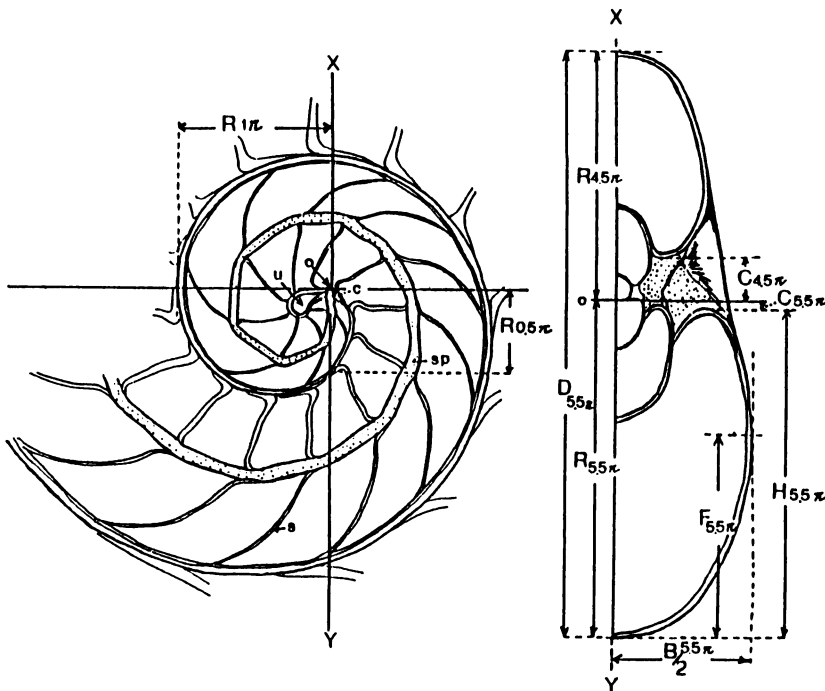


# Newsletter

No. 2

February 1991

*Kagoshima University Research Center  
for the South Pacific*



鹿児島大学  
南太平洋海域  
研究センター

ニューズレター  
2号  
平成3年2月



Professor Shin'ichi Terashi  
Director of Research Center for the South Pacific

Basic morphology, orientation and measurements of the shell of *Nautilus pompilius* in median (left) and cross (right) sections.

## As the Fourth Director of our Research Center

Shin'ichi Terashi  
Kagoshima University Research Center for the South Pacific

Upon accepting the position of Director of the Kagoshima University Research Center for the South Pacific in April, 1990, I would like to take the opportunity to summarize the history of the Research Center.

For many years, the faculty and staff of Kagoshima University, which consists of 8 faculties and 1 college, has been engaged in cooperative research activities including field surveys in tropical and subtropical regions. When one makes an areal study, he is obliged to deal with much information and materials belonging to academic fields in which he is not deeply versed. Therefore they desired to establish a research institution as a center for their cooperative activities and the accumulation of information concerning the tropics and subtropics. Thus the Kagoshima University Research Center for the South Pacific, whose main subject was "man and the environment", was established in 1980 and officially recognized by the Ministry of Education, Science and Culture, in 1981.

As a result, the number of staff members of our Research Center proper increased from one, the Director himself, to three. That is, in addition to Professor Sasuke Nakao the original Director, Dr. Kazutaka Nakano and Mr. Takefumi Terada, who several years later received his Ph.D., obtained respective positions of Professor and Research Associate.

As the first year of the First Term of the overseas surveys, Director S. Nakao organized an expedition team into Fiji with the aid of a "Special Research Grant" from the Ministry of Education, Science and Culture, and he himself played the role of the team leader. In 1982, although Professor S. Nakao retired, three people, Professor Akio Inoue, Administrative officer Masao Arimura, and I took positions as members of the Research Center proper. In that year, Director Shigero Iwakiri, who succeeded S. Nakao in parallel as a professor of the Faculty of Fisheries, similarly organized another team to Fiji and the Solomon Islands. Dr. Tadao C. Katayama, a professor from the Faculty of Agriculture, served as the team leader for this second expedition. For the third expedition, to Papua New Guinea, in 1983, Dr. Hachiro Hirata, a Professor from the Faculty of Fisheries, was the team leader.

In the first year of the Second Term, 1985, a similar expedition team, whose leader was Dr. Shozo Hayasaka, a professor from the Faculty of Science, was organized for a survey in Pohnpei and the Truk Islands of the Federated States of Micronesia. In the second year, 1986, a survey was conducted under me, as the team leader, in collaboration with the research officers and other appropriate people in Yap, the Federated States of Micronesia, and the Republic of Belau.

In the 4 academic years from 1984 until 1987, Professor A. Inoue served as the Director of

our Research Center. In 1988, while the Research Center was obliged to alter its name in Japanese (though the English name remained unchanged), it was permitted by the Japanese Ministry of Education, Science and Culture, to exist and actually to continue its activities, for the following 10 years, as it had been. At this time of renovation, Associate Professor T. Terada, who had been promoted several years before, left Kagoshima University and Mr. Yasuyuki Karakita succeeded him as Assistant Professor.

In 1989, an overseas survey with the aid of the foregoing research grant was made in Papua New Guinea. The team leader was Dr. Tooru Yonemori, a Professor from the Faculty of Fisheries.

