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TRANSLATIONS ON JAPAN
(FOUO 3/79)



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POLITICAL AND SOCIOLOGICAL

'SHUKAN ASAHI' REVIEWS OHIRA'S LIFE AND CHARACTER

Tokyo SHUKAN ASAHI in Japanese 15 Dec 78 pp 196-199

[Article by Yuji Katsumata: "The 68 Years of Masayoshi Ohira, the Man"]

[Text] The man known as Masayoshi Ohira has been an enigmatic politician. Though apparently intelligent, he is not a clear-cut genius. One wonders if he is a coward, yet when it is time for tenacity, he can be tenacious. His well known hesitant manner of speech is found to be surprisingly lucid when given careful attention. This man, however, has now become prime minister. He can not remain an enigma. Let us try to trace the path the man, Ohira, has walked.

Masayoshi Ohira returned to his home in Setagaya in Tokyo the night of November 27 following the decision that he should assume the positions of president of the Liberal Democratic Party (LDP) and of prime minister. He spoke in Sanuki dialect, almost as if muttering to himself, to his wife Shigeko and those awaiting him: "Something incredible is going to happen..."

That morning, Ohira, making an effort to maintain his composure, had said, "It would be ridiculous to get excited at the announcement of the initial test." The day before, when he appeared at the offices of the Kochikai (the Ohira faction) in Toranomon he spoke to such top party executives as Zenko Suzuki, who were calculating the Ohira votes. "Tomorrow the long awaited ship comes in, doesn't it?" he said, borrowing the words of Kuranosuke Oishi spoken the previous night.

But the facial expression of the Ohira who muttered, "Something incredible is going to happen..." was different from both the poker face of that morning and the aggressive look of the day before.

"I don't know how to describe his expression, but it was, at any rate, extremely stern." (Yoshiko Morita, Ohira's oldest daughter.)

Few politicians have personally experienced the fascination of political power and the difficulty of maintaining that power to the extent that

Ohira has. Even now, mention of Ohira evokes a persistent and irritating association with Kakuei Tanaka, though over the years the politician most responsible for lighting the fire of Ohira's political life has been the late Hayato Ikeda.

Ohira assisted Ikeda, during the Ikeda cabinet era, first as chief Cabinet secretary, and then as minister of foreign affairs. Until Ikeda's pre-cancerous condition caused resignation after the Tokyo Olympics, Ohira was constantly at his side, representing the Ikeda administration. It was a pained political regime, that arose in the midst of the turbulent conditions following the riots relating to the Japan-U.S. Security Treaty and the Asanuma incident [assassination in 1960 of Inejiro Asanuma] in 1960.

The night Ikeda assumed office as president of the LDP, Ohira offered the following advice: "To state the extreme, the cabinet formed in the morning may fall by evening, but there is nothing to be done about it. It is the people who will decide how long one will be permitted to stay in power. Henceforth, it would be best to completely avoid such words as 'long-term political control.'"

Ohira is a type who has already begun thinking of the eventual collapse of an enterprise, its goals unrealized, even at the beginning. One can well imagine the strain Ohira felt as he watched the drama of the "Fukuda collapse," realizing that it was the result of the battle he himself had begun.

As Child Apologized for Mischief of Brothers

Though Ohira has ascended to the premiership, the general impression of him has been rather the opposite of that of a "man of great destiny." When newspapers forecasting the results of the primary elections appeared with headlines reading, "Overwhelming Victory for Fukuda" and Ohira to Battle Nakasone for Second Place" one LDP Dietman declared, "Ohira is, after all, simply not destined to become prime minister or party head."

Ohira does not show strong leadership characteristics, nor does he have what it takes to excite widespread popularity. His features may be called fatherly or ox-like. His speech seems inarticulate, typified by his well known halting delivery. During the last election, rumblings that, "It's a big job because we are trying to sell defective merchandise" were heard even from Dietmen in Ohira's own faction.

What lifted such a man to Ohira's present position? There are many who find the answer in Ohira's achievements in his persisting role as behind-the-scene advisor. The Ikeda period hardly needs mention as a case in point. Further, Ohira was "one in body and spirit" with Kakuei Tanaka, a younger man than he; and he served the aloof Takeo Miki as finance minister. And even with Takeo Fukuda, Ohira devoted himself to being the power in the background as Secretary General of the LDP.

It seems that this "Number 2" can be traced back to Ohira's natural instincts rather than to the predisposition of a politician of bureaucratic origin to be ill at ease in some kind of post.

Ohira's elder sister, Muma Yamada (74), recalls that as a child, whenever his two brothers were scolded by their father for mischief, Ohira, who himself had done nothing, would stand before his father Rikichi and apologize. Perplexed, Rikichi would say, "What's the matter with him, always going around bowing and scraping...." Such behavior requires a willingness to be self-deprecating, to bow one's head in order to calm a situation. This may, in later years have a relationship to his submitting meekly to Shiina's judgment when the Tanaka Cabinet fell, and to conceding power to Fukuda during efforts to get the political situation under control after the "Miki ouster." Kenzo Kawano (former president of the House of Councilors), in his work "My Term as House of Councilors President" ("Gicho icidai"), wrote: "Ohira's virtue lies in his selflessness. He has a great flexibility, an ability to drift with the current. This is clever, but it also lends strength."

During his days as a student at Takamatsu College of Commerce, Ohira became a Christian. A schoolmate, Elichichi Hashimoto (chairman of Mitsui and Co) observed Ohira on the street solicitating contributions with a charity pot on a snowy night.

Unless one elbows through and attempts to push ahead he will, of course, not be conspicuous. Tsuneo Kawahara, who attended the old system Mitoyo Middle School (now Kanonji First High School) at about the same time as Ohira, says, "He was inconspicuous. Even his marks were not outstanding."

So inconspicuous was he that until recently there were those among his classmates at Tokyo University of Commerce (now Hitotsubashi University) who would say, "Now that you mention it, I believe there was a fellow there named Ohira."

Ohira has, however, in his own way, left a strong impression on those who were close to him. Eisuke Yoshinaga (Professor Emeritus of Hitotsubashi University), who was 1 year ahead of Ohira at Tokyo University of Commerce, was sold on Ohira's ability to get things done. At the end of a course on administrative law given by Tatsukichi Minobe that had only five students, Yoshinaga and Ohira discussed the possibility of giving a farewell luncheon for the professor. When Prof Minobe readily accepted the invitation, Ohira, feeling it would be a waste if only five students were there, placed a notice on the school's bulletin board announcing "A Luncheon With Professor Minobe." The result was a packed faculty lunch room, as more than 100 people attended the luncheon.

Though not as flashy as Takeo Fukuda, who coined such phrases as "Kyoran bukka" [frenzied commodity prices] and "showa genroku" [a contemporary Genroku era-noted for decadance], Ohira is not lacking in the ability to coin new phrases. His "magnanimity and perseverance" (kanyo to nintai) of the Ikeda era is only too well known, but even taking only the last 2 or 3 years we find such phrases as "ablutions" (misogi) and "governability" coined at the time of the Miki ouster. After he was chosen party president he expressed his feelings with the words:

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"There are times when even 10 or 20 years have no significance; yet there are other times when one instant is terribly significant."

Though a somewhat ambiguous phrase, when spoken by Ohira it seems somehow to take on significance. One thing that evokes this feeling is the voluminous nature of Ohira's reading. Even when saddled with the exhausting duties of secretary general of the LDP, Ohira never altered his habit of dropping by a bookstore once or twice weekly.

Though he claims to be so busy he can only skim, he is, in fact, a careful reader. A classmate at Tokyo University of Commerce Chizuo Kamida (former head, Western Division Branch Office, Japan National Railways), has this recollection:

"It was, as I recall, one of his law books. The points he wanted to remember circled in red, word by word. They were not just underlined. Once I tried doing the same, but it was so time consuming I gave it up."

Ohira sends books he has finished to the local municipal offices in Kanonji City, where he is creating an Ohira Library. In the back of one of the books there, Principles of Economics, is the following record:

First Reading: 1933, month date unknown
Second Reading: 1934, 17 September
Third Reading: 1934, 4 October afternoon.

It has been said of Ohira that, "He is not the type to push himself aggressively ahead" (Ohira faction Dietman, Hiroyuki Kurihara), but there is apparently a side to his personality which includes a secret to success obtained from his upbringing.

LDP member Mitoji Sakamoto once heard Ohira in deep reminiscence,

"I envy you, Mr Sakamoto. I had to borrow money from people to get through school, and my life has been such that I always had to be concerned with the feelings of those around me."

In addition Zentaro Kosaka (former foreign minister), who went to the same university and entered the political life, was told by Ohira:

"You were born with a silver spoon in your mouth."

Sakamoto is owner of major forest lands in Noto, and Kosaka is heir to the Kosaka financial group in Shinshu.

Ohira was born March 12, 1908, third son of a middle-class farmer in Toyohama-cho in Mitoyo-gan, Kagawa Prefecture. It was usual on farms of the day that children began helping with the work at the age of 6 or 7. The daily task consisted of weaving straw plaits to be used in the manufacture of straw hats. On days when there was no school the assigned quota was as much as one roll (1.5 centimeters by 50 meters) of woven straw.

After finishing Mitoyo Middle School in Kanonji City, Ohira turned to his married aunt living in Takamatsu City for support and attended Takematsu College of Commerce. After graduating, he began work associated with the Christian missionary effort, but after 1 year, stifled, he decided to proceed to university.

"Of course, my family hadn't the means to send me to university, so along with admission to the university I was to be lent school expenses by both the Sakaide City Kamato Mutual Aid Society and the Kagawa Prefecture Scholarship Society in Takamatsu City. Hence it was through the good graces of both organizations that I began university life." ("Personal History")

Sensitive to Jealousy of Friends

While in school Ohira passed the most difficult test of all the higher civil service examination, placing among the top 30 (as Kamida remembers it), and was the first Tokyo University of Commerce graduate in 6 years to go into the Finance Ministry. There is, therefore, no question of his elite status. But this was the pre-war period. It is not surprising that Ohira should develop a complex of sorts as he looked about himself at the university to discover that nearly all the students were children of the distinguished families of the area.

