AWARD OF MEDALS

The Seventy-third Annual Award of Medals was held on Monday, June 13, 1983, at 10:00 a.m., in the presence of His Majesty the Emperor.

The function was opened with an address by the President, in which he made a brief statement of each award. Then the Medals and Prizes were presented to the respective recipients.

After this, congratulatory addresses were given by the Prime Minister and the Minister of Education.

The function was closed at 11:25 a.m.

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THE RECIPIENTS OF THE PRIZES AND THE SUBJECTS OF THEIR STUDIES

Teruaki MUKAIYAMA
Exploration of New Methodologies in Synthetic Organic Chemistry and the Syntheses of Biologically Related Substances

Organic synthesis today continues to make rapid progress in close relations with such fields as life and material sciences, whereas the exploration of novel and efficient synthetic methods has been strongly desired for successful achievement of the total synthesis of a variety of compounds of interests.

During the last 30 years, Dr. Mukaiyama has explored a wide spectrum of new synthetic methods, that is, new synthetic organic reactions, including the following three projects considered to be the landmarks of his research.

1. Exploration of new dehydration condensation reactions. Dehydration condensation reactions, one of the most fundamental organic reactions, proceed in general *via* elimination of H_2O molecule as [H] and [OH]. Dr. Mukaiyama introduced an oxidation-reduction system into the condensation reactions and established a totally new "Oxidation-Reduction Condensation" which proceeds by eliminating H_2O molecule as 2[H] and [O] during condensations.

He has also developed a new type of condensation reagents, a variety of the onium salts of azaaromatic compounds. These reagents are now widely employed in organic synthesis as mild condensation reagents, and have successfully applied in the syntheses of natural products such as macrolides and terpenes.

2. Exploration of new synthetic reactions by the use of titanium, sulfur, boron, and tin compounds. Various useful reactions for construction of carbon skeletons have been developed by Dr. Mukaiyama. For example, he found the usefulness of titanium compounds as Lewis acid to effectively promote synthetic reactions. In fact, in the last several years titanium compounds have been extensively employed as common synthetic reagents. Also, he has succeeded in the exploration of several directed aldol reactions based on titanium, boron and tin compounds, and developed very useful methods for the highly stereo- and regio-selective preparation of acyclic compounds, key intermediates of various natural products syntheses.

3. Exploration of highly selective reactions based on the concept of Synthetic Control. In recent years, Dr. Mukaiyama has developed efficient asymmetric reactions and various highly selective C-C bond forming reactions by introducing common metal chelate in controlling the reactions.

Efficient asymmetric reactions, previously considered only attainable by biological processes, were explored employing several new chiral auxiliaries. Furthermore, he recently developed new and creative methodologies for the syntheses of carbohydrates based on highly stereoselective reactions for the preparation of acyclic compounds as well as glycosylation reaction utilizing the interaction of metal compounds with functional groups involved in the substrates.

Dr. Mukaiyama's research has always been concentrated on the exploration of fundamental and important organic reactions based on his own creative ideas, resulting in unique approaches to organic syntheses. These achievements have contributed significantly to the development of modern organic syntheses. Moreover, the methodologies developed by him have not only cultivated the grounds for numerous new concepts in organic chemistry but also found useful applications in the syntheses of a variety of biologically related substances such as peptides, nucleotides, terpenes, vitamins, carbohydrates and so on.

Shozo TANABE
A Comprehensive Review on Sue-ki Research

This book is a comprehensive review of the extensive studies hitherto made on "Sue-ki", a type of ancient Japanese earthenware. It consists of three chapters, i.e. Chapter 1, "A Brief History of Sue-ki", Chapter 2, "Various Methods for the Making of Sue-ki", and Chapter 3, "Development of Manufacture of Sue-ki", with each chapter further divided into three sections.