On this opportunity, the "Memorandum of Understanding on Research and Training Cooperation in Marine, Terrestrial and Human Science in the University of Papua New Guinea, Papua New Guinea University of Technology and Kagoshima University" was signed by the President of Kagoshima University, the Director of our Research Center, the Dean of the Faculty of Fisheries of Kagoshima University, the Vice Chancellor of the University of Papua New Guinea, the Dean of the Faculty of Science of the University of Papua New Guinea, and the Vice Chancellor of the Papua New Guinea University of Technology on December 1st, 1989. The meeting for reporting the results of the 1989 survey was held on March, 20th, 1990.

None of the foregoing surveys with the aid of a "Special Research Grant" by the Ministry of Education, Science and Culture, Japan, could have been conducted without the cooperation and collaboration of the staff members of the Kagoshima-maru and the Keiten-maru, the two training vessels of the Faculty of Fisheries, Kagoshima University.

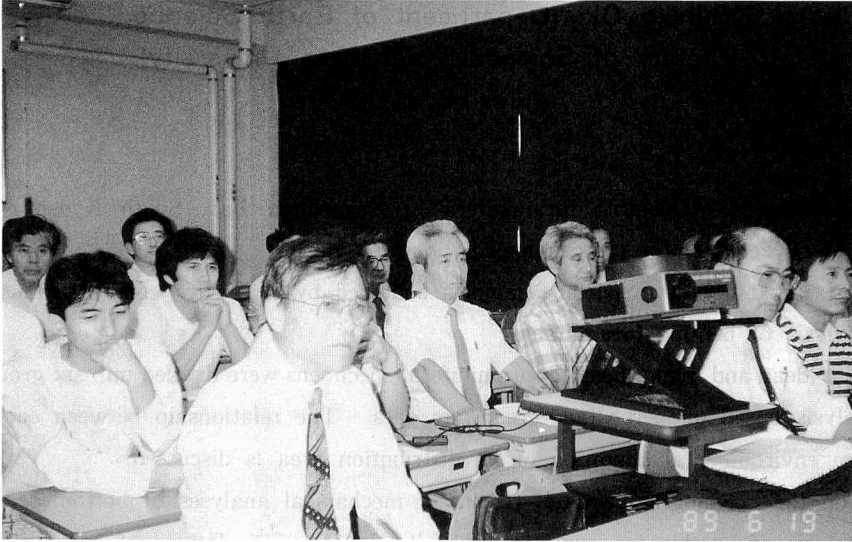
In this academic year, our Research Center is, on the basis of the Memorandum mentioned above, to make a more substantial survey in collaboration with the staff members of the universities in Papua New Guinea.

Thus, owing to the strenuous efforts by the three foregoing Directors, our activities for surveys and research have developed conspicuously. Though difficult, it is my responsibility to maintain the high level of our activities and further raise it. With the help of the members of the cooperative staff and the committees, I intend to make every possible effort to attain this goal.

In this academic year, in addition to the usual monthly study meetings, we successfully held a symposium entitled, "*Habu*, a venomous snake". Furthermore, we held the 6th Occasion for the Open Lectures for Citizens for three days from the 7th to the 9th of August. At this opportunity, we asked, Mr. Masao Nakayama, the ambassador of the Federated States of Micronesia to Tokyo, to give the participants a lecture on the history and the present situation of this nation. Afterwards, we had a tea party to strengthen our friendly relationship. When we conducted surveys in his country, he held the position as the Secretary of Foreign Affairs and liberally granted favor to us.

I modestly hope that the atmosphere of the usual monthly study meetings, Symposiums, the meetings for reporting the results of the surveys, and the Open Lectures for Citizens should not be too academic, but become more relaxed.

## Abstracts from Seminars



### Afforestation Activity on the Loess Desert

Hideo Tagawa (Department of Biology, College of  
Liberal Arts, Kagoshima University)

May 28, 1990

From April 27 to May 7 1990 I visited China for planting trees on the devastated loess plateau around Lanchou, Kansu, as a member of the Green Envoy of the Chugoku Dojinkan, Kagoshima. The climate around Lanchou is severe with low temperatures reaching  $-15^{\circ}\text{C}$  and little rain (500mm a year), and in the summer people must pump water up from the Hung Ho River 200m below to irrigate the land. Planted species were *Cedrus deodara*, *Sabina vulgaris*, *Picea purpurea*, and *Populus* spp. The salts which came up to the top soil with subterranean and irrigated water did much damage to the leaf tips of the saplings, but their survival ratio was about 80%. At the bottom of the valley they planted fruit trees such as *Prunus davidiana* and crop plants to get money for the project. The planning, pest control, seedling nursery and aftercare etc. are carried out by the Forestry Department of Kansu, but the labour for every procedure has hitherto come from the free service of citizens for a certain period. About 50,000 ha have been planted since the project was conceived and put into operation in 1985 by the late Prime Secretary, Hu Yao-Bang.

# Ecological Analysis of Benthic Foraminifera in Kagoshima Bay, South Kyushu, Japan

Kimihiko Oki (Department of Earth Science,  
Faculty of Science, Kagoshima University)

July 16, 1990

The assemblages of benthic foraminifera in Kagoshima Bay, South Kyushu, Japan are quantitatively analyzed from a paleoecological point of view.