After entering the Finance Ministry, Ohira was not particularly fortunate. Compared to Takeo Fukuda, who consistently followed an elite course, Ohira may even be called ill-favored. Three years after beginning service he was ordered to proceed to the Asian Development Board, which was responsible for the administration of occupied Inner Mongolia, and spent 1.5 years in the treeless desert land of Chang-chia-k'ou. After the war he was transferred to the Economic Stabilization Board, a conglomerate from all ministries. Even after returning to his original ministry, he served twice as confidential secretary to his senior from the same town, Finance Minister Shuichi Tsushima.

Hence it was that when Hayato Ikeda, a high official in the tax division, was appointed Finance Minister and designated Ohira confidential secretary, Ohira held back momentarily. It just happened that Ohira was away on business in Kagoshima, and he sent a telegram of actual refusal which read, "Though deeply grateful for your kindness, my emotions are torn apart with confusion, and I am unable to reach a decision." Ikeda's failure to acknowledge the telegram and coercive letter of appointment became a turning point for Ohira.

It is difficult to enter the mind of Ohira, who rather than seeking to stand out always tried to hide himself. There are too few clues.

If one persists, the word "jealousy," which Ohira often used, is perhaps a clue. For instance, there is his statement, "Among friends, rather than being congratulated, I was more often the object of jealousy." (His feelings after removal from an important government office.)

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The term "jealousy" is not one that finds frequent use among politicians in normal circumstances. Is it because of my petty-minded suspicion that I find in his statement a dark aspect in the heart of the man Ohira?

At the same time, use of the term "friend" such as when he said, "Among friends, rather than being congratulated,...the object of jealousy," reveals most directly the mindfulness that stems from this factor. Surely, "friends" in the true sense of the word congratulate and not envy. It appears, however, that Ohira includes in the term "friend" all people who have even the slightest relation to him.

It is characteristic of Ohira that, almost without fail, the terms "friendship" or "friends" will be woven into his writings and reminiscences. Apparently, even the members of the Seirankai, who are unrelenting in their hostility to Ohira, are covered by his term "friends."

Whenever a word leaves Ohira's lips it has passed through two or even three filters. A statement which might incite the other party is skillfully eliminated by these filters. He once justified his faltering manner of speech:

"As foreign minister, I had to speak while simultaneously considering the reactions of other nations. Hence..."

But Ohira's hesitancy is not limited to his testimony in the Diet. His "uh's" and "ah's" are perhaps best viewed as activity to fill up the time required for words to pass through the filters.

Politician of Both Hardheadedness and Sense of Mutability

Ichiro Nakagawa of the Seirankai, who stood against Ohira and opposed normalization of Japan-China relations and the Japan-China Aviation Agreement to the last, never hesitates to say, "Ohira is deceitful." There is a concern even among dovish members of the Diet who support Ohira that he may indeed be capable of major falsehoods. The concern stems from failure to dispel mistrust resulting from Ohira's noncommittal stance as Foreign Minister in the Tanaka Cabinet vis-a-vis the Kim Tae-chung affair.

After 26 years of continuous work as a professional politician, Ohira has at last reached the highest post. That he has made his way solely on the basis of "sincerety," "selflessness" and "honesty" is contrary to common sense.

On one occasion, when dealing with the Japan-Korea problem as foreign minister in the Ikeda Cabinet, he asserted:

"My diplomacy is realistic."

We may conclude that in the depths of those narrow eyes there lurks an ability for hardheaded calculation. Indeed, in a conversation with author

Saburo Shiroyama, Ohira more or less compared himself with Ieyasu Tokugawa. "In personality, he (Kakuei Tanaka) is in some ways like Hideyoshi Toyotomi. I, on the other hand, am not like Hideyoshi. If anything, it is Tokugawa... (rephrasing), that is, I tend to be unspectacular." (GENDAI, a monthly)

At home, Ohira is said (by Dietman Yukihiro Ikeda) to be, "Not a man given to extravagance." He is unhappy when lights are left on, and goes about turning them off, whether at home or in his ministerial offices.

When he takes off a shirt, he is apt to say, "It's not dirty yet. I'll wear it again tomorrow." On 1 December, when chosen party president at the convention, he was interviewed by press agencies until 2300 hours. Yet, on the morning of the 2d, when he left home he wore the same shirt as the night before.

Moreover, Ohira, who is so concerned and gives such circumspect care to outward appearances, upon returning home becomes "almost embarrassingly casual." His concept of home as the ultimate haven is unusually strong.

Ohira (to whom home is so important) lost his oldest son (Masaki) (26 at the time) to Behçets disease in 1964. He has written of that time:

"Common mortal that I am, I nearly lost all hope and passion for living. He was irreplaceable--nearly everything to me."

Ohira is apt quite casually to speak of "the evanescence of human existence." We seem to have a prime minister the likes of whom we have not had before.

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MILITARY

USSR INDOCHINA STRATEGY ANALYZED

Tokyo GUNJI KENKYU [JAPAN MILITARY REVIEW] in Japanese Vol 14 No 1 (No 154)
Jan 79 pp 34-43

[Article by Takio Yamazaki, international affairs researcher: "Commentary on Soviet Indochina Strategy"]

[Text] With the conclusion of the Indochina war which covered thirty years after World War II, it was expected that a period of peace would settle in, without any wars in Southeast Asia, and that peaceful coexistence would come about among the three socialist countries of Indochina and the liberal countries of ASEAN (Alliance of Southeast Asian Nations).

In reality, however, Vietnam and Kampuchea are continuing a fierce "proxy Sino-Soviet war" (National Security Adviser Buzhinski); and the situation has changed to one in which the Soviet Union, which is backing Vietnam, and China, which is backing Kampuchea, are in fierce conflict in Indochina, from which the United States withdrew.

With this kind of situation, China, while restraining Vietnam with a problem of the overseas Chinese, strengthened its containment of the Soviet Union by making a treaty of peace and friendship with Japan. But the Soviet Union strengthened its support of Vietnam in order to roll back this containment, and, at the same time, has aimed at closer relations with ASEAN.

In June of last year, Vietnam became affiliated with the Soviet-led COMECON (Council for Mutual Economic Aid); also, Party Secretary Le Duan and Prime Minister Pham Van Dong visited the USSR in November, and ostentatiously displayed the unity of the Soviet Union and Vietnam by issuing a joint declaration.

Now the Soviet Union is reinforcing the fighting power of the Soviet Pacific Fleet which is based in its maritime provinces. There must be some purpose to this reinforcement of military power, and it would seem related to the strengthening of its support for Vietnam. But there is a concern that the development of such a state of affairs will influence the security affairs of our own country.

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Soviet Strategy Viewed from Post-war History

If the post-war history of the Asian Pacific Ocean is taken in summary, the Pacific Ocean was under the control of the United States for a long time after the war, although the USSR supported the Chinese revolution and extended the "communist sphere" to the Chinese continent. The United States stationed many military bases in Japan, South Korea, Okinawa, Taiwan, the Philippines, Thailand and other countries; and the security of the western Pacific was maintained by American naval power, as represented in the Seventh Fleet.

The Soviet Union changed this state of affairs and tried to push back even more American power from Asia. The strategy the Soviet Union employed to do this was to set up a rivalry between the United States and China. That strategy was inaugurated at the time of the Korean War in 1950.

The Soviet Union avoided any direct intervention in the Korean War, and wanted China, which had just established its Chinese communist government the year before, to send troops into the Korean peninsula to fight against the American army. Taking this opportunity, both the United States and China entered into a state of bitter antagonism; but this was allowed to happen by none other than the Soviet Union.

Also, the Vietnam war, which began in 1964, aggravated even more the Sino-American antagonism.

In order to get rid of this Sino-American antagonism, the American scheme to turn the tables in its own favor was the Nixon visit to China in 1972 and was the drive for the Nixon Doctrine which followed from the visit.

The United States withdrew 540,000 troops from Vietnam and reduced its military strength elsewhere in Asia as well. However, with the retreat of American military power, a "power vacuum" was created and the Soviet Union stepped in to fill that vacuum.

Likewise, Nixon's visit to China became an opportunity which allowed the communist parties of both China and Vietnam to become antagonistic toward each other. As the Nhan Dan magazine pointed out in August 1972, the Vietnamese communist party has harbored a feeling of mistrust, which is hard to uproot, toward the Chinese communist party which "gave an innertube to a drowning bandit". It was none other than the Soviet Union which gave enormous military aid to Vietnam, which further deepened its mistrust of China, and helped it obtain its victory in 1975.

Having done this, the Soviet Union acquired a "base" of power in Vietnam from which the United States had withdrawn. And Hanoi, which won a victory in the Indochina "liberation war" with Soviet aid, aimed at forming an "Indochinese Federation" with itself as the leader.

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The Soviet Union strongly supported Vietnam in this. Pro-Soviet Party Secretary Le Duan of the Vietnamese Communist Party visited Moscow in October 1975, and issued a joint declaration with the Soviet Union. But, so as not to give any room for Chinese intervention, it hurried with its unification of north and south Vietnam and, at the same time, removed all people of Chinese lineage from positions of responsibility in the party and the military. This became the source of the present "problem of the overseas Chinese".

Taking off on this "problem of the overseas Chinese," China unfolded a campaign of criticism against Vietnam. However, in opposition to this, the Soviet Union intensified its criticism of China, and, on June 29, Secretary Brezhnev made a definite statement that Vietnam is an "advanced base" in which socialism can put its trust.

The Soviet-led COMECON had formally decided on Vietnam's affiliation the day before, June 28. This was an indication that Vietnam, the important place in Southeast Asia, would be committed to the Soviet camp. Undoubtedly, Brezhnev's speech about "advanced base" was the result of these facts.

According to information from the United States Pacific Forces Commander Wiesner, it is said that the Soviet Union has already completely equipped a Soviet missile base in Cam Ranh Bay. It is also said that a Soviet naval base has been built on Cat Ba island, just outside Haiphong Harbor.

In short, the Soviet Union has changed to a situation which literally makes Vietnam, the important spot in Southeast Asia, an "advanced base". This is nothing less than a sound victory for Soviet military and diplomatic strategy.

USSR Strategy Plans for Asia and the Pacific

Thus, the Soviet Union progressively pushed into the Pacific and post-war Asia; and, with the retreat of United States military power, it acquired a base in Vietnam, thereby reinforcing its containment of China.

It seems there are the three following broad aims to this Soviet strategy. These are the elimination of American military power from Asia, the actualization of China-USSR reconciliation, and control of maritime traffic from their Far East bases to the Indian Ocean.

