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JPRS L/8760

13 November 1979

Japan Report

(FOUO 32/79)

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JAPAN REPORT

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SCIENCE AND TECHNOLOGY

POLITICAL AND SOCIOLOGICAL

JOURNAL ANALYZES CHANGES IN POST-WAR JAPANESE THINKING

Tokyo ASAHI JANARU in Japanese 17-24 Aug 79 pp 101-107

[Article by Yasumasa Tanaka, Law Professor at Gakushuin University: "How Has the Thinking of Post-War Japanese Changed--Flight from the Post-War Period; Attachment to a Cultural Region--Thought Variations between Generations, Eras"]

[Text] The Homeland--The Resurgence of Tradition, More than a Fad

The results of an unusual poll dealing with "the homeland" were presented in the 8 March edition of YOMIURI SHIMBUN.

Firstly, to what place indeed does "the homeland" refer. The majority of the approximately 2,000 men and women from around the country answered that it was "the place where I was born" (88 percent) or "the place where I was mainly raised" (87 percent).

The first thing that comes to mind upon hearing the word "homeland?" In the first place, most convincingly, is "mountains, rivers, the sea, fields, paddies," and in the second place, "parents." Within "parents" there were different expressions such as "mother" and "mom," but it is stated that "the female parent" was overwhelmingly in the majority. Following this in third place was "friends" and in fourth place "nature." Friends are those of earliest childhood and of the "one of the gang" sort. Within nature the form of expression was of the sort taken over from nursery tales and elementary school songs such as "Yuyake no Yamanami" [the wave of mountains in the sunset, "Tonbo-tori" [catching dragonflies], "Suisha-goya" [a waterwheel cottage] and "Nano-hana Batake" [a field of rape flowers]. Apart from this there were words of pastoral feeling such as "tranquility" and "simplicity" and such as "festival" and "New Years" referring to the ancient customs and manners of Japan. The location of the homeland, it seems, lies also in the heart which is bound to the nature of the place, to people and to customs and manners.

It is surely a natural phenomenon to have a feeling of nostalgia for the place of one's birth and upbringing. However, not all people intend to

return there again. Modern young people are called dry, cool and unenthusiastic. Do these young people, like birds with the instinct to return to their nests, desire again to return to the homeland? We can predict that as a person grows older the feeling for "returning to the homeland" will grow stronger. This is because the reality of old age becomes that much closer, and the thought of the homeland as a place to spend the rest of our days becomes ever stronger. Thus among those in the latter half of their fifties, the "I want to live [in the homeland]" group comprises 28 percent more than the "I don't want to live" group and for those in the early part of their fifties the difference is 26 percent, as the difference between "want to live" and "do not want to live" is progressively decreased. This then can be called a natural progression.

However, in the twenties, for those who we should call the most typically modern of the young moderns, the difference opens up again to 22 percent. This survey does not clearly state why this is so but the reason may be that most of those in their twenties are still unmarried students and young workers in whom the ties to the homeland are comparatively strong.

At present, after one-third of a century has passed since the end of the war, we have made progress in westernizing our society. In both physical build and ways of thinking about things, it seems that the young people, compared to those during the pre-war and wartime periods, seem to have drifted afar from the image of Japanese youth. However, in looking at the strength of this desire to return to the homeland in young men and women in their twenties, we are left thinking that these are, after all, Japanese people raised in Japan. The young people of America and Europe as well, with regard to the importance of the homeland, are in no way inferior to the youth of Japan. However, once leaving the point of origin, the homeland, the question is whether they will really have a desire to return sometime to this point of origin.

Even among Asians themselves, probably the Japanese are a people who would suffer in giving up their homeland. The Chinese have a talent for establishing villages in remote corners of the earth and making of them new homelands. And at present, large numbers of Vietnamese are risking their lives to give up their homeland, choosing a wandering journey across the earth. To these Vietnamese refugees there can be no doubt that there is no longer any reason or any desire to return to the homeland. Japanese who have always been able to have a homeland to go back to appear to be a unique and fortunate people.

Before the first third of the century, for the great number of soldiers and civilians who faced from overseas the most unfortunate possible situation of a defeat in the war, there were parents, wives and children waiting to greet them, and also the rivers and mountains back in the homeland. "To be buried in a foreign country" is, to a Japanese, an unbearably lonely and unfortunate thing. In Japan there are foreign cemeteries here and there, but in foreign countries there are no large Japanese cemeteries.

After the war large numbers of Japanese moved overseas with the intention of settling. However even though they spent their youth in a foreign country, almost all returned to Japan when they became old. For them, Japan in its entirety was the homeland, and that which awaited them in their old age.

In recent years the National Railroad undertook a nation-wide "discover Japan" campaign. This campaign probed the historical roots of Japan and the Japanese, sought an identity and succeeded in mobilizing an incredible number of men and women, young and old, in pilgrimages of Japanese tradition and culture. These journeys of traditional culture pilgrimage are still with us, having apparently succeeded to the quieter, solitary journeys beloved by the generation of post-An An and nonno era.* The reason this cannot be set aside as a simple fad is because if at first there were not a strong concern for searching out roots, a nostalgia for the beauty of Japanese tradition and more than anything else a sensitive spirit filled with a powerful feeling in the bones for the soil on which their ancestors lived, then no such movement or boom would have appeared. Is it not simply that the National Railroad, An An and Nonno and the new travel journalism of the post-An An and Nonno era has in the process brought to awareness an old ethnocentric impulse which was slumbering in young Japanese.

Fig. 1 shows the results of a portion of the survey on "Ways of Regarding Society" undertaken by the Prime Minister's Office in December 1978, directed at 10,000 men and women over 20 years of age. Among answers to "things you are most proud about Japan or the Japanese people" the most frequent was "long history and tradition" (35 percent), next was "beautiful nature" (29 percent), "the diligence and talent of the people" (28 percent), "superior culture and arts" (19 percent), etc. Looking at this again by age divisions, "long history and tradition" was more frequent the older the age level (30 percent for those in their 20s, 40 percent for those in their 60s) and "superior culture and arts" was most common among those of middle age (31 percent for those in their 30s, 29 percent for those in their 40s). "The beauty of nature" was frequent irrespective of age. These trends showed practically no deviation during the past 7 years.

That most Japanese value and are proud of "history and tradition" and "beautiful nature" apparently leads quite naturally into a longing for the homeland.

Recently through the newspapers the enshrining at Yasukuni Shrine of former Prime Minister Tojo and other Class A war criminals was brought to light, and together with the problem of instituting an Era name this was noted as a dangerous trend showing a move to the right. However, is this really a dangerous phenomenon indicating ideologically a shift to the right? I just cannot think that this is so. Rather than considering the essence of

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*After the normalization of Japan-China relationship in 1972.

the 'Era' problem to be the right or wrong of the emperor system, this has, I believe, derived from traditional custom. And the enshrinement of Class-A war criminals in Yasukuni Shrine takes root in a unique Japanese naturalistic religious belief that is surprisingly tolerant of all souls of the deceased returning to the "soil" regardless of the good or evil deeds done during their life time. I may be mistaken. However, considering the especially strong Japanese feeling pointing towards the homeland, it is not altogether without reason.

Conceptions of the Emperor: Composition of Public Opinion Unchanged from Survey of Thirty Years Ago

Over 20 years ago, in the 1 July 1957 issue of SHUKAN ASAHI an extremely interesting article by psychologist Otoya Miyagi entitled "What Do You Think of the Emperor--A Lie Detector Analysis" was published. This article begins with the following account.

"You would likely cower if you came face to face with the emperor." A man with a reputation as a progressive and cultured man, Shimizu Ikutaro, replied this way. "When a student referred to Her Highness Princess Takamatsu as 'Mrs' it gave me a bad feeling. As a man raised during the Meiji Era, I feel a resistance against calling Her Highness Princess Takamatsu 'Mrs.'" Hideyoshi Aono, who has long been a sociologist and known for his liberalism answered in this way. It may be said that for the great majority of Japanese the emperor calls forth strong emotions. Because of feelings of awe and respect people have toward the emperor, I wonder if it is possible, merely upon hearing the word "emperor," not to be deeply moved.

Then professor Miyagi showed photographs of ordinary people, politicians, a stripper, etc., mixed these with a photo of the emperor, to male students at Tokyo Institute of Technology and female students from Ochanomizu University, outstanding progressive men of culture such as historian Goro Hani and chairman of the Japan Teachers Union Kobayashi and proceeded with the experiment with the lie detector, which registered a startled response and the slightest fluctuation in emotion. Firstly, taking in the whole group the one which received the strongest response was "the emperor's respected image," and the one receiving the next strongest response, with the exception of the female students, was the photo of the stripper. Afterwards it appeared that the response of professor Hani, author of "Urban Theory" and other books, who had become the idol of the new left student group during the anti-Security Treaty demonstrations in 1970, was no exception in professor Miyasgi's objective experiment.

It is not necessary to reiterate, but although the lie detector can detect objectively fluctuations of emotion to the most minute degree, it cannot tell the nature of the emotion (for example love or hate). At that point, with respect to the nature of the emotion, an analysis by other methods such as, among others, public opinion surveys becomes necessary.

According to the NHK "Survey of Japanese Thinking" taken in June 1974 throughout the country for all men and women over 16 years of age, we know that countrywide, three sorts of persons coexist with regard to emotions held towards the emperor; there are "respect" (33 percent), "fondness" (20 percent) and "no feeling" (43 percent). Those showing "animosity" were not absent but were very few (2 percent). However, as shown in Fig. 2, in looking at this by age group we see that "respect" increases the older the age (9 percent for those in their teens, 81 percent for those above 70) and in contrast "no feeling" increases the lower the age group (73 percent for teens, 9 percent for those above 70). Furthermore for "fondness" the peak of the curve is reached in the first half of the 40s. In this way feeling towards the emperor is divided into "respect," "fondness" and "no feeling," but we may recognize a great difference between the feeling towards the emperor depending on the generation, the older age level showing "respect," the middle age level "fondness" and the young age level "no feeling."

A survey using the same sort of selection as in the NHK survey was carried out by the Cabinet Publicity Office in 1970. As the sample of those replying was not uniform in a strict sense there can be no comparison, but for reference the following is a comparison with the 1974 NHK survey.

Table 1 Continuation - Abolition of the Emperor System

1946 Survey		1975 Survey	
Abolition of Emperor System	11%	Abolition of Symbolical Emperor System	10%
Continuation of Emperor System	86%	Continuation of Symbolical Emperor System	80%
		Increase Authority of Emperor System	7%

MAINICHI SHIMBUN Survey

Regarding "respect," which increases slightly in the younger age groups, there is no difference against the whole composite, and against this every age group shows a reduction in "fondness" and an increase in "no feeling."

Since the birth of the "symbolic emperor system" a third of a century has passed, but it may now be said that those having a special feeling of reverence are limited almost entirely to the elderly. However, it may not be said that for this reason consequently those with a feeling of "animosity" are especially on the increase. In a word it appears that the composition of public opinion concerning today's emperor can be expressed in a diagram with just the slightest amount of "animosity," a firm approximately one out of three people with solid "respect" and then "fondness" appearing about to be absorbed by "no feeling."

Needless to say, the lifting of the ban on free dialogue with the emperor or imperial household has come about since the end of the war. Throughout the pre-war and war years, and moreover looking back over Japanese history, there was no instance of any question in the thinking of the people with regard to the emperor. As could be expected, the May, 1946 nationwide public opinion survey of men and women over 20 years of age conducted by MAINICHI SHIMBUN on the "emperor system" was a heretofore unprecedented attempt which broke the core of the deified emperor system. Twenty-nine years later in October 1975 MAINICHI SHIMBUN, generally using the same questions used in the first public opinion survey on the "emperor system," held another poll.

