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Japan Report

(FOUO 1/82)

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CONTENTS

POLITICAL AND SOCIOLOGICAL

Prime Minister Suzuki's Strategy for Election (Takehiko Takahashi; MAINICHI DAILY NEWS, 9 Dec 81)	1
Suzuki's Choice of Sakurachi as Foreign Minister Analyzed (Minoru Hirano; THE DAILY YOMIURI, 6 Dec 81)	3
Two New Ministerial Appointments Examined (Swadesh De Roy; THE DAILY YOMIURI, 8 Dec 81)	5
Changes in Komeito Policy Examined (Editorial; MAINICHI DAILY NEWS, 6 Dec 81)	7
Ministers Still Split Over Defense Cost (MAINICHI DAILY NEWS, 5 Dec 81)	10
Moscow Disappointed by Japan's Passivity (THE DAILY YOMIURI, 8 Dec 81)	11
Tokuma Utsunomiya Criticizes U.S.-USSR Arms Race (THE DAILY YOMIURI, 9 Dec 81)	14
SDF Pay Boost Not in 7.5 Percent Ceiling (THE JAPAN TIMES, 2 Dec 81)	16

ECONOMIC

Japan, Singapore Strengthen Economic Ties (Akira Kasuya; BUSINESS JAPAN, Nov 81)	17
---	----

SCIENCE AND TECHNOLOGY

Role of Robots in Industry Viewed (Shozo Hochi; BUSINESS JAPAN, Nov 81)	24
--	----

- a -

[III - ASIA - 111 FOUO]

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- International Cooperation Promoted To Boost Plant Exports
 (Fumihiko Matsuda; BUSINESS JAPAN, Nov 81) 30

Chemical Industry Hurt by Continuing Recession
 (Akira Suzuki; BUSINESS JAPAN, Nov 81) 33

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POLITICAL AND SOCIOLOGICAL

PRIME MINISTER SUZUKI'S STRATEGY FOR ELECTION

Tokyo MAINICHI DAILY NEWS in English 9 Dec 81 p 2

[Nagatacho Doings Column by Takehiko Takahashi: "Prime Minister Suzuki's Clever Strategy"]

[Text] There is a saying, "talk about next year and the devil will laugh." The meaning is that since no one knows what will happen tomorrow, it is nonsense to talk about next year.

The devil may laugh but let us think for a moment about politics next year. The biggest political event scheduled for next year is the election of the Liberal-Democratic Party's president.

Prime Minister Zenko Suzuki has strengthened his confidence in holding on to the reins of administration. He is thinking about continuing to remain in the premiership by winning the LDP presidential election next year. The cabinet reshuffle and new appointments of party officials were steps taken for that purpose.

Susumu Nikaido has been appointed by Prime Minister Suzuki as the LDP secretary general. Nikaido is a person on whom the label of "a grey high official" has been placed in connection with the Lockheed incident. This may have raised eyebrows but in order for Prime Minister Suzuki to maintain the reins of administration, the cooperation of the Tanaka faction, the largest in the LDP, is necessary. To refuse the

Tanaka faction's demand that Nikaido be made the secretary general would have shaken the foundation of the Suzuki administration. Suzuki therefore made Nikaido the party's secretary general.

In doing so, Prime Minister Suzuki kept in mind the strategy of "turning misfortune into fortune." If Nikaido were to assume the post of secretary general, the Fukuda faction would find it necessary to push for the entry of Mutsuki Kato into the cabinet. For a party man, the post of secretary general is much more important than a cabinet post.

'Grey Official'

If Nikaido, a "grey official," were to be appointed to that important post, there should be no problem in selecting Kato, similarly a "grey official," to the lighter post of cabinet minister. This was the thinking that had to come from the Fukuda faction, considering its internal situation.

Former Prime Minister Takeo Fukuda must have personally thought that Kato's entry into the cabinet would be inappropriate for the time being. Nevertheless, because Nikaido became the secretary

general, it became necessary to ask for Kato's entry into the cabinet. This demand was made to Suzuki.

Prime Minister Suzuki advanced his strategy cleverly. Suzuki said: "The party and the cabinet are different. One who is called a 'grey official' can be appointed a party official but it is inappropriate for a 'grey official' to enter the cabinet." This was the reason given for rejecting Kato's entry into the cabinet.

This attitude taken by Prime Minister Suzuki will bring him big political benefits. In next year's party presidential election, if the Tanaka faction were to enter someone as a candidate, it would logically be Nikaido. It is at such a time that Prime Minister Suzuki's strategy taken at this time will display its effect.

Rejecting Kato's entry into the cabinet while appointing Nikaido as secretary general was tantamount politically to saying: "Mr. Nikaido, a party post is the best that you can hope to obtain. A person who is called a 'grey official' cannot hope to become a cabinet minister. Even more so, it is useless to think of the post of prime minister. Public opinion

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will not allow it."

This is what Prime Minister Suzuki indicated to the Tanaka faction and Nikaido.

Under such a situation, although the Tanaka faction has such influential members as Noboru Takeshita, Ganri Yamashita and Shin Kanemaru, it hardly seems likely that the Tanaka faction will be able to push one of these strongly in next year's party presidential election.

Stronger Position

If so, the only thing that the Tanaka faction can do is to support Suzuki. If the Tanaka faction, the largest within the party, lends its support, Suzuki's position will be strengthened immeasurably. It

may be that no other candidate will be forthcoming.

In this way, Prime Minister Suzuki is preparing the structure, through the present personnel reshuffle, for next year's party presidential election.

Nevertheless, there is a possibility that an event will take place, that will cause "the devil to laugh." This is the verdict to be pronounced on former Prime Minister Tanaka in the Lockheed case. If Tanaka is found guilty and if he is subjected to imprisonment, the Tanaka faction's aspect is likely to undergo a great change.

Needless to say, this will have an important effect on the party presidential election also.

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POLITICAL AND SOCIOLOGICAL

SUZUKI'S CHOICE OF SAKURAUCHI AS FOREIGN MINISTER ANALYZED

Tokyo THE DAILY YOMIURI in English 6 Dec 81 p 3

[Behind the Schemes Column by Minoru Hirano: "Why Sakurauchi?"]

[Text] A ceremony marking the changeover in the foreign ministership was held in the Foreign Ministry hall Tuesday, the day following the cabinet reshuffle. Outgoing foreign minister Sunao Sonoda, who was being succeeded by Yoshio Sakurauchi, told the Foreign Ministry staff that because he was out of Japan for 65 days of the six months he was in office, he had no time to talk directly with young staffers and he regretted that. Sonoda was reluctant to quit his post.

The reason or reasons for the recent change in the foreign ministership are unintelligible to the people in three ways. First, why was Sonoda removed from office? Together with Chief Cabinet Secretary Kiichi Miyazawa, Sonoda supported Prime Minister Suzuki's foreign policy to establish an independent course of action on the basis of the spirit of the war-renouncing constitution. For their unity, the three men were called the Suzuki-Miyazawa-Sonoda trio. It made the career officials of the Foreign Ministry acknowledge the superiority of politics and at the same time, kept a certain distance from US President Reagan's hawkish foreign policy toward the Soviet Union. The people applauded Sonoda for resisting Washington's pressure for increased defense spending by Japan and for frankly criticizing South Korea's request for \$6 billion in Japanese aid.

Sonoda's outspokenness toward the US and South Korea, however, invited criticism from some Liberal-Democrats, particularly those belonging to the Fukuda faction. Prime Minister Suzuki, who desires to be reelected LDP president in the election to be held after one year, badly needs support from the Tanaka and Fukuda factions, the two biggest factions in the LDP. For this reason, he appointed Susumu Nikaido, of the Tanaka faction, to the post

of LDP secretary-general despite public criticism and respected the wishes of the Fukuda faction in reshuffling his cabinet in order to maintain a balance between the Fukuda and Tanaka factions. As a result, Shintaro Abe, a "prince" of the Fukuda faction, was appointed international trade and industry minister, and Sakurauchi, though of the Nakasone faction, was named foreign minister because of his friendly relations with former prime minister Takeo Fukuda. Some persons say that Suzuki victimized Sonoda to ensure his reelection as LDP president.

The second question is why Sakurauchi was picked as the new foreign minister. Sakurauchi had successively served in such posts as international trade and industry minister, agriculture, forestry and fisheries minister, construction minister, chairman of the LDP's policy Board and LDP secretary-general, but has little experience in the conduct of foreign affairs. One newspaper said that Sakurauchi, a man of domestic politics, does not seem to have enough ability or vision as foreign minister and that Suzuki's words that he appointed the right man in the righth post sounded empty.

As if to reinforce this criticism, it was reported that Sakurauchi, when told that he had been informally chosen as foreign minister, said that he knew nothing about foreign affairs. Also, after assuming office as foreign minister, he said he had never desired to become foreign minister.

At the said changeover, Sakurauchi said he could not imitate his predecessor, a "flying foreign minister," and that he would perform a supportive role out and out without playing to the upper gallery.

Sonoda and Suzuki are diametrically different in character. While Sonoda looks into his listener's eyes when he speaks, Sakurauchi speaks without emotion and

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with downcast eyes. Accordingly, not only foreigners but also Japanese find it difficult to fathom his thoughts. Sonoda has many enemies but Sakurauchi forged something like unity in the LDP as secretary-general. Adjectives used to describe Sakurauchi are "colorless," "neutral and nonaligned," "without enemy," etc.

The third question is what Japan's foreign policy is coming to. Sonoda has disappeared from the Suzuki-Miyazawa-Sonoda trio. Moreover, to enlist the support of the Fukuda faction, Suzuki must respect Fukuda's policy to attach importance to Japan's relations with the US and South Korea. The Foreign Ministry, which had awkward relations with Sonoda, welcomed Sakurauchi. The best foreign minister for Foreign Ministry officials is a foreign minister whom they can perfectly control.

