



NAST

Annual Report

1993

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NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY
Republic of the Philippines

NAST
Annual Report
1993

NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY
TAPI Bldg., DOST Compound
Bicutan, Taguig, Metro Manila

FOREWORD



The National Academy of Science and Technology, the recognition and advisory body on science and technology, presents this annual report on the Academy's programs and activities for Calendar Year 1993.

A handwritten signature in cursive script, which appears to read "Conrado S. Dayrit".

CONRADO S. DAYRIT, M.D.

President

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NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY 1993 ANNUAL REPORT

The Academy, a collegial body of science and technology with mandated functions of recognition, advisory and establishment of international linkages, hereby presents its 1993 accomplishments:

1. RECOGNITION FUNCTION

To give recognition and incentives to high calibre scientists to help promote S & T culture and scientific productivity.

(1.1) New Academicians

The Academy elected four new Academicians to bring up the number of Academicians to 46. The new members of the Academy are:

1. Salcedo L. Eduardo, Ph.D., Director of Instruction, UP Los Baños;
2. Edgardo D. Gomez, Ph.D. Director of the Marine Science Institute, UP Diliman;
3. Teodulo M. Topacio, Jr., Ph. D., Officer in Charge, Philippine Animal Health Center, Bureau of Animal Industry; and
4. Ramon F. Abarquez, Jr., M. D. Professor, College of Medicine, UP Manila.

(1.2) 1993 Outstanding Young Scientist (OYS) Awards

OYS awards were given to nine (9) young (below 40 years old) scientists who excelled in their fields of research:

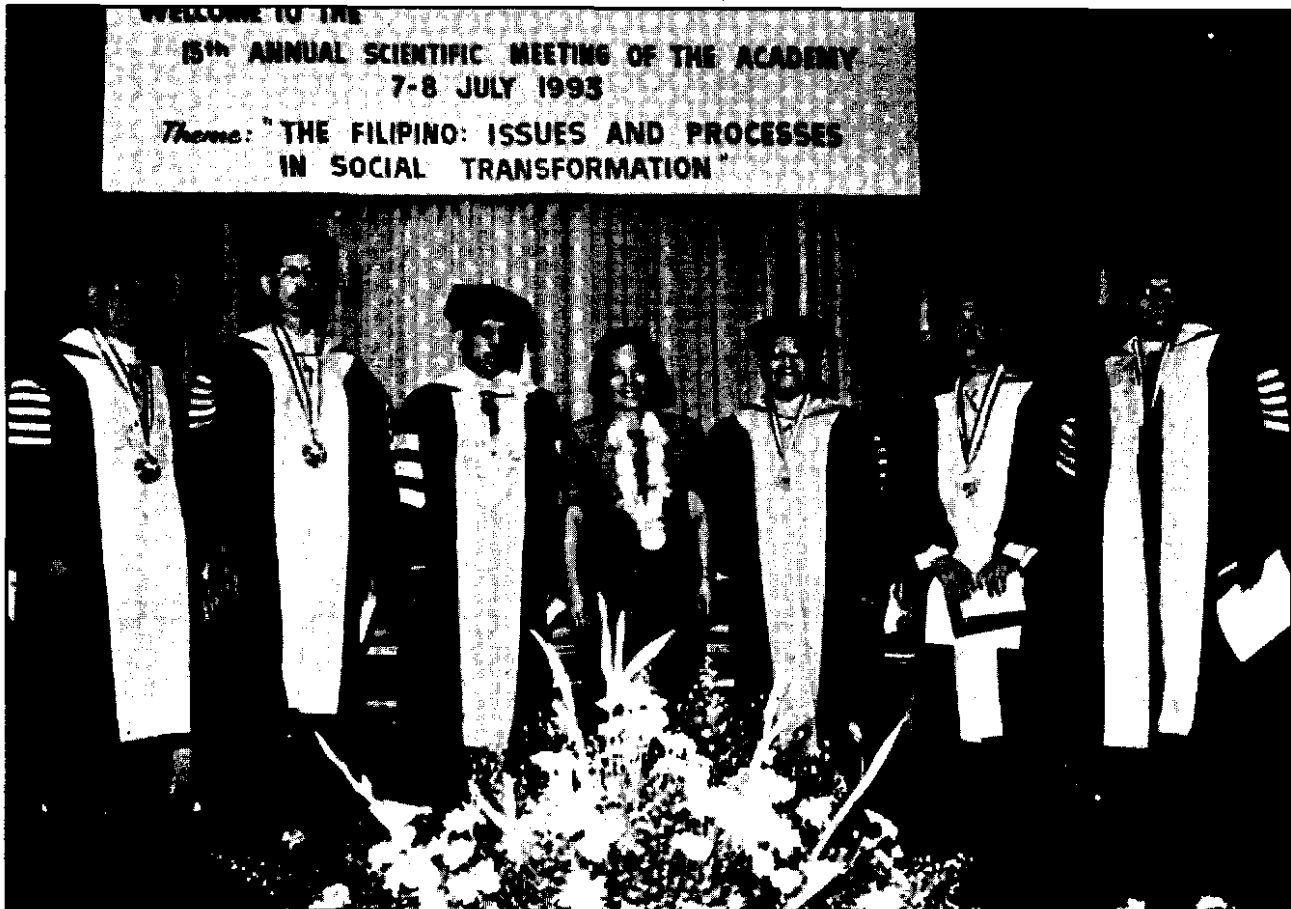
1. Ma. Alicia M. Aguinaldo, Ph. D. (Chemistry), researcher at the University of Santo Tomas;
2. Angelina M. Bacala, Ph. D. (Physics), professor at the MSU-Iligan Institute of Technology;
3. Gerardo C. Janairo, D. Nat. Sci. (Chemistry), professor at De La Salle University;
4. Shirley R. Tiong, Ph. D. (Materials Science), professor at De La Salle University;
5. Graciano P. Yumul, Jr., D. Sc. (Geology), professor at National Institute of Geological Sciences, UP Diliman;



Acad. Dayrit (NAST President) assisted by Acad. Ramirez (NAST Vice-President) in placing Acad. Abarquez's hood.



Acads. Gomez, Eduardo, Abarquez and Topacio (L-R) take their oath before Sec. Ricardo T. Gloria



Four new members of the National Academy of Science and Technology (NAST) pose with Senate President Pro Tempore Leticia Ramos-Shahani (center) and Hon. Ricardo T. Gloria, Secretary of the Dept. of Science and Technology (third from left) and Acd. Conrado S. Dayrit, NAST president (fifth from left) after their investiture during the 15th Annual Scientific Meeting held at the PICC, 7-8 July. From Left, Acd. Ramon F. Abarquez, Jr.; Acd. Edgardo D. Gomez; Secretary Gloria; Hon. Shahani; Acd. Dayrit.; Acd. Salcedo L. Eduardo; and Acd. Teodulo M. Topacio, Jr.

TABLE 1. OUTSTANDING YOUNG SCIENTISTS AND THEIR ACHIEVEMENTS

NAME OF AWARDEE	EDUCATIONAL ATTAINMENT	MAILING ADDRESS AND TEL. NO	SIGNIFICANT CONTRIBUTION/S TO SCIENCE
MA. ALICIA M. AGUINALDO	Ph. D. Chemistry UP Diliman	UST Research Center for the Natural Sci. España, Manila Tel. No.731-4031/ 731-3101 loc. 316	Significant studies on the chemistry of biologically active constituents of some Philippine medicinal plants which provide scientific basis for the medical use of these plants identified as potential alternate drugs for therapy
ANGELINA M. BACALA	Ph. D. Physics Louisiana State University	Purok 9, Tibanga Iligan City	Pioneering works in the field of experimental high energy physics, the first and only measurement of the reaction $e^+ e^- \rightarrow M^+ M^-$ in the energy region $52 \text{ GeV} \leq \sqrt{s} \leq 57 \text{ GeV}$, which presented a test of the Standard Model of Electroweak Interactions in this previously unexplored region.
GERARDO C. JANAIRÓ	Doc. of Natural Sci. in Chemistry Eberhard-Karis- Universitatzu tu- bigen, Germany	Chemistry Department De La Salle Univ. 2401 Taft Ave., Mla. Tel. No. 501611 loc. 430	Developing new routes to pharmacologically interesting organic compounds, the impact of which is to make available key functionalized intermediates suitable for partial or total syntheses of antibiotics and analogs
SHIRLEY R. TIONG	Ph. D. De La Salle Univ.	Bldg. 9 Unit 13 BLPC Road 3 Pag-asa Quezon City Tel. No. 978865	Significant studies on the growth and characterization of zincsulfoselenide single crystals. Her findings provided data on which today's great strides on the development and application of ZnSe in devices especially in shortwavelength LED's electroluminescent panels, optical waveguides, photovoltaic cells and even the most recent blue laser semiconductor diodes are based
GRACIANO P. YUMUL, JR.	D. Sc. in Geology Tokyo Univ.	Nat'l Inst. of Geological Sciences UP Diliman Tel. No. 976046; 976047;976061	Significant researches, both basic and applied in igneous petrology, geochemistry, economic geology and tectonics. Economically viable mineral deposits discovered through the parameters set by his researches help the country in terms of revenue and employment generation and translate to savings exploration costs, time and efforts exerted.
PORFIRIO ALEXANDER M. ALIÑO	Ph. D. Marine Bio. James Cook Univ. of	Marine Science Inst. UP Diliman, QC	Outstanding research on the important and diverse coastal ecosystems in the Philippines:

Table 1 cont...

	North Queensland	989676 to 85 loc 7426	the Coral Reefs. His studies on the coral reef community in Bolinao were the bases for the development of a holistic model of the reef structure and its interrelationships. His significant work on the reefs and reef environment as habitats for fish assemblages has important implications for reef fisheries which constitute over 50% of small-scale fishing in the Philippines.
EMMANUEL S. DE DIOS	Ph. D. Economics UP Diliman	School of Economics UP Diliman, Q.C.	Significant contributions to the use of economic analysis and research in service of both the formulation and the critique of policy. The volume "An Analysis of the Phil. Economic Crises (1984)", which he edited, was a persuasive and original contribution to the analysis of the institutional defects of authoritarian policy making. His critical viewpoint now represents an influential element in the policy debate in a wide range of areas, including fiscal, monetary and exchange rate policies.
JOSEPHINE U. AGRAVANTE	Ph. D. Postharvest Horticulture, Kagawa Univ., Japan	Postharvest Horti- culture Training and Research Center, UPLB College, Laguna Tel. No. 2444;3259	Significant research studies on postharvest horticulture with emphasis on two important crops, the mango and the banana. Her achievements have resulted not only in the improvement of postharvest systems for these crops, but in the generation of basic physiological information which can be used in designing other appropriate handling technologies that can help expand markets and minimize losses.
SEVERINO S. CAPITAN	Ph.D. Animal Physiology, Punjab Agricultural Univ., Ludhiana, India	Inst. of Animal Sci UPLB, College, Laguna Tel. No. 3450;2547	Outstanding achievements in artificial insemination (AI) programs contributing significantly to the genetic improvement and population increase of carabaos in the country. As a reproductive physiologist, he worked on the development of the estrus synchronization (ES) technique and the technology of clitoral stimulation (CS), both instrumental in the massive upgrading programs of Philippine carabaos.

