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Japan Report

(FOUO 37/82)



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POLITICAL AND SOCIOLOGICAL

RUMOR OF FUKUDA-KOMOTO SECRET PACT REPORTED

Tokyo YOMIURI SHIMBUN in Japanese 24 May 82 p 2

[Text] The Suzuki and Tanaka factions of the LDP took the drastic central strategy measure of calling for a long extension of the present Diet session. Behind this move is the rumor that a pact has been made between former Prime Minister Fukuda and Director of the Economic Planning Agency Komoto in connection with the upcoming election for LDP party president this fall. This rumor of a "secret pact between Fukuda and Komoto" has been circulating recently in government circles.

Fukuda and Komoto say that "the very idea of a secret pact is ridiculous," and laugh it off. However, three factions, Suzuki, Tanaka, and Nakasone, are getting very nervous about the true state of affairs.

The content of the secret pact rumor is as follows. Komoto visited Fukuda in his office in Tokyo on the afternoon of 27 April. After discussing issues related to management of the economy and government finances, the two men had a discussion on the present political situation.

Fukuda is reported to have seriously criticized the Suzuki government: "Recently, many people in the party are saying, 'We cannot understand what Prime Minister Suzuki is doing in either foreign or domestic policy.' If things keep going this way, circumstances may be such that the prime minister will have to resign in the middle of his term amid great difficulties."

In response, Mr Komoto said that he understood the import of what Mr Suzuki had said, but he said only that the problem was a very serious one and avoided a more direct reply. However, it is reported that he was in virtual agreement in his attitude toward the Suzuki government policies.

In addition to this discussion, the rumor has gone so far as to describe the content of the "secret pact" as a plan for former Prime Minister Fukuda to take over as a relief player if Prime Minister Suzuki fails to be reelected and resigns and then for Komoto to take over a year later.

Observing this movement, the Suzuki and Tanaka factions were afraid that the government would fall at once if the Public Election Law revision bill advocated by the Fukuda and Komoto factions were not passed. During the

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period of the May holidays, Kuniyoshi Saito, a close associate of the prime minister, met with former Prime Minister Tanaka and Party Secretary Nikaido. Following the May holidays, on the evening of 6 May, Prime Minister Suzuki and Party Secretary Nikaido talked for approximately 2 hours at a Tokyo restaurant. After this discussion with the prime minister, Mr Nikaido went directly to the Meiji residence of former Prime Minister Tanaka and conferred with former Prime Minister Tanaka and Masaharu Gotoda (chairman of the electoral system study committee). The decision was: "We will give full support to passage of the Public Election Law proposal. A long extension of the Diet session is unavoidable."

Informed sources say that the source of the rumor of the "Fukuda-Komoto secret pact" is the leadership of the two factions. The rumor began going around at the beginning of this month. The following facts are offered as a basis for this speculation although they are only circumstantial evidence. 1) Although there have been other people present at previous discussions between Fukuda and Komoto, this time they talked alone for 50 minutes. 2) The discussion was not announced until the day it was held. 3) Mr Komoto has recently been rather forward in making statements in meetings of party leaders and cabinet meetings. He has had frequent clashes with Administrative Management Agency Director Nakasone, his rival for the position of prime minister after Suzuki. 4) Fukuda's mentor, former Prime Minister Kishi, has stated that "we cannot get through the present difficulties with Suzuki. How about bringing back Fukuda?"

An old politician unaffiliated with any of the factions says: "We will soon find out whether this secret pact rumor is true or strategic propaganda. The political world right now, both the ruling and the opposition parties, is in pandemonium." The movement by the Suzuki and Tanaka factions to forcefully push through a policy of "reelection of Suzuki" is especially active recently. On the evening of 21 May former Prime Minister appeared at a gathering of Diet members in the Suzuki faction who have been elected three or four times and said: "Prime Minister Suzuki will be reelected in the fall elections for president of the LDP." Also: "Next year the elections of both the upper and lower houses will take place on the same day." Contact between the two factions has been frequent.

Future developments in political power will depend on whether a collaboration develops between Fukuda and Komoto, and this circumstance gives rise to speculation.

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POLITICAL AND SOCIOLOGICAL

DIFFICULTIES OF LABOR UNIFICATION COMMITTEE REPORTED

Tokyo NIHON KEIZAI SHIMBUN in Japanese 3 May 82 p 4

[Text] The meeting of the labor front unification preparatory committee came to a standstill over the problem of participation by the second group of Sohyo (General Council of Trade Unions of Japan) unions. However, on 8 April approval was finally given for inclusion of seven single-industry Sohyo unions including the General Federation of Private Railway Workers Unions of Japan. This was a major progressive step in reorganization in preparation for the inauguration of a "private-sector union conference" this fall. Now the preparatory committee will shift the focus of debate to the major issues of policies for action and an operating platform based on the "fundamental concept of unity." However, the second group of Sohyo unions is critical of the "fundamental concept" itself, and some unions maintain that participation in the preparatory committee is separate from participation in the conference. Therefore, further complications involving a power struggle between Sohyo and Domei (Japan Confederation of Labor) are expected before the conference is organized.

Domei Disregards Small Differences

Seven single-industry Sohyo unions applied to participate in the preparatory committee on 26 March. These include the General Federation of Private Railway Workers Unions of Japan, the National Trade Union of Metal and Engineering Workers, the Japan Coal Miners Union, Zenjiko, Seniroren, Zendenryoku, and the Federation of Paper and Pulp Workers Unions. However, at the preparatory committee directors meeting on 27 March, the Domei single-industry unions strongly affirmed that: 1) the fact that the seven Sohyo unions have not made an official resolution of support for the fundamental concept is unacceptable and 2) it is unnatural to approve of block participation by only the second group of Sohyo unions, and separate judgments should be made for each case.

Domei single-industry unions (such as Zenkin Domei, Zensen Domei, and Denryoku Soren) are in competition with six of the Sohyo single-industry unions--all of them except the General Federation of Private Railway Workers Unions--so the confrontation was emotional and resistance stiff.

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In the general meeting on 1 April, only two points were confirmed: 1) that the factual proceedings of the preparatory committee up to that point would be honored, including decisions that "action policies and the operating platform will be discussed on the basis of the fundamental concept" and that "a conference will be held within the year," and 2) that adjustments would be made between single-industry unions which are in a competitive relationship. This coordinating and adjustment process was entrusted to the director in charge, Chairman Nakamura of the Federation of Iron and Steel Industry Workers Unions.

The Domei single-industry unions, such as the Zenkin Domei, continued the attack, saying: "An official resolution should be passed to the effect that the factual proceedings will be honored." However, the National Trade Union of Metal and Engineering Workers decided to participate even while it retains an internal faction opposed to the preparatory committee. Therefore, Chairman Tabuchi of the Nippon Express Company union has said that the demand of Zenkin Domei is "impossibly difficult" to carry out.

Because of this situation, the first Sohyo group of five single-industry unions (including the Federation of Iron and Steel Industry Workers Unions and the Japanese Federation of Synthetic Chemistry Workers Unions) walked out of the directors meeting on 16 April to demonstrate their stern attitude to Domei. Part of the Sorengo, including the Denki Roren, made a hardline proposal to act in concert with them. So there was a bad atmosphere in the meeting for a time.

Following the directors meeting, no definite date was set for the preparatory committee meeting and it became doubtful that the conference could be organized within the year.

Because of these developments, Domei increasingly came to believe that it should "disregard small differences and cling to large areas of agreement." Therefore, in the 8 May directors meeting a decision was made to permit the participation of the second Sohyo group.

Enemies on Board the Same Ship; Stormy Conditions

With this decision, 47 single-industry unions (with 4.3 million members) were brought together in the preparatory committee, thus assembling all of the important private sector unions. As the foundations of Sohyo weaken, conditions have been created for building the core of a new labor movement.

The preparatory committee may transform itself into a private sector union conference as early as this fall, so it will now begin serious debate on action policies and an operating platform. On the basis of this action policy and operating platform, each single industry will decide whether or not it will participate in the conference during general meetings and central committee meetings which will be held in the period from summer to fall.

However, there are several more hurdles which the preparatory committee must cross before it can make the leap to becoming a conference.

One problem is that the committee now contains seven single-industry Sohyo unions which are critical of the "fundamental concept of unity." Therefore, the situation for debate on the action policy and operating platform, which should be drawn up on the basis of the fundamental concept, will be that of "bitter enemies placed together on the same ship." It is highly doubtful that the proceedings can be completed in time for the summer meeting.

The paper and pulp union, for example, attached a "Basic Policy for Participation" to its application for participation in which it stated that "it is necessary to point out specific problems and clarify the points that should be criticized in the fundamental concept" and clearly presented five criticisms. Chairman Kurokawa of the General Federation of Private Railway Workers Unions is ready for the attack: "When the preparatory committee meeting begins, we will have our say (about the fundamental concept)."

Chairman Kurokawa is also chairman of the Sohyo council of private sector unions, so he is aware of the existence of 18 other Sohyo single-industry unions, and it is not at all likely that there will be an easy compromise on the action policy.

Opposition to Rapid Organization of the Conference

The second group of Sohyo single-industry unions are not only skeptical about easily reorganizing into a conference, they are making a sharp distinction between participation in the preparatory committee and participation in the conference. For example, the "Basic Policy for Participation" mentioned above states that "we do not favor a quick inauguration of the conference" (General Federation of Private Railway Workers Unions) and "participation in the preparatory committee and participation in the future conference are separate problems" (Zendenryoku).

Chairman Kurokawa of the General Federation of Private Railway Workers Unions states: "We will think of the preparatory committee as an opportunity for expansion of joint struggle. We will decide whether or not to participate in the conference after seeing how the preparatory committee grows and after judging its level of maturity."

The transformation of the preparatory committee into a conference will be quite difficult. It will be a steep climb overcoming differences to grow further from a conference to a federation and then to a national central organization which can overpower Sohyo.

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MILITARY

STATUS, POTENTIAL OF DEFENSE INDUSTRY DISCUSSED

Tokyo BUNGEI SHUNJU in Japanese May Special Issue 82 pp 150-161

[Article by Katsuto Uchihashi, economic critic]

[Text] If Japan desires it, the country can become a highly competitive arms exporter within a short time, and the world is taking precautions.

Although Defense Expenditures Are Said To Protrude....

Every New Year's Day, the Japanese Arms Manufacturers Association holds a New Year's get-together at the Japan Industrial Club in Otemachi, Tokyo.

If each member company went to the Defense Agency and other government offices to deliver its New Year's greetings individually, the waste of various kinds would be enormous. In order to economize, the Japanese Arms Manufacturers Association decided to bring people from the government offices together in one place 20 some years ago.

For the last 3 years, the number of people attending the New Year's party has been increasing rapidly. The number of participants exceeded 600 both this year and last year.

"Since the old site became too small, 3 years ago we changed the location of the party to the Japan Industrial Club, which has a large hall," explained Jinshichi Hirano, the association's managing director.

"However, we are not in high spirits. No company is pleased to have increased work," he adds cautiously. Nevertheless, there are not many industry organizations with only 99 participating companies that can easily gather 600 executives in one place at one time.

On the other hand, Gakuji Moriya (a counselor to Mitsubishi Heavy Industries), chairman of the Federation of Economic Organization's Defense Production Committee and the general controller of the Japanese defense industry, says that the present atmosphere in defense industries reminds him of the fever 30 years ago around 1952, when resumption of aircraft production was permitted as a result of the signing of the peace treaty.

"We began with the repair of U.S. military aircraft, and then moved on to licensed production of fighters, training airplanes, and escort ships. I remember the atmosphere of that time. Although the market was small, every manufacturer was trying to plunge into the field (arms production) with almost abnormal energy...."

At that time, Mr Moriya was engaged in the just resumed aircraft production at the Nagoya Aircraft Factory of the New Mitsubishi Heavy Industries Company. According to him, related companies, parts makers, and subcontractors all rushed daily to the New Mitsubishi Heavy Industries, pleading "let us help, let us help."

"Even though they asked us to let them help, the work itself was very little.... Nevertheless, they were very enthusiastic. I now sense the same atmosphere that was generated 30 years ago."

Mr Moriya says what everybody else in defense industry says: "Although people clamor against protrusion of the defense budget, there is no other country with a defense budget within 1 percent of its GNP. There is no way for the defense industry to experience a boom or fever." Emphasis was placed on the last sentence.

How true is the phrase: "The arms industry is always hungry"? The following words of Kenji Ikeda (managing director of Mitsubishi Heavy Industries), chairman of the Federation of Economic Organizations' Defense Production Committee Policy Subcommittee, seem more or less to represent the attitude of business leaders related to the defense industry: "I do not expect Japanese defense demand to expand by much. Although people clamor against the protrusion of the defense budget, the ratio of Japanese defense spending to the total general account was actually 5.1 percent last year and 5.24 percent in 1980. It is 5.2 percent this year, which is about the same as 1980 or even a little less. In the past, there was a year when it was 13 percent. The reality is that the ratio of defense spending to the total general account budget has been gradually decreasing. Even if it has been increased from 5.1 percent to 5.2 percent, it has not shaken up our budgetary system at all." Mr Moriya's way of thinking seems to be the same. He says: "I do not like the ratio relative to GNP."

Not the ratio relative to GNP but the ratio relative to the total general account, moreover, not an absolute amount but a percentage--this is the consensus among leaders of the defense industry.

Of course, even though the percentage remains unchanged, the absolute amount increases. In the case of Japan, where arms exports are not permitted, no matter how the defense budget is expressed--whether in percentages or in absolute amounts--the only market for the defense industry is in the defense budget. Of the defense budget, what directly affects the business of defense-related companies is "equipment expenditures."

Mr Ikeda declares that "the ratio (of equipment expenditures to the total defense budget) was 24.5 percent last year and it is 24.4 percent this year. Precisely speaking, it has been decreased rather than increased. Under these conditions a defense industry boom cannot happen."

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The condition of arms makers belonging to the Japanese Arms Manufacturers Association seems more or less the same. "The ratio of Defense Agency sales to total company sales is only 1.6 percent on the average for member companies. The fact that we have been conducting a petty business for the Defense Agency in a tiny corner of a huge company has not been changed from earlier days," emphasizes managing director Hiraou.

At the same time, however, the Japanese Arms Manufacturers Association has been receiving applications for membership one after another. Just recently, four special steel makers are said to have applied for membership, saying that "we want to resume production of shells since the prospects for automotive demand for steel are gloomy."

In spite of defense industry leaders' denials of a defense industry fever, the Japanese defense industry seems more flourishing than ever.

Briefly speaking, although those responsible for the Japanese defense industry see the market neither having expanded substantially in the recent past nor assured of rapid growth in the near future, it is also true that the atmosphere surrounding the defense industry is astir with excitement as it was 30 years ago.

Why is it astir? Mr Moriya gives us a hint.

"Companies seem to have an eye on 'futures.' Everybody knows that a company cannot suddenly get a huge contract and earn a huge profit. We cannot entirely deny that there was an expectation of 'dreams come true once again' 30 years ago. This time, however, no one has such expectations. Then, what aspect of the defense industry's future does everybody have an eye on? I think it is technology. For years now, arms have been such that they have had to be based on the most advanced science and technology of the time. A feeling that new technologies are emerging now and that we should not fail to catch them.... I think that is it." The economic slump is worldwide. Japan's exports are tapering off. Under these conditions, we cannot completely deny the industry's hopes for defense demand, which at least will not decrease in the future.

If the defense industry fever is caused not by interest in the size of the market or the possibility of growth, but instead in the technologies involved, it tells us that the Japanese arms industry is moving into a completely new phase today.

Advancing Autonomous Development of Military Technology

In fact, the desire and concern to obtain an accurate grasp of the actual condition of the Japanese defense industry has been rising in foreign countries.

THE FAR EASTERN ECONOMIC REVIEW, an economic journal issued in Hong Kong, in the second week of December 1981 published a detailed special article on Japanese defense industry, entitled "Industrial Japan '81: Space Age Samurai."

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It even has a list of the 20 companies, such as Mitsubishi Heavy Industries and Ishikawajima-Harima Heavy Industries, with the most contracts with the Defense Agency.

FOREIGN AFFAIRS, a special journal on diplomatic relations issued in England, published a paper which predicted that "by participating in world arms export competition, Japan will violate the American sanctuary." The paper also reported that "Japan will have nuclear arms in the not too distant future" (winter 1981-82). The U.S. Council on Foreign Relations (David Rockefeller, chairman, a research organ on international problems) perhaps expressed the most obvious interest and concern about the Japanese defense industry which has been becoming stronger at a high pitch.

In a 352-page report published in January 1982, the Council on Foreign Relations is said to have warned that "how to hold down the Japanese defense industry will be one of the most difficult tasks facing Europe and the United States for the rest of this century" (ASAHI SHIMBUN, 25 January 1982).