At the first conference after reshuffling his cabinet, Suzuki was asked which he would choose, foreign policy carved out by the Foreign Ministry or foreign policy initiated by Miyasawa. Suzuki stressed unity in foreign policy making, but the people's doubts still remain.

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POLITICAL AND SOCIOLOGICAL

TWO NEW MINISTERIAL APPOINTMENTS EXAMINED

Tokyo THE DAILY YOMIURI in English 8 Dec 81 p 2

[Focus on Asia Column by Swadesh De Roy: "A Measure of Independence"]

[Text]

Symbolism is often used in Oriental communication; and quite a bit of it is to be found in Prime Minister Suzuki's recent choice of ministers for his second cabinet in 18 months.

Externally at least, his selection of Yoshio Sakurauchi as foreign and Shintaro Abe as international trade and industry ministers, both regarded unfamiliar to the tasks given them, perhaps symbolically seeks to convey something that words for obvious reasons must not spell out.

A word of warning though: Failure to correctly read it may lead to dangerous misunderstanding.

Both men are well-versed with the ruling Liberal-Democratic Party's policies, both having been closely associated with the party's policy-making processes. They have extensive government experiences too, though not in the areas of their new responsibilities. What perhaps they lack is an "American background" to be recognized immediately in Washington.

Observers were initially surprised; but they knew better than not to read the message which, when deciphered, should read somewhat like this: The new government like all the past ones considers the US as its principal and by far the most important partner; but unlike so often in the past it does not propose to exhaust all its talent managing the problems of Japan-US relations, intending instead to employ its resources so that other areas of concern will not only be not neglected but be adequately cultivated.

Sources in Washington, according to reports, were surprised at these two appointments. Americans naturally will be closely watching with some concern how the two men handle the US-Japan problems. Another report quoted an ASEAN source in Southeast Asia as having expressed doubt

if the new foreign minister will support ASEAN's position on Cambodia as before.

At the Brussels headquarters of the EEC officials were blunt: "What we need now is action, not words" to improve trade relations. And comments from Seoul were mild, limited to an expression of hope that the new foreign minister and the government would attend to the problems of South Korea.

None in China said anything. But the Chinese will be the first to meet both Sakurauchi and Abe in about a week's time in Tokyo at a ministerial conference.

Sakurauchi has said he has no plans to visit Washington in the next few months and is said to prefer the pending problems between Japan and the US to be tackled at officials' level. Obviously, he believes his time will be better spent on issues that really need political handling. If he is going to South Korea next month the message is he wants to start himself on Asia like the prime minister himself did earlier this year visiting ASEAN capitals before even fixing a date for his trip to Washington.

He is also known for his repeated suggestion to the prime minister that the freeze on aid to Vietnam be at least relaxed to allow humanitarian assistance to be resumed. This may be the cause of concern in ASEAN. But Sakurauchi's personal position will hardly alter a government policy, though his known sympathies may influence or prompt actions not necessarily incompatible with the official policy.

Sakurauchi is not alone when he sympathizes with Vietnam's needs. Japanese businessmen, intellectuals and critics are opposed to economic sanction against Vietnam. There is a growing clamor that Japan begin to try and influence others

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rather than remain "prisoner" of its commitment to America, China, or ASEAN.

If it is no longer to have "free ride" on the US or for that matter anyone else, it should also not be grudged a measure of independence. This may indeed be a new policy in development.

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CHANGES IN KOMIETO POLICY EXAMINED

Tokyo MAINICHI DAILY NEWS in English 6 Dec 81 p 2

[Editorial: "New Komeito Policy"]

[Text]

The moderate opposition Komeito Party has drastically changed its policy line which is now approaching that of the Liberal-Democratic Party. Frankly speaking, we would like to ask the party: "Where are you going?"

The party opened its three-day 19th convention in Tokyo and adopted its action policy and basic policy for the coming year. Since its inauguration 17 years ago, the Komeito policy line pendulum has swung rapidly from left to right and vice versa. The convention has disclosed that the policy line has now made a drastic right turn. It may be a realistic policy line but it has given us an impression that the Komeito Party is now standing closer to the government party.

The Komeito has made a drastic change in such basic aspects as its foreign and defense policies and also its concept on the possible formation of a coalition government among opposition parties. On foreign and defense policies, the party, based on the idea that "Japan is a member of the Western world," admitted the existence of the Soviet threat and the tension on the Korean Peninsula, the virtual constitutionality of the Self-Defense Forces and, for the first time, announced its support of the U.S.-Japan Security Treaty.

On the formation of a coalition government, the Komeito shifted its emphasis toward a possible alliance with the Liberal-Democratic Party "as a new choice" while adhering to its original idea to attain a coalition among the Komeito, Japan Socialist and Democratic Socialist parties.

In his opening address to the convention,

7
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Chairman Yoshikatsu Takeiri referred to the party's new foreign and defense policies and said: "We can no longer ignore the reality in our efforts to attain our ideal." He thus criticized the unarmed neutrality advocated by the Japan Socialist Party as unrealistic under the present international circumstances. During the convention, some Komeito members expressed their doubt and anxiety on the advisability of a new party stance on such important problems when criticisms are being heard on the government party's "shift to the right" and its military expansion policy.

In the representatives' doubt and anxiety, we could perceive their impatience toward the new policy. In short, representatives sensed a contradiction in Takeiri's determination to pursue anti-war and peace-loving policy line and the policy change. We can share the common feeling. The Komeito leadership did not answer the question: "Why do you have to adopt the new policy at this specific time?" What is prompting the Komeito Party to side with the government party?

We can notice, in the background, the party's deep attachment to political power. This was indicated in the change of the party's concept on a coalition government. The party can make a choice out of the three possibilities: a coalition among the Komeito, Socialist and Democratic Socialist parties; a coalition among the middle-of-the-roaders in addition to the above three; and a new road.

The Komeito leadership seems to prefer the third idea — a coalition with the Liberal-Democratic Party, to the other two. The change in foreign and defense policies has widened the gap between the Socialist and Komeito parties and narrowed the gap with the LDP. Accordingly, the preparation has been made for a coalition with the LDP.

We feel some apprehensions about the hasty policy change of the Komeito Party. The ideal form of coalition can be attained by a thoroughly ironed out compromise which will bring about a common feeling, and not by an easygoing union or arbitrary absorption. Clarification of difference with the partner of a coalition is essential.

The Komeito's critical attitudes toward the LDP has become less clear. In his speech, Takeiri has failed to refer to the appointment of a "grey official" to an executive post of the government party which became a target of public criticism toward Prime Minister Zenko Suzuki, indicating Komeito's leniency

toward the LDP.

We want the Komeito Party to have another look at the raison d'etre of opposition parties. We regret that the sense of cleanliness and justice that the Komeito once possessed has waned.

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9
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MINISTERS STILL SPLIT OVER DEFENSE COST

Tokyo MAINICHI DAILY NEWS in English 5 Dec 81 p 1

[Text] Cabinet ministers still remained divided Friday whether the proposed 7.5 percent increase in Japan's 1982 defense spending should include a boost in personnel expenses or not.

At a meeting of the National Defense Council, Defense Agency Chief Soichiro Ito said the general defense spending increase and a personnel cost hike should be two separate things.

"I think it is necessary to achieve the current defense buildup program at the earliest possible date although I know our national budget is in trouble," Ito said.

If the government fails to substantially increase its defense spending, Ito went on, it might "undermine the cornerstone of the Japan-U.S. Security Treaty system."

The defense budget went up 7.6 percent this year.

Ito's view was shared by Toshio Komoto, director general of the Economic Planning Agency, and Ichiro Nakagawa, chief of the Science and Technology Agency.

Finance Minister Michio Watanabe, however, said, "I want to have the (proposed 7.5 percent increase in) the defense spending cut back."

"The personnel cost hike should be included in the defense budget increase," he added.

Defense Agency officials told the meeting the personnel costs of the 240,000-man Self-Defense Forces (SDF), will go up by 2.4 percent or 57 billion yen (about \$265 million) next year.

The officials also said the agency plans to increase the number of SDF personnel by 1,909 and the reserve forces by 1,600 in fiscal 1982 starting next April.

A fleet of 17 P-3C anti-submarine patrol aircraft and 43 F-15 jet fighters will be

purchased ahead of schedule during the fiscal year to speed up the current defense buildup program, the officials added.

Foreign Minister Yoshio Sakurauchi later said, "I am in favor of the separation" of the increase in general defense spending from a personnel cost hike.

He said his idea was prompted by percent U.S. congressional moves for a larger Japanese defense budget.

The new Foreign Minister apparently referred to a draft resolution by Rep. Clement Zablocki (D-Wis.), which called on Japan to spend at least 1 percent of its Gross National Product (GNP) on national defense.

Japan's 2.4 trillion yen (\$11.2 billion) defense budget in the current fiscal year equals 0.91 percent of the projected 1981 GNP.

The corresponding figure for the United States is 5.2 percent.

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POLITICAL AND SOCIOLOGICAL

MOSCOW DISAPPOINTED BY JAPAN'S PASSIVITY

Tokyo THE DAILY YOMIURI in English 8 Dec 81 p 5

[Report on a discussion between Dr. Georgi Arbatov, Soviet expert on Kremlin policy and Dr. Christoph Bertram, director of the International Institute for Strategic Studies in London]

[Text] This is the concluding instalment of a three-part discussion between Dr Georgi Arbatov, a Soviet expert on Kremlin's US policy, and Dr Christoph Bertram, director of the International Institute for Strategic Studies in London. The two exchanged views on global nuclear threat.

Kazuo Yamamoto, foreign news editor of The Yomiuri Shimbun, acted as moderator.