First, the elimination of American military power has shown great progress. The United States military power already has been withdrawn extensively from Indochina; and Thailand, which yielded to Vietnamese pressure, asked for the withdrawal of United States forces stationed in Thailand. The United States army pulled its presence out of Thailand in July 1976. Likewise, American troops are supposed to be withdrawn from South Korea as well. Consequently, the next important aim will be directed at the elimination of American military power in the Philippines.

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Secondly, the actualization of Sino-Soviet reconciliation is expected to be achieved by reinforcing its containment of China. The USSR's greatest desire is that China will yield to Soviet pressure and convert to the Soviet line; and then, Sino-Soviet reconciliation will be complete. With that, it would be possible to divert to Europe the 45 army divisions deployed along the China-USSR border. Therefore, the USSR is reinforcing its containment of China. By doing so, they anticipate that Soviet influence will gain power within China and that China-Soviet reconciliation will come about from the seizing of political power. Their containment of China has been showing progress. Vietnam, together with Laos, is deepening its leaning toward the USSR, especially since Vietnam has become an "advanced base" for the Soviet Union. Therefore, the next aim is directed mainly at ASEAN.

Third, the "control of maritime traffic" has become indispensable for supporting not only USSR strategy toward Asia but its world strategy.

As for control of maritime traffic, they want to have under Soviet control maritime traffic which goes through the Strait of Korea, heads south from the South China Sea, goes through the Strait of Malacca to the Indian Ocean. In other words, it is to eliminate American control and establish Soviet control over maritime traffic from the Pacific Ocean to the Indian Ocean.

However, Southeast Asia is a great gateway for this maritime traffic from the Pacific Ocean to the Indian Ocean. After all, whoever controls Southeast Asia can control maritime traffic from the Pacific Ocean to the Indian Ocean.

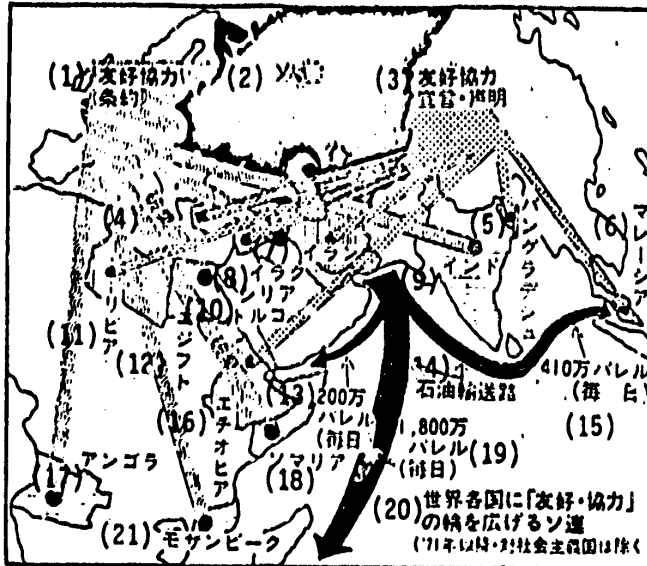
Southeast Asia consists of the three socialist nations and the five liberal nations of ASEAN. The USSR has acquired a base in Indochina. Therefore, the Soviet Union will try next to expand its influence to all of the nations of ASEAN from its base in Vietnam. That will contribute greatly to its attempt to contain China to the south, to cause American military power to pull back from ASEAN, especially from the Philippines, and to establish Soviet control of maritime traffic under the protection of Soviet naval power, which will use Soviet naval and air bases now in Vietnam.

Whoever Controls Oil Controls the World.

In the above manner, the Soviet Union has aimed at control of maritime traffic flowing from the Pacific Ocean to the Indian Ocean. But, as a Soviet world strategy, that seems to have a close relationship with its strategy that aims at controlling the petroleum shipping routes which go from the oil-rich Persian Gulf to Western Europe and Japan.

The Soviet Union has attached great importance to the Indian Ocean where petroleum shipping routes pass from the Persian Gulf to Europe and to Japan. Since 1968, they have already put their naval power permanently in the Indian Ocean, and given it the duty of "checking" the petroleum shipping routes of the west.

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Key:

1. Treaties of friendship and cooperation
2. USSR
3. Manifesto or declaration of friendship and cooperation
4. cancelled
5. Bangladesh
6. Malaysia
7. Iran
8. Iraq
9. India
10. Turkey
11. Libya
12. Egypt
13. 2.0 million barrels daily
14. petroleum transport routes
15. 4.1 million barrels daily
16. Ethiopia
17. Angola
18. Somalia
19. 18.0 million barrels daily
20. Soviet Union expands circle of friendship and cooperation to all nations. (From 1971. Non-socialist countries are excluded.)

After that, the USSR made a military aid pact with South Yemen in 1969, and acquired a naval base in Aden and an air force base on Suqutra Island. On the other hand, South Yemen, which had received aid from the USSR, supported the PFLO liberation movement in Oman, a neighboring country, and threatened the monarchic government of that country. It also tried to threaten the security of the Strait of Hormuz, which is an important gateway for petroleum shipping routes.

Also, in August 1971, the USSR made a treaty of friendship and cooperation with India, which received enormous Soviet support, crushed Pakistan in the third Indo-Pakistani war and made Bangladesh independent. In March 1972, the USSR made a treaty of friendship and cooperation with Bangladesh also.

Moreover, the USSR made a treaty of friendship and cooperation with Iraq in April 1972, and supported pro-Soviet former Premier Daud with the change of government in Afghanistan, obtaining that country for the Soviet sphere of influence. They made a treaty of friendship and cooperation with Somalia in 1974, completely equipping naval and air military bases in that coun-

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try. This became an important base for the Soviet Indian Ocean fleet.

In April 1975, the USSR carried out "OKEAN" maneuvers, using the world seas as a stage. Likewise, they carried out naval attack maneuvers in the Indian Ocean, deploying many ships and aircraft. Moreover, the USSR air transported directly to Angola 20,000 Cuban troops for the Angola dispute, which had intensified since the end of 1975. At the same time, Soviet naval units escorted a fleet of ships, transporting to Angola large numbers of tanks and heavy weapons.

The USSR, making a treaty of friendship and cooperation with Ethiopia in May 1977, sent Cuban troops to Ethiopia just as they did with Angola and their naval power escorted a fleet of vessels to the Eritrean port of Massawa.

Somalia, objecting to the USSR's assistance to Ethiopia, cancelled unilaterally its treaty of friendship and cooperation with the USSR in November 1977 and requested the evacuation of all Soviet military advisers and the return of bases being furnished to the Soviet Union. To counteract this, the USSR gave Ethiopia aid exceeding one billion dollars and 50,000 tons. And, they sent 17,000 Cuban troops and 2,000 South Yemen troops to Ethiopia, and unfolded a large scale assault against Somalia. Because of this, the Somalia side, which had brought the Ogaden area under its control, caved into this destruction. Somalia's President Barre suffered the degradation of a defeated commander.

The USSR, which lost the military bases at Berbera and the like because of Somalia's treachery, is trying now to request substitute bases in Eritrea. It is said that Ethiopia has already allowed a Soviet air base in Asmara and a naval base on Dahlak Islands outside Massawa Harbor.

Under these conditions, a siege strategy toward the Persian Gulf has intensified since April of last year. This can be seen in the coups d'etat that have occurred successively around the Persian Gulf areas, such as in Somalia, Afghanistan, Yemen, Iraq and others. This also indicates how much importance the USSR attaches to control of the petroleum shipping routes to the western nations from the Persian Gulf.

The USSR is now supplying 80 million kiloliters of oil annually through a pipeline to the Eastern European nations, except Romania. But it seems that the oil production of the Soviet bloc has not progressed enough to meet increased consumption. Therefore, according to some sources, if the oil supply to Eastern European nations should stop in the 80's, it would mean that the Soviet control of Eastern Europe would collapse indisputably.

From this, it seems that the USSR has been deepening its interest in Persian Gulf oil. But the security of Japan, Western Europe and the United States hangs on the securing of the petroleum shipping routes leading from the Persian Gulf to the western nations. So it can be said that whoever con-

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controls the oil of the Persian Gulf controls the world.

Strategic Value of Indochina.

Thus, the Soviet Union attaches great importance to Indochina from its view of world strategy, especially control of maritime traffic from the Pacific Ocean to the Indian Ocean. That is because the Soviet Union has discovered the great strategic value of Indochina.

First of all, Indochina, together with the Malaysian archipelago, constitutes the "rim-land" of the southeastern part of the Eurasian continent. However, since Indonesia and the Philippines are in the open seas off of this rim-land, that area becomes an important gateway, tying together the shipping routes of the Indian Ocean with the Pacific Ocean.

The shipping routes that go from the Pacific Ocean and pass through this region to the Indian Ocean can be squeezed into the general classification of the following four routes.

The first shipping route is the one that passes through the Strait of Malacca. For the Soviet Union, this route is the shortest route tying the Indian Ocean with the bases in their maritime provinces. In addition, Vietnam, which has become affiliated with COMECON, and Malaysia, which has advocated for Soviet "friendship and cooperation", are close to this shipping route. Therefore, the Soviet Union has the advantage of being able to request bases, as well as port privileges, from Vietnam and Malaysia.

The second shipping route passes through the Strait of Sunda.

The third shipping route is a route that leaves the Indian Ocean, and passes through the Lombok Strait from the Strait of Makassar.

The fourth shipping route is a route that goes through the Indian Ocean, passing through the Strait of Ombai from the Molucca Sea.

These last three shipping routes are a greater distance than the first shipping route, and need a mutual Indochinese agreement as well. Therefore, from the Soviet Union's perspective, it can be said that the first shipping route is much more advantageous, and the possibility of securing it is greater.

Secondly, Indochina has a great value from the perspective of containing China.

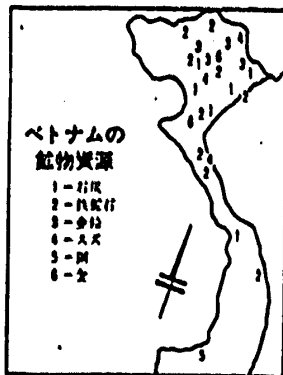
The USSR has pressured China from the north, deploying a military force of 45 divisions along the Sino-Soviet border. In addition to this, Indochina has joined the Soviet bloc. If the Vietnamese army of 1.5 million men, which is the strongest military power in Asia (if one excludes China), decides to pressure China from the south, the containment of China would be

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solidified even more.

