JPRS L/9528

5 February 1981

Japan Report

(FOUO 9/81)

FBIS FOREIGN BROADCAST INFORMATION SERVICE

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

APPROVED FOR RELEASE: 2007/02/08: CIA-RDP82-00850R000300080011-8

JPRS L/9528

5 February 1981

JAPAN REPORT

(FOUO 9/81)

CONTENTS

APPROVED FOR RELEASE: 2007/02/08: CIA-RDP82-00850R000300080011-8

ECONOMIC

JAPAN DEVELOPMENT BANK FOCUSES INTEREST ON ENERGY

Tokyo BUSINESS JAPAN in English Dec 80 pp 30, 31

[Interview with Takatomo Watanabe, governor of the Japan Development Bank]

[Text]

IN its December 1979 issue, Business JAPAN carried an interview with Takatomo Watanabe who had been appointed Governor of the Japan Development Bank (JDB) in March that year. He is the second official from the Bank of Japan, after Risaburo Ohta, to have been appointed Governor of the JDB and is the sixth Governor so far. The other four have been ex-Ministry of Finance vice ministers.

Watanabe joined the Bank of Japan in 1939 after graduation from the former Tokyo Imperial University (Tokyo University). He worked in the general affairs and sales departments, both of which he headed. In April 1975 he was appointed vice Governor of the JDB, and Governor four years later. Born in 1916, he is 64 years old. During our conversation with Mr. Watanabe, his enthusiasm with respect to the importance of providing banking services to Japanese industry was constantly apparent along with an unusually firm resolve to deal with the increasingly difficult problems of environmental protection and energy. (Interviewed by Shozo Hochi, Editor-in-Chief, *Business JAPAN*)

QUESTION: What was the reason for the establishment of the Japan Development Bank and how has the bank developed?

ANSWER: As stipulated by law, the reason for establishing the JDB was to promote the development of industry and the expansion of economic activities through the provision of low-interest, long-term loans to industries and to complement and encourage commercial banking institutions. In accordance with the times, JDB has extended loans in line with the needs of the country's economic development projects.

Consequently, JDB's loan priorities have kept changing with the times. The bank was established in 1951. Its initial capitalization was ¥10,000 million, but today it has increased to ¥234,000 million, with outstanding loans totalling as much as ¥4,900,000 million. At the time of the bank's establishment, priority was given to industries, such as power, coal, steel and shipping, which would contribute to the rehabilitation of Japan's devastated economy. The power and steel industries achieved remarkable growth. Only the shipping industry has remained unchanged, and we are continuing to provide financial assistance in the form of loans. As for the coal industry, it has long since been out of the economic picture.

From about 1963, the redevelopment of large cities required more loans, and the elimination of community differences, i.e., local development, became important. During the years from about 1972 to 1976, investments in anti-pollution projects greatly increased. In addition, large loans were extended for technological promotion and development. For example, loans were provided to help place on a commercial basis the production of Sony's Trinitron color television sets, Toyo Kogyo's rotary engines, Hitachi's large-scale integrated circuits and Honda Motor's CVCC engines. We have constantly sought to nurture the latest industries and new businesses.

Following the energy crisis, we have been providing loans in connection with measures for the acquisition or development of energy resources, such loans now accounting for a large share of our financing. In fiscal 1980, energy resources-related loans amounted to ¥321,000 million, or approximately 30% of the over ¥1,000,000 million in loans planned. Involved are nuclear energy, petroleum, energy diversification, promotion of the utilization of alternate energy, and conversion of oil to thermal fuel. These items account for 40% of the total in the 1981 fiscal plan.

Q: Of the ¥1,000,000 million in loans to be allocated this fiscal year, 9.4% will go to shipping, 17% to urban development, 12% to improvement of national livelihood and 10% to technological promotion. Nuclear energy accounts for a high of 11%. From what standpoint are loans for nuclear development being extended?
A: They are very important. We are supplying loans with confidence, our assurance based on the Nuclear Energy Commission's explanation on safety. There is still a strongly rooted distrust among the people with respect to the safety of nuclear energy, but we trust the explanation of the authorities. We regard nuclear energy as an important alternate energy resource that can supplement the use of petroleum.

Q: In fiscal 1981, loans totalling ¥1,500,000 million, or ¥500,000 million more than this fiscal year, are planned. Has the JDB always been able during the past 30 years since its establishment to obtain the requested amounts from the government following negotiations with the Ministry of Finance?
A: Sometimes it has been reduced by half. At other times the requested amount has been too large because it included the requests of various ministries. Ever since becoming vice president, I have insisted on reducing the requested amounts. The new planned amount has been sharply reduced. A portion that has been increased is for energy resources; the figure comes to ¥300,000 million. Since the national finances are in a bad way, we cannot afford to be too insistent, but we feel that our request to the Finance Ministry is quite close to the actually required amount.

Q: What are JDB's priorities for the next fiscal year?
A: I have mentioned providing loans to the energy resources related enterprises and to the shipbuilding industry, which has recently been showing signs of renewed activity. Priority will also be given to promoting technology in the computer and electronics fields and to placing the latest

domestic technological innovations on a commercial basis. These include caustic soda production based on the ion exchange diaphram method, development and commercialization of the next generation domestically manufactured passenger aircraft and manufacture of a light fiber cable. You might say, we will provide funds to put the foregoing on a commercial basis. Investments for pollution prevention have generally run the course, but, recently, investments in new fields have emerged.

Q: What is the outlook for the Japanese economy in the 1980s?
A: As generally stated, the present period is one of uncertainty. Also, with the war between Iran and Iraq, it is extremely difficult to make any forecast. With respect to the Japanese economy, however, there is widespread prediction of a recession. When public investments by the government decline, the growth of the Japanese economy will slow down. But I don't think there will be a serious recession because demand for investments in plants and equipment will emerge, stemming from renewal of facilities, rationalization of operations and a shift to products demanding a high level of technology. Enterprises, having formerly experienced the trials of recession, have trimmed the fat off their operations and strengthened their management; hence, they can withstand a certain amount of reduced production. As long as the world economy does not get any worse, I think the situation will continue on an even plane. A slow, stable growth should be achieved.

The United States is suffering from inflation, and the rise in oil prices is exerting an oppressive factor on the world economy. In view of this, I, for one, am hoping that the U.S. government authorities will manage their economy with the required skill because the state of the American economy has the greatest effect on Japan. Unless the U.S. quickly overcomes inflation, its economy will not improve. However, I expect it to recover relatively quickly.

Q: Ronald Reagan has been elected the next president of the United States. What do you expect of his new administration?
A: Aside from political matters, I would like to see the new administration quickly overcome inflation, achieve stable prices and take proper steps to prevent the world economy from getting any worse. It appears that all the industrially advanced nations are giving priority attention to measures to stabilize prices.

Q: Have you any comment to make on the hiking of oil prices by the producing countries? Do you think prices will rise even higher hereafter?
A: It is necessary for all consuming nations to make efforts for, or proceed with, the development of alternate energy sources to cope with the actions of the oil producing countries. In this connection, we are looking to the United States for leadership. The raising of crude oil prices fourfold at the time of the first oil crisis was shocking, but the market hereafter will move in accordance with the international supply and demand situation. The oil producers might not be able to raise prices even if they wanted

to. Of course, it will also depend on how the consuming nations deal with the problem of conserving energy resources.

I believe the IEA's policy is good. It would be ideal if the consuming countries could manage to accommodate each other with oil... We would like to see the Iran-Iraq conflict settled at an early date since its prolongation will affect the domestic stockpiles of Japan and other countries. Even if the war ends, it will take a long time before the situation recovers. It's a difficult problem.

Q: In what way can the Japanese economy contribute to the development of the world economy in the '80s?
A: I will be repeating myself, but Japan should take thorough measures to save on energy, strive to develop alternate energy, and not only cooperate internationally but make efforts on its own to undertake transition to an industrial structure that can exert a positive role.

Furthermore, it should promote technological development. For example, in the field of large projects, it is jointly undertaking coal liquefaction with the United States, which I think is a good thing. I would also like to see Japan become involved in nuclear fusion projects through international cooperation. And, above all, Japan should extend positive assistance to the non-oil producing developing countries.

We should encourage the circulation of funds among all countries, including the oil producing nations. After ascertaining what is best for the development of another country, we should extend our help if at all possible. We should seek to establish a system whereby we obtain resources on the basis of the rule of mutual friendship and prosperity.

Despite being a major economic power, Japan is not capable of providing funds for external investments to the extent that would be expected. Consequently, Japan should, taking into account government and public consensus, use most effectively what strength it has for world peace and prosperity.

Q: I can see that the work of JDB is directly related to the above tasks for Japan and that it plays an extremely important role. We are looking forward to its playing an even more active role in the future. Thank you. □

CSO: 4120

SCIENCE AND TECHNOLOGY

MITI FORECASTS NUCLEAR ENERGY SUPPLY WILL NOT REACH 1990 GOAL

Tokyo NIHON KOGYO SHIMBUN in Japanese 12 Dec 80 p 1

[Article: "MITI Leaders Forecast Nuclear Power for 1990; 43 Million KW Is Limit in Present Situation; Hasten Site Promotion Policy"]

[Text] It was revealed on the 11th that under present circumstances it will be difficult to meet the nuclear power station goal (between 53 and 51 million KW in fiscal 1990) in the alternative energy supply goals set by the cabinet at the beginning of this month. On that day officials of the Ministry of International Trade and Industry made known their forecast that, "output in fiscal 1990 will be no more than 43 million KW," and the Resources and Energy Agency expressed its thinking that (1) 1990 output would be 45.369 million KW at the maximum, and that (2) the alternative energy supply goal would be brought down to the lower level of 51 million KW. MITI feels that in order to break out of this situation and reach the levels of the supply goals, it will be necessary to establish a site cooperation grant next year for nuclear power facilities. At the same time it will be the policy of MITI to simplify administrative procedures for construction of nuclear power stations in order to shorten the preparatory period between the decision by the Power Development Council and the start of construction (now about 4 years) to 2 years.