* * *
Yamamoto: On this opportunity of welcoming two authorities on international problems, Dr Arbatov and Dr Bertram, we cordially would like to ask you to discuss the current world situation, especially relations between Japan and the Soviet Union and Chinese-Soviet relations.

Arbatov: Up to now, the difficulty has been that Japan is a neighbor of China. In addition, since the US plans to make use of Japan's facilities in the event of a war with the Soviet Union, we have to treat Japan as a military ally of the US, in the same way as the NATO countries.

I also have to say that I am much disappointed by Japanese passivity. Japan did not respond to our pro-

posal that we meet to discuss mutual security arrangements. I am not sure what relation this bore to the Chinese refusal to participate. Anyway, Japan should have been sufficiently responsible to think about participation. But don't think we are anti-Chinese. We cannot envisage any security arrangements without China being involved. Again, at the 26th Party Congress, President Brezhnev put forward some modest confidence-building proposals. There was no response from Japan.

Japan's Reluctance

Bertram: But what do you want Japan to do in addition to what it is already doing? It spends less on defense than any other industrialized country; the self-defense forces are under-equipped; they are repeatedly pressurized by the US to increase their defense spending and yet they have remained reluctant to do so; they have a constitution which prevents them from becoming a fully-fledged military power. If there was ever a non-aggressive country, it is Japan.

Arbatov: I am not blaming Japan for being aggres-

sive. I blame them for being passive.

Bertram: If you were in the situation of Japan with four islands occupied by a country which then calls for confidence - building measures . . .

Arbatov: This is a counter-productive example.

Bertram: Wouldn't one important confidence-building measure be, for example, to reduce the size of the forces on those islands, even to hold out the prospect of their return . . . The Japanese have very good reasons for not responding to Soviet overtures. The initiative must come from the Soviet Union if it wants Japan to do more than it does already.

My second point concerns China. Soviet people often talk of the "Chinese threat." Yet why does the Soviet Union continue to invest so many highly-developed missiles and so many highly-equipped personnel in a showdown with a country which is still in the process of economic development and which is militarily so backward that it is virtually indefensible against Soviet military might.

The superpowers need to recognize that, in today's

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world, they cannot achieve their own security without taking into account the security of neighboring countries. Military over-insurance by the superpowers means military under-insurance for her neighbors—whether they be Pakistan, Afghanistan, Turkey, Finland, or Japan.

Different Viewpoint

Arbatov: It's easy to exploit the Northern Territories issue as a polemical gimmick. It is so difficult to look at a situation from another nation's point of view. It is, for example, very difficult for others to understand the psychological consequences of our own history of "encirclement."

The problem of China cannot be so easily dismissed. Although it doesn't scare us to death, it makes us concerned. A nation of one billion people is right on our border. It is carrying through a program of modernization, with help from the US, and Western

Europe.

Bertram: The Soviet Union is no longer the regional power it was at the end of the Second World War and so you cannot explain its present policies in terms of the historical context of that time. Is it not now time for this superpower to feel sufficiently assured of its own security to be able to make more generous gestures—for example, to recognize that the northern islands are important to Japan?

Arbatov: Achieving strategic parity has always been a condition of being treated as an equal by the US. We have to come to terms with the reality that many Americans regard us an illegitimate child of history, as an abnormality which has to be corrected.

Recognizing Reality

Yamamoto: Let us ask the final question, Dr Arbatov and Dr Bertram, about your views on the prospects of whether the ongoing

Geneva talks between the US and the Soviet Union will actually help facilitate US-Soviet dialog for peace.

Bertram: As you well know, US political culture involves a virtual "cultural revolution" every four years, after which it takes six or seven months to come to terms with the world. The November 20th speech demonstrated the "learning capability" which any new US president has to strive toward. The shift from rhetoric to realities has now taken place and we can draw certain conclusions: first, that the US people are reluctant to support major increases in defense spending; second that it has come back to recognition that negotiations are indeed essential; third, that it now recognizes the importance of its allies.

Arbatov: When a superpower refuses to recognize any continuities in foreign policy, it is extremely dangerous and represents a tremendous burden for us.



In particular, we lose so much time: new weapons systems are developed and the nuclear club attracts new members.

Bertram: The superpowers need to be able to get some impression of each other's problems. There is a strong case for a personal meeting between the two presidents.

For the first time since 1979, the superpowers are sitting down at Geneva to deal with problems which affect both each other and their allies in western Europe and those in Asia.

If the negotiations end in failure, it will be a tragedy for years to come. In particular, the negotiations must involve recognition by the US, and especially by the Soviet Union, that the security interests of other countries are legitimate and have to be taken into account.

Arbatov: Despite the way the US administration has developed and the sad story of SALT, the Soviet Union, for its part, will do what it can and a bit more. The US is now on a level of responsibility which is called for by its military might.

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13
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TOKUMA UTSUNOMIYA CRITICIZES U.S.-USSR ARMS RACE

Tokyo THE DAILY YOMIURI in English 9 Dec 81 p 5

[Paper given at the International Symposium on "Security, Peace and Survival" held in Tokyo]

[Text]

A paper given by Japanese politician Tokuma Utsunomiya at a special evening open session of last week's international symposium on international peace and survival prompted some of the most lively debate seen at the symposium.

Although many of the European delegates had spoken out against what they perceived as Soviet expansionism, Utsunomiya was one of the most outspoken critics of the present arms race between the Soviet Union and the US.

Utsunomiya is a former member of the ruling Liberal-Democratic Party. He left the party several years ago due to differences of opinion over relations with China and Korea.

He has consistently taken the view that Japan should come to terms with these two nations without necessarily agreeing with whatever the US policy may be toward the region at the time.

Utsunomiya has been a frequent visitor to China and was associated with the pro-China faction within the Liberal-Democratic Party.

Utsunomiya led the discussion with his paper on "crisis management," in which he pointed out that

whereas the US had once perceived China as a threat, Japan, because of its geographical proximity to China, was more immediately obliged to seek ways of developing friendly relations with China.

Rapprochement

He went on to argue that the same rapprochement between the US and the Soviet Union could eventually be possible if both nations did not place so much emphasis on a mutual arms race.

"It does not suffice for us to look only at military assessments," he said. "This contains a danger of over-reaction."

"The US today seems to be dominated by the tendency to believe that crisis control, in other words the maintenance of peace, can only be achieved through power rather than reasoning and that talks not backed by power are out of the question."

"In the present situation, the Soviet threat is emphasized beyond necessity and the world appears filled with crises."

"The same people who were talking about the Chinese threat to the US, no longer do so."

"The same thing could happen with regard to Russia."

"In view of our relations with China in the past, I think anything can be improved."

"At the present time, Japan-China relations are extremely good and it is difficult to measure just how greatly this situation has contributed to peace in the Far East and the stability of both the Japanese and the Chinese nations."

"It has even had an important effect on peace in Korea."

Arms Buildup

Utsunomiya conceded that there had been a significant arms buildup on the part of the Russians in the East Asian region, but questioned whether this posed any imminent problems for the region.

"Recently there has been talk of a Russian threat to Japan," he said.

"But viewed from our position, a threat is something that exists where there is a will and a capability to invade another country."

"A military buildup is apparent, but it is not clear that such a will exists in other countries."

Utsunomiya cited the Korean peninsula as an example of a relative absence of a Russian threat of interference in the near future.

"In May this year, I met with Deng Xiao Ping," he said.

"Deng said that American policy vis-a-vis the Korean peninsula is very foolish.

"He said Kim Il Sung is only eight hours flying time to Moscow and yet he hasn't been to Russia for eight years. But if the US continues its present posture over Korea, it could drive Kim Il Sung toward the Russians."

As a counselor of the Japanese Parliamentary Association for the Promotion of International Disarmament, Utsunomiya voiced his complete support for international forums which provide an opportunity for discussing disarmament.

"Some countries are behaving as if they are living in an armaments storehouse," Utsunomiya said.

"War is a competition in mass murder, aimed at domination of other countries.

"In recent years, in particular, the development of new weapons has added a new dimension to mass murder, and modern wars bring cruel injuries and death to countless non-combatants."

Civilian Deaths

These sentiments were echoed by Professor Shimpei Fujimaki of Tokai University who noted that in all wars since World War II, civilian casualties had surpassed the death toll among military personnel.

Fujimaki, a former secretary in the secretariat of the Socialist Party, said 95 percent of those killed in future wars would be civil-

ians because of the nature of the weapons employed.

"When the war is over, those paying homage to the war dead will be the former soldiers," Professor Fujimaki said.

Utsunomiya's paper sparked critical remarks among other delegates, particularly those from Europe and Australia.

Taking Sides

Former French representative to NATO Council, Ambassador Francois de Rose, said it was impossible not to take sides morally over the Soviet Union's intentions internationally.

"You can not condemn those who by great cost do what is necessary to prevent the Soviet Union from prevailing in the world," De Rose said.

"I don't believe in war—because the risk is too great—not because the Soviets have given up their will to see their system prevail in this world," he said.

Christoph Bertram, director of the London-based International Institute for Strategic Studies, said arms control was not a favor one side did for the other.

"A unilateral refusal to arm may be a perfectly legitimate position for a country to take," Bertram said.

"But historical experience shows that such decisions do not produce the same reactions in others, for the simple reason that other countries have different ways of seeing things."

Finlandization Of Japan

Australian delegate Paul

Dibb, a senior research fellow at the Department of International Relations at the Australian National University, said the Soviet Union's East Asian strategy could conceivably lead to the eventual Finlandization of Japan.

"I am impelled to say that in the last decade, the evidence points to an unremitting buildup in Soviet military strength," he said.