(The previously mentioned paper published in FOREIGN AFFAIRS is "Arms Sales: The New Diplomacy," which is a summary of the 4-year study written by Dr Andrew Pierre, a senior researcher at the Council on Foreign Relations.)

"There is no field impossible for the Japanese arms industry to handle. Once a political decision is made, Japan can become a middle-ranking arms exporting country almost overnight." "If the pressure on Japan to increase defense power is too strong, it will create the fear that Japanese defense industry will start running independently on its own." This common recognition can be observed in many foreign papers.

While those who are responsible for the Japanese defense industry are saying "Oh, no," the United States, a military superpower unrivaled in the scale of its defense industry, watches the Japanese defense industry carefully.

They are not interested in the peripheral matter of the quantitative increase in the size of the Japanese defense industry, but in the potential value of its military technologies.

We must pay attention to the coincidence of their interest in technologies and the suggestion of Mr Moriya.

Such recognition by the United States and other foreign countries seems to have reasonable grounds. They have certainly recognized with a considerable degree of correctness the new phase the Japanese defense industry is entering.

First, the Japanese defense industry is trying to escape as much as possible its past dependence on licensed U.S. technologies. The Japanese defense industry is beginning to proceed intentionally toward "autonomous development" of military technologies.

Second, widely applicable civilian technologies, which are the bases for our domestic military technologies, have reached a high level. In the areas of

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electronics and production technologies, in particular, the trend is obvious. In the case of Japan, which has a unique mechanism of technology transfer from civilian to military use, raising the level of civilian electronics and production technologies means strengthening potential capability in military technology.

Third, Japan has begun to possess a system for "militarizing technology," which enables transfers of high-level civilian technologies to military uses in a more efficient manner.

The above-mentioned three trends have been progressing simultaneously. Under these conditions the Japanese defense industry has gained more capability than anticipated, and for this reason the Japanese defense industry is moving into a new phase.

At present, the Japanese defense industry is at a stage where the primary interest is not on the size of the defense budget--the size of the market--but on the high-level quality content of Japanese military technology.

First of all, let us use a familiar example to illustrate the mechanism of transferring a widely applicable civilian technology to military use.

What Is the CCD upon Which Intent Gazes Are Focused?

Neither film, development, nor printing is required. An image on a TV picture tube can be recreated the moment a picture is taken. Sony's announcement that it has succeeded in the development of the "Mavica," the world's first magnetic camera, was reported not only by Japanese media but also by foreign media. BUSINESS WEEK reported Sony's announcement together with a two-page commentary. The story created a worldwide impact last summer.

Another foreign journal specializing in cameras revealed the magnitude of the shock by writing that a camera not requiring film would be something like a water tank not requiring water for fish.

The designers of the Mavica were able to separate the camera and the film, which were supposed to have an inseparable relation, simply by placing a small magnetic disc in a camera box.

Instead of being recorded as a volume of light on silver film, as in an ordinary camera, images are magnetically recorded on a disc small enough to be held in the palm of the hand.

"Video is intended for motion pictures whereas Mavica is intended for stationary pictures. As Sony itself explains, Mavica's magnetic disc may be considered something like a long tape for tape recorders and video recorders that has been chopped into small rectangular pieces (the dimensions of a piece are 3 mm in thickness, 54 mm in width, and 60 mm in length, and it can record 50 pictures).

When a tape is played in a taperecorder, sound recurs. When a video cassette tape is played, visions are regenerated. In the same manner, a magnetic disc can recall stationary pictures on a TV picture tube as many times as desired.

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Reports on filmless cameras have followed one after another. This year, Sony has reported the establishment of a firm footing in the practical application of a printer which would print pictures as cardsized photographs.

Considering that 8 mm cinemascope was replaced by video cameras, it is no wonder that fear of the decline of optical cameras spread throughout the camera, film, and DPE industries.

When the news was reported, however, professional technologists must have recognized immediately that a seemingly revolutionary magnetic camera was in fact based on only three elementary technologies.

The first technology is a precise processing technology that enables the packing of an enormous number of parts into a space as small as an existing camera. The second technology is a series of technologies which enable high-density visual signals transformed into magnetic signals to be recorded on a magnetic disc.

But, more than anything else, it requires the technology of an elemental device which can receive optical energy from the object on which a camera is focused and transfer it with high precision onto a magnetic disc.

The third technology, which plays the most important role, is a CCD (charged coupled device).

A CCD is a completely new type of semiconductor which, after receiving the optical energy of a subject, transforms it into electrical signals and then stores them as they are or transfers them somewhere else. Thanks to a CCD, the Mavica could replace film with a magnetic disc and eliminate film from the camera. It is quite natural that engineers gazed intently at the CCD used in the Mavica.

"How analytically capable a CCD can Sony mass-produce at how low a cost?" asked engineers around the world. Soon it became clear that military engineers were among them.

An immediate reaction came from the British Ministry of Defense. It asked Sony about the possibility of providing the British Defense Ministry with the CCD technology as well as requesting a sample of the CCD.

Since the Defense Ministry made the request, there is no doubt that its intention is to use the CCD for military purposes.

It was later reported that MITI, unofficially consulted by the British, said that "the three principles for arms export" made export of the technology impossible.

The theory of the CCD was originally discovered by Bell Laboratories of the United States. As usual, however, its practical applications were developed first by the Japanese. A CCD was used as the eye of VTR camera instead of a pickup (camera) tube, a kind of vacuum tube. Not only Sony but also Nippon Electric Company, Toshiba, Hitachi, Mitsubishi Electric--almost all of the

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semiconductor makers--have been mobilizing engineers to compete vigorously in the CCD field. Nevertheless, the high wall of high production costs has yet to be breached.

Sony is said to be one step ahead in the CCD, including the development of new materials for the CCD.

A CCD is a semiconductor only about 1 cm square in size (an ordinary semiconductor is 5 mm square), and at a glance it looks just like a piece of something filled with an enormous number of dots (vision elements--currently about 200,000 can be placed on a chip. The more vision elements there are, the higher the analytical capability.). Can such a semiconductor really be transferable to military uses? The question does not need asking; the Japanese Defense Agency is already seriously engaged in development of military applications for the CCD.

Its intention is to develop an IR-CCD (CCD with infrared sensor), which is a combination of a CCD and an elemental device capable of detecting infrared rays, and to apply it in the homing device of a missile (it is possible to apply the CCD as it is for military use).

The course a missile with an IR-CCD eye will follow after launching is clear from the previous explanation of the magnetic camera.

The missile detects infrared rays from an enemy fighter by sensor and concurrently recognizes and memorizes the image of the enemy fighter by CCD. Once the image is memorized, the missile will chase the enemy fighter and constantly correct its direction until it hits the fighter.

The Defense Agency has commissioned Toshiba, Mitsubishi Electric, and Fujitsu to do the research. If the IR-CCD is perfected, it will also be used in a hand-carried SAM (a small surface-to-air missile that Toshiba has been developing with its own technology).

Thus, a revolution will occur in the precision with which a missile hits its target.

No Distinction between Civilian and Military Uses

Needless to say, the CCD is only one example of electronic high technology that can be converted to military applications. The optical fibers, the laser, the VLSI, the photoelectron--all possess the same capability.

"The roots of the radar, sonar, and automatic control technologies widely used as civilian technologies today are military technologies developed during World War II. The military technologies were developed for civilian applications. Recently, however, new advanced technologies intended for civilian use and supported by enormous demand in civilian industry have been progressing remarkably. The number of these technologies which are convertible to military applications has been increasing. Some technologies can be used for military applications without adding special specifications. Some technologies can be

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converted to military use by raising the grade to military specifications. Today, very strict, high-performance qualities are required even for industrial-use technologies. Thus, the basic conditions for converting civilian technologies to military applications through qualitative improvement can be said to have been already established in Japan" (Keiichi Fukuizumi, manager of the Induction and Photoelectron Department of NEC).

Taking the case of the VLSI as an example, the only differences between civilian applications and military applications are: 1) "the temperature range" varies at the time of use, and 2) "guarantees of reliability" are required in military applications.

Revolutionary electronic products have been introduced into the peaceful world of hobbies.

Under the inner cover of those products, high-level technologies convertible to military uses are concealed.

Both civilian and military technologies have been radically electronicized. This trend will continue. This is a characteristic of modern technology. Thus, the line separating civilian and military technologies has been growing smaller and smaller.

"Except for certain strategic arms, military technologies will be deeply concealed among all-purpose civilian technologies just like urban guerrillas hidden in cities. On the other hand, military technology will swallow the advanced civilian technologies of the world and hungrily try to adapt them." So explain the experts.

In Japan, which has achieved a high level of technology in the electronics field in particular, foreign countries see the image of a country with the world's biggest collection of potential military technology. Considering the current conditions and trends, this is natural.

These conditions also give us a clue to understand the true intention of the United States when it requests a "Japan-U.S. military technology exchange."

To Make Our Arms by Ourselves

"...For instance, when we are manufacturing a fighter under license from the United States, could Mitsubishi do it by itself if the license was suddenly cancelled? If we are asked such a question, we must not be in a situation where we have to answer 'no.' Even manufacturing under license, we should be prepared to manufacture by our hands with our own technology any time we are asked. Such an attitude is necessary. This is our philosophy." Although Mitsubishi Heavy Industries has been manufacturing aircraft from the F-104 through the F-15J under license, it has always kept the strong will and intention to move toward "autonomous development of technology" at the bottom current of licensed production, according to Mr Ikeda.

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"When we were engaged in manufacturing the F-104, we considerably advanced our knowledge. When we suggested producing the F-104 domestically, the Defense Agency laughed at us and did not trust us, saying that such a thing could hardly be reliable. When we were manufacturing the F-4--the next aircraft--under license, we again suggested that we could make that sort of aircraft by ourselves. But the Defense Agency did not trust us then, either. At last, when the Defense Agency wanted the T-2 (a supersonic training aircraft), it told us: 'If you want to do that much, we will let you try.' Finally we were able to manufacture aircraft by ourselves with our own technology."

There was a fear that it would become a seller's market if Mitsubishi did not possess the capability to develop technology by itself. More than the economic reasons, however, what contributed most to this attitude was the Mitsubishi engineers' inheritance of Mitsubishi's prewar philosophy "to make our arms by ourselves."

It has been pointed out that nowadays the urge toward "autonomous development of arms" has been felt in the entire arms industry. The Japanese defense industry is beginning to stand and walk by itself.

I must describe here the postwar history and characteristics of domestic arms.

With the wartime defeat, the old military forces were dissolved. Armament factories were completely abolished. This is what many Japanese believe.

The facts, however, are different. The military industry did not die. Concealed from the occupation forces, large numbers of military engineers were carefully retained within Mitsubishi Heavy Industries, Mitsubishi Electric Company, and Toshiba. Using those military engineers as a seed, the postwar Japanese military industry, which changed its name to the defense industry, was reborn like a phoenix.

There may be a small number of people who know that the philosophical trend toward "autonomous development of arms" has, up to the present, been established mostly by those engineers.

For example, the aircraft engineers of Mitsubishi Heavy Industries spent the postwar period doing the following.

They were at the dispersed factories in Matsumoto, Nagano Prefecture, when the war ended. At the instruction of the company, they secretly dispersed themselves and moved to five factories throughout the country. The first group left for the Mizushima (in Okayama Prefecture) and Kyoto factories. The second group went to the Kobe and Nagasaki dockyards.

Because experimental facilities such as wind tunnels and water tanks remained in both the Kobe and Nagasaki dockyards, engineers in the field of aerodynamics were sent there. The rest of the engineers went to the Kawasaki factory.

After a time, they began moving again. This time engineers were gathered at the Kyoto and Mizushima factories. While polishing their skills there, they waited for an opportunity to practice their old skills.

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"The company kept about 140 to 150 engineers in all areas ranging from tanks to aircraft. Of them, about 70 engineers moved to the Nagoya factory (an aircraft factory) when aircraft production was resumed in 1952," testified Mr Ikeda, who was one of them.

Soon production of aircraft was permitted. Then, production started under license from U.S. companies. Taking advantage of their past experiences which enabled them to compare the U.S. licensed aircraft with Japanese aircraft of the past, they coped with design diagrams, specifications, and other complicated, high-level instructions sent from the United States.

"Although the knowhow associated with the key technologies for licensed production was not taught at all, they were able to understand the contents to a certain extent once they got started. Later, the knowhow they gained in this process was utilized. It was totally different from starting from nothing."

Soon they turned their attention to their own technology and developed the GCM (a gas turbine) and the MU-2, a ground starter for the F-104; the T-2, a high-performance training airplane solely developed and manufactured in Japan, and the ASM-1 (an air-to-ship missile) were also developed and produced domestically. Now, they have taken up the challenge of developing domestically the Nike-Phoenix, a surface-to-air missile.

They say that not only technological accomplishments but also inheritance of the "make our own arms by ourselves" philosophy resulted in the present condition of technology in the defense industry.

The ASM-1, a Domestically Developed Missile

Associated with the domestically developed ASM-1 missile is the story that "engineers of the U.S. military forces were astounded at the high accuracy with which it hit the target." Taking the case of the ASM-1 as an example, let us examine the characteristics of our domestic arms.

The ASM-1 was perfected by Mitsubishi Heavy Industries as the prime contractor. Its homing head was developed by Mitsubishi Electric Company and its rocket section was developed by Nissan Motor Company (Space and Aviation Division).

One characteristic of Japanese military technology is, first of all, that the ASM-1 was completed with very low development costs compared to the same type of U.S. missile.

Compared with the Harpoon, its U.S. counterpart, the development period was one-half, the development costs were one-tenth, and the production costs per missile are said to be 60 percent.

How could this be possible?

Actually, the domestically developed ASM-1 missile was born after a certain incident that was the beginning of the so-called Japan-U.S. missile war.

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Prior to the development of the ASM-1, Mitsubishi Heavy Industries, which had started to develop missiles on its own, succeeded in developing a missile named AAM-2. Its rival was the U.S. Falcon. Since the Falcon could be carried by the F-4 Phantom, Mitsubishi also designed the AAM-2 so that it could be carried by the F-4 Phantom.

The performance of the AAM-2 was superior to that of the Falcon. This became clear in the tests conducted by the Defense Agency. The accuracy was twice that of the Falcon (in other words, the AMS-2 could hit within a circle one half that which Falcon could hit).

The conclusion was, however, that the AAM-2 had to be abandoned without being adopted.

Those who know the situation reveal that "the rival Falcon was suddenly sold at a bargain price."

Judging that the Falcon could no longer be employed in the United States, the makers of the Falcon decided to start a bargain sale in order to dispose of their inventory of Falcons.

The AAM-2 could not compete in cost with the bargain price of the Falcon, and Mitsubishi Heavy Industries had to swallow its tears.

When Mitsubishi started planning the next missile, the ASM-1, it decided from the early stage on the basis of its bitter experience with AAM-2 that "there must be a significant difference in quality and in price in order to compete with American-made missiles." From this, we can understand that the development of Japanese military technology has taken the same course as automobiles and color TV sets.

In order to develop a missile with low production costs, Mitsubishi engineers chose the Harpoon (an air-to-ship missile) of the United States as a rival and rushed to develop a missile under the slogan "a domestic missile for half the price of the Harpoon."

In order to cut production costs thoroughly, Mitsubishi established a strict cost management structure which involved related enterprises and subcontractors. From the production of trial models, Mitsubishi engineers went to every vendor and parts maker and gave direct instructions on how to produce the parts.

The result was what I have already described. The ASM-1 was adopted as a domestic missile with extraordinary competitive power.

Based on their past experiences, Mitsubishi engineers have started to go into the area of surface-to-air missiles. They are going to develop the Nike-Phoenix.

The example of the ASM-1 can apply more or less to the development method of every domestic weapon.

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This method puts an enormous number of subcontractors, which form the footing of the defense industry, under a certain strict discipline and control. It brings them into a checking structure that extends to technology, production sites, machines and tools, and parts supplies.

Thus, quality control and cost control are thoroughly carried out.

Having had a great deal of trouble with sabotage at the subcontractors' level, the American military industry is losing its competitive power, and for that reason much of the Japanese defense industry is becoming competitive in the Japanese arms market.

On the other hand, in calculating personnel expenses for design engineers and other engineers engaged in research and development of military technology, a significant difference exists between Japan and the United States. This is one secret of a low-cost Japanese weapon. This fact is not known widely.

In brief, highly qualified engineers in the Japanese defense industry are employed at a cost astonishingly lower than their American counterparts.

A time charge per hour is calculated by analyzing the standard work of every engineer and researcher in the United States. In addition to time used for research and development, even idle time is charged to a client as a chargeable cost if the cause is related. This is the American method of calculating personnel expenses.