In Japan there are 21 power reactors with a total output of 14,952,000 KW now in operation. The Energy Agency's estimate includes the 11 reactors and 9,779,000 KW under construction, and the three reactors and 3,150,000 KW in the planning stage (not yet approved by the Power Development Council), for 35 reactors and only 27,881,000 KW total output in fiscal 1990.

The alternative energy supply goals aimed for nuclear power plant construction with a capacity between 51 and 53 million KW by fiscal 1990, but achieving that is now seen as quite difficult. The views of MITI leaders and the Resources and Energy Agency are noted as public recognition of that difficulty.

The electrical power industry has worked out a plan for presentation to the Power Development Council for seven reactors and 6,744,000 KW this year, and for fiscal 1981 it hopes to present the Council plans for 12 reactors and 12,315,000 KW: Tohoku Electric Power's Shimokita (1,100,000 KW), its Namie-Odaka (825,000 KW), Hokuriku's Noto (500,000 KW), Tokyo's N_1 and N_2 (1,100,000 KW each), Kansai's N_1 and N_2 (1,200,000 KW each), Chugoku's Toyokita 1 and 2 (1,100,000 KW each), Shikoku's Ikata 3 (890,000 KW) and Chubu's S and T (1,100,000 KW each).

However, of those proposed for fiscal 1980, all but Tokyo Electric's Kashiwazaki-Kariwa 2 and 5, on which the first public hearings have been completed, experienced difficulties in acceptance by local residents.

The Energy Agency's forecast of "a maximum of 54,369,000 KW in fiscal 1990" includes such plants as Hokkaido's Kyowa-Tomari nr 1, Chugoku's Shimane nr 2, Shikoku's Ikata nr 3, Kyushu's Genkai nr 3, and Tohoku's Namie-Odaka, Maki and Shimokita. But the MITI leaders take an even harsher view and say that, "achievement of the higher value of the Energy Agency's estimate would be impossible; the limit is probably 43 million KW." An official of the Energy Agency agrees that, "there is a good chance of ending up at 43 million KW."

Because of this, MITI and the Resources and Energy Agency have strengthened appeals to various quarters to make every effort to bring about the creation of four grants to promote selection of sites for power plants, and especially the site cooperation grant for nuclear power facilities which has experienced difficulty in the form of resistence by the Finance Ministry.

Administrative procedures governing construction of nuclear power plants are quite numerous. These procedures could be sped up if a method were adopted whereby the work on approval went forward simultaneously in all the ministries and agencies involved, so MITI and the Energy Agency hope to reduce the preparatory period between the decision of the Power Development Council and the commencement of construction from the present 4 years to 2 years. They also hope to greatly shorten the preparatory and construction periods, which now require 15 years from the presentation to local residents to completion, and thus bring the actual output in fiscal 1990 as close as possible to the lower limit of the supply goals.

9601
CSO: 4105

SCIENCE AND TECHNOLOGY

RESEARCH FOR HIGH-TEMPERATURE HIGH-STRENGTH MATERIALS PROMOTED

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 11 Dec 80 p 5

[Article: "New Materials Research Association: Sights Set on Energy Savings; Organic/Metallic Polymers Replaced by Inorganic Materials?]

[Text] The New Materials Research Association (64 companies--headed by Tokyo University professor emeritus Shigeru Takeuchi), which serves as a bridge for transfer of technology between the industrial and academic worlds, has set its sights on the transfer of technology focused on new energy and energy-conservation materials, and at the same time plans to educate materials researchers in private firms. Now that introduction of overseas technology has become difficult, there has been considerable growth in the need to transfer new technology from the university laboratories where it sprouts to the industrial world, as well as between nations and between industrial sectors. In particular, new materials form the foundation for breakthroughs to revolutionary technology, and thus for the creation of new areas of industry; for that reason there is great need for a tight bond between the industrial and academic worlds. The Research Association is now seeking strong high-temperature structural materials, and is planning for the education of young researchers in the private sector who will put their effort into technology transfer for methods for synthesis of new materials--including the switch to inorganic materials from materials based on organic/metallic polymers--and who will take the burden of applied research and development for the industrial use of such materials.

Study of the technological problems of predicting new materials and their practical applications should not be done just from the perspective of the scholar; consideration of the aspect of private industrial technology which will create commercial products is indispensable. Particularly in regard to inorganic materials which go beyond the limiting factors characteristic of metals and alloys as structural and functional materials, elucidation of the sinter structure, which is indispensable for the practical application of these materials, is incomplete, and there are still many technological problems in the areas of forming and processing such materials. It is thus necessary for the industrial and academic worlds to unite in dealing with accumulation of basic data and studies of future techniques for industrialization and the scope of application of these techniques.

It is the New Materials Research Association which serves as a binder in this union of industry and academia. It began in September of 1979 with such key members as

Takeuchi, its present head, Japan Standards Association advisor Eizaburo Nishibori, Kyoto University Chemistry Institute Director Toshio Takada, Industrial Development Institute Director Hiroshi Okado, and professors Seishi Yajima and Toshio Hirai of Tohoku University's metallurgical laboratory. It encompasses 64 companies, primarily manufacturers of special materials.

About 20 items of materials technology--including "Use of Borosiloxane Polymer as a Heat Resistant Industrial Material," "The Future of Noncrystalline Metals as Industrial Materials," "Trends in New Magnetic Materials" and so on--have already been introduced to private firms and some plans for transfer of technology for introduction have gone forward. Nevertheless, there are many cases where development of materials is goal-oriented and is overtaken by needs; the risks for private industry are great.

On 13 January the Research Association will hold a seminar on "How Should Materials Development be Done?" by Takeuchi, Nishibori and Matsushita Electric executive and radio laboratory director Yoshio Iida, and will probe policies for materials development. At the same time it hopes to contribute to the development of young materials researchers and creative talent using the example of materials development methods under new conditions, such as with silicon nitride and super-fine powder or chemical vapor deposition (CVD).

9601
CSO: 4105

SCIENCE AND TECHNOLOGY

TECHNOLOGY DEVELOPED TO PRODUCE POLYCRYSTALLINE SINTERS

Tokyo NIKKAN KOGYO SHIMBUN in Japanese 5 Dec 80 p 4

[Text] Integrated research by the Science and Technology Agency has produced the technology to combine granular diamond or cubic boron nitride crystals under ultra-high pressure, and thus produce large polycrystalline sinters. Diamond and boron nitride are by themselves hard, and single crystals are used industrially in such things as cutting tools, but Japan is the first country to establish the technology to produce polycrystalline sinters. Because it has been confirmed that the polycrystalline sinters synthesized by the Science and Technology Agency are adequate for use in super-hard tools, a diversification of uses as a new material in the industrial sector is anticipated.

Substances like diamonds that are characterized by superior hardness have traditionally been used industrially for cutting tools in the form of single crystals. But as single crystals (diameter 100 to 500 μ), their uses have been limited, so by synthesizing these as large polycrystalline sinters (about 10 mm), an expansion of their use as a industrial material could be brought about. Research to this end has thus been pursued in countries like the United States and the Soviet Union. That is, synthesis of polycrystalline sinters was expected to bring new advantages such as reduced breakage, homogeneity, high strength, and free selection of shape.

Therefore, in 1976 the Science and Technology Agency chose "integrated research on synthesis of sinter material using ultrahigh pressure" as a research topic for special research promotion and coordination expenditures. With a 3-year program of cooperation between the Science and Technology Agency's National Institute for Researches in Inorganic Materials, the Industrial Science and Technology Agency's Osaka Industrial Technology Laboratory and its Nagoya Industrial Laboratory, research was carried out on synthesis of polycrystalline sinters of diamond and of cubic boron nitride, and on uses for such sinters. The result was the capability for regular experimental production, under pressures of 55 to 65 kilobars and temperatures of 1700°C, of large polycrystalline sinters about 7 mm in diameter and 5 mm long.

The production method is as follows: First, the surface of fine diamond particles is treated with graphite. Then they are subjected to a temperature of 1700°C and a pressure of 65 kilobars, using a sodium chloride pressure medium in an ultrahigh-pressure generating device. Using the same process with cubic crystals of boron nitride, it is possible to obtain superhard materials with a Vickers hardness over 7,000 kg (per mm^2).

When the cutting capability of diamond and boron nitride sinters produced in this way were examined, using aluminum alloyed with 20-percent silicon, the diamond type showed excellent cutting characteristics, with little adhesion to constituent blade edges and flanks.

Good results were obtained with the boron nitride type on high-carbon, high-chrome bearing steel SUJ; flank wear was under 0.25 mm in 15 minutes, and surface roughness less than 3 μ . When cutting tests were made under the same conditions on such bearing materials as SKD11, SKJ3, SNMC8, and tungstencarbide, flank wear was always less than 60 percent that of traditional cutting tools, and the tools lasted an average 1.7 times longer.

9601
CSO: 4105

SCIENCE AND TECHNOLOGY

INTERNATIONAL SYMPOSIUM ON GALLIUM ARSENIDE

Tokyo MAINICHI DAILY NEWS in English 31 Dec 80 p 19

[Text] The 1981 International Symposium on Gallium Arsenide and Related Compounds will be held Sept. 20 to 23, 1981, at Oiso Prince Hotel, Oiso, Kanagawa Prefecture, a seaside resort about 70 km from Tokyo, under the sponsorship of the Institute of Electronics and Communication Engineers of Japan. This meeting will form a sequel to the 1980 Symposium in Vienna. In all, 350 participants representing 22 countries are expected to attend.