Third, there are great undeveloped underground resources in Indochina.

It is said that there are promising undersea oil fields in the Gulf of Siam and Gulf of Tonkin in Indochina. Further, it is anticipated that there are oil and natural gas deposits in the Red River delta area. Besides this, there are mineral resources of uranium ore, coal, iron ore, zinc and the like in the Phu Lang Thuong area.



Key:
Vietnam's Mineral Resources

1. coal
2. iron ore
3. zinc
4. tin
5. copper
6. gold

It is said that, in exchange for project aid, the USSR aims at the acquisition of these underground resources. Toward this end, it sent to Vietnam a vice-minister level investigation team many times. The investigation team, led by the vice-minister of the Ministry of Geology, prospected for oil and natural gas for about one month last year in July.

According to another report, it was said that the aim which the USSR had in pushing for Vietnam's affiliation with COMECON was the control of its oil and mineral resources.

Fourth, Indochina is an advantageous base to expand its influence to the ASEAN nations.

After the "Indochinese liberation" in 1975, Laos and Kampuchea abolished their monarchies and became socialist countries. Laos deepened its leaning toward Hanoi, but Kampuchea intensified its resistance

to Hanoi's leadership and, opposing Soviet-supported Vietnam, requested the support of China.

Vietnam has aimed at a Southeast Asia under the leadership of Hanoi, and advocated for a "Southeast Asian Common Market" in June 1975. That concept was extensive enough to include the ten nations of Southeast Asia. In short, Soviet-supported Vietnam is trying to extend its influence to the ASEAN nations in place of the Soviet Union. And, Vietnam has become a base for an ASEAN assault by the USSR.

Will Vietnam Become the Cuba of Asia?

On account of the USSR's strategy to make Vietnam an "advanced base", China has been put into a situation where it is threatened from two fronts---the

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north and the south.

China has experienced this kind of military threat three times: the first was when General MacArthur insisted on attacking Manchuria during the Korean War of 1950; the second was when the Soviet army assumed a posture of challenging a full-scale battle by sending tanks to the front. Therefore, this present crisis would be the third crisis for China.

This crisis materialized more last year. Namely, there was an incident in which the Soviet troops invaded the Ussuri River border on May 9. In the south, clashes by both parties---China and Vietnam---have occurred frequently at the China-Vietnam border. The Soviet navy carried out threatening maneuvers between Luzon Island and Taiwan at the end of June. It can be seen that Soviet naval power was "demonstrating" against China, by getting caught up in the China-Vietnam dispute. Further, there was an incident in which the navies of both China and Vietnam battled over Nanshan Island, about which both China and Vietnam are in dispute and which both claim as its own possession.

Under this state of affairs, China, putting up its full strength, has endeavored to organize an "anti-Soviet consolidated front". As is commonly known, Vice Premier Teng Hsiao-ping expressed his "discourse on the big three worlds" at the United Nations natural resources assembly in 1974. That is, one must look for the source of all the evils of the world's wars in the hegemony principles of such large countries as the United States and the Soviet Union, who belong to the first world. But he made it clear for the first time that the existence of Soviet socialist imperialism as the more dangerous.

China has put itself in the third world against this dangerous USSR, and, involving the second world of the leading industrial nations, such as Japan and others, has begun calling for an "anti-Soviet consolidated front". In short, it can be said that China's discourse on the world became the yardstick to measure all acts as either "anti-Soviet" or "pro-Soviet."

Vietnam's Prime Minister Pham Van Dong made clear his opposition to China in a discourse on the world that divides the world into five worlds at a national assembly just after the 1975 liberation. The first is the socialist bloc, led by the Soviet Union; and it has the greatest importance. The second is Laos and Kampuchea, which must be added to the "Indochinese Federation"; the third is all of the Southeast Asian nations that form the nucleus of ASEAN. The fourth is the non-aligned nations. And last of all, the United States, Western Europe, Japan and others are mentioned as the fifth. In short, Vietnam's world perspective is a view which puts as its foundation a confrontation between the USSR and the United States. Whether something is "anti-American" or "pro-American" becomes the yardstick for measuring the suitability of all acts.

In other words, Prime Minister Pham Van Dong dealt a frontal counterattack

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against the "discourse on the big three worlds" by Vice-premier Teng Hsiao-ping. So, it is natural that the Soviet Union supports Vietnam.

The USSR allowed Vietnam to become affiliated with COMECON in June of last year. Secretary Brezhnev made it clear that he would support Vietnam resolutely as "brothers" and declared that Vietnam is an "advanced base" which socialism can trust. In short, the Soviet Union made clear its firm intention to add Vietnam to the Soviet bloc.

Under these conditions, China, which aims at forming an "anti-Soviet consolidated front", concluded a China-Japan treaty of peace and friendship on August 12 of last year. The Soviet Union repeatedly objected and warned against this Sino-Japanese treaty, which includes an "anti-hegemony article" hostile to the USSR. This has become a frequent undisguised threat, and is unparalleled as an intervention by a major country in the relations between two other countries.

But the China-Japan treaty was finally concluded, was formally ratified in October and became effective. The China-Japan treaty and the United States-Japan Security Treaty mean that there will be cooperation through the mediation of Japan. The USSR, seeing this as the establishment of an "anti-Soviet alliance" by the United States, Japan and China, is increasing its vigilance. This can be seen from the fact that Party Secretary Brezhnev had a conversation with First Secretary Tsedenbal of the Mongolian People's Revolutionary Party in the Crimea on August 23. He declared that "recently, very negative elements have arisen in the Far East and Southeast Asia."

The Soviet view is that even though the anti-hegemony article may have been watered down, no basic change has taken place in the anti-Soviet character of the China-Japan treaty. Therefore, the USSR predicted that the status change important for Asia, which comes from the formation of this treaty, namely, the balance of power, will collapse. In order to offset this, the USSR has emphasized repeatedly that there is a need to change Soviet policy toward Asia. It can be stated that the substance of this policy has been able to bring about an important change in the Asian situation, as was pointed out by Vice-chairman Kowarenko of the USSR-Japan Society.

So, the predicted "roll back policy" of the USSR is asking to conclude a USSR-Japan good neighbor friendship treaty in order to restore the balance, and, secondly, is intensifying the military pressure against China. Third, it is to make Vietnam the "Cuba of Asia", and to try to assume the duty of "lead soldier" in its approach to ASEAN.

This kind of movement has already shown itself. Until now, the USSR, along with Vietnam, has not recognized ASEAN as an organization. However, IZVESTIYA recognized ASEAN as an organization for the first time on July 13. Vietnam's newspapers also advocated for a "Southeast Asian Neutrality Concept." Prime Minister Pham Van Dong himself made of tour of the ASEAN countries. As China states, their aim is to try to expand their influence within

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ASEAN as a "Trojan Horse."

Moreover, so as to support Vietnam's move, First Assistant Minister Fillyuvin of the Soviet Foreign Ministry, while making a tour of the ASEAN nations near the end of October, made a statement of support for the peaceful character of ASEAN.

After this unified USSR-Vietnam approach to ASEAN, the USSR invited to the Kremlin an administrative-level party delegation, led by Party Secretary Le Duan and Prime Minister Pham Van Dong. It can be said without a doubt that their aim was to reinforce Vietnam's "Cuba status."

USSR Has Built a Bridgehead in Indochina.

The USSR entered into its "roll back policy" as predicted. The Soviet Union made a treaty of friendship and cooperation with Vietnam on November 3; and with that, the USSR built a "bridgehead" with which to impede China's inroads into the Indochinese peninsula.

The core of this USSR-Vietnam treaty of friendship and cooperation is the article on "emergency deliberations," whereby it was decided to mutually support each other when either party, i.e., the Soviet Union or Vietnam, is exposed to a threat of attack. This article, which makes cooperation important from a military viewpoint, has a high degree of strategic substance.

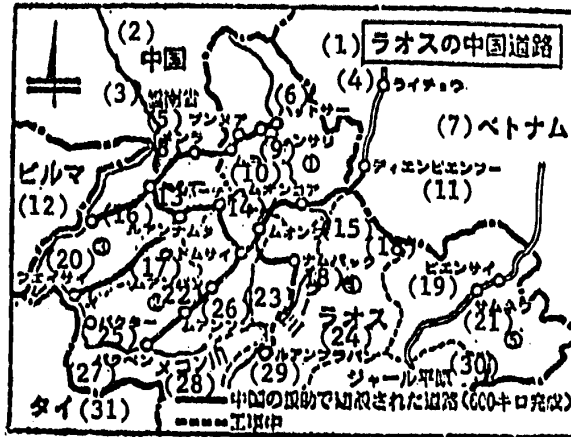
In June of last year, the Soviet-led COMECON recognized Vietnam's formal affiliation. That indicated that Vietnam has already been included economically in the Soviet bloc. However, to offset that, China made its China-Japan treaty. Moreover, China made clear its plan to cancel the "Sino-Soviet Alliance Treaty." The powerful "roll back policy" had begun with the Soviet-Vietnam friendship treaty.

Now, full-scale hostilities by troops of both China and Vietnam, which began in October of last year, have been repeated at the China-Vietnam border. Also, their uncanny move, centering around a "dry season large-scale offensive" has continued into the Vietnam-Kampuchea dispute. Kampuchea's Vice-premier Ieng Sary, who made a speech at the United Nations in October of last year, stated that Vietnam will use again several army divisions, stationed in foreign territories, in its dry season offensive. In this case, Laos is clearly indicated as the foreign territory. It seems that about four army divisions of Vietnamese troops are stationed in Champassak Province on the southern extremity of Laos.

In addition to this, Vietnam includes in the "Kampuchean Liberation Front" Kampuchean residents in southern Vietnam, amounting to about 150,000 men. They have formed a "Kampuchean People's Liberation Army" from among these, and sent out into Kampuchean territory well-chosen guerrillas and political

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saboteurs. They are using this dual front strategy to intensify internal disturbances in Kampuchea. In short, Hanoi is using exactly the same kind of strategy against Kampuchea as they used for the conquest of South Vietnam in the past.



In this way, if Vietnam uses Lao territory for troop movements, it is possible that China will expand its troop movements into Lao territory to counteract them. China built 600 kilometers of road in northern Laos, adjoining Chinese territory. And, it would seem that if they were to use this road, they could easily enter Thailand and at the same time, threaten Vietnam from the rear.