In concluding his contribution to the debate, Utsunomiya referred to recent antinuclear demonstrations in Europe as a manifestation of an uncertainty regarding the US, a country which "has of course never experienced nuclear warfare, which is located across the Atlantic Ocean from Europe as a relative zone of safety, and which is intent on achieving military superiority over the Soviet Union, even at the risk of turning Europe into a battlefield, and even in the worst case, sacrificing Europe in a nuclear war.

"Japan's crisis control must never go beyond the framework of its peace constitution and its three non-nuclear principles," Utsunomiya said.

"Since the rationale for the present global war crisis is provided by emphasizing the differences between the social systems of the US and the Soviet Union, the principle of mutual nonaggression and mutual nonintervention among nations must be reaffirmed anew by transcending differences in social systems, race and religion.

"This can be done by the US and the Soviet Union. If they only decide to do so."

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POLITICAL AND SOCIOLOGICAL

SDF PAY BOOST NOT IN 7.5 PERCENT CEILING

Tokyo THE JAPAN TIMES in English 2 Dec 81 p 1

[Text]

Prime Minister Zenko Suzuki indicated Monday that the planned increase in pay for defense personnel will not be included in the 7.5 percent ceiling on the growth of defense spending in fiscal 1982.

In his first press conference since the reshuffle of his Cabinet Monday, Suzuki said: "It is extremely difficult for the Defense Agency to absorb the pay raise for its employees, including Self-Defense Forces personnel, within the 7.5 percent ceiling."

Amid growing calls from the United States and other Western nations for an increased Japanese defense role, the agency is stubbornly resisting the Finance Ministry's pressure that the pay increase should be absorbed in the 7.5 percent growth allowed the agency.

Suzuki said that the National Personnel Authority recommended pay increases for government employees, including defense service personnel, after the agency had made its budget proposal for fiscal 1982 early summer this year. But he stopped short of clearly endorsing the Defense Agency's position.

Chief Cabinet Secretary Kijichi Miyazawa explained later to the press that Suzuki's statement meant that there was no telling how much the defense budget would be until the government completes compilation of the fiscal 1982 budget.

The prime minister also reconfirmed his position during the press conference that his government would not change its policy of holding the defense spending below the level equivalent to 1 percent of the gross national product (GNP).

Asked why he had appointed Susumu Nikaido, a suspected bribe-taker in the Lockheed payoff scandal who escaped indictment, to the post of secretary-general of the Liberal-Democratic Party, Suzuki justified his choice by saying:

"Mr. Nikaido has made serious efforts for the party as chairman of the party Executive Council over the past year, always keeping public opinion in mind. I expect him to discharge even greater responsibilities as secretary-general."

He bluntly dismissed the allegation that he had given the No. 2 post in the ruling party to

Nikaido, commonly regarded as the proxy of former Prime Minister Kakuei Tanaka, to buy the cooperation of the powerful Tanaka faction in order to ensure his re-election as LDP president next autumn.

Turning to foreign affairs, he reiterated that his government regards South Korea as "one of the closest neighboring countries" in Asia and intends to help that country improve the livelihood of its people and contribute to its stability.

But he declined to comment how his government will handle Seoul's request for \$5 billion in Japanese loans.

In reply to a question about Japan's external trade issue, Suzuki said he would shortly adopt a package of measures to remove Japan's tariff and non-tariff barriers, which impede the flow of foreign products into the Japanese market.

He also reiterated his policy of advancing the implementation of the 1979 Tokyo Round multilateral agreement on tariff cuts by two years.

"I am not thinking of seeking a second term now, and the (re-election) issue entirely depends on the wishes of all the ruling party members," Suzuki stressed.

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ECONOMIC

JAPAN, SINGAPORE STRENGTHEN ECONOMIC TIES

Tokyo BUSINESS JAPAN in English Nov 81 pp 31, 35, 39, 43, 46

[Article by Akira Kasuya, Director, South Asia-East Europe Division, International Trade Policy Bureau, Ministry of International Trade and Industry]

[Text]

ECONOMIC relations between Japan and Singapore are becoming closer every year, and trade between the two countries is showing stabilized growth. Private capital investments are in a process of recovery on a moderate scale.

Some pending problems naturally exist between the two countries, such as the trade imbalance and the import of specific Singapore products by Japan, but they can be solved through mutual efforts and cooperation, and they do not menace the permanent friendship between Singapore and Japan.

Japan's position has again become the theme of heated discussion concerning peace and stability in the Southeast Asiatic region. Needless to say, a strong economic structure for ASEAN countries is essential for attaining stability in Southeast Asia.

Japan must respond to Singapore's hopes in various aspects of economic cooperation now that Singapore has established itself firmly as a member of the newly-industrialized countries (NICs). Singapore must receive help and encouragement to become the hub of strong collective self-reliance aimed at fostering the economic expansion of countries in Southeast Asia and surrounding regions.

Singapore maintained a two-digit economic growth record in 1980 when almost all industrially advanced countries were suffering from the protracted recession. The country's economic growth in the first half of 1981 seems to have remained on the same high level. National productivity in this period grew 6% over the corresponding period in 1980. At the same time, Singapore succeeded in curbing the rise of commodity prices to 6%.

Such a favorable economic trend, in parallel with the stability of the present administration, is continuously stimulating foreign investments in Singapore.

The volume of foreign investments in Singapore in the first half of 1981 amounted to 70% of the amount for the same period a year earlier. However, the incentive for investments in the new sectors remained strong thanks to the country's policy of modernizing its industrial structure.

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The future is bright, especially for manufacturing industries. Securing skilled labor is the greatest current problem.

Singapore's guideline for economic independence, mapped out with the advice of the U.N., has successfully passed the take-off stage of promoting transit trade and financial business, and has entered the phase of actively creating or expanding various secondary industries with high added value, including the petroleum industry. This policy is embodied in the Economic Promotion Expansion Law, and specifically in various measures enacted to encourage the inflow of foreign capital, including preferential duties, which have proved extremely effective.

Most of these huge foreign investments, which accompanied the smooth changeover to heavy and chemical industries, assumed the form of direct investments in fixed assets. Foreign enterprises including Japan's seem to have accounted for 75% of the added value produced by all industries in Singapore in 1971. These factors have enabled Singapore to escape the common fate of newly industrialized countries — the accumulation of foreign debts.

Although soaring oil prices have increased the country's trade deficit, they have simultaneously pushed up the export revenue derived from oil products. Singapore, among non-oil producing nations, has attained an unusually high trade share with non-ASEAN countries, which climbed from 53% in 1960 to 81% in 1979.

Hitherto Singapore has successfully expanded its economy by avoiding trade conflicts with neighboring countries and specializing in oil-derived products with their wide marketability. What implications the industrialization of neighboring countries will have on Singapore remains to be seen. Likewise, Singapore's contribution to the solidarity of ASEAN community is of interest. These are decisive factors for making medium-term and long-term predictions concerning the economy of this nation.

What is the attitude of Singapore to its medium-term and long-term economic prospects? We can read it in the message of Prime Minister Lee Kwan Yew commemorating the National Day on August 9, 1981, in which he emphasized 1) the importance of education, skills, working moral, team spirit and higher productivity for the future economic development of the nation. 2) the importance of mutual cooperation with the ASEAN Community so as to achieve high and stabilized economic growth and 3) the promotion of industries with higher added value to transform Singapore into the "information and brain center" of ASEAN or Southeast Asiatic region as the target for the 1980s. According to Prime Minister Lee, the immediate tasks of the nation were the easing of the labor market and higher productivity.

Along with its policy to modernize the industrial structure, the government of Singapore is expected to carry out steps for improving labor productivity and for higher wages, as well as steps for encouraging foreign capital inflow including tax reduction for specific equipment investments.

In this article the writer wishes to make some predictions concerning Japan's role in the creating of a high-productivity society in Singapore mainly from the standpoint of investments.

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Direct Overseas Investments by Japan

Following is a part of the conversation which took place when Singapore's Permanent Secretary of Commerce and Industry visited the leaders of Japan's Ministry of International Trade & Industry last summer:

S: "We expect Japan's assistance in making Singapore the center of the information industry in the future."

J: "The information industry has an extremely wide scope. The same thing can be said of software. Singapore must decide first which sectors it will give priority to. That data will serve as a guideline for the future actions of Japanese enterprises."

S: "We will naturally bear in mind your suggestion."

J: "Is Singapore interested in technology-oriented sectors other than the information industry?"

S: "Singapore is also interested in the technology service industry including engineering."

J: "We feel that mutual cooperation in specific projects, in which the assets of both nations can be combined to the highest advantage, may be profitable. The government of Singapore is conducting a campaign to promote labor productivity. We are wondering whether the entrepreneurs themselves are switching their thought patterns as quickly as the government desires."

S: "The government of Singapore must act on the assumption that entrepreneurs will follow its intention."

As can be surmised from this conversation, ASEAN and its neighboring countries are pinning an ever mounting hope on the role of Japan in overseas investments and in particular, technology transfer as well as on policy aimed at structural reform through furnishing guidance and know-how.

Direct overseas investments by private Japanese enterprises received a fresh impetus in 1972 through the international adjustment of exchange rates. It was followed by a period of protracted stagnation unleashed by the oil crisis and ensuing turmoil in domestic and overseas investments in late 1973.

Overseas investments surged up again in 1978 reflecting the growing potential of enterprises for such ventures and the influence of long-term management strategy.

The importance of developing countries in Japan's overseas investments has increased further. When regional shares of direct investments are analyzed, the increase in investments for transferring production bases, motivated by less expensive labor costs, and investments for natural resources development with comparatively high unit contract amount is conspicuous.

The change in shares by industrial sector and region, highlighted by the uptrend in direct investments in the manufacturing sector, indicates the extent of the international activity by Japanese industries and their domestic structural adjustments. It further points to the expansion of overseas investments through the direct incentive of management diversification and internationalization centering on developing countries.