In considering the various changes in Japanese society which have occurred in the past more than 30 years, and particularly the changes in the composition of the population, it is extremely natural to expect a substantial difference in these two polls which were carried out over an interval of 29 years. For example, already one in two belongs to the "young people" born after the war and having no experience with war. Of this group those over 16 years old born after the war number 28 million or a quarter of the overall population.

Accordingly, with the prior NHK survey undertaken nation-wide of those over 16 and the 1975 MAINICHI SHIMBUN survey, the percentage held of all respondents with no experience of war lies at the extremely large figure of one out of three. In the matter of response to the "Emperor System" a difference may naturally be expected. Consequently a large difference must appear from the figures of these two surveys. If it does not appear, something is wrong.

The results of Table 1--our hopes for "change"--show clearly that apparently this conjecture is completely mistaken. "Abolition" rather decreases from 11 percent in 1946 to 10 percent in 1975, and "continuation" increases increases from 86 percent in 1946 to 87 percent for "Continuation of the Symbolic Emperor System" and "A More Authoritative System."

To put it another way, public opinion on the abolition or continuation of the emperor system shows a practically unchanged composition of "a great majority of nearly 90 percent supporting the emperor system."

As in the NHK survey, here as well we may certainly observe a difference in generations. For example "support of the emperor" becomes greater with increasing age, with 75 percent for teenagers, 80 percent for those in their 20s and 96 percent for those over 60. On the other hand "Abolition of the Emperor System" is more prevalent the younger the age group, 25 percent for those in their teens, 17 percent for those in their 20s and 1 percent for those over 60. However, this sort of trend did not newly develop; in the survey of 29 years ago as well, 20 percent of the university students were "abolitionists." That is, if those "abolitionists" of

the time had continued on to the present without changing their ideas we must expect that the vertical and horizontal spread of "abolitionists would be far above the 1975 figure of 10 percent. Notwithstanding the overall high increase in those having experience with war, the fact that the percentage of "abolitionists" in the overall populace has remained practically stable during the last 20 years can not be explained except by the supposition that those who were once "abolitionists" for some reason later changed their position to "successionists."

Several years ago in a magazine I read an interesting piece of reporting by Kamimae Junichiro called "I Chiya, Chiyoda Ward," (i.e., the imperial household). In this article, which was subtitled "Positive Research on the Conception of the Emperor in the Japanese Nation," Professor Kamimae presented the views of a number of post-war youths whose "original home" is "I Chiyoda, Chiyoda Ward.

"The emperor is like a navel. You can't get along without it." (company employee, 30 years).

"You see, the emperor is the spiritual homeland of the Japanese. We can rest assured that our original home is there." (company employee, 30 years).

"His Majesty, the Emperor? When I was young, before getting married, I thought it was unnecessary, a waste of taxes. But recently, while watching television, I felt closer to him. Well, I've come to think that we should have it. Perhaps this just means I've become an adult." (housewife, 27 years).

These people are all young people of the time of the anti-Security Treaty demonstrations. This young housewife, approaching 30 years of age, thinking "Does this mean I've come to maturity?" is probably expressing her honest feelings. The perspective may be different from that of Ikutaro Shimizu, who said he would feel small coming before the emperor, or Hideyoshi Aono, who was displeased by the student calling Her Highness Princess Takamatsu "Mrs," but it must mean there is something (a force) working strongly in the Japanese cultural climate which makes people feel one has reached adulthood when he begins to have a warm feeling for the emperor.

Thoughts on Nuclear Power--Support for Nuclear Power Plants Increases; Attenuation of the Bomb Experience

In October of last year "The Nuclear Power and Peace" edited by Professor Naomi's Shono group from Hiroshima Joshi Gakuin University was published. This book is a large-scale report on "A Survey on the State of Thought on Nuclear Power" which was conducted with 11,000 middle school and high school students and their mothers from 1976 to 1978 in the four cities of Hiroshima, Nagasaki, Okayama and Kanazawa. The results of this research present clearly a number of unexpected facts.

Firstly this survey makes it clear that the experience of a nuclear explosion at Hiroshima and Nagasaki has no direct correlation with issues related to the degree of concern over the nuclear problem and with the evaluation of nuclear power. Of more direct bearing in the evaluation of nuclear power is the "political party." For example the lean towards "the Socialist Party is against nuclear power," and conversely, "the Liberal Democratic Party supports nuclear power" is strong.

Table 2 Attitudes Regarding Nuclear Testing
(from The Nuclear Power and Peace by Shono)

	Hiroshima	Nagasaki	Okayama	Nagasaki
Should be completely prohibited	73.3%	68.8%	63.6%	61.5%
Should be allowed for underground test	2.8	3.4	4.2	7.1
Should be allowed for peaceful purposes	23.9	27.7	32.2	31.4

As shown in Table 2, it is natural that those supporting a "ban on all nuclear testing" should be numerous in Hiroshima and Nagasaki but it is nonetheless surprising that even in Hiroshima and Nagasaki 20-30 percent, and in other cities over 30 percent, support "nuclear testing for peaceful purposes."

"PNE--Peaceful Nuclear Explosions" utilize nuclear detonations to blast away mountains, excavate waterways, etc., but no matter what the use, or whether the word "peaceful" is applied or not, beyond any doubt nuclear detonations, upon the fact of the explosion's success, are the equivalent of a successful nuclear experiment. From the time of the PNE success in India in 1974, the various nations of the world have come to recognize the newly created threat of nuclear proliferation. The most zealous proponent of nuclear nonproliferation is the American Government and if they were to learn that "one out of four" to one out of three citizens and children of Hiroshima and Nagasaki support peaceful uses of nuclear energy," not only would they be astounded they would "misunderstand" that the probability is that now Japan like India would begin to set out on the path of nuclear proliferation, leading to the fostering of a great sense of danger.

On the other hand, on March 29 at the Three Mile Island nuclear power station outside of Harrisburg, Pennsylvania in America the largest scale accident to date in a private nuclear reactor occurred, with radiation leaked into the atmosphere. Taking this accident as an opportunity, in various places in the world the anti-nuclear power station movement is becoming active, and on July 4 ASAHI SHIMBUN presented the results of the first public opinion survey held throughout Japan since the Three Mile Island accident.

Firstly, "impression of nuclear power" is "frightening" for 57 percent, "not so" for 39 percent, and overall there is certainly a strong feeling of unease and caution with regard to nuclear power. However, this feeling differs notably with regard to sex and age group, with women in their young twenties being divided roughly in two on "frightening" or "not so," and we recognize a tendency for this uneasiness to become stronger with age. On the other hand for men from their twenties through early thirties the percentage holding "not so" is high, and this is roughly the same percentage as for those in their fifties. Viewed in this way, those feeling most uneasy about nuclear power are primarily women, but for those women above 25, and for those men under 30, those with a feeling of uneasiness is small.

Secondly, with regard to "the push towards the nuclear power plant as a future energy source," 50 percent were in support and opposition was held to 39 percent. Here as well there are differences in age and sex groups. For men in their twenties 70 percent are in support and for men in their thirties and forties 60 percent in support. In other age groups those opposed increase.

Thirdly, with regard to "construction nearby of a nuclear power station," compared to the results on the same question asked in December 1978, those in support have increased from 5 percent to 18 percent and those conversely against have dropped from 7 percent to 69 percent. Here for the first time we seem to be able to view the direct effect the Three Mile Island accident had on the thinking of the Japanese people. That is, though feeling "not so" with regard to any unease and supporting the drive for nuclear power as an energy source, if a nuclear power plant were to come to a nearby locality the opposition increases. This must be an example of "in support of the general, in opposition to the specific."

However, these results show the influence of the results of the Three Mile Island accident are less than expected. Rather we may say that on the whole they hint at a gradual lessening in the rejection and uneasiness directed at nuclear power. And as we saw in the differences in dispersion among the respondents by age and sex, the younger the age group the weaker the sense of uneasiness about nuclear power, and the greater the number of those supporting the nuclear power push.

Next, Table 3, shows the results of a survey taken directly after the Three Mile Island accident (May, 1979) among 180 leaders of various groups (political, bureaucratic, economic, industrial, academic, research agency, critics, mass communications, commercial groups, consumer groups, unions).

These leaders of various groups far transcended the 50 percent in the public opinion survey in ASAHI SHIMBUN, with 86 percent supporting "pushing forward with nuclear energy" and 75 percent opposed to "should postpone nuclear power plant as safety is insufficient." Probably those who supported the latter, but thought they could not say so because of the energy

situation, really did not oppose it. These respondents who took the middle ground are the approximately 10 percent of the whole who supported nuclear power plants.

In any event, as the spread of answers shown in Table 3 clearly shows, among those responding, support for nuclear power plants, enriched and reprocessed uranium and internationalization of enrichment and reprocessing is overwhelmingly in support of the nuclear power push. However, we may see on the other hand a tendency among a section of these leaders--and in the case of politicians, because of the political party to which a locality lays claim--for opinions to differ greatly. The strongest tendency to take a consistent stand against all development of nuclear power, nuclear power generation, enrichment and reprocessing, by group division, is among the leaders of consumer groups and labor unions and, within political parties, the representatives in the Diet of the Japan Socialist Party and the Democratic Socialist Party. We saw that in Professor Shono's survey of the four cities of Hiroshima, Nagasaki, Okayama and Kanazawa that there was no correlation between experiencing an atomic air raid and the assessment of nuclear power and that the cause most directly bearing on an evaluation of nuclear power is the "political party supported." Now, in terms of the survey of the thinking of leaders in various groups, in the same manner we have discovered that the strongest correlation in the overall assessment of nuclear energy is with the political party. This probably shows that the aftereffects of the incident long ago referred to as "the atomic air raid experience" have attenuated to a degree and no longer exert such an influence on our thinking, but that in place of this we have become able to define even more implicitly the heart of our thinking on nuclear power, the sense of political worth and the impact of political parties which from the past to the present has been at the center in our cultivating of relations with modern society.

In looking at question No 9 in Table 3, in the survey on the thinking of the leaders, we see that only 57 percent support the view that "as the emotions of a people who have been bombed act as a brake in Japan there is no danger of proliferation." Here, if we take support as optimism and opposition as pessimism, by group division again, in viewing the cross section of political parties the section most pessimistic with regard to "the emotional brake of the people in a country which has been bombed" are the consumer groups and unions and within political parties, the Socialist and Social Democratic League Diet representatives. Conversely we see that the most optimistic are the Liberal Democratic Party and Democratic Socialist Party Diet representatives. That is, those in reform parties and people in divisions close to them do not believe in the efficacy of the brake of the "Atomic bombing experience" and conversely those believing this are members of the conservative parties.

The framework of our mind is not easily explained. Of late the words "conservatism" and "shift to the right" are being used with frequency but it may be considered that to express our complicated world of thought with these words is much too simple. That which we are thinking about

is attached to a cultural climate, waves of thought moves from left to right by the laws of nature such as age or difference in sex and yet another is influenced by some coincidental occurrence. This article attempts to shed some light on how just a few of these factors work and to illustrate those things which have undergone continuation or transition in postwar Japanese thinking.