In Chapter 1, it is observed that early studies started in the Edo period on Sue-ki pottery were motivated primarily by dilettantism, and have since been developed into an area of contemporary research. The name of the earthenware has also evolved as it was first called "Gyogi-yaki" pottery, and then changed to "Iwaibe-doki", and finally named "Sue-ki" pottery; a fact the author suggests as possible theme for further studies in the future.

Chapter 2 is comprised of three sections under the headings of "Forms and Uses of the Sue-ki Pottery", "Forming Techniques", and "Kilns and Baking Systems". Apparently this is the chapter most important in this book, and one can read between the lines the traces of great efforts devoted to it by the author. For example, to describe the various forms of Sue-ki earthenware, the author made special efforts to seek a name for each form so as to accurately reflect its morphological characteristics. Although it may not be possible to establish nomenclature for all the forms of Sue-ki pottery under the current state of art of archeology in Japan, the views expressed by the author here will nevertheless be considered an important contribution in assigning accurate names to each form of the earthenware and in establishing a system for research on the Sue-ki pottery.

To follow the ware forms, the author attempted to analyze the various uses of Sue-ki, and classified them into such categories as those used for liquid storage, for storage of other supplies, or for serving food as well as uses in funerals and other ceremonial services. While the categories proposed here should be accepted as a basic classification system, the author's analysis on the relationship between the ware forms and their uses appears to be somewhat insufficient.

On the other hand, in the second section entitled "Forming

Techniques", the author made analyses in great detail and added much to the value of this book.

In the next section 3, the author reviewed various "Kilns and Baking Techniques", and proposed to classify the kilns according to the time of construction, into two periods with the first period covering from the mid-fifth-century to the first half of the seventh century, and the second to cover the period thereafter. The author has analyzed the various pottery-making techniques and their outcomes in correlation to each of the periods thus suggested.

Chapter 3 is another part of the book to show the great research efforts made by the author. Presented in this chapter is a total perspective of the Sue-ki making, while readers' attention is also called to regional studies, especially in relation to the evolution of local kilns. Such regional studies would provide a systematic insight on the relationship between the Sue-ki earthenware and the life of ancient people. In this context, the author uses such words as "time and space" (or historic periods and areas). In any event, he asserts that the making of the Sue-ki pottery would have been meaningless if it had not been associated with the daily life of the ancient people.

In this book, a large number of figures, pictures and drawings are used in order to support or clarify various descriptions as well as the author's views, and also to help grasp the artistic expressions of the Sue-ki pottery *per se*.

The author looks upon the Sue-ki pottery not merely as a measure for a chronological compilation, but obviously tries to make a positive use of it in the study of an ancient history as a whole.

Thus, the intent to make a comprehensive review of the extensive results hitherto made by many Japanese researchers of Sue-ki pottery, and also to establish a methodology as well as system for Sue-ki research has been well accomplished in this book. Supported with the solid views of the author, the book will no doubt make a great contribution to the studies in this area.

On IKEDA
Ancient Chinese Household Registers
and Related Documents
—A Historical Study—

This work is divided into two parts: I. General Review, and II. Texts of Collected Documents.

A remarkable fact is that in China the household registration systems were developed from ancient times as an instrument to rule over the people. While actual registration documents had been lost out of sight of historians for a long period of time, the research expeditions into the inner part of Asia, repeated since early this century, have disclosed a large number of ancient manuscripts of the household land registers and related documents.

In the Introductory chapter of Part I, the author reviews important characteristics of the household registration system, along with the history of the discovery of ancient registers and of the studies thereon, achieved mainly by Japanese scholars. In Chapter 1, the author traces the origin of the system back to the Early Chou period, as suggested by bronze inscriptions, and describes its development during the Warring States, Ch'in and Han periods. Then the author reviews, in Chapter 2, the transformations of the system of household registers during the period of the Six Dynasties, with details discussed under the subheadings of (1) The Wei-Chin and Southern Dynasties, (2) The Five Barbarian Sixteen States and (3) Northern Dynasties. The author also examines in detail a taxing documents included in the Aurel Stein collection, which has been identified to be a record made in 547 A.D. Chapter 3 is devoted to a study of the registration system during the Sui and T'ang dynasties, though with an emphasis on the latter period. Special attention is paid to the record of fugitives in the K'aiyuan era (713–741), and the increasing tendency of decline of the system in the T'ienpao era (742–755), and finally to the collapse of the whole system after the An-Lushan's rebellion.