The Japanese method is customarily called "gross cost." Engineers, mechanics, designers, and researchers are not clearly distinguished from one another and they are all paid by the salary system. Often they work extra hours for which they are not paid overtime.

Comparing the two structures, a difference in cost and price competitiveness is naturally created at the stage of the final products, which are modern weapons.

As long as Japanese weapons possess a strong price competitiveness deriving from the Japanese method, the Defense Agency, a user, has to move in the direction of buying Japanese arms.

High technology, especially in the electronics field, is joined to price competitiveness and the spiritual backbone of making our own arms by our own hands. Therefore, autonomous development of arms seems destined to go forward as a chaser would with a tailwind.

Dr Andrew Pierre has predicted that Japan-U.S. friction would increase in the Japanese arms market in the future. He has also warned that "Once Japan desires, it can become a highly competitive arms exporter within a short time." We feel as though we must pay respect to his sharp eyes.

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The Purpose of Japan-U.S. Military Technological Cooperation

The Japanese defense industry has begun to walk purposefully toward autonomous development of military technology. I have written a rather long explanation of the situation background because I had to write about the Japan-U.S. military technological cooperation, an issue that has been changing its form and shape and reappearing at every opportunity, like a persistent ghost, since early last fall. The United States has reportedly asked Japan to provide military technology. Concerning the intentions of the United States and the contents of the request, all Japanese defense industry executives have said that "We can't understand its real intentions," and "We can't think of any Japanese technology worth providing to the United States."

What the U.S. Department of Defense expects Japan to provide is said to be high-speed operation elemental devices, lasers, electronics technology for use in radars and surface-to-air missiles, optical fibers, robots, and CCD's (IR-CCD's, if successfully developed). Various speculations have spread through the defense industry.

As I have already written, it is undeniable that U.S. interest and concern toward Japan's highly advanced civilian technology in the electronics field has been increasing.

On the other hand, there is another story here. "Originally, Japan, not the United States, asked the United States to provide military technological cooperation. Now, it is Japan that wants to break the three principles of arms exports. The United States is, on the other hand, in a position to take a precaution. If Japan starts exporting military technology to the United States, it may start exporting it to other countries too."

In fact, it has been reported that former Defense Agency Director General Omura brought up the issue when he visited the United States in June 1981.

The truth is elusive.

Nevertheless, the important fact is that the Japanese defense industry's military technology has become a great potential power. At the same time, even if this is true, it is limited to the extent of individual subsystems and components. It does not extend to broad military systems like those possessed by the United States or an entire design philosophy.

Ikeda, the managing director of Mitsubishi Heavy Industries, says: "If Japanese and U.S. military technologies are compared, the U.S. technologies are definitely better and greater. There may be some areas where Japanese technology is competitive or ahead by one step. They are, however, only limited, local areas of military technologies."

Therefore, he says: "As far as Mitsubishi Heavy Industries is concerned at present, we have no technology to export to the United States, and the United States does not expect such localized technologies, either."

What does the United States think of and want from military technological cooperation?

"Some technologies that Japan has spent an enormous amount of money to develop for civilian uses are very localized but slightly ahead. The United States seems to be requesting the freedom to buy and use such technologies. This is only my personal guess" (Mr Ikeda). "It is hard to think that Japan possesses technologies that the United States wants to absorb into its military system in large quantities. If there are any individual technologies which are cheap and applicable to the U.S. military system, the United States wants to buy and use them on a commercial basis. I think that is what the U.S. request means" (Mr Fukuizumi). "Japan lacks critical technology (the technology that forms the heart of a system). The recent theory of establishing a technology-based state is aimed at remedying this lacuna. Under the current situation where the level of Japanese military technology has risen, Japan possesses the capability of easily becoming a large military power if we decide to integrate available technologies and can add critical technology to them. However, as long as Japan lacks a huge military system and its software, U.S. interest naturally turns to obtaining low-cost, good-quality components" (Yuji Masuda, lecturer at Hosei University).

After all, the U.S. request in a form of asking for military cooperation seems to have been an aberrant intention.

As I have already written, the primary U.S. interest is in civilian technologies that are transferable to military uses and some components.

"The subcontractors which support the military-industrial complex of the United States have been exhausted and their capability has fallen down in respect to performance, on-time delivery, and quality. Frankly, we want Japan to supplement that area." As an executive of an American company says, the second intention seems to be procurement of individual hardware parts from Japan or contract production of them in Japan.

Under the current law, even procurement of parts is prohibited by the three principles of arms exports as long as they are used by the military.

Here, however, I must emphasize the following assumption, which can be considered to be the third intention of the United States.

There is an implication that the United States intends to involve Japanese researchers and engineers specializing in civilian and military technologies in Japan-U.S. joint research on military technology.

As I have already mentioned, there is a significant difference in the personnel expenses paid to excellent researchers and engineers in Japan and in the United States.

Instead of employing one American researcher, it may be possible to obtain better fruits in terms of cost efficiency by using several brains in Japan.

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A varied forms of subcontracting brains may come to pass.

Finally, it has been reported that voices asking Japan to share the required development cost of military technology have been rising among U.S. military contractors.

All the things that I have mentioned tell us nothing except that the Japanese defense industry is moving into a new phase. While general electrical machinery manufacturers have become well known for delivering various home appliances, office automation equipment, and new hobby and entertainment-related products to consumers, they have also occupied a large foothold in the military industry by using a wide range of military technology as an intermediary. This phenomenon has been accepted as quite ordinary in our industrial world. Mitsubishi Electric Company has been much talked about in the consumer goods market for its hit products such as quilt dryers and clean heaters. The company also is proud of being the Defense Agency's number one supplier in the area of electronics, which excludes Mitsubishi Heavy Industries or Ishikawajima-Harima Heavy Industries.

Hitachi Limited, which announced its participation in a bidding war to get a contract for the Badge X (the next automated air defense warning and control system), established a Defense Technology Promotion Headquarters within the company 2 years ago. By permanently assigning 60 researchers and engineers, it has been busy researching and developing military technology.

Fujitsu, number one in the computer industry, also started the Fujitsu Systems Integration Laboratory at the beginning of last year. It is hustling "to double its contracts in the defense market within 2 or 3 years." One hundred thirty researchers and engineers are engaged in developing military technology at the Fujitsu laboratory.

Nippon Electric Company, known for its slogan of computers and communication and as Japan's largest semiconductor maker, is said to be supplying the Defense Agency with almost 290 parts and products under contract annually. In addition, it has over 50 subcontracts to supply to prime contractors engaged in arms manufacture.

"For both civilian and military uses, technology will become more complex, higher level, and more advanced in the future. We don't have to neglect the high technology we have achieved in civilian applications. We want to utilize this technology in military applications. And then we want to feed back our accomplishments in military applications into civilian applications," opines an executive of a general electrical machinery maker with an easy look.

Now, "a market of 1 trillion yen" is beginning to reveal its entire features before the defense industry.

It is also certain, however, that the semiconductor makers can see a huge swamp called "company risk" ahead of them.

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In the VLSI battle of the 64 kilobit or more, the capital investment for one plant is said to reach 20-30 billion yen. They have to recover these huge investments within 2 to 3 years. They are stuck in a surprisingly risky business.

We cannot completely deny that one of the motivations urging them toward autonomous development of military technology is company risk. It is not something which can be talked about in a bright world free from worry.

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ECONOMIC

AGRICULTURE WHITE PAPER FOR 1981 REVIEWED

Tokyo NIHON KOGYO SHIMBUN in Japanese 12, 15, 19, 22, 26 May 82

[12 May 82 p 3]

[Text] Development of National Economy and Agriculture

Food Supply and Agriculture

The national food demand increased rapidly during a period of high-level growth; rice demand decreased while fruits and animal products increased. Likewise, the form of food consumption moved in the direction of an increased tendency to rely on food consumption service, i.e. the weight of restaurant food and high value-added food, such as processed food, increased. As a result, the ratio starch occupies in the daily per capita supply of caloric value declined from 63 percent to 52 percent during the period from 1965 to 1973, and the ratio of protein and fats increased. On the average, the diet content has improved in that balanced nutrition has been acquired.

In answer to this, agricultural production continued a selective expansion, centered in products for which demand has increased rapidly. Faced with the previously unknown problem of having a structural excess supply of rice in 1968 and later, with regard to the inevitability of having regulated basic production since 1971, domestic production of wheat, soy beans and the like gradually declined and the supply of these products relied mainly on imports. As a result, the agricultural food products overall self-sufficiency ration dropped to a little more than 30 percent.

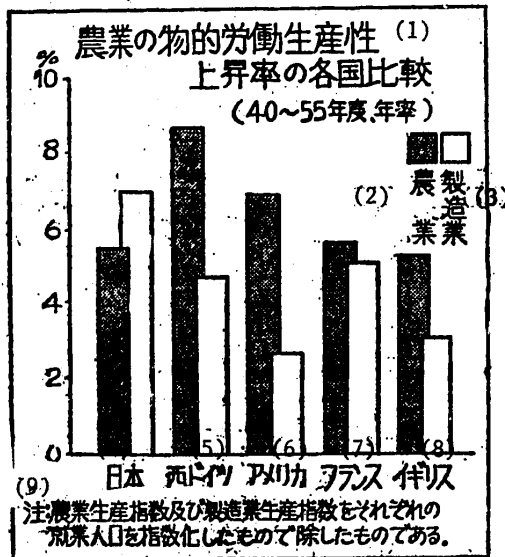
As for such a decline in the overall food self-sufficiency ratio, there is the problem of insuring Japan's food security. While the Ministry of Agriculture and Forestry worked to maintain and strengthen the overall domestic food self-sufficiency capability continuously in FY-81, it also decided to insure the stability of imported agricultural products and promote countermeasures for reserves of agricultural products.

In the process of changes in national food demand, the food supply structure has become a double structure in which products with an extremely low self-sufficiency ratio coexist with products which have a high ratio. Agriculture must create a stable supply in answer to the food demands of the future also,

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but the white paper offered a working plan for improvement in productivity by means of: 1) development and dissemination of agricultural technology; 2) efficient agricultural investment; and 3) reform of the agricultural structure.



Key:

1. Comparison of Rate of Increase in Material Labor Productivity in Agriculture in Several Countries (annual rates for the years 1965-1980)
2. Agriculture
3. Manufacturing
4. Japan
5. West Germany
6. United States
7. France
8. England
9. N.B. Agricultural production index and manufacturing production index divided by the index of employed population for each.

The improvement in agriculture's physical labor productivity is an indispensable factor for maintaining and strengthening the overall food self-sufficiency capability; the rate of increase was high, 5.6 percent per year, during the period from 1965 to 1975 and can rank with that of the United States and European countries. However, some distinguishing characteristics can be seen in the tendency of productivity during this period: 1) in contrast to the fact that in the United States and European countries, the increase in agricultural productivity exceeded that of manufacturing, it was just the opposite in Japan; and 2) the tendency of Japan's agricultural productivity to depend greatly on

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the growth of the capital-intensive agricultural sector, such as small-to-medium sized animals and institutional horticulture, and progress in labor-saving technology in the land use style agriculture sector is impeded by a petty land retention structure and not enough efficiency is demonstrated.

Because of this, it has gradually become difficult to achieve an income differential between agriculture and manufacturing with an increase in agricultural productivity, and the tendency to rely on an increase in the price of agricultural products to insure an agricultural profit has intensified. The production cost of agricultural products had a high increase ratio of 9 percent annually between 1965 and 1975, but because relaxation in demand during the period from 1975 to 1980 worked to inhibit the price formation, it was rather small, an annual rate of 4.1 percent, compared to the previous period.

In an international comparison of agricultural product prices, there are such problems as the influence of export subsidy measures on international prices; for example, when Japan's agricultural product costs are compared to the world's average import costs, Japan is high in such items as the land use style agricultural sector's rice, wheat and meat, but is at the same level or lower than international prices in such things as chickens and eggs.

More important, since 1977, in contrast to the fact that the tempo of price increases for domestic agricultural products has slowed down, international prices have increased, and there is a trend toward a reduction in the range of disparity with international prices in expensive items.

[15 May 82 p 3]

[Text] Trends in Agricultural Product Demand

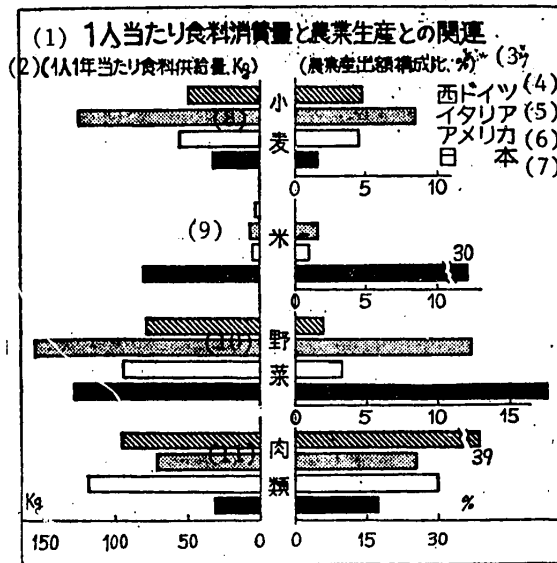
Diet and Health

As pointed out in the first article, the content of the national diet has changed greatly, and compared to the diet of the United States and Europe, the Japanese diet has several distinctive features; an individual diet pattern which must be called "a Japanese style diet" continues:

According to the white paper, those distinctive features are as follows:

- 1) The caloric supply difference. In contrast to the fact that the national annual per capita caloric supply in the United States and Europe is more than 3,000 kilocalories, in Japan it has remained almost constant at approximately 2,500 kilocalories.
- 2) Compared to the United States and Europe, the ratio starch occupies in the caloric supply is high, about half.
- 3) The ratio animal protein occupies in protein supply is low and even in animal protein, the ratio of fish and seafood is 45 percent, remarkably high compared to the rate of less than 10 percent in the United States and Europe.

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Key:

1. Relationship Between Per Capita Food Consumption and Agricultural Production
2. (Amount of per capita food supply in kilograms)
3. (Agricultural production distribution ratios in percentages)
4. West Germany
5. Italy
6. United States
7. Japan
8. wheat
9. rice
10. vegetables
11. meat

The result of such food intake is that a proper balance has been obtained in the ratio calories found in the three great nutritional elements--proteins, fat and carbohydrates--occupy in the caloric supply, and the so-called "Japanese style diet" has taken root.

In Japan, a diet which has added various types of fish and seafood, animal products, vegetables and fruit to rice, the core of the diet, has been formed. Likewise, the ratio of Japan's caloric intake has been improved in the form of fat substituting for carbohydrates; on the average, the rate is at a desirable level.

On the average, the diet of presentday Japan has reached a nutritional balance, but problems exist in terms of the individual diet. The greatest problem is the possibility of a nutritional imbalance depending on the tempo of change in the diet. Likewise, there is the fear that the diet will move in the direction

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of a diet unrelated to Japan's climate and natural resources. Concerning a diet imbalance, according to the Ministry of Health and Welfare's "National Nutrition Survey," a wide dispersion can be seen, such as the fact that 27 percent of households have an intake of more than 3,000 kilocalories, 20 percent greater than the average required daily caloric intake of 2,500 kilocalories for the adult male; and in contrast to this, there are about 10 percent of the households with less than 2,000 kilocalories, more than 20 percent below the required caloric intake.

In recent years, the lengthening of the average lifespan is due greatly to medical achievements, but at the same time it is due in no small part to improvement of the diet. For example, it is reported that people with a longevity of more than 100 years have dietary habits rooted in agriculture and fishing in the districts with lightly seasoned fish, eggs and vegetables and with rice as the staple. Consequently, it is important to strive to give root to a Japanese-style diet which has as its core rice and such products rooted in Japan's natural features, by means of promoting food product measures in league with nutrition measures and cultural-educational measures.

[19 May 82 p 3]

[Text] International Agricultural Products Supply and Demand and Japan's Agricultural Products Trade

International Agricultural Products Supply and Demand and Food Supply

In the fifties and sixties, the international supply and demand for such products as grain underwent a transition with a basic surplus, but in the seventies this supply and demand became generally unstable and arrived at the present situation. The reduction in grain and the like due to worldwide abnormal weather conditions in 1972, and the large-scale purchases of grain by the USSR and others completely changed and caused a tightening of the international supply and demand from a basic surplus up until that time, and brought about the sudden rise in international prices. After that, there followed a poor harvest in the United States in 1974 and crop failure in the USSR in 1975, so the world's total grain stock was 120 million tons at the end of 1975-76. (At the beginning of the sixties it was 190 million tons), so the stock ratio fell to 12 percent.

Even though the international supply and demand for grain since 1976-77 has on the whole been blessed by good weather and stabilized because of production increases, inasmuch as there was increased production in the United States and a sharp reduction in production in the USSR in 1979-80 reductions in production in both the United States and the USSR in 1980-81, and a bad harvest in the USSR and a bountiful harvest in the United States and Canada in 1981-82, the international supply and demand in grain increased its degree of instability in comparison with the previous periods, and the range of fluctuations in international prices was great.