Table 3 Ideas of Leaders of various groups on nuclear power

表3 各界の指導者における原子力に対する意見

	(1) 項　　目	反(2)	賛(3)	どちらともいえない(4)
(5)	石油の輸入に対する過度の依存から解放されるために日本は原子力発電をよやすべきである。	9.4	86.1	4.4
(6)	安全性がまだ十分ではないから日本は原子力発電を当分見あわせた方がよい。	75.0	14.4	10.6
(7)	放射性廃棄物処理技術がまだ十分でないから日本は原子力発電を当分見あわせた方がよい。	74.5	13.8	11.7
(8)	核拡散につながるおそれがあるから日本は原子力発電を当分見あわせた方がよい。	85.5	8.9	5.6
(9)	核拡散につながるおそれのあるウラン濃縮は日本国内では行わない方がよい。	72.3	15.6	12.2
(10)	核拡散につながるおそれのある使用済み核燃料の再処理は日本国内では行わない方がよい。	68.4	16.7	15.0
(11)	日本は自らそれに参加して多国間あるいは国際的ウラン濃縮事業の確立につとめるべきである。	7.2	78.9	13.9
(12)	日本は自らそれに参加して使用済み核燃料の多国間あるいは国際的再処理事業の確立につとめるべきである。	6.1	81.2	12.8
(13)	被爆国の国民感情が歯止めとなるから，日本ではウラン濃縮や再処理は行っても核拡散の心配はない。	15.0	57.2	27.8
(14)	核拡散は核時代におけるナショナリズムを反映しており，長期的にはそれを阻止することは不可能である。	23.3	50.0	26.7
(15)	日本には現在25基の発電用原子炉が稼働中であるというのは事実に基づいた正しい認識である。	30.0	35.0	35.0

(注) ゴシック体の数字は70%以上の高いコンセンサスを示す

Key:

(1) Item
(2) Oppose
(3) Support
(4) Cannot Say
(5) To relieve Japan of an over-dependence on oil imports we should increase nuclear power plant.
(6) As safety is not yet sufficient, Japan should postpone building nuclear power plants for awhile.
(7) Technology to handle nuclear radioactive waste is not yet sufficient and Japan should postpone building nuclear power plants for awhile.
(8) As there is danger of nuclear proliferation, Japan should postpone building nuclear power plants for awhile.
(9) As there is danger of proliferation, the reprocessing of spent fuel should not be undertaken in Japan.
(10) As there is danger of proliferation, uranium enrichment should not be undertaken in Japan.
(11) Japan should itself participate with other countries or internationally to work towards the establishment of an enriched uranium industry.
(12) Japan should itself participate with other countries or internationally to work towards the establishment of a reprocessing industry for spent nuclear fuel.
(13) As the emotions of a people who have been bombed act as a brake in Japan there is no danger of proliferation even if enriched uranium and reprocessing is undertaken.
(14) Nuclear proliferation is a reflection of nationalism in the nuclear age, and it is impossible to check it in the long run.
(15) That in Japan there are at present 25 nuclear power reactors operating and this is a correct understanding based on the facts.

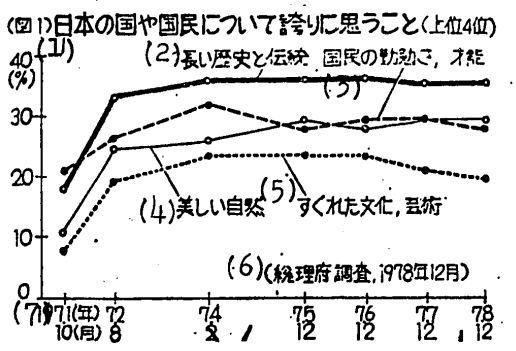

Figure 1

Key:
(1) Fig. 1 Things of which Japan and the Japanese People Are Proud (from 1st to 4th place)
(2) Long tradition and history
(3) Talent and diligence of the people
(4) Beautiful nature
(5) Superior culture and arts
(6) Prime Minister's Office survey, Dec 1978)
(7) 1971 (year) Oct (month)

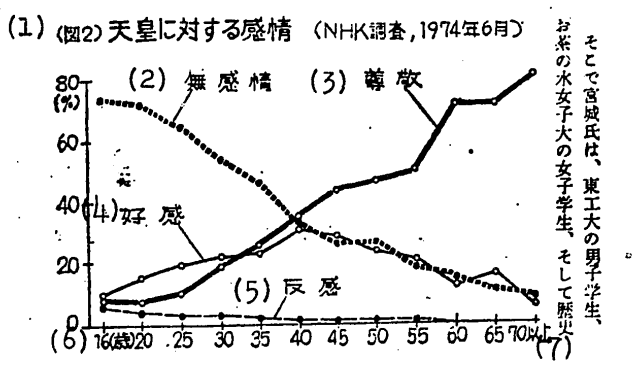

Figure 2

Key:
(1) Fig. 2 Feelings Toward the Emperor (NHK survey, Jun 1974)
(2) No feeling
(3) Respect
(4) Fondness
(5) Antagonism
(6) Age
(7) Above 70

9501
CSO: 4105

POLITICAL AND SOCIOLOGICAL

TEXT OF JCP COMMUNIQUE ON 9TH PLENUM

Tokyo JPS in English 0902 GMT 18 Oct 79 OW

[Text] Tokyo, 18 Oct, JPS--The secretariat of the Japanese Communist Party Central Committee issued a communique on 17 October on the 9th CC Plenum, the full text of which follows:

1. Following the JCP advance in the general election of the house of representatives, the 9th CC Plenum was held for three days from 15 October at party headquarters.

2. The plenum was opened under the chairmanship of Central Committee Chairman Sanzo Nosaka. At the beginning, a silent tribute was given to alternate central committee member Koji Yamamoto, who died on 17 September.

3. On behalf of the presidium, Presidium Chairman Kenji Miyamoto gave greetings and opening speech.

4. On behalf of the presidium, Secretariat Chief Tetsuzo Fuwa proposed that the 15th Party Congress is to be convened on 15 January next year, and the plenum unanimously agreed to his proposal.

5. The presidium submitted a 9th CC Plenum resolution (draft) "general election results and immediate tasks," proposing to create "months for implementing public pledges, making known to the public party policies, and expanding the party strength," for success of the party congress and for victory in the house of councillors election, and to immediately take up those tasks.

6. On behalf of the presidium, election policy bureau director Kichiro Akeda gave a report on "reviews and lessons of the general election battle, and immediate tasks for the house of councillors election."

7. The plenum made lively discussions on the above items, and 50 CC members took the floor during the three day discussion. All voiced welcome to the convocation of the 15th Party Congress of the JCP, and the creation

of the "months", and expressed determination to tackle the "months" immediately, and to do their utmost to win victory in the upper house election. On the reviews and lessons of the general election battle, it was confirmed with deep emotion that since the defeat in the previous general election, three years' party activities that all party membership had carried out with the maintenance of the basic party line, and strenuous struggle with a great aspiration over three years since, provides the foundation of the great advance at this time. [Sentence as received] struggles in top priority constituencies for winning assured victory were vividly reported, and the struggle in constituencies where the party must increase its votes--the struggle which held the double task of assisting the party forces in top priority constituencies.

On the actions in preparation for the house of councillors election, which will be due in eight months from now, election policy bureau director Akeda proposed concrete tasks on the third day of the plenum, on behalf of the standing presidium, and intensive discussions took place on the proposal.

Following the discussions, Presidium Chairman Miyamoto gave a concluding remark on behalf of the presidium. When it was put to a vote, the plenum unanimously approved the opening statement of Chairman Miyamoto, election policy bureau director Akeda's report and concrete tasks for the upper house election, and Chairman Miyamoto's concluding remarks. The plenum also unanimously adopted the 9th CC Plenum resolution.

8. The plenum newly elected Comrade Zenmei Matsumoto member of the presidium.

The plenum heard that the presidium was decided to appointed comrade Toshio Sasaki chairman of the Central Organ Editors Commission and director of AKAHATA editorial board, and comrade Tadao Nirasawa devoting entirely to the task of propaganda bureau director.

CSO: 4120

POLITICAL AND SOCIOLOGICAL

BRIEFS

ATTITUDE TOWARD PLO--Foreign Ministry sources said Thursday the government will promote dialog with the Palestine Liberation Organization and be ready to offer facilities to PLO leader Yassir 'Arafat if he visits Japan. The positive attitude toward the PLO followed an appeal made by United Arab Emirates Oil Minister Mani' Sa'id al-Utaybah during his meeting with Prime Minister Ohira Wednesday. The government has not granted diplomatic privileges to the PLO Tokyo office which was opened in February 1977. The only high-level contact between the government and the PLO came when the PLO's foreign affairs spokesman Faruq Qaddumi met the foreign minister in Tokyo in 1976, the sources said. [Text] [OW241159 Tokyo THE DAILY YOMIURI in English 20 Oct 79 p 1 OW]

JCP REJECTS JSP'S PROPOSAL--Tokyo, Oct 27, JPS--The Japanese Communist Party on October 26 rejected a Japan Socialist Party proposal for JCP's cooperation in a possible runoff election to designate the premiership in the special Diet session. The JSP asked the JCP to cast votes for Ichio Asukata, chairman of the JSP. This proposal was made in a meeting between JSP General Secretary Shinnen Tagaya and others who called at JCP headquarters, and JCP Standing Presidium member and Vice Chief of the Secretariat Tadato Miyamoto and others. Miyamoto said, "JCP attitude toward this issue is very clear. As has been announced by JCP Vice Chairman Koichiro Ueda in an NHK TV discussion aired on October 21, the issue of the designation to the premiership relates to the political power concept. The JSP, without favoring any consultation on program or policies between the two parties, proposes merely a cooperation in a runoff election. This is not logical and is seriously irresponsible to the people. The Communist Party has proposed, during its election campaign, the holding of constructive discussions on the issue of a progressive unity. But no consultations have been made between the two parties. There is no other way but to reject the JSP proposal." [Text] [OW271001 Tokyo JPS in English 0904 GMT 27 Oct 79 OW]

CSO: 4120

ECONOMIC

JETRO: SINO-JAPAN TRADE REACHES RECORD HIGH

OW290114 Tokyo THE JAPAN TIMES in English 27 Oct 79 p 5 OW

[Text] Customs-cleared Sino-Japanese trade in January-September hit a record high for the period of $4.92 billion, up 44.6 percent from the same period a year before, the Japan External Trade Organization (Jetro) announced Friday.

The semigovernmental trade promoting agency said Japanese exports totaled $2.81 billion, up 40.8 percent, and imports from China, $2.11 billion, up 50.1 percent.

The advance was ascribed mainly to price increases for plants, steels and crude oil, it said.

Jetro said trade in the period under review almost equaled the 1978 value of $5.08 billion--$3.05 billion in exports and $2.03 billion in imports.

It said Japan suffered deficits in August and September of $101.10 million and $7.43 million, respectively. Japan's excess sales to China shrank to $700 million from $766 million in the first half of 1979, it said.

Japan's deficits in these months are attributable to slumping sales of steels and plants, a slump in commercial talks and contracts and China's economic readjustment policy in February.

Imports were firm with crude oil, foodstuffs, clothing and sundries in the vanguard.

Jetro forecast that 1979 two-way trade would reach $77.2 billion, up 40 percent over the previous year. It said exports would reach $4.1-4.2 billion, ahead 35-40 percent, and imports $2.9-3 billion, up 45-50 percent.

Jetro said that in the January-September export sector, steels, accounting for 52 percent of export share, rose 36 percent to $1,435 million, plants and equipment rose 89 percent to $747 million, and chemical fertilizer levelled off. In terms of tons, steels increased to 3.84 million tons from 3.79 million tons.

In the import sector, oil increased by 31.8 percent to $706 million due to three price markups--$21.80 per barrel in July from $16.96 in May and $16.30 in April, in terms of tons, oil increased to 5.5 million tons from 5.2 million tons.

Textiles also increased by 48 percent to $535 million and traditional Chinese products including soybeans, peanuts and chestnuts kept firm.

Coking coal, whose imports started in August last year, reached $27 million and 544,000 tons, accounting for 1.3 percent of total imports.