Part II consists of the collected texts copied from the actual household registers and related documents, discovered mainly in Tunhuang and Turfan areas, and preserved separately in China, the United Kingdom, France, East Germany, the So-

viet Union and in Japan. Complete texts of a total of 316 documents are reproduced here with the author's notes, together with photographs of the 116 documents selected from the collection.

This work by Mr. Ikeda is of great importance for the studies of institutional, social and economic histories of China, as well as for the historical studies of its neighbouring countries much affected by the Chinese legal systems.

Hideshi KOBAYASHI

Comparative Endocrinological Studies on Hypothalamo-Hypophyseal System

With a variety of birds including *Emberiza rustica* and *Zonotrichia leucophrys gambelii*, Kobayashi studied changes in the activities of acid phosphatase and protease as well as alterations in the amount of neurosecretory materials in different sites of the hypothalamus in correlation with the testicular activity and concluded that the supraoptic nucleus and the median eminence were the major sites of production or storage of LHRF (=LHRH). Moreover, he demonstrated in these studies the feedback relationship between the hypothalamus and the adenohypophysis for the first time in nonmammalian vertebrates. Later, Kobayashi applied immunohistochemical techniques to the study of distribution of LHRF in the hypothalamus of representative animals of all vertebrate classes, from cyclostomes to mammals, and has found immunoreactive product indicating the presence of LHRF in the supraoptic nucleus, arcuate nucleus and median eminence.

Ultrastructural studies of the median eminence carried out by Kobayashi with representatives of all vertebrate classes revealed that the median eminence contained numerous axon terminals carrying electron-dense granules, 100–300 nm in diameter, together with synaptic vesicles measuring about 50 nm. Moreover, the granules in each axon were of the same size. Subsequently he isolated neurosecretory granules of different sizes by ultracentrifugation from the horse median eminence and pointed out that the activities of LHRF and ACTHRF were respectively associated with granules different in size and density. These findings provide evidence that each of the hypo-

thalamic releasing and inhibiting factors (RF and IF) originates from different neurosecretory cells.

Some axon terminals in the median eminence contain monoaminergic or cholinergic vesicles but no neurosecretory granules. Much higher contents of monoamines and acetylcholine in the median eminence than in other parts of the brain and very high activities of monoamine oxidase and choline-esterase in the median eminence, especially in its outer zone, appear to suggest that the release of RF and IF in the median eminence to the portal vein blood is controlled by monoaminergic and cholinergic nerves. This was ascertained by Kobayashi as he showed a depression of ovarian endocrine activities in the rat following stereotaxic exposure of the median eminence to dopamine or noradrenaline.

Finally, Kobayashi demonstrated that destruction of ependymal linings of the median eminence by electric cautery or intraventricular injection of picric acid in the rat and Japanese quail resulted in no significant changes in secretion of adenohypophyseal hormones and consequently in size and function of the gonads, thyroid and adrenals. These findings are at variance with the current concept that the tanycytes of the median eminence transport RF and IF from the ventricular fluid into the hypophyseal portal capillaries and are involved in the regulation of adenohypophyseal function.

In conclusion, Kobayashi has contributed a great deal to the recent development of comparative endocrinology of hypothalamo-hypophyseal system.