Key:

- | | |
|--------------------------|-------------------|
| 1. Chinese Roads in Laos | 17. Ou Dom Sai |
| 2. China | 18. Nam Pak |
| 3. Yunnan Province | 19. Vien Sai |
| 4. Lai Chau | 20. Houei Sai |
| 5. Boun Neua | 21. Sam Neua |
| 6. Hat Sa | 22. Muong Beng |
| 7. Vietnam | 23. Ou River |
| 8. Mengla | 24. Laos |
| 9. Phong Saly | 25. Pak Tha |
| 10. Myo | 26. Muong Son |
| 11. Dien Bien Phu | 27. Pak Beng |
| 12. Burma | 28. Mekong River |
| 13. Ba Ten | 29. Luang Prabang |
| 14. Muong Khoua | 30. Jarres Plains |
| 15. Muong La | 31. Thailand |
| 16. Luan Nam Tha | |

— Roads built with China's assistance
(600 kilometers completed)
- - - Under construction

With this, there is a danger that the Vietnam-Kampuchea conflict will spread to all of Indochina, engulfing Laos. If the USSR backs up Vietnam and China backs up Kampuchea, there is a possibility that it will develop into a Sino-Soviet clash, making Indochina the stage.

The ASEAN nations are exceedingly afraid that it will expand to such a situation. In particular, the feeling of crisis is very acute in Thailand,

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borders Kampuchea. In particular, if Kampuchea cannot withstand a large offensive from the USSR-Vietnam union, and, if a pro-Soviet/pro-Hanoi government appears upon the collapse of the Pol Pot regime, certainly this would be the actualization of an "Indochinese Federation" at which Hanoi aims. Then, the pressure on Thailand would suddenly increase from the USSR and from Hanoi.

Thailand is a country where two coups d'etat have occurred since 1976, caused by the Indochina shock. It is a country which requested a complete evacuation of United States troops stationed in Thailand, because of Vietnam's pressure. In the event that Thailand offers the air bases at U Thapao and elsewhere to the USSR, because of pressure from the Soviet Union which has solidified its "bridgehead" in Indochina, the Soviet Union would be able to control maritime traffic passing through the Strait of Malacca by using its bases in Thailand and Cam Ranh Bay.

However, the appearance of such a situation would not only threaten the South China Sea route for transporting natural resources to our own country, but would have such a great influence that it would destroy the strategic balance in Asia and the Pacific.

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ECONOMIC

'YOMIURI' BLAMES EC FOR DELAY IN TOKYO ROUND TRADE TALKS

Tokyo THE DAILY YOMIURI in English 21 Dec 78 p 2 OW

[Editorial: "EC Overly Stubborn"]

[Text] It is regrettable that the Tokyo Round Multinational Trade Negotiations will not be concluded this year, and the European Communities (EC) must take the blame for the delay.

The EC has been stubbornly negative in its overeagerness to protect its markets. But what worries us the most is that the EC attitude may encourage those favoring protectionism in the U.S.

Japan, the U.S. and the EC pledged twice to make all-out efforts to wrap up the negotiations within this year. The first pledge was made at the summit meeting of industrially advanced nations held in Bonn in July and the second at the Tripartite Ministerial Conference in Geneva last month.

Most Unfortunate Delay

Nevertheless, the Tokyo Round Negotiations will not be concluded by this deadline. Of course, everyone knew that it would not be easy to reach an agreement to set the rules for world trade in the 1980s. We admit the task was big but still insist that it is unfortunate that the target date will not be met. And the EC through its negative attitude has caused a loss in prestige for the summit participants.

The EC is trying to shift the blame for the delay to Japan and the U.S. but this is not true. From the very beginning of the talks, the EC assumed a negative attitude toward expanding the open market system.

Japan and the U.S. issued a joint statement saying they had reached a comprehensive agreement in negotiations so far between themselves. This is encouraging, and certainly the EC will not cancel the Tokyo Round on its own.

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The key issue left unresolved is the contents of the "selective safeguards" (emergency import restrictions). Between Japan and the U.S. there is the issue of how open to foreign companies should be government procurement. However, agreements can be found.

Therefore, it is our belief that the Tokyo Round Negotiations will be virtually completed in January and signed in March or April, but even with this expectation, we cannot put our minds to ease.

Offspring of Recession

The protectionist sentiment in the EC and the U.S. runs deep because of the protracted recession in the world, high unemployment and the loss of confidence by private U.S. enterprises to change the structure of their businesses.

In January the European Monetary System (EMS) will be inaugurated with the objective of strengthening EC unity. However, the move toward greater unity is not restricted to monetary problems but also covers the field of trade. Under the circumstances, we must appeal to the EC to maintain the open market system.

In the debate in the U.S. Congress on the Tokyo Round agreement next year, we can expect protectionists to severely criticize Japan and the EC, and demand restrictions on imports. Japan might forestall such demands by taking drastic steps to allow foreign companies to bid for our government's procurement contracts.

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SCIENCE AND TECHNOLOGY

GOVERNMENT, BUSINESS LEADERS PLAN NUCLEAR COMPLEX

Tokyo MAINICHI DAILY NEWS in English 5 Jan 79 p 5

[Text]

The government and business world jointly plan to establish a plant industrial combine using nuclear energy not only for power generation but for more extensive purposes including the iron and steel industry, aluminum smelting, chemical industry, etc., it was learned Thursday.

The project is now under study on the basis of a "nuclear energy combine plan" jointly worked out by the government and the private sector.

Under the planned program a huge multi-purpose high temperature reactor (HTR), with a capacity of generating 50,000 kilowatts, will be developed through technical cooperation with the United States and West Germany in six or seven years so that the nuclear energy combine might be able to be completed around the year 2000.

This was decided at a meeting of the "Study Committee On Industrial Use of Nuclear Energy" summoned by the Ministry of International Trade and Industry on Dec. 26 last year.

Government officials and business world experts concerned took part in the meeting, the first session ever held. The meeting was chaired by

Professor Mamoru Akiyama of the University of Tokyo.

If this project for nuclear industry combine is materialized the nuclear energy will be actually comparable to petroleum in its role as a primary resource of energy.

The nuclear energy has so far been utilized exclusively for power generation. A total of 18 nuclear reactors (for power generation) are now in operation with combined capacity of 11.5 million kilowatts, close to 8 percent of total generation capacity of the nation.

These nuclear reactors have not been used for purposes other than power generation. This is mainly because the coolant used for the conventional nuclear reactors (light water reactors) is water and the energy contained in it in the form of thermal energy is discharged into the sea.

But in the case of the high temperature reactor, which will play a leading role in the planned industrial combine, the coolant used for the reactor is helium gas instead of water and it will keep the high temperature for a long time.

In this system the thermal energy is usable not only for

power generation but for other industrial purposes.

The utilization of thermal nuclear energy is a new field in which the U.S. and West Germany have been conducting full-fledged studies. In Japan, too, MITI and other bodies have started to study the technology of high temperature reactors in the use of helium gas for the iron and steel industry.

MITI is planning to extensively apply the technology to such fields as liquefaction or gasification of coal, aluminum smelting, hydrogen generation, various kinds of chemical industries, regional air-conditioning, etc.

If this program is implemented the energy necessary for the industrial combine will be provided by the high temperature gas.

To promote the idea, the "Study Committee On Industrial Use of Nuclear Energy" was set up. Officials from MITI and the Science and

Technology Agency as well as people from the private sector, including electric power, gas, chemical, iron and steel, and coal industries, will take part in the project.

According to MITI, the industrial combine will be supplied with electric power and other sources of energy from high temperature reactors with capacities ranging from 700,000 to 800,000 kilowatts, to be installed in the zone.

The HTR reactors will be developed over a period of six or seven years on an experimental basis. The reactors will be able to keep the helium gas temperature at around 1,000 degrees centigrade at the outlet of the reactor (about 300 degrees in the case of water coolant in the conventional reactors).

If this program goes as scheduled, the industrial combine in using HTR reactors will go into operation around the year 2000, according to the MITI statement.

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SCIENCE AND TECHNOLOGY

JAPAN ATOMIC INDUSTRY FORUM REPORTS ON NUCLEAR INDUSTRY

Tokyo NIKKAN KOGYO SHINBUN in Japanese 7, 8 Dec 78

[7 Dec 78, p 5]

[Text] The Japan Atomic Industry Forum (president, Hiromi Arisawa) collated a report titled "Nearly Viable Atomic Energy Industry," which reports on the results of study of the actual state of the atomic energy industry for FY 1977. According to this report, total atomic-energy related expenditures in the private sector exceeded 1 trillion yen for the first time, and the atomic energy supplier industry (mining and manufacturing industries) also had a credit balance for the first time in 8 years, since FY 1969. However, the cumulative deficit in the industry since FY 1956 has reached 130 billion yen, with little hope for liquidation of this deficit in the near future. Furthermore, estimated future expenditures in terms of costs in FY 1977 are 0.8 for FY 1978, 1.05 for FY 1979, and 1.65 or 712.7 billion yen for FY 1982. These are grim prospects and a summary of the situation is given in this article.

Trends in the Atomic Energy Industry--Towards FBR Cooperative Development

In the area of power reactors, a fast Breeder Reactor (FBR) Engineering Office was jointly established in August 1977 by four firms, Mitsubishi Heavy Industry, Hitachi Ltd, Tokyo Shibaura, and Fuji Denki, which action formed the foundation for cooperative technical developments of the FBR, and work has already started on some preliminary designs for the "Monju" FBR and other projects. In nuclear fuels, a Committee on Measures to Secure Uranium Resources with representation from electric power companies and non-ferrous metal manufacturers was formed in Feb 1978 to consider more efficient development of uranium resources, and furthermore, a Centrifugal Separation Engineering Office was jointly established by Hitachi Ltd, Tokyo Shibaura, and Mitsubishi Heavy Industry to integrate R & D work on centrifuges required in the construction of a uranium concentration pilot plant.

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With respect to reprocessing of fuels, a consignment contract was signed on September 1977 between the electric power companies and COGEMA, a French nuclear fuel company, to reprocess 1600 tons of uranium over a 9-year period 1982-1990. A similar consignment contract for reprocessing was signed in May 1978 with the British Nuclear Fuels Ltd (BNFL) firm. Other activity includes the designation of radiation workers in November 1977 and the opening of a Radiation Workers Central Registration Center for centralized control of personal radiation dosage on a national scale.