Eighty-six of 146 bottom surface samples collected by a gravity corer were used for the ecological analysis of benthic foraminifera.

The total (dead and living) benthic foraminiferal specimens were divided into six groups through a cluster analysis based on percentage frequency data. The relationship between each clustered group and the environmental condition of its distribution area is discussed.

Based on the oceanographic data, results of mechanical analyses of bottom sediments and of cluster analysis of benthic foraminifera, the following five populations of benthic foraminifera, corresponding to the distribution of the water masses were discriminated.

1) Population A: Inhabiting the area (the open sea and Bay Mouth Areas and the coastal area along the Osumi Peninsula in the southeastern part of the Central Area) under the influence of the open-sea water mass. Predominant species are *Cibicidoides pseudoungerianus*, *Globocassidulina orianguilata*, *Paracassidulina quasiearinata*, *Nonion pauperatus* and *Discorbis mira*.

2) Population B: Inhabiting the area (the coastal area along the east coast of the Satsuma Peninsula extending from Kagoshima to Ibusuki) under the influence of a hyposaline water mass. Predominant species are *Cymbaloporella hemisphaerica*, *Buliminella elegantissima*, *Bolivina ordinaria*, *Protelphidium schmitti* and *Pseudononion japonicum*.

3) Population C: Inhabiting the boundary area (the deepest part of the Bay Mouth Area and the marginal part of the flat marine terrace developed along the east coast of the Satsuma Peninsula in the Central Area) between water masses of different salinity. Predominant species are *Uvigerina vadescens*, *Bulimina marginata* and *Globocassidulina orianguilata*.

4) Population D: Inhabiting the basin bottom (Central Area and the southwestern part of the Bay Head Area) under the influence of a relatively stagnant water mass slightly mixed with open-sea water. Predominant species is *Bulimina marginata*.

5) Population E: Inhabiting the basin bottom (Bay Head Area) under the influence of a water mass which is stagnant through the year and scarcely exchanged with open-sea water. Predominant species is *Eggerella scabra*.

## Pathology of Decompression Sickness

Motoo Kitano (Department of Oral Pathology,  
Kagoshima University Dental School)

September 25, 1990

Decompression sickness (DCS) results from a complex series of events initiated by the formation of gas bubbles during or after decompression of the environmental pressure, especially in divers and caisson workers breathing compressed air. DCS is caused by the formation of inert nitrogen gas bubbles within the intravascular or extravascular spaces. The bubbles that form in tissue or blood produce local damage and intravascular blockage and give rise to a wide variety of clinical symptoms and signs.

It had long been accepted that the creation of intravascular gas bubbles resulting in bubble embolisms is the most important aspect of the pathogenesis of DCS. Recently, however, many biophysiological phenomena which are not related to bubble embolisms have been observed by many investigators, such as (1) some patients with DCS do not recover from the disease in spite of an adequate recompression therapy, (2) administration of an anticoagulant (such as heparin) is sometimes a very effective treatment for the disease, and (3) obese persons are more prone to suffer from DCS than thin persons.

In considering the etiology of DCS, some investigators pointed out that the occurrence of fat embolism might be very significant for the development and progression of this disease.

I described some autopsy findings of human cases and experimental animals with DCS revealing more or less marked fat embolism. Intravascular fat seemed to be created in and released from the injured adipose tissue, because the solubility of nitrogen gas in the fat tissue is much higher than that in the non-fatty tissues and rupture of fat cells during decompression occurs comparatively easily. The bone marrow should be a predilectable site for the creation of embolic fat, since there are innumerable fat cells in the adult bone marrow. The fragile thin walls of the bone marrow sinusoids would be easily damaged by mechanical injuries to allow a continued egress of fat and other products of tissue disintegration into the blood stream.

The intimate relationship between intravascular fat and hypercoagulability of blood within the blood vessels were discussed.

## Archaeology in the Kuroshio-Current-Culture Area

Toshio Kamimura (Department of Humanities, Faculty of  
Law and Letters, Kagoshima University)

October 22, 1990

The Southwest Islands of Japan, *i. e.* the Kuroshio-Current Islands, were island pathways to those who proceeded north to or south from Kyushu. The prehistory of the Kuroshio-Current Islands was begun at length to be studied in the 1950's and it is now understood to some extent.

Materials such as processed Gohoura-gai (*Tricornis latissimus*) and Imo-gai (*Lithoconus litteratus*), collected in the souther islands, have been excavated in Japan proper in large numbers.

So far, shellworks serving as evidence of the northward expansion of culture, and the later Jomon-Age Ichiki type pottery and the middle Yayoi-Age Yamanokuchi type pottery serving as evidence of the southward expansion of culture are regarded as important.

Of these years, the pottery, excavated in Kyushu but produced in the southern islands, and volcanic glass stoneware and metalwork, all of which dated some thousands years earlier than has so far been supposed, have been confirmed as evidence of the north south expansion of the culture.

Some remarkable recent results are shown in slides.