Yasutada UEMURA and Tsuneya ANDO
Theory of Conduction in MOS Inversion Layer
under Strong Magnetic Fields

A sandwich structure of metal-oxide-semiconductor (MOS) and a similar heterostructure of metal-$Ga_{1-x}Al_xAs$-GaAs are used as field-effect transistors. A typical MOS is composed of a p-type semiconductor of a single-crystal silicon with (100) surfaces. When a voltage is applied between the metal electrode and the p-type semiconductor, a thin layer of electrons (called the inversion layer) or a layer of positive holes for reversed voltage (the accumulation layer) is formed in the semiconductor near its

boundary to the oxide. In the inversion layer electrons are in a quantized state with respect to their motions perpendicular to the layer but are free to move in directions parallel to the layer. In this respect the electrons form a two-dimensional system. The central problem in the study of such a two-dimensional electron system is electronic conduction, particularly the conduction at low temperatures and under strong magnetic fields where the system's two-dimensional character is clearly manifested. Uemura and Ando have developed a theory for the conduction under such conditions.

Electrons moving in the inversion layer are scattered by impurity atoms and defects. In a magnetic field applied perpendicularly to the layer, electrons make circular motions with frequency $\omega_c = eH/mc$ (H: magnetic field strength), and with a finite life-time due to scattering. Quantization of the circular motions provides Landau levels of energy spacing $\hbar\omega_c$, and the finite life-time broadens each Landau level. Uemura and Ando determined the extent of this broadening of Landau levels by what they called "the self-consistent Born approximation", and calculated the conductivity from the Kubo formula using the Green's function method. They first showed that the transverse conductivity σ_{xx} vanishes when the Fermi level comes midway between successive Landau levels and takes a maximum value of $(e^2/\pi^2\hbar)$ $(N+1/2)$ when the Fermi level comes at the center of the Nth Landau level, providing that the scatterers are of short range. The Hall conductivity σ_{xy} takes an extremum value of $Ne^2/2\pi\hbar$ when the Fermi level comes midway between the $(N-1)$th Landau level and the Nth Landau level. They further developed a theory for the Zeeman splitting including exchange interactions and for the valley splitting observed in the peaks of σ_{xx}.

The frequency-dependent conductivity $\sigma_{xx}(\omega)$ was also calculated from the Kubo formula much in detail by Ando. The results were used for the analysis of cyclotron resonance experiments. In particular, subharmonic resonances predicted by the theory were observed in the experiments. Ando has also made an accurate computation of subbands in silicon using the density-functional method, and further made a calculation of the optical transitions between the subbands. The optical transitions were attributable to the conductivity $\sigma_{zz}(\omega)$.

Finally, a mention should be made of a recent discovery of the quantum Hall effect. This effect has been observed by Kawaji, v. Klitzing, and others with MOS of highly pure silicon

and with GaAs-heterojunctions. With this effect σ_{xx} vanishes in a finite range between successive Landau levels and σ_{xy} in that range takes a precisely constant value of $Ne^2/2\pi\hbar$ ($e^2/c\hbar =$ 1/137 is the well-known fine-structure constant). Although Uemura and Ando have paid attention to this effect, a complete elucidation of the effect still requires further investigations in the future.

Tsuyoshi MASUMOTO
Original Production of Amorphous Metallic Tapes and Their Fundamental and Practical Investigations

Since 1969, Dr. Masumoto has carried out many original investigations on the amorphous metals produced by melt-quenching and has contributed immensely to the rapid progress of the scientific and technical research in the fields concerned.

The following are some of the most prominent results from his extensive work.

1) First he succeeded in the preparation of amorphous metallic tapes by using a new method, which is now widely used for the technological advantages such as simplified production processes and high productivity.

2) He has found about a hundred kinds of amorphous metals, including several alloy systems already being used as materials for practical purposes.

3) His extensive studies on their properties ranged from fundamental to practical aspects and led to the discoveries of the following attractive characteristics; a) high strength and toughness (1970), b) extremely high corrosion resistance (1974), c) excellent soft magnetic properties (1974), d) invar and elinvar properties (1977), e) high resistance to radiation damage (1977), f) prominent catalysis (1980), g) superconducting properties (1979) and h) hydrogen absorbing properties (1979).