Trends in Expenditures in the Private Sector - Cumulative Total About 5 Trillion Yen

Atomic energy related expenditures in the private sector (electric power industry, mining and manufacturing industries, trading companies) reached 1.026 trillion yen for the first time in FY 1977, with a cumulative total of 4.9157 trillion yen since FY 1956 when the study started, or about 5 trillion yen. Of the total, the outlay by the electrical industry, which builds and operates nuclear power generating stations, was 583.5 billion yen, a 12 percent increase over expenditures for the previous fiscal year. The expenditures of the mining and manufacturing industries, which supply atomic power equipment, nuclear fuel recycling equipment, RI-radiological equipment, and related services was 440 billion yen, a 19 percent increase. This breaks down into 406.2 billion yen for production costs (21 percent increase), and 30.3 billion yen for research expenses (21 percent increase). Finally, the expenditures of the trading firms, which handle atomic energy products, was 2.5 billion yen, a 19 percent increase over the previous fiscal year.

Especially in the case of the electrical industry, where atomic energy related expenditures were 583.5 billion yen, construction costs, which are usually about 50 percent of total expenses, remained at 288.3 billion yen, only a 2 percent increase. This is due to the fact that because of the difficulties of site acquisition, starts on construction of nuclear reactors in FY 1977 was limited to only the single Ikata No 2 reactor, while operational status was achieved by only the Ikata No 1 reactor. Construction continued on all 10 nuclear reactors which were under construction in FY 1976.

On the other hand, aside from construction costs, there is also a rising trend in preparation, fuel, and operational and maintenance costs. Preparation cost, including an increase in R & D for safety and reliability, was 19.7 billion yen (41 percent increase). Fuel costs were 170.2 billion yen (25 percent increase), including initial fueling costs for five reactors scheduled for operation in FY 1978 and advances to COGEMA with which a consignment contract for reprocessing fuel had been signed. Operating and maintenance costs were 93 billion yen (31 percent increase), which includes, in addition to the increased outlay for new reactor operation, the cost of repairing power plant failures (41 percent increase), and a drastic increase in various taxes (63 percent increase) such as business taxes on the

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Fukushima No 1 and No 3 reactors, the Hanaoka No 1 reactor, and the Mihama No 3 reactor, all of which started operation in FY 1976, a nuclear fuel tax in Fukui Prefecture, the Electric Power Resources Development Promotion Tax, and others.

Investment Ratio of Research Related to Atomic Energy - Nuclear Fusion Research Popular

The research investment ratio defined as the ratio of research investment to sales was 6.3 percent, a slight decline from the 7.3 percent for the previous fiscal year. This is simply the result of research investment rising slower than sales (21 percent against 30 percent), and it also reflects a general decline in investment in research in all of the areas such as in nuclear reactor machinery and materials, nuclear fuel recycling, and RI-radiological equipment. On the other hand, however, there has been a definite rise in the research investment ratio for nuclear fusion equipment and in various testing equipment, a 16.8 percent compared to 8.9 percent for the previous fiscal year. In particular, the research investment ratio for nuclear fusion is a very high 44.1 percent, which indicates the serious interest private industry has in the development of nuclear fusion and critical plasma testing facilities such as the JT-60.

Table: Atomic Energy Related Research Investment Ratios in the Mining and Manufacturing Industries (Unit: million yen)

(1) Sector	(2) Expenditure	(3) Research expenditure		(5) Sales	(6) Investment Ratio	
		(4) Research expenditure	(4) Research expenditure		(6) Investment Ratio	(6) Investment Ratio
(8) Nuclear reactor machinery and materials	262,002	13,999	5.34	261,015	5.34	8.1
(9) Nuclear fuel recycling	61,760	3,697	5.99	50,454	7.33	7.3
(10) RI-radiological equipment	45,703	1,072	6.75	21,620	4.91	7.2
(11) Power generating and transforming equipment	22,678	622	2.70	47,823	1.32	1.7
(12) Construction and public works	21,227	419	1.91	25,067	1.17	1.5
(13) Miscellaneous manufacturing	25,074	3,827	15.29	22,251	16.69	8.9
(14) RI-radiological applications	6,260	2,180	48.18	-	-	-
(15) Contribution to atomic energy agencies; cost of importing foreign technology	7,037	2,223	-	-	-	-
(16) Total	422,652	26,327	6.23	412,043	6.89	7.3

Key:

- | | |
|--|--|
| 1. Sector | 9. Nuclear fuel recycling |
| 2. Expenditure | 10. RI-radiological equipment |
| 3. Research expenditure | 11. Power generating and transforming equipment |
| 4. Research expenditure | 12. Construction and public works |
| 5. Sales | 13. Miscellaneous manufacturing |
| 6. Research Investment Ratio (FY 1977) | 14. RI-radiological applications |
| 7. Research Investment Ratio (FY 1976) | 15. Contribution to atomic energy agencies; cost of importing foreign technology |
| 8. Nuclear reactor machinery and materials | 16. Total |

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[8 Dec 78, p 5]

[Text] Sales Trends of Atomic Energy Supplier Industries (Mining and Manufacturing)

Sales for FY 1977 in the mining and manufacturing industries ran to 442.7 billion yen (30 percent increase over previous FY) as a result of a rise in backlog of orders in FY 1976. This resulted in a credit of 2.7 billion yen after total expenditures in FY 1977 of 440 billion yen, including plant investment.

Cost Reduction Policy Successful

This is the third time since FY 1956 that a credit balance has occurred. The other years were FY 1963 (sales 12.6 billion yen, balance 2 billion yen) and FY 1969 (sales 44.7 billion yen, balance the same). If 12 years is taken as the life of production and research facilities, then the facilities amortization cost is estimated to be over 12.9 billion yen and the credit balance can be roughly estimated to be at the most about 19 billion yen. The causes of the credit balance are the time lag between production and delivery and also the concerted cost-savings policies of the various firms during a business recession. On the other hand, however, there still exists a cumulative deficit of 130.7 billion yen since FY 1956, the liquidation of which will be unlikely in the near future.

In particular, the increase in sales by the mining and manufacturing industries actually represents very active delivery of equipment to nuclear power stations, with sales to the electrical industry rising 39 percent over the previous year. Export figures show a 49 percent increase over the previous fiscal year to 19.5 billion yen, representing mainly export of items such as pressure vessels, steam generators, heat exchangers, turbines, and steel pipes to West German, the United States, France, Spain and other nations. Sales to the government, makers, public and private universities and hospitals also showed increases respectively of 14 percent, 16 percent, and 28 percent over previous year figures.

By sector, sales by makers in the nuclear reactor equipment and materials area were 264.8 billion yen (51 percent increase over previous year sales), the nuclear fuel sector 50.5 billion yen (25 percent increase), RI-radiation equipment sector 21.6 billion yen (31 percent increase). In contrast, sales in the construction and public works area, where most of the work occurs in the early stages of power plant construction, declined by 19 percent over the previous year, this actually being part of a large decline over two consecutive years 1976, 1977. This was due to the fact that most of the nuclear power plants under construction were already in well advanced stages of construction and also because there were few new starts. For example, sales for FY 1977 were 44 percent below that for FY 1974, the best year.

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Backlog of Orders - 66 Percent Increase

The backlog of orders at the end of FY 1977 was 1,921.4 billion yen, an increase of 66 percent over FY 1976. This amounts to 4.34-years worth of FY 1977 sales, the effect of a move up of orders by nuclear power plants as one way to stimulate the economy.

By sector, the backlog of orders received by the nuclear reactor equipment and materials area was 1,442.8 billion yen, or 75 percent of the total (110 percent increase over the previous fiscal year), followed by nuclear fuel recycling with 2.069 billion yen, an increase of 45 percent over the previous fiscal year. On the other hand, the backlog in the construction and public works sector was 61.1 billion yen, a decrease of 45 percent over the previous fiscal year. This simply shows that the effect of move up of orders by the nuclear power plants extended only as far as the prime contractor and not as far as the construction and public works industries.

Trends in Atomic Energy Related Exports by Trading Firms

With increasing sales by the mining and manufacturing industries sector, trading firms also rang up an atomic energy related business of 480 billion yen, an increase of 24 percent over the previous fiscal year.

Of this, domestic transactions amounted to 256 billion yen (65 percent increase over previous fiscal year) and import business was 215.4 billion yen (a 5 percent decline).

Export transactions amounted to 8.6 billion yen (equivalent to 44 percent of exports by the mining and manufacturing industries) (an increase of 50 percent over the previous fiscal year), accompanying the increase in exports by the mining and manufacturing industries of pressure vessels, turbines, steel pipes, etc. This is the largest amount of export business ever handled by the trading firms, amounting to 80 percent of the cumulative export transactions handled between FYs 1958 and 1976. The atomic energy related business handled by these trading firms, however, only amounts to a small 1.8 percent of their total business, and in the future more effort will be required of both equipment makers and the trading firms.

Estimated Expenditures of the Electrical Companies - Construction Starts on Four Units in FY 1979

Concerning construction starts on nuclear power plants, four are planned for FY 1978 and three for FY 1979. As a result, expenditures for construction are expected to rise sharply from the 423.7 billion yen a year from now (equivalent to 1.47 times actual construction costs in FY 1977) to 433.4 billion yen 2 years hence (1.5 times) and 893.9 billion yen (3.1 times) 5 years hence.

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Nuclear fuel and operating and maintenance costs also seem to be on the rise. The estimate for FY 1978 is 863.5 billion yen (1.52 times FY 1977 costs), which is expected to increase to 1.68 times or 954.8 billion yen in FY 1979, and to 3.07 times or 1,751.3 billion yen in FY 1982.