**Public Lecture Series**  
**Nature and Human Life in South Pacific**

The public lecture series of the Kagoshima University Research Center for the South Pacific was held three days on the 7th, 8th and 9th of August. These public lectures were supported by a special grant from the Japanese Ministry of Education, Science and Culture. Eight lectures were given. Each addressed a topic related to the theme, "The Nature and Human Life in South Pacific". The schedule, subjects and abstracts of the lectures are as follow:

1. Day 1 (August 7, 1990)
  - (1) Kazutaka Nakano, Professor of Kagoshima University, Research Center for the South Pacific, "A Brief Introduction to the Economies of Solomon Islands".
  - (2) Munetomo Nedachi, Professor of Kagoshima University, College of Liberal Arts, "Mineral Resources in the Circum Pacific Rim".
  - (3) Shin'ichi Terashi, Professor of Kagoshima University, Research Center for the South Pacific, "Diseases in Oceania".
2. Day 2 (August 8, 1990)
  - (1) Mitsuru Hotta, Professor of Kagoshima University, Faculty of Science, "Usefulness of Palmae in Malesia and South Pacific Islands".
  - (2) Suelo Kuwahara, Lecturer of Kagoshima University, College of Liberal Arts, "History and Culture of the Malaya Peninsula".
  - (3) Hiroyuki Otsuka, Associated Professor of Kagoshima University, Faculty of Science, "Landbridges and Animal Migration".
3. Day 3 (August 9, 1990)
  - (1) Masashi Sakuma, Research Associate of Kagoshima University, Faculty of Dentistry, "Human Migration in Oceania".
  - (2) Masao Nakayama, Ambassador, Embassy of the Federated States of Micronesia, "An Introduction to the Federated States of Micronesia".

**A Brief Introduction to the Economies of Solomon Islands**  
**Kazutaka Nakano**

The country of Solomon Islands has the land area of 28,370km<sup>2</sup>, which is slightly larger than three quarters of the area of Kyushu Island where Kagoshima University is located, and has a population of a little more than 300,000 which is increasing annually at the surprisingly high rate

of 3.5%. Most of her people are anthropologically classified as Melanesians, many of whose morphological features appear to be similar to sub-Saharan Africans. Most are subsistence farmers based on the gardens of the shifting cultivation of tuber crops or subsistence fishermen. Traditionally, the staple crop in such gardens had been yam and taro which usually need a long fallow period in the shifting cultivation system. In recent years, however, the increase of average population density itself and, in addition, the trend of population distribution to further uneven patterns has necessarily brought about the shortening of fallow periods of those gardens and, in consequence, has made it very difficult to continue the cultivation of the foregoing tuber crops. As a result, the main crop in the gardens in most regions of this country has become sweet potato which enables the farmers to anticipate satisfactory harvests with shorter fallow periods and has a decided superiority to the traditional tuber crops with respect to labor productivity. The main goods for export from this country are fish (tuna and skipjack), logs, copra, and cocoa beans. Logging, however, often occasions grave problems from the viewpoint of nature conservation and land-use and bitter disputes among the inhabitants, and has resulted in social unrest particularly in rather densely populated regions. Presently, the prospect of an oversupply in the international market of both copra and cocoa beans makes the future of the money-earners of this nation rather gloomy.

## **Mineral Resources in the Circum Pacific Rim**

### **Munetomo Nedachi**

Nevertheless mineral resources are indispensable to human existence, our Japanese people look to recognize the resources only from negative aspects; exhaustion, poor country in mineral resources, declining industry in Japan, environmental soil. We use to avoid to consider the truth on the mineral resources. If we understand the geo-sciences, mining industry, market of mining product, economical and political situation of Japan, we can understand that mineral resources are the most important materials for Japanese human life both in present and future. The genesis of mineral resources in the Circum-Pacific rim are considered in this lecture. The Circum-Pacific rim is the important productive area for mineral resources.

The Circum-Pacific rim is characterized by high activity of andesitic to dacitic magmatism, some of which are associated with many kind of mineralization. The relationship between magmatism and mineralization has been discussed by many people. The study in geothermal fields have contributed to construct the hypothesis on mineralization, in which, magma was thought to play a role as a heat source for the convection of meteoric water, metamorphic water and sea water. The classic idea of ore bringer also have been discussed quantitatively. Recently, some investigators consider the metal concentration mechanism from the aspect of the evolution of the earth during 4600 Ma, and others also from the evolution of cosmic environment.

## Diseases in Oceania

Shin'ichi Terashi

The most common sickness in human beings in Oceania are the infective diseases, including parasite infections as in other undeveloped countries'.

The gastro-intestinal diseases are amoebic dysentery (cause of diarrhoea), round worm (cause of abdominal pain), hookworm and thread worm (cause of anemia) etc. Skin lesions are observed in subcutaneous clawing of scabies, centipede, spider, and scorpion bites etc. Other common diseases are transmitted by intermediate hosts. These are filariasis, Dengue fever and yellow fever (viral diseases) from the mosquitos. Shagas' disease (one cause of paracytic pneumonia) from the reduviid bug, typhus from lice and relapsing fever from mites and oncocerciasis from black-flies.

