic resins, together with high pressure polyethylene, medium and low pressure polyethylene, polypropylene, and vinyl chloride. It achieved brilliant growth as a material used in electrical and other industries, packaging, and general merchandise. When the depression set in during the summer of the year before last, when the other four resins failed one another another, the demand for polystyrene and its market activity still remained strong. Now, the situation has become uncertain even for this "good boy."

Directly Hit by Depression in Audio Industry

First of all, it was hit directly by the depression in audio products. In the past several years, the increase in polystyrene production was almost all absorbed by the electric industry. However, the market deteriorated rapidly and "we have considered we had to make production adjustments without warning at the molding fabrication stage since last fall" (Mitsui Toatsu Chemical).

As early as last spring, abnormal conditions in the materials used in audio products such as stereos, radios, cassettes, and tape recorders were noticed, but the situation has worsened since last fall. Recently, even material for the VTR is not in big demand, and the impact of dull export activity in household electric products is keenly felt.

Another main use of polystyrene, packaging material, is also suffering from poor market conditions. The white trays used for packaging vegetables and meat in the supermarket are made almost exclusively of polystyrene. "December is usually the month in which the demand peaks. We don't know why, but the demand dropped last December, and we have been forced to adjust production accordingly since January" (Asahi Dow).

The impact of a movement to "light, thin, short, and small" is also painfully felt. Today, almost all TV cases are made of a plastic material such as polystyrene. However, miniaturization of TV continues, and the total number of units smaller than 14 inches in size exceeds 60 percent of all products. As a result, the amount of plastics used is reduced significantly.

Asahi Dow, which is leading the polystyrene industry, had a huge lucky shot recently. A plastic toy-model kit "mobile warrior Gandam [phonetic]" made of its polystyrene became a big hit, and 4,000 tons of resins were sold last year on this single item alone. The material for cassettes used in the

popular headphone stereo is also selling well. However, these sales are not big enough to make up for losses due to stagnant demand.

Even Polystyrene

"The slow market is due not only to stagnant demand. It is painful to realize that it is due to excessive competition among the producers, whose expanded facilities are now in operation" (a person in charge of sales of a certain polystyrene maker).

In order to absorb the higher raw material cost, since last fall the petrochemical companies have been making plans to raise the price of almost all products. However, the price rise has had a difficult time getting through. A reduction in price on certain products has been demanded by consumers, with a slump in demand as an excuse. Polystyrene makers are receiving a demand to lower the prices by such big consumers as light electric appliance makers and supermarkets. The makers are tense with suspense: "A month or so is the crucial period in which either the demand for lower prices will be rejected or the makers will buckle under to the demand."

In spite of the dull market activity, a number of powerful polystyrene makers, including Shukko Petrochemical, Dainippon Ink Chemical Industry, and Mitsui-Toatsu, have started operation of new facilities one after another since last summer. Although they are aiming at the development of a brand new application field, the opening of these new facilities no doubt contributed to the sag in the supply and demand balance and added fuel to the mood for lower prices. The wave of excessive competition has caught up with polystyrene, the honor student of the petrochemical industry.

The offensive launched by cheap imported goods is also contributing to the pressure to lower prices. Polystyrene imports last year amounted to 34 million tons. The same amount was imported in January of this year alone, and the imports increased in February. Approximately one-third of the total imports consist of relatively high-quality U.S. products. The petrochemical industry laments: "In order to ease the trade friction and also to prepare for exports to the United States, the household electric appliance makers have begun to use materials made in the United States aggressively."

"As to structural reform of the petrochemical industry, everybody agrees that 'the number of enterprises must be reduced,' but everybody disagrees when it comes to specifics: 'don't shut down mine'; however, there are ways to reconcile these two, including mutual production consignment" (Yasunobe Kishimoto, president of Showa Electric Industry).

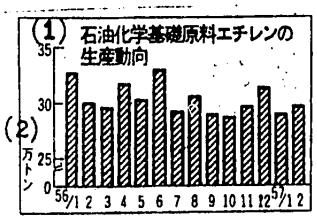
In addition to excessive competition within the industry, the industry is also troubled by the high raw material cost, stagnant demand, and invasion by cheap imports. The degree of polystyrene slump is relatively light, but numerous petrochemical products have trodden the path of vinyl chloride resin since last summer toward a structural depression even with intensified activities carried out by the collective sales companies.

Good Material in Imported Raw Material

Nevertheless, a number of hopeful materials appeared when the voice of spring was heard.

The unsettled problem related to the reform of the naphtha (crude oil) import system, which is the raw material for the petrochemical industry, has a prospect of being settled for the present. Early implementation of public works which can stimulate the demand for petrochemical products has been decided on. These measures will no doubt benefit the industry on the cost side and demand side, but will not be a quick remedy for the depression.

Intensive industrial reorganization as a drastic measure to escape from depression is being considered; it is believed to be the inevitable route that must be followed by everybody. Since last fall, mutual production consignment between two companies has become quite popular in the fields of vinyl chloride resins and other synthetic resins, raw material for fertilizer, and other chemical products. This is an attempt by all parties concerned to increase their benefit by concentrating production on those plants having a stronger cost competitive edge. There are too many enterprises in the petrochemical industry. For example, there are 12 companies manufacturing mainly the basic raw material, ethylene. Those companies which are slow in establishing a cooperative strategy will be forced into a more and more disadvantageous situation. Competition for leadership in the reorganization of the industry, on which the survival of the industry hinges, is getting hotter and hotter.