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6. Porfirio Alexander M. Aliño, Ph. D. (Marine Biology), professor at Marine Science Institute, UP Diliman;
7. Emmanuel S. De Dios, Ph. D. (Economics), professor at School of Economics, UP Diliman;
8. Josephine U. Agravante, Ph. D. (Postharvest Horticulture), professor at Postharvest Training and Research Center, UP Los Baños and
9. Severino S. Capitan, Ph. D. (Animal Physiology), professor at College of Agriculture, UP Los Baños.

The 1993 OYS will receive from the Department of Science and Technology (DOST) P100,000.00 each upon approval of their research proposals. Of the proposals submitted by five of the nine 1993 OYS awardees, three have already been approved under the DOST-GIA program (table 2).

TABLE 2
1993 OYS RESEARCH PROPOSAL

PROJECT TITLE	PROPONENT	STATUS
Chemistry of selected Plants with Antitubercular Potential	Dr. Alicia M. Aguinaldo	Approved
Across-Arc Variation in the Pinatubo-Arayat Transect: Source Region Characteristics, Partial Melting Signatures or Distinct Tectonic Blocks	Dr. Graciano P. Yumul	Approved
An Assessment of the Octocoral Resource in Bolinao, Pangasinan and their Ecological Role in Reefs	Dr. Porfirio M. Alino	Awaiting PCAMRD'S evaluation;
A Study on the Properties of an Inorganic Crystal Detector [NaI(Tl)] and Silicon Surface Barrier [SSB] Detector	Dr. Angelina M. Bacala	Approved
Daily Cyclical Interruptions of Incubation	Dr. Severino S. Capitan	Awaiting PCARRD's evaluation; Referral letter sent

To help promote science and technology, OYS awardees and Academicians gave interviews over various radio stations during the year (table 3).

**TABLE 3
REPORT OF ACTUAL RADIO INTERVIEWS OF SCIENTISTS**

DATE INTERVIEWED	STATION	SCIENTIST	TOPIC
March			
19	DWIZ	Rodolfo Cabangbang	Turf Management
26	DZRB	Edwin A. Benigno	NAST Awards
31	DZCA	Edwin A. Benigno	NAST Awards
April			
28	DWAN	Melecio S. Magno	Global Warming
29	DWAN	Melecio S. Magno	Global Warming
May			
7	DWIZ	Edwin A. Benigno	NAST Awards
12	DZRB	Cecilia G. Conaco	Social Psychology
21	DZRB	Melecio S. Magno	Global Warming
August			
16	DZCA	Graciano P. Yumul	Geology
17	DZRM	Gerardo C. Janairo	Science Research Problems
27	DWAN	Porfirio M. Aliño	Marine Biology
September			
29	DZRB	Severino S. Capitan	Animal Science
30	DZRB	Josephine Agravante	Postharvest Horticulture
October			
1	DZRB	Candida Adalla	Insect Resistance
4	DZRM	Josephine Agravante	Postharvest Horticulture
6	DZRB	Violeta Villegas	Breeding of Fruit Crops
11	DZRM	Severino S. Capitan	Animal Science
18	DZRM	Violeta Villegas	Breeding of Fruit Crops
25	DZRM	Candida Adalla	Insect Resistance

Selected OYS were featured in the S & T Post and other science newsletters. Featured were: Drs. Aguinaldo, Tiong, Capitan, Aliño and Agravante.

(1.3) 1993 NAST-TWAS Science Prize (Physics)

Cristopher C. Bernido, Ph. D., professor at UP Diliman is the 1993 NAST-TWAS Science Prize awardee. He is also a 1989 OYS awardee in Physics.

(1.4) 1993 Awards for Outstanding Published Papers

To encourage scientists to publish their research articles in Philippine publications, the Academy establishes the awards for outstanding published papers. For 1993, 15 papers were awarded (Table 4).

TABLE 4
1993 OUTSTANDING PUBLISHED PAPERS & THEIR SIGNIFICANCE

TITLE OF PUBLISHED PAPER	AUTHOR/S	PUBLICATION	SIGNIFICANT CONTRIBUTION TO SCIENCE
Performance Analysis of a combined Updraft-Stratified Downdraft (CUSD) Gasifier	Felipe D. Vinluan, Jr. Ibarra E. Cruz	Philippine Engineering Journal 10(1):65-79 1989	The paper analyzes the performance and establishes the operating characteristics of a CUSD gasifier. The study shows that the CUSD gasifier combines the advantages of both the updraft and downdraft reactors while minimizing the disadvantages, and that it possesses some desirable features which include production of clean gas, stable reaction zones, continuous gas production during fuel feeding and effective removal of ash (with less unconverted carbon) even without a movable grate. All these give the CUSD gasifier a good potential for direct-heat applications and thus may be useful in an energy crisis.
Production of Oleochemicals: Medium Chain Triglycerides (MCT) and Glyceryl Monoesters from Coconut Oil	Daisy L. Binlayo Carmelita H. Viernes Lilibeth C. Hermosura Bella L. Roan Carmelita O. Manalo Yolanda M. Valderrama Agridino S. Piquero, Jr. Violeta P. Arida Rufino C. Lirag, Jr.	Philippine Journal of Science 120(3):215-225 1991	The paper reports on a timely, significant, and comprehensive study of the reaction parameters and optimum conditions for laboratory and pilot scale production of commercially important oleochemicals from coconut oil, including the characterization of the products as compared with commercial standards and the economic feasibility of their commercial production.
A Generic Revision of the Subfamily Asopinae, with Consideration of its Phylogenetic Position in the Family Pentatomidae and Superfamily Pentatomoidea (Hemiptera-Heteroptera)	Victor P. Gapud	The Philippine Entomologist 8(3): 865-961 1991	The taxonomic paper is quite impressive because it does a generic revision (world treatment) of the subfamily Asopinae (a predatory group of bugs of Hemiptera) and considers its phylogenetic position in the family Pentatomidae and superfamily Pentatomoidea. It analyzes and studies the phylogenetic relationships within the superfamily and family mentioned above by using the cladistic principles of Hennig (1966) or comprehensive

Table 4 cont...

TITLE OF PUBLISHED PAPER	AUTHOR/S	PUBLICATION	SIGNIFICANT CONTRIBUTION TO SCIENCE
Ecological Studies on Laguna de Bay	Macrina T. Zafaralla Elvira A. Corcolon Rowena Torres Lina Agulla R. A. Valmonte	UP Los Baños Journal 1(1):17-26, 27-52 1990	character analyses of the currently recognized families and pentatomid groupings. It concludes that the probable sister-group of the Asopinae is found within the subfamily Pentatominae. It proposes a phylogenetic scheme (cladogram) of classifying the superfamily Pentatomiodea and the family Pentatomidae which differs from the currently established scheme of classification. It also suggests an alternative scheme based mostly on genitalic characters. For a difficult paper on the subject of taxonomy, it is well presented and adequately illustrated.
A New Genus and Ten New Species of Philippine Mealybugs (Pseudococcidae, Coccoidea, Hemiptera)	Ireneo L. Lit, Jr.	The Philippine Entomologist 8(5):1158-1181 1992	The author has updated our knowledge on Philippine Pseudococcidae or mealybugs which were last studied by Morrison (an American) in 1920. New collections of mealybugs which are destructive as pests of fruit trees, ornamental plants and grasses were taken in Luzon, Mindanao and Palawan. The taxonomic paper describes a new genus and ten mealybug species new to science. In addition to the description and clear and informative illustrations of each new species, the host(s) and habitat(s) are also recorded.
A Top-Down Econometric Model for a Philippine Region	Rolando A. Danao	Philippine Review of Economics and Business 28(2):127-153. 1991	The paper demonstrates the feasibility of constructing a supply-determined top-down econometric model for a Philippine region. The specification, estimation, historical simulation and ex-post forecast of the model for Region 7 (Central Visayas) are presented. The

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Table 4 cont...

TITLE OF PUBLISHED PAPER	AUTHOR/S	PUBLICATION	SIGNIFICANT CONTRIBUTION TO SCIENCE
An Evaluation of the Philippine Participatory Communal Irrigation Program	Romana P. delos Reyes Sylvia Ma. G. Jopillo	Monograph published by the Institute of Philippine Culture, Ateneo de Manila University 120 pages, 1986	simulations show that the model tracks the sample period and ex-post values fairly well. The Model could serve as a prototype for the other regions. The regional models could be a system of satellite models that could be linked to a national model which can then be used to determine regional forecasts consistent with a national forecast.
A Descriptive Model of Cropping Decision-Making Application to Crop Diversification in Irrigated Rice Farms	Anna Miren G. Intal Jaime V. Valera	Transactions of the National Academy of Science and Technology 12:295-310, 1990	Nowadays, participation and empowerment are popular slogans but the literature on these subjects is long on rhetoric and short on evidence. The Philippine participatory communal irrigation program is a very innovative approach to irrigation development and the fact that a systematic evaluation of results shows that the approach achieved most of its intended results lend scientific credibility to the value of the approach. De los Reyes and Jopillo, through a creative combination of research methods captured the evidence that participation does make a difference.
Fertility Following Clitoral Stimulation of Heat Synchronized Carabaos	Severino S. Capitan Vicente G. Momongan Antonio R. Obsioma Arnel N. Del Barrio	Philippine Journal of Veterinary and Animal Sciences 17(1 and 2):1-7 1991	Social scientists are wont to preach that farmers' perspectives must be taken into account in agricultural development programs but translating this admonition into an actual research project does not come easily. Intal and Valera developed a three-staged descriptive model of cropping decision-making vis-a-vis diversified crops. Results suggest that the model could be used as a diagnostic guide to determine whether or not farmers are ready to crop diversity. The study also showed the "rice security" orientation of farmers and the usefulness of a social-psychological approach to the understanding of farmers crop diversification behavior.
			The continuously growing energy crisis has demonstrated the importance of the carabao as source of farm power. It has been the focus of massive breeding and reproductive studies using artificial insemination and estrus synchronization to improve its reproductive efficiency and growth, milk and meat characteristics. However, pregnancy rates obtained from artificial insemination are low compared to natural breeding. This problem is exacerbated among heat-synchronized carabaos. The work of S. S. Capitan and associates on estrus synchronization with clitoral stimulation

Table 4 cont...

TITLE OF PUBLISHED PAPER	AUTHOR/S	PUBLICATION	SIGNIFICANT CONTRIBUTION TO SCIENCE
Mechanism of Resistance of Eggplant (<i>Solanum melongena</i> Linn.) to the Cotton Leafhopper (<i>Amrasca biguttula</i> Ishida). II. Morphological and Biochemical Factors Associated with Resistance	Merdelyn Caasi Lit Emilliana N. Bernardo	Philippine Journal of Crop Science 15(2):790-84. 1990	<p>produced an inexpensive and very practical technology of improving artificial breeding pregnancy rates.</p> <p>The paper was selected as outstanding not only because of the scientific depth of the studies but also for the quality of the published paper. The presentation of the data, analysis and methodology used are standards that Filipino scientists can emulate. The study clearly elucidated the resistance mechanism of the eggplant to the cotton leafhopper. A highly significant and negative linear association between length, number of branches and density of leaf trichomes, and susceptibility as measured by nymphal preference or adult oviposition was found. Fat content and more particularly, alkaloid content, were also significantly and negatively correlated with nymphal preference or adult oviposition. These findings will help the plant breeders in developing eggplant varieties resistant to the cotton leafhopper.</p>
On-Farm Trials of a Fungus, <i>Paecilomyces lilacinus</i> Against Potato Cyst Nematode and Other Species In Benguet Province	Romulo G. Davide Rustico A. Zorilla	Philippine Phytopathology 23:1-7 1987	<p>The authors have developed the technology of utilizing a fungus (<i>Paecilomyces lilacinus</i>) as a biological control agent against the potato nematode (<i>Globodera rostochiensis</i>) and other species of plant parasitic nematodes. Under field conditions, this disease control technology has proven to be very effective resulting in 38 to 58 per cent increase in yield of potato, tomato, okra and other crops that are subject to nematode attack. Moreover, it is less expensive and safer to use than chemical nematicides, and not hazardous to health and environment. The technology has been patented and the bio-control agent is now commercially produced by a private company and marketed under the trade name BIOACT.</p>
Comparison of Closed and Semi-closed Anesthesia Systems Using Isoflurane for Mastoidectomy Cases in the Philippine General Hospital	Ma. Concepcion L. Cruz Angel Joaquin M. Gomez Grace Ann A. Banzon	Acta Medica Philippina 26(3):146-159 1990	<p>Forty healthy adult patients who were scheduled for modified radical mastoidectomy at the Philippine General Hospital were randomly divided into two groups. Group A patients underwent general endotracheal anesthesia using the closed system method (intermittent circuit-injection technique) while the semi-closed system was used in Group B. Heart rate, blood pressure were measured at regular intervals. FiO_2, oxygen saturation and end-tidal CO_2 values were measured using a calibrated Ohmeda Oxicap 4700. Data gathered from both groups and subjected to statistical analysis</p>

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Table 4 cont...