CSO: 4120

ECONOMIC

JAPANESE AGENCY OFFICIAL ON 'SPOT CRUDE OIL' IMPORTS

OW260541 Tokyo THE JAPAN TIMES in English 25 Oct 79 p 14 OW

[Text] More than a tenth of the crude oil now being shipped on tankers to Japan is so-called "spot oil," or crude sold on the spot markets at prices far higher than the ceiling prices set by the oil producing countries, it was disclosed Wednesday.

Such "spot crude oil" usually accounts for about 5 to 6 percent of Japan's total crude imports.

A ranking official of the Natural Resources and Energy Agency said that it would be impossible for Japan's oil importers to avoid buying crude on the spot markets so as to hold the crude supply shortage to a minimum.

Presently, crude prices on spot markets are $38 per barrel for standard grade crude Arabian light and more than $40 for some grades from Africa.

The agency official refused to disclose at what prices Japan's oil importers have been buying such spot oil. He only said that he believed Japan's oil importers are buying spot crude "in a manner so as not to disrupt the international oil market badly."

The agency, affiliated with the International Trade and Industry Ministry (MITI), also announced a projection that Japan's crude imports for the third quarter of fiscal 1979, or between October and December, would be slightly less than 70 million kiloliters.

The projected quarterly figure is about 4 million kiloliters short of the original government target. Japan's crude imports for fiscal 1979 ending next March are estimated to finish some 8 million kiloliters short of the yearly target.

An agency official said however, that the government would use part of the crude stockpiles to make up for the projected deficiency. As a result, there will be no serious shortage in the supply of key oil products including home-heating oil in the coming winter, he added.

CSO: 4120

ECONOMIC

TOYOTA CHAIRMAN INTERVIEWED ON AUTO INDUSTRY PROSPECTS

Tokyo NIKKEI BUSINESS in Japanese 10 Sep 79 pp 20-23

[Interview with Masaya Hanai, chairman, Toyota Motor, by (Katsuyuki) Aogi, chief editor, NIKKEI BUSINESS; date and place of interview not given]

[Text] Standing aloof from GM and Ford Motor's feverish efforts to establish overseas production bases, Masaya Hanai, chairman of Toyota Motor Company, asserts, "When we consider worker quality, we cannot produce overseas because that is tied to a lowering of product quality." He plans to counter-attack with "a production system that yields a profit even at 70 percent of operation." Furthermore, he discloses a unique Toyota philosophy: "Toyota's success today is rooted in the simple and bold earth of Mikawa [former name of a part of Aichi Prefecture]." (The interviewer is Katsuyuki Aogi, chief editor of this magazine.)

[Question] Recently there has been a lot of talk of Chrysler's serious slide into a financial crisis in the United States. What do you think is the cause of this?

[Answer] Yes, first of all, it's the fuel economy measure being pursued by the president. The one that requires that [cars get] 27.5 miles (about 40 kilometers) per gallon (about 3.8 liters) by 1985. GM began to build small model cars promptly, and Ford is working full speed on them now. But Chrysler has not been doing so, nothing but larger model cars. And suddenly the larger models have stopped selling because of fuel costs. Up to now [Chrysler] has been flying at a low altitude [economically speaking] and with the demand trend going like it is, you can't expect anything else, in my opinion.

[Question] The GM chairman seems to be taking the position that he doesn't want the government to subsidize them directly with relief funds....

[Answer] He may be saying that, but at heart, I wonder if he doesn't want them to come up with something. Since GM already has a 60 percent share [of the market], they'll be in trouble if they increase their share any more than this. Right now Chrysler's share is 7 to 8 percent. If two-thirds of this goes to GM, they're going to run up against the anti-trust laws, you see.

[Question] Even if help is extended in some form or another, what with the burden of developing small-model cars and other things, Chrysler isn't going to be able to catch its breath, is it?

[Answer] That's right. If you look at the history of the U.S. auto industry, before World War II, there were apparently around 30 American auto manufacturers, but these gradually filtered down. But in the filtering down process, the unsuccessful companies inevitably merged with one another. Then they would fail again. GM has been involved in almost no mergers since World War II. Finally the "Big Five" emerged in the industry, then the "Big Three," and now it's become the "Big Two."

This means the automobile industry is the kind of business which needs mass-production and mass-sales. It doesn't work to follow the [usually] sound policy of cutting down volume and raising the profit margin, so it eventually ends up like this.

In Japan Everyone Rallies Around to Prevent a Collapse

[Question] On the other hand, Japan has 11 companies and all are doing well. How do you account for this?

[Answer] It's really amazing, isn't it? But then in Japan there are many "support rods." For example, in western Japan Sumitomo (bank) became a giant support rod, didn't it? With this kind of help, companies never fail. Furthermore, if they did go bankrupt, the economy of a region would be greatly affected, so everyone rallies around to keep [a company] from failing. What's more, if the worst happens, there are some that don't fold even if they are kicked and trampled upon because of that strange system of the regenerated company. It's really incongruous.

When they become regenerated, it's no wonder they're strong. Because they don't have to pay interest. For a Japanese company with a low ratio of owned capital to get by without paying any interest is an extraordinary advantage. That's most unfair competition, in my opinion....

[Question] Toyota has formed affiliations with Hino and Daihatsu, but hasn't merged or taken over any foreign operations. Is this basic strategy?

[Answer] Affiliations are more expedient than mergers. If you merge, there's the problem of future market share because of the anti-trust laws, and the problem of making use of the personnel talent is very difficult, as Nissan has found out. It takes 5 or 10 years. Rather than that, it's better to let [the other company] have autonomous operations. Neither company puts out much capital. We don't even hold 10 percent of the stock. And everything is likely to remain the same as it was before.

Overseas too, taking over and using existing facilities is hard; if you're going to go at all, do it yourself on a small scale. In the first place if [a company] has reached the point where it is taken over, it means that there's been defective management, and it's hard for us to just step in and start running it at that point.

[Question] So, even if Chrysler were to ask you to come to its aid....

[Answer] That wouldn't work. That would be no good. (Laughs) Even with (assets) of 300 billion yen, compared to GM and Ford, we're miniscule.

[Question] Toyota's financial condition has been so good that you're known as the "Toyota Bank," but how do you stack up next to GM and Ford?

[Answer] There's no comparison. GM is like a sumo grand champion strutting out across the ring; we're just darting about. We haven't even climbed into the ring yet. If you look at our net worth, we've reached nearly the same level, but if you look at volume, we have one-fifth or one-sixth. That's how different we are.

[Question] But your already invested assets amount to over 300 billion yen, don't they? With this talk of more and more, will you continue to expand?

[Answer] That's what everybody says, but it would be a disaster if a big wave of depression or something were to hit us. Even with 300 billion yen, converted that's about 1.5 billion dollars, right? That's miniscule compared to GM or Ford.

[Question] To be sure, according to a study by BUSINESS WEEK, one of them has spent $1.6 billion on research and development, and the other $1.4 billion, haven't they?

[Answer] That's right. [Ours] doesn't amount to much. Of course, if you reckon by Japanese standards, our figures are impressive. We're talking about an international commodity, so we don't even dream of such a thing. Above all, as long as our exports to America bear such considerable weight, we just have to look in that direction instead of keeping our eyes on the domstic [market].

Even if we wanted to become [as big as] GM we couldn't, because if we were hit by that big wave it would be disastrous. If we failed with one model, like everyone says, the shock would be so great, it's hard to foresee what would happen. For that reason, we have to create very soon the conditions under which we could make a profit at 80 percent of operation, or should the worst happen, even at 70 percent of operation. In other words, I'm saying that we have to work towards a cost reduction or we will lose our competitive strength.

We Mustn't Lose Out to the U.S., The Johnny-Come-Lately in Small Cars

[Question] From now on, won't exports to the leading nation markets become more difficult with the worsening of Chrysler's financial problems?

[Answer] Over there it doesn't concern them at all. That's because now, even though consumers want small cars, American makers are not supplying them, so Japanese cars are selling. And because of the fuel economy problem, consumers are not refusing to buy cars just because they are Japanese. But if GM and Ford were to start producing small cars in earnest, then the Japanese cars might stop selling.

[Question] Then, what do you think about the price and performance of GM's X-cars?

[Answer] Yes, they look very good. There seem to be many features that are technically "what you'd expect." I noticed that while they have FF (front-wheel drive), they've taken the bugs out of it, and they've made advances in making the cars lighter.

Since they're even boasting of their X-cars and J-cars as import fighters, if we're beat back into the Pacific, the next thing you know they'll be coming ashore in Japan. Europe was the leader in small cars, then came Japan; the United States was the Johnny-come-lately in developing them. To be outdone by America now would be terrible. Right now what with the fuel problem and other things, we're in the lead, but we're urging [Japan] to be assiduous from now on.

If Nissan and We Are Secure (The Other Nine Automakers) Will Probably be Secure Too

[Question] They talk about a world war in small cars. Do you feel any threat in the strategies in the "Big Two?"

[Answer] From the prices of the new GM X-cars I feel they're surely knock-down-and-chase prices. I think there's no doubt their profit margin is exceedingly slim, since there must have been quite a lot spent in development costs. I think this is what they commonly call the Yankee spirit, the spirit of the covered wagon heading from east to west, even now continuing to pulsate. "The nerve of these Japanese cars, this Toyota. Are we going to sit back and take this?"

GM and the others at one time headed for Europe and made an invasion there, more or less swept over them. During this time Japan strengthened its guard. Then [GM] spotted a small gap and made an affiliation with Isuzu, and began to build small model cars. This means they've already crossed west to the Pacific, and before long they'll reach Southeast Asia. That's a mighty strong challenge for Ford, I think.

[Question] So, you've said that up to now, there are 11 domestic companies, but considering what happened to Isuzu earlier, isn't Isuzu definitely being taken over by foreign capital?

[Answer] No. I wouldn't go so far as to say that, but I'd like to see even Isuzu hold on firmly to their independent spirit. On the question as to whether even with 11 companies all are healthy, if Nissan and Toyota are secure, then the others are probably secure too. But if either of the two big companies falters, there'll be chaos. I think it's important for Nissan and for us to be on constant watch for intrusions, whether for 10 years or 20 years, so that we will not founder. Because we're now up among the foothills of the key industries.

[Question] How does Toyota compare to Western European small cars?

[Answer] Over there names sell, but they don't produce the volume we do. And the "quality" of their workers is different. The same is true in the United States. So on the question of making inroads overseas, from the standpoint of worker quality, even if we were to build in Europe and America, we wouldn't be able to produce a high quality car, so we can't very well make a move there, can we? Consequently the worry about import restrictions, and so forth, comes up, but I doubt that, being the United States, they'll put a stop to free trade. The automobile great grand champion GM wouldn't think of uttering such a heretical thought.

Through Peaks and Valleys, We Keep Wages Even; That's What we Call the Common Destiny System

[Question] In Japan labor unions are moderate and extremely cooperative with management I think. From the standpoint of management, what do you consider to be their merits or benefits to society?

[Answer] We think of ourselves as coexisting and co-prospering with the labor unions. Therefore, when profits are up, if they ask us to give them their share all at once, we don't. Do we cut back [wages] when times are bad? No, we do not. It's known as "peak and valley logic." That means through peaks and valleys we try to keep wages even, whether it be increases in the wage base of bonuses. That's what we refer to as the common destiny system.

[Question] Only, when it comes to an annual net profit of over 1 billion yen, don't the demands get stronger?

[Answer] No, the union is extremely understanding, they're extremely cooperative with us. Why are they so cooperative? The labor union looks at other companies. Then when they see how much better we are they don't make unreasonable demands. They express themselves like "the other companies

have given their employees thus and so; we've worked hard, so maybe you could give us a little more?" Since that small amount is not a problem, we say, "we'll give it to you," and they settle down.