The areas to be covered by the Symposium will be material preparation, material characterization, device physics, optoelectronic devices, microwave devices, gallium arsenide IC, and other device technology.

More than 10 years have passed since gallium arsenide first attracted attention as a third semiconductor following geranium and silicone. In 1966, when moves to develop a gallium-arsenide device were coming to the fore, the First International Symposium on Gallium Arsenide and Related Compounds was held in England. Since then this Symposium has been held every other year in Europe and the United States alternately, the eighth Symposium took place in 1980.

This Symposium is marked by research reports and discussions on a wide scope ranging from the crystalline formation and physical properties of gallium arsenide to its application in devices. From the third Symposium the scope was expanded to chemical compounds other than gallium arsenide. The Symposium has been highly evaluated as a valuable place for the exchange of information by researchers in this field.

In recent years remarkable progress has been made in Japan in the field of gallium arsenide and related compounds, reaching the front line worldwide level. At the meeting of the Executive Committee for the 1977 Symposium, it was proposed that Japan be added to the venues and for the meetings to be held in Europe, Japan and the United States in turn, with the 1981 Symposium in Japan.

While silicon device technology, centering on LSI's, was reaching maturity, research on gallium arsenide and other chemical compound semiconductors enabled the realization of microwave elements indispensable for satellite communications and ultrahigh frequency communications, semiconductor laser indispensable for optical cable communications, and light emitting diodes. In addition, they have attracted great interest as materials for logic elements of ultrahigh speed computers in the future and as materials for solar batteries. At a time when new anticipation in gallium arsenide and related compounds is rising, the important significance of holding a Symposium in Japan was recognized and the proposal to do so was accepted with the strong hope that fruitful results will be achieved.

Character, Aims

In contrast to silicone semiconductor devices, which have made rapid progress in connection with the development of LSI technology in recent years, chemical compound semiconductors centering on gallium arsenide (gallium phosphorus, gallium aluminum arsenide, indium gallium phosphorus arsenide, etc.) possess unique electrical and optical properties not seen in silicone. They have played a big role in realizing microwave elements indispensable for ultra high frequency communications such as satellite communications, semiconductor laser indispensable for optical cable communications, and light emitting diodes. Recently in addition to these devices, research and development is being conducted widely for use as logic device in ultrahigh speed computer, high efficiency solar battery, and high speed light detection equipment. Research is also being advanced on their use for integrated circuits and optical IC's.

Nevertheless, because of the complex composition and diversification of their physical properties when compared with silicone, formation and evaluation techniques of the materials have not necessarily been fully established as yet. A part of the device characteristics has reached the stage of application and their importance is widely recognized, but in order to develop new functions and improve the characteristics, there is a need to return to basic technology and carry out many studies.

At this Symposium, the results of the latest research on gallium arsenide, gallium phosphorus and related three-dimensional and fourth-dimensional chemical compound semiconductors will be announced. An international venue will be provided for discussing these reports, contributing thereby to further research in this field.

Reports of research on chemical compound semiconductors have been made in the past at two or three international conferences, including the International Semiconductor Conference, but this Symposium is the only one in which consistent announcement of reports and discussions has taken place from basic research to application on compound semiconductors alone, centering on gallium arsenide.

Program Committee—Chairman, T. Sugano, University of Tokyo. Secretary, M. Fujimoto, Musashino Electrical Communications Lab: NTT.

General Affairs Committee—Chairman, S. Furukawa, Tokyo Institute of Technology. Secretary, T. Moriizumi, Tokyo Institute of Technology.

Treasurer—M. Watanabe, Musashino Electrical Communications Lab, NTT.

Secretary—T. Suzuki, Musashino Electrical Communications Lab, NTT.

The International GaAs Symposium Advisory committee comprises the following:

R.J. Archer, Hewlett Packard.

J.V. Dilorenzo, Bell Laboratories.

W. Heywang, Siemens AG.

C. Hislum, Royal Signals and Radar Establishment.

N. Holynayak, University of Illinois.

H.W. Thim, Technical University of Vienna.

The Secretary of the 1981 Symposium is Professor T. Ikoma, Institute of Industrial Science, University of Tokyo.

The British Institute of Physics has cooperated throughout with this international symposium.

Schedule

September 20, 1981 (Sun.)—Registration in the afternoon.

September 21 (Mon.)—Registration continued. Opening ceremony in the morning. Committee meetings in the afternoon. Reception at night.

September 22 (Tues.)—Committee meetings in the morning and afternoon. Lamp session t night.

September 23 (Wed.)—Committee meetings in the morning and afternoon. Lamp session at night.

To be taken up at the Symposium is a broad research field ranging from materials to devices concerning III-V compound semiconductors, centering on GaAs (GaP, GaALAs, InGaPAs, etc.). The main subjects will be:

1. Crystalline formation materials processing technologies.
2. Technologies for analysis and evaluation of semiconductor characteristics.
3. Devices for optoelectronics (laser, light emitting diode, light detection equipment, etc.).
4. Solar battery.
5. Microwave devices.
6. High speed logic devices.
7. Other new devices and device technology.

Among the notables expected to attend the Symposium from abroad are:

Austria
H.W. Thim (Technische Universität, Wien)
W. Fallmann (Technische Universität, Wien)

Canada
J.C. Dyment (Bell Northern Research Laboratory)

France
J.L. Teszner (D.R.M.E.)
N.T. Linh (Thomson CSF Laboratory)
J.P. Duchemin (Thomson CSF Laboratory)
J. Michel (C.N.R.S)
A. Jouille (Universite de Montpellier)
J. Magarschack (Laboratories D'Electronigue et de Physique Applique)

Germany
P. Balk (Technische Universität, Aachen)
H. Beneking (Technische Universität, Aachen)
H. Hartnagel (Technische Universität, Darmstadt)
W. Heywang (Siemens A.G)
K.H. Zschauer (Siemens A.G.)
H. Welker (Siemens A.G.)
H. Queisser (Max-Plack Institut Für FKF)
A. Schlachetski (Fernmeld Techniche Zentralamt)
H. Strack (A.E.G. Telefunken)
W. Harth (Technische Universität, München)
R. Kersten (Technische Universität, Berlin)
H. Pilkuhn (Universität Stuttgart)

B.G. Bosch (Ruhr Universität, Bochum)

Netherlands

G. A. Acket (Philips Research Laboratory)

Sweden

P. Weissglass (Royal Institute of Technology)

Switzerland

G. Epprecht (Eidgenössische Technische Hochshule)

United Kingdom

C. Hislum (Royal Signal and Radar Establishment)
C. Stanley (University, Glasgow)
B.A. Joyce (Philips Research Laboratory)
A.R. Goodwin (Standard Telecommunication Laboratory)
B.E. Barry (Standard Telecommunication Laboratory)
T. Ambridge (British Post Office)
M.J. Cardwell (Allen Clark Research Center)

U.S.A.

N. Holonyak (University of Illinois)
G.E. Stillman (University of Illinois)
L.F. Eastman (Cornell University)
J. Frey (Cornell University)
K. Lehovec (University of Southern California)
W.T. Lindley (Lincoln Laboratory, MIT)
W. Spicer (Stanford University)
C.M. Wolfe (Washington University)
L. Esaki (IBM Watson Research Center)
L.L. Chang (IBM Watson Research Center)
J.V. Dilorenzo (Bell Laboratories)
R.E. Nahory (Bell Laboratories)
A.Y. Cho (Bell Laboratories)
H. Kressel (RCA Laboratory)
R.J. Archer (Hewlett-Packard Research Center)
H.B. Kim (Hughes Research Laboratory)
G.A. Antypas (Varian Associates)
R.D. Burnham (Xerox Research Center)
H.F. Lockwood (Exxon Laboratory)
J.S. Harris (Rockwell International Science Center)
D.W.Shaw (Texas Instrument)
J.A. Rossi (Monsanto Research Laboratory)
Y.S. Park (AFAL, Wright-Patterson)
E.M. Swiggard (Naval Research Laboratory)

New Semiconductors Enter Spotlight

For the International Symposium on Gallium Arsenide and Related Compounds to be held in Japan is a very happy event. This is because it reflects Japan's high level of research and development in this field, which is leading the world.

Semiconductors of GaAs and related compounds are the so-called III-V compound semiconductors which have entered the spotlight as new semiconductor materials next only to silicone used widely in transistors and LSI's. These compound semiconductors have outstanding characteristics not possessed by silicone. It is possible by using these materials to produce luminous devices and the possibilities for manufacturing microwaves with higher frequencies and more rapid response than silicone, as well as ultrahigh speed integrated circuits are among the excellent characteristics. If we can conquer compound semiconductors, realization of a high capacity optical communications network will be facilitated and the practical application of ultrahigh speed computers will become possible.

Nevertheless, in order to make actual application of these outstanding characteristics, it is necessary to have a good understanding of these materials' properties and promote crystalline growth technology, together with processing technology, to a higher level, and also to understand the action of the devices fully. Differing from simple silicone semiconductors, compound semiconductors are formed of two different elements such as Ga and As, or in the case of three-dimensional or fourth-dimensional combinations, they become semiconductors made from In, Ga, As or Ga, Al, As or with P added. Or they may be semiconductors consisting of four elements. The properties of these materials are very complex and the technology for using and controlling them will also become extremely difficult. Notwithstanding, since it is this very complexity that expands the materials' possibilities, we must overcome the complexity and difficulties.

In order to do so, there is a need for those who are active in this field — experts in thermodynamics, experts in physical properties, engineers well versed in crystalline formation and evaluation techniques, and researchers who manufacture and analyze devices — to gather together, exchange information and hold discussions so as to expand new development. This Symposium is being held to provide a place for such activities.