TITLE OF PUBLISHED PAPER	AUTHOR/S	PUBLICATION	SIGNIFICANT CONTRIBUTION TO SCIENCE
Surgical Infection Surveillance at the Philippine General Hospital	Adriano V. Laudico Ramon L. de Vera Arturo S. dela Peña Nelson D. Cabaluna Edna A. Lasarte Dominga G. Gomez	Philippine Journal of Surgical Specialties 47(3): 109-115 1992	<p>did not show any significant differences. The amount of anesthetic agent used in the closed system group was significantly lower than in the semi-closed system group. The actual amount of isoflurane used in the closed system method approximated the predicted amount based on Lowe's square root of time model. Results of this study show that the closed system method of general endotracheal anesthesia is a standard semi-closed system.</p> <p>The paper reports a four and a half year prospective study that attempted to establish a Surgical Infection Surveillance System by utilizing an Infection Control Nurse who performed case findings in the wards, ICU and out-patient clinics. This is the first such activity in the country and documents show the importance and value of surveillance in surgical infection control. It validates reports from other countries and should settle the issue on the necessity of surveillance in nosocomial infection control as well as the appropriate methods that would generate complete and accurate data.</p>
Phlyctenulosis in Filipinos	Mario J. Valenton	Philippine Journal of Ophthalmology 19(2): 43-49. 1990	<p>Whereas in the literature, the staphylococcus and the tubercle bacillus have always been implicated as the causes of phlyctenulosis, this paper was able to prove for the first time other causes of phlyctenular disease such as the hemophilus, moraxella and the chlamydia. It has also shown the binding potential of T. B. bacilli and the staphylococcus. It deserves an award because the author has painstakingly examined and studied an unusually large number of cases of the disease which is still unknown in the western world but at the present time is rampant and has caused considerable blindness in the third world, such as the Philippines.</p>
A Study of the Evolution of Optic Neuritis Caused by Ethambutol in Rabbits	Rosie R. Noche Marilyn G. Nicolas Normando C. Gonzaga	The Philippine Journal of Microbiology and Infectious Diseases 16(2): 42-46. 1987	<p>The histological and biochemical changes in rabbits given from 50 to 200 mg per kilogram body weight of Ethambutol were followed over a period of 2-12 weeks. The significant observations were: 1) Ultrastructural changes were demonstrated earlier than the clinical appearance of the optic neuritis. 2) As early as 2 weeks, axonal dilatation was shown in the 50 mg samples. 3) At 4 weeks duration a "myelin-</p>

Table 4 cont...

TITLE OF PUBLISHED PAPER	AUTHOR/S	PUBLICATION	SIGNIFICANT CONTRIBUTION TO SCIENCE
			like" structure within the axonal cytoplasm appeared in the samples given 100 mg dose. 4) Biochemical analysis of the retina and the optic nerve showed proportionate increase in proteins and lipids. It is concluded that these histochemical and biochemical changes are coincident to demyelination in the optic nerve and retina.

(1.5) Benefits of Academicians

(1.5.1) Eleven Academicians were awarded "Research Fellowships" by the Academy (table 5).

**TABLE 5
REPORT ON 1993 RESEARCH FELLOWSHIPS**

ACADEMICIAN	TITLE OF PROJECT	DURATION
Dolores A. Ramirez	Code of Ethics for Researchers	1 Mar - 30 Nov 93
Evelyn Mae T. Mendoza	Code of Ethics for Researchers	1 Mar - 30 Nov 93
Clare R. Baltazar	Vol III Inventory of Philippine Insects (Order Hymenoptera)	1 May - 30 Apr 94
Emil Q. Javier	Research Management	1 Apr - 31 Oct 93
Luz Oliveros-Belardo	Study of the Volatile Oil Nothopanax	1 Apr - 31 Mar 94
Carmen C. Velasquez	Index-Catalogue of Parasites Reported from Philippine Vertebrates	1 Jul - 30 Jun 94
Bienvenido O. Juliano	Cereal Chemistry	1 Jul - 30 Jun 94
Filomena F. Campos	International Geosphere-Biosphere Program	1 Jun- 31 May 94
Clara Y. Lim-Sylianco	Biochemical Catalysis	1 Jul- 30 Jun 94
Jose R. Velasco	The Effects of Rare Earths and Chromium on the Growth of Coconuts	1 Jul - 30 Sept 93
Melecio S. Magno	Environmental Aspects of Nuclear Power with Reference to the PNPP	1 Jan- 31 May 93
Melecio S. Magno	Science Policy in the Philippines	1 Nov - 31 Oct 94

(1.5.2) Books by three Academicians are given publication assistance: (a) "Bioorganic and Bioinorganic Mechanisms": by Acd. Clara Y. Lim-Sylianco, (b) "Protozoa" by National Scientist Carmen C. Velasquez, and (c) Collection of Speeches of National Scientist Dioscoro L. Umali.

(1.5.3) National Scientists, when on official mission are given the privilege of port courtesies and assistance by the management of the Ninoy Aquino International Airport (NAIA). National Scientists are also to be accorded due recognition and invited to state events. The Department of Social Welfare and Development has also waived eligibility requirements for them to avail of the benefits given to senior citizens as per RA7432.

(1.5.4) President Fidel V. Ramos signed on 26 October 1993 Executive Order No. 131 *Facilitating the State Funeral of Deceased National Artists and National Scientists*. Necrological and interment services shall be conducted by either the National Commission for Culture and Arts or by NAST with the AFP providing ceremonial elements.

(1.5.5) The Academy financed the travel of Acd. Lourdes J. Cruz to attend the 10th Council Meeting of the Federation of Asian And Oceanian Biochemists (FAOB) on 7-10 December 1993 at the Academia Sinica, Taipei, Taiwan. She submitted the following recommendations:

- (a) Academicians in the field should actively participate in encouraging and helping the development of young researchers. Meetings and collaborations among biochemists and molecular biologists should be encouraged through the activities of the Philippine Society for Biochemistry and Molecular Biology (PSBMB). The coming of the FOBMB President to the 1994 PSBMB convention be used as a feature to attract participants from all over the Philippines.
- (b) The Strategy of Taiwan in developing science and technology should be studied by the Philippines. Taiwan has a large community of biochemists who are doing excellent research on proteins. The country offers very attractive incentives (good salary, excellent facilities and research support) for expatriates to come back and work permanently in Taiwan.

Of particular interest to the members of NAST are the recent developments in changes in mitochondrial proteins and genes as function of aging. Dr. Y. Kagawa of Japan discussed an interesting hypothesis relating aging to the shortening of telomeres during cell division. The hypothesis provides a "biological timer" that may determine the life span of an organism.

(1.5.6) As part of its extension and advisory function, the academy funded the travels of the following Academicians under the NAST Speakers Bureau Program (table 6).

Table 6

SPEAKER'S BUREAU

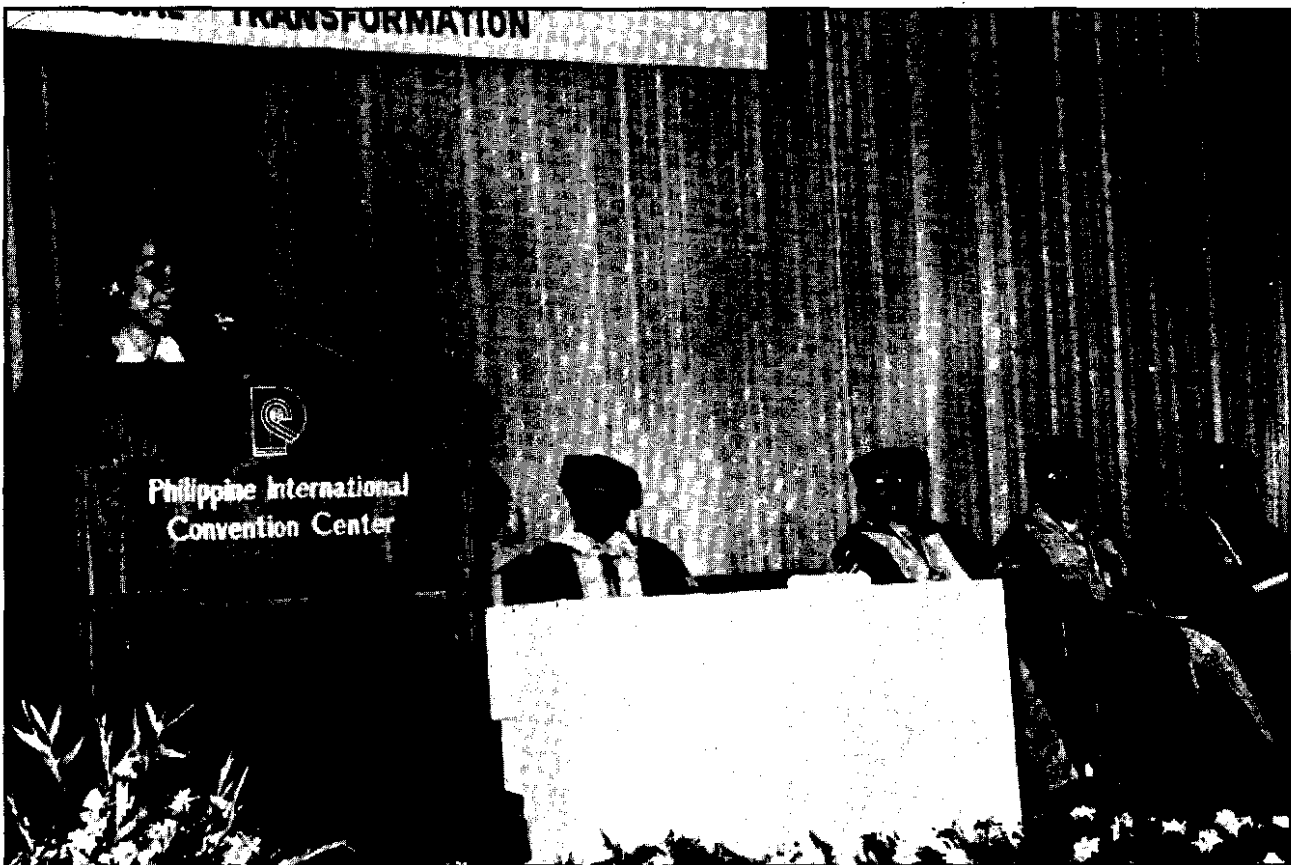
ACADEMICIAN	DATE	VENUE AND PURPOSE OF TRAVEL	TITLE OF PAPER
Acd. Filomena F. Campos	March 14-18, 1993	Central Mindanao University Musuan, Bukidnon Panel discussion on Sustainable Development in connection with the International Geosphere-biosphere Program (IGBP)	"Global Change in Terrestrial Ecosystems"
Acd. Leopoldo S. Castillo	Sept 17-18, 1993	BIOTA Bukidnon Chapter Central Mindanao University Musuan, Bukidnon - 9th BIOTA Annual Convention	"Animal and Plant Researches"
Acd. Rafael D. Guerrero III	Sept. 17-18, 1993	BIOTA Bukidnon Chapter Central Mindanao University Musuan, Bukidnon - 9th BIOTA Annual Convention	"Importance of Freshwater Ecosystems"

2. ADVISORY FUNCTION

(2.1) 15th Annual Scientific Meeting (ASM)

The Filipino: Issues and Processes in Social Transformation was the NAST theme in its 15th ASM held on 7-8 July 1993 at the Philippine International Convention Center. The program of activities included the awarding ceremonies, investiture of Academicians, symposia, scientific sessions and the poster session.

