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7 May 1981

Japan Report

(FOUO 29/81)

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POLITICAL AND SOCIOLOGICAL

'MAINICHI' RAPS LDP'S ARROGANT POSTURE

Tolyo MAINICHI SHIMBUN in Japanese 7, 8, 9, Mar 81

[Article: "Arrogant Manner of the Liberal Democratic Party"]

[7 Mar 81 p 2]

[Text] A sudden turn toward settlement--but it cannot but be said that the Liberal Democratic Party [LDP] has already crossed the Rubicon. The LDP's act of ramming the vote through the Lower House budget committee on 5 Mar 81 is clearly in conflict with the "politics of harmony" preached by Prime Minister Suzuki. No matter how they patch up things later, the fact remains that the party did revert to its true character of trying to use force to get things done. What incited the LDP to adopt the hard-line policy and what is its future course? As one of the means of probing into future political trends, the basic makeup of the "deviate LDP" is analyzed here.

"This is a course of action that had to be taken sooner or later. It could not be helped. History will judge the action." Thus did one of the party leaders summarize the situation on the night of 5 March, with young Diet members whooping it up in a victorious mood, after the LDP for the first time since its formation, unilaterally forced its vote through the Lower House budget committee. During the period when the conservative and reformist forces were evenly matched, the LDP somehow managed to keep the Diet functioning through compromise after compromise with the opposition parties. However, over half a year has passed since the LDP regained, after a long period, a stable majority in the combined Upper and Lower Houses elections of last summer. Having operated for long in an evenly contested Diet, the LDP had not gotten out of its indolence and the mood of "even-match torpor" had still persisted, which had been an irritant in the party mood, but the atmosphere was completely changed by the shock treatment of the forced vote. The air was cleared, so to speak.

The immediate explanation is that the LDP was acting childishly in trying to erase at once the "humiliation" it had suffered during the days of an evenly matched Diet. However, LDP authorities, who had been running around backstage to negotiate, assert that the action was fundamentally unavoidable, claiming that, "structural problems, which could not be solved by clever Diet manipulations or through human relationships, made the forced vote necessary." Having placed top priority on financial reconstruction, with the support of the stable majority that it won, the

LDP insisted that it would be contradictory to its policies to yield even a step to the demands of the opposition parties for lower taxes. On the other hand, confronted with decreasing real wages because of price increases and with labor circles organizing for the spring struggles, the opposition parties could not give grounds on their demands for lower taxes. The vote was rammed through with these positions clashing.

The explanation was that the compromise methods of "seeking the middle ground no matter what" or the [artfully ambiguous] so-called "changeable color" solution which the LDP had heretofore considered as their specialities, could not be used because the confrontation was fundamental in nature. To attain financial reconstruction, the LDP must continue to push for increased taxes, even if it is unpopular with the people, and follow a firm course. There are many LDP Dietmen who earnestly explain that Diet management would be smoother if they compromised but when future national interests are considered, they must choose now the route of a forced vote and make apparent the conflicting positions.

However, was that really the case? On the night of 6 Mar 81, a day later, the confrontation, which was not supposed to allow any yielding, suddenly turned toward settlement through the good offices of Fukuda, speaker of the House of Representatives. The mediation plan was nothing more than a proposal on which the ruling and opposition parties could agree without resorting to a forced vote. If such is the case, the only gain the LDP has to show for the clash with the opposition parties could agree without resorting to a forced vote. If such is the case, the only gain the LDP has to show for the clash with the opposition parties over the budget adjustments is the experience of having pushed through a forced vote. It can be said that after its heyday of majority votes, it had to go through a period of tribulations of an evenly matched Diet but when it finally regained a stable majority, the LDP brought out of the warehouse its moldy hard-line policy. A Diet member of the main-stream faction supporting Prime Minister Suzuki showed his guilty conscience by stating, "None of the leading members, who are acquainted with the earlier Diet sessions where votes were forced repeatedly, are personally applauding this action."

However, such views of the moderates were shown only in rare instances during the recent disturbance. A veteran middle-of-the-road Dietman, who was the only one announcing, "I am for a peaceful course," tried to negotiate with the opposition parties to normalize the situation. He singly advocated to the prime minister, the LDP triumvirate and leaders, on the day before the go-ahead decision was made for a forced vote, saying "we have to find a compromise." However, he was turned down brusquely with the statement "that's impossible." The recent Diet performance showed that if there is vociferous support within the party, no one can propose any compromise measure and the party would resort to strong tactics. This might be called a case symbolic of the fact that the LDP had entered a period of deliberate confrontations.

Whether the cause of confrontation is fundamental in nature, such as policy differences between the ruling and opposition parties, or an expression of revengeful political sentiment for the evenly contested days, perhaps only time will tell.

The statement that "at any rate, it is certain that the LDP will lose in the next election. So we must do what we can now," (by a leading member of the main-stream faction) seems to truly reveal the feelings of the LDP which is girding for confrontations.

[8 Mar 81 p 2]

[Text] On 7 June 1978, at the Upper House audit committee meeting, Prime Minister Fukuda stated, "The auditing power of the Board of Audit does not extend to investment and loan firms or liabilities guarantors dealing with government-related organs. I hope that the Board of Audit speedily concludes its deliberations (of expanding its authority) and requests advice (regarding revision of the law)."

On 16 February 1981, at the Lower House budget committee meeting, Cabinet Secretary Miyazawa said, "As of now, we do not have decisions that would please the Board of Audit or various government ministries. We are sorry about this."

Whenever institutional corruption cases, such as the Lockheed case, the suspicion surrounding Seoul subway, the Grumman-Douglas case, etc. are exposed, the question of loans of government-related organs is pointed out. As a means of conducting inquiries into such incidents, strengthening of the investigation function of the Board of Audit, which cannot inspect sources of loans under the present law, was pressured on the government which promised the Diet to look into the matter. Although there is public pressure to investigate institutional corruptions and four Diet resolutions have been passed, the government and the LDP have completely ignored revision of the law in the past 3 years.

What the government and the LDP promised during the evenly matched Diet days are being discarded, one after another, as "scraps of paper" or suffering the fate of large-scale withdrawals. The abolition in both Houses of the special investigation committees on aircraft import, the revision of control laws on political funds, the presentation to the Diet of a bill on environmental assessment, the three basic principles on arms export and the problem of raising questions on a unified view, and the revision of the law governing the Board of Audit--there are too many cases to mention. It cannot be helped if the people seem to think that the government and the LDP regard this Diet session as an excellent opportunity to reexamine all the promises they reluctantly made during the evenly contested days.

With regard to the inaction on revision of the Board of Audit law, a ranking board official explained, "the biggest reason is the increase in the LDP's Diet seats." That is, the series of "scraps of paper or withdrawals" is due to the brakes being strongly applied on the government by the LDP. At the "discussion group concerning revision of the Board of Audit law," held by the LDP on 4 Mar 81, there were no dissenting views to withhold action and the government's policy was readily approved. An official of the LDP Policy Affairs Research Council revealed that, "there was not even one supporter of the Board of Audit." Thus, the LDP, which participated on four occasions during the evenly contested days in the drafting of resolutions recommending revision of the law, have completely reversed its stand.

The environmental assessment bill is surviving "by the skin of one's teeth," and is being coordinated within the party but the outlook is "it would be difficult to present it at this Diet session" (according to LDP Source handling Diet matters). Since the government requested the LDP in May 1980 to present it to the Diet, the bill has been shelved for nearly a year. In the spring of last year, while still in the evenly matched period, during negotiations with the opposition parties at the regular Diet budget committee meeting, the government and the LDP were forced to

promise to consider this bill. After gaining a stable majority, the LDP has kept turning down this bill. There is no question that the bill would have been presented to the Diet if the evenly matched period had continued. It is a typical case of the "number" deciding the nation's policy.

After the LDP won a big victory in the double elections of June 1980, the LDP leaders said that "the party's power in the government will strengthen." When forces were evenly matched, the Diet did not proceed smoothly unless the government consulted the opposition parties on policy decisions. After the LDP won a stable majority, it could get by with minimum consideration for the opposition parties. To that extent, the political influence of the LDP increased. The LDP, which has the backing of financial circles, is strongly demanding that the government reassess policies disliked by the financial world.

The strengthening of the LDP's political voice has close relationship with Prime Minister Suzuki's "politics of harmony." The prime minister was not selected through the general elections but emerged through talks among various party factions. He did not gain political authority by winning power struggle. Therefore, the continuation of party unity is the biggest weapon in maintaining the stability of Suzuki's regime and if party harmony breaks down, he will be placed in an extremely precarious position. For this reason, he must prevent any situation where only the LDP president's faction or the mainstream faction will "get a cut," he must maintain a "equidistance" from each faction and must listen to the views of all. That is the design of "politics of harmony." In other words, it is a means of manipulating the party. Because of this, to respond to everyone's request when compiling the JFY-1981 budget, he had to make the pie bigger through increased taxes. There was concern that if expenditures were cut, dissatisfaction would inevitably arise in the party and seeds of dissension would be sown.

Promises made during the evenly contested days are becoming "scraps of paper" because of cases like the following: agricultural groups and medium and small enterprises' organizations are opposing revision of the Board of Audit law while electric power companies are opposing the environmental assessment bill. In other words, various organizations are requesting LDP-affiliated groups to reconsider the promises. Diet members belong to these different LDP-affiliated groups look upon this as an excellent opportunity to "repay election debts" and are actively giving their support.

Basically, the "politics of harmony," which dislikes dissensions within the party, is ultimately creating an environment which facilitates reappraisal of promises made during the evenly matched days. One of the motives for the unilateral forced vote at the Lower House budget committee on 5 May was the strong LDP view to be firm in its course of action.

[9 Mar 81 p 2]

[Text] It seems that a single book moved the LDP to action. It is the "highly questionable middle school textbooks," compiled under the editorial supervision of Nobuyuki Fukuda, president of Tsukuba University, by an anti-Nikkyoso [Japan Teachers' Union] group of scholars of the same university. On 27 Feb 81, soon

after its publication, Upper House Secretary-General Masaaki Fujita introduced the contents at an LDP officers' meeting and stated, "The present textbooks are prejudiced. Upper House LDP members are going to take up this question."

Further, at the LDP officers' meeting on 3 Mar 81, Hiroshi Mitsuzuka, chairman of the textbook subcommittee of the LDP's education section, commented, "opinions are being expressed that textbooks should be compiled by the state." He also revealed at the subcommittee meeting that he intends to immediately reappraise the certification system. Yoshiro Mori, chairman of the LDP education section, also requested that "this problem be taken up as a national issue." The LDP's public relations committee, national movement headquarters and the national organization committee will consider the national issue aspects.

There is a reason behind this speedy action. In compliance with changes of the study course guidance, this book thoroughly criticized seven textbooks to be used from April in middle schools in social studies and civics courses. Before publication, the contents were circulated to LDP Diet members as the "textbook report of the Tsukuba University group." With the education faction as the leaders, LDP members were in a mood to give solid approval to the book.

This book criticizes textbooks for advocating rights and not mentioning patriotism, for emphasizing the unconstitutionality of self-defense forces and describing economics on the basis of socialistic principles, etc. Even the Ministry of Education officials claim that the criticisms reveal much misunderstanding. The problem of textbook certification has been disputed since the "Ienaga trial" of 1965. In 1970, the "Sugimoto decision" was handed down in the Tokyo District Court and the state lost with the ruling that "the system is not unconstitutional but excessive examination which delves into thoughts and beliefs are unconstitutional." In the appeals trial, too, the state's contentions were rejected. The Ministry of Education is in a dilemma over the proposal to strengthen the certification system.

Subcommittee chairman Mitsuzuka, who was formerly parliamentary vice minister of education, does not seem to be aware of these developments. He is adamantly asserting, "How can we tolerate such terrible contents of textbooks distributed at state expense under the free textbook system? Basically, it would be ideal for the state to compile them but for the time being, I will try to get the party's agreement to settle for strengthening of the certification system."

In this situation of so-called "educational deterioration," the LDP decided in early December 1980, on a policy of tackling in earnest the reappraisal of postwar education and established subcommittees on higher education problems, teachers' problems and textbook problems within the LDP education section and subcommittees on basic educational problems and school system problems in the Education System Investigation Society (president, Toshiki Kaibe).

With such serious problems as campus violence, misdemeanors, youth suicides occurring one after the other, "reappraisal of postwar education" is probably necessary. However, the LDP is concerned only with the textbook issue which has no relations to such problems. The criticism by Nikkyoso that "the LDP is using 'educational deterioration' for reactionary purposes" is not entirely off the mark.

At the subcommittee meeting on textbook problems held on 5 Mar 81, Takeo Nishioka, who had been deeply interested in education even during the New Liberal Club days, stated, "we must avoid undermining trust in textbooks and creating confusion on the educational scene." However, his statement was overshadowed by the loud, repeated attacks on prejudice. With the LDP, which gained the majority, it seems only high-spirited declarations are acceptable.

The "rightist trend" is not limited to the textbook problem. The words, "omni-directional diplomacy" are no longer heard and we have entered the "era of Japan-U.S. alliance." It is a common knowledge within the party that the defense outlay is being increased at U.S. request. It seems that the JFY-1981 budget would be the last one in which an attempt would be made to keep the growth rate the same for welfare budget and defense spending. It is only natural that "lavish welfare dole" should be reassessed. On the other hand, the LDP would give its total support to electric power companies which are having rough sledding with atomic power plant construction.

Upon examining the series of LDP actions, it seems that the party is trying to destroy, one after another, the systems and traditional practices in various fields that the party built up in the mid-1950's to 1970's. The financial crisis, energy source crisis, etc. are given as reasons for the actions. To cope cooly with crises is fine but priority is being given to ideological actions of the industrial and financial circles which have turned their backs to the nation's people.

Perhaps, the apex of these actions is Okuno's suggestion to revise the constitution. Prime Minister Suzuki is keeping "constitutional revision" under his thumb. However, because talks about constitutional revision were recognized as acceptable, a situation was created which permitted great latitude to "hawkish" treatment of various policies.

Of course, there are many LDP members who agonize over the loud remarks of the "hawk faction." However, at a cabinet meeting last year, when the proposal was made "for all cabinet members to worship at the Yasukuni Shrine on the day commemorating the end of World War II," only Minister Tanaka, of the Ministry of International Trade and Industry, refused to go. The situation is not that "no one need fear if everyone crosses together against the red light." Rather, "if the loud, hawkish elements cross against the red light, it is safer to follow suit." This design is held by the LDP which won, after a long while, nearly 300 seats in the Lower House.

The LDP repeatedly claim that "in last June's elections of both houses, the people chose the stability of a conservative party with absolute majority over the instability of an evenly matched coalition of conservative and reformist parties." However, if the LDP which won the majority is going to strongly confront the opposition parties, the people would soon realize that politics had been more stable during the evenly contested days when the "dove faction" held the leadership of the LDP.

9134
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POLITICAL AND SOCIOLOGICAL

TAKEDA REMARKS CRITICAL OF GOVERNMENT DEFENSE POLICY ANALYZED

Tokyo YOMIURI SHIMBUN in Japanese 3 Feb 81 p 3

[Article by three YOMIURI SHIMBUN reporters: "Inside Report: Takeda Creates Shock Wave"]

[Text] The "unprepared statement" of General Takeda, chairman, Joint Staff Council, has already brought the deliberations of the Lower House Budget Committee, which only started on 2 February, to a grinding halt. While contending that he "has no intention of criticizing the Constitution or government policy," Chairman Takeda appears surprised at the turn of events, stating that he "did not think" that his own statement "would be taken up by the Budget Committee." But the Socialist Party, pouncing on him for his remarks that "one percent of GNP is meaningless," is not backing off from its stand for disciplinary action. Since the question is whether or not the incumbent chairman transgressed civilian control, a major issue dealing with the fundamentals of a nation's defense policy, it should not be allowed to pass without resolution. The question, then, is whether the government and the ruling party's explanation in defending Gen. Takeda is wrong or whether the Socialist Party "over-reacted" in order to bolster the party. Now, let's probe into the background of the Takeda statement.