Asia, and especially the ASEAN region, is highly significant as the receptacle for Japan's overseas investments, 56% of which flowed into this region from 1951 to 1979.

However, the progress of economic development in

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newly industrialized countries of Asia and other regions, led by Singapore, is causing fundamental changes in the motivation of private Japanese investors. Various advantages such as preferential duties and protective measures for foreign investments by local governments are no longer to be expected as in the past. For Japanese enterprises, foreign investments have come to assume the same degree of strategic importance as domestic investments. Future investments must be guided by higher recognition such as the deepening of economic interdependence among nations.

In this connection, business circles in Japan are analyzing the positive and negative sides to foreign investments from the standpoint of an investing nation. Japan's role in pursuit of a fair international division of labor on a worldwide basis — with the emphasis on higher added value in industry and trade — is being seriously discussed, reflecting the higher share of manufacturing industries in the foreign investment balance.

The recognition is gaining ground that private foreign investments must serve as an important leverage for the division of labor. An increasing number of Japanese enterprises are accepting this point of view.

Private Japanese Enterprises

The overall amount of committed investments in Singapore during 1980 stood at US\$690 million, down 33% from a year earlier. Investments by Japanese enterprises (commitment base) decreased from \$150 million in 1979 to \$70 million in 1980.

The chief cause of this decline was naturally the influence of the economic climate in Japan. At the same time, it cannot be denied that the response to the switchover in Singapore's industrial policy caused a considerable delay.

Positive implementation of a fairly drastic anti-protective policy by Singapore, based on the thinking that "only free competition can strengthen the structure of enterprises," constituted radical therapy for creating a new dimension in Singapore's industry.

Only enterprises promising high added value and clearing this hurdle will have a chance in Singapore in the future. Yet the feeling in general is optimistic.

Let us take as an example a Japanese electronic enterprise which has recently moved into Singapore. The amounts of fixed assets and added value per employe have increased 100% and 30%, respectively, compared with the average figures of the same industry in 1980.

Singapore's powerful campaign for higher productivity, aimed at the growth of industries with higher added value, appears to promise a steep economic growth. Capital-intensive and technology-intensive sectors have become attractive for foreign investors.

This trend conforms to Singapore's basic policy of higher productivity and wages to break the bottleneck of the chronic shortage of labor. On the other hand, there are some apprehensions about the inevitable flight of a part of its foreign capital during the transition period and the possible implications in Singapore's economy.

The balance of investments in Singapore by Japanese enterprises stood at over \$500 million as of the end of 1980. Over 1,000 Japanese companies maintain at least

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representative offices in Singapore. Among them, about 300 companies were registered later than 1978. The advance of Japanese enterprises in Singapore is apparently maintaining a substantial level in spite of a slight setback in 1980.

Broken down by industry, manufacturing industries, which are the most active, accounted for about half of the enterprises that have moved into Singapore in the past four years. Noticeable is the recent increase in the investments by makers of electronic and electric devices.

This trend is ascribed to the wholehearted compliance of Japanese enterprises to Singapore's policy in this sector. Extensive local surveys have enabled the participation of numerous medium and small enterprises as subcontractors supplying parts.

These moves conform to the growth of supporting industries around the nucleus or key industries in the process of industrial modernization stressed by Singapore, and are regarded as a desirable phenomenon. Against this background, a sharp growth of foreign investments in the form of full subsidiaries has become a conspicuous trend.

Whereas the percentage of manufacturing industries far exceeds 50% of Japanese investments in the Asian region (in number of individual investments), this ratio is less than 34% in case of Singapore. In contrast, weight of Japanese investments has relatively risen in service sectors including trade, construction and engineering compared with neighboring countries in Asia. Thus things are moving in favor of Singapore's national policy.

These facts show that Japanese capital is making a vital contribution to establishing Singapore as an international business center. Observing macroscopically the desirable effects which Japanese enterprises have brought to Singapore by their locating in that country, we can cite increased employment opportunities centering on manufacturing industries (some one-sixth of the workers in the manufacturing sector being employed by Japanese enterprises) and growing revenue from exports.

Japanese and American enterprises have offered opportunities to newcomers to the labor market. This may be the reason why Singapore maintained a very low ratio of unemployment during the 1970s in spite of the oil crisis.

However, the creation of new employment opportunities has ceased to be an urgent task for Singapore. In other words, full employment has served as the direct motive for Singapore's policy change regarding the induction of foreign capital.

As mentioned earlier, Singapore is seeking a way of survival in the export market through fostering industries with higher added value while its neighboring countries are rapidly catching up with Singapore by virtue of their labor-intensive industries. Japanese investors have obviously contributed in a substantial way in technology transfer to Singapore, although this fact tends to be overlooked owing to the difficulty of ascertaining details of such agreements.

Technological transformation has become a common task for all developing countries, and especially so for such newly industrialized countries as Singapore.

Responsibility of Japanese Enterprises

The changeover to products with high marketability is

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imperative for Singapore at present. Additional investments and reinvestments for this purpose are progressing fairly smoothly. As a whole, Japanese enterprises are endeavoring to entrust Singapore with the manufacture of certain types of products and to make available automated processes to Singapore for the production of diversified, reliable merchandise of high quality.

Japanese investors are also working patiently to establish harmonious management-labor relationships in multi-racial Singapore. There have been inevitable minor troubles, but deep-rooted antagonism has been avoided so far. Some enterprises have given up investments mainly because of the abolishing of preferential import duties and not because of racial problems.

Such a normal state of investments, however, seems to have arrived at a turning point. If the adequate growth of sectors with lower maturity than the service sector is the real task for Singapore, the acquiring country, then Japan, the supplying country, must concentrate on changes in sectors where technology transfers promise the most opportunity. The risk can be alleviated by involving Singapore's own capital.

Japan should preferably encourage, at the same time, Singapore's expertise in consulting and engineering sectors among non-manufacturing activities, and actively extend investments and technological assistance accompanying or preceding such investments.

Conclusion

Singapore's import surplus against Japan in January - June period, 1981, reportedly grew 24% over the same period in the previous year. Singapore's exports to Japan increased 6%. Japan has now grown into Singapore's No. 1 trade partner surpassing even Malaysia.

While we are not indifferent to the trade imbalance between the countries, the growth of imports from Japan can be interpreted as a sure sign that private Japanese investments are being reflected in the growing trade volume between Japan and Singapore. It is an indication of the healthy growth of industries in the host country.

This observation is supported by the fact that Singapore's exports to Japan, too, are slowly but steadily increasing. Economic relations in general and trade relations in particular between Japan and Singapore are expected to become ever closer with time.

Japan's attitude on cooperation in Southeast Asiatic countries was made clear in International Trade & Industry Minister Tanaka's vision (the so-called "Tanaka Doctrine") explained last fall, and the "Bangkok speech" presented by Premier Suzuki when he visited Southeast Asia early this year, emphasizing such themes as the solution of the energy problem, increased exports of finished products and promotion of medium and small enterprises.

Japan is in a position to offer cooperation based on its accumulated expertise. The Japanese government is implementing steps for adequate counselling of smaller enterprises in various stages of development and for information exchange among developing and industrially advanced countries through various experts. The importance of overseas investments by smaller enterprises is emphasized since such investments mean a direct transfer of manage-

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ment resources and knowhow to the host country. Various measures are being mapped out for the purpose of encouraging the cooperation of medium and small Japanese enterprises, including training and advisory businesses, in this age of internationalization.

Singapore's expectations from direct private investments have not abated a bit. The Economic Development Board (EDB) of Singapore is fully aware of the difficulty of assuring a smooth inflow of foreign capital into the nation as in the past, beset as it is with soaring wages, inflation and labor shortage.

Singapore, now committed to steep economic growth, is making a total input for the induction of Japanese capital. In this connection, it is interesting that an investment seminar is going to be held in Japan in November with the co-sponsorship of JETRO (Japan Export Trade Organization) and EDB.

Japan has been somewhat behind other advanced Western countries in overseas investments. However, the country has at last attained leadership in the field of vanguard technology, and Japan's overseas investments in advanced countries, centering on manufacturing industries, are rapidly expanding, partly stimulated by the resurgence of protectionism.

Investments in developing countries must be viewed from a different angle. Using the receptive attitude of host countries as a powerful incentive, such investments are expected to grow in the future with medium and small enterprises as the nucleus.

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SCIENCE AND TECHNOLOGY

ROLE OF ROBOTS IN INDUSTRY VIEWED

Tokyo BUSINESS JAPAN in English Nov 81 pp 21-23

[Article by Shozo Hochi, Editor-in Chief, BUSINESS JAPAN: "Unmanned Factories Relentlessly Producing Computer-Controlled Products"]

[Text]

A flexible manufacturing factory (FMF) has been recently completed at the headquarters of Yamazaki Machinery Works, Japan's largest machine tool manufacturer based in Oguchi-cho near Nagoya, and is now in operation. Many people are visiting the factory to see how the new unmanned system works, including a large number who are coming from abroad.

A factory in which "robots produce robots" was completed by Fujitsu Fanuc Co. last year in Fuji City, Shizuoka Prefecture and came into production from this January. The factory is also attracting many visitors as the first unmanned factory of its kind.

The factory that has been built as the first unmanned factory adopting a full-fledged flexible manufacturing system (FMS) in the machine tool industry has a floor space of 2,790 square meters. Equipped with 18 machine centers (MC) that can do various cutting operations and two pallet-loader robots that carry work pieces, the factory can process major parts of machine tools on an almost fully automatic basis.

What the factory processes includes main cylinder bases, beds and cabinets for numerically-controlled (NC) lathes, and machining centers, the company's mainstay products. The factory produces as many as 23 different items of main cylinder bases, and the total number of different items it produces amounts to as many as 84. The factory boasts of its capability to process such a great number of different parts.