These pioneering studies have made valuable contributions not only to the establishment of a new research field in materials science but also to the development of new industrial materials. At present, significant applications continue to be developed mainly for magnetic and electronic devices such as for tape-recording heads, amplifiers, convertors and transducers all under his guidance.

Sakae YAMAMURA
Theoretical Study on Linear Induction Motor

The linear induction motor is an electric motor for linear motion, developed for use for super-high speed trains, machine tools, etc. The fundamental principle of the linear induction motor is the same as that of an ordinary induction motor for rotary motion, except that the former has a linear or planer structure and the latter has a cylindrical structure. The linear induction motor has a stator on the primary side and a reaction rail on the secondary side, with the former to make linear motion relative to the other, across a constant air gap between them.

In the linear induction motor the air gap is linear in shape and has an entry end and an exit end, while in the rotating induction motor the air gap is cylindrical and endless. In the air gap of the linear motor there exists travelling magnetic field, to produce electromagnetic force and power. At both ends however the travelling magnetic field shows discontinuity. The magnetic field, very weak at the entry end gradually grows in intensity as it travels towards the inside. At the exit end the magnetic field intensity reaches its peak value and then suddenly drops down to zero. This non-uniform distribution of magnetic field is called the "end effect". The magnetic field is not uniform in the lateral direction either because of the sheet secondary conductor effect. This is called the "edge effect". The end effect, coupled with the edge effect makes the field distribution in the air gap to be very complicated, and makes it extremely difficult to solve the Maxwell's equations for the air gap.

Mr. S. Yamamura however succeeded in solving the Maxwell's equations for linear induction motors, and clarified the peculiar characteristics and performances of linear induction motors. He started with one-dimensional solution of the Maxwell's equations for the linear induction motor. It was a rather simple solution, but was the first solution ever made of this kind. It revealed the serious adverse effects of the end effect on the performance of linear induction motors. He went on to seek two-dimensional solutions, and then three-dimensional solutions. These solutions were obtained in the form of separated variables in a rectangular coordinate system in space. They required ingenuity in mathematics. Laplace transformation was

utilized to take care of the end effect, and Fourier series was introduced for mathematical expressions of the edge effect. The solutions thus given revealed the fine structure of the electromagnetic field of linear induction motors. Superimposed on the normal steady travelling wave of synchronous speed, are many travelling waves of different speeds and of different attenuation patterns. Both have extensive influence on the motor performance. It was found that the thrust, power factor and efficiency of the motor were considerably reduced by the end effect, especially in the speed range of most applications of the linear induction motors. Without remedy to such performance degradation, linear induction motors would not be suitable for practical applications.

Mr. Yamamura has also worked on the remedy problems, and proposed several remedial approaches, including use of compensating windings, increased resistivity of the secondary circuit and increased number of magnetic poles. The last approach to increase the number of magnetic poles would help to narrow the speed range of potential performance degradation. It was shown that if the number of the poles are increased to eight or more, it would be very effective in preventing the performance degradation of linear induction motors due to the end effect.

Using a small model of a linear induction motor, he has experimentally demonstrated the correctness and adequacy of his theoretical works on the linear induction motors.

From the scholastic point of view his theoretical works are considered to be an excellent achievement, and would also make a great contribution towards the practical application of linear induction motors.