The most well known infectious disease in tropics is malaria of which four species are recognized. These are *Plasmodium vivax* (become feverish having one day normal temperature), *P. malarie* (becoming feverish having two days normal temprature) and *P. ovale* (rear type). Malignant malaria is the most dangerous type for human beings having high incidental mortality and on some occasions, the preventive drug chloroquine is ineffective. The cause of death is called meningial malaria (thrombosis in meningial and brain vein by hemorrhaged masses). The most important pulmonary disease is influenza virus infection. It was reported that all inhabitants of some areas die of the endemic virus infection. Viral hepatitis type A (per oral infection), Viral hepatitis type B (three infective routes are known, such as blood transfusion, mother child in birth and sexual intercourse). Recently viral hepatitis type C (before it was called hepatitis type non-A non-B the reason of morphologicaly no virus discovered).

The Incidence of malignant tumors is statistically unknown, because of incomplete diagnostic equipment, diagnostic techniques, or hospital reports by traditional diagnostic and therapeutic method in their own villages.

## History and Culture of the Malay Peninsula

Sueo Kuwahara

The Malay Peninsula is located to the western most of the South China Sea, and was connected culturally to the Philippines, Indonesia, and Madagascar.

Since prehistoric times, the Malay Peninsula was the main point of departure for the migration of the people from mainland Southeast Asia to the South Sea. In historic times, it was on the route connecting India and China. In classical times, Indian merchants crossed the spine of the Malay penninsula on their way to and from Indochina and brought their culture to the peninsula

and many small Hindu States came into existence.

The Middle Ages saw the discovery of a new route which passed through the Strait of Malacca to the Indonesian archipelago. Muslim merchants came over to the peninsula more often than before. The first unified kingdom was built in Malacca. King Palameswara strategically accepted Islam as his religion. The advent of the Portuguese brought an end to the Malacca Kingdom and Malay peninsula entered a time of colonial competition among the Western powers. Indigenous Kingdoms of immigrants also sprung up on the coastal regions.

In the early twentieth century, all the indigenous Malay states on the peninsula came under the control of British colonial rule. Chinese and Indians were brought to the peninsula as tin miners and plantation workers, and thus British colonialism left behind the present complex society in Malaysia.

Its geographical location, between the two great traditions of India and China, made the Malay peninsula a strategically important place, and thus it saw the cultural and historical dynamics of human migration and interaction.

## Landbridges and Animal Migration

### Hiroshi Otsuka

The present Japanese Islands are separated by many straits from the Asiatic continent and form a part of the festoon island arcs in the western Pacific. However, some continental species of terrestrial animals and plants, which are unable to travel across the sea, are widely distributed over the Japanese Islands. This suggests that the Japanese Islands had been connected with the continent in the past. It is possible to assume that their ancestors from the continent migrated to the Japanese Islands during a glacial period. The lowering of the sea level during the ice ages would have exposed the bottoms of the straits forming several land bridges.

The palaeontological evidence show that the Ryukyu islands might have already been insulated from the main four islands of Japan in the late Miocene. In the Ryukyu Islands, there are many, characteristic inhabitants of endemic animals such as wild cats, wild hares, wild rats, poisonous snakes and tortoises.

These endemic animals are considered to be relicts of fauna which have migrated from the Asiatic continents to the islands during the Late Miocene to the Middle Pleistocene. There are two distinct horizons of the vertebrate fossils, i.e. the lower part of the Late Neogene Shimajiri Group and the Late Pleistocene fissure or cave deposits developed in the Middle Pleistocene Ryukyu Limestone. From the later horizon, two species of dwarfed deer which are closely related to the Chinese Neogene species, are found abundantly. This may strongly suggest a close palaeogeographic relation of the Ryukyu Islands to the Asiatic Continent before the deposition of the Ryukyu Limestone.

Java today is an island situated on the southern margin of the Sunda Shelf.

The sea between the islands of Java, Sumatra and Borneo, is very shallow, and a lowering of the sea-level of only 40 meters would be sufficient to connect the three large Sunda Islands with each other and also with the mainland of Asia.

Such connections with the mainland undoubtedly existed several times during the Pliocene and Pleistocene ages.

The Japanese Islands as well as the Sunda Islands in southeastern Asia can be regarded as subcontinental in their general geologic condition. Based on the palaeontological evidence, it is concluded that the Early to Middle Pleistocene was the stage when these islands may have been connected to each other by many land bridges. Such geographic conditions certainly retained to some extent until the Latest Pleistocene.

## Human Migration in Oceania

### Masashi Sakuma

The peopling of the Pacific was the greatest feat of maritime colonization in human history. In the most general sense, the record spans perhaps two million years and extends beyond the Pacific proper as far west as Madagascar and as far north as mainland China above the Tropic of Cancer. Its main arena, however, consists the islands of Southeast Asia, the subcontinent of Australia and its neighbor islands, and the great ocean reaches of what today are called Melanesia, Micronesia and Polynesia. The first maritime phase was well under way 40,000 years ago. By then, certain hunter-gatherers had managed to cross a minimum of 70 kilometers of open water to settle Australia and New Guinea.

Long before the region was known to Europeans it was settled by diverse populations that have maintained their diversity down to the present day. It is impossible to explain this diversity purely on the basis of today's physical, cultural and linguistic patterns; hence the confusion of hypotheses that have proliferated until recently. Advances in archaeology, physical anthropology and comparative linguistics, mainly over the past three decades, now make possible a fresh assessment of the problem. This lecture is based on this modern view.