The international supply and demand in grain and the like destabilized. And in the midst of this, the white paper enumerated as questions which should be

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regarded in connection with the long-term view of the world's future food supply and demand, such major destabilizing factors as: 1) increased fluctuations in harvest amounts due to weather conditions; 2) increase in supply and demand of feed grains because of population increase; 3) increase in Soviet and Chinese imports; and 4) rise in the position of the United States in the world grain market. These are factors not allowing optimism about the future of international long-term supply and demand.

While considering many important factors surrounding such a world food supply and demand, the white paper has the following long-term view of the world food supply and demand.

Looking at the increase in food supply and demand accompanying the population increase and economic growth, and the food production possibilities, it seems the degree of imbalance in food supply and demand by region will increase still more. According to estimates of the FAO (Food and Agriculture Organization of the United Nations), the grain shortage amount in the developing countries (trade amount) has the prospect of expanding from an average 36 million tons in 1978-79 to 150 million tons in the year 2000.

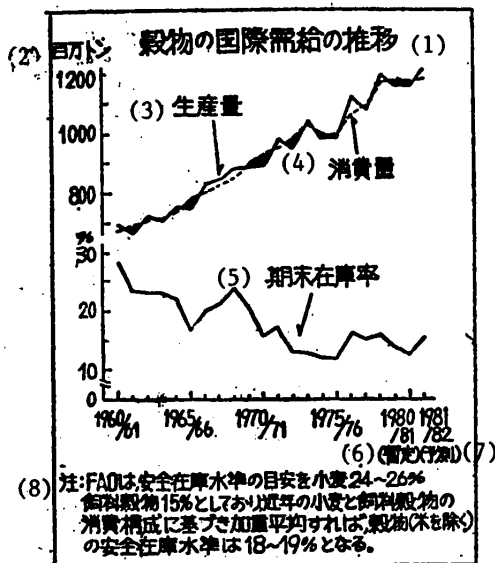
In the developing countries, despite the increase in production and imports, not much of an increase in per capita consumption can be anticipated because of population increases. In the developing countries, that part of the amount of increase in demand by the year 2000 allocated to per capita consumption increase will be no more than 20 to 30 percent.

The arable land limitations will be severe, and with that, grain production cannot help but rely even more on single harvests. According to the U.S. Government's "The Earth in the Year 2000," the world's arable land area will increase only 4 percent by the Year 2000, and in answer to the expanded demand, there will be more hope placed on increased use of fertilizers.

Marginal land will be cultivated, and the intensive use of arable land will advance. As a result, the instability of grain production will increase. On the one hand, the expansion of cultivation to marginal land will increase the influence of weather fluctuations; because the degree of intensity of land use will rise, there is concern about the creation of such problems as the decline of certain regions, soil erosion, the making of deserts and salt accumulation.

With regard to Japan, it relies on foreign countries for many products, such as grain and soybeans, and it is possible to envisage interference in the overseas food supply due to some kind of unforeseen situation. Consequently, it is important to work for the stabilization of imports of those products for which we must rely on imports together with providing as much as possible through domestic production those agricultural products which can possibly be produced domestically, while working for an improvement in production. Parallel with this, it is necessary to insure food security, including international emergency reserves in many countries against unforeseen situations.

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Key:

1. Changes in International Supply and Demand in Grain
2. 1 million tons
3. production amount
4. consumption amount
5. ratio of stock on hand at the end of the period
6. 1980/81 (tentative)
7. 1981/82 (estimated)
8. N.B. FAO has set the criteria for a safety reserve level of wheat at 24-26 percent and feed grains at 15 percent; based on the structure of wheat and feed grain consumption, the safety reserve level for grain (except rice) is 18-19 percent as a weighted average.

[22May 82 p 3]

[Text] Price of Agricultural Products and Trends in Food Industry

Price of Agricultural Products and Agricultural Production Materials and Consumer Food Prices

Agricultural producer prices are moving narrowly upward because overall supply and demand for agricultural products is basically easing. The rate of price increase in agricultural products which are the subject of pricing policies, such as rice, wheat, milk, swine and beef cattle, is being held down.

Japan's agricultural producer price increase rate (an increase rate of 5.3 percent in the period April through December 1981 compared to the same period the previous year) was high in the mid-sixties to mid-seventies, but from the

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mid-seventies on it has been rather low. This is the result of agricultural product pricing policies having been applied properly from the standpoint of prevention of excessive price changes, introduction of agricultural products corresponding to demand, and maintenance of agricultural income.

Also, the price of agricultural production materials, which showed an upward tendency reflecting increases from such overseas factors as light and heat, fertilizer and feed in FY-80, showed a quiet movement in which the increase rate in the period April through December 1981 compared to the same period of the previous year was 4.3 percent, due to the fact that in FY-81 the price of composite feed and fertilizer was reduced.

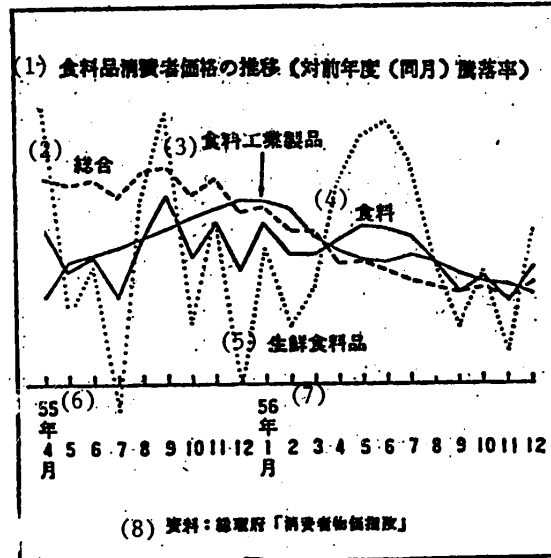
Also, according to the "Agricultural Household Economic Survey," agricultural management expenses, such as the expense of agricultural production materials, are tending to increase compared with the sluggishness in growth of agricultural gross earnings; and even though the comparative ratio of agricultural management expenses versus agricultural gross earnings declined a little, from 48 percent in 1970 to 45 percent in 1975, it rose to 61 percent in 1980 because gross earning leveled off due to the influence of cold weather damage. When a breakdown of agricultural management expenses is viewed by category of the scale of cultivated land managed in cities, towns and prefectures, the smaller the scale, the greater the proportion which farm machinery and equipment expenses, especially depreciation costs, occupy in management expenses. The white paper pointed out: "In order to stabilize agricultural management hereafter, it is important to use invested material efficiently, especially farm machinery and equipment, along with stabilizing the cost of agricultural production materials.

Next, according to the "Manufacturing Statistics Survey: the average scale of industries supplying agricultural materials, excluding the agricultural machinery and equipment manufacturing industry, far exceeds the average of all manufacturing industries both in amounts shipped and value added amount. Likewise, when the recent earnings of the main enterprises are viewed, even though earnings of all manufacturing industries are comparatively favorable, including the chemical industry and machinery manufacturing industry, there is a great difference in the favorableness and unfavorableness depending on the industry. In industries supplying agricultural production materials, profits have been low in the chemical fertilizer manufacturing industry, farm machinery manufacturing industry and composite feed manufacturing industry. In particular, the chemical fertilizer manufacturing industry, whose overall competitive power is weak due to the difference in raw materials used, is showing a move to reorganize the industry because the industry continues in an organizational depression and a growth in demand is not anticipated.

Agricultural producer prices have given indication of a relatively restrained movement, but the overall increase rate in consumer prices has dropped greatly since 1976. In 1980, the overall increase rate in consumer prices was 7.8 percent; in contrast, food product prices remained at 5.3 percent. Even though food prices for the period April through December 1981 increased 5.1 percent over the same period the previous year, when prices were relatively steady and food prices changed and exceeded overall consumer prices, recently there has been almost no difference.

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Key:

1. Changes in Consumer Food Prices (fluctuations compared to previous year, same month)
2. overall
3. food industry products
4. food
5. perishable food
6. 1980
7. 1981
8. Data from Prime Minister's Office's "Consumer Price Index"

The reason food prices have changed steadily is that besides the fact that agricultural food product prices have basically changed with a bearish tendency, their movement has also steadily changed in terms of processing and distribution. Even when compared with the United States and the major European countries, the increase rate of Japan's food prices is the lowest increase rate after West Germany.

[26 May 82 p 3]

[Text] Agricultural Product Prices and Trends in Food Industry

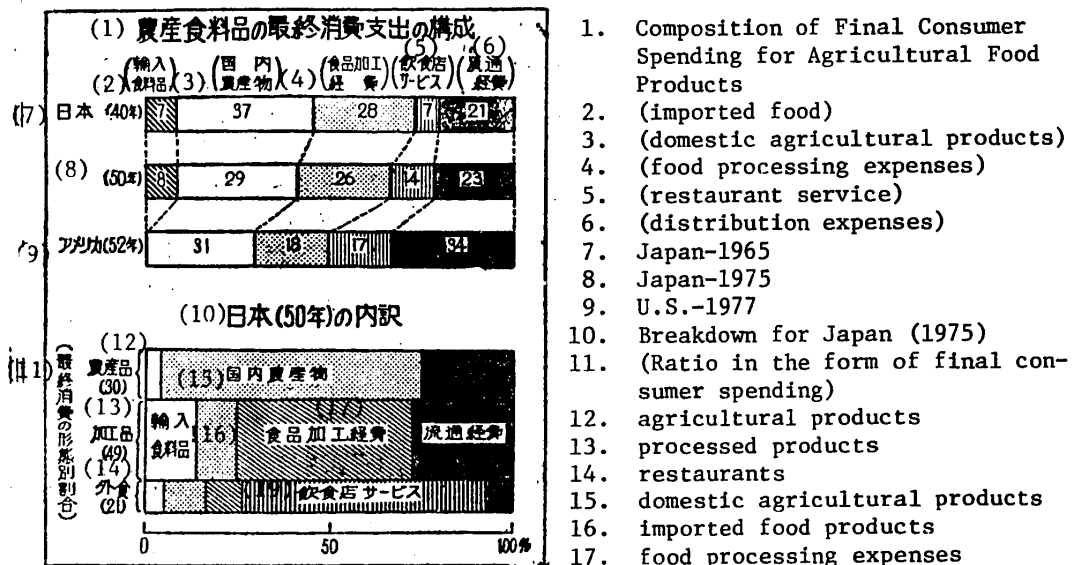
Trends in Food Industry

On the whole, a slowing down tendency continues in the growth of food demand, but in that, because the growth in expenditures for processed food and foods eaten out, which have a high degree of service added, was relatively high, the proportion processed foods and restaurant foods occupy in food consumption costs continued to increase, and reached 60 percent in 1980.

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The food industry in that sector, such as the processing and distribution of food products and restaurant food industries, which link production of agricultural products and food consumption, is functioning as a stable supply of food, standing side by side with agriculture and the industry supplying agricultural production materials, and occupies an important position in the national economy. Even though the proportion the food industry occupies in total industry has declined slightly in terms of production, it is still 8 percent, and in terms of people employed is 10 percent. In the food industry, the weight of the food products industry has dropped and the weight of restaurant service has risen.

According to the "Industrial Statistics Survey," the scale of the food products manufacturing industry occupies a large proportion, 11 percent, of total manufacturing industries, with 84,000 places of business, 848,000 employees and 21 trillion yen in amount of products shipped. Its major characteristics are that the value added rate is low and the rate of raw material usage is high. This tendency is especially remarkable in the basic raw material type industries, such as flour mills and the oil industry. However, in recent years, reflecting the diversification of diet, there has been great growth in high value added industries, such as the processing industry, and seasonings and prepared food manufactures where there is an especially large amount of service added.



- 18. distribution expenses
- 19. restaurant service

A recovery in food manufacturer earnings has been slower than that of other manufacturers, but it is understood that this is due to the fact that growth in demand in processed foods has slowed down recently, and in the midst of the movement to a basic easing of manufactured product supply and demand, cost increases could not be shifted easily due to the sudden rise in oil prices and the drop in the yen.

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Likewise, comparing the productivity of the food manufacturing industry in terms of the per-capita employee value added amount with all industry, in the years 1970 to 1972 they were at about the same level, but the differential expanded to 90 percent in the years 1973-78, and to 80 percent in 1979. It can be seen that the major factors are that until 1979 the differential expanded in relative terms in both value added ratio and labor and equipment ratio, and furthermore, since 1979, hand in hand with a leveling off in sales, the material fixed assets turnover dropped in relative terms.

Thus, the economic environment surrounding the food industry is severe, but there is a trend toward developing many new products, such as high-grade processed foods and health foods corresponding to the changes in consumer needs. For example, there is enthusiasm for the development and introduction of new technology, such as vigorously wrestling with cooperative development of an aseptic replenishment system of the food industry as a whole is at a low level compared with other manufacturers, a ratio of 1 to 2 researchers per 10,000 employees, and a ratio of 1 to 3 in research expenditures per company.

Based on the actual situation of such food industries, the white paper concludes that "while planning to raise the base level of technology of the food industry as a whole, including small-to-medium enterprises, and to introduce ultramodern technology from other fields to the food industry, it is vitally important to strengthen the management basis of the food industry via the development of high-value-added products which precisely meet consumer needs more than previously.

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SCIENCE AND TECHNOLOGY

MITI POLICY GUIDES PLANNING IN VARIOUS INDUSTRIES

Coal Liquefaction Technologies

Tokyo ASAHI SHIMBUN in Japanese 27 Apr 82 p 8

[Text] The Ministry of International Trade and Industry [MITI] and the New Energy Development Organization [NEDO] have set a policy of unifying, within 2 years, the three types of domestic coal liquefaction technology undertaken by Japan's energy industry. Until now development efforts have been scattered in fostering new technology, but the intention now is to develop technology efficiently as the scale of plant operations grows larger. There is a world-wide oversupply of petroleum, and European and U.S. interest in coal liquefaction technology has diminished. But Japanese technology, which has grown with financial aid from the government, is facing a period of reorganization.

There are four varieties of coal liquefaction in Japan: the "direct hydrogenation" method of Nippon Kokan KK and Mitsui Shipbuilding and Engineering Co, the "solvent extraction" method of Sumitomo Metal Industries, the "solvolysis" method of Mitsubishi Heavy Industries, and the KOMINIC project of Kobe Steel Ltd and others. The first three methods are to be integrated.

A direct hydrogenation experimental plant handling 2.4 tons per day was just completed on 20 April, and 1-ton per day experimental plants were completed in December 1981 (solvent extraction) and December 1981 (solvolysis). Research on improvements will continue until FY-83 for each of these, and data will be gathered on coals and solvents used, and on proportions of liquefaction products.

As for future development plans, MITI intends to bring together the superior aspects of the three technologies and complete an experimental plant with a capacity of 250 tons per day by the second half of the 1980's. The intention is to cut expenses and concentrate technical personnel, but the various firms are making every effort to have large parts of the technology they have developed incorporated in the experimental plant. Fierce competition over development can be expected to unfold in the next year or two.

In the United States, construction of the SRC-II commercial plant planned by Gulf and others has been stopped, and Exxon has slowed down development of its EDS method. The primary reason for this is that oil prices are down, making

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prospects for early realization of relatively expensive coal liquefaction dimmer than ever. Japan is the only advanced country which is enthusiastic about development of alternative sources of energy, but even in Japan the government is not able to supply unlimited funds.

As for the KOMINIC project, construction of a 50-ton-per-day plant has already begun in Australia, but because this uses only Australian lignite, MITI has decided it should be developed separately from the other three technologies.

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Petrochemical Industry Reorganization

Tokyo NIHON KEIZAI SHIMBUN in Japanese 10 May 82 p 1

[Text] MITI considers it is necessary to greatly reduce production costs in order to restore the competitiveness of Japan's petro-chemistry industry, and has firmed up a reorganization plan which will cut in half the number of ethylene production sites at the 15 petrochemical complexes across the country. The smaller and older facilities which make up about 30 percent of total capacity will be closed, consignment production and cooperative production will be encouraged, and ethylene production will be concentrated at six or seven plants at locations such as the coast of the Inland Sea, the shore of Tokyo Bay and Yokkaichi District. To bring this about, MITI wants to incorporate its policy in the final report of the chemical industries subgroup of the Industrial Structure Council at the beginning of June. Its recommendations on taxes and financial measures necessary for dealing with the facilities to be closed are to be brought together in a "Materials Industries Revitalization Bill" (working title) by the end of the year, and submitted to the next regular session of the Diet.