Hon. Senator Leticia Ramos-Shahani, Speaker Pro Tempore, was the keynote speaker. Her speech dealt with the power of human values or the Moral Recovery Program. The main message of her speech is that we must transform ourselves first before we can transform our nation. We shall not fail in this undertaking of individual and national transformation if we have faith in the power of human values to help us achieve our vision of human dignity, nation-building, and sustainable development.



Senate President Pro Tempore Leticia Ramos-Shahani in her speech before the National Academy of Science and Technology (NAST) on the occasion of its 15th Annual Scientific Meeting last July 7-8 at the PICC.



The Academician marching at the start of the investiture ceremonies.



Senator Shahani cuts the ribbon in the opening of the poster session. (L-R) Acd. Conrado S. Dayrit, Sen. Shahani, Secretary Ricardo T. Gloria and Acd. Ruben L. Villareal.

The symposia had nine papers (Appendix A) culminating with a list of recommendations (Appendix B) presented to the participants.

There were 24 oral papers and 44 poster papers. (Appendices C and D)

The members of the 1993 ASM Committee are: Acds. Dolores A. Ramirez (Chair), Solita F. Camara-Besa, Filomena F. Campos, Mercedes B. Concepcion, Ernesto O. Domingo, Rafael D. Guerrero III, Jose O. Juliano, Alfredo V. Lagmay, Melecio S. Magno and Prescillano M. Zamora.

Further, it was decided that all the recommendations gathered in the 1990-93 ASM will be the basis in formulating advice for use of President Ramos, the Cabinet and the legislative body. The meetings provided the forum for the scientific bases for managing our resources and environment, reducing the impacts of disasters and understanding the Filipino as the central figure and key to the solution of the problems of the country. The topics of the meetings were: (1990) Sustainable Development, (1991) Management of Ecosystem for Long-Term Human Survival, (1992) Coping with Natural Disasters, (1993) The Filipino: Issues and Processes in Social Transformation. The two-person committee drafting the consolidated recommendations are Acds. Gelia T. Castillo and Mercedes B. Concepcion.



The 15th ASM opening ceremonies.

(2.2) Guidelines on Ethics for Researchers

The AdHoc Committee on Code of Ethics chaired by Acd. Melecio S. Magno approved the draft guidelines on ethics for researchers which was consolidated with the assistance of Acds. Ramirez and Evelyn Mae T. Mendoza. The draft which is still with the editor will be submitted for legal consultation with the Office of Undersecretary Amelia C. Ancog. Afterwhich there will be series of roundtable conferences to consult with concerned sectors.

The topics included in the guidelines are as follows

- I. Responsibilities of Society and Researcher
- II. Conflict of Interest
- III. Guidelines on Research Procedures
- IV. Guidelines on Working Relationships of Researchers
- V. Guidelines on Authorship and Publications
- VI. Guidelines on Preparation, Evaluation and Funding of Researches
- VII. Safety Aspects
- VIII. Intellectual Property Rights
- IX. Local Codes of Ethics and Research Manuals
- X. Remuneration/Incentives

(2.3) Advice

The Academy coursed through the Office of Secretary Ricardo T. Gloria its advice to the President re *Enlarging Our Supply of Science Teachers (or Eliminating the 18-unit Obstacle)*. The main idea is as follows:

“Concentrated efforts must be directed toward the raising of the academic standards in the context of science education in the elementary levels by strengthening the course (science) content and by upgrading the competence of teachers.

Corollary to (this) item...is the move to break open the policy of confining science jobs to the graduates of science teachers, i.e. from method-oriented to the subject-oriented, which would include people with A.B. and B.S. degrees in science and mathematics.”

The Academy studied and reviewed some bills; namely; (a) S.B. #817, S.B. #1280, and H.B. #7224 re: Science and Technology Scholarship Fund, (b) S.B. #33275 re: An Act to Revise the Philippine Environment Code Defining Its Scope and Integrating All Other Laws Relative Thereto, (c) H.B. #8008 re: An Act Providing for a Comprehensive Air Pollution Control Policy and for Other Purposes.

(2.4) Botanical Garden

The Committee chaired by Dr. Domingo Madulid and coordinated by Acad. Magdalena C. Cantoria are considering some alternatives to come up with a national botanical garden either through the assistance of the government or by establishment of a foundation. NAST will endorse the project to the Department of Tourism (DOT) which has the budget for the purpose.

3. INTERNATIONAL LINKAGES

(3.1) The Academy continues its linkage with the Third World Academy of Sciences (TWAS), Federation of Asian Scientific Academies and Societies (FASAS), International Network of Scientific Organizations (INSO), Chinese Academy of Sciences (CAS), Indian National Science Academy (INSA), German Research Society (DFG), Royal Society of London (RSL) and the American Association for the Advancement of Sciences.

(3.2) Three scientists visited the Philippines under the function.

(a) Dr. Gregoria N. Aniche of the Department of Applied Microbiology at Anambra State University, Nigeria visited the Natural Science Institute, UP Diliman on May 13- July 24, 1993 under the TWAS Lectureship Program. She collaborated with scientists from UP Diliman to have the facility for the production and purification of B-D Galactosidase from *Escherichia coli*. At the request of UP Diliman, she taught a special graduate class for one month.

(b) Prof. Zhang Gou-Hua of the Yunnan Academy of Agricultural Science, China visited UP Los Baños and Baguio to observe highland areas possible for subtropical fruit trees plantation. His visit was in coordination with Dr. Violeta Villegas of UP Los Baños and the Bureau of Plant Industry. Prof. Zhang is willing to share good varieties of apples, pears, peaches and other fruit crops. In exchange, Dr. Villegas will be visiting China under the DOST Global Technology Search Program.

(c) Prof. Ivor Delme Bowen of the Cell Biology School of Pure and Applied Biology, University of Wales College of Cardiff visited the Philippines on November 29 - December 10, 1993 at the invitation of the Malacological Society of the Philippines. He presented a paper entitled *The Integrated Management of Terrestrial Slug Pests* at the 2nd Malacological Convention. He also met with his colleagues to develop and initiate a joint research project for the integrated management of the "golden kuhol" snail pest and to seek funding for this programme from the European community and the International Scientific Cooperation.

Three Scientists went abroad under the NAST linkage program. They were:

(a) Dr. Corazon M. Raymundo, Director, Population Institute, UP Diliman attended on October 25-27, 1993 the Population Summit of the World's Scientific Academies in New Delhi. The participants explored in great detail the complex and interrelated issues of population growth, resource consumption, socio-economic development, and environmental protection.

(b) Acd. Conrado S. Dayrit attended the FASAS Council meeting and the 21st International Symposium sponsored by the National Academy of Sciences of Korea on October 30-November 1, 1993.

(c) Acd. Fe del Mundo attended the 10th Anniversary Celebration of the TWAS on November 11-14, 1993.

(3.3) The Academy in coordination with FASAS, DOST, TWAS, Food and Nutrition Research Institute, Philippine Nuclear Research Institute and Philippine Association of Food Technologists Inc. is organizing the International Conference on Food Preservation and Security on November 8-11, 1994. The theme is Food Security through Food Preservation. The topics for oral and poster presentation are: (a) Food Quality, Safety and Security, (b) Food Processing and Packaging Equipment and Machinery, (c) Food Handling, Storage and Distribution, (d) Computer Applications in Food Technology and Preservation, (e) Food Ingredients and Additives, and (f) Food Preservation Technologies.

(3.4) The Academy produced the 1992 Annual Report and Molecular Biochemistry by Acd. Clara Y. Lim-Sylianco.

(3.5) NAST continues the exchange of scientific materials with libraries here and abroad. NAST Specialist library has a total of 329 exchange addresses, 60 of which are foreign. Some 22 foreign exchange agencies send periodicals on regular basis. Of the 269 local exchange agencies about 39% are sending publications. On the average the library receives 50 publications every quarter, most of which are periodicals.

The library sent 1,344 exchange information materials, most of which were sent to local universities/schools.

(3.6) The Academy participated in the 4th DOST Annual Technology Fair held on July 19-23, 1993 at the Philippine Trade and Training Center. NAST exhibits featured its profile and role as a recognition and advisory body on science and technology. The 20 national scientists were showcased as well as the academy's publications and awards.

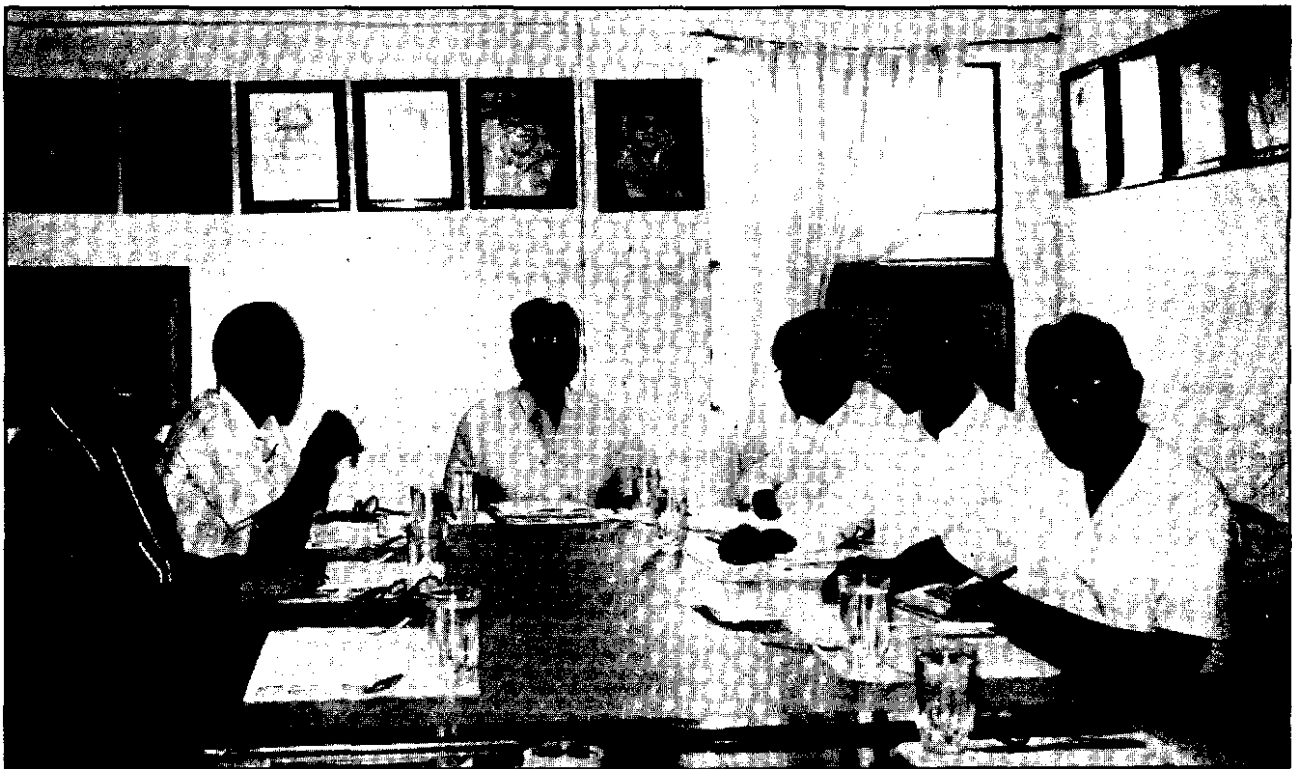
NAST continues its participation in the DOST Display and Exhibit Center located in the lobby of the Technology Application and Promotion Institute (TAPI) Building.