Gist of Takeda's Remarks

The substance of the controversial statement by Takeda, chairman, Joint Staff Council:

Exclusively defensive capabilities: The Constitution, the concept of exclusively defensive capabilities, and the three non-nuclear principles are all political problems. So we able to act only within the scope of the policy provided us.... (passage omitted) But, clearly speaking, in light of today's advanced weapons, it is questionable whether exclusive defense could assure the safety of all the 100 million people....

Conscription system: The government's response is that it opposes a conscription system. That is fine. Apart from the question of feasibility of conscription, the reason cited is that it contravenes Article 13 and 18 of the Constitution. Article 13 provides for the people's rights to exist as individuals whereas Article 18 stipulates that no person shall be held in bondage or involuntary

servitude. Such reasoning is out of place here (passage omitted). Criticizing a government decision will immediately create a stir...although it is my personal views...

Defense spending: Whenever the budget comes under discussion, a debate on the percentage invariably comes first. This is nonsense. The budget should be formulated after considering what the Self Defense Forces can do, their capabilities (passage omitted). Just talking about one percent is meaningless. If I am to talk about it three percent would be more meaningful...Even foreign countries maintain this level, so it is possible. One percent is meaningless.

Note: Article 13 of the Constitution reads: All of the people shall be respected as individuals. Their right to life, liberty and the pursuit of happiness shall, to the extent that it does not interfere with the public welfare, be the supreme consideration in legislation and in other governmental affairs.

Article 18 of the Constitution: No person shall be held in bondage of any kind. Involuntary servitude, except as punishment for crime, is prohibited.

Background:

When the Time for Shedding the Military Uniform Nears.

The Takeda statement was made during an interview with Kyuta Mineu, a military critic, for the March issue of the monthly magazine HOSEKI, to hit the bookstands shortly. The interview itself was conducted under "civilian control" in that it had been approved through the channel at the Defense Agency, but its substance was not checked. As Chairman Takeda acknowledges, a general criticism of the government was probably not intended, but it is a fact that some of the language was controversial.

As Chairman Takeda has already submitted, at the end of January, a letter of resignation and is awaiting its acceptance by the Cabinet meeting of 3 February for retirement on the 17th, it could be that he had an overly active tongue due to a feeling of reduced tension and to the fact that the interviewer was his junior at the old [Imperial] Military Academy.

But the most important point is whether his slip of tongue in a state of relaxation represented the "true feelings" that he had been harboring.

We have witnessed numerous instances of individuals who, while on active duty conform to civilian control and quietly follow the national policy, but abruptly change and actively criticize the existing situation as soon as they shed their uniforms. Motoharu Shirakawa, former chairman of the Joint Staff Council, once said, "The general outline of the defense program was decided in the midst of detente stupor," while Shigeto Nagano, former chief of staff of the Ground Self-Defense Force, contended that "enemy bases should be attacked." Views of this kind, assailing government programs or repudiating the exclusively defensive capabilities concept have been boldly presented before the Diet as soon as they doffed their uniforms. It appears that once an individual sheds his uniform, he feels free to speak out.

An exception to this was Hiroomi Kurisu, former chairman of the Joint Staff Council, who continued to speak his mind after his statement on "measures transcending the law" and in the face of de facto relief of duty, matter-of-factly removed himself from the position of the chairman.

The Socialist Party, which fears that the recent, intensified debate on defense might signal a transition toward becoming a "major military power," is thus focusing its attention on the "deviatory statement" of uniformed men, in the belief that there will be no check once civilian control becomes unfunctional and no resisting the demands of the ever-dissatisfied uniformed personnel.

We shall look at several controversial points in the Takeda statement. As Director General Omura of the Defense Agency notes, Chairman Takeda stated at the outset that "doing one's best within the framdwork of exclusively defensive posture was only natural," and with respect to the unconstitutionality of the conscription system, he qualified his words by saying, "this is my personal views because a government policy does exist." But his statement that "one percent of GNP is meaningless"--the immediate cause for suspension of the Budget Committee deliberations--could only be an expression of his true feelings, even when one places emphasis on the context of his statement.

Suspension of Meeting Uncalled for Nevertheless.

Since their defeat in last year's Upper and Lower House elections, the opposition parties have been fighting a downhill battle. For the Socialist Party which has been waiting for a chance to swing the Diet debate to its advantage to bolster its position, it might have been like a "summer insect flying into the flame."

Even so, the Socialist Party succeeded in bringing the hearing to a halt, unheeding Director General Omura's repeated requests for an opportunity for clarification. Some have even charged that insistence on some kind of disposition without affording an opportunity for explanation runs counter to parliamentary democracy. Thus, it is a fact that another obscure point has developed over the reason for suspension of hearing.

Government and Ruling Party

The leaders of the government and Liberal Democratic Party seemed a bit frustrated at the sudden turn of events in the reconvened Diet session, with the head of the LDP saying, "as with the case of Gen. Kurisu, former chairman of the Joint Staff Council (who resigned because of the transcend-the-law-statement,) they all tend to have a slip of tongue and reveal their true feelings when leaving office." An air of optimism had prevailed over the issues of Constitutional revision and defense, in effect, saying that "the powerless opposition parties have no decisive ammunition for attack. The chances for turmoil are nil, unless some scandal develops." Now, some uneasiness is beginning to show: "as things now stand, can the opposition parties' demand for [Takeda's] dismissal be blocked?..."

The government, for now, intends to reject the demand for his dismissal on the ground that "the Takeda statement was based on purely personal views and that

even a Self Defense Forces official enjoys the freedom of speech. It does not conflict with the government thinking." (Chief Cabinet Secretary Miyazawa).

But the source of worry is not only the disruption of future agenda in the Diet brought on by the suspension of Budget Committee hearing, but also the possible stimulation of the party's hawkish faction into a Constitutional revision by the opposition parties' offensive over the issues of the Constitution and defense.

Presently, there are many in the hawkish faction reacting cooly to the Takeda statement, as Mitsuo Setoyama, chairman, Party Constitution Research Council, who said, "any statement which causes a misunderstanding is inappropriate. Perhaps, the real meaning of exclusive defense has been misunderstood" and Tokuichiro Tamazawa who said "it is odd for uniformed personnel, while in office, to meddle in political affairs. Statements in support of a conscription system are not in line with national sentiment."

However, some members of the National Defense Council are sympathetic, saying, "the Takeda statement is based on personal views and is only an expression of what is natural." Moreover, since last year's special Diet session, the hawkish faction has become critical of the Suzuki Cabinet's weakness over the Constitutional revision issue. Therefore, depending on the government's response, there may arise some friction within the party.

The government thus is in a predicament, there being a need to consider not only the opposition parties but also the hawkish faction of its party in dealing with the matter.

It is for these reasons that LDP Secretary General Sakurauchi on 2 February directed the party's Security Affairs Research Council and the National Defense panel to probe into the truth behind the Takeda statement. This is viewed as a move to "bide time" to check the moves of the opposition parties and the reaction of the party's hawkish faction.

Opposition Parties:

Socialist Party Happy over Material for Attack

As the Diet was the first ordinary session held under the stable majority of the LDP and the opposition forces lacked materials for attack on the government, the "Takeda statement" provided the opposition forces including the Socialist Party with an excellent theme to harp on.

The Socialist Party has decided to address this issue in the Diet Policy Committee meeting on the morning of 2 February. Committee Chairman Tanabe said, "A decision on the resignation of Chairman Takeda is supposed to be made in a few days. But the blame for his action will be justly placed. From the point of civilian control, the government's political responsibility will be thoroughly reviewed without any compromise." The strategy was to inject a "narration" of key points into the questions posed by Policy Board Chairman Ishibashi, who had been originally scheduled to address only the defense issue, to concentrate on those

points. As planned, the hearing was suspended that same evening. Mr Tanabe vigorously stated, "we cannot agree to resuming the deliberations unless some kind of disciplinary measures is meted out to Mr Takeda," At least for now, the Socialist Party is ready to press the government and the LDP on this issue.

In full accord with the Socialist Party is the Communist Party. Chairman Matsumoto of the [Communist Party] Diet Policy Committee said: "It is a matter that cannot be ignored. It is the first step toward becoming a major military power. Chairman Takeda should be given a disciplinary dismissal." At the request of the Socialist Party, the Komeito is "tagging along" with the Socialists. Chairman Okubo of [the Komeito's] Diet Policy Committee takes a serious view of the Takeda statement, saying, "criticizing such things as the exclusive defense concept deviates from the policies of the Suzuki Cabinet," but on the operation of the Budget Committee, the Komeito is permitting the Socialist Party to assume the lead, rather than acting aggressively in unison with it.

On the other hand, the Democratic Socialist Party whose Upper House candidate for the Tokyo constituency was ex-Joint Staff Council Chairman Kurisu, deposed for his statement on legislation for emergency situations, reacted differently, with Vice Chairman Watanabe, Diet Policy Committee saying, "the matter was not discussed at today's Diet Policy Committee." The New Liberal Club also assumed the position: "We have nothing to say. It is nothing to be excited about." Thus it assumed an opposite stand from the Socialist Party.

As for future outlook, there is generally a strong, deep-rooted feeling that the matter should be left up to the Socialist Party. But in view of remarks that "the Socialist Party is unable to block the Budget Committee hearing without pouncing on mistakes of the foe," it seems that the opposition forces do not necessarily represent one gigantic boulder.

Buoyant Even During Interview

At the 2 February afternoon interview to explain his stand, the Defense Agency's Goro Takeda (age 59), chairman, Joint Staff Council, whose statement in a magazine interview led to the suspension of the Diet Budget Committee deliberations, said, "I shall be responsible for my own personal views," but made no mention of resigning. Perhaps because the official decision on his retirement was due to be made at the Cabinet meeting set for the next day, 3 February, he appeared to be buoyant, rather than taken aback by the major controversy surrounding him. Defense Agency Director General Omura, who had rejected the opposition parties' demand by stating in the Diet, "there was no ground for disciplinary action," appeared in a press interview that same evening, stating, "I cautioned him on his remarks" and took "no issue" with the remarks itself. The Diet, the Defense Agency and the people have all been abused, there being nothing that can be done to a high-ranking uniformed individual awaiting immediate retirement.

Chairman Takeda, in an interview at the Defense Agency at 3:30 pm, stated at the outset, "my views do not represent a unified government opinion or views of the Defense Agency." It probably was in full realization that Self Defense Forces

But he continued, "even now, I believe those views are correct." Certainly, the thinking that "under the exclusive defense concept, the country could be occupied or subjected to direct shelling" is understandable in a military sense. But the word, "meaningless," coming from a top uniformed man in support of more funds for the following year has been assailed by others in uniform as being "foolhardy."

Asked if his statement was made in realization that his remarks would be carried in a magazine and attributed to an individual with the title of chairman of Joint Staff Council, Gen Takeda acknowledged, "perhaps, I should have omitted it (the controversial portion)." He added, "I did not realize it would be taken up in the Budget Committee." He showed some signs of lightheartedness because of his pending retirement.

Just at this juncture, Chairman Takeda's views on defense policy became public on the first day of the Budget Committee hearing. Haughtily informed that "one percent appropriation of GNP was meaningless," the opposition parties all rose up and forced the hearing into suspension. The government and the LDP, taken by surprise, shuddered at the "round of ammunition" hurled at them.

9097
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ECONOMIC

TOYOTA PRODUCTION CAPACITY SET AT 3.5 MILLION

Tokyo NIKKAN JIDOSHA SHIMBUN [DAILY AUTOMOBILE NEWS] in Japanese 4 Feb 81 p 1

[Text] Toyota Motor Co., Ltd. (President: Eizo Toyota) announced that it has set annual production capacity at 3.5 million automobiles in early 1981. As with the previous year, this year's production plan is 3.3 million. The immediate question being addressed is the creation of flexibility in the company production plants' capacity to meet the demand shifts. "By the end of March, all the production plants will have respective 'pilot lines.'" (Executives of Toyota Motor Co., Ltd.) Toyota has just about completed the facilities improvement plan that it has been working on since last year. Along with it, its production capacity has been established at 3.5 million in order to create an elastic production system.

Production System Responsive to Market Shifts

Since the first petroleum crisis, market demand forecasting--both domestic and overseas--has become difficult. As a result, Toyota has refrained from serious facilities investments and has been striving to upgrade productivity within the existing framework through rationalization and energy conservation. It is also true that, along with other auto manufacturers, it has met the expanding demand by overtime and work holiday scheduling.

Although both domestic and overseas demands have slackened a bit, stable growth rate is indicated. Thus the company has switched from "full" capacity operation to a production set-up that is elastic and responsive to domestic and overseas demand trends.

Tawara Plant whose initial construction phase was completed in 1979 is the cornerstone of the company's 3.5 million car [per year] system. By moving production from the existing plants whose production capacity has reached a saturation point to the new plant, Toyota hopes to inject same leeway into the existing plants' production system. The second construction phase will be completed this March and the monthly production capacity will be increased from 10,000 to 15,000.

A major renovation of production facility has been implemented not only for the Tawara Plant but for the existing plants such as Tsutsumi Plant as well. A single pilot line for each factory has been established. According to Toyota, this facilities renovation will also be completed by the end of March. Although the actual production base is unchanged from last year's figure, there will be a 5 to 10 percentincrease in production capacity.

Such company policies are designed to respond to the diversification of needs. Toyota thought it best to establish an elastic production system in keeping with the demand trends and responsive to the demand fluctuation of automobile types. For instance, when the demand for the Corona surpasses the projected figure in the initial production plan, the increased demand can be accommodated immedaitely by having the pilot line ready. Of course, the parts manufacturers that work with Toyota also have set-ups that are in keeping with Toyota's elastic policy.

In the 1980's amidst the small car competition on an international scale, both domestic and overseas demand forecasting is becoming increasingly difficult. Moreover, there is a definite trend toward diversification. Therefore, the establishment of an elastic and flexible production system reflects the need for finely detailed production organization based on automobile types.

Also, Toyota sought to upgrade production capacity through rationalization of facilities in order, in part, to change from "full production system" where overtime and holiday work schedules were encouraged to a normal work mode. Overtime has been reduced to about half and each plant was placed under reduced production quotas. In addition, the production pitch, too, was reduced. That is to say, both in terms of industrial facilities and operationally, the policy with a "broad leeway" is being implemented.

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ECONOMIC

JAPAN, USSR TO SIGN TRADE AGREEMENT

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 pp 1, 2

[Text]

Japan and the Soviet Union have agreed to start negotiations this Wednesday to conclude a new agreement on trade and payments. Japan, however, will continue to maintain a general framework of economic sanctions against the Soviet Union, it was learned recently.

Informed government sources said that in the new agreement to be signed on April 20 at the latest, Japan is expected to import about 90 items including coal, oil and natural gas and export about 70 items including plants. The Soviet Union is to abolish a monitoring system set up to check the trade balance between the two countries.

Sources speculated the new agreement would pave the way to more brisk Japan-Soviet trade deals, especially those on Japan's plant exports which will be a major pillar in the mid-term economic cooperation between Japan and the Soviet Union.