Key:
1. Movement of ethylene production, the basic raw material of the petrochemical industry
2. 10,000 tons

9113
CSO: 4106/97

SCIENCE AND TECHNOLOGY

EFFORTS TO DEVELOP NEW ENERGY SOURCES DESCRIBED

Tokyo SHUKAN DAIAMONDO in Japanese 27 Mar, 3 Apr 82

[Article by Gene Gregory: "Japan To Extricate Itself From Oil Dependence"]

[27 Mar 82 pp 91-93]

[Excerpts] Highly Practical Japanese Nuclear Fusion

Influential Japanese scientists submitted unusually demanding advice to the Japan Atomic Energy Commission in March 1981, requesting that Japan act immediately and concentrate its effort on construction and operation of a 400-800 megawatt experimental nuclear fusion reactor costing in 10 figures in dollars by 1993 and on construction of a large-scale "engineering experimental reactor" by 1984. If this timetable is observed--and the possibility is extremely high--Japanese industries will lead in the practical application of this new technology in the field of thermonuclear fusion control.

In Japan, the Nuclear Fusion Council chaired by Morishige believes that some of the steps which were previously considered necessary for the development of nuclear fusion can be omitted. According to the advanced present timetable, nuclear fusion generation is predicted to be commercialized by the year 2010. However, some Japanese scientists think it possible to expedite the development further if only more human resources are invested in this project.

For all, it is clear that nuclear fusion cannot solve the current energy problems of Japan. Indeed, there is no single answer to these problems. What are being emphatically pursued now are various conservation practices and substitute energy projects.

Champion of Energy-Saving

Japanese industries have consolidated their status as champions in the technology of producing more with less energy due to the concerted conservation efforts in 1980. Before the oil crisis of 1979, Japanese industries increased energy consumption by an average of 0.6 percent for each 1 percent gain of GNP. However, in 1980, the total energy consumption on the contrary decreased by 0.49 percent for each 1 percent gain of GNP. In FY-80, the

Japanese economy showed a 3.8-percent growth while energy consumption was reduced by 3.8 percent--by 10 percent in the case of oil consumption.

It is clear that this is not an isolated phenomenon but a long-term trend which resulted from continuous conservation efforts. In the 6 years from 1973-1979, GNP rose 24.5 percent while the increase in the total energy consumption was held as low as 8.25 percent and the increase in oil consumption was only 1 percent.

This fantastic dampening of energy consumption growth can be attributed primarily to the following three factors:

--Power demand by the raw material related energy guzzling industries was curtailed combined with the effects of a low economic growth rate.

--Electricity conservation technology for home electric appliances has made a giant step forward.

--Consumer energy use was reduced by the 50 percent utility rate peak which took effect in April 1980.

These factors definitely reflect not merely a temporary phenomenon but a basic structural change in power consumption.

The Industrial Structure Council of Japan admitted that the most important task of the industrial structural reform was to change the general relationship between energy and the industrial system. Inversely, they accepted the fact that the most effective approach to achieve large-scale energy conservation and to introduce substitute energy sources was a basic reform of the industrial structure.

The council made the following explicit statement in its latest report: "For this purpose, we must intensify efforts from the supply-side, for instance efforts for securing a stable supply of oil and developing substitute energy. Simultaneously, the demand-side must promote various projects for the development of an industrial structure which is much higher in energy efficiency and much lower in dependence on oil-base energy than the present industrial structure through energy conservation technology and introduction of nonoil energy."

Import Oil Dependence Reduced to 50 Percent

In May 1980, a "Substitute Energy Source Law" was enacted in order to pursue the objectives, and a public corporation called the "New Energy Development Organization" was established in October of the same year for coordination of the substitute energy projects. The simply expressed purpose of the organization means that the import oil dependence will be reduced to 50 percent by 1990 from the current 75 percent, which, in other words, means a three-fold increase in nonoil energy supplies in the 1980's.

What claims the largest percentage among the substitute energy sources based upon this supply target is coal. Coal imports are expected to be raised to 163.5 million tons per year by 1990 from 92.4 million tons in 1980. At the same time, LNG (liquefied natural gas) imports will be raised to 45 million tons from 17 million tons.

However, in Japan, it is nuclear energy that is considered the most promising intermediate substitute energy source in parallel with coal. Since nuclear energy is a model of a system industry which is known for the concentrated use of advanced technologies, its development is awaited with great expectations even for the future modernization of the general Japanese infrastructure.

The high temperature and energy density of atomic energy will open an avenue for a revolutionary new energy system which cannot be developed with regular energy sources.

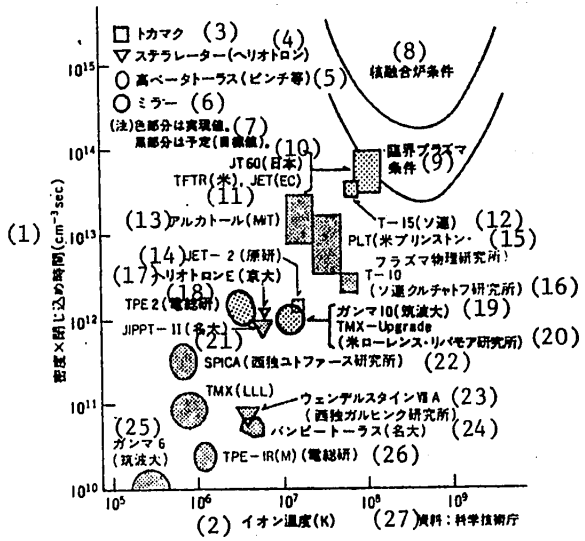
Among the types of energy used in an industrial society, electric power claims only 30-40 percent. The rest is consumed as fuels or thermal energy in the industrial process. The very high temperature reactor (VHTR) currently being developed will, on the other hand, reduce gas and synthetic gas used as fuels and raw materials for the chemical and iron and steel industries, and in effect will curtail the dependence on coal and oil energy sources.

The Japan Atomic Energy Research Institute is projecting the operation of a 50 megawatt commercial VHTR by 1987. Meanwhile, nuclear power generation by regular reactors will increase over three times by 1990 to 51-53 megawatts from 15.5 megawatts in 1980.