Yamazaki Machinery Works has long been adopting a two-shift work system, but here at the factory, a three-shift system has been adopted for around-the-clock operation. But only six persons work the 8 a.m. to 4 p.m. shift and the 4 p.m. to 12 p.m. shift. From midnight to 8 a.m., no human works at the factory, but automatic machining centers and pallet loader robots continue their programmed movements. Any abnormal operations of the machines can be detected by various kinds of monitoring equipment such as self-diagnosing devices, and tool defect detecting and repairing devices attached to each machining center.

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Though the average working hours of Japanese workers account for less than 2,000 hours a year, an annual average of working hours at the factory is expected to reach some 8,600 hours, almost 4.5 times. When compared with a similar sized conventional factory with existing types of machines, the factory is said to correspond in capability to 68 general-purpose machine tools and 215 workers. When expressed as a sales price, the new factory is estimated at a value of ¥4,000 million. According to Tsunehiko Yamazaki, the company's managing director, when calculating the factory's capability, personnel expenses, and other expenses, the original investment can be returned within two years. More than 10 inquiries for purchasing similar plants from the company are said to have been received.

As the above example indicates, the flexible manufacturing system, combining NC machine tools, auto transfer machines, industrial robots and the software to operate them, has entered the stage of practical use in Japan. This is an achievement of the nation's highly advanced machine industry which exports nearly 40% of its products. The new factory symbolizes the first milestone toward complete unmanned operation of factories. As for forging machines, along with the recent advancement of technologies to produce dice, those with pressing functions with less losses and safety mechanisms have been developed. Markets for industrial robots, indispensable for unmanned operation, are also rapidly expanding.

Immediately after World War II, nobody could anticipate that the Japanese machine industry, that had been almost completely destroyed during the war, could grow and develop to such a great extent. In 1980, Japan's machine tool industry claimed the third highest position in the world in output after surpassing the Soviet Union. Japan started the production of industrial robots in 1967 with imported robots as models and achieved the world's largest output of ¥60 billion last year.

This outstanding achievement by Japanese industries can be witnessed not only in the machine industry but also in such fields as steel, automobiles and household electrical appliances. Against the background of their No. 1 position in the world, many industrial products made in Japan are being exported to almost all regions of the world.

This tremendous achievement can be ascribed to the diligence and high educational level of the Japanese people. Other factors that also contribute to this may include the unity of the labor force, the lifelong employment system and the homogeneity of the Japanese people.

But what we should not overlook in this respect is the fact that the technological level of Japan's machine industry, particularly that of the machine tool industry, is very high. When a trade problem developed in connection with Japan's rapidly increasing auto exports, the president of a leading Japanese machine tool manufacturer said, "It is quite natural that Japanese-made cars are high in quality and low in production cost. Japan's technology for production of transfer machines used in mass production of autos is more advanced than in other countries."

There have been some noteworthy features in the development of the nation's machine industry since the first oil crisis in 1973.

First of all, efforts toward making not only automatic

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machine tools but also automating other machines have been extensive. Secondly, in coping with the diversification of consumers' needs, manufacturers have changed their views on mass production and ceased to rely only on mass production technologies. They have realized the importance of developing various ways of production to meet various needs of consumers. Thirdly, such new concepts as computer-aided manufacturing (CAD) and flexible manufacturing systems (FMS), that are completely different from conventional concepts of production, have been introduced. Fourthly and finally, the nation's machine industry has become more and more export-oriented.

These new trends indicate that the final target of the machine industry is to achieve complete unmanned production of machines and equipment.

One of the methods to achieve unmanned operation is adopting NC machines. Such tools made their debut about 30 years ago. Now more than half the machine tools produced in Japan are automated NC machines. The most remarkable advantage of NC machine tools is that products that are exactly alike can be manufactured regardless of the "skill" of their operators.

The machine tool industry used to be subject to fluctuations in business activities. But, thanks to the appearance of NC machine tools and general demand for replacements of machines following the oil crisis, Japan's machine tool industry has been drawing a constant upward curve in output since 1975.

During the past several depressions, the machine tool industry has been well able to compensate for stagnant domestic demand with exports. Now, the machine tool industry has firmly established its foothold as an export industry by exporting nearly 40% of its total output.

Though there can be witnessed some declining trend in order acceptances, the order backlog surpasses ¥300 billion. This means that the industry can continue full operation for half a year without any new orders.

It is furthermore expected that there will be large investments in other industries in plants and equipment from next year on. The machine industry will be called upon to supply many of the required goods. Now the nation's machine tool industry is on the crest of the wave of FMS and automation.

Those in Japan's robot industrial circles regard 1980 as the first year of the widespread diffusion of industrial robots. It was in 1980 that the total output reached the ¥60 billion level. It is assumed that the market for robots will rapidly expand.

Up until sometime ago, robots were creatures only in the world of the imagination, figuring largely in science fiction. Robots will be producing robots on a far larger scale than what is being done in the Fujitsu Fanuc factory within a few years.

Seiemon Inaba, President of Fujitsu Fanuc, says, "Markets for robots are within easy reach of our operation. Markets develop first and then our development activities follow. In the case of NC machine tools and other equipment, we spent more than 10 years developing them before markets were created."

As everyone concerned with the industrial robot indus-

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try admits, markets for industrial robots precede what the industry can do at that time.

Unmanned operation of a factory becomes a reality when robots are combined with NC machine tools and work pieces are fed from machine to machine by means of automatic transfer machines.

In the case of NC machine tools, they helped the recovery of the machine tool industry which had been suffering from a long-term depression. When a depression hit the Japanese economy in 1975, demands for NC machine tools became stagnant, but the output of NC machine tools started to increase spectacularly from 1978. The output of industrial robots has drawn a similar upward curve over the past several years.

Until 1975, the output of industrial robots in Japan was only ¥10 billion or so, but it started to show an upward trend from 1976 and its rising curve after 1978 indicates how rapidly demands for industrial robots will increase from now.

Fields in which industrial robots are extensively used are mainly the auto industry and the electric machine industry. Nevertheless, along with the development of "intelligent" robots and the expansion of their uses, the output of industrial robots is expected to sharply increase as in the case of NC machine tools.

The development of the industrial robot industry is most likely to bring a qualitative change to the machine industry in general. The progress of FMS consisting of industrial robots will free workers from undesirable working environments and simple operations, but could bring on the problem of unemployment. But most of the people concerned with the machine industry insist that there is no such possibility. Workers will be transferred to more satisfying work and their working hours will be shortened, they say.

In Japan, industrial robots are used extensively for repetitive work in the auto industry. Spot welding operation at Nissan Motor's factories is done by some 400 robots, which contribute to 90% of the company's spot welding operations on car bodies. Toyota Motor also began using spot welding robots from last year. Kawasaki Heavy Industries Co. produced more than 1,000 Unimate spot welding robots, with 90% of them having been delivered to the auto industry. In the production of arc welding robots, Yasukawa Electric Works has a market share of 70% to 80%, most of which are destined for the auto industry. Painting robots are not so widely diffused yet, but Kobe Steel Corp., which introduced technology from Norway in 1973, has so far sold more than 1,000 units, mostly to the auto industry.

At the 19th International Symposium on Industrial Robots held in Milan, Italy, in March 1980, a U.S. delegate described how industrial robots were diffused in major countries of the world. According to the report, while the U.S. held 1,810 programmable servo-controlled point-to-point (PTP) robots, 345 programmable servo-controlled continuous path (CP) robots, and 1,100 programmable general-purpose non-servo robots in operation as of December 1979, and West Germany 300 programmable servo-controlled PTP robots, 150 programmable servo-controlled

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CP robots, 200 programmable general-purpose non-servo robots, 200 programmable diecasting and molding non-servo robots and 5,000 units of mechanical transfer equipment, Japan held as many as 3,000 programmable servo-controlled PTP and CP robots, 11,000 programmable general-purpose non-servo robots and programmable diecasting and molding non-servo robots and 33,000 units of mechanical transfer equipment. These figures well demonstrate that Japan has the largest number of various industrial robots in operation.

According to another survey by a Japanese economic research institute, industrial robots are mainly used in such industries as transportation machines, electric machinery, synthetic resin, metal products and general machines. The auto industry and the electric machinery industry assume more than 60% of industrial robots delivered. The number of industrial robots delivered in 1980 was estimated to have reached more than 75,000. One survey revealed that as of December 1979, 7,290 manual manipulators were in use in Japan, while there were as many as 45,760 fixed sequence robots and variable sequence robots in operation. There were 2,410 play-back robots and 1,340 "intelligent" robots in use. Even two years ago, there were 56,800 industrial robots of various types in use in Japan.

Industrial robots can easily cope with changes in products to be processed by changing programs. This is a revolutionary role industrial robots can play in the modernization of industries. When NC machine tools made their debut, they prompted a large stimulus to plant and equipment investments in the nation's machine industry. Plant and equipment investments assume a large weight in Japan's gross national product, and their trends should not be overlooked when one tries to see how domestic business activities move. Then what influence will industrial robots give to such plant and equipment investments?

First of all, industrial robot manufacturers increase their plant and equipment investment in order to increase their output of industrial robots. Then, on the part of industrial robot users, they increase such investments by replacing obsolete facilities with industrial robots.

Prices of industrial robots range from some ¥1 million per unit to ¥12 to ¥13 million. Judging from this price range, if a factory tries to fully use industrial robots, amounts to be invested for such a purpose will range from several million yen in small cases to ¥2 to ¥3 billion for large undertakings.

Industrial robots also decrease enterprises' investments in other plants and equipment. If the rates of operation of facilities are enhanced to a maximum point by introducing industrial robots, enterprises do not have to purchase machines and equipment in addition to industrial robots. Then they can save money for investment.