The Japan-Soviet agreement on trade and payments is designed to expand trade and economic exchanges at a private level. It was first signed in 1958 after both countries normalized relations in 1956, and was renewed almost every five years. The last 5-year agreement was signed in 1976, but in the wake of Japan's economic sanctions against the Soviet Union enacted after the Soviet invastion of Afghanistan, the new agreement to cover the years after 1981 was delayed and the January-March period this year went without any agreement in effect.

Informed sources attributed reasons for Japan's starting negotiations on the agreement to their judgment that since it is a working-level agreement, it will not break down the general framework of "sanctions" against the Soviets, that there is a need to meet the Japanese industries' expectations to mend ties with the Soviet Union and that the Soviet Union has been strongly urging Japan to conclude the new agreement to promote the Soviet's eleventh 5-year (1981-85) economic plan.

The major items in the new agreement included bilateral trade goods, Siberian development projects and their related machinery equipment, settlement currency, twice-a-year official working-level talks and means to cope with disputes. Among bilateral trade goods are lumber, coal, oil, natural gas, cotton, white gold and other non-ferrous metals and iron ore which Japan is expected to import. Japan's export goods include steel products, machinery and plants, chemical products and textile goods. Siberian development projects which involve prospecting for oil and natural gas, development of coking coal and timber, and related machinery equipment will be placed in a separate category aside from ordinary trade deals.

Sources said the negotiations will start this Wednesday between representatives of the

Japanese Government and the Soviet delegation led by M.A. Kiselev, chief of the Asian Trade Bureau of the Soviet Foreign Trade Ministry.

The Soviets are said to accept the Japanese requests in principle and the new agreement is expected to be signed soon, possibly on April 20 at the latest.

In the wakr of Japan's economic sanctions, Japan-Soviet trade last year totaled $4.6 billion, up 6 per cent compared with a year earlier. West German, British and French trade with the Soviets last year was up 20-to-30 per cent over the previous year.

All those European nations are proceeding with plant talks with the Soviet Union as scheduled. France recently grabbed the contract to export electrical steel sheets, shelved two years ago after Nippon Steel Corp. and Armco Inc. received orders. West Germany also decided to give credits to the Soviet Union last fall for the once-shelved contract on an aluminum smelting project.

Confronted with those European thrusts, the Japanese industry turned increasingly irritated and impatient, and all welcomed the Japanese Government's recent decision to conclude the new agreement.

Meanwhile, the Japanese side of the Japan-USSR Economic Cooperation Committee will assume a "forward approach" to participation in the Russian "Yamburg project," which envisions setting up a natural gas supply pipeline from western Siberia to West Europe.

At a recent meeting between a Soviet negotiating group and the Export-Import Bank of Japan and Japanese steel industry representatives, a broad agreement was reached on exporting large diameter steel pipes to the Soviet Union (3,500,000 tons over a period of four years from fiscal 1981).

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ECONOMIC

JAPANESE INDUSTRIAL INVESTMENTS OVERSEAS ON RISE

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 pp 1, 15

[Text]

Japanese industrial enterprises once again are intending to step up their investment overseas for climbing out of the recession and finding new avenues for survival in the 1980s, confronted as they are with such problems as the emergence of a new "structural recession" involving the basic material industry, "country risk" difficulties as pertaining to the Iran-Iraq war, and China's need to carry out economic readjustments.

The Nihon Keizai Shimbun, as of February 1, carried out an overseas investment survey of 346 leading companies on their plans in fiscal 1981. Its salient findings were:

—The total amount of planned investment overseas (yen remittance base), compared to the estimated performance in fiscal 1980, will grow by 3.1 per cent for what will be a turn to an increase after one year.

—There has been a conspicuous increase in large investment anticipating development and import of raw materials or siting at places where raw materials are available.

—More overseas investments are being directed at places where country risk is less involved, such as Asia, North America and Oceania.

The survey put the total amount of overseas investment planned by the 346 companies in fiscal 1981 at ¥246 billion. This is up 3.1 per cent from the estimated performance of ¥238.6 billion for the preceding fiscal year.

Since the performance in fiscal 1980 marked a year-to-year decline of 18 per cent, the amount of planned overseas investment in fiscal 1981 signifies a shift to an increase, though the amount may be small.

The decline in fiscal 1980 was influenced by such factors as the cheap yen-high dollar trend of the foreign exchange market, the U.S.-Iran confrontation, and the worsening of the global political and economic climate owing to the tension between the U.S. and the Soviet Union over Afghanistan, which led many Japanese enterprises to shy away from making overseas investment.

Some hold that the investment environment in fiscal 1981 further has worsened from the Iran-Iraq war and China's renewed economic adjustment. But executives, like Seiki Tozaki, president of C. Itoh & Co., feel that Japanese companies have begun to show signs of making more overseas investment because "they have been pressed to strike out a global strategy, including the problem of local siting, for their survival in considering worsening of international competitiveness due to higher raw materials, especially in the basic material industry."

The Nihon Keizai survey said that the global strategy motive is strong in considering 20 firms with the largest investment.

The top investor, Kawasaki Steel Corp., plans to make an investment of ¥61.2 billion, 7-fold that of the preceding fiscal year. The major object of its investment will be the Tubarao steel mill in Brazil, which is scheduled to start operations next year.

As for Kobe Steel, Ltd., which rates second in planned overseas investment, Yoshida Kogyo Co., seventh, and Showa Keikinzoku K.K., their invest-

ment is concerned with aluminum-related activities associated with proximity to raw materials and cheap production costs.

The reasons of most of the companies for planning big overseas investment are for securing natural resources", "importing raw materials", and the "disadvantage of manufacturing in Japan."

In other words, their investment for ensuring themselves of raw materials, centering on the basic material industry, development & import of natural resources, and establishment of plants near places where raw materials can be readily secured has become conspicuous.

As to place for investment, the checkup showed that the greatest number of plans concerned Asia. This was followed by North America and Oceania, in the order named. Cases of investment in Europe, the Middle East and Africa tended to be few. The enterprises planned investment in places where there was relatively smaller risks.

With regard to investment overseas on a medium-range perspective, most of the enterprises (only those concerned with manufacturing) aimed at putting the ratio of production overseas to domestic production at "over 10 per cent but less than 19 per cent."

Companies having this in mind and intending further to expand investment in the next three years comprised nearly half of the enterprises surveyed. Those which were going to lessen their investment ran to only 3 per cent.

CSO: 4120/212

ECONOMIC

CHANGES, FUTURE DIRECTION OF MONETARY SYSTEM ANALYZED

Tokyo EKONOMISUTO in Japanese 27 Jan 81 pp 42-47

[Article by Hirohiko Okumura, Chief Research Fellow, Nomura Research Institute of Technology and Economics: "Future of Monetary System: Liberalizing Trend Observed"]

[Text] The postwar monetary system was based on a belief in the omnipotence of controls, as symbolized in the Temporary Money Rate Adjustment Law. This system is beginning to shift dramatically as the Japanese economy becomes more international. Beginning with the execution of the New Foreign Exchange Law at the end of last year, the issuance of certificates of deposit, and the liberalization of interest on call money and discount bills, the Japanese monetary system is entering a phase where "liberalization calls forth more liberalization." What is at issue in this era of monetary liberalization?

Foreword

The year 1980 heralded an era of change for the Japanese monetary system. It opened with the issuing of a new financial asset known as the middle-term national bond fund, and then there was a succession of symbolic events which shook the monetary system to its foundations: the sudden jump in national bond yields, the boom in postal savings, an expanded debate on the monetary system, the sudden influx of oil dollars, the completion of an online system, and, at the end of the year, the New Foreign Exchange Law proclaiming the financial opening up or Japan.

Of course, the series of events did not occur all at once. They had a place in a sequence of revolutionary measures which have occurred during the past 2 or 3 years.

Looking at the progress of liberalization in the money market since 1978, we have seen the freeing of interest in the call money and discount markets and free yen accounts, the issuing of certificates of deposit, and the liberalization of foreign currency accounts. In the capital market, we have seen the adoption of a public bidding system for the purchase and sale of national bonds by the Bank of Japan's bond operations department and Trust Fund Bureau, the offering of medium-term national bonds for bid, and the creation of a new financial asset called the

medium-term national bond fund. We have entered a phase where liberalization calls forth more liberalization.

In short, the steps taken to change or abolish this group of monetary controls were not just stopgap measures. They were structural changes of the environment that were required by the times. They must be considered as fundamental changes from which there is no return. This is nothing less than a break with the "postwar monetary system" which supported the Japanese economy in the period of rapid growth following World War II.

Rapidly Changing Money and Capital Markets

The structural changes that began to appear in the Japanese economy around the time of the first oil shock brought about a decisive change in the flow of funds in the money and capital markets after 1975. Let us look at two categories of securities--direct securities issued by the ultimate borrower of financial assets and liabilities (bonds, stocks, loan certificates, etc.), and indirect securities issued by a financial institution (certificates of deposit, etc.)--and study the circumstances of issuing each after 1955 when the present monetary system became established (Tables 1 and 2).

First, 23 trillion yen worth of direct securities (domestic only) were issued from 1975 to 1979. The breakdown by type of purchaser was 32.4 percent by corporations, 47.0 percent by the public sector, and 20.7 percent by individuals. Considering that during the high growth period from the mid-1950's to the late 1960's, corporations made up 70 percent of the purchasers and the public sector 10 to 20 percent, the change has come like a landslide.

The great change in the weighting of the main procuring agents has caused a change in the form of procurement. As borrowing and stock issues have plummeted, the use of bonds (public bonds) has risen spectacularly. In the late 1970's, procurement of funds through public bonds was one third of the total.

In indirect securities, on the other hand, 250 trillion yen worth, including contract savings (insurance, pensions), were issued from 1975 to 1979. Of these, 75.7 percent were issued by private financial institutions and 24.3 percent by government financial institutions. As is well known, the government financial institution's share recently has gone up enormously. For example, postal savings rose consistently from 6.7 percent of the total between 1955 and 1962 to almost double that figure, 13.1 percent, in the period from 1975 to 1979.

Another thing often pointed out with regard to indirect securities is the decrease in the relative weight of investment trusts and the increase in contract savings (insurance, pensions, etc.). What is more important is that the ratio of indirect securities to direct securities continues to be extremely high, and among indirect securities the relative amount of bank deposits continues to be overwhelming.

In short, even though the type of procurement is changing on the borrower's side, there has been little change for the intermediate institutions between the lender and borrower, except for an increase in government activity.

Of course, the percentage composition of the ultimate suppliers of funds has changed greatly, as shown in Table 3. In the high growth period, corporations, in contrast to individuals, made up about 30 percent of the total. In the latter half of the 1970's, however, their share fell to 20 percent and the individual share rose tremendously.

In this way, the flow of funds in the money market changed from the past pattern, "from individuals and corporations to corporations," to "from individuals to public sector, corporations, and individuals." Public bonds increased in the use as a means of procuring funds, and government financial institutions increased their activity as intermediate institutions.

In brief, financial transactions involving corporations have slackened off and the public sector and individuals have jumped ahead. And although it has not been possible to comment previously, owing to a lack of statistics, the foreign sector has gained a great deal of weight, both as a borrower and a lender, as the money market has become international. The existing financial mechanisms could not cope with this complication in the flow of funds, and so today there is a pressing need for reform in the entire monetary system.

Collapse of the Postwar Monetary System

The Japanese monetary system showed spectacular progress in many of its aspects following World War II. In many places, however, in the concept of monetary controls and the monetary structure and activities, a "postwar" feeling remained. Even today this has not been completely expurgated. This is symbolized by the fact that interest, the main performer of monetary functions, is still controlled by the Temporary Money Rates Adjustment Law (established in 1947).

Concerning interest on bank deposits, Shu Ishikawa has argued: "After the war, most controlled prices were freed, but interest is closely controlled even today, and this is legally and in reality a price that is tied up hand and foot. This is truly odd in a country whose economy has progressed and prospered as greatly as ours. New thinking and the enactment of a new system are essential in this new era."

In March 1970, the Ministry of Finance revised the notification setting maximum interest rates based on the Temporary Money Rates Adjustment Law, in the belief that the interest controls determined by law should be relaxed as much as possible. For example, the controls on bank deposit interest were greatly simplified, from 10 kinds of controls to 4 kinds. In order to avoid confusion in the transitional period, maximum rates were set as Bank of Japan guidelines for the same deposit categories as before, and within the limits of the maximum interest of the notification for a certain period of time. And city banks were made to follow these guidelines.

However, the establishment of this "certain period of time" has been dragged out for 10 years right up until now, so there has been no real change in the system to this day. As far as interest is concerned, there has been no progress in "breaking away from the postwar era." And the concepts of other monetary controls have not changed from the way they were formed in that period of confusion. In general,

we may say that the monetary system has continued to be characterized by the intervention of the monetary authorities, and that it has remained deeply conservative.

If we analyze the "postwar monetary system" in an organized fashion, we can find the following characteristics: 1) strong and effective monetary control by the authorities and careful protection of financial institutions; 2) financial distribution based on interest controls and implicit (unpriced service) monetary transactions; 3) financial transactions centering on corporations; 4) delayed development of the capital market; 5) a money market closed to foreigners.

The system formed in this way was tied together by an "invisible handshake" between the monetary authorities, city financial institutions, and industry. The performance of this monetary system produced good results as far as achieving stability of the monetary order. On the other hand, there were defects such as lack of innovation in financing techniques, inactive arbitrage between markets, and a lack of clarity in the terms of transactions.

However, the reason that dissatisfaction with the performance of this system did not become apparent and the "postwar monetary system" was maintained for 30 years is that a comprehensive cycle of financial transactions and real transactions was obtained. Proper distribution of funds was maintained because of the following circumstances: 1) high growth, and great expectation of high income; 2) a majority of the population being young and working for wages; 3) underdevelopment of open markets; 4) little participation by nonresidents because of closed markets.

These conditions allowed only a small amount of interest to the individual supplying funds in financial transactions, but through high growth it gave him a high income in cash transactions. Looking at the entire economy, one could rationalize that the individual was not treated badly. Also, since open markets were undeveloped and there was little injustice in the employment of funds, ultimately the harm from controls was kept to a minimum. (We could say that the main benefit of controls, stability, overrode the various costs of the controls.)

(Note 1) Ishikawa, Shu, "Concerning Relaxation of Controls on Bank Deposit Interest," KINYU ZAISEI JIJO, 1 December 1969. It should be noted that Mr Ishikawa's article was written during a period when the rate of interest on bank accounts remained completely unchanged, from April 1961 to April 1970. However, even if we allow for changes in interest since then, the statement still retains a timely freshness.

Revision and Abolition of Controls Inevitable

Today, the financial environment has changed greatly and the conditions supporting the postwar monetary system have for the most part been eradicated. The following phenomena have appeared since 1975 and seem likely to continue over the medium and long term: 1) the end of high growth; 2) the aging of the population; 3) the development of open markets; 4) the development of mechanization of monetary transactions; 5) progress of monetary internationalization.

The first two factors, the reduced growth rate and the trend toward an older society, have made it necessary to dissociate the income cycle related to financial

transactions from that of real transactions. They have also forced a reduction in financial transactions centering around industry and have weakened the strong ties built by implicit interest between banks and industry.

In addition, the appearance of deficit financing, the large-scale issue of national bonds, and the necessity for development of the capital market can also be traced to these two phenomena.

The third factor, the development of an open market, was previously limited to the interbank money market and futures market, the CD market, and the foreign short-term loan market. From now on, however, the existing national bonds which are nearing maturity will go out in large volume on the bond-trading market and actually create a huge open market. Also, we can consider the emergence of investment trusts which utilize the commercial paper market and the existing open markets.