## Scientific Survey of Papua New Guinea in 1990

Kagoshima University Research Center for the South Pacific organized a research project, entitled "Scientific Survey of the South Pacific", since 1981 funded by the Ministry of Education, Science and Culture of Japan.

In 1990 this research project was carried out in Papua New Guinea, especially in Port Moresby, Lae and their surrounding areas, with the tight cooperation of the scientists of the University of Papua New Guinea, the Papua New Guinea University of Technology and other research institutions, from November 5th to December 17th.

The research party was composed of five survey teams, i.e., team 1: Development of agriculture resources in some regions, team 2: Development of aquacultural resources in the coastal regions, team 3: Isolation of human T-Lymphotropic Virus type- and their seroepidemiological studies, team 4: Traditional social systems and their transformation, and team 5: Oceanic structures and their fluctuation in the tropical Pacific.

A meeting of presentation on the survey will be held in April 1991, and progress reports of the survey will be published in October 1991.

Itinerary and members of the research party are as follows:

Itinerary;

5 November, 1990 Departure from Kagoshima, Japan

20 November, 1990 Arrival in Port Moresby, Papua New Guinea (PNG)

26 November, 1990 Departure from Port Moresby, PNG

30 November, 1990 Arrival in Lae, PNG

7 December, 1990 Departure from Lae, PNG

17 December, 1990 Arrival in Kagoshima, Japan

Members of team 1:

HAYASHI, Mitsuru, Associate Professor, Dr., Tropical Crops Science, Faculty of Agriculture, Kagoshima University.

TOMINAGA, Shigeto, Associate Professor, Dr., Fruit Science, Faculty of Agriculture, Kagoshima University.

SAKATA, Yusuke, Research Associate, Dr., Ornamental Horticulture, Faculty of Agriculture, Kagoshima University.

TAURA, Satoru, Research Associate, Plant Breeding, Faculty of Agriculture, Kagoshima University.

NAKAMURA, Muneyuki, Post Graduate Student, Ornamental Horticulture, Faculty of Agriculture, Kagoshima University.

Members of team 2 :

INOUE, Akio, Professor, Dr., Marine ecology, Research Center for the South Pacific, Kagoshima University.

TUKAHARA, Junzo, Professor, Dr., Developmental Biology, Faculty of Science, Kagoshima University.

UCHIO, Yasuto, Associate Professor, Dr., Natural Organic Chemistry, Kagoshima University School of Allied Medical Sciences.

OKI, Kimihiko, Associate Professor, Dr., Geology and Micropaleontology, Faculty of Science, Kagoshima University.

SHINOMIYA, Akihiko, Associate Professor, Dr., Marine Biology, Faculty of Fisheries, Kagoshima University.

TANABE, Kazushige, Associate Professor, Dr., Geology and Paleontology, Faculty of Science, University of Tokyo.

OHBA, Hideo, Research Associate, Dr., Phycology, Research Laboratory of Fisheries Resources, Faculty of Fisheries, Tokyo University of Fisheries.

KATOH, Takafumi, Post Graduate Student, Paleontology, Faculty of Science, Kagoshima University.

TSUDA, Eiji, Post Graduate Student, Marine Biology, Faculty of Fisheries, Kagoshima University.

Members of team 3 :

TERASHI, Shin'ichi, Professor, Dr., Tropical Pathology, Research Center for the South Pacific, Kagoshima University.

MIKAMI, Seiji, Research Associate, Dr., Public Health, Faculty of Medicine, Hirosaki University.

Member of team 4 :

MINAMURA, Takeichi, Professor, Dr., International Economics, Faculty of Law and Letters, Kagoshima University.

Members of team 5 :

ICHIKAWA, Toshihiko, Associated Professor, Dr., Biological Oceanography, Faculty of Science, Kagoshima University.

NISHI, Touru, Lecturer, Oceanography, Faculty of Fisheries, Kagoshima University.

MASUMITSU, Sunao, Lecturer, Oceanography, Faculty of Fisheries, Kagoshima University.

HIGASHI, Masatake, Research Associate, Oceanography, Faculty of Fisheries, Kagoshima University.

HIDAKA, Masayasu, Research Associate, Oceanography, Faculty of Fisheries, Kagoshima University.

SUZUKI, Hisashi, Post Graduate Student, Marine Invertebrate Zoology, Faculty of Science, Kagoshima University.

WATANABE, Toshiteru, Post Graduate Student, Physical Oceanography, Faculty of Fisheries, Kagoshima University.

Other member :

TAKENOUCHI, Noriyoshi, Accountant, Research Center for the South Pacific, Kagoshima University.