Atompolice

The biggest target is the realization of independent nuclear energy by the end of the 1980's both in reactors and fuel production. Ever since the initial oil crisis, the Japan Development Bank has granted low interest loans to nine power companies for the purchase of Japanese-made nuclear engineering plants, and has stimulated both R & D and production of nuclear engineering plant makers--Hitachi, Toshiba and Mitsubishi Heavy Industries in particular.

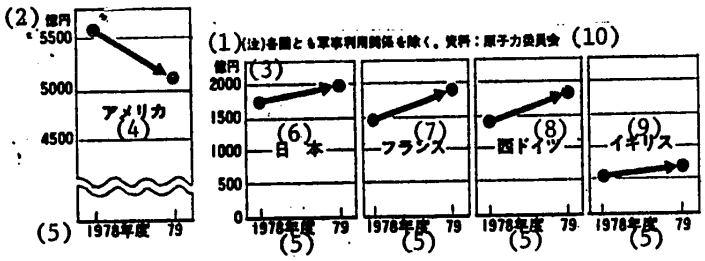
In order to assure independence in nuclear fuel supply by 1990, the Power Reactor and Nuclear Fuel Development Corporation jointly operated by the private and public sectors has intensified its efforts in studies on fuel reprocessing at the Tokai Research Establishment of the Japan Atomic Energy Research Institute. Also, an agreement was concluded in regard to funding for the establishment of commercial reprocessing facilities by private corporations. Simultaneously, the Japan Atomic Energy Research Institute is promoting the development of a fast breeder. The fast breeder does not require enriched fuels and can economically produce energy supplies on a large scale until such time as power from nuclear fusion becomes usable.



Present State of Nuclear Fusion Research and Development by Method in Various Countries

Key:

1. Density x confinement time
2. Ion temperature
3. TOKAMAK
4. Stellarator (heliotron)
5. High beta toroidal system (pinch)
6. Mirror
7. (Note) gray part indicates actual values while black part indicates estimate (target values)
8. Nuclear fusion reactor conditions
9. Threshold plasma conditions
10. Japan
11. America
12. Soviet Union
13. Alcator
14. Japan Atomic Energy Research Institute
15. American Princeton Plasma Physics Research Institute
16. Soviet Kurchatov Research Institute
17. Heliotron E (Kyoto University)
18. Electrotechnical Laboratory
19. Gamma 10 (Tsukuba University)
20. American Lawrence Livermore Laboratory
21. (Nagoya University)
22. West German Utofas Research Institute
23. Wendelstein VII A (West German Garching Research Institute)
24. Bambi toroidal system (Nagoya University)
25. Gamma 6 (Tsukuba University)
26. Electrotechnical Laboratory
27. Source: Science and Technology Agency



Changes in Nuclear Development Budgets in Major Countries

Key:

1. (Note) Military use nuclear development budget of each country is excluded
2. 100 million yen
3. 100 million yen
4. America
5. FY-78
6. Japan
7. France
8. West Germany
9. England
10. Source: The Japan Atomic Energy Commission

In order to overcome the opposition of local communities to the construction of nuclear power plants, the Ministry of International Trade and Industry has launched a highly imaginative project which combines the construction of nuclear power plants with the promotion of the development of industries and communities. This project is one of the highlights of the FY-82 budget and will be in operation as of April 1982. MITI will first research and investigate these new "atompolice" site candidates. Meanwhile, the government subsidies will be increased to 47 billion yen from the current fiscal year's 7 billion yen within the 3 year research and investigation period, in order to amplify the direct incentive for the nuclear energy projects.

In anticipation of the increase in the role of nuclear energy as described above, a historical ground-breaking ceremony was held in Niomachi, to the southwest of Takamatsu, commencing the construction of the world's first facility for recovery of uranium from salt water. This $2.5-billion facility extracts uranium from salt water which is sucked up by pipelines imbedded in the bottom of the sea and filtered for removal of foreign matter and sand. Afterward, the salt water is passed over a stationary bed of hydrous titanium oxide which absorbs the ionized uranium; 0.003 ppm uranium particles thus obtained are subsequently concentrated to 2.800 ppm.

With such multiple projects for substitute energy development as a driving force, the power industry in Japan will dramatically increase its investment in the next 15 years. The total investment, which was only $81.8 billion in all in the 1970's, is expected to be nearly quintupled to $380 billion in the 1980's.

According to a recent report by Yamauchi Securities, the nine power companies will increase investment by 2.7 times for coal-fired thermal power plants to

$45.5 billion and will quadruple investment for nuclear power generation to $47.3 billion during 1980 to 1989. It is forecast that nuclear power will claim 22 percent of the total power generation, and the coal contribution will be 12.1 percent.

[3 Apr 82 pp 130-132]

[Text] Coal-Oil Mixed Fuel

It is forecast that liquefaction and gasification of coal will contribute to the energy supply of Japan in the latter half of the 1980's.

The two processes that produce high-calory gas from coal--coal-residual oil process and hydro gasification process--are presently being intensively developed as a part of MITI's Sunshine Project for the development of new energy. The Electric Power Development Company intends to complete a prototype coal gasification plant with an operational capacity of 50,000 cubic meters/day by FY-85 using the coal-residual oil process, and to introduce practical commercial coal gasification in the 1990's.

An effort such as this for the development of a high-calory gasification process is reinforced by the efforts of Hitachi, Babcock-Hitachi (pressurized fluidized bed system), Mitsubishi Heavy Industries (conversion of coal to slurry using dissolved salt) and Shin Meiwa Industries (recirculation-heating system).

Five different methods for liquefaction of coal are also presently being developed, in which 20 or more public and private enterprises play an active role. Referring to government-backed projects which were advanced from the initial schedule, practical technology for coal liquefaction is to be developed in order to make it possible to start supplying over 15 million kiloliters in terms of oil in the 1990's.