Under MITI's concept, industrial concentration is a method by which the government can allow the industry to create a plan to eliminate excess facilities by closing inefficient ethylene plants and promoting commission production at large plants with capacities exceeding 300,000 tons per year. In principle this would all be left to voluntary action by the industry, but MITI has a general goal of reducing the number of ethylene centers--15 at present--by about half.

If the specifics of this concentration are considered region by region, the northernmost location is the plant Mitsubishi Petrochemical Co will operate independently in Kashima District. In Chiba District, Mitsui Petrochemical Industries, Sumitomo Chemical Co, Maruzen Petrochemical Co and the new Idemitsu Petrochemical Co will carry out integrated ethylene production. In Kawasaki District, operations by Tonen Sekiyukagaku KK and Nippon Petrochemicals Co will be integrated; and in Yokkaichi District, operations by Mitsubishi Petrochemical Co and New Daikyowa Petrochemical Co will be integrated. The five existing centers on the Inland Sea and Kyushu coasts (Mitsui Toatsu Chemicals and Izumikita; Mitsubishi Chemical Industries and Mizushima Manufacturing Co; Asahi Chemical Industry Co and Mizushima Manufacturing Co; Idemitsu Petrochemical Co and Tokuyama Soda Co; and Showa Denko KK and Oita) will be concentrated into two or three centers.

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The candidates for complete closure are the plants with poor energy efficiency and relatively high production costs, such as Sumitomo Chemical's Ehime plant and Mitsui Petrochemical's Iwakuni and Otake plants. In districts in which there are both 300,000-ton facilities and facilities of 200,000 tons or less, the smaller ones will be shut down.

Japan's total production capacity for ethylene, which is regarded as a basic raw material, is about 6.2 million tons at present, and the total capacity of active facilities is about 5.4 million tons. However, actual production in 1980 was 4.8 million tons, and in 1981 it dropped even further to 3.6 million tons. Pressure from imports of foreign petrochemical products is expected to continue to increase, and it is the view of a MITI official that after 1985, "it will be all Japan can do to produce 4 million tons a year."

In such circumstances, MITI expects the closing of facilities with a total capacity of 1.74 million tons: about 840,000 tons in obsolescent facilities which are actually closed already plus about 900,000 tons in smaller facilities (under 200,000 tons per year) which will soon be fully depreciated. As a result, total ethylene production capacity will be reduced to about 4.5 million tons and, if high-efficiency operation in large-scale plants becomes possible, the international competitive strength of Japan's petrochemical industry will be increased.

To support the reorganization of the petrochemical industry, MITI is considering a "materials industries revitalization bill" which will incorporate tax incentives for shutting down facilities, and measures to provide low-interest loans through financial institutions with government ties and to relax application of antitrust laws.

In April 1981 the Industrial Structure Council convened a working group on the petrochemical industry which is now deliberating revitalization of that industry. The interim report of December 1981 recommended improvement of the mechanism for purchasing raw naphtha (crude gasoline), which is available only at prices higher than those in Europe and the United States, and review of the disorderly industrial structure in which there are too many firms. This would include a raw materials policy in which price-setting is linked to international price trends in order to eliminate raw materials situations which are unduly unprofitable. But the influx of relatively cheap foreign imports has continued; it is urgent that Japan's petrochemical industry, if it is to survive, be concentrated to restore its international competitive strength by means of decisive cost reductions.

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Stockpile of Rare Metals

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 20 Apr 82 p 1

[Text] MITI has firmed up its intentions to create a national stockpile of rare metals, and has begun concrete preparations. Rare metals are essential materials for products of advanced technology and a broad range of industrial products, and stockpiles are being accumulated in Europe and the United States; although belated private stockpiles will be started with government assistance this summer, these will be inadequate in terms of economic security, so it was

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decided to promote stockpiles on a national basis. There is, however, disagreement in both governmental and private sectors regarding fiscal measures, economic feasibility, and the necessity of such stocks. Thus the emphasis of MITI's preparatory work will be on informational activity and creation of a theoretical framework; promotion of national stockpiles will be incorporated in a new policy in FY-83 at the earliest.

Although there is no clear definition of rare metals, those involved include cobalt, chrome, molybdenum, strontium, tungsten, and nickel. These are the "vitamins" of modern economic society in that they bring out the utmost capabilities of materials and equipment, and are indispensable in industrial products.

Many of these metals, however, are found only in specific regions, and in more than a few cases they are concentrated in regions of political instability.

Therefore, the United States and the countries of Europe began long ago to accumulate these metals to assure a stable supply from the perspective of economic and military security. The United States, France and Sweden, for example, have established large stockpiles on a national basis (a 3-year supply in the United States) in preparation for a cutoff of supplies from producing countries, and Britain and West Germany have also begun consideration of national stocks. In such circumstances, it has been decided that Japan, too, will finally begin private stockpiles with government aid in FY-82. To accomplish this, the government will provide interest subsidies for two-thirds of the interest on stockpile costs to the Metal Mining Agency (the stockpiles will actually be run by an ad hoc association for metal stocks); the budget impact will be 10.5 billion yen. It is a 9-months budget, so the stockpile is to start in July; the immediate plan is to acquire 10-day stocks of nickel, chrome, cobalt, molybdenum and tungsten.

Although MITI considers private stockpiles with government assistance to be a step forward in terms of economic security, they will not be adequate from the perspective of real strength, and MITI has begun promotion of national stockpiles. But as in the case of the petroleum reserve, there will be problems in that national reserves of resources naturally mean an increased burden on national fiscal resources and on the private sector, and industrial circles have a growing desire to engage in research and development of new materials in order to escape dependence on rare metals.

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Facilities Investment in 1982

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 28 Apr 82 p 1

[Text] MITI has surveyed the 1982 facilities investment plans of the major businesses under its jurisdiction, and it made a summary report to the financial subgroup of the Industrial Structure Council on the 27th. The main points are that (1) on a project basis, 1982 facilities investment plans total 11.926 trillion yen, up 8.2 percent from actual investment in 1981; (2) most of the

increase will be in steel, electric power and leasing--other industrial sectors will increase only 0.3 percent; (3) investment in the last half of FY-81 was up 19.1 percent from the previous half, but that in the first half of 1982 will be down 1.5 percent from the previous half, and the second half of 1982 will be up 2.0 percent from the previous half, so investment in FY-82 will be at about the level of the second half of 1981.

On receiving this report, the financial subgroup pointed out, with regard to 1982 facilities investment, that (1) the rate of growth has fallen off; (2) there is little desire to replace aging facilities; (3) the tendency toward self-financing seen in recessions has begun to appear. The subgroup also advised the minister of international trade and industry of the necessity of flexible economic management policies and individual measures for the materials industries.

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Copper, Lead, Zinc Production

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 28 Apr 82 p 5

[Text] This year's supply and demand estimates for copper, lead, zinc and other metals came out on the 27th. According to MITI's report to the financial subgroup of the Industrial Structure Council, copper production will be 1,071,000 tons (up 1.9 percent from estimated production for the previous year), and shipments and domestic consumption will be 1,332,000 tons (down 1.6 percent). Lead production will be 227,000 tons (no change), and shipments will be 256,000 tons (down 4.3 percent). Zinc production will be 658,000 tons (down 0.6 percent) and shipments will be 673,000 tons (down 2.9 percent). Because of the economic downturn, demand cannot be expected to increase, and demand will show negative growth in any case. But production was at a record high level last year, and the estimate of a further increase is striking.

Estimated 1982 Nonferrous Metal Production and Domestic Demand (shipments) in Thousands of Tons

Metal	Year	Produced	Change from previous year	Shipped	Change from previous year
Copper	1982	1,071.0	+1.9%	1,332.0	-1.6%
	1981	1,051.0	+2.5%	1,353.6	+2.2%
Lead	1982	227.0	0%	256.1	-4.3%
	1981	227.0	+2.2%	267.7%	+2.8%
Zinc	1982	658.0	-0.6%	673.2	-2.9%
	1981	662.0	-6.6%	693.6	-1.5%

This year's estimated supply of copper, including domestic production, imports and reprocessed metal, will total 1,382,000 tons (down 28,000 tons from the previous year). Demand, including 50,000 tons in exports as well as domestic demand, will also total 1,382,000 tons. The overall supply will be down slight-

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ly from last year, but consignment refining for America's Anaconda Copper has increased yearly since domestic production reached the million-ton level in 1980, and a new record is expected to be posted this year. It was thought that the closing of important mines overseas would mean an ore shortage and reduced production, but MITI says it will be possible to procure enough ore to produce 1.7 million tons.

In 1981 demand was strong in the electrical wiring and electrical machinery sector, but there were cutbacks in the rolled copper sector; domestic demand reached a record high. This year, however, good materials are lacking for both electrical wire and rolled copper, and a slight reduction from last year is expected. Export levels will remain unchanged. The refining capacity of the eight copper producers is 1,247,000 tons. Each year refineries have operated closer to full capacity; because of a slight increase in consignment refining, they are expected to reach a high-level 85.9 percent of capacity this year.

This year's estimated lead supply, with 36,00 tons of imports in addition to domestic production, is 263,000 tons (down 2,700 tons). Total demand, with 4,000 tons of exports in addition to domestic demand, is to be 263,000 tons (down 9,800 tons). For the last 5 years lead production has stayed in a range of about 22,000 tons; the tone of the market has not really changed.

The refinery capacity of the six lead companies is 297,000 tons per year and this year, at least year, they will be operating at 76.4% percent of capacity.

This year's estimated zinc supply, with 37,000 tons of imports in addition to domestic production, is 695,000 tons (up 2,500 tons). Total demand, with 36,000 tons of exports in addition to domestic demand, is to be 709,200 tons (down 3,600 tons). Zinc production has fallen since 1980 because of depressed demand and inadequate ore supplies, and will continue to decline this year. Demand for galvanized iron sheeting, which accounts for 40 percent of domestic zinc demand, remained low in 1981 because of depressed housing construction and exports to the United States. Demand for galvanized iron sheets is not expected to recover this year, and demand for zinc for copper rolling and die casting will also remain poor; demand this year is expected to be even lower than last year.

Thus the six zinc producers will operate at only 64.5 percent of their annual refinery capacity of 1.2 million tons; this will be a record low.

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SCIENCE AND TECHNOLOGY

AUTOMOBILE PARTS INDUSTRY'S STRUGGLE INVESTIGATED

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 23, 24 Feb, 2, 16, 17, 24, 30, 31 Mar 82

[23 Feb 82 p 8]

Stanley Electric

[Text] Last summer Honda Motor Co developed an "electro gyrocoator," a microcomputerized (micon) driving guidance system and surprised people in the automotive industry. It was because Honda had steadily maintained a negative attitude toward car electronics until the time of disclosure that it was so shocking. However, the development of the system was more than a mere symbol of Honda's "transformation." It was in fact an event in which the new start of Stanley Electric, which cooperated with Honda as a partner, was announced to the world.

Stanley Electric is a major car lamp maker which receives part of its capital from Honda Motor. The business picture was favorable until the first half of last year, but the winds of fortune turned away starting about the time the voluntary restriction of automobile exports to the United States was decreed. Requests from automakers to cut the unit purchase price were steadily heard. Furthermore, the company decided to open a plant in America at the request of Honda, which added to its liabilities. Accounts settled in March of this year are expected to show a 9.8-percent increase in sales compared to the previous term, but a drastic drop in operational profits, by 28 percent to 3.1 billion yen, is also expected. "We must do something; otherwise a long-term strategy will be inconceivable," was the grumble overheard (Vice President Tatsumi Doi), and Stanley strenuously undertook various maneuvers to change the precarious condition in which the company found itself.

One of the "crystals" of the struggle was the "electro gyrocoator" disclosed by Honda. It is not an overstatement to claim that the device symbolized the start of a full-scale car electronics strategy as far as Stanley is concerned.

The "electro gyrocoator" is a system developed by remodeling inertial navigation technology for aircraft to suit automobiles. It is the first car electronic device to integrate a 16 bit microcomputer. The device accurately detects the driving direction of the car and displays pictures of the driving track

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on a TV type Braun tube. It is designed to indicate to the driver the current position of the car and the shortest course to the destination when a transparent sheet road map is placed over the screen. The microcomputer was supplied by Alps Electric, but the system itself was developed by the Honda-Stanley combination from the basic research to the final product.

Stanley is, after all, an old established semiconductor related product manufacturer. Since the company began with the manufacture of resistors in 1935 and selenium rectifiers in 1940, it has earned a reputation of its own as a semiconductor maker. During the war, the company also dipped into the manufacture of radar systems, and the accumulation of these experiences blossomed as the "electro gyrocopter." With the development of the system as a springboard, Honda has embarked on a serious car electronic strategy lest it be left behind the times, while Stanley has snuggled deep into Honda's embrace. Honda also has a close relationship with Nippon Denso and Oki Electric Industry, but it seems to have chosen Stanley as a valid partner.

Supplying semiconductor elements is one thing, but it is important to keep secrets when developing strategic merchandise. Nippon Denson is a maker in the Tokyota Motor group. That is why Honda, which holds 5 percent of Stanley's stock, chose Stanley as a valid partner.

Since the development of the "electro gyrocopter," the two companies have taken joint steps in the development of basic technology. For instance, they have begun to work to produce new car electronic devices as they exchange information through engineers leased out for several months. From the standpoint of Stanley, the new partnership gives the company a chance to make the most of semiconductor application technology and car lamp technology, and what is more, it offers plenty of business opportunities. This arrangement "kills two birds with one stone."

Nevertheless, it requires Stanley to be well "fortified with logic" to conduct joint research with Honda's technical camp, which bombards Stanley with ideas. Stanley has selected a special staff of engineers and has started to send them to universities and research institutes in Japan and to private electronics research institutes overseas. For the next few years, these engineers will undertake intensive learning so that the competence of Stanley's technical camp will be improved.

Furthermore, Stanley is presently negotiating with the largest American general electrical machinery maker, GE (General Electric), about working together on car lamps. These business talks were initiated by GE, which indicated a desire to supply lamps through Stanley to Honda's passenger car plant in Ohio. Stanley is steadily preparing for the deal, hoping to learn something of GE's advanced technology.

"We must waste no time in building up another foundation of business which can be equal to the car lamp business." Stanley is frantically trying to fortify its car electronics strategy. It may not be able to expect an immediate improvement in business results, but new business opportunities will

slip by before its eyes and it will be washed away by the waves of selection unless it invests ahead of time. The environment surrounding Stanley is that austere.

[24 Feb 82 p 9]

Nifco

[Text] The largest automobile fastener (locking device) maker, Nifco, has joined the fashion industry. The company has begun to sell plastic fasteners for handbags and mountaineering sacks. Grins President Toshiaki Ogasawara: "Although the same fasteners are used, the unit price of fasteners delivered for fashion use rises every year almost without fail." Annual sales are still barely around 500 million yen, but the company has set its heart on "making fasteners into its mainstay item in the near future at all costs."

Nifco is currently so busy as to be envied by other automobile parts makers. This is because the demand for plastic fasteners has continuously increased due to the progress of miniaturization and weight reduction of automobiles. For example, in the case of the "Corona" of Toyota Motor, the fitting of plastic fasteners which cost 680 yen per car a half-year ago is now 1630 yen. For Honda Motor's "Accord," the same charge was inflated from 980 yen to 2500 yen. Nevertheless, regarding fasteners for automobiles, a request for a cut in the unit purchase price is persistently getting louder, while, on the other hand, demand increases. True, it is busy, but the profits from the work are not as great as they should be.

"Somehow we must realize larger profits if we want our business to grow," thought (president Ogasawara), and he made an entry into the fashion industry. At present, automobile-related business is on the upswing, but the company reportedly would be in difficulty if this demand were to start slowing down. According to President Ogasawara's explanation, the fashion industry is fortunately a conglomeration of small businesses and therefore, he says, a newcomer need not expect a great many counteroffensives from existing makers. It does not appear to be a dream for Nifco to incorporate the fashion fastener business into its main sector much earlier than expected if the correct approach is taken.

Nifco is an automobile parts maker which was organized in 1967 by the joint venture of the former Nichiei Bussan and a large American industrial fastener maker, ITW (Illinois Tool Works, Inc; capital subscription ratio 32.1 percent). It has been 15 years since the company started, and in that short time the company has established its status as the largest automobile fastener maker. Partially the success is attributable to the lack of competitive makers, but the significant factor was that the Nifco fasteners were a new idea.

The company introduced easy-to-fit plastic fasteners to the world one after another as products replacing metal bolts and nuts. The majority of the products are derived from an idea similar to the "Columbus egg," and that's what made the business a success. The same concept seems to have driven the company into the fashion industry. Besides automobile fasteners, the company

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also manufacturers fasteners for keyboards of VTRs and computers, and lids for plastic food and detergent containers. Profit can hardly be realized unless the products are sold in large volume, since the unit price of each article is low. Among the various channels where the company has tried to seek business opportunities, the fasteners for the fashion industry appear to be promising.