We welcome active participation not only from the United States and European countries including Germany, France and the United Kingdom, together with Canada, but also from neighboring People's Republic of China, Australia and the Republic of Korea.

CSO: 4120

THIRD INTERNATIONAL CONGRESS ON POLYMERS IN CONCRETE PLANNED

Tokyo MAINICHI DAILY NEWS in English 31 Dec 80 p 21

[Text] The Third International Congress on Polymers in Concrete will be held at Nihon University's College of Engineering at Koriyama, Fukushima Prefecture, from May 13 through May 15, 1981.

Cement concrete has been a popular construction material throughout the world for the past 150 years. "Polymer concrete," a material which has been developed to improve concrete performance, has recently come into wide use in the world construction industry.

The congress to be held in Koriyama will be the first Polymer Concrete Congress to be held in Japan and also in Asia. The first Congress was held in London in May 1975 and the second was held at Texas University in the United States in October 1978.

The main purpose of the Congress, to be held every three years, is to disseminate information on Polymers in Concrete through the presentation of papers and discussions related to polymer concrete process technology, properties and so on.

Since Japan has been known for its basic and applied researches of Polymers in Concrete together with the United States, Germany and Britain, the presentations and discussions at the Third International Congress will contribute greatly to furthering mutual friendship among participants and to promoting exchanges of knowledge, thus fulfilling the objectives of the Congress.

The main themes of the session are 1) worldwide use of Polymers in Concrete, 2) properties and applications of polymer-modified concrete (Mortar), 3) process technology, properties and applications of resin concrete (Mortar), 4) process technology, properties of polymer-impregnated concrete, 5) gypsum-polymer composite, 6) concrete-sulfur composite, 7) applications of adhesives and coating in concrete work, and 8) new applications of concrete with polymers.

About 110 papers are expected to be presented to the Congress. Although Japan is one of the five advanced nations in the field of Polymers in Concrete, the structural use of the polymers in concrete, namely polymer-modified concrete (mortar), resin concrete (mortar) and polymer-impregnated concrete, is yet to be developed.

The future of polymers in concrete is very promising as a new construction material. It is expected that the development of mass production technology and rationalized speedy application methods, as well as an improved balance between the quality and economy of polymers in concrete, will contribute toward a renovation of engineering and architectural technology.

The provisional program of the Third International Congress is as follows:

May 13

9.00--Registration
10.30--Opening Session
13.00--Plenary Session

1) Worldwide use of Polymers in Concrete
2) Properties and Applications of polymer-modified concrete (mortar)

18.30--Welcoming reception at the Koriyama View Hotel

May 14

9.00--Plenary Session

1) Process Technology, Properties and Applications of Resin Concrete
2) Process Technology, Properties and Applications of Polymer-impregnated Concrete

10.00--Ladies' program
18.30--Barbecue party at the Koriyama View Hotel

May 15

9.00--Plenary Session

1) Gypsum-Polymer Composite
2) Concrete Sulfur Composite
3) Applications of Adhesives and Coating in Concrete Work
4) New Applications of Concrete with Polymers

17.00--Conclusions and Closing Ceremony

During the session, simultaneous interpretation in English and Japanese will be provided. Documents are to be prepared in English.

A post-Congress technical tour is also planned for participants and accompanying persons to visit an institution related to the Congress themes and to see more of Japan.

The major themes of the Congress are based on various fields of science such as civil engineering, architecture, material science and chemistry. In this regard, the study of polymers in concrete belongs to an interdisciplinary field, accounting for the participation of various academic and technical societies and associations in the Congress.

The Third International Congress sponsored by Nihon University is supported by the Adhesion Society of Japan, American Concrete Institute (USA), Architectural Institute of Japan, the Building Contractors Society, the Cement Association of Japan, the Ceramic Society of Japan, the Concrete Pole and Pile Association, the Concrete Society (U.K.), the Education Board of Koriyama City, the Fukushima Prefectural Architectural Society, Fukushima Prefecture, the Japan Concrete Admixture Association, the Japan Concrete Institute, the Japan Construction Materials Association, the Japan Society for Composite Materials, the Japan Testing Center for Construction Materials, the Japan Society of Epoxy Resin Technology, the Institute of Gypsum and Lime Research, Koriyama City, the Nippon Telegraph and Telephone Corp., the Prestressed Concrete Engineering Association, the Society of Materials Science, Japan, and the Society of Polymer Science, Japan.

Members of the organizing committee of the Congress are as follows:

K. Okada, (Honorary Chairman, Kyoto University), T. Fukuchi (Chairman, Nihon University), Y. Ohama (Co-chairman and secretary, Nihon University), S. Akihama (Kajima Corporation), Y. Arai (Nihon University), A. Enami (Nihon University,) K. Hirai (Teheku University), S. Inobe (Hokkaido Prefectural Cold Region Building Research Institute), K. Imamura (Nippon Telegraph and Telephone Corp.), Y. Kasai (Nihon University), M. Kawakami (Akita University), T. Kawano (Onoda Cement Co., Ltd.), K. Kawase (Building Research Institute, Ministry of Construction), Y. Kitada (Nihon University), K. Kobayashi (University of Tokyo), E. Koh (Hokkaido University), W. Koyanagi (Gifu University), H. Kubota (Takenaka Komuten Co., Ltd.), Y. Matsui (Nihon University), J. Motooka (Nihon University), T. Mukai (Meiji University), S. Nagataki (Tokyo Institute of Technology), S. Nishioka (Nihon Cement Co., Ltd.), S. Ohgishi (Nagoya Institute of Technology), M. Sawaide (Shimizu Construction Co., Ltd.), A. Takagi (Nihon University), S. Takagi (Sumitomo Cement Co., Ltd.), K. Takano (Japan Testing Center for Construction Materials), E. Tazawa (Taisei Corporation), Y. Tsuruta (Taisei Corporation), and A. Watanabe (Kyushu Institute of Technology).

The Third International Congress on Polymers in Concrete to be held in Koriyama will offer the participants an opportunity to gain new knowledge and experience in this field, especially because in recent years there have been numerous advances in the research and development of technology for the use of polymers in concrete.

CSO: 4120

SCIENCE AND TECHNOLOGY

INTERNATIONAL SYMPOSIUM ON INDUSTRIAL ROBOTS

Tokyo MAINICHI DAILY NEWS in English 31 Dec 80 p 22

[Text] The 11th International Symposium on Industrial Robots will be held at the Keidanren Kaikan in Tokyo from Oct. 7 through 9 in 1981 under the theme "Human Age and Robots."

The industrial robot is now acknowledged as an indispensable means to improve productivity, increase investment return, upgrade product quality and relieve workers from dangerous operations, hard labor and monotonous work.

The industrial robot has been playing a very important role to assure cost reduction and the humanization of one's working life. Industrial robots and applied systems are highlighted as the required means not only for improving productivity but for reducing occupational hazards and ailments, thereby contributing to the betterment of one's working environment and welfare.

The 11th International Symposium on Industrial Robots (ISIR) will be held under the sponsorship of the Japan Industrial Robot Association and the Society of Biomechanism, Japan.

This symposium will be held in accordance with the decisions made at the national coordinators' meeting of the 9th ISIR held in Washington, U.S.A., and will follow the 10th ISIR held in Milan, Italy. The symposium is also the third international event in Japan following the 4th ISIR in 1974 and the 7th ISIR in 1977.

The ISIR has contributed to the remarkable development of the technology of industrial robots, and the innumerable industrial robots installed have provided many socioeconomic impacts on industry, such as an improvement of productivity and industrial safety.

The 11th ISIR aims at providing opportunities for presenting papers and exchanging opinions on a wide range of subjects such as research and development of industrial robots, especially the research and development of sensing, controlling, programming and the mechanisms of industrial robots, and newly applied techniques as well as an evaluation of the economic and social impacts, and the present status and forecasts on the application of industrial robots.

The Tokyo Symposium is expected to be attended by more than 500 participants from over 20 countries throughout the world. More than 50 papers are also expected to be presented on such themes as research, development, applications, and socioeconomic evaluations of industrial robots.

To make the symposium more fruitful, it has also been decided to hold the '81 International Industrial Robot Exhibition from Oct. 8 to 12 at the Tokyo International Trade Fair Center in Harumi, Tokyo, under the joint sponsorship of the Japan Industrial Robot Association and the Nikkan Kogyo Shimbun Ltd. (Industrial Daily News, Ltd.).

This exhibition is the third international trade fair of industrial robots to be held in Japan and will follow the '74 and '77 International Industrial Robot Exhibitions. All the latest and advanced industrial robots and their systems from all over the world will be exhibited.

The scope of the exhibits regarding industrial robots covers 1) manual manipulators, 2) fixed or variable sequence robots, 3) playback robots, 4) NC robots, 5) intelligence robots, 6) robot application systems, and 7) related equipment.

At the same time, the '81 Material Handling Machine and System Show will be held at the same place.

The suggested topics for papers of the 11th ISIR are as follows:

1. State-of-the-art and development trends.
2. Economic and social evaluations
   —Humanization, industrial safety, reliability, marketability, socioeconomic impacts, etc.
3. Standardization of industrial robots

—Definition, classification, terminology, symbols, safety, method of indication and measurement on functional characteristics, patent classification, etc.

4. Research and development of mechanisms and software

—Working functions—moving, holding and locomotive functions.

—Control functions—moving control and teaching functions, robot language.

—Measurement capabilities—internal and external capabilities.

—Sensing and recognition capabilities—shape, voice, etc.

—Analysis and synthesis—modular constructions, built-in block system, etc.

—New products of industrial robots.

5. Production systems design

—Manufacturing systems modeling, man-robot systems, computer-assisted systems design, flexible manufacturing systems, etc.