According to the estimation of the Japan Development Bank, it will take 7-8 years for coal to be able to compete fully with oil, although coal liquefaction among oil substitute energies has the potential to supply a large part of the Japanese energy needs.

However, once this target is achieved, it is highly possible that coal refining may well replace the oil refining which currently supplies naphtha for production of chemical goods. The iron and steel total-process makers are expected to participate in the coal liquefaction and gasification business in cooperation with oil refiners and to supply a compound gas of hydrogen and carbon monoxide to neighboring chemical plants and power plants.

A technology to produce petrochemical products from carbon sources other than oil--C_1 chemistry--is presently being developed by a cooperative research institution organized by 14 major chemical companies through the good offices of MITI. In the 9 years from 1980-1989, a total of 15 billion yen is to be invested for research and development of C_1 chemistry.

Liquefaction and gasification of coal are still in the developmental stage, but the practical use of coal-oil mix (COM) fuel is more imminent. COM fuel will soon be used economically for iron manufacture and cement production, and in general industrial boilers and thermal power plants.

At present, in the area of research for practical use, good COM technology that uses surface active agents is showing rapid progress. The Electric Power Development Company is hoping to generate 6 gigawatts using COM by 1985 at a cost 5 to 10 percent lower than using heavy oil-fired power generation.

Plant construction contractors which are attempting at present to complete COM technology include Mitsubishi Heavy Industries, Mitsubishi Shipbuilding & Engineering, Ishikawajima-Harima Heavy Industries, Kawasaki Heavy Industries, Hitachi Shipbuilding & Engineering and Hitachi Ltd. Among the surface active agent makers which are participating in the work for development of COM technology, the most outstanding firms are Kao Soap, The Lion, Nippon Oils and Fats, Dai-ichi Kogyo Seiyaku, Sanyo Chemical Industries and Toho Chemical Industry.

10 More Years Before Practical Application of Optical Power Generation

Optical power generation, another developmental project, was initiated in 1980. It has been already put into practical use, although on a small scale, using silicon semiconductors to convert solar energy to electricity. However, at present solar cells that use noncrystalline semiconductors are being developed. With this type of solar cell, an increase in production and a cut in cost can be simultaneously realized.

Six companies--Sanyo Electric, Mitsubishi Electric Corporation, Fuji Electric, Teijin Limited, Kyoto Ceramics and Komatsu Ltd--are proceeding with the development of noncrystalline silicon solar cells with a light-electricity conversion efficiency of 10 percent. At this conversion efficiency level, the power generation cost of solar cells will be reduced to 100 yen/watt, which makes it economically feasible to use the cells.

The construction of a pilot plant for the production of noncrystalline silicon cells and systems using these cells began in FY-81. It will be FY 1992-1993 before the first 10-megawatt generation capacity commercial plant is constructed.

In parallel with this, the Electric Power Development Company has built an experimental solar heat power plant on a salt farm near a pilot plant for extraction of uranium from salt water, in Nio, Kagawa Prefecture. One unit of this two-unit pair solar power generation system is based upon a "tower light collection system" and is built by Mitsubishi Heavy Industries and Asahi Glass Company. The other unit is based upon a mirror system with plane and convex surfaces and is built by Hitachi Ltd and Nippon Sheet Glass.

These two units have a 1,000 kW power generation capacity and will be operated experimentally for 2 years in preparation for the construction of a 10,000 kW (10 megawatt) generation capacity commercial plant to be completed at the beginning of the 1990's.

Assuming that the present developmental test is successful, solar energy will become popular and will be widely used in the 1990's, with the increase of the efficiency of the cells and the system and the reduction of the construction costs. The further development of solar cells will make it possible to produce hydrogen inexpensively in conjunction with coal gasification. Also, it will thus make it possible to adopt fuel cells that use hydrogen in the power generation system.

Various Biomass Fuels

Biomass among the recyclable energies is given high priority as the one to be developed for commercial use in the 1980's. On 15 May 1980, an oil substitute energy research association was organized for the development of a biomass fuel supply system, and president Teruo Noguchi of Koa Oil Company became the president of the association. As a catalyst for this 7-year project, the government will supply 25 percent of the research and development expenses and private industries will take care of the remaining 75 percent.

Initially, the association set up four separate project groups with the company most advanced in each basic biomass technology as the leader of the group. The following are the responsibilities of these four groups.

--Production of liquid grape-sugar from chaff, straw and waste wood (Kyowa Hakko group including Kyowa Hakko Kogyo, Sumitomo Electric Industries, Toyo Seisakusho, Daikyo Oil Company and Kurita Water Industries).

--Production of liquid grape-sugar from strained lees of sugar cane (Hitachi group including Hitachi Ltd, Godo Shusei, Sumitomo Heavy Industries Environtech, Toyo Seisaku-sho, Chisso Corporation, Chiyoda Chemical Engineering & Construction, Ajinomoto and Idemitsu Kosan).

--Production of alcohol fuel for automobiles from liquid grape-sugar (the second Kyowa Hakko group including Kyowa Hakko Kogyo and Nippon Oil Company).

--Production of alcohol fuel for automobiles from liquid grape-sugar (Nikki group including Nikki Chemical, Kansai Paint, Ajinomoto, Sanraku-Ocean and Maruzen Oil Company).

If the best results are obtained, 76.6 million tons of waste wood, straw and chaff may at some time turn into 9.2 million kiloliters of automobile fuel exclusively from the first project. This figure is equivalent to 27 percent of the 3.4 million kiloliters of gasoline which is currently consumed in Japan. Even if only half the waste materials were used in order to economize on expenditures for collection, the alcohol production operation

from recyclable resources would have sufficient value, in the view of industry and government.