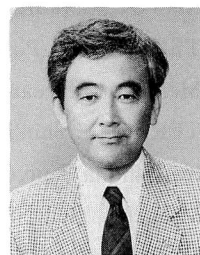
On-campus Part-time Researchers of  
Kagoshima University Research Center for the South Pacific (KURCSP)

- 1 ) Position, 2 ) Faculty (Sci.: Science, Eng.: Engineering, Agr.: Agriculture, Fish.: Fisheries, Lib. Arts: College of Liberal Arts, Ed.: Education, Law & Lett.: Law and Letters),  
3 ) Main subject, 4 ) Present subject of research, 5 ) Main work

Research Project 1: Studies on the Dynamics and Integrity of the Land  
Environment and Ecosystem

ETOH, Takeomi;

- 1 ) Associate Professor, Dr., 2 ) Agr., 3 ) Horticulture, 4 ) Origins  
of Vegetable Crops,  
5 a ) ETOH, T. 1985. Studies on the Sterility in Garlic, *Allium  
Sativum* L. *Mem Fac. Agr. Kagoshima Univ.*, 21, 77-132.  
5 b ) ETOH, T. 1986. Fertility of the Garlic Clones Collected in  
Soviet Central Asia. *J. Japan. Soc. Hort. Sci.*, 55, 312-319.



HAMANA, Katsumi;

- 1 ) Professor, Dr., 2 ) Agr. 3 ) Veterinary Reproduction, 4 )  
Teratology,  
5 a ) HAMANA, K. and TAURA, Y. 1988. Epidemiological and  
Clinical Aspects of the Calves with Hydranencephaly and  
Cerebellar Hypoplasia Caused by Chuzan Virus. *Proc. 15th  
World Buiatrics Congress*, 886-889.  
5 b ) HAMANA, K. 1990. Bovine Congenital Defects Associated  
with Dropsy of Fetal Membranes. *Proc. 16th World Buiatrics  
Congress*, 595-599.





HASHIGUCHI, Tsutomu ;

- 1 ) Professor, Dr., 2 ) Agr., 3 ) Animal Breeding and Genetics,  
4 ) Valuation and Practical Application of Genetic Resources  
in Animals,
- 5 a ) HASHIGUCHI, T. *et al.* 1982. The Effectiveness of On-farm  
Progeny Testing on the Meat Performance of Japanese Black  
Cattle. *Japan J. Zootech. Sci.*, 53 : 656-663.
- 5 b ) HASHIGUCHI, T. *et al.* 1981. Phylogenetic Relationships  
Determined by the Blood Protein Types of Fowls. *Japan  
J. Zootech. Sci.*, 52, 713-729.



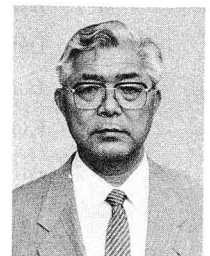
HAYASHI, Mitsuru ;

- 1 ) Associate Professor, Dr., 2 ) Agr., 3 ) Tropical Crop Science,  
4 ) Studies on Storage and Dormancy of Rice Seed,
- 5 a ) HAYASHI, M. 1986. Physiological Studies on the Relationship  
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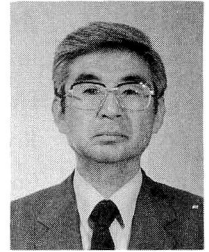
ISHIHATA, Kiyotake ;

- 1 ) Associate Professor, 2 ) Agr., 3 ) Tropical Horticulture 4 )  
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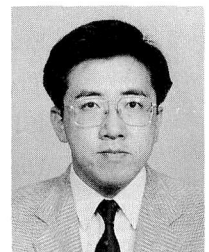
KATAYAMA, Tadao C.;

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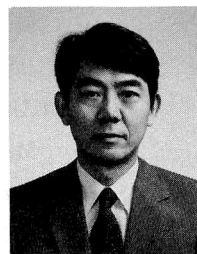
NAGATOMI, Akira ;

- 1 ) Professor, Dr., 2 ) Agr., 3 ) Entomology, 4 ) Taxonomy of the Orthorrhaphous Brachycera (Insecta : Diptera),
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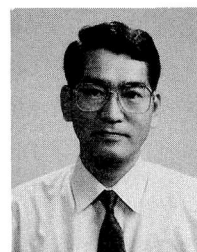
NEDACHI, Munetomo ;

- 1 ) Professor, Dr., 2 ) Lib. Arts, 3 ) Geology, 4 ) Mineralization in the Circum-Pacific Rim Region,
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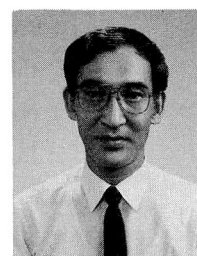
OTSUKA, Hiroyuki ;

- 1 ) Associate Professor, Dr., 2 ) Sci., 3 ) Geology and Vertebrate Paleontology, 4 ) Evolution of the Cenozoic Mammals in Asia,
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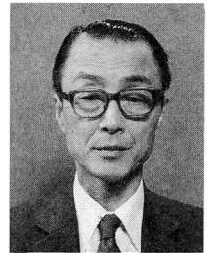
SAKATA, Yusuke ;

- 1 ) Research Associate, Dr., 2 ) Agr., 3 ) Ornamental Horticulture, 4 ) Breeding on the Ornamental Plants,
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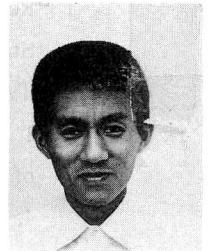
SHINAGAWA, Akio ;

- 1 ) Professor, Dr., 2 ) Agr., 3 ) Soil Science, 4 ) Volcanic Ash Soil Formation
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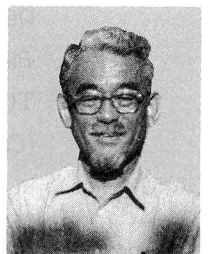
SUZUKI, Eizi ;