6. Applications and operational experiences

—Manufacturing industrial applications

—Nonmanufacturing industrial applications, such as nuclear industry, ocean development industry, medical service industry, social welfare service industry, etc.

—Users' experiences, future needs and expectations.

(National Coordinators)

(Belgium) F. Denis, Fabrique Nationale Herstal

(Bulgaria) M.S. Konstantinov, The Central Laboratory for Manipulators and Robots.

(People's Republic of China) X.S Liu, Shanghai University of Technology

(CSSR) J. Buda, Kosice University

(Denmark) B. Andersen Technological Institute.

(Finland) A.J. Niemi Technical Research Center Finland.

(France) P. Rabischong, Unite de recherches biomechaniques. M. Leroux, French Industrial Robot Association.

(Germany) H.J. Warnecke, IPA—Stuttgart University.

(Hungary) P. Krisztinicz, Hungarian Academy of Sciences

(Italy) V. Nicolo, Centro Ricerche Fiat. M. Somalvico, Politecnico di Milano.

(Korea) J. Seo, Korea Nuclear Fuel Development Institute.

(Netherlands) J.B. Eijlers, Meininger Automation bv.

(Norway) A. Tengs-Pedersen, Jonas Oglaend A.S.

(Poland) A. Morecki, Technical University of Warsaw.

(Romania) P.N. Nitescu, Romanian Commission of TMM-IFToMM.

(Spain) F. Simo Prats, Spanish Industrial Robot Association.

(Sweden) A. Arnstrom, The Swedish Institute for Production Engineering Research. N. Martensson, Institute of Technology.

(Switzerland) C.W. Burckhardt, Ecole Polytechnique Federale de Lausanne.

(UK) T.E. Brock, British Robot Association. W.B. Heginbotham, Production Engineering Research Association. A. Pugh, University of Hull.

(US) B.M. Sallot, Robot Institute of America. R.C. Messinger, Cincinnati Milacron, Inc.

(USSR) E.I. Yurevich, Leningrad Polytechnic Institute.

(Yugoslavia) D. Hristic, Mihailo Pupin Institute.

(Symposium Organizing Committee)

Chairman: I. Kato, Prof., Waseda University.

Vice-Chairman: K. Yonemoto, Executive Director, Japan Industrial Robot Association.

Members: S. Asai, President, Toyoda Machine Works, Ltd.; M. Fukuda, Managing Director, Fuji Electric Co., Ltd.; S. Gohda, Executive Director, Daido Steel Co., Ltd.; H. Hanafusa, Prof., Kyoto University; Y. Hasegawa, Prof., Waseda University; Y. Ikeda, President, Toshiba Seiki Co., Ltd.; S. Inaba, President, Fujitsu Fanuc Co., Ltd.; K. Kitaura, General Manager, Mitsubishi Electric Corp., T. Kubo, Adviser, Hitachi Ltd.; M. Mori, Prof., Tokyo Institute of Technology.; M. Nishizawa, Executive Director, Yasukawa Electric Mfg., Co., Ltd.; S. Ozaki, Director General, Mechnical Engineering Laboratory, MITI.; T. Sata, Prof., Tokyo University; K. Satoh, Director General, Electrotechnical Laboratory, MITI; K. Shiomi, Director, Kawasaki Heavy Industries, Ltd.; M. Ueda, Prof., Nagova University; Y. Umetani, Prof., Tokyo Institute of Technology.

(Working Committee)

Chairman: Y. Hasegawa, Waseda University.

Members: T. Amemiya, Daido Steel Co., Ltd.; M. Irisawa, Kawasaki Heavy Industries, Ltd.; E. Nakano, Mechanical Engineering Laboratory, MITI; N. Yoshitake, Fujitsu Fanuc Co., Ltd.

(Industrial Robots For Practical Use)

More than 10 years have passed since industrial-robots made their debut in Japan in 1968. With the advent of the 1980s, robots have entered the age of practical use in Japan after going through the transitory age of the 1970's.

In fact, the production of industrial robots has been expanding at a rapid clip in

recent years for their contribution toward the improvement of productivity in various industrial fields and betterment of working conditions of employees.

According to Shigemitsu Asai, Chairman of the Publicity Committee of the Japan Industrial Robot Association and President of Toyota Machine Works, Ltd., the production of industrial robots in Japan was valued at 21.6 billion yen in 1977. It increased by 12.6 percent over the previous year to 27.3 billion yen in 1978, and by 15.5 percent to 42.4 billion yen in 1979. Production in 1980 is expected to exceed the 60 billion yen mark, according to Asai.

These figures speak most eloquently of the remarkable advance made in Japan's robot manufacturing industry. To further propel the development of the industry, four specific measures have been adopted since the turn of 1980 to mark the advent of the age of "practical use" of industrial robots.

To begin with, a lease system for industrial robots was inaugurated to promote the introduction of industrial robots. The Japan Robot Lease Co. was established jointly by various industrial robot manufacturing companies.

In spite of the increasing demands for industrial robots, their users, especially small and medium manufacturers, tended to think twice before making any decision to buy robots because of financial difficulties or fear of technical obsolescence, as the cost of installing units is rather high. This is because of their technology and high value added characteristics, so the necessity of a policy toward an easier introduction of industrial robots has been keenly felt.

Under these circumstances, a policy of promoting the wide use of industrial robots has been adopted, based on four principles, including special depreciation regulations, leasing arrangements and financial aid programs, since the start of fiscal year 1980.

These programs are very helpful to the users and makers of industrial robots. The programs in question include the special depreciation program and its application for high efficiency computer-controlled industrial robots; industrial robot leasing arrangements; special financing programs for industrial safety and health facilities and equipment; loan and lease programs of smaller enterprises; insurance systems for installment sales and loan guarantees, and financial programs for the promotion of machining systems.

(Topics)

Automatic systems for safe disposal:

The project on automation systems for safe disposal of high level radioactive waste materials was carried out in fiscal year 1979.

The reprocessing of used nuclear fuel is a very important task assigned to the energy policy of the nation. However, it is highly dangerous since strong radioactive waste liquid can leak during the process.

As one method of disposal, the solidification of the liquid has been researched and developed. But the work, under high level radioactive exposure, is very hazardous and it is necessary to make this operation fully automatic and unmanned.

The project, in this connection, attempted to identify and analyze the actual situation of solidification disposal, creating a conceptional design of knockdown solidified melters, in order to provide realistic knockdown methods, develop working robots, and to show safe and automated processes as a step toward practical use.

Robots and Cassette Tapes:

In order to meet the diversified needs and expanded application of robots for injection molding machines, the Star Seiki Co. has remodeled a previous control system to a table programming type sequencer through its long years of experience. It has newly introduced an "MHY-E" series with the sequencer fitted to the traverse type molded-product remover.

Labor saving and automatization are the most important factors to be considered regarding the audio cassette and video cassette production lines. To meet such needs, the company has developed a combination machine of audio cassette tapes and a cassette tape case-combined integrated machine.

In the former cassette tape case production system, two injection molding machines are operated by one operator by using a metal mold capable of molding two pieces at a time, and then inspection, combination and packing are done by extra workers after forming. With the manufacturing of a metal mold capable of molding four pieces (cover, body, etc.) at a time and installation of an automatic molded-product remover and a combined integrated machine, automation and labor saving have been greatly improved.

Teaching-Type Coating Robots:

The TOKICO CP teaching-type coating robot has been introduced to the market by Tokico Ltd. The new robot has the following features:

1) Only principal points on the coating path should be taught while the work is standing still. On playback, the robot coats the work, which is transported by conveyer, in a manner automatically synchronized with the movement of the item. So complicated coating can be taught easily.

2) After teaching, the coating program can be corrected easily if necessary.

3) On playback, the position date between two "taught" points is interpolated so that the robot moves smoothly at a constant speed.

4) Coating speed is taught numerically, which enables high-speed coating.

CSO: 4120

SCIENCE AND TECHNOLOGY

INTERNATIONAL CONFERENCES ON ANALYTICAL SPECTROSCOPY

Tokyo MAINICHI DAILY NEWS in English 31 Dec 80 p 27

[Text] About 700 foreign and Japanese scientists are expected to participate in the 9th International Conference on Atomic Spectroscopy and the 22nd Colloquium Spectroscopicum Internationale which will be held at the New Otani Hotel and Sophia University in Tokyo from Sept. 4 to 8.

The conference will be organized by the Japan Society for Analytical Chemistry with the cooperation of the Spectroscopical Society of Japan under the sponsorship of the International Union of Pure and Applied Chemistry, Science Council of Japan, Japan Society of Applied Physics, and Chemical Society of Japan.

The conference will consider all aspects of analytical spectroscopy. Symposia and sessions devoted to specific areas and applications will include: plasma emission spectroscopy, atomic absorption spectroscopy, atomic fluorescence and scattering spectroscopy, Fourier transform spectroscopy, laser spectroscopy, computers in spectroscopy, microbeam and surface analyses, spectroscopy for chemical state analyses and applications to life science.

Invited speakers who have so far agreed to attend include: L.S. Birks (USA), P.W.J.M. Boumans (the Netherlands), C.L. Chakrabarti (Canada), K. Dittrich (GDR), L. de Galan (the Netherlands), V.A. Fassel (USA), K. Fuwa (Japan), K. F.J. Heinrieh (USA), G.M. Hieftje (USA), G. Horlick (Canada), P.N. Keliher (USA), G.F. Kirkbright (U.K.), K. Kohra (Japan), S.R. Koirtyohann (USA), B.V. L'vov (USSR), R.J. MacDonald (Australia), A. Meisel (GDR), S. Minami (Japan), S. Nagakura (Japan), J.M. Ottaway (U.K.), T.G. Rains (USA), J. Robin (France), A. Rosencwaig (USA), I. Rubeska (Czechoslovakia), G.A. Somorjai (USA), J.C. Van Loon (Canada), A. Walsh (Australia), J.P. Walters (USA), T.S. West (U.K.), J.D. Winefordner (USA) and Zeng Yun-E (China).