However, a method which depends on the collection of wastes relies fundamentally on an unstable supply. A substitute supply source that guarantees a stable supply is starting to be requested as well as a quantitative increase in the materials. In response to this, MITI added the following three projects to the biomass development project in FY-81.

--Extraction of automobile fuel from eucalyptus oil. Eucalyptus oil will be supplied first from a pilot farm in Okinawa.

--Production of methanol from fermentation of seaweed.

--A comprehensive wood material utilization project for the extraction of alcohol and combustible gas from trees which can be harvested many times a year.

These projects are all based upon the cultivation of recyclable crops that can be systematically grown and harvested using a growth acceleration method.

However, the economical efficiency of these projects is not totally dependent on fuel production. Just as coal and oil became important raw material sources for the production of chemical goods, so the technology that produces fuel alcohol from biomass will also deliver an extensive variety of intermediate assets for the chemical, medical and pharmaceutical and food industries.

This technology has merit in that intermediate assets with high added values are produced from very inexpensive and easily available materials. It is therefore predicted that it will replace many of the regular chemical exchange processes in the 1980's and 1990's. For this reason, chemical companies play a large role in biomass research.

Resistance to Supply Problems

What is considered more familiar and less problematic is the development of geothermal energy throughout the 1980's. Geothermal power plants in Japan currently produce 168 megawatts of power, which makes Japan the world's fourth geothermal power generation nation. At present, there are three types of geothermal power plants in use, and a fourth type is now in the stage of investigation for commercial use.

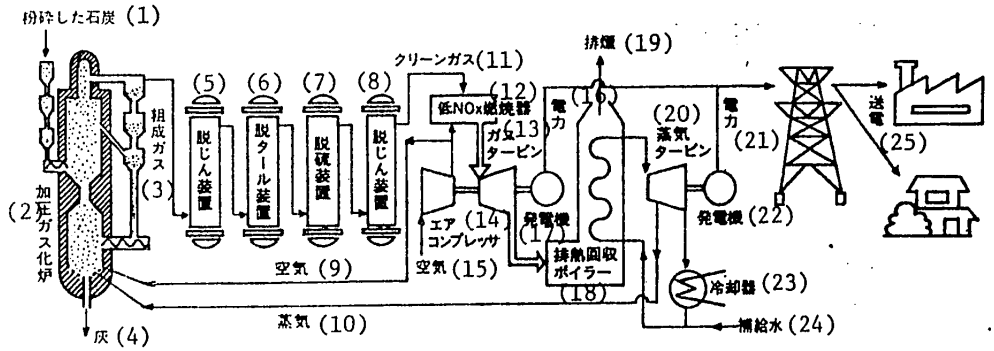
It is projected that in the next 2 years turbines built by Toshiba, Mitsubishi Heavy Industries, Fuji Heavy Industries and Kawasaki Heavy Industries will be installed in geothermal power plants which will supply 740-840 megawatts of power to the Japanese power network. Thereafter, geothermal power plants will be further increased, and will reach the goal set by the MITI of supplying 1 gigawatt of new geothermal power by 1985 and 3.5 gigawatts by FY-90.

The effects of these gigantic multiple efforts by the government and the private sector indicate that an enormous energy industry will prosper in Japan. This energy industry will not only produce energy which is by far much more fuel-efficient from various new and old supply sources, but it will also strengthen the competitive power both in production and installation of a complex energy system, power generation equipment and energy-saving equipment.

Japanese industries once more seem to have chosen a source where misfortune is turned into a blessing. As a result of the successive oil crises in the 1970's, the energy industry in Japan is about to emerge as an industry which supplies the world's most energy-efficient and most advanced energy technology, leaving its former precarious energy system which was in the world's most vulnerable and the most technically dependent conditions.

If the currently available best forecast on nuclear fusion power generation technology turns out to be something close to fact, by the end of this century the Japanese energy industry will assume a technical leadership similar to what the iron and steel industry presently enjoys.

The significance of these developmental activities to the Japanese economy is immeasurable. Of course, the Japanese economy will be substantially fortified to an unprecedented level in modern history, and powerful resistance to external supply pressure will be engendered. However, at the same time, the astronomical investment in new energy generation facilities and the production of new energy generation equipment will also have a strong impact on the economy of Japan.



Example of Coal Gasification Power Generation System

Key:

1. Pulverized coal
2. Pressure gasification furnace
3. Crude gas
4. Ashes
5. Dust remover
6. Tar remover
7. Desulfurizer
8. Dust remover
9. Air
10. Steam

[Key continued on following page]

11. Clean gas
12. Low NOx incinerator
13. Gas turbine
14. Air compressor
15. Air
16. Electric power
17. Generator
18. Waste heat recovery boiler
19. Flue-gas
20. Steam turbine
21. Electric power
22. Generator
23. Cooler
24. Water supply
25. Power transmission

8940
CSO: 4106/100

SCIENCE AND TECHNOLOGY

RECENT ACTIVITIES IN BIOTECHNOLOGY REPORTED

Toyobo Research Foundation

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 10 Feb 82 p 1

[Text] Toyobo Plans To Establish a "Research Foundation"

Toyo Boseki (O. Uno, president) decided to establish a Leading Technology Research Foundation (tentative name) for the purpose of assisting researchers in the biotechnology field as a focus of events taking place in May this year commemorating the 100th anniversary of its founding. In this field, which is said to be the last technological innovation of this century, over 100 firms are strengthening their research structure in Japan, seeking creative leading technology. On the other hand, due to a serious shortage of technologists because of the unfamiliar field, the plan is to help in upgrading the technical level in Japan as a whole by establishing a foundation. It is the first research foundation to be established in this field.