That's because in 1949 and 1950 there was quite a lot of labor strife. There were strikes and we went through some bitter experiences and came mutually to the realization that we should not do such a foolish thing again. When the people who went through that experience are all gone we'll have a little trouble. We're trying to instill their spirit in the next generations, though.

The Establishment of the "Toyota Institute of Technology" Is in No Way a Tax Dodge

[Question] At the end of July you filed to establish a Toyota Institute of Technology. What is your purpose in doing this? Since your company is making extremely high profits, there's the cynical viewpoint that, to avoid paying taxes....

[Answer] We're not thinking any such cynical thing. When you consider that today Japan's industrial strength and economic strength have progressed this far thanks to education and technological strength, we feel acutely the need to pursue the study of technology even more deeply.

It's not just the college-educated engineering group; the quality of the high school graduate workers is high too. That's why we build good cars. The engineers are the pitchers who throw out the blueprints and designs, but those who do the catching, the workers, also have impressive qualifications. This is all thanks to education. So it's in no way anything like a tax dodge, it's what I think is the mission of big industries, to return our profits to society, to cultivate peoples' talents.

[Question] Only, since you've already created a foundation, you must have some other reason to go as far as building a university.

[Answer] Yes, it's a different concept. With people who graduate from high school and go directly to college, there's no problem. But I have the goal of giving the others, those who've entered as workers, the opportunity to continue their education. So we'd like to positively give people who've had 2 to 3 years of work experience the chance to take the entrance examination. We'll receive applications from throughout Japan, but since there aren't that many really outstanding people, it will be an extremely compact class of 80 persons per year.

Not only that, but there'll be a month of practical experience each during the summer and spring vacations. That's with pay. So we have three things in one: study, practical experience, and research. As for research, there'll

be research at the Institute, and they will also participate at our Toyota Central Research Center. The practical experience will take place at Toyota Motor Company, Mitsubishi Heavy Industries, and Nippon Steel Corporation, among others.

I Believe the Secret to the Shape of Toyota Today Lies in the Climate of Mikawa

[Question] There are many books out about Toyota. What are your impressions of them?

[Answer] For the most part, I just look through the table of contents and leave it at that. Because the contents are all the same. And yet none of them touches the essence of our spirit. I sometimes speak of our ties with the climate of Mikawa in explaining how Toyota reached its present form. The spirit of the Mikawa people was, like that of Tokugawa Ieyasu, a simplicity which eschewed extravagance, and a constant self-study. Even though we've grown now to some 40,000 employees, this has been passed down. It comes out even in our meetings with the labor union; we don't fight but we prosper together in this way.

What's more, during the Tokugawa era, not one Mikawa samurai ever became a daimyo [feudal lord]. They were all content with the rank of hatamoto [a direct vassal of the shotgun]. I believe that's the kind of self-sacrificing spirit that's Mikawa.

[Question] How is this simple and bold Mikawa spirit connected to the operation of Toyota?

[Answer] In Mikawa, their method of operating was different from that of the Owari [former name of Nagoya] merchant and different too from the Naniwa [former name of Osaka] code of commerce. The Owari [merchant] even if he had 10 coins would likely use only 5 of them. Therefore he could not expand at all. With us, we have at times invested 100 out of 100. We try to balance both offensive and defensive. At any rate, borrowing is no good, so this means shifting over as quickly as possible to owned capital and seizing the opportunity to utilize it to expand our facilities. Over the past 10 years we've been doing so more and more.

No matter how much we make predictions about demand, there's no way we can hit it right on the nose. Because there's always somewhat of a gamble. But if we are using owned capital, if things go wrong, there's no damage to the company. That's why you have to constantly consider the offensive at the same time as the defensive. The reason for Toyota's [position] today may be that we have taken the initiative over Nissan for the past year or year and a half.

[Biographical Sketch]

Masaya Hanai, born in August 1912 in Otowa-cho, Hoi-gun, Aichi Prefecture, 67 years old. Upon graduation from Kobe Commercial University (now Kobe University) in 1938, he joined the Toyota Motor Company. He was in charge of accounting during a difficult period, taking an active interest in financial management, then climbed the ladder, becoming a director in 1959, an executive director in 1964, a managing director in 1970 and vice-chairman in 1975; since September 1978 he has been chairman. As a "protege" of advisor Taizo Ishida, from whom he received his training, his sense of "defend your own castle yourself" is particularly strong. Perhaps because of this he expresses strong opinions about iron and steel and other industries. His hobbies are listed as golf and the shakuhachi [bamboo flute] but, he says, "in fact, my work is [my hobby]." Ever since his difficult experience in accounting, he has been proficient in accumulating capital, and the opinion has been voiced that "his wealth is the greatest in Toyota, surpassing even that of company president Eiji Toyota."

9010
CSO: 4105

ECONOMIC

ASSOCIATION ESTIMATES GROSS COST OF SUNSHINE PROJECT

Tokyo NIHON KOGYO SHIMBUN in Japanese 26 Sep 79 p 1

[Article: "20 Trillion Yen by 1990, Gross Demand of Sunshine Project, Japan Society of Industrial Machinery Manufacturers"]

[Text] With the aim of developing alternate energy sources to oil, the government is promoting the Sunshine Plan as a national project. The question was raised as to how large the gross demand would be, assuming that 1990 marked the end of one project phase, and the reply given by the Japan Society of Industrial Machinery Manufacturers [JSIMM] (president, Gakuji Moriya) was that, combining direct and indirect demands, the projected sum was 20 trillion yen. This survey was conducted by the JSIMM, at the request of the Ministry of International Trade [MITI] and Industry, which needed to grasp the investment scope and to define the role of the new energy industry from productivity and employment standpoints, in order to push forward the Sunshine Project. The JSIMM judged that the demand inducement effect of the new energy enterprise was greater than anticipated and has decided to request the various industrial circles to reconsider their programs of action.

To encourage the development of energy sources to replace oil, the MITI started the Sunshine Project in 1974 and by 1979, had invested a total of 37.55 billion yen. The project is targeted to make fully operational the four alternate energy sources of solar heat, geothermal heat, coal and hydrogen. From the new energy sources, the MITI aims to supply, in 1990, the equivalent of 38.3 million kiloliters of oil. In 1990, this energy amount would be 5 percent of the entire supply.

The JSIMM had tested out the inducement effect on industrial circles on the basis of the "approved project plans." The plans call for the new energy supply to be diffused at the following rate: solar heat to provide 6 million homes with hot water, 500,000 homes with hot water for heating, and 10 units of 10,000 kw solar power generation; and, geothermal heat to provide eight units of 250,000 kw deep underground heat power generation and 21 units of 50,000 kw hot water power generation. For

investments in new utilization of coal, 140 billion yen would be set aside for liquefaction and 130 billion yen for calorie gasification. This expansion rate appears quite conservative, in numerical value, when the new energy development phase is being projected as far ahead as the year 1990, but calculations based on this rate indicate that the direct demand ratio for commercialized investment is expected to reach 8 trillion 762 billion yen. Furthermore, since this investment amount is expected to have the production diffusion effect of approximately 2.3 times, the cumulative market amount, in other words, the total demand is forecast at 20,349.7 billion yen.

The JSIMM conducted the survey at the request of the MITI to determine the industrial role of new energy enterprises. Calculations of the cumulative investment amount were made for the first time, however, and the JSIMM claims that, "it was surprised that the demand far exceeded expectations, particularly because the market scale for the year of 1990 (gross demand) reached 3.5 trillion yen." Since there is a possibility that the demand might increase even more, depending on changes in the oil situation, the JSIMM is considering new steps to cope with the new energy problem, stating that "to meet the increasing demand, the industrial set-up must be strengthened."

Table 1. Outline of Diffusion Effect

	Cumulative Demand				Annual Average Demand	Energy Supply Amount (Million KL of oil equivalents)
	Direct Demand	Indirect Demand	Total Demand	Inducement Index		
Solar	5.5 trillion yen	7.3 trillion yen	12.8 trillion yen	2.3	2.0 trillion yen	630
Geothermal	1.5 "	2.1 "	3.6 "	2.4	0.7 "	800
Coal	1.8 "	2.2 "	4.0 "	2.2	0.8 "	2,400
Total	8.8 "	11.6 "	20.4 "	2.3	3.5 "	38.3

ECONOMIC

BRIEFS

IRON PLANT TO TAIWAN--Chugai Ro Kogyo, an Osaka-based furnace maker, has received a formal order from the Kaohsiung iron works of Taiwan for iron-making plant equipment, including two Blooms heating furnaces for the hot rolling shop, which amounts to a total of 8.2 billion yen. The deal is linked with the Kaohsiung iron works' phase I expansion project, designed to increase its annual capacity from the present 1.5 million tons to 3.25 million tons. The equipment also includes 52 coil annealing furnaces with an annual capacity of 730,000 tons, and a coil cooled antirust mechanism with an annual capacity of 730,000 tons. [Tokyo NIHON KEIZAI SHIMBUN in Japanese 16 Oct 79 Morning Edition p 8 OW]

POWERPLANT TO KENYA--A group of three Mitsubishi companies--the Mitsubishi Heavy Industries, the Mitsubishi Electric Corporation and the Mitsubishi Corporation--on 15 October announced the receipt of an order from the Kenya Power Company (KPCL) for an (Olkaria) geothermal powerplant with an output of 15,000 kilowatts at a cost of 2.5 billion yen. Mitsubishi Heavy Industries will deliver a geothermal generating turbine and the Mitsubishi Electric Corporation a generator in June 1981, to the first geothermal powerplant in the African continent. [Tokyo NIHON KEIZAI SHIMBUN in Japanese 16 Oct 79 Morning Edition p 8 OW]

TRADE LEADER TO KAMPUCHEA--According to information reaching the Japan-Kampuchea Trade Association on 26 October, Koshiro Iwai, chairman of the association's board of directors, who is currently visiting Hanoi, has officially been invited by the People's Republic of Kampuchea (the Heng Samrin regime) to visit Phnom Penh. He will make the visit in late November or early December for consultations with Foreign Trade Minister Chan Ven [title as published] and other government leaders on reopening Japan-Kampuchea trade. Japan does not recognize the Heng Samrin regime. As a result, there has been little private-level contact, not to mention contact with the Heng Samrin regime. Therefore, if Iwai's visit to Phnom Penh is to open a trade route, it will have a major bearing not only on the economic relationship between Japan and Kampuchea but also on the international political arean. Meanwhile, the Foreign Ministry is taking a wait-and-see attitude toward Iwai's forthcoming negotiations with the Heng Samrin regime, on grounds that the Japanese Government is in no position to block his entry

into Kampuchea as a private person, and that as in the case with the DPRK, Japan is trading on a private basis with countries with which it has no diplomatic relations. Explaining the ministry's position, a Foreign Ministry source has said: "The ministry already has the information regarding Mr Iwai's planned visit to Kampuchea. However, simply because the government is taking a wait-and-see attitude toward the visit does not mean that it is changing its policy on recognizing the Pol Pot government." [Excerpts] [OW290440 Tokyo NIHON KEIZAI SHIMBUN in Japanese 27 Oct 79 Morning Edition p 4 OW]