Seijiro MOROHOSHI
Studies on the Mechanism Controlling Growth
and Development in the Silkworm,
Bombyx mori

The larval development of *Bombyx mori* is controlled by a cooperative action between Corpora allata (CA) and Prothoracic glands (PG), while the pupal or imaginal development is under an action of PG only. The writer trained 5 associates to ex-
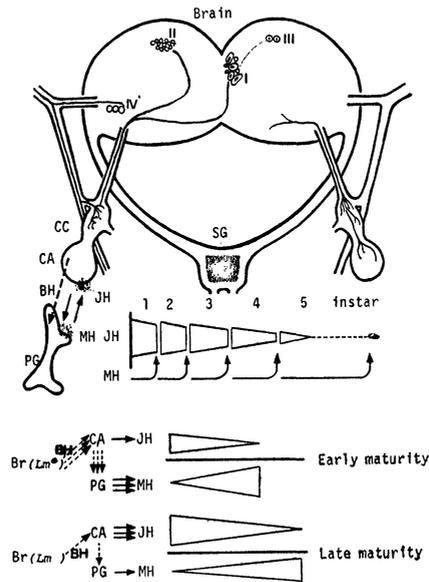
Fig. 1.   Showing control of antagonistic balance by brain hormone.

tirpated CA and thus extirpated CA from over 10,000 animals. Moreover he promoted this investigation using the cobalt diffusion and precipitation technique of Nijhout (1975). The writer discovered the following points.

(1)   The Corpus allatum hormone (JH) and Prothoracic gland hormone (MH) acted antagonistically with each other. The function of CA ceased for a time in the 66-h-old of the 5th instar. The JH was dominant in the MH in relation to the control of larval ecdysis.

Hormone (organ)	Protein synthesis	Larval duration	Course	
JH (CA) ──→	Inhibition ──→	Elongation ──→	Growth	⎫ Antagonistic
MH (PG) ──→	Promotion ──→	Shortening ←──	Development	⎭ balance

(2)   The brain hormone (BH) controlled this antagonistic balance (Fig. 1). The brain did not release BH from the organ itself, but released it from the Corpora cardiaca (CC) and CA. The hormone from type IV cells penetrated into the CC and inhibited partially the function of CC. The BH from I, II and III type cells inhibited partially the function of CA and accelerated the function of PG.

(3)   The secretory power of the brain hormone was controlled by the sex-linked gene and environments. The secretion of BH was stronger in the recessive gene (Lm^e) than in the
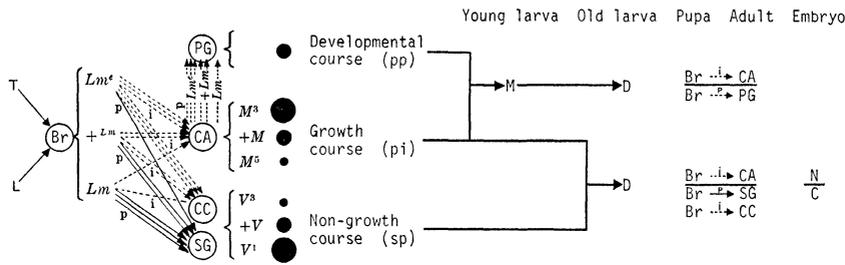
Fig. 2. Molting (M) and diapause (D) characteristics controlled by the central nervous system.

dominant gene (Lm). The Lm^e gene shortened larval duration and segregated about 20% of recessive trimolters from normal tetramolters. The apical two cells (type III) and lateral three cells (type IV) seemed to react directly to temperature and light stimuli.

(4) Establishment of early, intermediate and late maturities: It was determined that the BH was controlled by a series of sex-linked maturing genes $(Lm^e<+Lm<Lm)$ relating to the speed of maturity. These genes existed on 2.0 units of the Z chromosome. The early, intermediate and late maturities were associated with much or less quantities of BH.

(5) Determination of molting and voltine characteristics: Tri-, tetra- and pentamolting characteristics were determined by molting genes $(M^3>+M>M^5$ on 3.0 units of the VI chromosome) which controlled the secretory activity of CA, and these genes were suppressed by sex-linked maturing genes. Uni-, bi- and multivoltine characteristics were determined by voltine genes $(V^1>+V>V^3$ on ±21.0 units of the VI chromosome) that controlled the secretory activity of SG and CC, and these were also modified by sex-linked maturing genes. Accordingly, a genic balance existed between the sex-linked maturing genes and the molting genes or voltine genes.