Currently, details are being worked out by Vice President K. Matsumoto and others. Although they have not revealed the specific substance of the foundation, the initial funding will be 300 to 500 million yen, and funds will be built up by adding from future profits. If possible, the goal is to establish it in May and begin funding prospective research projects at various universities, etc.

Biotechnology consists of four technological fields, including, besides genetic recombination, cell fusion, tissue culture, and bioreactors that recreate biological reactions by engineering. Some say that it will have a market scale of 6 trillion yen in 10 years in the areas of pharmaceuticals, chemicals, food, agriculture, energy, etc. Research is being advanced in American, Japanese, and European universities and business firms in concert. In Japan, where natural resources are scarce, it is considered a very promising field for the future since the country has a base of enzyme technology to begin with.

However, as a field which is said to require the strategy of throwing waves of outstanding technologists into action, the Japanese firms have a serious shortage of research funds, while a brain drain overseas is also becoming evident. Establishing the foundation in an attempt to aid such researchers indirectly is a significant effort.

Toyobo was initially founded as Osaka Boseki, with the first modern spinning factory in Japan, on 3 May 1882 by E. Shibusawa, who was then the president of Daiichi Bank. Subsequently, the present structure came into being after repeated corporate mergers. The history of the company may well be the history of the modern textile industry in Japan. Having its 100th anniversary this year, the company itself is about to make a new first step into the next 100 years on the basis of new technologies such as applications in biotechnology, polymer chemistry, membrane technology, etc. Reflecting such a corporate posture and searching for a commemorative work that can contribute to society as well, it has decided to establish a biotechnology research foundation.

In commemorating the 100th anniversary, the company is, in addition, aiming for a transformation of its past corporate image of "textile firm with tradition" to "a modern firm with vitality," with the entire corporate force engaged in CI (corporate identity) activities. On the other hand, it will delineate the "vision 1990" that aims for vitalization of the textile business and expansion of new business and reevaluate the TQC (total quality control) that aims for vitalization of the corporate structure. However, it will forgo showy events such as anniversary parties and will instead carry out the social commemorative work of establishing a foundation.

Mitsubishi Chemical, Mitsubishi Corporation Institute

Tokyo NIHON KOGYO SHIMBUN in Japanese 24 Feb 82 p 1

[Text] A New Company for Seed Development

On the 23d, Mitsubishi Chemical Industries (E. Suzuki, president) and Mitsubishi Corporation (K. Mimura, president) revealed their plan to establish a seed development firm "Plant Engineering Research Institute" as of 27 March by joint funding from the two firms.

The capital for the new firm is 100 million yen (the investment ratios are Mitsubishi Chemical, 51 percent, and Mitsubishi Corporation, 49 percent), and it will conduct research and development on plant breeding technology using biotechnology and related consignment work. It is the first case in Japan of private firms establishing a company with a research and development objective for plant breeding technology.

Biotechnology centered around the gene splicing technique has been making rapid progress lately, and its applications are being studied in broad areas such as pharmaceuticals, food, agriculture, energy resources, etc., centered in Europe and America. Japan, too, is hastening to consolidate a research and development structure in both the government and private sectors. With the belief that practical application will materialize earliest in pharmaceuticals and plant breeding technology in biotechnology, expectations are great.

In such circumstances, Mitsubishi Chemical has been advancing basic and applied research in biotechnology at the Mitsubishi Chemical Life Science Research Institute and the General Research Institute. On the other hand, Mitsubishi Corporation has been collecting information related to the leading technology through a worldwide network, and through a subsidiary, Kyowa Seedlings (43 percent investment), it has been showing strong interest in breeding as well.

The two firms agreed to establish jointly a "venture business" for research and development of plant "seeds" which will contribute to increased food production and provide a new energy source, based on their judgment that technical development in the breeding area can be advanced more profitably through a functional combination of the accumulated techniques of Mitsubishi Chemical Industries and the extensive business activities and information gathering power of Mitsubishi Corporation both at home and abroad.

The new company will start with a research staff of about 10 (from Mitsubishi Chemical) for the time being and carry out research using the facilities at Mitsubishi Chemical's General Research Institute on (1) improvement of seedlings to increase plant productivity and (2) application of the leading technologies, from tissue culture, cell fusion, gene splicing, etc., to plant breeding. The president will come from the Mitsubishi Chemical group, and the company will accept firms that desire to join in the future. It also intends to supply the developed technology widely without limiting it to related firms.

With regard to breeding, a fused species "pomato" has already been produced by cell fusion of a tomato and potato at an experimental level in West Germany. A salt-resistant rice plant has also been produced by fusing the cells of a plant resistant to salinity and a rice plant. With the inauguration of the new firm, research in this area is expected to make further progress.

Ajinomoto Mass Production of L-Cysteine

Tokyo NIHON KOGYO SHIMBUN in Japanese 26 Feb 82 p 1

[Text] First Mass Production of L-Cysteine

Ajinomoto (K. Utada, president) revealed on the 25th that it has established, for the first time in the world, a technique to mass-produce an essential amino acid, "L-cysteine," which is used for pharmaceuticals and cosmetics, and it will embark on full-scale production in March at the company's Kyushu plant. The production scale will be 100 tons annually; emphasis will be placed on exports for the time being, with market development centered in European regions such as England and Italy.

In the past, "L-cysteine" was obtained mainly by an extraction process from a natural raw material, hair, and due to a shortage of material, production

could not meet demand either at home or abroad. Thus, the company will have an advantage by being able to supply quality products at a low price by taking advantage of mass production.

"L-cysteine" is a sulfur-containing essential amino acid and is in the same category as methionine, which is used for livestock feed. It is used for pharmaceuticals such as medicines, antidotes, expectorants, and for material for cold permanent cosmetics.