In the case of conventional types of machines, they must be either improved or remodelled as new requirements develop. Otherwise, new machines must be purchased. In the case of robots, however, changes in programming are usually sufficient when changes are demanded. Unlike human beings, industrial robots demand no special lighting nor airconditioning facilities.

Miniaturization of industrial robots is also an important subject matter to be studied in the 1980s. Their miniaturization

zation is expected to come about in the middle of the current decade. Then, small industrial robots will be efficiently arranged along the production line in a factory, improving production efficiency to the maximum in both space usage and output. Land is very expensive in Japan, so a decrease in required space for factories is a big advantage for management.

As seen above, industrial robots can both increase and decrease plant and equipment investments. Installations of industrial robots will have a great impact on the trend of an industry's plant and equipment investments in the future.

Japan's machine industry has achieved tremendous results in the past three decades: it induced a great variety of modern technologies from abroad in the 1950s, it developed various applied technologies on the basis of such induced technologies through the 1960s and 1970s, and now it is facing a new industrial revolution through the adoption of numerical controls and flexible manufacturing systems.

Industrial robots can be called the crystallization of the most advanced industrial technologies. They can play the most vital role in the new industrial revolution.

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29
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SCIENCE AND TECHNOLOGY

INTERNATIONAL COOPERATION PROMOTED TO BOOST PLANT EXPORTS

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[Article by Fumihiko Matsuda]

[Text]

ACCORDING to some experts, the export of plants, which, together with automobiles and household electrical appliances, have formed the three main pillars supporting the Japanese export industry, has reached a crisis point. Plant exports, which had steadily expanded to top \$10 billion in fiscal 1979, decreased for the first time in fiscal 1980 to fall below that level again. This was due largely to such factors as (1) the war between Iran and Iraq, which forced Japan to interrupt plant construction and suspend negotiations, (2) cancellation of construction of large plants in China, and (3) economic sanctions against the Soviet Union after its invasion of Afghanistan.

Now, however, it has been said that plant exports have passed the crisis thanks to the orders received this fiscal year for plants for large-scale projects. Nevertheless, with increased country risk and intensifying international competition in the shrinking export market for large plants, the outlook for plant exports remains questionable. In the following paragraphs, we will try to outline the future prospects and problems of Japan's plant exports.

According to statistics compiled by the Ministry of International Trade and Industry (MITI), licensed plant exports (excluding heavy machinery exports exceeding \$500,000 per case) totaled \$8,932 million (roughly equivalent to ¥2,000 billion) in fiscal 1980, down 24.2% from \$11,785 million (roughly equivalent to ¥2,600 billion)

in fiscal 1979. This decline came as a shock to industrial circles, for Japan's plant export industry had steadily grown since the start of the 1970s through the first oil shock, even while other industries were suffering from a slowdown. Moreover, the industry had attained the \$10 billion mark in the previous fiscal year.

There are various reasons given for this lapse in plant exports. They can be boiled down to the following:

(1) Worldwide recession slowed the demand for plants.

(2) Japan's plant negotiations with developing countries, its main plant market, were restricted by the unstable political situation and accumulating debts and, therefore, increased country risk of these countries.

(3) Japanese plant makers did badly in international competition which was intensifying among plant exporting countries. In particular, Japan's plant exports to communist countries declined by as much as 70% as a consequence of economic sanctions against the Soviet Union following its invasion of Afghanistan, the cancellation of plant construction in China, and Poland's accumulating external debts.

Considering the sharp decline in plant exports and the structural aggravation of the conditions affecting plant exports, it was obvious that plant-exporting firms faced a grave crisis. The government and private industries were considering joint efforts to work out measures to promote

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plant exports.

However, the situation has reversed itself since the current fiscal year started. A preliminary report for the first quarter of the year (the fiscal year begins in April) revealed that licensed plant exports totaled \$3,919,170,000 in value, a whopping increase of 51.7% over the like period of the previous year. Some people were optimistic enough to remark that if this growth rate was maintained, plant exports in fiscal 1981 could total \$15 billion or more. The truth, however, is that among the orders Japanese firms received during the first quarter of fiscal 1981 were such large-scale ones as LNG plants from Indonesia and oil refinery plants from Malaysia, and these contributed greatly to the overall increase in plant exports. After negotiations for a certain project are started, it is usually several years before orders are actually placed. The bigger the project, the longer it takes for it to materialize. The orders received in the current fiscal year are the outcome of negotiations which were started a long time ago. Therefore, one cannot be too optimistic about the trend of plant exports. As many people have acknowledged, good performance in the first quarter of the year does not necessarily mean a good performance for the entire year.

The current plant export situation was clearly foreseen by the Plant Export Policy Committee (a private advisory organ to MITI, chaired by Renzo Taguchi, director of the Japan Federation of Machinery Manufacturers), in its report compiled in April this year when measures to revitalize plant exports were widely discussed. The report says that, as the causes of the plant export slowdown will remain mostly unchanged, the difficult situation will continue except for a temporary recovery in fiscal 1981. Because the report proved right as regards the temporary recovery, we may as well be prepared for difficult times ahead as anticipated by the committee.

What, then, were the grounds for predicting some improvement in plant exports in fiscal 1981? First, the repercussions of the second oil shock subsided and many countries, in particular developing ones, started to invest in new energy sources and industrialization. Secondly, in the Soviet Union

and East European countries, the demand for plants became active as a new five-year plan was started. New economic plans were laid out for Algeria and Nigeria, which were potential plant markets. There were new moves to relax economic sanctions against the Soviet Union. Thirdly, in the oil-producing Middle East, another plant export market, the war between Iran and Iraq seems to have passed its worst period and, with the political stabilization of these countries, the demand for plants for rehabilitation projects was expected to become active.

The above considerations were supported by MITI data on Japan's plant deals with other countries. The number of such deals finalized during a particular period is used as a leading indicator for plant exports. According to the MITI data, 1,488 export orders for plants totaling \$94,800 million in value will be placed with Japanese firms in fiscal 1981. While the number of orders remains much the same as in fiscal 1980 (1,480 orders), the export value shows an increase of 23% over fiscal 1980 (\$86,900 million). A big increase is expected for orders from the Middle East (165 orders, \$19,900 million) and Southeast Asia (453 orders, \$20,100 million).

It is also estimated that plant exports will show an annual growth rate of 3-4% in real terms over the next five years (up to fiscal 1985). It would be difficult for Japan, which has already grown into a major plant exporter by obtaining a 10% share in the world plant market, to increase its share further. It would be no exaggeration to say that the most the country can do is to maintain its 10% share.

Measures to promote plant exports are being studied by MITI and the industries concerned. Specifically, Japan intends to take the following measures, after working out and implementing measures to decrease country risk and analyzing reasons for the country's setbacks in plant export competition. They are:

- (1) Adopting measures to avoid exchange risks.
- (2) Establishing consulting, engineering and project management techniques.
- (3) Strengthening the competitive

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power to export plants to resource-related areas.

(4) Expanding yen credits.

(5) Technology transfer and other forms of assistance to developing countries.

(6) Consolidating an international setup by organizing international consortiums.

In particular, it is essential for the Japanese plant export industry to accomplish structural reforms to increase its exports related to overseas resource-related projects. It is said that the Japanese plant industry, which has developed mainly in the area of chemical plants, falls far behind its counterparts in other industrialized countries in the area of energy and social engineering. Now that full-scale efforts have been launched in this area, it is possible for Japan to promote exports of plants and machinery and tools to those countries where resource development projects related to energy, natural gas, uranium, iron ore and nonferrous metals are being carried out.

Efforts at international cooperation have also been started. Because plant negotiations for huge projects involving over ¥100 billion would involve too great a risk to be taken by a single corporation, it has become a common practice to form a consortium jointly with European or American plant makers to sponsor such projects in third countries.

Apart from the activities of individual corporations, the Japanese plant

industry as a whole has been working toward international cooperation. One example is the cooperation of Japan, as represented by the Japan Machinery Exporters' Association (Director: Ichiro Terao), European countries and moderately industrialized countries in exporting plants to third markets. This is an international exchange project started in 1980 in which more than 10 countries, each represented by an industrial organization, agreed to promote the establishment of an international cooperative setup. The participating countries include Belgium (FABRIMETAL), France (CEIF and FIMTM), the Netherlands (FME), Britain (EEF), Spain (SERCOBE), West Germany (VDMA), Italy, South Korea (Machinery Industry Promotion Association), Brazil (ABIDIB) and Mexico (CANACI, NTRA).

The Japan Machinery Exporters' Association also sent a delegation to West Germany, Italy and Spain to discuss international cooperation in plant exports from October 11 to 19. When a similar delegation was dispatched to Britain in April this year, British plant industrialists reportedly announced their plan to send a mission to Japan in November.

At a time when international trade friction caused by automobiles and electronic parts is receiving wide publicity, the government and industrial circles are greatly encouraged by the prospects of "frictionless trade" promoted in cooperation with European machinery industries.

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SCIENCE AND TECHNOLOGY

CHEMICAL INDUSTRY HURT BY CONTINUING RECESSION

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[Article by Akira Suzuki, Director, Chemical Products Division, Basic Industries Bureau, Ministry of International Trade and Industry]

[Text] THE international economy in 1980 floundered in recession owing to soaring oil prices and general economic stagnation in industrially advanced countries.

The Japanese economy continued to maintain a moderate growth from the previous year. The situation in the first quarter was favorable under the influence of the expansion experienced in 1979. But the economy began to cool after the second quarter because of declining domestic demand and the reaction to the earlier demand upsurge.

The cool summer in 1980 exerted an adverse influence on production in manufacturing and mining industries. But the economy recovered gradually afterwards, mainly through the boom in sales of automobiles and electric equipment.