4. ADMINISTRATIVE MATTERS

(4.1) Officers

The new officers of the Academy are:

- Acad. Conrado S. Dayrit - President
- Acad. Dolores A. Ramirez - Vice President
- Acad. Jose O. Juliano - Secretary
- Acad. Filomena F. Campos - Member
- Acad. José Encarnación, Jr. - Member
- Acad. Alfredo V. Lagmay - Member
- Acad. Faustino T. Orillo - Member



NAST Executive Council: (L-R) Acad. Filomena F. Campos, Acad. José Encarnación, Jr., Acad. Conrado S. Dayrit, Acad. Jose O. Juliano, Acad. Alfredo V. Lagmay, Acad. Faustino T. Orillo during one of its meetings. Not in the picture is Acad. Dolores A. Ramirez



NAST COUNCIL MEMBERS TAKE OATH

President Fidel V. Ramos swears into office the appointed members of the seven-man Executive Council of the National Academy of Science and Technology. From left: Science Secretary Ricardo T. Gloria; Acd. Jose O. Juliano, President Ramos, Acd. Conrado S. Dayrit; Acd. Faustino T. Orillo; Acd. Dolores A. Ramirez; and National Scientist Dr. Alfredo V. Lagmay. Not in the picture are National Scientist José Encarnación, Jr. and Acd. Filomena F. Campos.

(4.2) The Secretariat

Mrs. Rowena V. Briones was promoted to Information Officer II on January 4, 1993. Miss Regina T. Gonzales was hired as Stenographer II on December 21, 1993.

Dr. Edwin A. Benigno (Executive Director) and Miss Luningning E. Samarita (Information Officer V) attended the Conference on World Class Management on October 20-21, 1993 at the Hyatt Hotel, Manila.

Mrs. Gemma V. Enriquez (Information Officer III) attended the National Convention Workshop of the Public Relations Organization of the Philippines on November 18-20, 1993 at Camp Aguinaldo, Metro Manila.

Miss Rosemarie S. Espino (Administrative Officer V) and Ma. Aurora Reig (Accountant III) attended a Seminar on New Standard Government Chart of Accounts and Accounting Form on November 24-26, 1993.



NAST Secretariat: (L-R) Eliseo D. Raganet, Rowena Briones, Rosemarie S. Espino, Edwin A. Benigno, Luningning E. Samarita, Regina T. Gonzales, Gemma V. Enriquez, Chona C. Sollestre

5. SIDE-LIGHTS: ACADEMICIANS STILL ON THE GO

The Academy through its Academicians is able to reach different government and private agencies in their capacity as consultants or members of different committees.

Table 7 shows the Academicians, their projects, publications and honors received in 1993.

**NAST BUDGET
CY 1993**

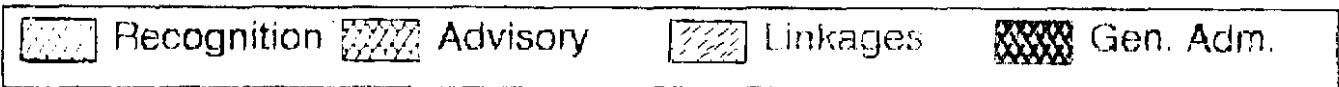
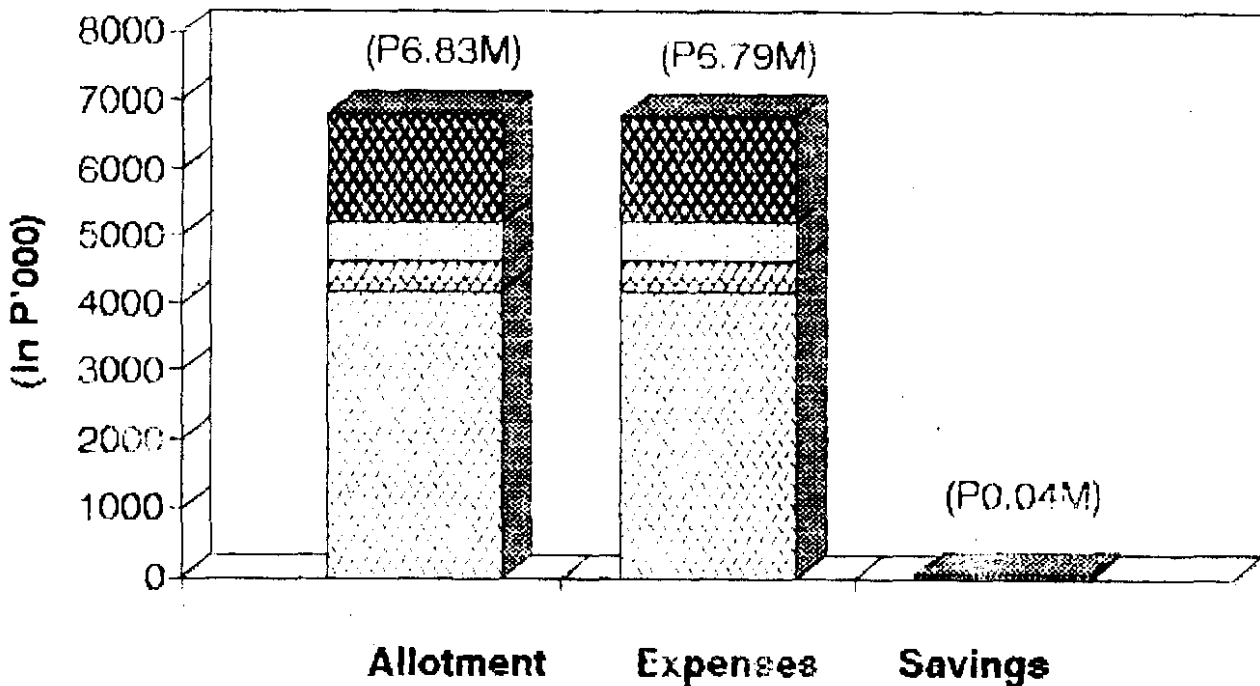


Table 7
1993 ACCOMPLISHMENTS

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
ABARQUEZ, Ramon F. Jr.	<ul style="list-style-type: none"> a) Raise-arm maneuver ("RAM") b) Digitalis reduces MI and LVH among uncomplicated hypertensive industry based cohort in a long term comparative study - The San Miguel Corporation experience c) Medical management effect on cumulative survival in an industry based acute myocardial infarction cohort without thrombolytics or anti-coagulants (Comparison of hospitalized and non-hospitalized cases) d) Thrombolysis in dogs e) Trimetazidine in reperfusion f) On El Carnitine in hospital effects in mortality among acute MI cases g) Longitudinal industry-based study among Filipinos showing favorable survival after myocardial infarction. 	<ul style="list-style-type: none"> a) Delfin, D.P.; Peralta, C.P.; Santos, R.J.; Calleja, H.B.; Dantes, R.B.; and Abarquez, R.F. Jr. Quantitative echocardiographic structural analysis of the left ventricular after intense endurance training among Filipino athletes. <i>Phil. J. Cardiol.</i> 21.2: 1075-1064, 1993. b) Abarquez, R.F. Jr.: Is hypertension in the elderly unique? Review Article <i>Phil. J. Cardiol.</i> 21.2:1086-1092, 1993. 	<ul style="list-style-type: none"> a) Outstanding Mason Awardee for Medicine - Grand Lodge of the Philippines - Free Masonry - April 22, 1993 b) Outstanding Sons and Daughters of Pagsanjan given by the Pagsanjan Economics Council, Mayor and Governor of Pagsanjan - April 25, 1993.
CANTORIA, Magdalena C.	<ul style="list-style-type: none"> a) Special Topics in Pharmacognosy (on-going) b) Microscopy of Philippine Plants Yielding Volatile Oils (on-going) 		Chairman, Division of Pharmaceutical Sciences, NRCP
CAMARA-BESA, Solita F.			<ul style="list-style-type: none"> a) Member, ASM Committee b) Chair, Subcommittee on Conflict of Interest - Code of Ethics c) Chair, Plenary Session of 15th ASM where Dr. Lourdes Vera-Lapuz read her paper on "Choices".
CAMPOS, Filomena F.			<ul style="list-style-type: none"> a) Vice-Pres. (Asia & Pacific Region), Third World Org. of Women Scientist (TWOWS) b) Member, Executive Board TWOWS c) Chair, NRCP, Biological Sciences Div. d) Member, NRCP Governing Council