OCT-DEC OIL SUPPLY--The government Wednesday said there is no anxiety about the oil supply for domestic needs during the October-December period, but the assurance was coupled with a partial release of the nation's oil stockpile. The Ministry of International Trade and Industry's Natural Resources and Energy Agency based the prediction of the assured oil supply for the three months upon the crude oil purchase estimate, as of Oct. 20, released the same day. The estimate, announced later than usual due to the recent murky oil picture, indicated that Japan will obtain 69.9 million kiloliters of oil during the fourth quarter of this year. The estimated volume shows that Japan will be able to meet the three months' oil demand unless an oil panic and consumers' overreaction to the "oil crunch" occur, the agency said. A top official of the agency said that spot oil in free markets accounts for about 11 percent of the announced volume. The percentage contrasts sharply with a 5-6 percent in the share of oil import during the first half of this fiscal year. [Text] [OW271032 Tokyo MAINICHI DAILY NEWS in English 26 Oct 79 p 1 OW]

CSO: 4105

SCIENCE AND TECHNOLOGY

MITI TO START 4-YEAR JOSEPHSON JUNCTION R & D PROJECT

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 13 Aug 79 p 5

[Text] On 13 August, the Ministry of International Trade and Industry [MITI] announced its intention to subsidize research and development of the Josephson element, an unexplored element for computers, in accordance with the four-year plan starting from JFY 1980. The subsidy is the core of the Future Leading Industry Nature and Consolidation policy, which is a large pillar of the JFY 1980 new policies. The Josephson element utilizes ultra-conduction, which appears when metals are cooled to ultra low temperature, as a logical element and a memory element. If this epochal element is installed for service a computer, it is possible to house a function several tens of times more than an existing supersize computer in a space of only 8 x 10 x 8. U.S. computer makers led by IBM have been actively involved in research and development of the element since earlier days, whereas in Japan, development of the actual element in particular aside from theoretical studies, lags behind for the time being, although the Musashino Electrical Communication Laboratory of Nippon Telegraph & Telephone Public Corporation and the Electrotechnical Laboratory of the Agency of Industrial Science and Technology are engaged in this particular research and development. In order to improve this situation, the MITI, as a first tentative measure, intends to establish fundamental technology such as (1) materials for the element, (2) circuit design, (3) packaging technology and (4) cooling technology by granting domestic makers a four-year, total 1.4 billion yen research and development aid (aid rate 50 percent). For JFY 1984 and thereafter the MITI anticipates a long-term plan as a second step to wrestle with the development of the element by nominating it as a Large Project of the Agency of Industrial Science and Technology.

In accordance with the four-year plan of 1975-1979, the MITI is engaged in research and development of a VLSI as a logic element of computers and has granted a total sum of approximately 30 billion yen to the domestic makers as a subsidy. This VLSI is the extension of the progress of the conventional integrated circuits, whereas the Josephson element is characterized by the use of a totally different principle called super conduction. The

leader in computers, IBM, became actively involved in developing this element before most of the other makers, and has already presented various research results. Meanwhile, Japanese involvement is in fact lagging behind compared to the speed of the research carried out by American makers, led by IBM, although domestic makers such as Fujitsu, Hitachi, and Nippon Electric are working on it besides the government research institutes.

The actual commercialization of the Josephson computer is expected to be realized 10 years later or so, but this computer is assumed to bring revolutionary changes compared to the conventional computers in various aspects including calculation speed, miniturization and electricity consumption.

To cope with the situation, the MITI decided on a development aid program starting from 1975 for the domestic makers as an unexplored innovative technology research and development task based upon the Important Technology Research and Development Subsidy System of the Agency of the Industrial Science and Technology, as they regard it important that this Josephson element is extensively involved in the progress of the future electronics industry since it is applicable not only to computers but also to machinery and equipment and industrial instrumentation.

For Josephson computers, it is essential that both logic and memory elements shall be Josephson elements. However, for the time being MITI is orientating its policy to develop the Josephson logic element as an unexplored logic element at full speed.

The following are the actual developmental themes nominated: research of metal materials which generate super conduction phenomena, design of circuits, packaging technology to incorporate the element into a computer and cooling technology to cope with the need to cool the Josephson element down to the vicinity of absolute zero degrees (minus 273.15^{0}C) with use of liquid helium. Especially, in regard to the metal materials, the matter in hand is to investigate the feasibility of using an alloy of lead-indium-gold, although conventional studies give high marks to the effectiveness of the tin group, lead group and niobium group.

If the fundamental research of four years results in the establishment of the base, the MITI intends to take a second step for 1984 and thereafter and subsidize the development of the said element as a national project based upon the Large Size Industrial Technology Research and Development System (Large Project) of the Agency of Industrial Science and Technology, or as an important technology research and development task based upon the Important Technology Research and Development Subsidy System.

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SCIENCE AND TECHNOLOGY

'HIGH TEMPERATURE STATION' FOR MATERIALS R & D PLANNED

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 6 Sep 79 p 5

[Text] The Inorganic Materials Laboratory of the Science and Technology Agency (director, Hiroshi Tanaka) plans to establish a "high temperature station" next year for the purpose of setting up the basic technology that is expected to trigger new inorganic material development. To this end, the high temperature station will target its sights on technology to produce large single crystals of high melting point inorganic materials and technology of high temperature sintering as its first objective. Attention will be specially directed at the growing of large single crystal inorganic materials employing temperatures of the order of 5,000°C and pressures of about 1,000 atmospheres. At the same time, studies will be directed at binderless covalent bond compound sintering for which the extreme conditions of 3,000°C and 1,000 atmospheres pressure will be employed. These single crystals are expected to attain the size of cubes 10 mm on each edge which can be used for practical physical measurements. The sintered bodies whose synthesis will be studied are expected to be roughly 40 mm diameter and 40 mm thickness, enabling practical material testing. This organized foray into the unexplored realms of inorganic materials is said to be the first of its kind in the world. In this respect, this high temperature station to be newly established and the already established super high pressure station together will make possible a research and development capability for studying large size and high capability inorganic materials for structural purposes. This laboratory is emphasizing the fact that this facility will assure Japan a much stronger hold on its position as a leading nation.

Inorganic materials, generally speaking, possess greater heat resistance, greater high temperature strength, and superior corrosion resistance compared to metals and organic compounds, but the excessive severity and multiplicity of conditions of use cannot be handled simply by improving the quality of natural inorganic materials as has been the case in the past. Only by reverting to specially synthesized materials or composition controlled materials employing extreme conditions through superhigh temperature, superhigh pressure, or superhigh vacuum can new inorganic materials to fill the needs be synthesized. In the particular case of

high temperature melting point material melting at temperature above 2,000°C it is usually the situation that this material also is highly volatile, as a result of which the synthesis of large single crystals or the production of large sintered bodies simply by elevating the temperature is not possible, and there is need to confine the reaction through very high pressure in order to prevent this vaporization.

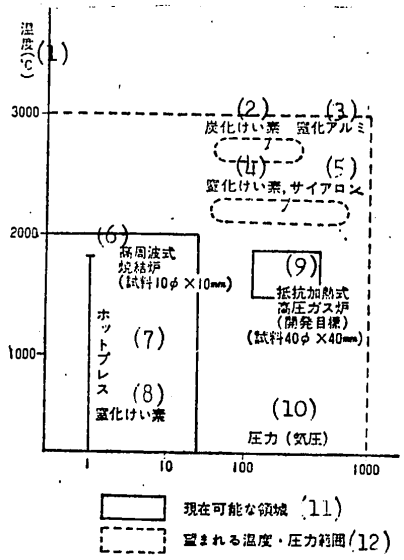
Now the temperature and gas pressure presently used are obtained in a xenon of halogen type infrared furnace which enables single crystal growth up to 3,000°C and 20 atmospheres pressure and sintering up to 2,000°C and 20 atmospheres pressure, as a result of which the synthesized products are small and not always of good quality. On the other hand, should the crystal attain the size of 5 mm per edge, neutron analysis becomes possible, opening the way for partial elucidation of the true properties of the material. These products can even be used in optical applications. As the size increases even more to about 10 mm per edge, all types of physical measurements, including thermal measurements, can be made. At the same time, the field of application is opened up greatly in line with these new properties. Temperature of the order of 5,000°C and pressure of about 1,000 atmospheres become necessary to achieve this end. In addition, if sintered bodies of 40 mm diameter and 40 mm thickness can be formed under temperatures of 3,000°C and pressure of 1,000 atmospheres, not only basic research on sintering mechanisms but materials testing necessary for practical utilization become possible.

This is why the Inorganic Materials Laboratory plans to establish this new high temperature station next year to initiate establishment of basic technology to provide the extreme conditions required in the synthesis and processes under study and follow 1) single crystal growth, phase equilibriums, and control technology accompanying high temperature generation; 2) high temperature sintering technology; and 3) high temperature chemical, physical, and measurement technology. These will be the three central topics under study which will be pursued over the next 10 years in an effort to establish practical technology. Research and development will be initiated to achieve this end.

Specific objectives of this research and development where 1) is concerned include the development of tungsten filament type bath melting furnace capable of producing syntehsis conditions such as 2,000°C and 1,000 atmospheres pressure in order to produce large single crystals of thiaron, conjugated titanium sulfide, lithium oxide, germanium oxide, conjugated bismuth oxide, rare earth oxide, copper sulfide, and tin oxide. This will be followed by going to a zone furnace capable of developing 5,000°C temperature at 1,000 atmospheres pressure to synthesize graphite, tantalum carbide, boron nitride, aluminum nitride, and rare earth nitride single crystals. Where 2) is concerned, silicon nitride, silicon carbide, and aluminum carbide type covalent bonded compounds will be sintered without the use of binder, for which technology a resistance furnace capable of

3,000°C and 1,000 atmospheres will be developed. As for 3), measurement technology and set temperature technology capable of high temperature measurements up to a maximum temperature of 2,000°C are targeted.

Sintering Conditions for Difficultly Sinterable Inorganic Materials



Key:
1. temperature (°C)
2. silicon carbide
3. aluminum nitride
4. silicon nitride
5. thiaron
6. high frequency sintering furnace (sample 10 ϕ x 10 mm)
7. hot press
8. silicone nitride
9. resistance heating type high temperature gas furnace (development planned) (sample 40 ϕ x 40 mm)
10. pressure (atmosphere)
11. region presently attainable
12. temperature and pressure ranges desired.

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CSO: 4105

SCIENCE AND TECHNOLOGY

TOKYO FIRM PROMOTES DIFFUSION OF U.S. NASA PATENTS, KNOW-HOW

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 14 Sep 79 p 5

/Text/ (Jedd) (Tokyo-to, Chiyoda-ku, Nagata-cho, 2-10-2, Shinichiro Amanuma, President, Tel 03(581)2909) has agreed to accept from the U.S. National Aeronautics and Space Administration (NASA) six more new inventions such as the vapor fuel cell and the polymer electrolysis hygrometer. Jedd will have technical assessments done by the Society for Promotion of International Technology Transfer (Sakae Yagi, President, Professor Emeritus of Tokyo University), and then widely disseminate the inventions to industry in general.

The number of inventions with which Jedd has been entrusted by NASA, Japanese science and engineering universities, and others has risen to about 600. Particularly with respect to NASA, Jedd has gained monopoly licensing rights in Japan for NASA patents as well as for the know-how related to these patents. Besides that, at the same time that NASA applies for U.S. patent rights, they send copies of the applications directly to Jedd from which Jedd can choose the inventions whose patent rights they would like to obtain.

New technology which Jedd has obtained in this way from NASA, the National Technical Information Service (NTIS), and other sources is submitted to the Society for Promotion of International Technology Transfer, and then Jedd promotes the wide dissemination of this new technology industry.

The themes and uses of the six newly accepted inventions from NASA are as follows:

Vapor Fuel Cell--Used for the production of electricty by chemical companies and gas companies which handle methane and hydrogen. Suitable for use in buildings and on construction sights.

Illumination control unit which supplements sunlight. Can be used for daytime office illumination.

A method of oxygen post-treatment of plastic surfaced with a layer of plasma polymerized monomer coating containing silicon. The field of synthetic plastic optical material.