The chemical industry, however, was affected far more extensively. After registering a peak in the first quarter, chemical production and shipment plummeted from the level of 1979 and did not show recovery in the latter half of the year. As a result, production (excepting pharmaceuticals) dropped 4.3% and shipments dropped 5.5% compared with a year earlier.

In particular, synthetic dyes, surface active agents and plasticizers were hit hard by the recession in the textile and housing industries and the slump of agriculture and fisheries due to the cool summer. Production, exports and imports of principal chemical products

in 1980 are shown in Table 1.

Exports of chemical products grew 10.9% in dollar value over a year earlier but dropped in volume.

Following is a brief description of the main categories of chemical products in 1980.

Synthetic Dyes

The synthetic dye industry is plunging deeper into recession, reflecting Japan's slumping textile industry. The demand for dyes as a whole has been on a steady downtrend after a peak in 1972-73. The consumer preference for thinner textiles, lighter color tones, the progress in dyeing techniques and the resultant economizing of dyes have accelerated the decrease in demand. Imported dyes have also contributed to stagnation in the domestic market.

The recession of Japan's synthetic dye industry is aggravated by soaring costs due to high oil prices and by the overproduction which necessitates the lowering of product prices.

In order to rationalize fundamentally the structure of the synthetic dye industry, a rationalization cartel was organized in January 1980 to carry out concentrated production of disperse dyes and some cationic dyes for synthetic textiles. A distribution survey was conducted for the purpose of rationalizing and modernizing the distribution structure.

The output of synthetic dyes in 1980 totaled 51,415 tons, down 14% from a year earlier. The production decrease was ascribed to the reaction

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Table 1. Production, Exports and Imports of Chemical Products (1980)

Item	(in tons)		
	Production	Exports	Imports
Synthetic dyes	51,415 (86)	16,397 (85)	10,513 (69)
Organic pigments	20,846 (95)	9,513 (84)	2,134 (104)
Pigment resin color base	8,346 (84)	1,941 (86)	22 (73)
Organic rubber components	45,596 (103)	1,128 (100)	1,487 (90)
Plasticizers	406,947 (91)	19,067 (105)	5,042 (102)
Surfactants	475,174 (91)	60,454 (83)	9,603 (83)

Note: Figures in parentheses are comparisons in percentage with the previous year.

to the demand upsurge in 1979 anticipating the rise of oil prices, stagnating personal consumption and the cool summer of 1980.

Almost all dyes registered a production decrease of about 10% compared with a year earlier excepting reactive dyes which maintained the 1979 level.

On the other hand, sulfide dyes, sulfide vat dyes, direct dyes, mordant dyes and acid mordant dyes recorded production drops of over 20%. Classified by type, the shares of disperse dyes and reactive dyes are yearly growing, while those of sulfide dyes, sulfide vat dyes and direct dyes are decreasing.

Some 16,397 tons of dyes were exported in 1980, down 11% from a year earlier. Broken down by region, Asia accounted for 65% of exports from Japan. However, Asia's share is

decreasing. Exports to Europe, and North and Central America were on the increase.

Main export destinations were the Republic of Korea, Taiwan, the U.S., Indonesia, Hong Kong and Thailand. Shipments to all regions excepting the U.S. and Thailand dropped 10-20% compared with a year earlier.

Particularly noticeable was a 50% drop in exports to China, which is Japan's main overseas market. Shipments to China had been growing steadily in the past.

Classified by type, exports of reactive dyes increased while naphthol, fluorescent whitening and sulfide dye exports dropped considerably.

Imports in 1980 stood at 10,651 tons, down 31% from a year earlier. This drastic import decrease was

Table 2. Production, Exports and Imports of Synthetic Dyes (1980)

Item	(in tons)		
	Production	Exports	Imports
Direct dyes	3,184	792	1,398
Acid dyes	2,288	648	1,564
Basic dyes	4,983	1,512	707
Mordant & acid mordant dyes	1,456	174	253
Sulfide & sulfide vat dyes	2,901	1,232	396
Vat dyes	2,373	1,207	274
Naphthol dyes (pickling agents)	721	594	103
Naphthol dyes (developing agents)	3,007	1,529	215
Rapid dyes	209	79	0
Disperse dyes	13,643	5,061	2,363
Fluorescent dyes	7,513	762	808
Reactive dyes	4,710	1,216	1,539
Organic solvents & solving dydes	3,114	1,023	750
Other dyes	1,313	567	143
Total	51,415	16,396	10,513
Comparison with previous year (%)	86	89	69

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caused by surplus inventory in 1979 and slumping demand in 1980. Main exporters of dyes to Japan were West Germany, Switzerland and Great Britain, which together accounted for over 70% of the dyes imported by Japan. They still enjoy an overwhelming share in the Japanese market, although their share is gradually decreasing. Disperse dyes, reactive dyes, acid dyes and direct dyes occupied a large percentage of imported dyes.

Table 2 shows production, exports and imports of synthetic dyes in 1980 classified by item.

Organic Pigments

The organic pigment industry had been growing steadily in the past several years against the background of an expanding domestic market and exports. However, the output of organic pigments in 1980 dropped 5% from the 1979 peak of 20,946 tons. The main cause of this decline was that the production of printing inks and paints, two principal consuming sectors, were affected by recession. Shipments to these sectors dropped by 2% and 4%, respectively.

Furthermore, exports of organic pigments suffered from the recession in overseas markets, and Japan's inter-

national competitive power was weakened by rising costs of fuel and raw materials. Heated competition with European pigment manufacturers also was a factor.

The combination of these factors caused the exports of organic pigments from Japan to drop 16% in 1980 from a year earlier.

Imports of organic pigments in 1980 rose 5% over 1979. Products made in West Germany and the Republic of Korea made deep inroads into the Japanese market. Table 3 shows production of organic pigments over the past four years.

Organic Rubber Components

The organic rubber component industry is registering a normal growth, reflecting a boom in rubber products for the auto industry. The output of organic rubber components in 1980 stood at 45,596 tons, up 3% over a year earlier and constituting the highest record in history.

Shipments for the manufacturers of automobile rubber products such as auto tire tubes, seat belts and anti-vibration pads were extremely brisk and covered the recessed demand for footwear. Exports stayed at nearly the same level as a year earlier. Production

Table 3. Production of Organic Pigments

Item	Year			
	1977	1978	1979	1980
Non-soluble azo pigments	4,601	4,881	5,340	5,024
Soluble azo pigments	4,465	4,720	5,348	5,294
Phthalocyanine	8,903	8,931	10,469	9,766
Lake	231	234	246	245
Others	496	524	612	517
Total	18,696	19,290	22,015	20,846

Table 4. Production of Organic Rubber Components

Item	Year			
	1977	1978	1979	1980
Vulcanizing accelerators	14,688	16,985	18,137	19,005
Age resistors	21,070	22,526	23,214	23,798
Vulcanizing agents	151	165	189	228
Others	2,177	2,235	2,767	2,565
Total	38,086	41,911	44,307	45,596

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of organic rubber components is given in Table 4.

Plasticizers

Production of plasticizers increased with that of soft polyvinyl chloride (PVC). The output of plasticizers in 1980 decreased through low production of PVC, which in turn was caused by the cool summer and the reaction to the demand upsurge in 1979. Production stood at 338,004 tons, down 9% from a year earlier.

Classified by type, the output of DBP and DIDP belonging to the phthalic acid family dropped considerably, whereas DHP increased slightly over a year earlier. Special phthalic acid type plasticizers excepting DOP registered some gains. Among other plasticizers, the fatty acid category increased somewhat while adipic acid and epoxy types declined.

Exports of plasticizers with 19,067 tons stayed on nearly the same level as in the previous year. Main export destination was Southeast Asia. Competition with American and European makers intensified. Production of plasticizers from 1977 to 1980 is shown in Table 5.

Surface Active Agents

Surface active agents (surfactants) are used in all industries as auxiliary agents. Recession and the especially cool summer in 1980 put a period to a trend of steady production growth since 1975. The output in 1980 stood at 475,200 tons, decreasing 49,000 tons or 9% from a year earlier.

Classified by ion type, anionic and non-ionic surfactants dropped by 10% and 12% respectively whereas cationic and amphoteric types grew about 10% each.

Demand in the main consuming sectors such as the textile industry, agriculture and forestry, and cleaning decreased about 10%. Consumption in the following sectors increased in 1980: cosmetic and pharmaceuticals (+ 7%), petroleum and fuel industries (+ 3%) and civil engineering construction and the ceramic industry (+ 3%).

Exports, centering on Southeast Asia, stood at 60,454 tons, down 17% from a year earlier. One of the reasons for this decline is believed to be the growth of local industries in the Southeast Asian regions. Table 6 shows production of industrial surface active agents over the past four years.

Table 5. Production of Plasticizers

Item	Year			
	1977	1978	1979	1980
Phthalic acid family	349,201	388,306	396,774	363,511
Fatty acid family	1,774	1,405	1,612	1,773
Phosphoric acid family	5,287	5,047	5,274	4,884
Adipic acid family	16,679	19,626	21,802	19,299
Polyester family	6,300	7,143	8,486	7,518
Epoxy family	13,207	11,999	11,178	9,933
Total	392,448	433,526	445,126	406,947

Table 6. Production of Industrial Surface Active Agents

Item	Year			
	1977	1978	1979	1980
Anionic	201,968	219,275	255,483	230,303
Cationic	22,634	23,759	23,046	25,980
Non-ionic	191,412	209,415	227,597	200,732
Amphoteric	7,500	3,558	3,067	3,253
Others auxiliary agents	14,117	13,950	15,502	14,906
Total	437,357	469,957	524,696	475,174

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