As the open market grows in this way, a capital shift will occur between the previously controlled markets, and a call will be raised within the controlled markets for liberalization of interest rates. At the same time, harmful effects will be produced in the form of unfair distribution between small customers who cannot make use of the open markets, compared to large customers who can.

The fourth factor, the mechanization of monetary transactions, eventually aims at having financial transactions carried out with electronic money. The effectiveness of the traditional monetary controls, based on old-style financial transactions using cash or checks, will be lost. Mechanization of financial transactions in the United States is progressing rapidly. There the measures forbidding interest on checking accounts have become meaningless, actual approval for providing interest has been given, and the meaning of restrictions on banks is being reevaluated. This may be an indication of the future direction of our monetary system.

The fifth factor, the internationalization of monetary activities, can readily be understood as a severe blow to the "postwar monetary system," since it is not based on a free movement of funds between Japan and other countries. First, it obviously is impossible under this system to obtain a comprehensive cycle of financial and real income for nonresidents. In short, the monetary cycle must be complete in itself, and interest, which balances the supply and demand for funds, must be balanced interest as determined by the market. Thorough utilization of the market mechanism is essential to an international money market.

At any rate, those engaged in international monetary transactions have the following specific complaints about the Japanese monetary system.

1. Interest is not flexible. The interest on bonds is fixed at the time of issue. Interest on bank deposits is also fixed, so it often becomes dissociated from the real market situation.

2. The financial assets desired by people involved in these transactions are difficult to create, and there is little variety. Even if the suppliers and users of funds or a financial institution itself should desire new financial assets, it

is difficult to get approval for technical financing innovations. The reason given is that it might disrupt the order of the monetary system. For example, short-term national bonds, which are desired by nonresidents, are not available. Neither are short-term corporate bonds or bills underwritten by banks. Moreover, approval is difficult to obtain for yen-based bonds or loans with flexible interest rates.

3. The volume of interest and funds is unstable. Since arbitrage is not actively carried out between the various financial markets, the interest accompanying buying and selling in any one market may be unstable. Also, owing to direct or indirect government intervention in the market, the volume of funds that can be procured or invested tends to fluctuate irregularly.

4. The price structure mechanism is unclear. The issuing conditions for yen-based foreign loans do not necessarily reflect the financial situation of the issuing agent, and the buying and selling price of bonds in the trading market may differ greatly according to the financial insitution. Because of this, nonresidents are unable to understand the Japanese mechanism for determining interest.

The internationalization of the money market and the yen's emergence as an international currency are indispensable to dispelling these complaints. The cause of dissatisfaction is the government monetary controls (interest controls, business field controls, and controls on introduction of new monetary assets), so in the last analysis, the monetary controls which formed the nucleus of the "postwar monetary system" must be revised or abolished in order to accomplish what is necessary.

Emergence of a New Monetary System

Reform of the monetary system is not just a desktop scenario. In the past 2 or 3 years, it has become a real movement.

First, as noted earlier, there has been real step-by-step progress in the liberalization of interest--an important aspect of monetary control. Also, in contrast with the previous stance of blocking the introduction of new financial assets, controls on technical innovations in financing have relaxed substantially. This was shown by the approval given for establishment of CD's and the medium-term national bond fund. Also, an attempt is being made to make branch restrictions and business content restrictions more flexible, as shown by the questions raised in the report by the Monetary System Survey Committee.

With these changes in the monetary system, the nature of the financial services in the money market is changing. As seen in some industries, regional government enterprises, and foundations, the supplier of funds is competing with financial institutions in the CD rate, and small and medium borrowers are demanding competition in reducing the lending rate. The reversal of the dominant role between the financial institutions and their customers is increasing. In short, the previous "nonprice financing competition" is declining and "price competition" has come to the fore.

Another developing phenomenon which is closely related to price competition is the mechanization of financial services. The use of machines in financial services has grown far beyond the expectations of the parties involved. This is seen even in Japan, where 70 percent of the deposit withdrawals at some bank branches are now done by machine. The machine is taking the place of the teller and reducing the cost of financial mediation (see Note 2).

The financial activities of industry are changing greatly in both quantity and quality. In quantity, there is a relative contraction of financial accounts compared to real accounts. In quality, both procurement and investment are being diversified on the basis of both cost and return. Previously, decisions on physical objects (plant and equipment investment) took priority, and procurement of money came afterward as an order from above. This was feasible under the conventional concern for material security. Now, however, with clearer terms for transactions, the decisions on both physical objects and money are being made at the same time, and the concept of "profit security" is gradually coming to be accepted.

Influential industries are adopting the slogan, "The best surplus investment is repayment of loans," and putting it into practice (causing a drop in both financial assets and liabilities). Together with medium-size enterprises, they are actively investing in securities. This shows a qualitative change in the relationship between banks and industry.

The practice of household finance, the selection of assets and loans, has become an important issue in daily life and is rapidly changing as if suddenly awakened from sleep. Comparing interest after taxes and deciding on the best alternatives, people are rushing to put their money in postal savings and are actively buying previously issued bonds and medium-term national bonds. These actions show a sharpened understanding of interest. A revolution in consciousness is taking place in borrowing as well, going from "save and then buy" to "compare real and financial assets and choose." This is demonstrated by the rapid diffusion of credit cards and the remarkable expansion of consumer credit.

Thus, beginning with the reform and rescinding of monetary controls, a revolution is occurring in monetary structure and practice. A movement is underway to build a new system.

As this happens, the direction taken in reorganizing financial institutions is under scrutiny. An important area for deliberation is the financial businesses' approach to economies of scale. We may consider the function of a bank to be the gathering and investment of funds. Economies of scale are smaller with the former and greater with the latter function. For example, small-scale financial institutions located in small cities will be less productive than large banks, as long as they stay closely tied to the local area and spend their effort getting deposits.

These small financial institutions tend to have a local loan position, and an important issue is their efficiency when they invest funds outside their own region. In such investment, economies of scale are clearly present because of the information-gathering and research capacity of the borrowers (corporation or project).

Generally speaking, economies of scale and specialization strengths are highly effective in reducing information costs. Therefore, investment of financial assets that involves large information costs is not advantageous to small financial institutions.

If this view is correct and if, in Japan, small financial institutions do not wish to merge with large banks, the only thinkable direction for reorganization is to separate the functions of financial institutions between commercial banks and savings banks. In other words, one possible approach is for small financial institutions to become savings banks, and for fund procurement to be carried out by separate institutions while part of the investment of funds is carried out cooperatively.

Note 2. The cost difference between machines and tellers in the United States is as follows:

Cost per transaction (1978)

ATM	26 cents (when handling 6,000 transactions per month)
Teller	41 cents (when handling 200 to 250 customers per day)

Source: Samuelson, R., "Banking Report," NATIONAL JOURNAL, 7 June 1980

It is estimated that the number of ATM's installed in the United States will grow from 10,000 in 1978 to 70,000 in 1984. In Japan there were 2,300 ATM's and 14,000 CD's as of March 1980.

Five Areas of Growth

The reform of the Japanese monetary system will see the most spectacular progress in the first half of the 1980's. This is because, first, the more active movement of funds in and out of the country, occurring in conjunction with the New Foreign Exchange Law and the large influx of oil money, has made it necessary to standardize domestic and foreign financial mechanisms. Second, the large volume of national bonds issued after 1975 and still remaining on the market is nearing maturity. Third, mechanization of financial transactions is becoming widespread and effective. We can boldly predict a period of large-scale monetary liberalization coming around 1985 in which interest will be liberalized for financial assets over 100 million yen.

At this juncture, the biggest issue for private financial institutions is the increase of flexibility in implicit interest. As long as interest controls remain in effect, implicit interest will not disappear, and those private financial institutions which make the form of payment flexible will be more able to succeed in the age of monetary liberalization.

Attention is now being focused on what kind of new money market will emerge and what kinds of transactions will expand through this rebuilding of the monetary system. In connection with the new trends mentioned above, we can draw the following five conclusions:

1. A reduction in financial mediation costs will be sought and achieved. The result will be greater development of the consumer credit market.

2. The choice for marketability and liquidity will increase. This trend will create new financial markets such as the commercial paper market, and some short-term borrowings and industrial credit will be drawn to them.

3. Arbitrage between financial markets will become more active. This will increase the shifting of funds between bank deposits and securities.

4. There will be more progress in internationalization. By 1985, it is estimated that about 4 percent of bank deposits and securities will be held by nonresidents (at present, 2 percent in Japan and 6 percent in the United States).

5. Competition will grow in developing new financial assets aiming at "conditional claims" (possibility of changing transactions terms, such as interest, in response to future changes in the economic situation).

The greatest issue for monetary authorities in the era of interest liberalization will be to prevent the emergence of financial institutions with the power to control the financial markets. The greater efficiency and mechanization of financial transactions and the internationalization of the financial market will create an environment favorable to large banks, such as the city banks, in the immediate future. If this occurs, along with the gain in relative weight of government financial institutions as predicted earlier, there will be many cases where the share of private financial institutions other than large banks will be reduced.

Based on this thinking, the advance of banks into new fields such as dealing in public bonds is very likely to lead to financial oligopoly. This situation should be studied carefully. If our primary aim is to create an environment favorable to fair competition, it probably is inappropriate for banks to deal in public bonds in their own accounts. Rather, if necessary, it may be best for the national economy if they begin participating in the securities market.

A radical reform of the monetary system in any country is a major event that comes about only every 10 years or so. Therefore, it is necessary to keep in mind what the financial market will be like after 10 or 20 years, and to proceed deliberately to construct the optimum monetary system.

Table 1. Issuing Status of Direct Securities (Domestic Only)
(Figures are percentages of total)

		1955-62	1963-70	1971-74	1975-79
By issuing agent					
private corporation		77.6	64.0	56.1	32.4
public corporation		9.4	18.0	22.9	47.0
individual		13.0	18.0	21.0	20.7
By form of issue					
borrowings		75.1	80.1	80.6	62.5
bonds		8.9	14.7	15.8	35.0
stock		16.0	5.1	3.6	2.6
By issuing agent and form					
private corporation	borrowings	57.1	56.5	50.4	27.9
	bonds	4.6	2.4	2.1	1.9
	stocks	16.0	5.1	3.6	2.6
public corporation	borrowings	5.0	5.6	9.2	13.9
	bonds	4.3	12.3	13.7	33.1
individual	borrowings	13.0	18.0	21.0	20.7
	Total	100.0	100.0	100.0	100.0

Note: Due to the nature of reference materials, the years 1955-62 are calendar years. Source: Formulated from the Bank of Japan's Financial Cycle Calculations.

Table 2. Issuing Status of Indirect Securities by Financial Institution
(Figures are percentages of total)

		1955-62	1963-70	1971-74	1975-79
Private	deposits, trusts	67.5	65.9	62.8	63.6
	bank debentures	6.6	6.6	6.6	4.3
	insurance	4.3	7.7	6.2	6.4
	stocks	1.1	0.8	0.6	0.3
	investment trusts	6.4	0.1	1.5	1.1
	Subtotal	85.9	81.1	77.7	75.7
Public	postal savings	6.2	8.7	11.1	13.1
	postal insurance	4.2	2.1	2.8	3.1
	municipal bonds	0.6	1.0	0.7	1.2
	welfare insurance, etc.	3.2	7.2	7.7	6.9
	Subtotal	14.2	19.0	22.3	24.3
Total		100.0	100.0	100.0	100.0

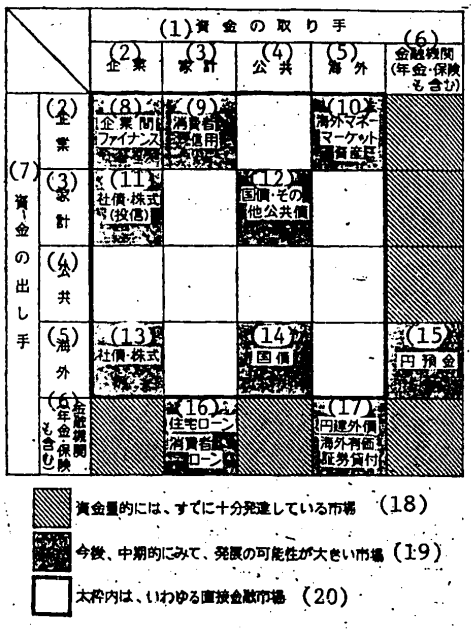
Note and Source: Same as in Table 1. Some estimates are included.

Table 3. Shift in Relative Weight of Individuals and Corporations as the Ultimate Supplier of Funds (Figures are percentages of total)

	1955-62	1963-70	1971-74	1975-79
Individual	66.0	69.0	71.7	80.4
Corporation	34.0	31.0	28.3	19.6
Total	100.0	100.0	100.0	100.0

Note and Source: Same as in Table 1.

Types and Development Status of Financial Mediation Markets



Key:

1. Receiver of Funds
2. Corporation
3. Household
4. Public Sector
5. Foreign
6. Financial Institution (Including Pensions, Insurance)
7. Supplier of Funds
8. Intercorporate Finance
9. Consumer Credit
10. Foreign Money Market Assets
11. Corporate Stocks, Bonds (Investment Trusts)
12. National Bonds, Other Public Bonds
13. Corporate Stocks, Bonds
14. National Bonds
15. Yen Accounts
16. Housing Loans, Consumer Loans
17. Loans for Yen-based Foreign Bonds, Foreign Securities
18. Markets sufficiently developed in terms of quantity of funds.
19. Markets with great development potential over a medium-range period.
20. Square inside heavy dark line contains so-called direct financial markets.

9651
CSO: 4105/144

ECONOMIC

BASIC MATERIAL INDUSTRIES FACE CHEAP FOREIGN ITEMS THREAT

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 4

[Text]

The Government has decided to ask an advisory council to study measures for supporting basic material industries threatened by increasing imports of low-priced basic materials, such as aluminum ingots and styrene monomer, from the United States. According the Ministry of International Trade & Industry, import of U.S. aluminum ingots to Japan increased to 306,800 tons in 1980, three times over that of the previous year. This accounted for 30 per cent of the total import of the metal in Japan, compared with the 1 per cent share in 1977 before the second oil crisis.

U.S. aluminum ingots which cost about ¥100,000 per ton less than the Japanese found their way into the Japanese market after the domestic demand in the U.S. declined due to the economic recession.

Imports of petrochemical products, such as styrene monomer, ethylene glycol, and polyvinyl chloride resin, from the U.S. are also on the increase.

Import of styrene monomer from the U.S. to Japan increased to 81,000 tons in 1980, twice as much as that of the previous year, accounting for 7.3 per cent of the total imports of such product in Japan. The like share in 1977 was only 0.2 per cent.

Import of ethylene glycol from the U.S. also increased to 47,000 tons in 1980, up 25 per cent over the previous year. The import share increased to 9.6 per cent in 1980 from 1.0 per cent in 1977.

Import of polyvinyl chloride resin from the U.S. has also increased to 2,000 tons per month, 2 per cent of the total domestic demand in Japan, from a negligible amount several years ago.

Import of petrochemical products from the U.S. increased sharply after the price of naphtha, raw material for such products, tripled from 1978 to 1979.

As a result, the price of ethylene produced in Japan has gone up 30 per cent higher than that of U.S. ethylene which is produced from natural gas. The price competitiveness of the Japanese product has thus declined sharply.

Due to the increase of U.S. products in the Japanese market, Japanese domestic petrochemical product makers have been in trouble.

Aluminum smelters and petrochemical product makers in Japan have launched a large production cutback, but apparently with no success in their inventory curtailment.

MITI purchased about 15,000 tons of aluminum ingots to help subsidize the domestic industry at the end of this January. Informed sources said, however, "This is far short of causing any effect in the face of excess inventories of the industry."