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
CASTILLO, Gelia T.	<p>a) Castillo, G. T.: Sustainable Agriculture: In Concept and in Deed, Overseas Development Institute, Network Paper 36, Dec. 1992, London, England (Received 1993)</p> <p>b) Castillo, G. T.: Where Food and Population Meet: The Filipino Household Among Other Household, UP Press and Center for Integrative and Development Studies, April, 1993.</p> <p>c) Castillo, G. T.: "Poverty Research: As if the Poor Really Mattered", Perspective on Philippine Poverty, UP Center for Integrative and Development Studies, the UP Press and the Council on Southeast Asian Studies, Yale Univ Oct, 1993, pp. 133-143.</p> <p>d) Castillo, G. T., Head, Ivan L. and Matos, Narciso: IFS: A Small Organization with a Large Mission, (External Evaluation of IFS 1993), International Foundation for Science, Stockholm, Sweden</p>	<p>e) Member, NAST Executive Council f) Chair, Southeast Asian Regional Com. for START (SARCS) for Global Change g) Chair, Int'l Geosphere-Biosphere Programme (IGBP) National Committee i) Consultant, Foundation for Philippine Environment j) Member, Systems for Analysis, Research and Training (START) Standing Committee</p>	<p>a) Member, Task Force on Health Research For Development, (meeting held in Geneva Switzerland, March 8-9, 1993) b) Chair, External Evaluation Team for the Int'l foundation for Science (IFS) c) Plenary Session Speaker, 22nd General Conference of the Int'l Union for the Scientific Study of Population, Montreal, Canada, 25 Aug. to 01 Sept. 1993: "Rural Dev. Reconsidered: Some Emerging Niches for Population Studies" d) Launching of Monograph on the UP State of the Nation Assessment Project on the Filipino Household by the Center for Integrative and Dev. Studies, UP Dil. Aug 2, 1993 e) Speaker, Symposium on Science Capacity Building for the Future. Sponsored by the Int'l Foundation for Science Nov. 18-20, 1993. Antananarivo, Madagascar f) Overview Speaker, Third National Social 1993 Science Congress, 9-10 Dec. 1993 Phil. Social Science Center, Q. C. g) National Social Scientist Award granted by the Phil. Social Science Council, 15 December, 1993.</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
CASTILLO, Leopoldo S.			<p>a) Member, UPLB Scientific Career Evaluation Committee appointed by the UPLB Chancellor</p> <p>b) Speaker, 9th Annual Convention of BIOTA, Bukidnon Chapter at Central Mindanao Univ. On 18-19 Sept. 1993, "Advances in Animal Science Researches"</p> <p>c) Chair, Committee of three members requested by the Pres. of the Board of Maquilting School Inc. (MSI) to look into an administrative problem of the school and to suggest appropriate action or solution to the school administration of MSI.</p> <p>d) National Research Award given by NRCP in its Diamond Jubilee at the Shangrila, EDSA Plaza Hotel on Dec. 1993.</p>
CRUZ, Lourdes J.		<p>a) Myers, R. A. Cruz, L. J. Rivier and Olibera, BM (1993) Conus peptides as chemical probes for receptors and ion channels. Chem. Rev. 93, 1923-1936.</p> <p>b) Cruz, L. J. and Olivera, B. M. (1993) Conus venom neuropeptides. Neuroscience Year: Suppl. 3 to the Encyclopedia of Neuroscience. B. Smith and G. Addleman (ed.) Birkhauser, Boston, pp. 32-33</p> <p>c) Olivera, B. M., Mcintosh, J. M. and Cruz, L. J. (1993) Conus peptides as tools for the neuro-scientist. In: Gene-Brain-Behavior, Proceedings of the 12th Gottingen Neurobiology Conference N. Elsner and M. Heisenberg (eds.) George Thieme Verlag, Stuttgart, Germany, pp. 159-169</p> <p>d) Torres, J.L. Mahe, E., Hernandez J.F., Miller, C., Cruz, L.J. Olivera, B.M. and Rivier, J.E. (1993) In vivo activities of conantokin-G analogs. Proc. 13th American Peptide Symposium, Edmonton, Alberta, Canada</p>	<p>a) 1993 Sven Brohult Award given by the International Foundation for Science, Stockholm, Sweden</p> <p>b) Plenary Speaker - "Potential Drugs from Deadly Marine Snails", 7th General Assembly of the Int'l Foundation for Science, Antananarivo, Madagascar, 17-20 November 1993</p> <p>c) Symposium Speaker - "Conopeptides as Ligands for receptors and ion Channels", VII Pacific Science Inter-Science Congress</p> <p>d) Symposium Speaker - "Conus Peptides: Efficient Biochemical Tools for Prey Capture", 10th FAOB Symposium on Protein Research, Taipei, Taiwan, 8-10 December 1993</p> <p>e) Delegate of the Phil. Biochemical Society Council Meeting of the Federation of Asian and Oceanian Biochemists, Taipei, Taiwan, 7 Dec. 1993</p> <p>f) Speaker - "Conotoxins as Ligands for ion channels", Science Week, STTC UP Diliman, Feb. 1993</p> <p>g) Chair, Organizing Committee, Annual</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPER/BOOKS	HONORS RECEIVED/POSITIONS
DOMINGO, Ernesto O.	<p>a) Immunogenicity of a plasma derived hepatitis B vaccine with Pre-S b) Immunogenicity of an rDNA derived hepatitis B vaccine c) Efficacy of 3 Regimens of HbsAg Vaccine plus HBIG d) Process Documentation of Immunization Against HVB as Part of the EPI e) Field Trial of Single as vs Three Doses of HB Vaccine in Preventing The Carrier State f) Viral Hepatitis: Philippines Perspective</p>	<p>a) Ching, M.C., Domingo, E.O., Ibanez, L.T. Hepatic Wilson's Disease in Two Brothers. <i>Phil. J. Intern. Med.</i> 31:1-4 1993. b) Tia, R.C., Ching, M.C., Gloria, V.I., Chavez, A., Domingo, E.O. Retained Common Bile Dust Stone-A Nightmare No More. <i>Phil. J. Intern Med.</i> 31:5-8, 1993.</p>	<p>Convention of Phil. Biochemistry Society, Theme: Biochemical Education and Technology Transfer, MSI, UP h) Rapporteur, 15th ASM, Theme: "The Filipino: Issues and Processes in Social Transformation", PICC, 7-8 July 1993</p> <p>a) Chair, Essential National Health Research Advisory Council, Department of Health b) Developed the Health Policy and Strategic Planning Program of the UP Manila. c) Organized a Multisectoral workshop on Human Resource Development d) Guest Speaker, 8th International Viral Hepatitis and Liver Disease Symposium, Tokyo, Japan, May 1993. Topic-"Viral Hepatitis: Philippine Perspective" e) Commencement Speaker-UP Manila Graduation f) Guest Speaker, Emilio Aguinaldo College Medicine, La Salle Univ. on the occasion of Medicine Week. Topic-"Status of Medical Education in the Country"</p>
EDUARDO, Salcedo L.	<p>a) Researcher-Taxonomic revision of the genus <i>Gastrothylax</i> affecting ruminants. Species of the genus have been described, illustrated keys and guide to their identification were formulated. b) Researcher-Disease affecting the seacow, <i>Dugong dugon</i> (Miller) in the Philippines. In collaboration with the Protected Areas and Wildlife Bureau, DENR. Several species have been collected on autopsy and these are being studied for specific identity. It becomes necessary also to examine for comparative study specimens deposited in museums abroad. c) Responsible for the parasitic aspects-Tamaraw Project. In collaboration with the Inst. of Animal Science and the</p>	<p>a) Eduardo, S.L. & Valensuela, L.M. 1993. Scanning electron microscopy of the surface topography of the egg of the biting lice., <i>Bovicola limbata</i> and <i>Heterodoxus longitarsus</i> (Mallophaga). <i>Phil. J of Veterinary & Animal Sciences</i>, 19(1):7-13. b) Eduardo, S.L. & Antiporda, L.R.D. 1993 Nematode parasites of horses in the Philippines. I. The genera <i>Strongylus</i>, <i>Triodontophorus</i>, <i>Cylicodontophorus</i> and <i>Gyalocephalus</i> (Strongylidae). <i>Phil. J. of Vet. & Animal Science</i>, 19(1):29-44. c) Eduardo, S.L. 1993. <i>Ogmocotyle indica</i> (Bhalerao, 1942)(Trematoda:Notocotylidae), a parasite of the Luzon sambar deer, <i>Cervus (Rusa) philippinus</i>. <i>Phil. J. of Vet. Med.</i> 30(1):23-26. d) Eduardo, S.L. & Antiporda, L.R.D. 1993. Nematode parasites of horses in the</p>	

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
ESCURO, Pedro B.	<p>Tamaraw conservation project of DENR. The parasites affecting the animals in the gene pool in Mindoro have been identified. These have been described and illustrated. Seasonal occurrence of helminths through fecal examination has also been studied. Results are being prepared for publication. Results have formed the basis of treatment.</p>	<p>Philippines.II. The genera <i>Cyathostomum</i> Molin. 1861 and <i>Oesophagodontus</i> Railleit & Henry, 1902 (Strongylidae). <i>Phil. J. of Vet. & Animal Sciences</i>, 19(2):69-79. e) Eduardo, S.L. & Wright, M.A..B.R. 1993. Surface topography of <i>Orthocoelium serpenticaecum</i> Eduardo and Peralta, 1987 (Trematoda:Paramphistomidae), a parasite of the water buffalo (<i>Bubalus bubalis</i> Linnaeus) in the Philippines. <i>Phil. J. of Vet. Med.</i>, 30(2):(in press). f) Eduardo, S.L. & Antiporda L.R.D. 1993. Nematode parasites of horses in the Philippines. III. The genera <i>Cylicocycylus</i>, <i>Cylicostephanus</i> and <i>Poteriostomum</i> (Cyathostominae: Strongylidae). <i>Phil. J. of Vet. and Animal Science</i>, 19(3): 121-143.</p>	<p>a) Distinguished Award in Agriculture given by the Gamma Sigma Delta The Honor Society of Agriculture, 5 February 1993, Los Baños, Laguna. b) IBM Science and Technology Award 1993, Diploma of Honor, given by IBM Philippines & DOST, 23 July 1993, Manila. c) Plaque of Recognition given by the Philippine Rice Research Institute, 12 October 1993, Los Baños, Laguna.</p>
GARCIA, Edito G.	<p>a) Multi disciplinary approach to Philippine Schistosomiasis funded by TDR-Rockefeller Funding venture. b) Development of vaccine to prevent hepatosplenic Disease in <i>Schistosomiasis japonicum</i> Infection. Funded by the Office of the Science Adviser, USAID, Washington, D.C., USA</p>	<p>a) Professor Emeritus, College of Public Health, UP Manila b) Consultant & Project Director Institute for Socio-Biomedical Research, UP Manila</p>	