- 1 ) Associate Professor, Dr., 2 ) Lib. Arts, 3 ) Plant Ecology, 4 ) Forest Succession in Coniferous Forest of Japan and in Tropical Forests,
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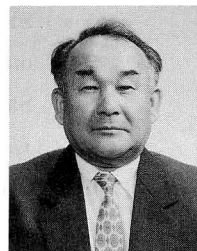
TAGAWA, Hideo ;

- 1 ) Professor, Dr., 2 ) Lib. Arts, 3 ) Plant Ecology, Especially Plant Succession and Change of Vegetation, 4 ) Turnover of the Vegetation by Means of Sprout Production of Trees. Overall Change of Vegetations,
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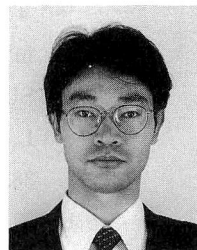
TAKEISHI, Taisuke ;

- 1 ) Professor, Dr., 2 ) Eng., 3 ) Electronic Measurement & Circuitry ; Communication, 4 ) Sedimentation Potential Measurement, Diode-Switched Capacitor Circuit, Application of Interrupted Continuous Oscillator,
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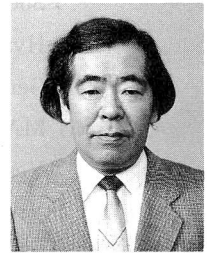
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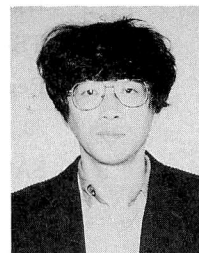
YUKAWA, Junichi ;

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- 1 ) Associate Professor, Dr., 2 ) Sci., 3 ) Insect Taxonomy, Insect Sociology, Biogeography, 4 ) Systematics of Aculeate Hymenoptera in Southeast Asia ; Biology of Ants of the Genus *Pheidole*,
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HARAGUCHI, Izumi ;

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- 1 ) Associate Professor, Ph. D., 2 ) Lib. Arts, 3 ) Oriental History (Philippine History), 4 ) Mindanao History, Philippine-Japan Relation,
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- 1 ) Associate Professor, 2 ) Lib. Arts, 3 ) Community Psychology  
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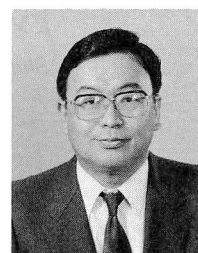
ICHIKAWA, Hideo ;

- 1 ) Associate Professor, 2 ) Fish. 3 ) Fisheries Business and Economics, 4 ) Socio-economical Analysis on Structure of Regional Fisheries,
- 5 a ) ICHIKAWA, H. 1986. Recent Trends of Socio-economic Problems in Sakurajima, Kagoshima Prefecture (in Japanese). *SAKURAJIMA : Reports of the Reference Center of the Scientific Researches for Southwest Pacific Area, Kagoshima Univ.* Special Volume No.1, 77-104.
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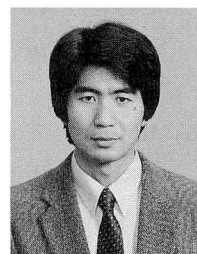
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- 1 ) Associate Professor, Dr., 2 ) Fish., 3 ) Fisheries Economics,  
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- 1 ) Associate Professor, Ph. D., 2 ) Fish., 3 ) Marine Social Science, 4 ) International Marine Policy,
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- 1 ) Professor, Dr., 2 ) Law & Lett., 3 ) International Economics, 4 ) Internationalization of Economy and Local Economy,
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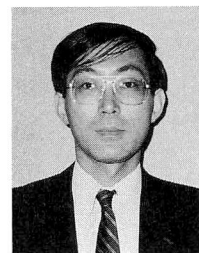
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- 1) Associate Professor, 2) Lib. Arts, 3) Archaeology of Southeast Asia, 4) Prehistoric Industries in the Northeast of Thailand,
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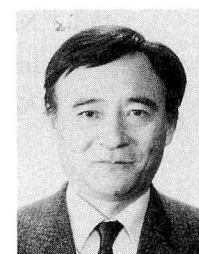
SAKIMURA, Hirofumi;

- 1) Associate Professor, 2) Lib. Arts, 3) Japanese Language and Literature, 4) Study of the Ryukyu Dialects and Surrounding Languages,
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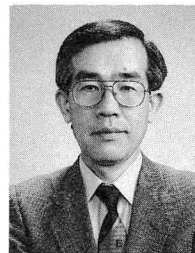
SHIGEMI, Yukio;

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- 1 ) Associate Professor, 2 ) Fish., 3 ) Fisheries Law, Commercial Law and Economic Law, 4 ) Common Fishery Right in Japan,
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TAJIMA, Yasuhiro ;

- 1 ) Professor, Dr., 2 ) Ed., 3 ) Human Geography, 4 ) Migration and Segregation,
- 5 a ) TAJIMA, Y. 1985. Marketing in Papua New Guinea. *Mem. Kagoshima Univ. Res. Center South Pac.*, 6, 2:175-186.
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