MITI sources acknowledged that Japan is in no position to ask the U.S. for a voluntary restraint on the export of such products, particularly when it —Japan's official gold as- away from participating in the membership of the forthcoming exchange, considering creation of such an exchange still premature.

—Such gold business specialists are also skeptical of the possibilities of building a large enough gold market to match the London, New York and Hong Kong markets.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

GREATER RESEARCH, DEVELOPMENT OUTLAY PLANNED

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 pp 1, 4

[Text]

Japanese enterprises are manifesting increasing interest in research and development. They plan to sharply boost investments for R&D in fiscal 1981, beginning April, according to a survey conducted recently by the Nihon Keizai Shimbun.

The survey, covering 1,312 firms, showed that R&D investments planned for fiscal 1981 will record a 21.6 per cent increase from fiscal 1980.

This means that the share of such R&D expenditures to total investments will rise 0.7 percentage point from fiscal 1980 to 5.1 per cent in fiscal 1981.

The high interest shown in R&D indicates the strong determination of Japanese enterprises to win in international technological development competition.

Enterprises listed among the top 50 as to amount of R&D expenditures planned in fiscal 1981 include automakers and electric machinery manufacturers engaged in stiff competition with American and European makers, steelmakers trying to maintain their technological lead, and pharmaceutical and chemical firms which are exerting all-out efforts to overtake their foreign counterparts.

Among the enterprises, the interest shown toward R&D by the automakers and auto parts makers is especially conspicuous.

Toyota Motor Co., Nissan Motor Co. and Honda Motor Co. monopolized the top three spots of the ranking.

Altogether, nine automakers are included among the top 50 firms. This is because the automakers see the need to increase investments for R&D since the U.S. Big 3 plan to spend $80 billion by 1985 to develop small cars.

Of the automakers, Toyota intends to set aside ¥104 billion of the ¥161 billion in R&D expenditures in fiscal 1981 for development of FWD (front-wheel drive) passenger cars and cars of lighter weight.

The remaining ¥57 billion will be used on researches for

R&D Expenditures Planned for FY1981

(Construction basis)

	R&D expenditures (¥ mil.)	Chg from FY1980 (%)
1. Toyota Motor	161,000	+ 41.2
2. Nissan Motor	33,000	0.0
3. Honda Motor	8,700	+210.7
4. Nippon Steel	6,800	+ 78.9
5. Nippon Electric	6,500	+ 8.3
6. Sumitomo Chemical	5,800	+ 87.1
7. Komatsu	5,100	+ 59.4
8. Eisai	5,008	+ 71.3
9. Asahi Chem. Ind.	4,500	— 12.5
10. Toyo Kogyo	4,400	+ 69.2
11. Sumitomo Electric	4,000	+ 17.6
11. Sanyo Electric	4,000	— 58.7
13. Nippon Kokan	3,500	+105.9
13. Matsushita Electric Works	3,500	+196.6
15. Sumitomo Metal Industries	3,000	+ 50.0
15. Ricoh	3,000	— 5.2
15. Mitsui Engineering & Shipbuilding	3,000	+ 24.4
15. Suzuki Motor	3,000	+130.8
19. Oki Elec. Ind.	2,800	+ 18.2
20. Osaka Gas	2,719	— 7.7
21. Daiichi Seiyaku	2,620	+ 87.1
22. Nippon Shinyaku	2,610	— 6.5
23. Mitsubishi Electric	2,500	+ 47.1
23. Sankyo	2,500	+ 78.6
23. Kawasaki Steel	2,500	+212.5
26. Isuzu Motors	2,400	+ 20.0
27. Showa Denko	2,272	+ 30.9
28. Sony	2,221	+ 23.4
29. TDK Electronics	2,210	— 3.1
30. Shimizu Construction	2,100	+346.8
30. Furukawa Electric	2,100	— 16.0
32. Dainippon Ink & Chemicals	2,000	— 4.8
33. Mochida Pharmaceutical	1,980	+406.4
34. Fuji Electric	1,900	+111.1
35. Canon	1,890	+ 21.2
36. Chubu Gas	1,799	— 36.3
37. Teijin	1,700	— 70.0
37. Pioneer Electronic	1,700	— 43.9
39. Sumitomo Metal Mining	1,614	+ 34.1
40. Nippon Mining	1,600	+ 6.7
41. Fuji Heavy Ind.	1,500	0.0
41. Makita Electric	1,500	—
41. Ube Industries	1,500	— 16.7
41. Nippondenso	1,500	— 6.3
45. Dainippon Screen	1,450	+229.5
46. Shionogi	1,437	— 50.8
47. Kureha Chemical	1,300	+ 30.0
47. Fujisawa Pharmaceutical	1,300	— 51.9
49. Kinugawa Rubber	1,203	+206.9
50. Santen Pharmaceutical	1,170	+ 13.6

Source: The Nihon Keizai Shimbun.

fuel-conserving engines and increasing the safety aspects of the cars.

Investments for production facilities related to R&D are believed included in the ¥161 billion earmarked for fiscal 1981. Even then, the figure is extremely big.

Honda already has completed shifting to FWD cars. But it plans to increase its R&D investments 3-fold from fiscal 1980 because company officials say there are many matters still to be dealt with when competition from other makers is taken into consideration.

The same can be said of electric machinery makers.

This is because makers in the world are competing with each other in order to take the lead in the semiconductor and other electronic sectors.

Sanyo Electric Co., which does not want to lose out in the semiconductor war, plans greatly to increase investments for expanding and strengthening its VLSI (very large-scale integration) technological development center in Gifu Prefecture.

Mitsubishi Electric Corp. and Oki Electric Industry Co. also plan to increase their R&D investments in the electronic sector.

As a result, competition in this field is expected to greatly intensify in the future.

A matter of interest is that eight pharmaceutical firms are included among the top 50 enterprises, although their scope of business is not so big.

A pharmaceutical firm stands to drop out if it fails to develop new medicines for world use. The pharmaceutical makers thus are increasingly laying stress on R&D.

Yuji Naito, president of Eisai Co., which plans to spend the biggest amount for R&D in fiscal 1981 among the pharmaceutical firms, said the amount set aside by Japanese firms for R&D accounts for only 7 or 8 per cent of their sales, far below the more than 10 per cent of leading firms in the U.S. and Europe.

He believed that the R&D expenditures of the Japanese pharmaceutical firms will increase to the same level as those of their American and European counterparts in the next few years.

Chemical firms also are planning to set aside huge amounts for R&D in order to overtake leading makers in the U.S. and Europe in highpolymer technology.

On the one hand, steelmakers are laying stress in R&D in order to further heighten their superiority over foreign steelmakers as to technology concerned with seamless pipes and high tensile steel sheets.

Kawasaki Steel Corp. is drastically increasing its R&D expenditures because of investments for a test plant to turn steam coal into coking coal.

In the postwar years and during the high growth era, Japanese enterprises inducted technology from overseas and elaborately improved them to adapt their production lines.

In many sectors, however, they managed to catch up with enterprises in the U.S. and advanced European countries and were forced to turn out new products and develop new technology on their own to cope with trade frictions.

The enterprises have started to place emphasis on R&D recently because they believe that R&D is the biggest necessary condition to enable them to survive.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

TECHNOLOGY COOPERATION OFFERED TO EC NATIONS

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 3

[Text] The Japanese Government has decided to hold government-level meetings with members of the European Communities in order to promote industrial cooperation in the field of advanced technology.

As a first step, Japan and Britain have agreed to study possible joint technology development and industrial cooperation, advise private corporations to cooperate jointly and to promote cooperation between the government and private corporations.

International Trade and Industry Minister Rokusuke Tanaka will sign an agreement to this effect with Britain's industry minister without portfolio, Kenneth Baker, on April 22 when the British official visits Japan.

The new agreement is a major step by the government to open up possible joint industrial cooperation between Japan and Britain and to advise private businesses to pursue the goal of industrial cooperation.

The consultations will be taken up first in advanced technology because the government finds it easy to take the lead in a field where it is closely involved with research and development. Japan decided to consult with the EC countries because they complement each other well — EC has excellent abilities for technological development and Japan is good at putting such technology to practical use. The EC countries have also indicated that they have great interest in industrial cooperation with Japan.

According to the proposed agreements with Britain, the industrial ministries of the two countries will go through a list of new technologies to be developed in the next five to ten years and find a certain technology in which the two countries have a common interest.

The two governments will then set up regular meetings to discuss ways and means of developing the technology and when to put the new technology on a commercial basis.

It is also possible at this stage that the two governments may reach an agreement to jointly develop a technology which both have been working on.

As a result of the consultations, the two governments may advise their own industries to exchange ideas in a particular field of technology where they believe private joint cooperation is appreciated.

After all of these consultations and exchanges of ideas, the two countries will consider whether to start a joint venture project or to extend government financing to promote joint industrial cooperation. The

governments thus take an initiative in setting up a system to promote a joint development of a new technology and an industrial cooperation between the two countries.

Although the Thatcher administration advocates a policy of non-interference in business activities, the British Government called on Japan for Japan-British industrial cooperation in the hope that the government could foster new industries in the field of advanced technology.

The Japanese Government readily accepted such an offer and hopes to establish a similar system with other EC member countries on the basis of the Japan-Britain agreement as a first model for government-initiated industrial cooperation.

The two countries are, at first, likely to promote their cooperation in the field of basic technologies for computers.

The Japanese Government will set out to develop a high-speed computer for science technology, a fifth generation computer and new materials for semiconductors which will replace silicon starting in fiscal 1981. Britian has shown great interest in cooperation in this field.

Two senior British officials of the Industrial Ministry in charge of computers and electric communications are expected to accompany Baker when he visits Japan to sign the agreement.

With CII Honeywell Bull S.A. of France asking MITI for cooperation in the development of basic computer technology, it is likely that Japan and EC countries will seek further cooperation in this field.

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SCIENCE AND TECHNOLOGY

FINE CERAMICS TO BE USED IN MAKING AUTOMOBILE ENGINE

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 6

[Text]

Kyoto Ceramic Co. will launch a new four-year research and development project from April 1 to create an entirely new kind of automobile diesel engine made of some fine ceramics.

Its new fiscal 1981-84 project will be undertaken jointly with some domestic automobile maker or makers.

The Kyoto company terms its new project "Second Project" (for fine ceremic engine development) because it will complete by March 31 the first three-year project of the kind subsidized by the Government.

A diesel engine resulting from the initial project has proved to be an elementary affair. Not basically produced out of such ceramics, it is a remodelled metal version of the conventional diesel engine lined with such ceramics.

The 1,800 cc four-cylinder engine, capable of running a small car at 40 to 50 kilometers an hour, has still proved problematical as to acceleration and fuel efficiency.

What the company envisions as an ultimate full-fledged ceramic diesel engine this time is a 2,000 cc four-cylinder type with its entire cylinder block and all other key parts and components made of non-oxide fine ceramics; chiefly silicon nitride.

The company already boasts expanding sales of its non-oxide ceramic cutting tools and mechanical seals. It has also sold to General Motors Corp. of the U.S. gas turbine engine stators made of such ceramics under GM's automobile gas turbine development project sponsored by the U.S. Government.

The company is thus joining a current fierce domestic race in developing such ceramic auto diesel engines in progress between Toshiba Corp. and Toyota Central Research & Development Laboratories, Inc., Toyota Motor Co.'s research division.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

TODA BEGINS TO DEVELOP ROBOTS

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 6

[Text] Toda Construction Co. has launched development of computerized robots for use in nuclear power stations with the cooperation of Kawasaki Heavy Industries, Ltd., a top industrial robot maker.

Toda, one of Japan's five biggest construction companies, also plans to develop electronics-applied, intelligent robots to have them engage in construction-engineering jobs.

The company sees the urgent need of N-power plant operators to protect human beings from radioactivity in building new stations, and dismantling disused reactors.

Toda will receive both hardware and software know-how on robots from Kawasaki HI in return for providing information and data concerning N-power plant construction projects.

While joining the Japan Industrial Robot Association as the first member from the construction industry, Toda has registered in the association's Development Committee for Nuclear Power Plant Work Robots. The committee's forerunner members are three foremost N-power plant builders — Hitachi, Ltd., Toshiba Corp. and Mitsubishi Heavy Industries, Ltd. (JEJ Feb. 24 issue, Page 7)

Toda thus aims at gaining an advantage over its domestic rival construction firms in winning N-power plant construction orders.

The company also envisions devising microprocessor- and sensor-equipped robots for use in construction to make up for the acute lack of skilled engineering workers.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

SEMICONDUCTOR MAKERS WILL DELAY MASS MANUFACTURE OF 64K RAMS

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 8

[Text] Japanese semiconductor makers will delay mass production of 64-kilobit dynamic random access memory (RAM) chips to the second half of 1982 at the earliest, from late this year or early next year as originally scheduled.

They are worried about a slowdown in demand for integrated circuits in the the U.S. and major European countries and the drastic plunge in quotations of 16K dynamic RAMs, the 64K's predecessor chip.

The 64K, which is regarded as the "first generation" of very large-scale integrated circuits, theoretically has 64,000 memory cells in a tiny chip but actually has 65,536. With four times the capacity of the 16K, the new superchip is expected to enable manufacturers to build smaller, cheaper, more powerful and more reliable computers and a variety of electronic devices. By 1986, annual sales of the 64K are estimated to reach $1.8 billion.

Several Japanese semiconductor makers announced their trial products last year. They include Nippon Electric Co. (NEC), Hitachi, Ltd., Fujitsu Limited, Toshiba Corp., Mitsubishi Electric Corp. and Oki Electric Industry Co. Some of them already have been delivering samples. Particularly, Fujitsu, Mitsubishi and Oki had been planning to build VLSI mass-production plants through late this year to early next year to take initiative in the 64K field.

Recently, however, these companies have become pessimistic about mass-production of 64K RAMs at the dates they earlier set.

"It now seems difficult for the new plant in Miyazaki on the island of Kyushu to start mass production of 64Ks from the outset in September," said Oki President Masao Miyake. "We'll spend much time determining what items to produce until next spring when the No. 2 Iwate plant (pretreatment line) starts operating," said Matami Yasufuku, managing director of Fujitsu.

The global market deterioration for 16K RAMs may be the biggest factor making the potential 64K producers prudent. In the U.S. spot market, a 16K now sells for less than $2, compared to more than $6 early last year. Inventories reportedly are swelling at distributors' shelves.

"Under the current unfavorable situation, conclusion of a fresh long-term (one year) contract seems unlikely," said Takahiro Kamo, president of Intel Japan Corp., a wholly-owned subsidiary of Intel Corp. of Santa Clara, Calif.

NEC and Fujitsu have discontinued shipment of 16Ks to the American spot market. However, recovery of market quotations is not still in sight.

"If 64Ks are introduced in the market, there will be no customers as four 16Ks are less costly than one 64K," said Atsuyoshi Ouchi, vice president of NEC.

Mitsubishi, which stakes the future of the company on 64Ks (according to Chairman Sadakazu Shindo), is the only exception. It recently revealed plans to begin mass-production of 64Ks in July at its No. 2 Kumamoto plant at a rate of 100,000 chips monthly (JEJ-Mar. 24).

However, some industrymen say that the production scale of 100,000 chips cannot be described as mass production. Actually, Fujitsu and NEC are now producing 150,000 and 50,000-100,000 chips, respectively, they said.

As 16Ks are produced in million units (1.7 million chips at present and 2.7 million in a peak month for NEC), the production scale of 64Ks is still in the "sample shipment" stage.