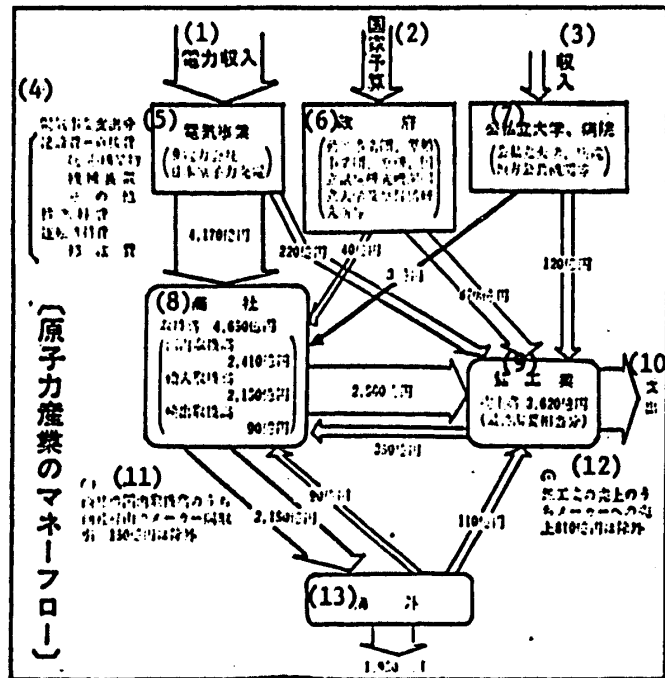
Estimated Expenditures for Mining and Manufacturing Industries

Expenditures in the mining and manufacturing industries sector are estimated to be 345.5 billion yen for FY 1978 (0.8 times FY 1977 expenditures), increasing to 1.05 times or 455.4 billion yen for FY 1979, and 1.65 times or 712.7 billion yen for FY 1982. With respect to the expenditure levels estimated for 5 years from now, those expected to be on the higher side are for electrical equipment manufacture with a 2.12-fold increase and construction with a 1.52-fold gain. Those expected to be on the lower side are for shipbuilding-machinery manufacture, iron and steel, and the exclusive atomic energy industries with less than 1.27-times gain.

Money Flow in the Atomic Energy Industry - 71 Billion Yen to Government Related Agencies

The money flow involving sales by the mining and manufacturing industries and business handled by the trading companies as revealed by the Atomic Energy Industry Survey for FY 1977 is as shown in the following diagram.

Money Flow in the Atomic Energy Industry



[key on following page]

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Key:

1. Income from electric power sales
2. National budget
3. Income
4. Electrical industry expenditures
 - Construction costs - direct costs (buildings, structures, machinery equipment, miscel.)
 - Nuclear fuel costs
 - Operating and maintenance costs
5. Electric power business (nine electric power companies, Japan Atomic Power Generating Co)
6. Government (Motor Fuel Corp, Nuclear Powered Ship Corp, Atomic Energy Res Inst, National Testing and Res Labs, National Univs and associated research labs, etc.)
7. Public and private colleges, hospitals (public and private colleges, hospitals, regional public agencies, etc.)
8. Trading companies
 - Transactions
 - Domestic business
 - Import business
 - Export business
9. Mining and manufacturing industries
 - Sales (only that corresponding to last demand)
10. Expenditure
11. Remark: Domestic transactions of trading firms exclude 15 billion yen which is business between makers handled through the trading firms.
12. Sales by mining and manufacturing industries excludes 81 billion yen which is sales to makers.
13. Overseas

[Note: All figures in flowchart are in units of 0.1 billion yen]

According to this flowchart, sales to government agencies were 71 billion yen, including direct sales of 67 billion yen from the mining and manufacturing industries and 4 billion yen delivered via the trading firms. Also, sales to the electric power business was 439 billion yen, including 407 billion yen through the trading firms and direct delivery of 22 billion yen.

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Furthermore, sales to public and private colleges and hospitals was 12.3 billion yen, including 300 million yen via the trading firms and 12 billion yen in direct deliveries.

On the other hand, exports amounted to 215 billion yen and imports to 20 billion yen, leaving an imbalance in atomic energy related trade of 195 billion yen for FY 1977 (approximately 1 billion dollars). Direct overseas sales by the mining and manufacturing industries amounted to 11 billion yen. The total business handled by the trading firms amounted to 480 billion yen which, from the standpoint of money flow, consisted of 241 billion yen in domestic business, 215 billion yen in import business, 9 billion yen in exports, and 15 billion yen in transactions between makers, which was handled by the trading companies.

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SCIENCE AND TECHNOLOGY

SCIENCE COUNCIL PROPOSALS ON GENETIC ENGINEERING, OCEAN RESEARCH

Proposals Detailed

Tokyo ASAHI SHINBUN in Japanese 19 Nov 78 p 4

[Text] The Science Council of the Ministry of Education (president Masao Yoshinori) sent two proposals to Minister of Education Sunada on November 28, one on measures for safe gene (DNA) recombination experiments by university and other research institutions, and the other concerning the promotion of ocean sciences research. On the matter of DNA recombination experiments, individual research institutions are to adopt measures to assure safety in accordance with a guideline notice to be issued shortly. Thus by next fiscal year, at the earliest, DNA experiments, which had been frozen, should be resumed.

While DNA recombination experiments, which permit the insertion of animal DNA into bacteria, can be of use in elucidating genetic riddles or manufacturing useful medicines, latent risks on the other hand are a cause of worry. For this reason, this type of research was temporarily suspended in Japan. The researchers themselves, however, undertook the task of studying methods to assure safety; in line with this effort, an interim draft, consisting of a main text and experimental guidelines was announced on July 24. This document is based on the following three points to assure safety:

(1) Buildings and facilities will be constructed in accordance with the degree of risk involved (physical containment); (2) the organism into which the recombinant DNA is to be inserted must be a weak strain which cannot survive alone in nature (biological containment); and (3) self-regulation by the researchers themselves.

The Ministry of Education solicited opinions about this draft from 1,205 institutions, including universities and other pertinent research laboratories; replies were received from 107 research institutions. A breakdown showed 52 (49 percent) in favor of the document, 36 (33 percent) urging caution, and 19 (17 percent) in favor of relaxing the rules to facilitate research.

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Based on this response the Science Council decided that the interim document was generally acceptable to the concerned research institutions and the proposal was sent to the minister with only a slight modification in the wording to clarify the Ministry of Education's responsibility in determining experimental guidelines.

In the future, following the guideline notice to be issued by the Ministry of Education, a safety committee will be created in each university to screen and approve plans for experiments by researchers and a safety official will be appointed to monitor conformity to the rules in experimental undertakings. A central committee will also be established in the Science Council to evaluate plans for recombinant DNA experiments in conjunction with the distribution of scientific research grant money, and one can resume once-suspended recombinant DNA experiments when approval by these organizations has been obtained.

In the area of ocean sciences research, plans to utilize and develop the seas, which abound in food and mineral resources, must be made and vigorously promoted, even to advance research in competition with the developed countries such as the United States, USSR, Great Britain, France, West Germany, and others.

It is particularly important in the ocean sciences that the development of research should involve the cooperative effort of researchers from various fields. This proposal calls for a cooperative research organization centered around the Oceanographic Research Institute of Tokyo University, the promotion of international cooperative research, and strengthening the fleet of research vessels, among other measures. The need to increase the number of research ships with long cruise range is indicated.

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'ASAHI' Editorial

Tokyo ASAHI SHINBUN in Japanese 30 Nov 78 p 5

[Editorial: "Genetic Manipulation and the Scientist's Responsibility"]

[Text] It has long been believed that scientific and technological advance contributes to mankind's happiness, but this is no longer the case. It is now clearly recognized that this can be a double-edged sword, sometimes attended by environmental destruction.

Atomic power is one such example. But probably the most symbolic case is the controversy surrounding gene recombination technology, which represents the forefront of the biological sciences. This stems from the fact that this new technology on one hand has hidden potential for greatly benefiting mankind but also harbors the danger of producing monstrous organisms.

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With respect to how gene recombination research should be conducted by research institutions at universities and elsewhere, the Science Council of the Ministry of Education completed and proposed to the minister of education on November 28 a set of "experimental guidelines." This establishes concrete standards for regulations which will put double and triple checks on the progress of experiments.

This is probably the first case in which regulatory action has been taken prior to the occurrence of a disaster, based only on a priori expectation of a hidden danger. The fact that the issue was first brought up by the very scientists who were engaged in this area of research, and that the experimental guidelines were drawn in the spirit of voluntary regulation, is to be appreciated.

Gene manipulation technology means the severance of DNA (dioxynucleic acid), the real substance of genes, by means of special enzymes and transplanting this unit into the cell of another organism. This makes it possible to create genes in combinations which do not exist in nature.

This new gene manipulation technology, sometimes called genetic engineering, not only represents the development of a unique research tool for elucidating life phenomena, but many practical applications are also expected, such as the synthesis of insulin for the treatment of diabetes.

On the other hand, on the negative side, the possibility that new biological disasters could occur, such as the appearance of new strains of cancer viruses or pathogenic bacteria resistant to antibodies, has also been pointed out.

This problem first became a major social issue in the United States, and during the past year or two, experimental guidelines have been established in the United States, Great Britain, France and West Germany. Our current guidelines basically follow the same philosophy as those adopted in other countries.

In substance, this involves a ranking system in accordance with the degree of risk of the experiment, combining the requirements of "physical containment," where the research room is sealed off, and that of "biological containment," where the new gene is not allowed to survive outside of the research room. In addition, the guidelines call for the establishment of a safety committee in each institution and a central committee in the science Council to monitor the experiment.

The establishment of these guidelines means that gene recombination experiments, which had been frozen, will be resumed, and we sincerely hope that all parties concerned will strictly adhere to the guidelines. For this to happen, first of all each researcher's sense of responsibility is important, but it is also necessary for the Ministry of Education to see to it at the

time when research funds are approved that proper research facilities are also built.

It is also important to introduce the idea of public participation, as practised in Europe and the United States, by including in the Central Committee, which is responsible for overall surveillance, persons from outside the biological sciences profession who can see problems from a wider social viewpoint.

On this occasion, we would also invite the researchers working not only with gene manipulation but with pathogenic bacteria and viruses in general to reexamine the adequacy of controls in their experiments.

In any field, the researcher directly engaged in a new science or technology is usually most keenly aware of the latent risks involved. As in the case of genetic manipulation, it will become ever more important for the researchers themselves to sound the alarm and apply the brakes.

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SCIENCE AND TECHNOLOGY

MRI HANDLES SALE OF DECLASSIFIED U.S. DOCUMENTS FOR NTIS

Tokyo NIKKAN KOGYO SHINBUN in Japanese 24 Nov 78 p 1

[Text] Mitsubishi Research Institute (President Masaki Nakajima) will conclude a domestic general agent contract with NTIS (National Technical Information Service) of the U.S. Commerce Department and will handle sales in Japan of technical reports held by NTIS.