Embryonal, larval, pupal and imaginal diapause characteristics were determined by a balance between the Br→CA hormonal system and the Br→PG hormonal system during development. However, the determination of the embryonal diapause was related further to the activity of the Br→SG axonal system and the Br→CC hormonal system. Further dispause was found to be under the control of environmental cues such as temperature (T) and light (L) (Fig. 2). Diapausing eggs had large amounts of lipid and glycogen (C), but a small amount of protein (N) in comparison with that of non-diapausing eggs.

At present, two kinds of BH, particles of 7,000 and 4,500 daltons, have been observed. These particles were observed in the CA by the electron microscope. The former particle related to circadian rhythm and the latter characterized vernalization and photoperiodism.

Masanori OTSUKA

Studies on the Peptidergic Neurotransmitters with Special Reference to Substance P

Neurotransmitters are chemical messengers released from neurons to transmit signals to other neurons or effector cells. The studies of Dr. M. Otsuka during the past 12 years provided complete evidence for substance P (SP) as a neurotransmitter. This was the first demonstration that a peptide of known chemical structure functions as a neurotransmitter, and in this respect, Dr. Otsuka's study served as a model for subsequent studies on many other putative peptide neurotransmitters.

In 1972, during the search for sensory transmitters, Dr. Otsuka and his colleagues found that the dorsal roots of bovine spinal nerves contain the undecapeptide SP, whose structure had been determined in 1971 by Chang *et al.* as follows: Arg-Pro-Lys-Pro-Gln-Gln-Phe-Phe-Gly-Leu-Met-NH$_2$. They also showed that SP exerts a powerful excitatory action on frog's spinal neurons. These findings suggested that SP is a neurotransmitter of primary afferent neurons in mammals, and this was strongly supported by the subsequent studies of Dr. Otsuka, which showed the following. 1) SP is concentrated in primary afferent terminals in the superficial layers of dorsal horn of the spinal cord, and it is released therefrom upon electrical stimulation of primary afferent fibers. 2) The excitatory action of SP on rat spinal neurons is, on a molar basis, three to four orders of magnitude more potent than L-glutamate, which is another candidate for a sensory transmitter. 3) A slow spinal reflex that is evoked by stimulating certain primary afferent fibers is depressed by a specific SP-antagonist, [D-Arg[1], D-Pro[2], D-Trp[7,9], Leu[11]]SP. This reflex is also suppressed by the treatment with capsaicin, which is known to cause a depletion of SP from primary afferent neurons. 4) In the prevertebral ganglia of the guinea pig, SP is concentrated in the terminals of axon collaterals of visceral primary afferent fibers. Stimulation of

primary afferent fibers elicits in the ganglion cells a non-cholinergic slow excitatory postsynaptic potential which is blocked by the SP-antagonist.

Dr. Otsuka and his colleagues also provided strong evidence that enkephalins function as neurotransmitters for presynaptic inhibition in the prevertebral ganglia of the guinea pig.

It is likely that many other peptides occurring in the nervous tissues play transmitter roles similar to that of SP. Thus the studies of Dr. Otsuka opened up an entirely new and vast field of peptidergic neurotransmitters, which altogether constitute probably the largest group of neurotransmitters. Further progress in this field is expected to contribute to our understanding of neural functions such as pain mechanism, and of dysfunctions.