The price of fashion products rises with the change in style, and the price of parts such as fasteners also follows that upward move. An effort to reduce the cost of automobile fasteners will be reflected to some extent in the cut of the unit purchase price. However, such a practice is rarely seen in dealing with fasteners for fashion products. With luck, it is said, the same fasteners will be purchased at a higher price than the previous transaction because of the price hike in the products to which the fasteners are to be fitted.

As rosy as it may sound, in merchandising, new ideas must be constantly created to expand the level of demand. When it runs out of ideas, it is certain that Nifco's business growth will be dampened. With this notion, it is emphasizing technical development. It frequently holds meetings and seminars in order to concentrate the knowledge of the technical community. It is said it tries to merchandise any trivial idea if it sounds interesting at all.

Ideas spouting from the mouths of the technical staff members are steadily inflating: Let us not stop with handbags and mountaineering sacks but grab the demand greedily for any parts that "fasten things together," starting with fasteners for women's coats.

Likewise, the company entertains plans to advance eventually into overseas markets. At present, it is not possible to advance directly into overseas markets because of the relationship with ITW, the partner in the joint venture. However, recently ITW conveyed its intention: "We are not unwilling to reduce the capital subscription ratio down to around 20 percent in the near future." If ITW were to drop its capital subscription to around 20 percent, President Ogasawara, who holds 29.2 percent shares, would become the biggest shareholder and could launch his own overseas strategy.

How much fruit will be borne by the attempt of Nifco? The next 2 years will be the critical time for the well being of the company.

[2 Mar 82 p 8]

Aishin Seiki

[Text] The real ability of Aishin Seiki in the field of functional parts is in the top class, needless to say, among the companies in the Toyota group and also in the entire industry. Now, however, President Norio Nakai is intensively studying the next course for the company to take. The president remarked: "The conditions surrounding the automobile industry are so austere as to necessitate the joining of Toyota Motor and Toyota Sales." The company is preparing to ride out that hardship by implementing a plant reorganization plan ahead of schedule and by speeding up development of new products.

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All through February, President Nakai energetically visited the 98 cooperating companies that constitute the Central Regional Association for Cooperation with Aishin. During his hardest schedule, he is said to have visited 10 companies in a day. He visits with them every year "to express gratitude for the cooperation of the previous year and to exchange views with the top administrators of the cooperating companies." However, the enthusiasm of President Nakai has escalated this year compared to an ordinary year since the company plans to achieve the goal of the "V85 project" before the end of next year.

The "V85 project" is a medium-term operational project of the company in which FY-85 was initially designated as the final year. However, judges President Nakai: "We might be too late to be competitive if our goal is set on 1985 when, reportedly, the peak of the world's small car war will be reached." Last year, the president accordingly gave the order to his company to realize the project 2 years ahead of the original timetable.

The two major pillars of the project are plant reorganization and development of new products. The company has seven plants, including the Anjo plant (Anjo-shi, Aichi-ken) for production of home appliances. Reorganization will be carried out in five plants engaged in the production of automobile parts among these holdings.

First of all, the water pump and oil pump production line of the Kariya plant (Kariya-shi) will be transferred to a new workshop added on the grounds of the Nishio plant (Nishio-shi), and the emptied space of approximately 18,000 square meters in the Kariya plant will be utilized as a research and development facility that includes a trial workshop. As a result, the trial workshop of the Shintoyo plant (Toyota-shi) will move to the Kariya plant, and the mole production line of the Shintoyo plant (Hekinan-shi) will be transplanted to this workshop site, while the assembly line for parking brakes and seats of the Shinkawa plant (Hekinan-shi) will be brought into the emptied former mole production line.

The space created in the Shinkawa plant will be occupied by the seat adjuster welding process which currently exists within the same plant, and the emptied space will be remodeled so as to double the size of the present mechatro product workshop. Also, an addition will be built to the Shiroyama plant (Nishio-shi) to increase the production of small-truck transmissions. Production of transmissions for small trucks will be vested entirely with Aishin, including those that were produced by Toyota Motor itself. The current production of approximately 20,000 transmissions per month will be inflated more than two times to 40,000 to 45,000 units by the summer of next year.

Among the results of expeditious product development, a recent public announcement of low-cost metal short fiber can be named. Mass production of this fiber became possible for the first time in the world due to the "fine vibration cutting method" developed by the company. The manufacturing cost of the fiber was reduced to one-third to one-fifth of the conventional manufacturing process. For the time being, the fiber will be mainly used as reinforcing material to be mixed with synthetic resins, but the company expects it to be widely

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used for blocking interfering radio waves with the further advancement of car electronics because of its high electromagnetic wave protective effect.

It appears that this series of Aishin business operations for "initiative and ultimate victory" which started last year will become increasingly sophisticated in the future.

According to the medium-term operational project, after the achievement of the "V85 project," involvement in merchandise which has a promising growth among automobile parts has been explicitly selected. The main products of choice are mechatronic products and passenger vehicle power steering systems.

Electronics is being introduced to the controls of mechanical parts produced by the company, such as pumps and automatic speed-change systems. Aishin is trying to strengthen its electrical engineering ability in order to make the most of it in manufacturing products. Last year, the company acquired approximately 200,000 square meters of land in Nanbe, Iwate-ken, which was also administered in expectation of building a plant base for mechatronic products "that will reach 60 percent of the entire production by 1990."

Furthermore, in respect to power steering, which is steadily improving in the passenger vehicle installation ratio, the company is getting ready to expand the conventional truck power steering business to cover power steering for passenger vehicles. Aishin is also investigating a plan for construction of a mass-production plant on approximately 330,000 square meters of company property in Handa-shi, Aichi-ken, for when the passenger vehicle power steering business is getting into smooth running order.

[16 Mar 82 p 9]

Toyota Gosei

[Text] "A cat on a hot tin roof" is the phrase which describes a leading Toyota group parts maker that is due for rationalization under the severe pressure of the drop in parts unit price.

In the past few years, the unit price of parts has dropped without choice every half-term, in spite of the basic inflationary mood. Unless efforts for rationalization are made more intensively than during the previous term, parts makers will experience immediate cuts in profit. These days, even an influential parts maker of the Toyota group such as Nippon Denso is reporting the falling of the operational profit ratio just as others do. Every company is encountering a time of hardship and perseverance in the face of "minus growth," when Toyota Motor is curtailing its car production.

Toyota Gosei, a major automobile rubber and plastic product manufacture, turned into a 100-billion-yen business in the fiscal term ending in April 1981, and it will be in a minority group which expects an increase in profits also in this term. Says President Sohei Kato: "It was a very austere environment but we did well because, in a word, we eliminated waste by our all-out efforts within the company."

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Rationalization effects of the fiscal term ending in April 1979 produced 1 billion yen, and 2 years later, in April 1981, 2 billion yen. In this fiscal year, profits are expected to be 200-300 million yen more than the previous figure. It considers that its higher profits from rationalization efforts compared to other companies in the same group derive from the fact that it had that much "more waste to be eliminated than other companies" (Executive Director Hiroshi Nozawa), which is a typical response that can be expected from the honor student of the group. The company gives the logical explanation that the rationalization effects are the source of current profits.

Toyota Gosei is a general parts maker which deals both in rubber and plastic parts; the favorable wind of the exhaust gas regulation and weight reduction since 1973 helped the company to grow fast, enabling it to double its sales in the past 8 years.

However, production increase after production increase left the previously pursued QC (quality control) practice neglected. Says Executive Director Nozawa: "Due to a quality control blank for as long as some 10 years, we cultivated a high-growth type corpulent constitution." To deal with this, the company moved the former vice president of Toyota Motor, Taiichi Ohno, the founder of the Toyota-style production method, to the office of chairman in 1978, and started to review the organization, personnel and production line.

The first showing of a large profit due to rationalization, in 1979, coincided with the introduction of the Toyota-style production method. It is because the effects of the constitutional reform started 4 years ago now reflect on the operational results as a specific remedy that the company takes a relatively positive attitude in profit projections among the parts makers, which are experiencing a sense of crises in the shadow of minus growth.

The rationalization theme of this fiscal year, started in May of last year, was "rebuilding of sectors which do not break even in spite of the promising outlook." The essential issue was to improve the margin of profit to be earned by the Inazawa plant (Inazawa-shi, Aichi-ken), the main factory of the plastic sector, which was a typical unprofitable sector.

The plant manufacturers steering wheels, which claim the top of the industry in the market share, radiator grills and plastic fasteners, and established itself as Japan's largest plant that exclusively produces automobile plastic products. Plastic products are manufactured on the basis of the same raw material costs and almost the same injection mold production capacity as in other companies. "What determines the price ultimately is the difference in labor costs," says Executive Director Nozawa. Due to the lack of technical competition, a bloody price competition will be unfolded against other companies.

In addition, rationalization is an imperative issue in the time of "slowdown" in view of the fact that Toyota Motor is also trying to manufacture plastic products in its own plants. Therefore, the reduction of cost at this time

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was dependent upon the improvement of the yield ratio by means of reducing the defect rate, which was once said to have reached more than 10 percent. To solve this problem, the company spent half a year accomplishing the overall transformation of the plant structure and production line. Says Executive Director Nozawa: "It took only 1 year to cut the defect rate in half and more, which edged this sector into profitability."

As seen in the example of the Inazawa plant, the strength of this company is found in its ability to draw a chart showing that "rationalization = profit." Conversely, the company is vulnerable to the appeal from Toyota Motor: "There is still room to reduce the unit price through rationalization."

In its present goal of strengthening its corporate structure, Toyota Gosei currently receives lessons throughout the company through efforts to win the Deming Prize this summer. Explains Executive Director Nozawa: "Compared to 3 years ago, intra-corporate QC circles have doubled to 500 circles, and the proposals that materialized have also doubled to over 1000 cases. The Deming Prize will put a finishing touch to our efforts."

A long-term project (5-year plan) being completed through rationalization on the basis of these QC activities naturally takes the form of a rolling plan which will be yearly corrected. The framework of the project currently being charted consists of: (1) expansion of the non-automotive sector from the current 5 percent to 10 percent, (2) upgrading of the technical level by importing technologies from European and American chemical makers, and (3) reviewing of profitability and future possibilities of parts which currently list 12,000 items.

All these programs are based upon the assumption of low automobile industry growth, and are aimed at compensating for the slump with import technology, development of new products, etc. "Rubber and plastic products cannot avoid price competition. While we nurture a corporate structure strong enough to endure price competition, we must, as a specialty maker, develop merchandise which cannot be produced within Toyota Motor's plants" (Executive Director Nozawa).

Can Toyota Gosei, which has emerged as an honor student of rationalization, also be an honor student of technology? Great hopes are placed on the company as it stands as the nucleus of the non-metal parts field in the Toyota group.

[17 Mar 82 p 9]

[Koito Manufacturing]

[Text] The largest car lamp maker, Koito Manufacturing, succeeded last summer in supplying FPC (flexible print control) to both the American Ford and Boeing companies. The electronics sector, which was promoted as a link in the chain of multiple operations, has now won worldwide "recognition." With this success from orders received as a momentum, Koito is striving to challenge the electronic parts field. President Toshiro Otake made an explicit statement: "At present, FPC is only slightly over 1 percent of the total

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sales, but we intend to raise its sales to the level of 10 percent as soon as possible."

It was 5 years ago that Koito began to explore the electronic parts field. The company was motivated to create new products based upon car lamp technology. At that time, as Koito was too technically immature to be able to tell "left from right," the company concluded a technical tie-up agreement with Oki Electric Industry and gained extensive knowledge of electronic technology. FPC "recognition" by American business, for example, and thick film IC (integrated circuit) resulted from the knowledge gained following the technical agreement.

The company receives guidance from Oki Electric in the advanced semiconductor technology field, but recently it has been consolidating cooperation with CKD, the major labor-saving machine maker. Koito is also a shareholder which holds 670,000 shares (share holding ratio, 1.7 percent) of CDK's outstanding stock. CKD is a maker which handles a range of products from oil air pressure parts to NC (numerical control) machine tools. In addition to the so far harmonious alliance, Koito contemplates boosting cooperation in the areas of technology and production, including production on commission basis.

What Koito is now pushing forward in cooperation with CKD is a car lamp electronic control system. This system controls the volume of car lamp light, adjusting to the outdoor darkness during driving. This is a commodity demanded more and more with the progress of car electronics. Up to now, the basis, system has been purchased from Nippon Denso and Hitachi Ltd, and Koito has only installed the systems. The cooperation with CKD makes it possible to handle everything from the basic system to the final product.

FPC started under the guidance of Oki Electric, and the car lamp electronic control system initiated through cooperation with CKD has gradually become popular on the market and is being sold. With the deliveries of FPC to American companies as a turning point, FPC inquiries are also starting to come in once in a while from the domestic camera and watch industries. It is certain that Koito's challenge is getting closer daily to the deserved time of harvest, as seen by the rapid rise of an expectant mood making it ready and ripe for inventing a new car electronic device based upon the lamp electronic control system.

That is not all. Koito, along with its West German technical tie-up partner, Heller, is preparing for advancement into the United States, where they plan to handle electronic parts in the future in addition to car lamps. They believe there is no reason to hold them back from entering into the American electronic parts market using the present deliveries of goods to Ford and Boeing as a lever.

With the West German Heller, Koito will proceed for the time being with joint production (mainly knockdown) of car lamps using Heller's plant in the United States, but the company hopes for a future commitment to produce electronic parts in the joint venture company set up in the United States with Heller.

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Nevertheless, intense hardship is expected to make a success out of a challenge into a new field. That necessitates the pursuit of rationalization of the car lamp sector in order to squeeze out the funds essential for research and development as much as possible. These days, when the demand for car lamps continues to decline, it is not possible to invest a large sum of money in research and development. Grumbles President Otake: "It's difficult to make ends meet."

As a risky countermeasure to problems, Koito began to make various industrial robots which make a small turn and placed them on the production line. "Robots that cost as much as 8 figures in yen per unit are beyond our means. We are making all kinds of robots using our wisdom acquired in the workshop."
(President Otake)

By the introduction of home-made industrial robots, Koito is bringing down the production cost of car lamps, and in the meantime, it is pushing efforts to challenge in the new field. How far can the development of the new field go from its current state of just about getting a clear prospect? Simply because they are sailing out to the sea jam packed with various large and small car electronic device makers, they must be prepared for counterattacks from the existing makers when they attempt a quantitative expansion.

[24 Mar 82 p 8]

Kayaba Industry

[Text] The potential to develop technologies ahead of others to meet the market needs--this is an absolute must for the survival of parts makers in the slowdown period. Today, after the end of high growth, the leading companies at the top of the parts industry and practically in the direct line of major automobile makers have no choice but to be on the move, visiting other automobile makers and looking for new deals. In such a severe environment, it can hardly be said sufficient if one resorts only to the conventional method of improving product quality and reducing costs.

Kayaba Industry, as of 1 March, decisively executed a structural reform with essentials such as the new construction of an automobile technology research institute and mechatro center. One of the purposes of the action taken as precisely to build such a corporate setup as mentioned above.

The goal of the structural reform is focused on the following three points. First, the organization will be reformed to a more market-oriented body than before. The organization will be structured so as to be able to monitor accurately the needs of customers and to take instant countermeasures. Second, the organization will have a system-oriented approach. Early assessment of needs will be wasted unless it is connected to the commencement of specific parts production. In particular, there is an urgent need to bolster the research and development sector. Third, it is necessary to cope with the science of mechatronics (electronification of machines). A need has emerged to build a center functioning as a central nervous system which concentrates on developing oil pressure control systems.

The director of the technical center, Fumio Ogasawara, emphasizes: "Each corporate department has made separate efforts to deal with these issues in the past. However, the need has emerged to deal with them more comprehensively and systematically."

For example, let us look at automobile oil pressure buffers (shock absorbers), the main commodity of the company. The internal mechanism of the shock absorber has become complex since the microcomputer-controlled body-level adjustment was adopted as a result of the progress of car electronics. It is necessary, it appears, to pursue a course of action which will facilitate in-depth research from the aspects of operability and safety, and consequently to find the best way to improve the shock absorber. Although technical development and research were pursued separately for two-wheelers and four-wheelers at the North Gifu plant and the South Gifu plant in the past, research will be carried out using the experimental equipment of the North plant for the time being following the establishment of the technical research institute. However, the company plans to build an integral setup which will unify the equipment and personnel of both plants in the future.

Of course, it is not that the company was left behind others in these new technologies and new product development in the past. Some tens of oil pressure devices for construction and industries are said to have been improved every year by raising the pressure, reducing the size and saving energy. Says the assistant director of the Accounting Department, Kazunori Abe: "Our achievement was unnoticed because of the lack of advancement into fields quite different from our existing products."