Significance

Achievements by Japanese scientists in the field of atomic spectroscopy have attracted the keen attention of overseas researchers. The two conferences, ICAS and CSI, will become ideal venues where participants from overseas nations will be able to obtain first-hand knowledge about Japanese scientific activities and also exchange academic opinions, thus contributing to further advancement of theoretical and practical researches by young scientists. The promotion of worldwide cooperation to enhance the academic standard is one of the main targets of the Tokyo meetings.

Spectroscopic process is a major method adopted in the field of modern analytical chemistry, and this has become the mainstream of analytical techniques widely adopted in practical fields. Analytical chemistry spectroscopy is contributing to the advancement of not only analytical chemistry but also engineering, agricultural science, medical science, pharmaceutics, biology, environmental science and archaeology. It is also playing a great role in the field of manufacturing industries and many other applied scientific spheres related to the maintenance of man's health and welfare. Colloquium Spectroscopicum Internationale (CSI) has been held in Europe since long in the past as important symposia for the progress of modern science and technology.

Atomic absorption spectroscopy has made rapid progress since the possibility of utilizing the atomic absorption phenomenon in chemical analyses was confirmed in 1955.

In particular, the research results are widely utilized in analyses of environmental factors, medical practices and industrial materials.

Today's microanalyses cannot be successful without utilizing atomic absorption analyses. Because of the remarkable development in this field, scientists of industrialized nations began to hold the International Conference on Atomic Spectroscopy (ICAS) from 1967.

Since CSI and ICAS have many subjects in common, the two conferences have been held jointly since 1976.

At the Melbourne conferences in 1975, many overseas delegates expressed their desire to ask Japan to host the international conference for the first time in Asia.

In 1972, the Japan Society for Analytical Chemistry organized the International Conference on Analytical Chemistry as an event to commemorate the 20th anniversary of the society's foundation. Since then, Japan's analytical chemistry has been able to achieve remarkable progress. In view of this, the ICAS and CSI symposia of 1981 are expected to accelerate the advancement of research work in Japan.

The first ICAS conference was held in Prague in 1967. Since then, the ICAS meeting has been held every two years. Subjects for discussions have also been expanded to include atomic light emission and fluorescent light as well as absorption and emission of molecular light.

Because many common subjects have been discussed at the two conferences, scientists are hoping to combine the two into a single international conference in the future. This will become one of the major topics at the Tokyo meetings.

Japan was officially requested to host the conference at an executive committee meeting held in Philadelphia in 1976. The Japan Society for Analytical Chemistry decided to accept the proposal, particularly because it will greet the 30th anniversary of its foundation in 1981.

Participating Nations

Countries which are expected to take part in the Tokyo conferences are: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, China, Czechoslovakia, Denmark, Egypt, United Kingdom, Finland, France, German Democratic Republic, Federal Republic of Germany, Greece, Hong Kong, Hungary, India, Indonesia, Iran, Iraq, North Ireland, Israel, Italy, Japan, Republic of Korea, Kenya, Laos, Malaysia, Mexico, the Netherlands, New Zealand, Nigeria, Norway, Pakistan, Poland, the Philippines, Romania, Scotland, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Thailand, Turkey, United States, Soviet Union, Venezuela and Yugoslavia.

Overseas delegates are expected to total 250, and Japanese delegates about 450.

Organizing Committee

Chairman: Hiroshi Kamada, University of Tokyo.

Vice Chairmen: Keiichiro Fuwa, University of Tokyo (secretary general and program organizer); Kunio Minami, Osaka University (exhibition organizer); Kunio Nakano, Rikkyo University (in charge of general affairs); and Yoshihiko Oyagi, Chiba University (social affairs)

Treasurer: Reinosuke Hara, Daini-Seikosha Co., Ltd.

Submission Of Papers

Papers describing unpublished original work are invited. Authors wishing to submit a paper for presentation are requested to forward a title and brief abstract to the Secretariat at the Japan Society for Analytical Chemistry, Gotanda Sanhaitsu, 26-2 Nishi Gotanda 1-chome, Shinagawa-ku, Tokyo 141, Japan.

Oral presentation and poster session will be featured at the conferences. The first choice of the mode of presentation will be made by the author. The Organizing Committee will make the final assignment of the definite form of presentation.

Authors of accepted papers will be informed of it as well as the mode of presentation together with a form for the comprehensive abstract by early March 1981.

Any language may be used for presentation, provided slides and abstracts are written in English.

There will be an exhibition of scientific equipment. Poster session will be provided, particularly in connection with the instrumentation exhibition.

All participants will receive a copy of the abstract of papers on registration. The conference proceedings containing the invited lectures will be published after the conference.

Social Program

A social program is being planned by the Organizing Committee.

Reception: Sept. 4, Friday evening. All the members are invited.

Excursion: Sept. 6, Sunday.

Banquet: Sept. 7, Monday evening, at The New Otani.

A social program specially planned for ladies and families accompanying the participants is being prepared by the Organizing Committee.

Kinki Nippon Tourist Co., Ltd. (KNT) has been appointed as sole travel agent for the conference participants. For the convenience and economy

of the participants, group discounted air travel may be arranged through KNT's overseas offices and/or associated travel agents, if the number of participants traveling together comes to form a minimum group size.

After Conference

Post conference symposia are planned in succession to the main-conference in some cities.

Group excursions after the conference will be organized by Kinki Nippon Tourist Co., Ltd.

CSO: 4120

SCIENCE AND TECHNOLOGY

NIPPON KOKAN MOVES TO HELP FORD STEEL DIVISION

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 1

[Text]

Nippon Kokan K.K., Japan's No. 2 steelmaker, and Ford Motor Co., America's No. 2 automaker, are negotiating on converting Ford's basic products (steelmaking) operation division into a joint steel venture, it was learned last week.

Ford initially asked NKK informally, to buy up all of its basic products operation division, but last fall it changed this to a proposal to set up a joint steel firm.

Early last December, Ford Vice-President George A. Ferris, in charge of basic products operations, met with NKK's executives. He disclosed a plan to separate Ford's basic products division to form a new steel firm, and asked NKK to invest in the planned new steel firm.

Convinced that the joint investment formula is less risky as to investments, NKK has decided to send a mission to Ford on January 17 to boil down details of the joint venture plan.

Ford basic products operation division runs the River Rouge steel works in Dearborn, near Detroit, Mich. The works now has three blast furnaces and can produce about 3.4 million tons of crude steel a year, and more than 2.5 million tons of steel mill products, including automotive steel sheets and steel bars for structural purposes. It has approximately 5,000 employees on its payroll.

Two-thirds of the works' output are being supplied to Ford factories and the rest to other firms.

The proposed joint investment plan is regarded advantageous for both Ford Motor and NKK.

For Ford, it will enable it to obtain NKK's capital and technology, particularly for steel sheet rolling for automobiles.

For NKK, it will give it a chance to have a major production base in the U.S., the largest steel market.

Amid the worldwide auto industry's "race for lighter and more fuel economy cars," Ford Motor wants to adopt NKK's continuous annealing process which is vital in mass production of high tensile strength steel sheets. It reportedly judges that its own technology in this field is still inadequate.

It is generally known that when 50 per cent of a 200-350 kilogram car body exterior is replaced with high tensile strength steel sheets, the car's weight will go down by 10-17.5 kilograms and its running distance per liter of gasoline will increase by 100-175 meters.

Ford and NKK are expected to discuss details of their joint venture as soon as possible. They now are planning to have the new steel firm sell its products not only to Ford but to other firms.

The new firm is expected to become a major steel supplier for the prospective joint auto plants due to be set up by American and Japanese automakers as well as for Japanese automakers, such as Honda Motor Co. and Nissan Motor Co., now planning car production in the U.S.

CSO: 4120

SCIENCE AND TECHNOLOGY

DEFENSE AGENCY ENVISIONS JAPAN'S BADGE SYSTEM

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 3

[Text]

The Defense Agency has decided on a policy of domestically developing a base air defense ground environment system as the core of Japan's air defense setup.

The present BADGE system used by Japan was acquired from Hughes Aircraft Co. of the U.S.

It stands to become the first instance of Japan switching a key equipment in air defense from a foreign make to one developed on its own.

The Agency hopes to produce the domestic version, dubbed "BADGE X," by using mainframe computers secured in Japan and developing a part of data processing software with American cooperation.

It envisages completing designing of the BADGE X system during fiscal 1981, select makers for participation in the project, and start procurement from fiscal 1983 at a total cost of from ¥200-300 billion.

In the back of the Defense Agency's decision to work out Japan's own BADGE setup is its recognition that Japan's electronics technology now has developed to the point of matching that of the U.S.

The BADGE system of Japan's Air Self Defense Force was introduced from 1963 as one of the key points of the second defense capability adjustment plan, running from 1962-66. It began operating in actuality from 1968.

The chief features of the system are:

—It detects flying aircraft with a nation-wide network of 24 radar stations, excluding Okinawa (4 stations).

—The computer system instantaneously comes through with such data as identification of plane nationality, its direction, speed, etc.

—This information, again, is relayed to defense planes as well as Nike and Hawk missile units for directing their defense counter-action.

The Defense Agency decided to develop a Japanese BADGE system as the present setup has become outdated in many respects from faster aircraft, and stands to reach a limit also in data processing in considering future use of E2C early warning planes.

It is understood that the Air Self Defense Force already has dispatched a study mission to the U.S. with regard to the BADGE X project.