According to industry sources, potential American 64K producers — Texas Instruments, National Semiconductor, Intel, Fairchild and Mostek — hold similar views on the market. Under the situation, it will be in the last half of 1982 at the earliest or early 1983 at the latest that 64K mass-production starts in Japan and the U.S.

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SCIENCE AND TECHNOLOGY

USSR NOTIFIES GOVERNMENT OF BKP MILLS BUILDING SUSPENSION

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 9

[Text]

The Soviet Union has proposed to the Japan-USSR Economic Association of Tokyo suspending two bleached kraft pulp mill projects. The notification has shocked the association, composed of 19 member companies (e.g., Oji Paper Co., Mitsui & Co., Mitsubishi Corp.), whose negotiations with USSR date back to early in 1970s.

The projects proposed by the Soviet Union had called for construction of a BKP mill with annual capacity of 250,000 tons at Amursk in Siberia and revamping a mill with annual capacity of 200,000 tons on Sakhalin island. In all, plant equipment exports were estimated to reach ¥250-300 billion. If realized, the Japanese cooperation in plant construction and modernization was to be followed by the Japanese obtaining pulp for paper production on the basis of barter deals.

The projects were first considered in 1973 between the two countries' leaders. By fall of 1979, details were worked out by Soviet officials and association member, including the new mill's capacity.

The Soviet Union notified the association, led by Oji President Fumio Tanaka, that the two projects failed to be incorporated in the 11th 5-year economic program (1981-1985). The 19 member companies of the association have been forced to accept the suspension.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

YAMAHA CONCEIVES NONPOLLUTING PLATING TECHNOLOGY

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 16

[Text] A new pollution-free system of chromium and other plating, surprisingly fast in working speed and low in hardware cost, has been developed by Yamaha Motor Co. of Hamakita City, Shizuoka Prefecture.

The well-known motorcycle maker calls it the YRPS (Yamaha Rapid Plating System).

The first set of hardware has been built and put into operation at the factory of its parts-making subsidiary, Showa Works Co. of Numazu.

Yamaha said it is a completely continuous closed system that recycles used plating liquids. All ultimate waste and gas discharges are also processed to eliminate pollution.

In plating rate, the working speed to finish plating in terms of thickness, the system has attained 60 microns a minute, 100 times the average for all conventional facilities of the kind in Japan.

The cost of its installation has also proved only one-third of the average for conventional ones because the new system is a compact structure only 4 meters cube requiring no bathing or washing tub.

It is also a decided departure from the conventional facilities for its capacity to continuously plate one sample after another in a rapid succession and, thus, is directly connectable with a production line.

The new system would cost only about ¥100 million to build in Japan today, compared with three or four times as much in constructing a conventional equivalent, including the latter's accompanying waste and gas treating facilities.

In current (electric power) efficiency, it has also far surpassed the conventional 15 per cent by attaining 50 per cent. Patents are scheduled to be taken out on the system's basic ideas in Japan, the U.S. and Britain.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

PROBLEMS INVOLVED IN USE OF LIGHT WATER REACTOR DISCUSSED

Tokyo GENSHIRYOKU KOGYO in Japanese Vol 27, No 1, Jan 81 pp 17-28

[Round Table Discussion by Taisei Toko, Tokyo University; Shinjiro Nishinaka, Ministry of International Science and Technology; Tetsuro Itakura, Japan Nuclear Generation; Yoshiaki Korei, Hitachi Ltd.]

[Text] How Do You View The Present Placement Situation?

Toko: This discussion is directed at how to introduce and establish the light water reaction in Japan, and we will start on the subject how well the light water reactor has settled in.

Nuclear Power Day is on 26 October, and I distinctly remember that last year the slogan was "One out of every 10 households is lit by nuclear generated electricity." In other words, last year was the first time that the production capacity of nuclear power plants exceeded 10 percent.

Now, there has been a slight increase in nuclear power production since then, and it is likely that at present nuclear power accounts for 12-13 percent, and one out of every seven or eight homes is lit by nuclear generated electricity.

If we consider the present oil situation, electric power will become even more necessary from here on. If we accept this premise, then unless we go to nuclear power to provide a substantial portion of the electric power from here on, the amount of power may become insufficient and the demand will not be adequately met.

So, the term establishment may have many meanings, and I ask Mr Nishinaka to start us off.

Establishment Has Already Started

Nishinaka: As Dr Toko just mentioned, the record of the nuclear power industry in 1979 was such that the plants and equipment amounted to about 12 percent of the total electricity facilities, and the power produced amounted to 13.3 percent. When we consider this situlation, we can say that nuclear power has become an important element in the electric power supply picture, and this industry is well-established.

Speaking from a somewhat different viewpoint, it is now more than 11 years since the operation of light water reactors was initiated in this country, and this is equivalent to 110 reactor-years. There have been an assortment of problems during this period, but there has been no incident in which the surroundings were threatened. When one considers this record, it appears that one can say that nuclear power is here to stay.

Recently, however, the need for improvements has become apparent, such as improving the operating rate and reducing the incidence of problems, and the term establishment is being used in this connection. In other words, it is used to mean better assimilation of nuclear plants.

Toko: What does Mr Itakura have to offer?

Establishment Has Entered the Initial Stage

Itakura: Speaking from the technological standpoint and from the actual record, I consider that the state of nuclear power production was reached on entering the initial stage of establishment.

If we look at how the power companies dealt with nuclear problems in the past when a certain problem had to be handled, supposing that there were two or three companies facing the same problems, there were poor communications between the companies in that there were cases in which entirely different lines of thinking were involved. On the other hand, the recent picture is one in which the thinking with regard to hardware such as that for nuclear power basically involves a large number of radioactive particles, and the awareness of this situation is reflected in the very similar manner in which everybody responds to nuclear power.

I am not sure whether what I say next will qualify under the subject of establishment, but what I would like to see is greater concensus among the public. While some wonderful reviews are presented with regard to nuclear power, it is my unavoidable conclusion that, specifically speaking, the establishment of public concensus has been greatly delayed.

Toko: I guess this boils down to public acceptance. I believe this subject will be discussed later, so I now ask Mr Korei to give us an idea what the makers may be thinking.

The Position of Nuclear Power-Related Work in a Company Is Well-Established

Korei: The makers which are involved in nuclear power are the electrical makers and heavy machinery makers, and these companies have continuously been engaged in nuclear power-related work at a given stabilized volume or given scale in line with the other areas of work.

This is why the various companies have set up special structures solely for nuclear power to conform to this nuclear power situation, and these special departments are trying to function in line with the other departments of the company in a stable manner. I believe this is the situation that has developed.

Leaving aside problems such as spectacular advances, this situation has long term implications in which facilities will be increased at a given rate or manpower will be increased to higher levels. If we think along these lines, it does not seem to be a matter of when we will enter into establishment but when we entered the state of establishment.

This is why the future has been established, and we can think up various schemes for the future; however, we should not worry about useless things but put forth every effort on the work at hand, and the path to the future will become brighter.

What Is the Objecting of Establishment of Nuclear Power!

Toko: It appears that all of you consider that nuclear power has been already established, according to your statements.

Continuing on, let us shift the subject to what is the significance in establishment and what is the object of establishment. My interpretation of establishment is a state of practical reality or a state in which the item in question is truly used to advantage.

Speaking of some other technology, the first item to come under scrutiny is the economics, and can the nuclear technology compete with existing technologies? This, I believe, is the first test of practicality. In the case of nuclear power, there were the fortunate or unfortunate sharp changes in the oil situation which resulted in lowering the relative cost of nuclear power compared to oil and coal. Nuclear power is also possibly lower in cost compared to other sources of power. This is why we have lost an important objective, and what is left is the technological establishment, where I believe there remains a problem.

In addition, the subject of public acceptance or the problem of whether the people of the country will accept nuclear power is another area where more effort is required, and I consider that in these two areas considerable discussion is warranted.

I now ask Mr Itakura to start the discussion.

The Public Has Not Yet Accepted It, But...

Itakura: The economic situation is just as Dr Toko mentioned, and the technology is already in a state of establishment. I forgot to mention this earlier, but those power companies and makers who are actually engaged in nuclear power production at present have people who from the time they started work or even as they were going to school were looking at the real potential of nuclear power. In this sense also the establishment of nuclear power has definitely advanced.

Now, these people who have been working to make the nuclear technology practical have had their claws sunk deep in the technology end, and their attitude toward public acceptance has been that it is important but they had no time or energy to get involved. This is why public acceptance efforts have been delayed. In any event, the average man is not aware of the true nature of nuclear power, particularly the safety factor.

While I may be overstating the case, it seems to me that the media takes a rather cold view of nuclear power. On the other hand, there are many media people who from their long contact with nuclear power have shifted from a critical viewpoint to one of promotion. In this manner, it has not been accepted socially, but this is certainly not a situation which we should despair over.

Toko: Could it be that nuclear power is actually a superior form of power?

Itakura: I believe that it warrants a bright assessment, at least that is what I think.

Need for Technological Exchanges

Korei: Nuclear power is an assembly of, so to speak, a technological spectrum or mixture of various technologies in which the nuclear reaction, which is the basis of nuclear power, and the comprehensive technology developed by man centered on this nuclear reaction, complete this spectrum.

While we may be engaged in the area of nuclear power, we are constantly receiving transfer of technology from many established areas. When we encounter some technological problem, we hear what means are available to resolve the situation. At the same time, we must be in a position to accept such aid. I believe that we must strive to present the stories of nuclear power technology or any discussion in a language in which people outside the realm of nuclear power technology can clearly understand the situation.

The number of nuclear power plants we construct is small compared to that of the United States, but the Japanese companies are conducting various projects in various areas, and a good interchange between these different efforts should eventually produce some very good results.

For example, there are the problems in setting up a control system in which questions arise as to what kind of control panel to use, what kind of distribution lines, but if we achieve skillful incorporation of technological advances in various areas,it will result in good results even though we have little experience or only a few nuclear plants.

Toko: I take it that you believe that nuclear power technology can compete equally with existing technology in the industrial and production areas.

Korei: I believe that we should take such a stand and see whether we can effect a good transfer of technology.

There Is No Longer a Cost Target

Nishinaka: While there may be some repetition of what was discussed thus far, one of the subjects brought out by Dr Toko is that the cost target for nuclear power has been removed, and I believe that this is actually the case.

In the past, when oil was cheap, one taxed one's mind wondering just how nuclear power could compete with oil. Today, the situation has been reversed, and describing it in very general terms, we are in the favorable position of not even having to worry too much about the cost of facilities or how we can cut down further on costs.

I do not mean to imply that the rise in the cost of oil was a lucky phenomenon, but speaking from a broader viewpoint, when one looks over the narrow field of nuclear power, I consider that the aspects of safety and reliability have become easier to handle.

Put in other words, even when the initial cost is somewhat high, as long as there is a high operating rate, I consider it a good buy. This being the case, it must be said that this is one of the plus factors as far as the establishment effort is concerned.

Now, the critics will say that nuclear power is a technology which is still in the research and development stage and that it still has not come to the truly commercial stage. This is a viewpoint I hear frequently. It may be that we should accept such criticism with some humility, but as I said at the start, nuclear power generation has accumulated many years of experience and has established such a good record throughout the world that it can be considered to have been well-established. There is always room for improvement, but this situation is not limited to nuclear power and can apply equally well to the automobile. In this sense, I cannot feel that nuclear power has not reached a state of maturity in the technological sense.

The next item I wish to bring up is that of social acceptance. Certainly, a number of problems have been raised with regard to nuclear power, and the number of people who oppose it is fairly substantial and cannot be disregarded. On the other hand, the results of public opinion surveys show that there is also a substantial group which recognizes nuclear power as necessary. When we come to the view that I am sure that nuclear power is necessary but I certainly would not want a nuclear power plant located in my town, that is, an attitude of agreement with the principle but opposition to the specifics, we cannot positively state that nuclear power is well-assimilated.

What Can Be Done To Advance Assimilation?

Toko: Now then, what can be done to advance establishment of nuclear power. What specific steps can we take to bring this about? This is what I would like to see discussed next.

The Ministry of International Trade and Industry has been making a considerable effort for some time on improvement and standardization of the light water reactor. Perhaps we can start with this subject.

Budget Request for Third Improvement Standardization

Nishinaka: Where improvement standardization is concerned, the first improvement standardization has already been completed, and the provisions are being

incorporated in the reactors which have been under construction recently. The second improvement standardization program is now in its final year and should end sometime in 1981.

We then come to the third improvement standardization, which is presently in the study stage and is included in the budget request for next year. It must be said that the main efforts in this improvement standardization program in the past have been along the lines not of the reactor core itself but of the core surrounding; however, the third phase gives more consideration to the core itself, including long-lived fuels.

If the budget is approved, the actual problems to be handled will be decided by a special new committee of learned people, and we at the office end on the administrative side believe that this is the situation at present.

Now, how do we tie together improvement standardization with establishment? Improvement standardization has many objectives such as, for example, the problem of improving the operating rate or reducing worker exposure during the periodic inspection or repairing and these measures involve advancing establishment in a certain sense, or it may not always be the case but I believe that they are synonymous.

Toko: Looking back over the past several years, even the light water reactor has experienced many unexpected problems. These problems required considerable time to repair with a resultant decrease in operating rate, which then increased distrust on the part of the public toward nuclear power, thereby bringing on a series of adverse incidents. When we consider this history, one gets the impression that the light water reactor technology of the past was all introduced from the United States; in other words, a start was made entirely with American types, and this factor may be responsible for these adverse events.

If we now look at why such events took place, it is my opinion that the Japanese power companies are rather conservative in their viewpoints and took the attitude that they would accept American technology but would not use Japanese-developed technology because they were not sure of its reliability. This situation has been the greatest factor standing in the way of domestic technological development. I may be put on the carpet by the power companies for saying so, but that is my belief.

This young experience was exploited to establish improvement standardization and domestic technology starting several years ago. In other words, a Japan-type reactor must be designed, and Japanese technology must be used to make this reactor, as I see it.

In line with this, efforts are under way to establish a completely Japanese nuclear fuel cycle, and I would like to hear from Mr Itakura on the establishment of this domestic technology.

Itakura: As was just mentioned, domestically produced technology involves a responsiveness on various fronts and the incidence of applied problems, all of which are very important, however, while I may be contradicting Mr Toko....

Toko: I am prepared to be chastised.... (laughter)

Do Not Be Bound to the National Framework But to a Broader Outlook

Itakura: It can be said that the power companies were conservative. On the other hand, pushing the issue of domestic technology too far may result in too much dependence on domestic technology for areas such as nuclear power and space development where we stand to be judged on an international level. We may be pushing this domestic production issue a bit too far....

Toko: I guess we should not limit ourselves to our national framework.

Itakura: That is so. If we do not do things right, there are people among those for and against nuclear power who take up this argument. The United States is the protagonist of the light water reactor, but recently its workmanship has been very poor. That is why imports from the United States have been developing a lot of problems, and these problems are the source of the statements that American technology is poor. I believe that there should be a curb on such feelings.

The next thing I have to say again contradicts what Mr Toko said with respect to the cause of problems to date being the result of overdependence on foreign technology. I would agree with him if the Americans were experiencing no problems and we were experiencing a high share of problems. Now, the actual situation is that the Americans experienced problems first. That is why I consider that one cannot say without reservation that the problems were caused by the backwardness of Japanese technology. To be sure, it would not do to swallow whole everything that is American, and the prudent course is to reexamine everything and make changes where Japanese technology is better and adopt foreign technology in the areas where it is better. It is my belief that we must not limit our nuclear power efforts to our national framework but operate in a much broader framework.