Kayaba Industry estimates sales of 150 billion yen for the fiscal year ending this March. This will be the first time its sales have exceeded the 100-billion-yen level. After-tax profits will be 1.05 billion yen, which appears to undercut the previous after-tax profits (1.088 billion yen). However, the operational profits are estimated to reverse to a profit increase. The fiscal year ending in March 1981, which showed an operational profit decrease for the first time in 5 years, was strongly affected by the second oil shock that invited a price hike of steel materials, oil and aluminum.

In contrast, the fiscal year ending this March showed early results of the rationalization activities promoted since the latter half of FY-80. Also, the TQC (total quality control) activities introduced since the spring of 1981 won the operational award of the Deming Prize. With the perfection of these corporate orders, the company intends to return the level of equipment investment starting in FY-82 to that before FY-80 by appropriating about 5 billion yen on the basis of orders filled, compared to a ceiling of slightly over 3 billion yen in FY-81. Equipment investment will be focused on: the construction of an addition to the North Gifu plant, the main shock absorber production plant which has been extended little by little; reorganization of the production lines; and construction of an addition to the Mie plant, the main plant for production of ship machinery and equipment such as hatch covers and winch control systems.

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Kayaba Industry aggressively engages in overseas business operations. It has local plants in three countries, Indonesia, Philippines and Thailand. In Indonesia, the company started new construction of a specialty plant which assembles final products in order to pursue production rationalization and improvement of capacity in conjunction with improvement of the Indonesian and domestic made ratio. Also, concerning exports, which had been promoted mainly by the overseas operation department, Executive Director Yozaburo Enami expresses his view: "We encourage all seven corporate sectors to investigate the possibilities for overseas operations. In the past, there was a mood, so to say, which allowed our people to indulge in domestic operations."

Kayaba Industry will celebrate the 50th anniversary of its founding in 1985. The sales goal for that year is 150 billion yen. Although it would like to increase the sales of its oil pressure shock absorbers for two- and four-wheeled vehicles, it is hoping to reduce its percentage of total sales from about 50 percent at present to a 40-percent level. It is an urgent task to improve its technical capability in all fields of corporate operations in order to achieve this goal.

[30 Mar 82 p 9]

[Toyo Radiator]

[Text] In Toyo Radiator's Hatano Workshops, slightly away from the streets of Hatano city at the foot of massive Mt Tanzawa, Kanagawa Prefecture, where the severity of winter is beginning to ease, large radiators (heat exchangers) for trucks and buses and for industrial machinery are daily produced at a pace of 15,000 units/month. Furthermore, there is no doubt that this workshop will increase its importance in the future for the independent maker, Toyo Radiator.

President Hiroshi Iwasaki reveals a bleak outlook for the future quite contrary to his usual gentle expression: "We are determined to confront the business environment where a cold wind will continue to blow for some time to come." It was only the fiscal year ending in March of last year when the company's sales went above the mark of 30 billion yen, but an income drop of about 2 billion yen is expected for the fiscal year ending this March. Forty percent of the total sales are for automobile radiators, including oil coolers, which breaks down to approximately 80 percent for trucks and buses and about 20 percent for passenger vehicles. It appears that the company received a heavy blow with the drastic drop in demand for trucks.

That does not mean at all that President Iwasaki wants to "sit and wait" for the wheels to turn in his favor. With the view that "price competition in automobile radiators is very tough, but it serves as a strong stimulus for the improvement of technology in respect to performance and weight reduction," the percentage of the automobile radiator business has been raised since last year. As a result, the company successfully received a new order of radiators for Honda's "civic" passenger car and an order for the same Honda's "City" last summer. Also, Toyo Radiator expects success in negotiations for a new passenger car radiator order to be received from

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Mitsubishi Motors. As the company projects "radiators for two-wheeled vehicles offer a promising future market" besides the above-mentioned prospects (President Iwasaki), it is prepared to undertake aggressive business efforts. However, in concluding the business deal for a passenger vehicle radiator order to be received from Mitsubishi Motors, the company was told as a "condition" that a part of the truck radiator deal which had been almost monopolized by Toyo Radiator should be transferred to other radiator makers. The order to be received is evidently accompanied by delicate bargaining over parts selection and conflicting policies pursued by finished car makers.

Today's automobile parts business is no longer necessarily interchangeable as it used to be, pursuing passenger vehicles if trucks were not profitable. It is because the "company widened its horizon preparing to grow into a business equipped with various heat exchanger technologies" (the same) that Toyo Radiator launched a policy to "push efforts for passenger car radiators" in spite of the situation wherein the domestic car production expansion is inevitably capped. Taking this opportunity, it is trying to sow many seeds that will bring fruit in the future, which can be described as a "head-on breakthrough tactic." The structural reform of 1 April is aimed at enriching the planning office.

Change of materials is also one of the hurdles that it must pass over, although it will squeeze profits for a little while. Three or four years ago, the company already changed the conventional copper material sheet metal to resin sheet for passenger car radiator tanks. In the Nagoya Workshop (Nagoya-shi), the central plant for passenger car radiators, it was naturally necessary to scrap the sheet metal equipment as a result of introducing resin molders. It seems Toyo Radiator is largely transforming its manufacturing system due to the expansion and diversification of customers and the change of material.

Simultaneously, the company is now thinking of proceeding with a plan "aimed at quantitative expansion by cultivating markets other than the automobile market" (the same). Already, the company is close to monopolizing receivable orders for construction machine radiators from Kamotsu Ltd. However, in the future, Toyo Radiator will engage in aggressive business operations in the field of electrical and industrial machine heat exchangers for ships, emergency power generation systems and gas coolers. For the time being, it is busy getting ready to propose a project for producing jointly developed commodities for large electrical and industrial machine manufacturers.

The president's order to "return to the original point of heat exchanger technology before committing ourselves to the development of commodities and cultivation of markets" is heard throughout the company. There are many issues regarding the corporate order--for instance, "vitalization" of technical research institutes and building of a non-automotive sales network. However, its strength indeed partially stems from the fact that it is not specializing in the car radiator business. At the Hatano Workshop, which single-handedly manufactures large products, it manufactures at most only some 300 units in what it considers a high lot (production unit), and only a few units in what it calls a low lot. This workshop, compared to the

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Magoya Workshop, is rich in knowhow regarding miniproduction of various types of goods.

The Hatano Workshop plans to expand the laboratory and has also scheduled an investigation into a high-efficiency technique for miniproduction of various types of goods in FY-82. The radiator for a 120-ton dumptruck is a large product that weighs 1 ton. Toyo Radiator can be regarded as a slightly unusual corporation among the automobile parts makers, which usually like to stake the business on quantity. Whether this characteristic can be the "weapon" of the company in the future may depend upon whether or not the effective strength of the company has the capacity to implement the president's policy.

[31 Mar 82 p 9]

Showa Manufacturing

[Text] "This year will be the year of a more accelerated overseas strategy." Showa Manufacturing, a shock absorber maker of the Honda Motor group, has begun to move rapidly in preparation for new advancement overseas. Up until now, the company supported local production concurrent with parent Honda's advancement overseas. With Honda's active interest in producing two-wheelers overseas, the company had no choice but to go abroad, particularly to the Southeast Asian nations which do not approve shock absorbers unless made locally.

However, in contrast to the previous advancement overseas, which was primarily to Southeast Asian nations such as Formosa, Thailand, Indonesia and the Philippines, the recent overseas strategy has become more global. The current first try was the start of production in Brazil: Showa du Brasil Limited, an incorporation established by 48 percent investment of Showa, 49 percent of Honda and 3 percent of local capital. A plant being built in Manaus by this local company will be completed and operated for the first time this June. At present the production goal is set on 20,000 shock absorbers for Honda's two-wheelers.

Furthermore, for two-wheelers, local production of shock absorbers in Nigeria, Saudi Arabia, Africa and the Middle East has been chosen as the subject for investigation. Also, in view of the fact that Honda Motor will start passenger car production in Ohio, in the United States, at the end of this year, the company sits ready for the move: "If they ask us to move into the United States, we must give it serious consideration." For the present, however, Showa plans to deal with the need by exporting from Japan as long as the U.S. import duty rate remains at the current level of 3.3 percent, for fear that the production costs will be comparatively high once it jumps into production in America.

On the other hand, in Southeast Asia, the company will build a new plant in Indonesia, and will double the production capacity in that country at one stroke. Already, a new plant site of approximately 26,000 square meters has

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been purchased. With the completion of the new plant, the monthly production capacity will jump from 15,000 up to 60,000 shock absorbers for two-wheelers.

Showa Manufacturing estimates the sales of the fiscal year ending this May to be 45 billion yen, a 9.2-percent increase over the previous period (41.197 billion yen). The financial status is expected to reflect an increase in income and an increase in profits, which amounts to an operational profit of 1.48 billion yen (fiscal year ending previous May, 1.35 billion yen) and after-tax profit of 710 million yen (the same term, 669 million yen). The ratio of sales of shock absorbers for two-wheelers and four-wheelers is about 6:4.

Sales according to customer indicate that Honda Motor takes an overwhelming 68 percent of the sales, followed in order by 12 percent for Suzuki Motor, 7 percent for Kawasaki Heavy Industries and 5 percent for Yamaha Motor. Although it sees some increase in deliveries to Fuji Heavy Industries and Toyo Kogyo, Showa's biggest domestic problem is the expansion of the four-wheeler market. Fortunately, from the beginning the company adopted the strat system essential for FF (front engine, front drive) cars, which are about to become the mainstream of small vehicles worldwide, to the production line of shock absorbers for four-wheelers. This feature can be said to be the ultimate strength of the company.

Nevertheless, "when dealing with different automakers, equipment which accommodates each customer's need must be enhanced" (Executive Director Tashiro). Therefore, the company is investigating the feasibility of building additional plants. It will undertake the construction under the policy of appropriating approximately double the amount of depreciation expenses to equipment investment, which interprets an estimated appropriation of 2.4 billion yen for the fiscal year ending this May and about the same for the following term. The appropriation will be largely divided into normal equipment investment, which amounts to the sum within the depreciation expenses, and investment which takes the remaining funds for in-house promotion of production.

In-house promotion of production is imperative for improvement of technology and product quality, and has the merit of convenience in changing the quality of materials. However, the pursuit of this action in this company does not take the form of eliminating employment for smaller subcontractors, but rather the form of handling at home the process that had been contracted out to larger makers.

Showa Manufacturing's plants are spread out in three locations. Those three are: the Saitama plant (Gyoda-shi, Saitama-ken) focusing on four-wheeler shock absorbers, the Nogoya plant (Kasugai-shi, Aichi-ken) specializing in two-wheeler shock absorbers, and the Asaba plant (Asaba-cho, Shizuoka-ken) producing two-wheeler frontforks completely from raw material to assembly.

Under this setup, the research and development sector is subdivided into a two-wheeler section in the Asaba plant and a four-wheeler section in the Saitama plant, and each section retains a staff of about 100 at present. The

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company injects 1.5 billion yen per year for technical development expenditure. However, in the present state of the company, it is very difficult to hope for development of an outstanding commodity which can command the four-wheeler market, although a new tendency is seen in two-wheelers, such as integration of an oil cushion unit in the rear.

If that is the limitation, how far will sales to domestic automakers go in the days to come, after the past inch-by-inch progress in expanding the market share, granting that the company can follow its original path to a certain extent in overseas strategy? That holds the key, so to speak, to the next great stride of Showa Manufacturing Company.

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SCIENCE AND TECHNOLOGY

PROBLEMS OF AUTOMOBILE PARTS INDUSTRY DISCUSSED

Tokyo NIKKEI SANGYO SHIMBUN in Japanese 6, 7, 14, 20, 21 Apr 82

[6 Apr 82 p 8]

Nippon Oil Seal Industry

[Text] "Nonautomotive" Applications To Be Increased to 50 Percent; Cooperative System with Subsidiary Companies a Problem

"The U.S. demand has cooled more than expected, so an effort to increase production at the plant on site has come to a standstill," President Takasachi Ueyama of Nippon Oil Seal Industry (NOK) is blue these days. After the plant was recognized last year by General Motors as the best parts plant, NOK's confidence in its technology related to oil seal devices was greatly enhanced. Therefore, the fact that it cannot put this confidence to good use in the U.S. market is especially irritating.

Domestic Market To Be Developed

Chairman Masaware Tsuru of NOK, who serves as chairman of the Association of Japanese Automobile Parts Industry, has constantly insisted that "the automobile parts makers must have their eyes not only on the domestic market but also on the overseas market and must prepare themselves to cope with an era of internationalization." Therefore, it is natural that President Ueyama should be concerned about production and sales in the European and American markets, in addition to the markets in the industrializing nations such as Singapore and Brazil. However, his plan is to "strengthen the domestic system further" while leaving overseas strategy to Chairman Tsuru to handle.

NOK hired approximately 1,000 graduates of the new school system in 1965. Its high rate of growth was marveled at by interested business circles, because the number of graduates hired by Toyota in the same year was 600 or so.

However, the number of its staff peaked at 5,800 in 1973 and has been on the decline since then. The number is approximately 3,300 today. President Ueyama explains the direction in which the business management is steering: "We will try to develop by maintaining the present system."

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The goal for increasing production in the recent years has been set at an annual rate of 10 percent, which is quite high. However, accomplishment of this goal is to be attempted through a companywide TQC (total quality control) drive and an aggressive investment in equipment as leverage. As part of its intermediate-range management project of the first period from 1977 to 1979, the company, centered around its plants, implemented the following specific items: 1) innovation in operational method and production flow, 2) full utilization of the existing facilities in production, and 3) development of software for the new rational production format. Starting in 1980, establishment of an efficient system for each department, including headquarters, management, and the design department, was undertaken patterned after this model. This movement was called the IZ movement (from the initials of "Isoro Zero" meaning "no freeloaders"). The IZ movement at the plants is leading other departments, so the utilization rate of the existing facilities is nearing the limit.

Therefore, in 1981, approximately 4.6 billion yen was invested in facilities centered around automatic and labor-saving machines. This amounted to an increase of about 90 percent over the previous year. "The investments to be made in 1982 and the following years are also aimed at the same level or higher" is the plan (President Ueyama).

Fields of Activity To Be Adjusted

"Since the growth of the automobile industry has reached a bending point" (Chairman Tsuru) "we are reevaluating our merchandise series, and cultivation of new capital products is going to be one of our major goals" (President Ueyama). The capital products of NOK, oil seals, hold a large share, approximately 80 percent, of the domestic automobile market. However, its growth rate will be dragged along by the growth rate of the automobile, so the rapid growth enjoyed in the past cannot be expected any more. Therefore, the company is planning to exert more efforts in the development and expansion of the sales of general industrial products such as industrial rubber products (including synthetic rubber) and valves, which occupy approximately 40 percent of the total sales today, and to bring them up within 3 years or so to the same level as the products for automobile applications (including everything besides seals).

The problem that it may encounter in doing so concerns how to maintain a cooperative relationship with its subsidiary companies. The company has so far established six subsidiary companies domestically, including Eagle Industry, which manufactures plant machinery (headquarters: Tokyo; president: Kazuhiro Tsuruda; capital: 540 million yen) and Nippon Mechatron (phonetic) which manufactures electronics parts and special synthetic rubber (headquarters: Tokyo; president: Ikuo Tanaka; capital: 600 million yen). These enterprises were built one after another upon the foundation of the seal technology and in cooperation, in part, with overseas enterprises. However, they constitute important strongholds to which NOK has entrusted its advanced technological fields. Therefore, how the product fields will be distributed between NOK itself and its subsidiary companies in the future and how well it will be able to maintain good relations with its subsidiary companies seem to be a problem.

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Profit Power Up

The long-range goal of NOK consists in part of achieving by 1984 a total sales amounting to 120 billion yen (estimated sales in the first quarter of 1982 is 83 billion yen), self-capital rate of more than 50 percent (47 percent in the first quarter of 1982), and an ordinary profit rate of more than 6 percent (5.8 percent in the first quarter of 1982). Moreover, the oil seals in the products composition will be reduced to 43-45 percent (47 percent today; its total group composition is to be reduced from 30 percent to approximately 25 percent) and the proportion of general industrial machinery will be increased. President Ueyama's dream of expansion is very colorful: "It should be interesting to be involved in electronics parts for cameras and copying machines."

NOK has developed its enterprise along the line of utilizing the technological knowhow gained through the development of a "simple" part, the oil seal, to the fullest extent, because the company was able to appropriate the profit made through increased production of seals to the development of the new fields. However, reliance on the profit from seals in the future cannot work any more. All efforts must be concentrated on increasing the profit through sales of industrial machinery.