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
GOMEZ, Edgardo D.	<p>a) Project Leader-Reproduction of Invertebrates (PCAMRD) and Culture and mass production of giant clams (IDRC)</p> <p>b) Co-project Leader-Monitoring of the stability of coral and associated fish communities</p>	<p>a) Gomez, E.D. and S.S.M., Mingoa. 1993 <i>Tridacna gigas</i> and <i>T. derasa</i>: A Growth Comparison. In:Fitt, W.K. (ed). The biology and mariculture of giant clams; a workshop held in conjunction with the 7th International Coral Reef Symposium, 21-26 June 1992, Guam, USA. ACIAR Proceedings No. 47:74-81.</p> <p>b) Gomez, E.D. 1993. Dam(n) Manila Bay? Mar. Pollut. Bulletin. 26(7):352.</p>	
GUERRERO III, Rafael D.	<p>a) Observations on the Juvenile Production of <i>Cristaria plicata</i> (Leach) in the Philippines</p> <p>b) Economic Valuation of Mangroves Converted into Fishponds and Other Aquaculture Uses</p> <p>c) Culture in Brackishwater Ponds of Sex Reversed Hybrid Tilapia</p> <p>d) Effect of Oral Treatment of Mibolerone on the Sex Reversal of Nile tilapia</p>	<p>a) Guerrero, R.D. 1993. Selected Philippine Tilapia Farming Technologies and Their Relevance to Africa. pp. 41-47, In: K. Koop (ed.) Aquaculture in Africa. Proc of the IFS Workshop on Research in Aquaculture, Harare, Zimbabwe 23-27 January 1991.</p>	<p>a) Plaque of Recognition awarded by the Pangasinan State University College of Fisheries for his sustained interest and efforts for the institutional development of the PSU-College of Fisheries for his leadership in promoting transfer of sustainable and indigenous technologies and for playing an active role and supporting coastal resource conservation and development in the Lingayen Gulf. Given on 30 March 1993 at Binmaley, Pangasinan.</p> <p>b) Program Administrator, ASEAN-DOST Cooperative Marine Science Program.</p> <p>c) National Coordinator, Red Tide R & D Program</p> <p>d) Head, Aquatic Biology Section, Div. of Biological Sciences, NRCP.</p>
JULIANO, Bienvenido O.	<p>a) Rationalization of screening for rice grain quality in the PhilRice Breeding Program</p> <p>b) Rice properties that enhance the quality of rice food products.</p>	<p>a) Biliaderis, C.G. and Juliano, B.O. 1993. Thermal and Mechanical Properties of Concentrated Rice Starch gels of varying composition, Food Chem. 48:243-250.</p> <p>b) Biliaderis, C.G., Tonogai, J.R., Perez, C.M. and Juliano, B.O. 1993. Thermophysical Properties of Milled Rice Starch as Influenced by variety and parboiling. Cereal Chem.</p>	<p>a) Fellow, NAST, July 1993-June 1994</p> <p>b) Professional Lecturer 5, Inst. of Chemistry, UPLB</p> <p>c) Consulting Senior Scientist, PhilRice Division of Rice Chemistry and Food Science, UPLB</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
		<p>70:52-516.</p> <p>c) Eggum, B.O., Cabrera, M.I.Z., and Juliano, B.O. 1993. Protein and Lysine and Digestibility and Protein Quality of Cooked Filipino Rice Diets and Milled Rice in Growing Rats. <i>Plants Foods Hum. Nutr.</i> 43:163-170.</p> <p>d) Eggum, B.O., Juliano, B.O., Perez, C.M., and Acedo, E.F. 1993. The Resistant Starch, Undigestible Energy and Undigestible Protein Contents of Raw and Cooked Milled Rice. <i>J. Cereal Sci.</i> 18 (in press)</p> <p>e) Eggum, B.O., Juliano, B.O., Perez, C.M., and Khush, G.S. 1993. Starch, Energy and Protein Utilization by Rats in Milled Rice of IR36-based amylose extender mutant. <i>Cereal Chem.</i> 70:275-279.</p> <p>f) Juliano, B.O. 1993. Rice in Human Nutrition. Food and Agriculture Organization, Rome, Italy-International Rice Research Inst. Manila 162 pp.</p> <p>g) Juliano, B.O. 1993. Rice. Pages 3926-3930 in <i>Encyclopedia of Food Science, Food Technology and Nutrition</i>, vol 6. Macrae R, Robinson, RK, Sadler, MJ, ed. Academic Press Ltd., London.</p> <p>h) Juliano, B.O. 1993. Improving food quality in Rice. Page 677-681 in <i>Int'l Crop Science I. Proceedings, First Int'l Crop Science Congress, Ames, Iowa, 14-22 July 1992</i>. Buxton, D.R., et al, ed. Crop Sciences Society of America, Madison, WI.</p> <p>i) Juliano, B.O., Perez, CM. 2993. Note: Critical Moisture Content for Fissures in Rough Rice. <i>Cereal Chem.</i> 70:613-615.</p> <p>k) Perez, C.M., Juliano, B.O. Bourne, M.C., Anzaldua-Morales, A. 1993. Hardness of Cooked Milled Rice by Instrument and Sensory Methods. <i>J. Texture Stud.</i> 24:81-94.</p> <p>l) Perez, C.M., Seshu, D.V., Juliano, B.O. 1993. Note: Increase in Vigor of Some Low-vigor Rices During Accelerated Seed Aging. <i>Philipp. Agric.</i> (in press).</p>	<p>d) Member, Committee to revise the selection on grain quality evaluation of the National Rice Cooperative Testing Project Manual.</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIOS
MAGNO, Melecio S.	a) Finished the syllabus and submitted it to NAST, "Environmental Aspects of Nuclear Power"	<p>m) Perez, C.M., Villareal, C.P., Juliano, B.O. and Biliaderis, CG. 1993. Amylopectin-staling of Cooked Nonwaxy Milled Rices and Starch Gels. <i>Cereal Chem.</i> 70:567-571.</p> <p>n) Resurreccion, A.P., Li, X, Okita, T.W. and Juliano, B.O. 1993. Characterization of poorly Digested Protein of Cooked Rice Bodies. <i>Cereal Chem.</i> 70:101-104</p> <p>o) Villareal, C.P., dela Cruz, N.M. and Juliano, B.O. 1993. Estimation of Amylose in Rice by Near Infrared Transmission Spectroscopy. <i>Tecator AB First Asian Plant Breeding Seminar, Bangkok, Thailand, 18-19 Nov. 1992. In Focus (Tecator) J. Technol. Chem. Anal.</i> 16(1):7-9.</p> <p>p) Villareal, C.P., and Juliano, B.O. 1993. Comparative Starch Synthetase Activity of Indica and Japonica Developing Rice Grain. <i>Starch/Staerke</i> 45:114-115.</p> <p>q) Villareal, C.P., Juliano B.O. and Hizukuri, S. 1993. Varietal Differences in Amylopectin Staling of Cooked Waxyrices. <i>Cereal Chem.</i> 70 (in press).</p>	<p>a) "Most Distinguished Alumnus Award" given by the Nueva Ecija High School Alumni Association, Inc. on November 30, 1993.</p> <p>b) Fellow, NAST; June 1, 1992 to October 31, 1993.</p>
MIJARES, Tito A.			<p>a) Principal Consultant (Nov. 1992- Aug. 1993) of a study commissioned by the Congressional Planning Office on the impact of devolution of national government services to local government units on the Philippine Statistical System (PSS) and to make necessary recommendations on the restructuring of the PSS.</p> <p>b) Chairman, Committee of Statistical Experts, organized (Dec. 1993) by National Statistical Coordination</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
DEL MUNDO, Fe	<p>a) Ongoing research - "A Decade of Progress in Child Health Care in the Philippines"</p> <p>b) Ongoing research - "Adolescent Mothers in the Philippines: Trends and Insights" through a grant from Ramon Magsaysay Foundation</p>		<p>Board (NSCB) to evaluate the results of the Feb. 1993 medical examination given by the CSC Professional Regulatory Board.</p> <p>a) Parangal Award, conferred by UP on 23 July 1993 (First woman out of three Awardees).</p> <p>b) Most Outstanding Citizen of Quezon City, August 19, 1993.</p> <p>c) Testimonial Plaque and Reception offered given by the Phil. Pediatrics Society, August 19, 1993.</p> <p>d) Testimonial Plaque given by the Phil. Medical Women's Association, on the occasion of its 44th Anniversary, 20 November 1993.</p> <p>e) President, Board of Trustees of the Human Resource Development Center</p> <p>f) Guest Speaker, Medicine Week, Phil. Medical Association, 25 Sept. 1993.</p> <p>g) Chairman, Phil. Medical Association (PMA) Centennial Commission, 1993-2003</p> <p>h) Speaker on the Postgraduate Course CMCP on Anorexia in Children, November 26, 1993.</p> <p>i) Editor-in-Chief, Textbook of Pediatrics 4th Edition 1993.</p> <p>j) Attended 10th Anniversary and 6th Annual Convention of TWAS in Trieste, Italy, October 28 to November 3, 1993.</p>
OLIVEROS-BELARDO, Luz	<p>a) Continuing Research on <i>Nothopanax fruticosom</i> (L.) Miq.</p>		<p>a) National Researcher Award given by NRCP during the Diamond Jubilee celebration on December 1, 1993.</p> <p>b) Presented research paper entitled "Major Components of the Leaf Vola-</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
ORILLO, Faustino T.			<p>tile Oil of <i>Nothopanax fruticosum</i> (L.) Miq." at the NRCP Cluster II (Life and Health Sciences) on November 24, 1993.</p> <p>a) Member, NAST Executive Council and Chairman of the Agricultural Sciences Division b) Member-at-large, NRCP Governing Board c) Member, Special Technical Committee on Agricultural Sciences of the Scientific Career Council, DOST-CSC d) Member, Board of Directors, Asian Development and Management, Inc. e) Member, Board of Trustees, NAST Foundation, Inc. f) Ex-officio Member, Board of Directors, UPLB College of Agriculture Alumni Association.</p>
SORIANO, Joventino D.	<p>a) Research Development Project (five-year) - "Inducing Seedlessness in Some Commercial Fruits"</p>	<p>a) Letters advising the people against planting all of the 30 million stem cuttings of malunggay or horse radish (<i>Moringa oleifera</i> Lam.) during the wet season and instead plant only a few of such cuttings for the ceremonial opening of school or barangay program. Published in the Manila Bulletin and the Daily Inquirer.</p>	
LIM-SYLIANCO Clara Y.		<p>a) Molecular Nutrition - NAST 1993 b) Molecular Biochemistry - NAST 1993</p>	<p>a) Speaker - "Environmental Mutagenesis: Air Studies", NSRI, Oct 22, 1993. b) Speaker - "What makes nutrition Molecular?". OCTA UE Auditorium, Oct. 12, 1993 c) Speaker - "Inhibition of Genotoxicity of Aflatoxins", UE Auditorium Oct. 12, 1993 d) Speaker - "The Polycyclic Aromatic Hydrocarbon Profile of Polluted Air of Metro Manila", Nov. 16, 1993. Technological Univ. of the Phil. e) Speaker - "How polluted is Metro Manila air?" Annual Scientific Mtg. NAST, July 1993</p>

Table 7 cont...

ACADEMICIAN	RESEARCHES	PUBLISHED PAPERS/BOOKS	HONORS RECEIVED/POSITIONS
TOPACIO JR., Teodulo M.	a) Coordinator, "Sensitivity Characteristics of the Different Screening and Confirmatory Test Against Porcine Brucellosis." b) Coordinator, "Serological Survey of Leptospirosis and Brucellosis in Swine at Selected Slaughterhouses and Farms in the Phil." c) Coordinator, "Development of a Simplified Test Kit for the Rapid Field Diagnostic of Hemorrhagic Septicemia." d) Coordinator, "Evaluation of Deworming Program for Cattle and Carabaos Naturally Infected with Fasciola sp. Using Albendazole." e) Coordinator - "Fascioliasis Eradication Program at Research Outreach Station of Lowland Development Zone (ROSLDZ)		a) President-Elect of the Federation of Asian Veterinary Associations (FAVA) b) Founder and Incumbent President of Phil. Society of Veterinary Public Health (PSVPH) c) Presented paper and lecture to the National Meat Inspection Commission "Protecting the Health of the People through Veterinary Medicine" d) Chairman - Subcommittee on Veterinary Drugs - DOH
VELASCO, Jose R.		a) Velasco, J.R., Atienza, R.S. and Sierra, Z.N. 1993. The Effect of the Rare Earths and Chromium on the Growth of Coconuts. Phil. Agric. 76(1):49-71, Jan.-March 1993. NAST granted a sum to support in part the publication of the article.	a) Member, Code of Ethics Sub-Comm. on Publications. b) Moderator, Plenary Session, 15th Annual Scientific Meeting (ASM) of NAST
VELASQUEZ, Carmen C.		a) Modern Biology (Philippine Version) Revised Edition 1993	a) Member, Editorial Board, Asian Fisheries Journal
ZAMORA, Prescillano M.	a) Project Leader, "Monographic Study of Philippine Selaginella Species" granted by UP ORC; June 1, 1993 to May 31, 1995.	a) Zamora, P.M., Beltran-Amoroso, C., Chaimongko, S and Marzan, M. 1993. Structure and Development of the Gametophytes of Phil. Cheilantheid ferns. II. <i>Cheilanthes javensis</i> (Willd.) Moore. Asia Life Sciences 1 (1992, 1&2): 129-145. b) Zamora, P.M., Tan, B.C., Bagaosian-Cosico, V.B., Balagat R.A. and Mercado M.R.F. 1993. Strobillar organization in the Philippine species of Selaginella. Science Diliman 4 (1992, 2):1-24. c) Zamora, P.M. 1993. Biogeography and Seasonality of Occurrence of Philippine Cheilantheid ferns. XV International Botanical Congress, Pacifico Yokohama, Yokohama, Japan, Abstracts 1993:222. d) Zamora, P.M. Beltran-Amoroso, C., Chaimongkol, S and Marzan, M. 1993. Structure and Development of the gametophytes of Phi. Cheilantheid ferns, IV. <i>Cheilanthes tenuifolia</i> (Burm.) Sw. Asia Life Sciences, The Asian International Journal of Life Sciences 2(1):88-98	a) 1992 Gregorio Y. Zara Award in Basic Sciences, given 5 Feb. 1993 b) Jose Kabigting Santos Professorial Chair Award, given 01 Jan. - 31 Dec. 1993. c) Chancellor's (UP Diliman) Award to Most Outstanding Faculty Members of UP Diliman for 1991-1992, given 18 June 1993. d) 1993 President's (UP) Award for Outstanding Publications, given 5 August 1993. e) USIA International Visitor Program Grantee, The United States and the World Environment (Washington, DC, Puerto Rico, Louisiana, Colorado California and Hawaii) given 23 Oct.-24 Nov. 1993) (one of the ten Asian and South Pacific nationals).