In Japan, Nihon Rikagaku, Sun Orient Chemical, and Nippon Protein supply approximately 200 tons annually. However, in all cases, it is extracted from natural raw materials such as hair, feathers, bristles, etc., and there has been a constant state of shortage of raw material, resulting in a shortage of supply and an unstable price.

Due to such circumstances, the firm advanced research and development of the process for mass production of "L-cysteine" by combining synthetic and fermentation processes using methyl acrylate and one of the thiazoline derivatives, amino-thiazoline carboxylic acid, as the main ingredients and found a prospect in the technique.

The technique has been to synthesize "L-cysteine," a natural substance, and "D-cysteine," other than natural substance, and extract the useful "L-cysteine" in the next process by mesotomy. In the new process developed by Ajinomoto, the characteristic feature is that after the raw material is synthesized, only "L-cysteine" is mass-produced by using Pseudomonas bacteria.

The world demand for this product is said to be on the scale of approximately 700 tons annually. Since a shortage of supply is marked in various European countries, the firm plans to market the product at a price below the current market price of 15,000 yen per kilogram, for a high purity product.

Mochida Pharmaceutical Interferon Trials

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 2 Mar 82 p 8

[Text] Clinical Trials for Interferon-Alpha, -Beta

Mochida Pharmaceutical (N. Mochida, president) will soon organize a research team and begin clinical trials of interferon-alpha and -beta as anticancer drugs. The plan is to pursue respective development with Professor S. Hattori of Kanazawa University as the leader for the beta type, which will start first, and with Professor H. Tsuzura of Tokushima University as the leader in collaboration with Otsuka Seiyaku for the alpha type. Regarding the anticancer effect of interferon, clinical reports have been made in the United States, etc., and with the exception of some cancers such as skin cancer, results have not been consistently favorable as initially reported. However,

now that the supply structure is ready for various types of interferon produced by genetic engineering, tissue culture, hamster method, etc., full-scale clinical trials have begun in various parts of the world. Thus, interferon, which gathered worldwide attention as a "new dream drug," will be evaluated within a year or two as to whether or not it can be realized as an anticancer drug.

Three kinds of interferon--alpha, beta, and gamma--are known to exist so far. Various production processes, such as tissue culture and gene splicing techniques, have been used in application. Of these, Mochida Pharmaceutical has undertaken two types, alpha and beta.

For interferon-beta, an imported technique from Searle & Co of the United States called the tissue culture technique is used in which human fibroblast cells are mass-produced to produce interferon. A production facility has already been built at the company's Shizuoka plant, and a supply structure for 5 billion units/month of interferon with 10 percent purity is in order. Since approval from the Ministry of Health and Welfare was also obtained at the end of last year, the company decided to organize a research team and begin clinical trials this month with cancer patients as subjects.

For the alpha type, it has a technical collaborative agreement with Ringen Biochemical Research Laboratory and it will be receiving a supply of interferon produced by the hamster method developed by this laboratory. Due to the technique used in the hamster method, which differs from the conventional tissue culture technique, some have voiced apprehension with respect to safety. However, now that the prospect exists for obtaining approval for starting clinical trials from the Ministry of Health and Welfare, clinical trials are expected to start as early as March.

In administering interferon to cancer patients, it is said that approximately 100 million units are necessary per month per patient. Therefore, with the beta type, the supply is only sufficient for 50 patients or so for the time being. For this reason, Mochida Pharmaceutical is studying the production feasibility of using more cost-effective gene splicing when expected efficacy is obtained clinically, and it is now advancing basic research independently. On the other hand, for the alpha type, Ringen has a production scale of 300 billion units a year and there is no concern about the quantity of supply.

Regarding the anticancer effect of interferon, the number of clinical reports worldwide are few, due partly to an insufficient quantity of interferon supply in the past. However, a large quantity supply has become possible for the alpha type using the gene splicing technique of Roche, and full-scale clinical trials have begun. Therefore, it is believed that the pros and cons for its development as an anticancer drug will become clear in the next year or two.

Green Cross R&D Investment

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 4 Mar 82 p 12

[Text] 3 Billion Yen for Biotechnology

Green Cross invested approximately 3 billion yen in research and development for biotechnology during the 1981 business year (January-December 1981). This is three-quarters of the company's annual research and development fund of 4 billion yen, and demonstrates the ambition of the firm in biotechnology.

According to Green Cross, the fund of approximately 3 billion yen was used mainly for manufacturing, research and development of interferon (virus replication inhibitory factor) and hepatitis B vaccine by gene splicing using E. coli. It also includes payment for technical fees to CRI in the United States and Swiss Biogen, from which the techniques were imported.

Wakunaga Chemical Strengthened Research Structure

Tokyo NIHON KOGYO SHIMBUN in Japanese 5 Mar 82 p 18

[Text] Strengthening Research Structure for Gene Splicing--Target on IFN-Alpha

Having obtained a prospect for commercialization of secretin, which was successfully synthesized by gene splicing for the first time in Japan, Wakunaga Chemical (president: G. Wakunaga; head office: 3-1-39, Fukushima, Fukushima-ku, Osaka; capital: 250 million yen; tel: 06-498-8901), which is attracting attention by its research and development in genetic engineering, has revealed its plan to advance research and development in genetic recombination focusing on interferon (IFN)-alpha. To that end, it plans to further strengthen the genetic engineering research structure by doubling the research staff in the molecular biology and immunology groups in April, while expanding some experimental facilities in the central research laboratory.

The company has leaped into the limelight since it synthesized the gastric juice secretion inhibiting hormone, secretin, by gene splicing last June. Subsequently, it has been advancing the development of bacterial strains that carry out the expression of the characters more efficiently. As a result, it has recently succeeded in producing 300,000 molecules of secretin from one E. coli cell and has applied for a patent. Thus, it now has the prospect of commercialization of secretin.