Triborofluoride coating of thermoplastic material. Coating such as the abrasion resistant coating on synthetic plastic optical material (acrylic, polystyrene, polycarbonate). The adhesive coating when coating an organic polymer.

A method of producing multi-layer metalizing of metallic oxide semiconductor equipment. The field of producing MOS devices consisting of multiple metallic layers.

Polymer Electrolysis Hygrometer--Can be used in all atmospheres. Can even be used in cases involving ammonia gas which had until now caused problems for hygrometers using phosphate polymers. Since the membrane of this solid polymer is inactive, it can be used even if during electrolysis, oxidizing gas or reducing gas is released.

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CSO: 4105

SCIENCE AND TECHNOLOGY

JAPAN-U.S. COMPETITION IN TIRE DEVELOPMENT MOVING QUIETLY

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 14 Sep 79 p 5

[Text] It is strongly desired to take some measures to reduce automobile fuel consumption, due to the successive crude oil price hikes. Already automakers have succeeded in reducing the weight of large-size passenger vehicles by an amount equal to the weight of one passenger by incorporating weight reducing materials such as synthetic resins. With this as a stepping stone, they have begun to make a serious effort to economize on fuels. Reflecting this momentum, all tire makers are also about to arrange a research and development system to develop light tires with a low rolling resistance designed with consideration of fuel costs. This movement reflects tire makers' voluntary effort to promote the development of "light tires," which stems from an idea to utilize limited rsources effectively. Already competition in technological development is about to start in association with the current research theme, improvement and development of steel radial tires.

The relationship between tires and vehicle fuel consumption is assumed to vary due to various resistances which develop when vehicles are driven as well as by driving speeds, loads, driving habits, weather conditions and roads.

Among them, the rolling resistance of tires especially indicates a constant relation to fuel cost, and is a major key to finding the fuel cost characteristics of tires. The rolling resistance is said to be directly related to the weight of tires. For instance, rolling resistance is reduced by 10 percent when the tire weight is lightened by 10 percent. Furthermore, if the rolling resistance is reduced by 10 percent, fuel cost will decrease by 1-3 percent.

This is why it is necessary to develop "light tires" as one of the means to improve fuel costs as related to tires. Practical use of light tires is being increasingly anticipated in response to the weight reduction strategy of automakers.

Tires are meant to facilitate dampening/driving, spring function and wheel movement. Consequently, "technologically speaking, efforts are made to enhance this role of tires," (Osamu Yasutake, director of Tire Structural Design III, Tire Design Headquarters, Bridgestone Tire) and makers are promoting development focusing on these points. Precisely speaking, the more tire characteristics have been improved, the heavier the tires have become, which has been the case with tires in the past. The following reasons account for this: it is necessary to develop a tire which will not be vulnerable to puncture, in order to enhance safety; it is necessary to use radial tires in order to improve drivability at high speeds. As indicated by the history of tires, which have developed from bias tires, textile radial tires (glass fibers, rayon and polyester are used for belt parts) and steel radial tires (fine steel wires are used for belt parts), tires have increased in weight. It is obvious that the weight of tires has also been increased due to the higher performance and upgrading of automobiles. For instance, taking as an example Nissar Motor's "Blue Bird," the 1600cc engine was the main product 10 years ago, whereas the current main product has become the 1800cc engine, after numerous model changes, which increased the weight of the vehicle from 915 kg to 1 ton. The "Sunny" has also changed to 805 kg from the 625 kg model of 10 years ago.

Nissan Motors blamed the perference for clean residential air which necessitated exhaust gas control for the weight increase. Tires which support heavier and better performance vehicles have become heavier in order to improve safety and performance. Especially with the emergency of steel radial tires, tire weight is said to have reached its peak. For instance, it is indicated that Bridgestone Tire has improved tire performance but at the same time has increased the weight of its tires: as to the tires manufactured five years ago, a steel radial tire weighed 9.1 kg (tire designation: 185/70-13) compared to an ordinary bias tire which weighed 6.9 kg (185: 560-13).

In spite of the trend of producing heavier tires, weight reduction has been quietly in progress, because light tires do not harm the body of vehicles (a phenomenon where tires absorb shock from the projections and depressions of the road surface and provide the means for motion of the body of vehicles), and because "the lighter the better" (Mr Yasutake) concept is introduced from the standpoint of fuel costs. At present, Bridgestone Tire has lightened its Tire 560-13 to 6.3 kg and its Steel 185/70-13 to 8.1 kg, and is carrying on further research to lighten tires even more.

Supported by the general notion that tire development, which continuously upgraded performance, especially after the introduction of steel radial tires, has finally reached its limit (service life and safety of this tire increased two times and 1.8 times respectively, and rolling resistance decreased 30 percent compared to conventional bias tires), research for weight reduction is now being pursued enthusiastically.

Incentive for this move is enhanced further by the drive to utilize resources effectively, as a result of successive crude oil price hikes.

Says Mr Yasutake, "Generally speaking, it is estimated that 20 percent of the energy which a vehicle uses during its life-span is consumed for manufacturing of the vehicle and 80 percent is consumed during its service life. It is therefore necessary to develop tires taking into account fuel cost, and this is a serious task which should be regarded with respect." Also, Mr Takashi Kobayashi, chief engineer of Yokohama Rubber Co. Ltd., emphasizes its importance: "Competition in manufacturing of light tires is on the way following the latest competition in manufacture of radial tires, but this may be an endless fight."

Weight reduction can be achieved by "letting the air do the job" (Mr Kobayashi). Speaking in concrete terms, he means that tires shall be lightened by reducing some of their structural materials.

The following methods are already in consideration to practice the idea:
(1) develop tires with an elliptical sectional area (flatter tires);
(2) increase air pressure from the present 1.3-2 kg to 5 kg.

Furthermore, the following methods are considered feasible: Reduce the amount of side rubber (which works as a spring to absorb shocks); reduce the depth of the grooves of the treads (contact part); reduce the amount of fibers and steel used for the bead which fastens a tire to its rim.

However, development of rubber materials must be promoted in order to carry out these proposals. Mr Kobayashi also affirms, "It is necessary to conduct research on rubber materials which can be suitable for a membrane to be wrapped around with steel, since the thinner the membrane is made the larger the 'force' applied to the membrane shall be even under the same stress."

Bridgestone Tire has already dealt with the problem, and has developed a tire called "Super Filler," that is, rubber which is used as a tire material is perceived as molecules, a very minute unit. A special film is formed on the part where the carbon atom and the rubber molecule are bonded. As a result, hard and elastic new rubber with a high modulus (a value of strength measured when it is stretched up to 200 percent) has been developed, and it is used in utility tires.

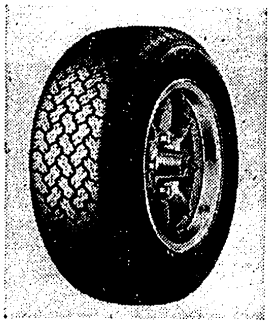
For weight reduction, a delicate study such as this is necessary, which eventually leads to the reduction of radial tire steel content that weighs 80 percent of the total tire.

This new approach has nothing to do with the conventional conceptor or the image of weight reduction which is associated with conservation of materials and cost reduction, and it produces products with greatly added values by concentrating high technical know-how.

Yokohama Rubber Co. organized a project team specifically for weight reduction, and intends to start this tire development on full scale.

On the other hand, Bridgestone Tire also says that they are considering developing tires with a higher air pressure jointly with the automakers. Dupoint of the U.S.A. has developed "Kebra 1," ultra-strong fiber, which replaces steel cords, although research and development of the fibers has only begun. They are studying the ways to put the fiber into practical use. Thus, Japan-U.S. competition in utilization of light-weight tires is quietly proceeding.

Steel Radial 185/70-HR13 with super filler, weighing 8.4-8.5 kg. forerunner of the weight reduction practice.



8940
CSO: 4105

SCIENCE AND TECHNOLOGY

HITACHI GETS 70 PERCENT RECOVERY IN OIL-COAL GASIFICATION

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 31 Aug 79 p 6

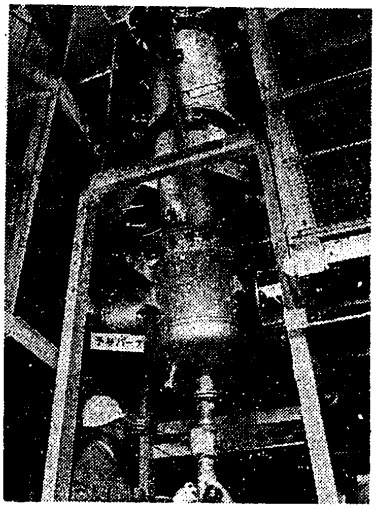
[Text] (Hitachi) Hitachi Laboratory of Hitachi Seisaku (president, Hirokichi Yoshiyama) announced on the 30th that it had succeeded in developing a "hybrid gasification" process that is a new technology for coal gasification and which is being promoted as one phase of the Sunshine Plan. The feature of this process is the use of coal slurried with heavy oil to be used as the starting material, and the process realizes a 70 percent gasification efficiency. It can handle almost any type of coal in large volume and can be operated with continuous feed-in of starting materials thereby representing technology of high practicability.

This scheme will be the theme upon which Japan's first high calorie gasification pilot plant will be constructed at Iwaki City by the Electric Power Development Company, Limited starting in October, and demonstration experiments are expected to be initiated in JFY 1981. This development brings Japan's technological development in coal gasification up to a world class level in line with the United States and West Germany, and there are expectations that this process will become practical within a dozen years should developments follow in order.

The major facets of this development at this laboratory are 1) the development of a pump-(hydro-hoist) to-pump slurry preheated to about 200°C into a high pressure gasification reactor operated under a pressure of 30 atmospheres; 2) realization of 74 percent gasification efficiency in a single tower moving bed gasification reactor using special rotary dispersion plates; 3) development of a moving bed quick-cooling heat exchanger (quencher) to enable trouble-free recovery of the heat of gas existing from the coal gasification reactor that is then transferred to coal tar for its coking; and 4) development of a gasification reactor simulator which systematizes the coal gasification reaction and fluidized bed bubble models to enable analysis of the reactor behavior under varying operating conditions.

This hybrid gasification reactor is of a two-region construction consisting of an upper thermal decomposition section and a lower partial oxidation section, and the slurry fed in by the hydro-hoist is injected at the boundary between these two sections where it undergoes thermal decomposition at a temperature of close to 700°C to yield gas and char (coke). The char formed in this process is transported to the partial oxidation section where it is reacted with oxygen and water vapor to generate heat of decomposition. At the same time, the char is converted to combustible gases such as carbon monoxide and hydrogen.

The product gas existing at the tower top is cooled at the quencher and rid of its tar content. It is subjected to further purification involving desulfurization to end up as a clean fuel. The tar fraction recovered at the quencher is returned once more to the gasification reactor where it undergoes heat exchange, and cooled water which is converted to steam is fed to the partial oxidation region of this gasification reactor where it is used in appropriate manner in the process developed.



The Photograph Shows the Hybrid Gasification Experimental Facility Employing This New Technological Development

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CSO: 4105

SCIENCE AND TECHNOLOGY

HIGH TENSILE, BORON ALLOY STEELS TO CUT COSTS OF FASTENERS

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 6 Sep 79 p 6

[Text] Tokyo Neji Seisakusho (president, Kiichi Suzuki) firmed plans to go into all-out use of high tensile steel and boron alloy steel as new materials for future screw production. This plan is aimed at replacing the chrome-molybdenum steels presently used in screw production to alleviate the high cost of raw materials and effect energy conservation. At the present time, this company is focusing its attention on producing standard type screws for automobiles, which constitute the area of greatest demand to which material conversion has been directed. "We plan to produce the greater part of our screws with this new material within 1 to 2 years, and we are hoping to cut down on the cost of these screws" (President Suzuki).