[7 Apr 82 p 10]

Kidogawa Rubber Industry

[Text] Production Line Arrangement Reevaluated; System for Development of New Products Organized

The main office plant of Kidogawa Rubber Industry is located in Naganuma-cho, Chiba City. The empty spaces marked here and there by tape inside the plant, in which the odor peculiar to rubber is wafted, were very conspicuous. This company is currently undergoing a reevaluation of the production lines at its three plants: the Chiba plant, which is the main office plant; the Maoka plant located at Maoka City, Tochigi Prefecture; and the Kyushu plant located at Nakazu City, Oita Prefecture. A portion of the production facilities at the Chiba plant were transferred to the Maoka plant; then the utilization of the vacant spaces thus created in conjunction with the new layout for the production line of the Chiba plant was being reevaluated.

To Lower the Cost

President Shojiro Fujita declared that "increasing the sales while lowering the cost" is the only way to ride out the harsh environment surrounding the automobile industry. For this purpose, after the cost reduction committee which was started last spring, the company established a layout committee to reevaluate the production line layout at these three plants.

According to the president of the Chiba plant, Executive Director Noboru Sato: "During the rapid growth period we were pressed by the need for

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production equipment, so the necessary equipment was installed wherever space could be found inside the plant." Now that a period of steady growth has arrived, the demand for cost down made by the automobile makers has been getting stronger and stronger, and a drastic reevaluation of the plant layout has become necessary. Because if the production equipment is not arranged properly, circulation will be poor and pileup of work pieces will increase, which is connected directly to the cost up. "An era has arrived in which investment in equipment must be based on a long-range plan which looks far ahead into the future," says Executive Director Tomichiro Enami. The list of products of Kidogawa Rubber includes antivibration parts such as engine mount and strut mount, automobile body parts such as weather strips used on the doors, windows, and trunk; bumper parts, various types of hoses, and the construction materials.

To Expand Sales to Other Automakers Besides Nissan

Reevaluation of the plant layout is centered around readjustment of the list of products for each plant and concentration of the entire process from production to inspection of each item in one place. Moreover, introduction of labor-saving production equipment and undertaking internally the finishing process which used to be carried out by the subcontractors are to be pushed forward. This company is one of the enterprises subjected to joint settlement of account with Nissan Motors. Its dependence on the Nissan group, if expressed in terms of its sales, is as high as 90 percent. Nissan has demanded a cost down of 10 percent within 3 years. However, "the cost-down effect has already begun to show in overall performance," according to President Fujita.

As to the other problem of Kidogawa Rubber, consisting of boosting the sales, the following specific measures are considered the keys: 1) expanding the sales of existing products, and 2) developing new products. The president spoke of the company's aspiration as follows: "We would like to improve the performance of the functions of our products so that sales may be expanded to automobile makers other than Nissan and also the sales of nonautomotive parts expanded at the same time. We already have the potential."

As part of an effort to build a research and development system, the construction of a technical development center, into which approximately 1 billion yen has already been invested, was finished by the end of March. The staffs of a number of departments such as technical development, design, and trial manufacture--160 in number--have been concentrated in the center, and the system is beginning to take shape. The center consists of a four-story reinforced concrete building (with a total floor space of 6,600 square meters). On the first floor are the dynamic testing laboratories; the second floor contains the trial manufacturing laboratories; the third floor, the static test laboratories; and the fourth floor, product design laboratories, offices, and merchandise display rooms.

Development of Construction Materials

This year, an additional 300 million yen has been budgeted for the purchase of testing equipment. At present, the merchandise list consist of

approximately 60 percent rubber products and approximately 40 percent resin products. The major objectives of the development include bringing down the cost of rubber products and improving the performance of the resin products.

As to the new products, an increase in the demand for the feraspan (phonetic) expansion joint used in the joints of roads can be expected. Its sales in the first quarter of 1982 are estimated at 28 million yen, which is only a very small fraction of the company total sales of 48.7 billion yen for the same period today. However, negotiations are under way for exporting it to Korea. The company wants to increase the sales of feraspan and other construction materials, such as window frame sealing material, plus the sales of automobile parts to automobile makers other than Nissan in the first quarter of 1983 to 14 percent of the total company sales (it is estimated at 11 percent in the first quarter of 1982).

Reevaluation and rationalization of the layout of the production lines and the development of new products--these operational efforts are expected to show a great effect in 1 or 2 years. However, President Fujita is anticipating a potential development of the company through intracompany competition, in its good sense, between the rubber and the resin technologists.

[14 Apr 82 p 11]

Ichimitsu Industry

[Text] To Lower the Cost Through TQC; To Increase the Added Value of Capital Merchandise

Starting in February this year, Ichimitsu Industry began to deliver parts such as rearview mirrors to Honda Motor Co. Thus it has business interaction with all but Isuzu Motors of the 11 domestic automobile makers. Its dependence on the Nissan group, including Nissan Motors, Nissan Diesel and Fuji Heavy Industries, is still heavy, 60 percent of its total sales. However, its market is being expanded gradually.

Profit Power Inferior

Nevertheless, its profit picture is quite bleak. With a total sales in the previous quarter of 66 billion yen, the ordinary profit was 1.35 billion yen and the after-tax profit was 670 million yen. The profit made by the Koito plant, thus, was inferior to the other companies in the same line of business. The company drafted the following four consolidated measures as the new year's guidelines for the purpose of further strengthening the structure of the enterprise: 1) lower the overall original cost, 2) implement TQC (total quality control), 3) drive for technological development, and 4) strengthen the management of establishing the new products.

Development of new products and management for their establishment in particular are important themes adopted today. President Tetsuya Tsukatani anticipates that "the sales will be increased through improved product

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performance and greater added value." Mirrors whose angle can be set by remote control and mirrors with wipers have been developed and commercialized.

Prevention of Trouble

The most recent trend in the automobile lamp is the great variety of headlamps. From round to square to unusual shapes, the variety of mirrors follows the steps of the automobile model engines, and they are characterized by smaller production of a larger variety. It is essential to reduce the number of troubles that may occur during the process of designing and producing according to the basic design of an automobile maker, especially during the early production stage. Therefore, management for starting a new product has become more important than ever.

Efforts to lower the cost such as VA (value analysis) and VE (value engineering) introduced in the past are no longer limited to the production stage alone; more detailed analysis and control have become essential. Implementation of TQC was introduced to serve as an aid and it is to be implemented company-wide starting in April. In order to achieve thoroughness in reeducating the staff on matters related to TQC, instructing lecturers have been engaged.

The makeup of Ichimitsu Industry's merchandise sales is as follows: Lamps occupy more than 60 percent; mirrors, more than 20 percent, and the total sales of these two categories come to nearly 90 percent of the total sales. The balance, slightly more than 10 percent, consists of seat adjusters, ashtrays, wipers, and wheel covers. At present, the sales of the capital products including lamps and mirrors are on the rise; "investment in equipment has been concentrated on the capital products; and the sales are also concentrated on the capital products," according to President Tsukatani.

Changes for the worse in the profit picture came as a result of high-level investment in equipment of over 6 billion yen in the years 1980 and 1981, and a consequent rise in the repayment burden plus a rise in the raw material cost and personnel expenditure which could not be absorbed all at once. Of the funds invested in equipment, the investment in molds in particular increased considerably since 1979 as a result of diversification of lamp shapes. The 1985 investment in equipment is expected to stop at the level of 3 billion yen, of which, 1 billion yen is to be earmarked for general equipment and the balance for the molds.

A production system capable of producing a large variety of products has already been established. The Isehara plant located at Isehara City, Kanagawa Prefecture, manufactures sealed beam lamps, standard headlamps, and seat adjusters. The Hasuda plant in Saitama Prefecture specializes in the production of headlamps of unusual shapes. The Fujioka plant in Gunma Prefecture is in charge of manufacturing rearview mirrors, lamps, wipers, resin products, and ashtrays. The three plants constitute the principle plants of the company. There are two other plants: Oizumi plant and Nakazugawa plant located in Gunma Prefecture and Gifu Prefecture, respectively.

Oizumi plant produces lamps, while Nakazugawa plant produces small lamps, various types of switches, and parts for household electric appliances.

Centered Around the Principle Products Today

The operating rate of a portion of the production lines has become worse as a result of diversification of the headlamps, so reevaluation of the production lines will be necessary. A round of large-scale investment in equipment, however, has just been completed. The urgent need for the company at the present stage may be said to consist of cost down and the development of new products. However, President Tsukatani expressed the company's fighting posture centered around the principle products it produces today: "We do not intend to diversify into a brand-new field which does not have any connection with our present merchandise structure. We will stick with the existing merchandise and push for its improvement."

[20 Apr 82 p 8]

Kokusan Metal Industry

[Text] Reduce Subcontracted Work to 5 Percent; Select Subcontractors Carefully To Achieve Division of Work

Kokusan Metal Industry (headquarters: Tokyo; president: Yasukura Wada; capital: 220 million yen), which manufactures door handles and automobile keys mainly for Nissan Motors, will officially start operation of its long-awaited Yokohama plant (Kanezawa-ku, Yokohama City) on the 23d of this month. Construction work for this plant was started in October last year at a site approximately 10,000 square meters in area. The two-story building, with a total floor space of 5,300 square meters, was built at a cost of 2.2 billion yen. The plant has a production facility capable of manufacturing 100,000 sets of automobile keys per month, and a production line capable of producing 50,000 steering locks with keys per month.

Yokohama Plant Becomes the Principle Plant

Between the 23d of this month, when the completion ceremony is held, and the 6th of next month, transfer of the key set manufacturing equipment (monthly production capacity of 200,000 sets) from the main office plant (Ota-ku, metropolitan Tokyo) will be completed. Then, the Yokohama plant will literally become the principle plant of Kokusan Metal. Moreover, by 1985, production of the steering lock is planned to be expanded to 300,000 items a month, and second-stage construction work involving a new casting process as part of a continuous production system will be undertaken starting next year.

Kokusan Metal used to carry out assembly of keys and final finishing work at its main office plant. Part of the process was carried out at the Tsurumi plant (Tsurumi-ku, Yokohama City), and approximately 15 percent of the total machining work used to be done by subcontractors. At the Yokohama plant, the entire process of key set production from the raw material, machining, to the

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final assembly will be carried out in a continuous production system. As a result, the work done by the subcontractors will be reduced to approximately 5 percent, and "the production efficiency will be improved significantly" (Executive Director Toshio Sugimori).

The subcontractors, slightly less than 20 in number, which used to get work from the main office plant will have no further business interaction with the plant in the future. "The consent of all subcontractors has been obtained," according to Executive Director Toshio Sugimori.

At the Gunma plant (Hakobayashi City, Gunma Prefecture), which is the principle plant manufacturing door handles, those parts having relatively large production volume will be manufactured internally and those parts having a relatively small volume will be manufactured by the subcontractors. Namely, a "divided work system" will be employed and implemented thoroughly. In other words, the role of a complementary plant is being reevaluated and good subcontractors are being screened. More than 30 subcontractors belonging to the Gunma Plant Cooperative Association will be "processed" in turn, and only those with a competitive edge will be retained in the future.

Overseas Expansion

"As long as the number of passenger cars manufactured domestically cannot grow rapidly, the automobile parts makers are obliged to renovate their structures" (President Wada). A big reconstruction project within Kokusan Metal is expected to be carried out rigorously in the future. However, just doing this may not be sufficient to prepare for the future. Take the overseas strategy, for example. Zinc alloy door handles are being exported to the Ford Motor Co at the rate of 100,000 per month, and a resin handle, "neobrite," having metallic luster, developed by this company, received a request from General Motors to submit samples for inspection. However, the future of product exports is expected to be limited.

Therefore, for the present, overseas expansion will be focused on two areas in Europe where the technical cooperation between the automakers of Japan and the United States, which have actual export results, is in full bloom. "Overseas expansion could not be contemplated in the past due to the restrictions of the company system. However, under the present situation in which trade frictions are problematic and increasingly more accomplished automakers are attempting overseas expansion, we will make preparations for overseas expansion at any rate" (Executive Director Sugimori). Overseas offices will be established and staffed, and information will be gathered and market conditions investigated. On the other hand, technical cooperation and joint production ventures are also being contemplated.

Fight with Quality

The long-range strategy of Kokusan Metal consists of, domestically, implementation of a continuous production system for realizing efficient production incorporated with the readjustment of subcontracting system, and

overseas, development of production bases. In addition, development of new technology and new products such as the resin door handle is also considered indispensable for improving the competitive edge. Therefore, the space vacated in the main office plant, from which the key set production lines have been removed and transferred to the Yokohama plant, will be turned into an intensive research center consisting of the main company office and the R&D department.

It is expected that automobile door locks operated electronically will soon appear. Kokusan Metal, which relied heretofore on mechanical locks only, has also begun to undertake the development of electronic door locks. This spring, 90 new graduates were hired. As a result, the total number of staff has increased to 1,370. However, on matters related to human power, too, Kokusan Metal chooses to fight with quality rather than with quantity.

[21 Apr 82 p 10]

Nippon Carburetor Co

[Text] Pushing Unmanned and Automatic Equipment; Conditions for Expansion into United States Being Prepared Steadily

Nippon Carburetor Co saved 12 percent of its operational expenditure recently through an emergency countermeasure consisting of zero overtime in the operations department and a 70 percent cut in overtime in the indirect department. This is because the volume of orders began to show a decline when its major customers such as Nissan Motors and Toyota Motors began to reduce production in the second quarter of this year.

Confident of Profit Power

Managing Director Takeo(?) Kobayashi stressed: "There will be absolutely no danger of going in the red if only the situation is handled shrewdly, anticipating bad times when the market is good, and anticipating a worse situation when it is bad." In the background of this was the first oil shock and the measures taken to strengthen the structure of the enterprise. As long as the measures are maintained well in the future, it is confident of its profit power, which cannot be swayed so easily.

To be sure, it received a painful blow from the first oil shock, which exposed the weakness of the structure of the enterprise, and a loss was registered in the first quarter of 1974. After this failure, it aggressively implemented various measures to strengthen the structure of the enterprise and to rationalize the management.

First of all, regarding investment in equipment, it embarked on making equipment which requires only one-third of what used to be required in expenditure, area, and personnel. To do this, equipment design and fabrication of machinery were undertaken internally as much as possible, and it started making equipment in accordance with the structure of the company. Second,

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it pushed ahead a completely labor-saving system. The company set up a guideline to achieve 8 percent labor-saving every 6 months, and the guideline is still in force today. More than 15 percent labor-saving is achieved every year. When a new product is to be manufactured, a new standard time is assigned to it by the manufacturing department, and 8 percent labor-saving based on this standard will be attempted every 6 months.

Lively Proposals

These activities are supported by the innovative proposals made by the employees. The term TQC (total quality control) is not used at Nippon Carburetor Co. However, it set the goal of having an average of 2.7 innovative proposals per employee per month, and 3 innovative proposals per employee per month are said to be submitted today. Managing Director Kobayashi said proudly: "The employees take 8 percent labor-saving and writing innovative proposals as a matter of course."

Moreover, they have improved the flow of production stage through the use of the KP (carburetor product) format, which is similar to the "billboard format" of Toyota Motors. As a result, the inventory assets have been lowered to 0.47 of the monthly sales volume today. The present goal is to lower it to 0.3.

Starting this year, the investment in equipment will emphasize unmanning and automation of the production line in general, and automation of the assembly line in particular. Automation of the production line has the merits of lowering the cost and increasing the quality. The company is attempting to "kill two birds with one stone," by making preparations for future overseas operations. It is definitely interested in making inroads into the U.S. market. However, in order to be able to compete with the carburetor made internally by the U.S. automobile makers, reducing cost and improving quality by unmanning and automation have become the necessary conditions.

As to making inroads into the U.S. market, it has successfully negotiated the export of a total of approximately 31,000 carburetors for ordinary engines to two companies: a lawn mower and generator maker and a motorboat maker. Based on these actual results, they have drafted a slow but steady schedule consisting, for the present, of dispatching resident staff members, establishing service stations, and construction of a maintenance plant and assembly plant.

President Inejiro Yoshida observes: "The aftereffect of this worldwide compact car war will no doubt drag the parts industry into it. We must expect to come face to face with tougher and tougher problems, and to be able to ride out these crises, the overall strength of the enterprise, including technical development, improved quality, reduced cost, improved productivity and expanded sales, is what speaks."

Emphasis on Electronic Control

In the area of new product development, popularization of the electronic carburetor (feedback carburetor) is being emphasized. A feedback carburetor

made by another maker is being adopted and used on engines having a large amount of exhaust gas as an antipollution measure. The key to popularization in compact cars hinges on the balance between fuel economy and cost. However, this company believes it will become popular sooner or later. The company has completed 90 percent of the development work, and it is at the stage of being tested on the actual cars by the automobile makers.

"We would like to increase the number of our customers by making superior products which the automobile makers will accept eagerly and to which our rivals will consent" (Managing Director Kobayashi). The activities related to the improvement of quality and reduction of cost are expected to become much busier as long as the company is determined to compete with an emphasis on product quality.

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