At the same time, the Agency has asked an American company to make a study of the present BADGE system and turn in a report to it by the end of the current fiscal year.

As for Japanese computer and electronic makers, they welcome the Defense Agency's latest decision since they had taken the view that BADGE would shape up as a major project in the first half of the 1980s.

The present BADGE system was made and delivered to the Japanese Government by the Nippon Electric group of companies on the basis of technology received from Hughes.

CSO: 4120

SCIENCE AND TECHNOLOGY

TOOL NUMBERING DEVICE CONTRACT SET WITH UK MANUFACTURER

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 7

[Text]

A machine trader has signed a long-range contract with a leading British machine tool manufacturer to supply the latter with machine tool numerical control devices and machining center automatic tool changers.

Trader Daiichi Jitsugyo Co. disclosed it has closed the contract with Staveley Machine Tools Ltd. of Birmingham.

The deal provides:

—It will sell any number of numerical control devices and automatic tool changers for a long period.

— SMT will freely use the electronic appliances on machine tools and machining centers of its own making and sell the products not only throughout Europe but anywhere else, including Japan.

Daiichi Jitsugyo will shortly start fulfilling the contract by first shipping out 10 sets of ATCs to SMT.

The sophisticated tool changers, identified as the H60 type, will be produced by Mori Tekkosho Co. of Okayama Prefecture, with which Daiichi Jitsugyo has close business relations. A second shipment consisting of a number of NCs, also to be produced by Mori Tekkosho, is scheduled later.

All such supplies will be purchased by Daiichi Jitsugyo from Mori Tekkosho and resold to SMT at Daiichi Jitsugyo's own responsibility.

According to industrial observers, SMT has realized that the Japanese machine tool industry has attained the world's top level in technology in a brief period of time and started dominating the West European machine tool markets with its superior products.

SMT thus has reasoned it will be wiser to make the most of such Japanese appliances in improving the efficiency of its own products.

SMT seems to have concluded that it is too late to develop its own appliances of the kind from now on.

Daiichi Jitsugyo seems to have also welcomed the deal because its own efforts to build its European business without the cooperation of local machine tool makers are too time- and labor-consuming and not too effective. The company has reportedly received a similar approach from an American machine tool manufacturer.

CSO: 4120

SCIENCE AND TECHNOLOGY

ROBOT MAKERS SHIFT STRESS TO IMPROVING SALES OUTLETS

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 8

[Text]

Japanese industrial robot makers have started to actively engage in strengthening their business structure as signs point to further dissemination of such robots in various industries.

Up to now, robot builders have been laying stress on development of their products and left the matter of expanding sales outlets as a problem for the future.

Recently, however, they have begun to emphasize exports on a full-fledged basis by entering into tie-ups with major general trading houses and overseas producers.

They also are showing interest in setting up firms to handle the software sector and in staging demonstrations and exhibitions in various parts of the country.

General Electric Co. of the U.S. is planning to set up a production base in Japan for industrial robots.

Dainichi Kiko Co. of Tokyo is regarded as a promising candidate to become GE's partner in the venture.

Of the other robot makers, Yaskawa Electric Mfg. Co. is having Iwatani & Co. act as its agent, and Kobe Steel, Ltd. is using Nagase & Co. as its agent.

Kawasaki Heavy Industries, is exporting its Kawasaki Unimate robots chiefly to automakers in the U S. and Europe through Unimation, Inc. of the U.S., its partner.

Yaskawa Electric Mfg. also has entered into a sales tie-up arrangement with Hobart Brothers, a major U.S. welding machine maker and established a sales base in North America.

Among the makers, Hitachi, Ltd. is most actively engaged in strengthening its business within Japan.

It recently set up Hitachi Keiyo Engineering Co. in Narashino, Chiba Prefecture, to sell software for industrial robots.

In the induction of industrial robots, a major factor to be considered is the layout of the plant and to what extent production can be systematized in the utilization and technological phases.

Hitachi also established demonstration and exhibition sites for industrial robots in Nagoya, Osaka and Hiroshima in addition to the existing one in Narashino.

Such demonstration and exhibition sites are regarded necessary for dissemination of industrial robots.

Active moves for establishment of such sites are being seen among the makers.

Tokico, Ltd. already has set up such sites in Tokyo and Nagoya and is planning to establish one in Osaka, while Yaskawa Electric Mfg. has established similar sites in Tokyo, Osaka and Kitakyushu.

CSOP 4120

SCIENCE AND TECHNOLOGY

MHI STARTS SALES OF WELDING ROBOTS TO AUTOMAKERS

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 8

[Text]

Mitsubishi Heavy Industries, Ltd. has launched sales of its new industrial robots — microprocessor-controlled spot welders — for delivery to automakers.

In producing spot welding robots, the company has stopped using the conventional wired logic control system in favor of the electronic device.

The microprocessor-controlled machines belong to the rectangular coordinates type. They consist of three models — floor type, under-floor type and overhead type.

An MHI spokesman said that the new system allows freer combining, easier changes and greater reliability of the robots. It also has enabled the company to mass produce the robots and cut down production costs, the spokesman added.

While switching to the rectangular coordinates type, the company has ceased to produce spot welding robots of the cylindrical and polar coordinates types.

Mitsubishi HI so far has delivered about 90 per cent of its conventional spot welding robots to its family automaker, Mitsubishi Motors Corp. With the unveiling of the novel robots, however, Isuzu Motors, Ltd. has come out as a new customer.

The robot producer plans to step up production by 50 per cent to some 15 units early this year in a bid to find more customers among other outside automakers, such as Toyota, Nissan and Toyo Kogyo.

CSO: 4120

SCIENCE AND TECHNOLOGY

POSTAL MINISTER DIRECTS NTT TO STUDY DECONTROL

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 9

[Text]

Posts and Telecommunications Minister Ichiro Yamanouchi recently orderd Nippon Telegraph & Telephone Public Corp. (NTT) to study possibilities of liberalizing the latter's exclusively controlled data communication service in Japan to permit competitive participation by private business enterprises.

His instruction is expected to draw some kind of answer from NTT during fiscal 1981. The problem involves NTT's risk of losing much of its lucrative data communication jobs.

NTT's data communication service now divides into two kinds — a public type operated by NTT itself, and an line-leasing type.

The new instruction is intended for removing the present restrictions of the line leasing type to only the leasees' own utilization, banning joint utilization with third parties or by third parties between them.

Yamanouchi's ministry had been trying to realize a similar, but milder reform by NTT.

The U.S. information industry has rapidly developed by two private enterprises' operation of added value data communication service at low fees.

Japan's problem of such liberalization is closely connected with its pending one as to whether to permit a similar added value data communication business. Even if the pending problem is not solved, the liberalization will bring a great expansion in utilization of the leased data communication lines among Japan's numerous business enterprises.

CSO: 4120

SCIENCE AND TECHNOLOGY

HOPE FOR NEW TECHNOLOGY BREAKTHROUGH EXPRESSED

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 12

[Editorial: "Technology Power"]

[Text]

There is renewed and expanding interest in technology development as a way of strengthening Japan's national power, which seems understandable in view of the high marks given internationally to Japan's technological capabilities.

There are several factors in the background. First are the hopes for technological breakthroughs. The outlook of the economy in the 1980's of an impasse for Japan and the world as various potential constraints on growth, energy, resources, environment, food and population, threaten. It is natural under these circumstances that expectations are for a breakthrough which technological development could bring about, like new energy sources.

Second, there is continued desire for improvement in the quality of life. In place of quantitative expansion, which in the future seems to have less chance than in the past, qualitative improvement is a growing concern for realizing more sophisticated economy and living.

The third factor is the need to open up export markets for new products through new technology development. Japan's traditional industries, like shipbuilding, steel, automobiles and home electric appliances, increasingly face conflicts with importing countries, which points to the need to come up with new kinds of export goods.

Fourth, there are possibilities that Japan could use its technological power, in place of money and goods, as an element in international bargaining.

What topmost technologies does Japan have then? One good example is the ultra LSI, which is ushering the nation into an age of microelectronics, after four years of development work that has cost ¥70 billion. Official and private sectors are also joining forces in advancing fiber optics technology, enabling Japan to produce the world's longest and best-performing optical fiber.

Technological innovation is in rapid progress in the field of new materials as well. Chemicals used to be measured by the ton, but today there are some specialty chemicals, like those used as materials for pharmaceuticals, which are valued at millions of yen per gram. New ceramics, stronger and capable of greater precision than metals, are being tested for making automobile engines.

There are numerous other areas where important technological innovation is taking place in Japan, including nuclear fusion which can generate an almost limitless amount of energy from sea water, and the linear motor car that can run at a speed of 500 kilometers an hour in fully automated operation. If seeds of all these new technologies fluorish and bear fruit, a wave of technological innovations could arrive in Japan, expanding the horizon of economic growth.

Spending an estimated ¥5,000 billion each year and possessing about 600,000 researchers. Japan today is the world's third largest force in technology development, after the United States and the Soviet Union. Serving not only its own economy but also the world community in this respect is its responsibility.

In 1978, expenditures on science and technology amounted to 2.15 per cent of national income, which still largely falls short of the 3 per cent set as a target by the government. But quantitative expansion alone no longer suffices. Qualitative improvement demands a clearer direction for research and priority in budget allocation.

Although Japan has achieved an affluent society, there are plenty of problems and dissatisfactions, especially in the field of social capital and services. One important role technology development is expected to play is to fill this gap. If confidence in and hope for technology is lost, the nation's survival will come into jeopardy.

CSO: 4120

SCIENCE AND TECHNOLOGY

TDK DEVELOPS ELECTRODE UTILIZING PALLADIUM OXIDE

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 12

[Text]

TDK Electronics Co. has developed a metal electrode, featuring use of palladium oxide instead of ruthenium oxide. Tokuyama Soda Co. has already decided to adopt the new electrode chiefly for caustic soda production.