This company is the largest overall maker of various screws, bolts, and nuts for the automobile industry and the aircraft industry, and is pointing toward a business of 11.1 billion yen for this business period (September period). The reason this company is planning to go to high tensile strength steel and boron alloys is the high cost not only of oil but of the raw materials for making these high strength steels, and this company plans to absorb cost increases in this manner.

According to this company, this new high strength steel material is the new steel called NHF material by Shin Nittetsu, which is the maker. When this material is used, the quench hardening stage for the heat treatment process is not necessary. In addition, the acid wash is reduced in scale, the process is nonpolluting, and surface treatment is more readily applied, among the advantages of the process. When screws are made from wire as is the common practice, the material undergoes the processes of wire drawing, cold rolling, rolling, heat treatment, and surface treatment. The elimination of the heat treatment results in much energy conservation, and production can be made more rational.

In another direction, boron steel is the steel material designated to replace molybdenum steel (chrome-molybdenum steel) whose cost continues to rise. This material is roughly one-third the cost of molybdenum steel.

SCIENCE AND TECHNOLOGY

ALUMINUM TITANATE GIVES CODIELITE TEMPERATURE SHOCK TOLERANCE

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 3 Aug 79 p 5

[Text] The (Nagoya) Nogoya Governmental Industrial Research Institute of the Agency of Industrial Science and Technology (director, Akira Inukai) has successfully developed a dense codielite sinter with excellent thermal shock tolerance up to a maximum 700°C cracking temperature which is an of thermal shock resistance. Codielite is a highly thermal shock tolerant ceramic with low expansibility, but its conventional manufactured products are porous and exhibit thermal shock resistance at most up to the 400°C level. The codielite sinter presently developed by the institute is made by adding synthetic aluminum titanate to synthetic codielite composition or to codielite raw composition. By this process, the thermal shock resistance of the codielite sinter is improved up to the level of 700°C, and additionally the manufacturing method can easily adopt the conventional ceramic sintering techniques without modification. The product is also characterized by good mechanical strength and a very low water absorbing rate. It is highly evaluated as a thermal shock resistant material such as an insulator for electricity, and as a material for the chemical industries.

Codielite ceramics have been researched and put to practical use as a thermal shock resistant material with low espansibility. However, due to the narrow sintering temperature range (approximately 10°C), manufactured products are almost all porous. Furthermore, it is labeled to show crack expansion and resistance of only 400°C at best in thermal shock resistance tests (a sample at a prescribed temperature is dropped into water). Therefore, usually zirconium oxides and aluminum oxides are added to expand the range of sintering temperature, but the original quality of codielite has not yet been brought into full play.

In contrast to this, the said institute found aluminum titanate as an additive for a dense codelite sinter excellent in thermal shock tolerance and treatable under an expansive sintering temperature range (30-50°C).

The manufacturing method is as follows: First, talc, kaolin, gairome clay and mercurated magnesium are blended together and calcinated for one hour at a sintering temperature of 1200°C to produce a synthetic codielite composition.

Meanwhile, a synthetic aluminum titanate is prepared by mixing together titan oxide of a special reagent grade and aluminum oxide of 99.5 percent or more in purity at a molar ratio of 1 to 1 (gram molecule) into a cake, and by calcinating the cake for 1 hour at 1450°C. The synthetic aluminum titanate is then crushed and added to the synthetic codielite composition or to the codielite raw composition. The mixture is then blended and crushed with water in an aluminum oxide pot for 24 hours to produce mixed powder. This powder is molded by a press and sintered for 1 hour (sintering temperature: approximately 1350°C) in an electric furnace with a silicon carbide heating element to produce the codielite sinter.

The institute made various samples by varying the amount of the aluminum titanate to be added from 0 to 48 percent, to find the various characteristics (see table). The results indicated that the ideal amount will be around 15 percent. This sintered product containing around 15 percent of the additive not only tolerated the maximum 700°C cracking temperature which is an indicztor of thermal shock resistance, but also showed very fine mesh type cracks (see photo). Compared to this sample characterized by an excellent thermal shock tolerance, the sinter without the additive indicated a low cracking temperature of 400°C and showed large and thickly expanded cracks. (see photo)

VARIOUS CHARACTERISTICS OF CODIELITE SINTERS

(Water Absorption Rate 0.02%)

(1) 試料種類	(2) 焼成温度 (℃)	(3) 熱膨張係数 室温～960℃ 単位×10⁻⁶	(4) 曲げ強さ 単位kg／cm² カッコ内標準偏差	(5) 耐熱生温度 (℃)	(6) き裂の状態 (7)
CTA—0	1,420	2.1	1,190 (380)	400	大きく太く伸長
CTA—5	1,360	2.0	1,400 (160)	500	網目 (8)
CTA—10	1,350	2.2	1,620 (120)	700	微細網目 (9)
CTA—15	1,360	2.0	1,710 (140)	(10)同	同 (10)
CTA—20	(10)同	2.9	1,560 (300)	500	同
C'TA—0	1,410	1.9	1,160 (380)	400	大きく太く伸長(7)
C'TA—12.5	1,340	2.5	1,470 (100)	600	微細網目 (9)
C'TA—17.5	同 (10)	2.7	1,540 (60)	(10)同	同 (10)

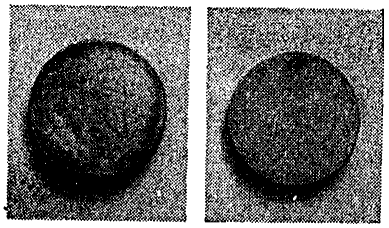
(注) (11)
CTO—0＝合成コーディエライトだけで無添加 (12)
C'TO—0＝コーディエライト生組成だけで無添加 (13) (14)
CTO—20＝合成コーディエライトにチタン酸アルミニウム20%添加

Key:

1. Types of samples
2. Sintering temperature
3. Thermal expansion coefficient
   room temperature -960°C, unit x 10^{-6}
4. Bending strength, unit kg/cm^2
   values in brackets show standard deviation
5. Cracking temperature
6. State of cracks
7. Large and thick expansion
8. Mesh
9. Fine mesh
10. Same
11. Note
12. Only synthetic codielite, nothing added
13. Only codielite raw composition, nothing added
14. Synthetic codielite with 20 percent of synthetic aluminum titanate

Thermal Shock Test Results

(1)(400度Cから0度Cの水中投下後、さらに1,000度Cから同様に投下)



(2)㊀合成コーディエライト無添加
(3)㊁合成コーディエライトに合成チタン酸

Key:

1. (Samples at 400°C were dropped into 0°C water, subsequently samples at 1000°C were dropped similarly)
2. Synthetic codielite, nothing added--left
3. Synthetic codielite with 20 percent of aluminum titanate--right

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SCIENCE AND TECHNOLOGY

BRIEFS

SUNSHINE PROJECT ACCELERATION--The Ministry of International Trade and Industry and its subordinate Agency of Industrial Science and Technology have decided to accelerate the Sunshine Project and have raised the goal for new energy sources from 1.6 to 5.5 percent of total energy supplies by 1990. The JFY 1980-1990 budget has been revised to 1.6 trillion yen, and to expedite development and application the past practice of contracting out R&D projects via the Electric Power Development Corp will be discontinued in favor of direct contracting to firms or groups capable of effective integrated development, provision, and utilization of new technology. The number of firms involved in contract R&D is expected to drop drastically: well over 100 firms are now engaged in such work, but MITI called in only around 60 firms for a briefing on the new orientation. /Summary/ /Tokyo NIKKAN KOGYO SHIMBUN in Japanese 2 Oct 79 p 1/

CONDUCTIVE SILICON NITRIDE--Professor Hirai of Tohoku University has utilized the chemical vapor deposition (CVD) method to create a carbon-containing amorphous silicon nitride material. With carbon content 5 percent by weight, the material has a resistance of 32 ohms/cm at 200°C and 20 ohms/cm at 900°C. Output can be in the form of a thin film or in blocks. The material has a micro-Vickers hardness of 2,700 to 3,000. Use as a cladding material or heat radiating body in applications requiring high-temperature and high hardness such as 1) conductive cladding for non-conductive parts, 2) anti-static electricity cladding, 3) chemical plant use in high temperature or highly corrosive environments, 4) rocket nozzle lining, and such is expected. /Summary/ /Tokyo NIKKAN KOGYO SHIMBUN in Japanese 4 Oct 79 p 1/

POWER SHOVEL TECHNOLOGY--Eight of Japan's 11 manufacturers of power shovels established technology tie-ups with foreign firms during 1961-1968, but all have now developed their own technology and are seeking to abrogate or--when this is impossible--modify the agreements. Royalties are described as a heavy burden, but provisions placing the European, Middle East and American markets off limits to them are the greatest source of Japanese dissatisfaction. The technology tie-ups are with three U.S., two Swiss, two French, and one West German firm. /Summary/ /Tokyo NIHON KOGYO SHIMBUN in Japanese 3 Oct 79 p 6/

SOLAR DESALINATION PROJECT--The government will dispatch an expert team to three Gulf states around this year-end to study the feasibility of a joint sea water desalination plant using the solar energy. The Ministry of International Trade and Industry (MITI) said that the planned plants in Kuwait, Iraq and the United Arab Emirates will be part of various technical cooperation schemes with the oil rich nations. Proven technologies to utilize solar heat, now a pet program among MITI's long-term innovative energy sources projects, will be available for the plants' construction, it said. Present blueprints show that the first desalination plant will be tested for operational capabilities next year in one of the three nations. Full commercialization will start five years later to produce 200 tons of fresh water per day. MITI expects that such technical aid by Japan to the Middle East is a plus factor in deepening mutual relations, and consequently may favorably affect future bargaining for oil. [Text] [Tokyo MAINICHI DAILY NEWS in English 20 Oct 79 p 5]

DIESEL EXHAUST RECYCLER--An efficient system of recycling the exhaust gas of diesel engines of ships for preheating fuel and other uses aboard vessels has been developed by Takuma Co. of Osaka, it was announced Tuesday. The company, a leading Japanese boiler maker, said it plans to market the device, called the marine diesel engine emission gas heat recycler, in the near future. The company said exhaust gas recycled with the system could be used for heating cabins and other purposes besides preheating fuel oil. It will make it possible to use the lowest grade and cheapest-priced "Class C" fuel to operate ships's diesel engines, it said. It will minimize the need for costly and cumbersome systems for preheating such oil before burning in engines. The company said that the device would be cheap and inexpensive to install. Should the recycler be applied to a ship of the 500-ton class, there would be no need at all for a preheating system and there would be a saving of an estimated 17 million yen in annual fuel cost through the use of "Class C" fuel instead of the far more expensive "Class A" type now usually required for operating diesel engines. Besides, in the case of such small ships, the total cost of buying and installing the recycler will be only around 15 million yen, an investment that could be easily recouped in one year, Takuma said. The recycler absorbs heat of between 300 and 350 degrees centigrade emitted by the exhaust gas of a diesel engine through two heat exchangers, one of air and the other of oil type. [OW290421 Tokyo MAINICHI DAILY NEWS in English 25 Oct 79 p 5 OW]

CBN GRINDSTONE BONDING--Nippon Toki has developed a vitrifide (?"Bitorifaido) bonding that can replace the resin bonding presently used in manufacture of CBN grindstones. The lifespan is described as three times that and the total service life cost one-third that for resin-bonded CBN grindstones, thanks to the longer service life. /Summary/ /Tokyo NIKKAN KOGYO SHIMBUN in Japanese 1 Oct 79 p 1/

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