Consequently, it decided to put its entire effort in the future into the development of IFN-alpha, for which research has been advanced in parallel with secretin. At present, the alpha type also seems to have various subtypes, and the company is thought to be nearing the final stage of research and development by gene splicing using E. coli.

In its plan, first, in the research personnel aspect, the immunology and molecular biology staff will be doubled as early as April. Specifically, in the immunology group, Dr T. Hozumi, who is known worldwide and is now advancing research at the City of Hope Medical Center in the United States, will return and is scheduled to begin full-scale research with 11 staff members. The molecular biology group is also being strengthened from the present 10-plus members to about 20 to extend its deployment.

On the other hand, in the research facility aspect, it will enlarge the central research laboratory in the lot at the Hiroshima plant. Currently, the first floor of the laboratory is being used for library and some office work; it plans to move these facilities, and the space will be allocated for an experimental facility for gene splicing research, which is expected to be completed soon.

Through such consolidation and strengthening in personnel and research facility aspects, the company believes that the research and development of gene splicing will move ahead rapidly. Regarding IFN-alpha, it wants to obtain prospects for development as early as possible this year.

Snow Brand Milk Products Laboratory

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 5 Mar 82 p 1

[Article by reporter Tokunaga]

[Text] 10 Billion Yen for Biotechnology--Anticancer Drug Production Within 5 Years

Snow Brand Milk Products has recently begun construction of a biological science research laboratory in which to study biotechnology in a broad area including fermentation techniques. It is to be completed in March next year. Funds for construction, including second-stage work, are expected to come to approximately 10 billion yen, with a research staff of over 100. It will be the biggest biotechnology research laboratory in the food industry. By doing this, Snow Brand will gather all outstanding technologists at the laboratory from each group and will begin heading full-scale toward "Snow Brand pharmaceuticals." The food industry is currently engaged in biotechnology in the aspects of both multilateral and health food development. The bold measure taken by Snow Brand is likely to stimulate the related industrial circle greatly in the future.

According to the plan, the biological science research laboratory will be placed at the former Tochigi plant site of the company in Ishibashi-machi, Shimotogagun, in Tochigi Prefecture. In the first stage of construction, a six-story research building, a safety test building, and other facilities will be constructed. The total building area will be 9,500 square meters, and the building fund excluding the cost of the land is approximately 5 billion yen. Scheduled completion is in March 1983.

The company will then enter second-stage construction, and the plan is to complete a research facility of approximately the same scale as in the first-stage construction by about 1985. The fund required for the construction of the research laboratory is expected to reach a final figure of approximately 10 billion yen. Coinciding with completion, it plans to increase the number of staff members drastically, from the current 50 (including women) to about 100. In the food industry, this type of research laboratory was constructed by Suntory in 1979, a biomedical research laboratory which cost 1.6 billion yen. The research institute of Snow Brand far exceeds the scale of Suntory's.

Snow Brand established a biological science research department in January 1981 at its Kawakoshi technical research laboratory and began research in the biotechnology field centered on pharmaceuticals. In the future, Snow Brand will undertake the leading technology on a full scale in its skill areas of nutrition, metabolism, enzymes, microorganisms, and fermentation, using the newly built biological science research laboratory as the base. At the same time, it plans to advance collaborative research with universities and public research organizations and produce pharmaceutical products within 1-2 years.

Prospects for development have already been obtained for an enteric nutrient which is directly injected into the patient's intestine for absorption and an anticancer drug. Through further research, the target for finished products is set within 2 years for the enteric drug and 5 years for the anticancer drug.

In the pharmaceutical areas, Snow Brand Products is running behind the manufacturers who had a head start and a long history such as Meiji Seika, Ajinomoto, Sanraku-Ocean, etc. However, by opening a special research laboratory, it is ready to catch up all at once.

In the food industry, various firms led by Ajinomoto and Suntory are showing a venture posture in the biotechnology field all together, and have begun establishing new promotional organs and increasing research laboratories. Among them, however, the equipment investment of Snow Brand is conspicuous, and it is expected to heighten further the biotechnology fever in the industry. In the background is the severe circumstances of the food industry, which is forced to strive for a multilateral operation and aim for survival by emphasizing this kind of leading industrial field where growth is anticipated.

7722
CSO: 4106/84

BRIEFS

LSI FOR VOICE RECOGNITION--Matsushita Electric Industrial Co. and Matsushita Electronics Corp. said Friday that they had succeeded in commercialization of speech recognition large scale integrations (LSI) incorporating all speech recognition circuits into one chip. Called "MNI 263," the LSI has 17,000 transistors, each 6 mm square, and can recognize a maximum of 64 words. As a result, the use of a speech recognition board, the print substrate for speech recognition systems, has been minimized to less than half the conventional requirement and costs have been reduced, a spokesman said. He said that the companies would market the LSI at 10,000 yen ($41.7) per chip and 80,000 yen ($333) per board. [Text] [OW241319 Tokyo MAINICHI DAILY NEWS in English 22 May 82 p 5] [COPYRIGHT: Mainichi Daily News 1982]

NTT'S LSI-MAKING COMPANY--Nippon Telegraph and Telephone Public Corp. (NTT) will form an LSI (large scale integrated circuit) manufacturing company next month jointly with major bans and other interests, an NTT official said Saturday. The official said the new company would chiefly design and manufacture LSI's for delivery to NTT. The joint company will be capitalized at 100 million yen ($417,000) of which 50 percent will be put up by NTT, and the balance by nine major banks, including Dai-Ichi Kangyo Bank, NTT-related firms and other companies, he said. An inaugural general meeting of the new company will be held on June 14 and the firm will start operations June 22. It will be based in Musashino, one of Tokyo's suburban cities. [Text] [OW241319 Tokyo MAINICHI DAILY NEWS in English 2 May 82 p 5] [COPYRIGHT: Mainichi Daily News 1982]

CSO: 4120

END