Until now, the ruthenium electrode, as developed by de Nora of Italy, has enjoyed a virtual monopoly throughout the world. The de Nora products are leased here by Permelec Electrode Co., a joint venture of the Italian developer (Cronzio de Nora Impianti Electrochimici S.p.A.), and Mitsui & Co. and Mitsui Engineering and Shipbuilding Co.

TDK said that its electrode is designed to consume less electric power than the de Nora version and to produce higher-purity chlorine gas. The company added that its electrodes can also be used for seawater desalination and purification of water.

It has been known that palladium promises good efficiency but performance can be instable. Test production at TDK's Akita plant was successful and made use of ferrite electrode and roasting know-how.

Palladium oxide is capable of efficient chlorine production in the Electrolysis of saturated seawater. Besides chlorine, electrolysis produces caustic soda.

The de Nora electrode debuted about 20 years ago, replacing conventional graphite electrodes. Only a few companies, including licensees of the Italian know-how, lease the electrode throughout the world.

Some chlor-alkali companies have tried unsuccessfully to develop their own electrodes. They infringed upon the Italian company's patent rights. The use of ruthenium electrodes in a diaphragm cell causes a problem: simultaneous generation of oxygen gas along with chlorine.

By comparison, TDK said, its electrode reduces the oxygen gas to a maximum of 0.01 per cent of chlorine gas. In addition, the company cites such advantages as lower power consumption (30 per cent saving when seawater is used as the raw material for soda and chlorine), and better energy conversion.

Palladium, similar to platinum, is easy to stretch. But its strength can be improved by adding gold. The element is often used as a catalyst in chemical plants.

CSO: 4120

SCIENCE AND TECHNOLOGY

FIRST COMPUTER FOR ANALYZING ENZYMES DEVELOPED

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 13

[Text]

Probably the world's first computer for analyzing, identifying and recording enzymes has been developed by the Institute of Physical and Chemical Research of Tokyo, an old and prestigious Japanese institute.

According to the institute, its trial Enzyme Reaction Test Reactor No. 1 was demonstrated to Japanese scientists at the local Research and Development Division of Mitsui Knowledge Industry Co.

The purpose of the new gadget is to help development of a "bioreactor" to synthetize different enzymes into useful new substances under the same conditions — temperature, pressure, and so on—as is found in living animal bodies.

Development of a reactor to combine enzymes parallels gene engineering as the hottest modern research and development target among the world's biotechnological efforts to make the most of living body enzymes for production of not only new hormones or other drugs, but even foodstuffs and chemical materials. Japan today may be in the lead in such research and development projects but Britain, West Germany and America are in hot pursuit.

The prospective reactors work under normal temperature and atmospheric pressure and create only a single specific kind of substance.

The first generation of such reactors to produce industrial catalysts may have already been developed in some form or other, but more sophisticated types are yet to be developed.

According to the institute, its test reactor would make it possible to instantly identify any enzyme chosen from countless varieties by magnetic tape-recorded characters. It is capable of processing at least seven kinds of enzyme a day by properly controlling by computer the temperature, solution density, hydrogen ion concentration and other checking conditions. That means an immense speedup of time-consuming human lab labor.

The institute is to develop its own bioreactor or "peptide typewriter" to automatically produce a physiologically active cancer-controlling polypeptide made up of a chain of 20 kinds of amino acid. Named as co-developers were Toyo Soda Mfg. Co. and Sagami Chemical Research Institute working with the institute under the guidance of Prof. Akimitsu Wada of the University of Tokyo.

CSO: 4120

SCIENCE AND TECHNOLOGY

FLAT VACUUM BOX DEVELOPED FOR COLLECTING SOLAR ENERGY

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 13

[Text]

A vacuum box in which solar heat is collected in helium gas or steam vapor inside several lines of copper piping to prevent heat leakage is being developed by Taiyo Sanso Co. of Osaka.

The Japanese compressed gas maker has become sure of its success in making solar heat collector by applying its own method of producing a flat vacuum box. So far, it has been difficult to produce a vacuum vessel in any form other than a sphere or a cylinder because of the strong atmospheric pressure.

The company succeeded, by creating a honeycomb structure inside a panel box. It has already commercially produced a liquid nitrogen container of the sort, planning to diversify application to new kinds of thermos bottles, lunch boxes and building heat-insulator wall.

So promising is the solar energy collector that the company has envisioned building a roof-top collecting system and an accompanying heating, air-conditioning and running hot water generator efficient enough to meet all the needs of a 10-story building, for instance. The company even visualizes solar energy power generation.

A first trial model of the solar energy collector will be a large vacuum box about 10 centimeters in thickness. Several pieces of copper piping inside the box will contain some heat medium. At one end of the box, a convex lens to reflect the sunbeam at the terminal of each copper tube is also fixed. The pipe terminal is surrounded by mirrors to help the reflected light concentration. The lens will automatically turn according to the changing angle of the sunlight hitting it.

Since a vacuum does not transmit heat, it is easy to heat the thermal medium inside the pipings to anywhere between 200 and 400 degrees C. and pen up the heat without any loss before application. Depending on conditions, the collector will be anywhere between 50 to 1,100 per cent more efficient than conventional equivalents.

The company hopes to get a governmental or other public subsidization to facilitate its ¥400 million research and development projects.

CSO: 4120

SCIENCE AND TECHNOLOGY

TECHNOLOGY DATA EXCHANGE IN ASIA WILL BE SUGGESTED

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 13

[Text]

An idea to create a coordinated network of official services among Asian nations for promoting interflow of scientific and technological information will be proposed by the Government's Agency of Science & Technology at the eighth plenary session of the Association for Science Cooperation in Asia (ASCA), to be held in Indonesia in February.

According to sources close to the Agency, the idea will be worked out in detail by a special study panel to be organized shortly by the Agency from various governmental and private scientists, technologists and other intellectuals, with careful attention paid to the progress of a current international move to create a worldwide network of the kind at the United Nations level.

Proper selection of types of information fit for such interflow and propriety of computerization of the network will be also studied by the panel.

Promotion of such international flows of scientific and technological information is not just important among advanced nations in this age of internationalization of such information enormously piling up in each country, including snowballing interdenominational types astride different specialities.

But it has become one of the most important demands on the part of the developing nations in the interest of bridging the North-South economic development gap.

An idea to build a worldwide network of services to ensure effective distribution of interflow of such information proposed during the Aug.-Sept. '81 United Nations scientific and technological conference for development held at Vienna has continued to be studied by four U.N. organizations. The prospective Japanese proposition is to create an Asian version of that network.

Inaugurated about a decade ago at an initiative taken by Philippine President Ferdinand E. Marcos, ASCA has been a sort of joint research and development promotional organization utilized either between two or among more Asian countries. Hitherto, Japan has been working for all ASCA member nations by distributing English language reports on Japan's new scientific and technological study literature or study developments.

CSO: 4120

SCIENCE AND TECHNOLOGY

NEW SCREENING METHOD FOR DISCOVERY OF NEW DRUGS

Tokyo JAPAN ECONOMIC JOURNAL in English 13 Jan 81 p 13

[Text]

What could be a revolutionary way to facilitate discovery of substances to make metabolism-controlling drugs for curing adult, especially old-age, diseases, has been developed by Mitsubishi Petrochemical Co.

The Tokyo company said the promising method developed by its central research laboratory is screening substances to develop such drugs out of countless varieties of biochemical or artificial chemical materials.

There are hundreds of thousands of such substances to choose from for finding out really potent ones to produce drugs to cure or control physical troubles caused by aging deterioration of metabolism, including hypertension and senile dementia as well as antibiotics and cancer cures.

In the absence of an effective systematic way of screening, all past discoveries of some good substances of the kind to make antibiotics or cancer drugs have been made only accidentally during basic and broader-ranged researches.

The method already has been used by the company's drug-producing subsidiary, Mitsubishi Yuka Pharmaceutical Co., for application to the latter's research and development projects.

According to Mitsubishi Petrochemical, such a screening method had been considered possible to develop by using an enzyme extracted from a human or animal body to test any substance for its effect on the enzyme — promotional to the enzyme's activities, and therefore, eligible for making the drugs, and inhibitive on such activities or having nothing to do with them, and thus, non-eligible. (But an inhibitive substance may sometimes be chosen for its reverse usefulness.)

Specifically, the natural metabolic functions of the brain, nervous system or other main parts of the body are simulated in a test tube, and a given enzyme derived from a living body is made to work upon those artificially created functions. Such enzymes are known to work as a catalyst to promote those metabolic functions. Any substance, or any drug made from it, if it accelerates the activities of such an enzyme, should be an indirect stimulant to the body metabolism to cure or control all metabolic disorders.

But every past attempt to develop such a screening process had hit a big bottleneck of how to obtain enough supply of such a biological enzyme to make tests.

The company has attained a breakthrough in this respect by applying gene engineering technology to implant such a enzyme-creating kind of animal gene on a colon bacillus known as a K-12 stock, thus succeeding in massive production of the enzyme.

This means an ingenious indirect way to utilize the gene engineering technology hitherto used for production of interferon and other innovational medical or other substances.

An executive of the company expected new drugs to be developed by the application of the screening method to emerge in two or three years to come, taking into account the long time needed for ensuring their safety. A Tokyo University assistant professor of pharmaceutical science highly evaluated the company's wisdom to utilize gene engineering for its achievement. As a first of the new drugs the company envisions, he imagined something like a hypertension-controlling drugs. Referring to the scarcity of naturally obtainable supplies of such enzymes, he said that not a few kinds are each derivable in just 1 gram or less from 5,000 animals.

CSO: 4120

END