Nishinaka: I would like to add a comment here. If someone who was not conversant with nuclear power happened to hear Mr Toko's previous statement, he would be likely to wonder whether there were some safety problems or some deficiencies in the technology. That is the impression that might very possibly be transmitted.

The so-called problems alluded to most certainly could have been rooted in the lower operating rate, and this certainly is not a desirable situation. On the other hand, they are not directly related to safety, and I believe that we should accept them as problems of reliability or of operating rate.

Toko: There were various kinds of problems, but none of them concerned safety. So what you say is true.

Operating Rate of 52.6 Based on Perfect Score of 70

Nishinaka: I want to say a few words about the operating rate. As far as the promotion people are concerned, they would like to see as high an operating rate as possible. When the operating rate is low, the critics and the opposition forces are quick to suspect that problems are being encountered in nuclear power. In this way we hear critical comments from both sides.

While the figures will depend on what stand is taken, the operating rates of nuclear power plants in Japan up to the end of 1979 averaged 52.6 percent. As you well know, because of periodic inspection, an operating rate of 100 percent is out of the question, and an operating rate of 70 percent is the maximum that can be realized.

Toko: In other words, 70 percent is perfect.

Nishinaka: In other words, a record of 52.6 points was made in a test where 70 was the perfect score, but we still cannot say that was a phenomenal record. Raising this record is one of the problems.

Looking now at the contents, if we classify the 21 plants presently operating as upper, middle and lower groups according to operating rate, the upper group averaged 72.9 percent, the middle group averaged 59 percent, and the lower group 39 percent. The two upper groups averaged 64 percent.

From this viewpoint, it is obvious that not all nuclear power plants have a low operating rate, and it is the lower group which is dragging the others down. This record is the result of some of the earlier nuclear power plants having developed stress corrosion cracks, and they had to suspend operations for fairly long periods while the necessary repair was made, which was the main factor responsible for the low operating rate.

This is an area where considerable information has been accumulated, and we believe that there should not be as much trouble in this area in the reactors of the future. At the same time, those power plants which experienced problems are now being repaired or have already been repaired so that the operating rates should rise.

Toko: In other words, they are in a convalescent stage.

Nishinaka: Even though I do not expect a perfect performance, I believe the operating rate will improve from here on. Just as it is not correct to say that nuclear power is not suitable just because the operating rate is low, it is not appropriate to simply look to an increased operating rate as the best solution. Steady accumulation of efforts and experiences will result in an improved operating rate, I believe.

Toko: Mr Korei, what can you say from the maker's viewpoint?

Need To Take Stance of Making Judgments by Oneself

Korei: The first problem is introduction, and here let me use the example of thermal power plants. When a power company is about to install a large facility, it looks to see whether any given machinery has a proven operating record or whether a given maker has a record of production which merits attention. When we sell a single turbine for thermal power plant use to a foreign customer, he asks how many years of service a given blade has provided.

When the Japanese power companies imported their first thermal power plant, they asked whether the machinery had a proven record in the past and whether on introduction into Japan the Japanese makers could manufacture such equipment. Such studies were thoroughly pursued before the introduction, and the results were essentially 100 percent successful. The second unit was produced domestically, and the fabrication was completed as was scheduled. I believe this is an example of a very successful expansion of business activity.

I am sure the same pattern was intended when nuclear reactors were imported, but unfortunately the U.S. was marking time, and Japan had to mark time in line with the U.S. Now, when problems arose, there were cries that we had to go to foreign sources to find out how to fix the problem or asking whether it was not possible to do so, and this is a situation which often arises with imported machinery. When such incidents occur, there is always the problem of guarantee, and the first step is to go to the manufacturer and see what can be done. I guess that is the natural step to follow.

When we use a product produced by a Japanese maker and something occurs, we do not seek to hear the causes to the maker one after the other. We judge the situation ourselves and then consult with the customer to arrive at the solution. The idea that depend on other parties for everything is something that needs to be revised. (laughter)

Toko: It was certainly the case with thermal power plants that the first was imported from the United States, after which the second was produced in Japan, and this pattern was very successfully developed. I consider that this practice helped support Japan's high rate of growth era. This was a successful course to adopt, and nuclear power followed along the same lines.

Korei: This is true as far as the results go.

Toko: Now the United States experienced considerable problems, and I believe that this has been the greatest source of our problems.

Japan experienced a high rate of growth period and developed capabilities in many areas such as automobiles and household electrical appliances which rank with the best in the world. If we now set our sights on establishing domestically produced technology, I wonder whether we will be able to catch up with the Americans in a short period. What do the makers feel about this?

Korei: We are thinking along those lines, but as Mr Itakura mentioned before, there will be problems if we adopt the national framework principle. The term technology spectrum was mentioned, and there are many technological areas. To start from zero in all these areas....

Toko: Is something we feel we have to do....

Korei: That is a valuable concept to hold, but to believe that we need to handle the entire field in such a manner is very inefficient. We must have technology of a comparable class, and we also must engage in technological exchanges while accumulating our basic data and improve the situation, and this may be a good method.

Take, for example, the situation connected with the BWR in which stress corrosion cracking of stainless steel proved to be a problem, and we set out to resolve the problem. At that time, the American cooperative partner GE and the Japanese companies Toshiba and Hitachi got together to conduct a large-scale experiment. In other words, the three companies working with the same type facilities while engaging in constant data exchange accumulated data over a wide area until they finally arrived at the point that the problem was satisfactorily solved.

Toko: Each tries to cooperate with each other through contributing each one's specialty and to make it work; that is my belief.

Korei: The work must be continued and one must be able to do any portion in order for technology to improve and advance.

Toko: I guess that is the case from the viewpoint of a maker.

Korei: In our situation, that is what needs to be done in order to keep a good technologist and keep up his productivity. Since the makers are putting forth their best efforts, we hope that the government will keep up its promotion with more resolve.

Nishinaka: It is just as you say. We are not promoting nuclear power just for the sake of the makers but to supply electric power, and the net consequence is that the effects are being tossed back to the makers....

Toko: It may be that I an changing the subject somewhat, but the Ministry of International Trade and Industry has recently been studying quality assurance as a means of improving the reliability of the light water reactor, and I ask Mr Nishinaka to fill us in on some of the details.

Quality Assurance, Base of Improved Reliability

Nishinaka: The quality assurance just mentioned is the basis for improved reliability, and I believe it was January this year when a Nuclear Power Plant Quality Assurance Study Committee was set up by the Ministry of International

Trade and Industry. President Ishikawa of the Musashi Institute of Technology was appointed committee chairman and both Mr Toko and Mr Korei along with other able people are serving on this committee to thresh out various problems.

We have received an interim report, and by early September we should be receiving the final report. It will take considerable time to disclose all of the contents, and I will dispense with such an introduction and say that quality assurance has undergone considerable improvement. Taking the example of incidents causing reactor stoppage, where the rate was 6.7 hours per 10,000 hours 10 years ago in 1971, this was reduced to one-sixth or 1.1 hours in 1978.

On the other hand, the number of nuclear reactors has increased, the actual number of stoppages (any stoppage of more than 3 hours' duration) is little different from before, and the newspapers report how many times a certain reactor has suffered a work stoppage in the course of a year.

Furthermore, a single incident is reported not just once but many times, and people get the impression that a nuclear power plant is stopped very frequently. But if one looks at the actual figures as was mentioned before, the frequency of stoppage does not seem excessive. To be sure, there is need to lower this rate of stoppage even further.

What I have left is what remains to be said in the report is the interim suggestion and it suggested that we study the establishment of the basic provision of quality assurance activities to create a systematic basic policy on quality assurance or the execution of objective diagnosis of intraindustry quality assurance activities. We have included such suggestions in our next budget and we hope to realize some measure of involvement in this area.

Establishment of Nuclear Power and Public Acceptance

Toko: In the discussion thus far, there is an awareness that the time has come when this issue of people's consensus or what might be called public acceptance can no longer be avoided before the light water reactor can be considered to be really accepted. As our final subject let us discuss the public acceptance problem with regard to the present situation, and what efforts are necessary from here on.

Female Support Rate Approaches the 50-Percent Level

A certain large newspaper conducted a public opinion poll with regard to nuclear power and defense problems, and the results were disclosed in the 1 January issue this year. What I found to be a revolutionary figure was that this was the first year in which more than 50 percent of the women supported nuclear power. The male support passed the 50-percent mark some time ago.

Why should this statistic be so epochmaking, one might ask, and the answer is that men are often thought to use reason and logic to think out their problems. Take the oil situation as an example, where a male would most likely reason

that with the oil situation as it is at present, there seems to be no recourse but to go to nuclear power. On the other hand, both housewives and working women tend to follow their instincts in coming to a decision. Such being the case, the tendency is to regard nuclear power with some apprehension and there is always some vague apprehension left so that their support rate has never been high.

Despite their instinctive feeling, it appears that the thought is finally seeping through that nuclear power is necessary, and I am of the view that public acceptance is gradually being built up.

What is extremely unfortunate here is that the safety problem has not been adequately understood, and people believe that whatever measures are taken are out of necessity. This is my belief, and I wonder what Mr Itakura thinks.

A Detailed Technological Explanation Is Not Appropriate

Itakura: What you have just said is so. On the other hand, if there is no awareness of the energy problem, there will be no need to use nuclear power with all its latent dangers. This is a natural step, and the good doctor need not concern himself so.... (laughter) Safety is the next argument, and this is a good plus factor in that respect, and I believe that we are finally going to see the safety end recognized.

In this sense, it is just as though after we have reached a fairly good age we are introduced to something which is entirely new and unfamiliar which we are not able to comprehend, and explanation of the fine technological details is useless in such a case. The problem of safety in nuclear power or rather the safety provisions that have been installed in order to make practical use of the latently dangerous nuclear power should be presented such as the multiple protection factors. We should present these aspects in readily understandable terms to the people. When we talk about such subjects as the heat transfer coefficient of ECCS (Emergency Core Cooling System), it is completely beyond people's ability to grasp.

Toko: I suppose it will do for specialists.

Itakura: That is so. Whenever talk about safety comes up, the discussion heads toward the technological end. We should abandon such an approach and return once more to more basic line of thought to get more effect.

In addition, I would like to add one more point which I consider very important, and that is that women are prone to think along the lines of life and particularly the genetic effects and to reason along emotional lines. This is why the subject of radiation and radioactivity can be brought up as often as possible and should even be mentioned constantly with respect to the fact that they have always been with us and how inconsequential the development of nuclear power is in adding to the present load.

I spent 4 years onsite and was in contact with many types of people, and it appears that this type of situation is not limited to ECCS alone. When the subject of safety comes up in Tokyo, ECCS is the first thing that is mentioned, at least according to my recollection.

There Is No Special Effect Drug But....

Nishinaka: While this may be overlapping somewhat on what was just said, it is very important that the people get the proper understanding of the situation. This is why I believe we should not shut off any news unfavorable to the issue.

Such being the case, how should we operate? This is a very difficult problem, and there are areas in which the government itself should put in some real effort. There are also many areas the private sector needs to work on as well as areas in which intermediary groups should be active. These efforts also need to be correctly understood, and efforts along such lines will ultimately determine the fate. The truth must prevail, and there is no special effect drug.

In such a situation, the nuclear power argument seems to be an all or nothing situation. For example, if someone asks whether nuclear power is absolutely safe, we answer that it is not absolutely safe. Then they jump to the conclusion that it must be dangerous. Or someone may ask if no radiation is emitted, to which we reply, well a little is discharged, whereup they say: "See, its dangerous.

There are some who argue over zero or not zero, disregarding the concept of quantity. This may not be limited to other large sciences but to the automobile as well. However, this is a type of argument which is not heard too frequently except in the nuclear domain.

Allegorically speaking, let us select the three numbers zero, 10 and 100, in which the actual difference between 10 and 100 is 90 and between zero and 10 is only 10. Therefore, the number 10 should be considered closer to zero, but in the case of nuclear power, any mention of 10 has the connotation that it is not zero. This is the special type of thinking which appears so often with regard to nuclear power, and I think that how to get people to understand this is very important.

Even in the natural environment, the radiation level is different between the Kanto Region and the Kansui Region by 20 MR. I never heard such a story as that a Tokyoite hesitated to move to Kansai on the company order. The radiation from a nuclear power plant is far smaller than it is thought to be, but tends to induce excessive reactions. This sort of thing is something we have to think about.

One other item is the concept of overall balance, in which we take the example of a balance in social effect. An automobile discharges exhaust gas, and a slight miscalculation can cause the death of a pedestrian. On the other hand, the argument that the automobile should be completely abolished is never advanced. This is because the social effect balance is so significant that the automobile is allowed to run on the streets.

Speaking along these lines, it may be that the social effect of nuclear power is greater than that of the automobile. On the other hand, the social drawback is not zero if one looks closely enough, although we can say it is very small. I feel that it is very important for the public to be aware of this relative balance.

To Have People Correctly Understand Technology

Korei: Speaking from the standpoint of the makers, I consider that every effort must be made for the people to correctly understand nuclear technology. In order to do so I am thinking of using every opportunity to have the general public understand nuclear technology; and how nuclear technology is supported by backup technology, by providing readily understandable explanation.

The public acceptance problem includes not only technological problems but various other types of problems such as the problem of location, and the makers do not have much opportunity to enter into direct dialog so that they are directing their efforts toward facilitating the public understanding of a generalized technological explanation.

What I Felt Through Onsite Experience

Itakura: Let me describe my onsite experience with regard to public acceptance.

What I thought most important and what should be watched most carefully at any given location is to obtain the trust of the local people. It is a fact that in order to complete negotiations with local peoples quickly, you must say that the possibility for accidents is zero as was discussed before. If you say that there is some possibility, there will be tremendous negative effect. Now, the proper thing to do is to say that one is one. Even when it might be all right to say that it is zero by rounding the figure if an accident should ever take place, then there would be those who would say, you lied to us. Their heated opposition would incite opposition from the general public as well. This is why we need to look at this factor of trust very closely.

There is another subject which I consider most unfortunate, and that is the existence of a theory for which considerable data has been accumulated. For example, a radiation problem which needs to be handled can be referred to the International Radiation Protection Committee (ICRP), at which specialists from different countries gather and present their views. If there is a story on the purple spiderwort, the news media will not make any differentiation as to the degree of importance, and a radiation incident involving the ICRP and the purple spiderwort will be treated in the same manner. Then the general public will think that they are of an equal significance.

This is why I have this request to make of Dr Toko and members of the academic world. If someone should come forward with some simple argument, you could come out with a statement such as that this is the consensus of the academic world regarding the argument. Unless that is done, a very simple incident may be treated on the same level as an earth-shaking incident.

As discussed above, what I consider important at the local level is to obtain the people's trust, and the fact that items with great significance are treated the same as items which are not so. On the other hand, this may be the fate of this new thing called nuclear power. (laughter)

Toko: I guess this means that it gets the people's attention that much.

Return Profit to the Local Level

Nishinaka: As mentioned before, public acceptance of a general nature can be attained by patiently plugging away, but there is another item which has proven to be an obstacle to the problem in obtaining nuclear plant sites and that is, in addition to the problem of uneasiness, something which may be called local vision, in that the arrival of a nuclear power plant will cause this locale to prosper. In other words, there is a return of profit which is a very important point.

Setting aside the question of safety as being inconsequential, there is no need to locate a nuclear power plant in my neighborhood; we want a different lifestyle--this is the stand that is sometimes heard. While I consider that such talk is to be expected in a certain sense, any actual attempt to locate a nuclear power plant in such a site will not be accomplished by public acceptance alone.