The documents held by NTIS cover 26 fields such as administration, economics, civil engineering, atomic energy, and resource problems which agencies of the U.S. Government have commissioned, etc., and studied. Particularly since quite a few of the collected documents had been top secret, the use of these documents has been growing yearly. Since few agencies in Japan currently obtain U.S. documents in a concentrated fashion, Mitsubishi Research Institute feels that these documents will be used fairly extensively. It is also said that in the future the United States wishes to collect at NTIS the results of studies which Japan has done independently; consequently, there is a strong possibility that an international exchange of technical information will be realized.

NTIS holds about 1.2 million reports, documents, etc., researched by 300 governmental and civilian agencies such as the Department of Defense, the Department of State, the Department of Treasury, the Environmental Protection Agency, ERDA, the trade commission, the NASA, the Stanford Research Institute and the (BATTERU) Research Institute. This represents the largest holding of technical reports in the world. NTIS was established in 1974 in order to return the results of research to the U.S. taxpayers and it has been selling the reports at low prices; later, NTIS began selling the reports to Britain, France, Belgium, Switzerland and Australia as a means of acquiring foreign exchange.

Beginning 2 years ago, NTIS began to sell in Japan under marketing contracts with nine firms such as Mitsubishi Research Institute. This November, however, executive director Noboru Makino of Mitsubishi Research Institute visited the United States and concluded a general agent contract with NTIS Director (S. Day). The sales record for Mitsubishi Research Institute was already 90 million yen in 1976 and 140 million yen in 1977. The estimate for 1978 is 240 million yen.

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Some of the reasons this annual rise in sales volume are: (1) Reports which the United States had previously kept highly classified are being released, and (2) it is easy to obtain the newest reports by the various research institutes. In addition, NTIS is codifying, summarizing, and microfilming its documents. Furthermore, a system is in effect whereby the reports received each week are categorized into 26 fields and summaries are released, thus allowing the user to obtain the information he wants easily. This, too, seems to be a major factor in the increased sales.

The explanation given for Mitsubishi Research Institute's decision to market foreign technical reports is that it makes various studies as a think-tank and this move is "in conformity with the policy" of those general studies.

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SCIENCE AND TECHNOLOGY

JNR CONDUCTING SURVEY FOR MAGNETIC LEVITATION RAILROAD ROUTE

Tokyo MAINICHI DAILY NEWS in English 1 Jan 79 p 16

[Text]

An ambitious plan is afoot to link Tokyo and Osaka by a high-speed, pollution-free transit system via the mountainous area of the southern Japan Alps region. The system, expected to be completed in about ten years, will reduce travel time between the two cities to one hour.

As the first step to materialize the plan, the Japanese National Railways (JNR) has entered into negotiations with local authorities concerned to purchase land to be used for construction of the transit system's experimental guideways in Gifu, Aichi and Mie prefectures.

The transit system called HSST (high speed surface transport), is now being developed at the JNR's research center in Hyuga City, Miyazaki Prefecture.

The system employs a linear motor and magnetic force. Magnets fixed on both linear motor cars and rails of the

guideway produce the lift that raise the cars. The linear motor propels the floating vehicles forward.

The JNR plans to make test runs of linear motor cars on a 40-kilometer experimental guideway to be constructed in the three prefectures within six years to come.

National railways sources said that the plan was made as a substitute mass transit system for the Tokaido Shinkansen bullet line which will need large-scale repairs in the near future.

Local government authorities and business leaders in Nagoya, which are eager to sponsor Olympic games in 1988, place their high expectations on the realization of the plan.

It seems that the Nagoya area wants to use the "ultra-super rapid transit system" in its campaign to attract as many Japanese and foreign people as possible if the Olympic games are held in Nagoya.

According to the details of the plan, HSST cars will run at a speed of more than 300 kilometers per hour on the projected Chuo Shinkansen line which is designed to connect Tokyo's Shinjuku with Osaka, via Kofu in Yamanashi Prefecture and Nagoya in Aichi Prefecture.

The train travel hours between Tokyo and Osaka could be shortened to about an hour, compared to three hours and 10 minutes by the Tokaido Shinkansen bullet train at present.

The JNR is now conducting a geological survey in the southern Alps district to decide the new line's route between Kofu and Nakatsugawa. From Nagoya, the line will run through the Suzuka mountain range, via Kameyama and reach Osaka.

The JNR estimates that the costs for construction of the experimental guideway and test runs of the HSST cars alone will exceed 100 billion yen.

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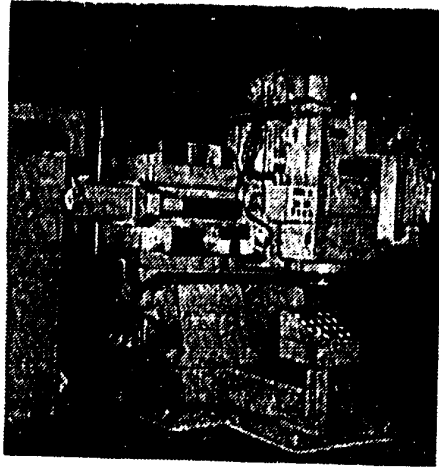
NEW MILLING MACHINE HAS 500-METER-PER-MINUTE CERAMIC CUTTER

Tokyo NIKKAN KOGYO SHINBUN in Japanese 9 Oct 78 p 15

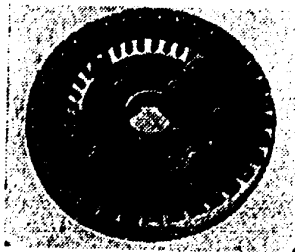
[Text] Niigata Engineering Co. (Tomio Nojima, president) and Sumitomo Electric Ind. have announced that jointly they have materialized the "MM60V" production milling machine, a powerful, production type milling machine that can cut at super high speed with high feed, with a ceramic cutter, and that it will soon be put on the market. Sumitomo Electric was in charge of the ceramic cutter, while Niigata Engineering handled the milling machine. This is a revolutionary production type milling machine which can process at high feeds and super high speeds. It is able to cut the surfaces of automobile engine blocks and other cast volume production items at a cutting speed of 300 to 500 meters per minute with a feed of 300 mm per minute. The realization, on a practical basis, of a milling process using ceramic tools was of prime interest in the machine tool and machine manufacturing world for many years and it is worthy of note that production was achieved through the combined efforts of a machine tool and a machinery company.

In carrying out the process, surface cutting of mass produced cast goods such as engine blocks, this is generally done with a super hard alloy cutter with a tungsten base, but in such cases, the cutting speed is 90 meters per minute, and the feed is 500 mm/minute at best. A broaching machine is also used, but the broaching machine itself involves several problems: it costs several hundred million yen, broaching tools are 20 to 30 million yen, and these tools have to be purchased each time the working profile is changed. For this reason, the task was to realize a milling process with a ceramic tool having aluminum as a principal constituent, capable of cutting at a super high speed of four to five hundred meters per minute.

However, (1) ceramic tools are inferior to super-hard alloys in terms of their toughness, so they can only be used in turning work, (2) highly rigid, high horsepower milling machines are not available which can operate at high speeds with high feed, and these factors hamper making milling by ceramics practical.



Manufacturing milling machine
capable of a feed of 3000 mm
per minute



Ceramic finishing cutter

In view of the above, Sumitomo Electric took charge of developing ceramic tools of high toughness while Niigata Engineering worked on the development of the machinery itself, and while doing so, recently were finally able to make the idea practical. A throw-away ceramic chip (B-90) (trade name) with a transverse strength of 90 kg per square millimeter is used for the ceramic cutter.

The cutter comes in two types--for rough machining and for finishing. Both of them have square negative-type octagonal chips set with three blades per inch, and include the rough machining type NRVF with a lead angle of 45° and the finishing type VFVF with a lead angle of 0°. The finishing type is designed with a view to keeping the play of the blades within 10 microns in order to improve the tool life and the finishing process.

The milling machine for which Niigata Engineering was responsible is a vertical production milling machine which can work at a maximum feed of 3000 mm per minute. Compared to conventional models of this type, its rigidity is five times greater and its horsepower more than three times

greater. It is designed so that it can accomplish high power, high feed cutting simultaneously with the same machine using a super hard cutter. Its main features are (1) a combination of a cylindrical roller with a main spindle shaft 200 mm thick and an angular thrust bearing, and by means of a sturdy column it can perform powerful cutting with a ceramic tool, with a rigidity five times greater than conventional production milling machines, (2) it can operate quietly even when cross cutting, under the effect of a large diameter flywheel that is attached to the front part of the main spindle and can obtain good finishing (surface roughness 3-6 S), (3) since it is of the head-traversing type, lining is easy, (4) higher accuracy positioning is possible by means of a digital type vertical moving device, and (5) it is possible to select an optimum feed rate.

As for marketing, the companies have agreed that Niigata Engineering Works will handle the milling machine and Sumitomo Electric the cutter, and the price of the milling machine is expected to be around 35 million yen. With the advent of this ceramic cutter-milling machine, we envision high speed surface cutting of cast materials produced in mass quantity, along with reduction of required energy. At the same time, this is a very rare case of a machine tool and a tool manufacturer joining together to face the challenge of developing something on a single theme, and through the success of both companies we expect increased joint development tool and machine tool manufacturers.

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SCIENCE AND TECHNOLOGY

BRIEFS

OCEAN OBSERVATION SATELLITE--Concerning acceptance of orders for the first Marine Observation Satellite (MOS), Mitsubishi Electric Corp. and Nippon Electric have decided to submit estimates, following a course of independent engineering development. Of the practical satellites to be launched by the National Space Development Agency, aside from engineering test satellites, this is the first case of substantial satellite development starting on the path of independent development of satellites without cooperation with American manufacturers. It will pave the way to launching "Hinomaru satellites" developed completely independently by Japan. [Text] [Tokyo NIKKEI ELECTRONICS in Japanese 18 Sep 78 p 234] 6093

IC TEST SYSTEM--Ando Electric Co. Ltd. has made progress in developing the DIC-8000 series IC test system aimed in the direction of the super-LSI age. Recently, they developed as first stage models the SSI/MSI Test System DIC-8010 and the LSI Test System DIC-8030. The same company will in the near future be making commercially available the super LSI Memory Test System DIC-8020 for the second rocket. It also is in the process of developing a super highspeed LSI test system. [Text] [Tokyo NIKKEI ELECTRONICS in Japanese 18 Sep 78 p 234] 6093

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