PROCEEDINGS AT THE 770TH GENERAL MEETING

The 770th General Meeting of the Academy was held on Thursday, June 14, 1983, at 1:05 p.m., Dr. Hiromi ARISAWA, President, taking the chair. Ninety-two members were present, and the following communications were made:

Certain problems in regulating small corporations . . . .
. . . . Takeo SUZUKI, M. J. A.
On the meaning of 'Political Economy' . . . Yuzo YAMADA, M. J. A.
Toda lattice hierarchy. II . . Kimio UENO and Kanehisa TAKASAKI
On the isomonodromic deformation of a linear ordinary differential
    equation of the third order . . . . Hironobu KIMURA
Wave front solution of some competition models with migration effect
. . . . Yuzo HOSONO and Syozo NIIZEKI
On the existence of solution to Schwinger's functional differential
    equations of higher order . . . . Asao ARAI
Note on the Wiener compactification and the H^p-space of harmonic
    functions . . . . Hiroshi TANAKA and Joel L. SCHIFF
A note on circumferentially mean univalent functions in an annulus
. . . . Hitoshi ABE
On the asymptotic behavior of a nonlinear contraction semigroup and
    the resolvent iteration . . Tetsuji SUGIMOTO and Munehito KOIZUMI
                Above seven, communicated by Kôsaku YOSIDA, M. J. A.
Fourier coefficients of generalized Eisenstein series of degree two . .
. . . . Shin-ichiro MIZUMOTO
Classification of logarithmic Fano 3-folds . . . . Hironobu MAEDA
G-vector bundles and F-projective modules . . . Katsuo KAWAKUBO
                Above three, communicated by Kunihiko KODAIRA, M. J. A.
Optical indications of excitation-contraction coupling in early develop-
    ing embryonic chick heart . . . .
    Kohtaro KAMINO, Shiroh FUJII, Akihiko HIROTA, and Tetsuro SAKAI
                        Communicated by Yasuji KATSUKI, M. J. A.
Identification of HCN in carbon stars . . . Yoshio FUJITA, M. J. A.
Uppermost Jurassic unconformity in Hokkaido, evidence for an early
    Tectonic stage . . . .
    . . . . . Laurent JOLIVET, Mitsuru NAKAGAWA, and Norio KITO
                        Communicated by Takeo WATANABE, M. J. A.
Staining of the nemaline rods by fluorescent antibody against Z-protein
. . . . Hideo SUGITA, Kazuyo
    OHASHI, Koscak MARUYAMA, Ikuya NONAKA, and Shoichi ISHIURA
Electron microscopy of Caulobacter straight flagellar polymers . . .
. . . . Yasuo SHIRAKIHARA,
    Shigeo KOYASU, Takeyuki WAKABAYASHI, and Yoshimi OKADA
Decrease in the amount of NAD and increase in the activity of poly
    (ADP-ribose) synthetase in chicken dystrophic muscle . . . .
. . . . Akira YOSHIKAWA and Tomoh MASAKI
                Above three, communicated by Setsuro EBASHI, M. J. A.
Clonal origin of Ph¹-positive cells in a case of 46,XX/47,XXX/48,
    XXXX mosaicism associated with chronic myelocytic leukemia . .

After a recess during which the members present met in their respective Sections, the General Meeting was resumed for business transactions.

First, the President announced that Dr. Ren Kimura, M. J. A., had passed away on June 28, 1983. The members rose from their seats in silence, expressing profound sense of grief.

Next, Dr. Mataji Miyamoto, M. J. A., paid a tribute of admiration to the late Dr. Seijiro Kishimoto's meritorious services to academic circles.

Then, the Chairmen of both Sections made reports on the matters dealt with at the respective Sectional Meetings.

After that, it was submitted to elect Sir Otto Frankel and Dr. Arne Müntzing to the Honorary Membership of the Academy on the recommendation by Section II. This was approved unanimously.

Finally, it was reported on the result of election of half the members of the Administrative Committee, which had taken place at the Sectional Meetings.

The Committee members elected are: Tatsuro YAMAMOTO, Tsunahiro KIKUI, Yoshitaro WAKIMURA, Yoshio FUJITA, Masao KOTANI, Ichiro TANI, Naohide HIRATSUKA, and Teizo OGAWA.

The Meeting adjourned at 5:20 p.m.

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