There have been a number of measures, including the Dengen Sanpo (Three Electric Power Laws) in order to resolve this situation, but I believe that more needs to be done, and the Ministry of International Trade and Industry is including some budget items in 1981 directed at this problem.

Steady Efforts Are Important

Toko: Let me summarize what has been discussed today. I believe we are in agreement that the light water reactor is at present already starting to assume a state of firm settlement. It was pointed out that efforts along various technological lines need to be compiled to bring about an even more advanced state of establishment. At the same time, there is need for parallel efforts along the lines of public acceptance on the part of the nation's people.

What I believe is that the greatest anxiety the people of this country have with regard to nuclear power is the safety problem, but this is a most difficult problem, and there are some aspects which must be understood very precisely. The safety problems of nuclear power involve many specialty areas as well as a very high degree of difficulty so that it may be asking too much to expect the general public to understand them all.

In the midst of such a situation, there has to be some degree of trust on the part of the people with regard to nuclear power if the people's acceptance is to be won; otherwise the problem will never be resolved.

To this end we must put great efforts into the technological area, improve reliability, and demonstrate that nuclear power plants can establish a good

operating record. This, I believe, is the fastest path to success. Speaking from the standpoint of reason, one could argue that 10 to 20 years of perfect operation does not guarantee no accidents for a million years....

I guess the only thing we can do is to pile up our technological knowledge and make steady efforts so that we can gradually build up reliability.

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SCIENCE AND TECHNOLOGY

COMMUNICATIONS SATELLITE TO BE USED TO LINK UP RESEARCH INSTITUTES

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 948, 31 Mar 81 p 16

[Text]

The Agency of Industrial Science and Technology, Ministry of International Trade and Industry, has started a new study on plans to connect all its seven regional research institutes in Japan with a government information computerizing center. The center would be in the research and academic city of Tsukuba about 60 kilometers northeast of Tokyo.

In that city, where advanced governmental research facilities and university and college institutions are concentrated, the agency now has nine local research facilities of its own. These facilities are already connected with the information computerizing center in the same city with fiber optics communication line fit for short-distance information transmitting.

The agency now plans not only to expand that fiber optics communications network among its regional institutes at relatively short distances apart, but also link up all the seven institutes, located at Sapporo, Sendai, Nagoya, Osaka, Takamatsu, Kure, and Tosu via Japan's communications satellite.

Japan now has only one satellite in orbit, but plans to have two by 1983, in the care of the Posts and Telecommunications Ministry.

Such instant information link-up, potentially including even research ships at sea and research aircraft in the air, could immensely facilitate and speed up all sorts of scientific and technological studies under the agent's jurisdiction.

CSO: 4120/213

SCIENCE AND TECHNOLOGY

KANTO DENKA MAKES HIGH PURITY FLUOROCARBON GAS FOR CIRCUITS

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 13

[Text]

An extremely high-purity type of fluorocarbon gas for semiconductor circuitry production has been commercially developed by Kanto Denka Kogyo Co. of Tokyo.

According to the leading industrial chemical producer, such gases, chiefly consiting of carbon tetrachloride (fluorocarbon 14), used for the dry process of producing semiconductor circuits on silicon wafers is now in mounting demand in Japan.

The new gas features minimization of the impurity content of conventional gases to only 1 ppm or even less. That promises much greater precision in preparing the surface of silicon wafers, and thus, in printing the circuitry.

The company already has built a ¥100 million plant to produce 40 tons of the new gas a year, having won high evaluation of the new gas samples from leading domestic semiconductor makers.

E.I. du Pont de Nemours is said to be dominating the present estimated 30-ton-a-year Japanese market for such gases, followed by two Japanese competitors, Daikin Kogyo Co. and Showa Denko K.K.

CSO: 4120/212

SCIENCE AND TECHNOLOGY

GENETIC ENGINEERING SYMPOSIUM IS ENVISAGED

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 13

[Text] Two leading industrial think tank enterprises of the Mitsui group have jointly decided to hold a two-day high-level international symposium on borderline affairs between genetic and enzymatic engineering sciences in Tokyo during this autumn.

According to the two enterprises Mitsui Knowledge Industry Co. and Toray Research Center Inc., their basic idea is to develop, through that chance of holding the unprecedented study meeting under their joint sponsorship, a new kind of technology they prefer to call a "biomolecular technology" by seeking a "marriage" between the two closely-related applied sciences.

This is because the gene splicing and other ultramodern genetic engineering types of industry, now bourgeoning in America and many advanced countries, including Japan, is considered to hinge on effective combination of the two sciences for its development.

To be called an "International Symposium on Border Areas between Genetic Engineering and Enzymatic Engineering," the proposed symposium is to take place at the Japan Council of Science auditorium in Tokyo for two days — September 29 and 30.

The two institution already have created an organizing committee for the symposium by enlisting the cooperation of various Japanese scholars, including Prof. Akimitsu Wada of the University of Tokyo, who is committee chairman, Prof. Itaru Watanabe of Keio University in Tokyo, and Prof. Saburo Fukui of Kyoto University.

Promises of support have been obtained from the Government's Science and Technology Agency and Agency of Industrial Science and Technology, and also the Federation of Economic Organizations (Keidanren).

A spokesman of Mitsui Knowledge Industry envisioned continued holding of the symposium as an international authoritative series of such study meetings.

Among the lectures to be invited to the prospective symposium are such famed Western genetic or biological or enzymatic scholars as Dr. Charles Weissmann of the University of Zurich, Dr. J. Schell of the Max Planck-Institut fuer Zuechtungsforschung of West Germany, Epharaim Katchalski, former President of Israel, Dr. Herbert Wayne Boyer of Genentech Inc. and Prof. Walter Gilbert of Harvard University, both of the U.S. Prof. Shosaku Numa of Kyoto University and Ichiro Chibata, chief applied biochemist of Tanabe Seiyaku Co. will be two Japanese lecturers.

A total of 250 researchers from Japanese governmental, academic, and industrial communities are expected to attend for moderate fees.

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SCIENCE AND TECHNOLOGY

TAKENAKA USES COMPUTER TO DESIGN WIRE NET CORE VESSEL FOR REACTORS

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 13

[Text]

An automated computer method of designing and blueprinting the wire netting core of a nuclear reactor housing vessel has been developed by Takenaka Komuten Co. of Osaka.

Its new PS-CONT (prestressed concrete tendon, that is, wire netting core) designing process, is intended chiefly for Japan's future nuclear power reactors of 1.1 million kilowatt or larger class of pressurized water reactor type.

The program reduces the time required for designing such a network of 200 to 300 high-tensility steel wire tendons to only 1/4th of the conventional human labor job to do such designing.

The job has required much time, skill and experience because such a reactor usually has no less than 200 openings for pipings and other devices.

The PS type of concrete to replace steel for big reactor housings has been adopted in advanced Western countries for about a decade past, and is now being first employed in Japan for a new PWR type of 1.16 million KW N-power plant under construction at Tsuruga, Fukui Prefecture.

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SCIENCE AND TECHNOLOGY

HITACHI CHEMICAL ELIMINATES USE OF GOLD IN MANUFACTURE OF IC'S

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 13

[Text]

A chemical for pasting integrated circuits or other chips onto lead wire terminals, without using gold has been commercially developed by Hitachi Chemical Co. of Tokyo.

According to the leading chemical maker, its new product, Epinal 4000, will answer the problem presented by the price of gold for both Japanese and foreign IC manufacturers. Continued hikes in the price of gold have become a serious deterrent to cost-cutting efforts.

In assembling IC units, an IC or other semiconductor chip and a pair of lead frames (lead wire metal terminals) must be bound together with an Au-Si (gold-silicon) eutectic bond.

The new product, a single-solution die-bonding paste of the silver-epoxy resin group, may be similar to other goldless bonds developed by other semiconductor makers.

But all such goldless bonds hitherto available in Japan, chiefly imports, though less expensive than the gold type, were far less reliable in adhesivity, heat conductivity, electric conductivity, or moisture resistance. Their vulnerability to humidity had been their biggest drawback.

Epinal 4000 is not just free from all such troubles, but has proved to be as good or better than the gold type.

Epinal 4000 is to be marketed in Japan for about ¥365,000 a kilogram, only about half the average price for the gold type. Having already started sample domestic sales and exports, the company plans to start mass production in April.

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SCIENCE AND TECHNOLOGY

MICROORGANISM IS USED TO COLLECT SEAWATER URANIUM

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 13

[Text]

A new way of collecting uranium in seawater by either chlorella (green algae) or a species of microorganism, with high efficiency has been developed by a research team of Miyazaki Medical College, of Miyazaki Prefecture.

According to the team led by Prof. Koji Sakaguchi, the method to let such micro-organic living things pick up uranium in seawater is possibly the first attempt in Japan to apply biotechnology to the nuclear energy field.

There had been similar researches in the U.S. and West Germany, respectively utilizing some kind of yeast and some species of chlorophyceae, a type of green algae, but no success in deriving uranium from such media had so far been reported.

The national college team said it used Chlorella regulus, a species of chlorella, and Streptomyces viridochromogenes, a kind of actinomyces (radial bacteria), because of their special character to gather uranium and deposit it on or within their cells.

Just how they collect uranium has yet to be explained, but they seem to have two ways—physical adsorption to their cell surfaces or chemical absorption into their cells through cell membranes.

They discharge their uranium when they are soaked in a 0.1 per cent sodium carbonate water solution.

The team has solved problems of such microorganisms' loss of uranium-gathering capacity and disingegration and melting out of their cells to clog the mesh of a uranium-retrieving device by repeated uses by wrapping them up with a protective polyamide cover.

In the team's latest test, each gram of Chlorella regulus and each gram of Streptomyces viridochromogenes put in an experimental seawater sample containing 10 ppm of uranium respectively picked up 0.159 and 0.312 grams of uranium.

Five continuous rounds of such testing did not cause any loss in the activity of such organisms, indicating their long usability if given such covering.

Commercial application of the method is still a matter of future. The team is looking for still better soil micro-organisms, especially in and around uranium mines.

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SCIENCE AND TECHNOLOGY

SHARP DEVELOPING AMORPHOUS SILICON SOLAR BATTERIES

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 9

[Text]

Sharp Corp. is now developing amorphous silicon solar batteries for commercialization possibly next year.

The Osaka consumer electronics maker is a leading producer of single-crystal silicon solar batteries.

By adding amorphous types, Sharp hopes to strengthen its solar battery lines. It will follow Sanyo Electric Co., which already has been marketing amorphous types.

Sharp's production method features creation of high-frequency plasma discharges in a fluorine gas atmosphere where silicon is placed. It is different from Sanyo's which features a silane gas atmosphere, but similar to that of Energy Conversion Devices Inc. of the U.S.

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SCIENCE AND TECHNOLOGY

ELECTRONIC TYPE MEASURING INSTRUMENTS SALES UP

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 9

[Text]

Exports of low-frequency oscilloscopes, IC testing equipment, impedance measuring instruments and other electronic measuring instruments are very brisk, keeping their makers busy.

Their destinations are mainly industrialized countries in Europe and North America and newly-industrialized countries, such as South Korea.

In these nations, electronics makers are actively installing measuring instruments and testing equipment at their production lines to cope with rising production of semiconductors and other electronic devices.

On the strength of increasing demand overseas, Japanese makers of measuring instruments are trying to further boost exports.

Oscilloscopes are the most export-oriented products. About 20 to 40 per cent of 10/20-megahertz oscilloscopes are sold abroad. Recently, some Southeast Asian makers buy them in a lot, says a spokesman of Kikusui Electric Corp., a leading producer. Industrymen estimate that the total exports of low-frequency oscilloscopes will gain more than 20 per cent this year.

Noteworthy is that 30 megahertz versions, which so far had been sold poorly, are now one of high demand items.

Other measuring instruments also sell well. Yokogawa-Hewlett-Packard Ltd., a joint venture between Yokogawa Electric Works Ltd. and Hewlett-Packard of the U.S., expects its sales to increase 15 per cent this year as its semiconductor testers and impedance measuring instruments are being shipped abroad at a fast pace.

Anritsu Electric Co. saw its exports swelled to ¥3.5 billion in fiscal 1980 mainly because of a ¥2 billion order from American Telephone & Telegraph Co. for measuring instruments for microwave telecommunications facilities. Anritsu expects ¥4 billion in exports this year, even without any AT&T order.

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SCIENCE AND TECHNOLOGY

NTT WILL EASE RULES ON LEASED LINE USE

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 9

[Text]

The Nippon Telegraph & Telephone Public Corp. (NTT) will greatly ease current strict restrictions on the use of leased circuits in the near future.

Possibility is strong that use of leased circuits will be "freed in principle" against the conventional rule of "prohibited in principle."

In late March, the Telecommunications Policy Council, a private advisory body to the Posts & Telecommunications Minister, took up utilization of leased circuits as the "most urgent and important issue."

The council, chaired by Kansai Electric Power Co. Chairman Yoshishige Ashihara, is very likely now to recommend in August that use of leased circuits be decontrolled.

Under the Public Telecommunications Law, NTT monopolizes the domestic telecommunications circuits and imposes strict restrictions on the use of leased circuits. Specifically, anyone who wants to connect "customer-provided equipment" to leased circuits, must get NTT's okay on doing so. Unless they conform with NTT's standard, the application is rejected.

Recently, however, criticism against NTT's monopoly has been mounting as private companies are seeking easier access to leased circuits along with the progress in computer-involving communications technique and so-called office automation.

Upon the council's recommendation, the Ministry will submit a revision bill to the Diet by the end of this year, if all goes smoothly.

In 1971, connection of computers and other equipment to leased circuits was allowed under some condition to facilitate data communications. This can be said the first decontrol.

Under the planned second decontrol, restrictions on usage of leased circuits will be greatly relaxed so as to allow emergence of new industries which will take advantage of computers and leased circuits to the fullest extent.

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SCIENCE AND TECHNOLOGY

SHIPBUILDERS COMPETE IN DEVELOPMENT OF FUEL-EFFICIENT DIESEL ENGINES

Tokyo JAPAN ECONOMIC JOURNAL in English Vol 19 No 949, 7 Apr 81 p 8

[Text]

The recent soaring of bunker oil prices has triggered fierce competition among Japan's major shipbuilders in developing and selling fuel-efficient diesel engines for ships.

The competing builders fall into two groups — one having technological ties with Denmark's Burmeister & Wain's and the other teaming up with Switzerland's Sulzer AG.

Backed by B&W, Hitachi Shipbuilding & Engineering Co. devised a Twin Bank-type diesel engine in 1978, with which the company succeeded in cutting down the rate of fuel consumption per horsepower/hour to the 140-gram level from the previous 150 grams or so.

B&W's follow-up engines, the GFC and GFCA series, greatly helped Mitsui Engineering & Shipbuilding Co. fare well in engine sales. The novel series reduced the consumption rate to 131 grams at the minimum.

In a rollback move, other engine builders belonging to the Sulzer team brought out a model change of the conventional RLA engine and also developed an RLB engine cutting down the fuel rate to 132 grams on a theoretical basis.

Ishikawajima-Harima Heavy Industries Co. has begun a test run of the No. 1 engine of the RLB type. The company said it has already has won more than 10 orders for that engine.

Sumitomo Heavy Industries, Ltd., another Sulzer licensee, said the company has succeeded in reducing the fuel rate to the 120-gram level for the first time in the world in a test imagining operation of an RLB engine by using an RLA engine.

Meanwhile, the B&W group builders have newly unveiled new models, L-GB and L-GBE. The developers say these novel engines can trim the fuel rate to 129 grams for L-GB and 126 grams for L-GBE.

Mitsui E&S is scheduled to complete the No. 1 unit of this type by the end of this year for test run on land.

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