APPENDIX A**PLENARY SPEAKERS AT THE 15TH ANNUAL SCIENTIFIC MEETING
HELD AT THE PHILIPPINE INTERNATIONAL CONVENTION CENTER
ON JULY 7-8, 1993**

SPEAKER	ADDRESS	TITLE OF PAPER
Dr. Felipe L. Jocano	Asian Center University of the Philippines Diliman, Quezon City	Values and Development
Dr. Alejandro N. Herrin	School of Economics University of the Philippines Diliman, Quezon City	Issues in Healthcare Financing in the Philippines
Dr. Aurora E. Perez	Population Institute University of the Philippines Diliman, Quezon City	Filipino Values in Philippine Demographic Transformation
Dr. Nicanor Tiongson	Vice-President Cultural Center of the Philippines	Culture, Arts and Nation
National Scientist Alfredo Lagmay	Department of Psychology University of the Philippines Diliman, Quezon City	Discipline, Culture and Information Systems: Computerization and Behavioral Technology in Government and Society.
Dr. Marcelino Foronda	De La Salle University Taft Avenue, Manila	Regional Culture as Part of Philippine National Culture
Dr. Lourdes Vera-Lapuz	Room 210, Medico Building Lourdes St. cor. San Miguel Ave. Pasig, Metro Manila	Choices
Dr. Antonio C. Abaya	The Manila Chronicle 371 A. Bonifacio Drive Port Area, Manila	Science and Technology Niches for the Philippines
Fr. Jaime Bulatao, S.J.	Department of Psychology Ateneo de Manila University Loyola Heights, Quezon City	Intellectual Discipline of the Filipino

RAPPORTEUR'S REPORTS

Symposium title : **Filipino Values In Philippine Demographic Transformation**
Moderator : **National Scientist Carmen C. Velasquez**
Rapporteur : **Academician Carmen Li. Intengan**
Speaker : **Dr. Aurora Perez**

Summary/ Highlights of Discussion

The discussion highlighted the need for more rights of women in her role as a mother.

Parenthood is a dual responsibility of both the father and mother.

Recommendations

In the formulation of population programs, the men should be included in its preparation.

The need to reformulate demographic values especially as it affects the health of the mothers.

Symposium : **Issues in Healthcare Financing in the Philippines**
Moderator : **Dr. José Encarnación, Jr.**
Rapporteur : **Dr. Anna Miren Gonzalez-Intal vice Fr. Bienvenido F. Nebres**

I. Summary/Highlights of Discussion

Dr. Herrin pointed out in his presentation that health, being a produced commodity, involves the use of resources. Hence, the issue is resource allocation. In this regard, health-care financing is not just a matter of raising funds but that the economic performance of the health sector in terms of efficiency and equity is intimately linked to the way the system is financed.

Dr. Herrin then outlined basic issues in healthcare financing from the larger perspective of transforming the health sector towards greater efficiency and equity in resource allocation. He pointed out that the research challenge is that we know so little about the sources and uses of healthcare financing.

More specifically, Dr. Herrin outlined the following basic issues in health care financing:

1. What health services are to be financed? What appropriate mix of primary and tertiary healthcare services are to be provided by the government or the private sector to various clientele groups?
2. Who should finance? What is the efficient and equitable mix of public and private sector financing of the appropriate mix of health care services?
3. How should health care services be financed either by the government or by the private sector in terms of financial efficiency and equity?
4. How much financing should the health sector receive relative to the rest of the economy?

Dr. Herrin described some basic principles in addressing the above questions. With respect to what health services are to be financed, the objective is to finance only those health services that are most effective in generating health impacts from a given level of resources; those that are produced at least cost; and those that will actually be used by the population with health needs to produce the expected health impacts.

On the issue of how should health services be financed, the choice of which alternative modes of government and private sector financing depends on which provides the most financial resources at the least administrative cost and which forces or encourages the rich healthcare beneficiaries to make progressively higher contributions than the poor healthcare beneficiaries.

On the question of how much financing is needed, Dr. Herrin points out that this is the most difficult to answer because there are no clear-cut methodologies to use and it is difficult to measure the impact of improvements in health status relative to other social investments.

With respect to the healthcare financing system in the Philippines, Dr. Herrin stated that preliminary estimates show that healthcare expenditures by the government and households were less than 2 percent of national income in 1991. About one-half of total health expenditures is paid for by households directly to healthcare providers; about 40 percent is provided by government through taxes which is regressive; and of the rest, about 8 percent is provided by social insurance through MEDICARE.

Finally, Dr. Herrin outlined some possibilities for expanding resources for health care. The first set of options involves reforms outside the healthcare sector, specifically, improved taxation and tax administration and economic reforms to speed up economic growth and more rapid structural change. The second set of options involves reforms within the health sector. These are reforms in the MEDICARE program and the need to study user charges and community-based financing schemes.

During the open forum, a gentleman from Tawi-Tawi inquired about the tentativeness of Dr. Herrin's data. Dr. Herrin pointed out that there really is very little systematic data on healthcare financing in the Philippines and perhaps this is because we did not look at it before from the perspective of resource allocation.

Dr. Juliano inquired about the efficiency of Philippine health expenditures for every peso spent and how this compares with those of other countries. Dr. Herrin again pointed out the difficulty of getting data from government. The survey of household expenditures is one source of information. Much of the existing information is anecdotal with very few hard data.

Dr. Abarquez shared the experience of San Miguel Corporation where the emphasis on preventive health services has reduced the cost of healthcare in the corporation. He asked why shouldn't MEDICARE spend more on prevention. Dr. Herrin pointed out the difficulty of a scheme where MEDICARE reimburses for prevention because it will be very costly administratively to deal with huge numbers of small transactions. One possibility is for the health maintenance organization (HMO) to also be the preventive healthcare provider.

Dr. Velasquez inquired about how the primary health care program is to be financed. Dr. Herrin's response was that services that benefit whole communities (e.g. disease surveillance, information and education, disease control) is a possible area for appropriate government intervention or provision.

Finally, Dr. Dayrit questioned the wisdom of the devolution of health, education, and social services to local governments which may not be very knowledgeable in these areas. Dr. Herrin's answer with respect to the health care sector is that preventive and health promoting activities affecting the whole

nation is better centralized whereas unique health issues and problems might be better localized or decentralized.

Symposium title : **Regional Culture as Part of Philippine National Culture**
Moderator : **Academician Rafael D. Guerrero III**
Rapporteur : **Academician Leopoldo S. Castillo**
Speaker : **Dr. Marcelino Foronda**

SUMMARY

Dr. Foronda asserts that regional culture considering geographical limits and linguistic considerations includes: language, folk traditions, literature, arts, and life style. He mentions the Ilocano region as an example for regional culture as a part of the national culture. He avers that the Ilocanos share many cultural traits such as close familial ties, hospitality, respect for elders, and a sense of fatalism as in the other Philippine regions.

In the discussion, the speaker was asked "what is it in the Ilocano that makes him successful in his migratory activities?" The reply mentioned about the large population in the area limited by Caraballo/Cordillera mountains, hence the Ilocanos migrate to other areas (provinces) where they worked very hard to support themselves. A comment was made that Ilocanos have an operational sense of thrift, "matipid or kuripot" (Dr. Foronda corroborated by saying "Amen") hence they get rich. This was reinforced by a discussant who asserted that the Oriental trait and the Spanish influence could be complementary to each other.

Dr. Foronda suggested that the regional centers for the study of the various regional cultures such as those in Cebu, Tacloban, Naga, Marawi, and others be created and those operational be expanded to preserve, develop, and disseminate the regional cultures as part of the Philippine national culture.

Symposium title : **Values and Development**
Moderator : **Academician Salcedo L. Eduardo**
Speaker : **Dr. Felipe Landa Jocano**

SUMMARY

Dr. Jocano's paper dealt with values and development and concentrated on traditional values. These values have been blamed by others as the causes of our inability to develop but he believes otherwise. He argued that these are no negative Filipino values. It is rather our negative views about our values, our unwillingness to view these values positively as well as our continued refusal to harness these values for development which cause the "ills now plaguing" the Filipino society.

He has no singular answer why we have not moved forward as we ought to but pointed one fundamental flaw in our approaches to social transformation.

He claimed that "we have not founded our approaches deep into our native grounds" and went

further that "we have not harnessed our traditional values to serve as inner reinforcements of the edifice of progress we have been attempting to build."

To correct these errors of transformation, he recommends the following:

1. Demistify the superiority of Western models and restore lost confidence in indigenous paradigms.
2. Look at traditional values more positively.
3. Examine the functions of these values more in terms of the logic and moral authority of Filipino tradition and less in terms of the logic and legal authority of borrowed models.
4. Focus academic and civic endeavors at discovering the inner strength of our culture instead of continuously looking for its weakness.
5. Incorporate the positive features of Filipino values in all aspects of our activities.

His explanations of traditional Filipino values seen positively and by giving concrete examples were well received and applauded by the audience.

- Symposium title : **Culture, Arts and Nation**
- Moderator : **Academician Jose R. Velasco**
- Rapporteur : **Academician Magdalena C. Cantoria**
- Speaker : **Dr. Nicanor G. Tiongson**

Summary/Highlights of Discussion

1. The terms "culture", "arts", and "nation" were defined.
2. The Philippines is a state, but because it has no distinctive culture, it has not yet attained the status of a nation as defined. The country has to develop a national identity in politics, economy, education, and media.
3. There is a need for a Filipino national culture which is the soul and strength of a nation. This has to be consciously developed. The identified problems are (1) cultural fragmentation, (2) impairment of racial memory, (3) culture still inchoate, and (4) the perception that "*the Filipino is negotiable*".

RECOMMENDATIONS

1. Cultural engineering can be done by (1) identifying and emphasizing those aspects of the Filipino way of life which should be saved and strengthened and (2) supporting and encouraging patronage of the arts; Filipino artists should shape and express the national soul by their art.
2. Some suggestions to develop a national culture are (1) create a national awareness of this vision, (2) disseminate information about the various ethnic groups in order to promote knowledge and understanding regarding them, (3) recognize the important artists and the character of the works of each, and (4) offer incentives to artists in the form of awards and grants.
3. Efforts to develop a national culture should be divided among persons in different fields in government and in the private sector and all should start at the same time.

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- Symposium title : **Discipline, Culture and Information Systems: Computerization and Behavioral Technology In Government and Society**
- Moderator : **Academician Bienvenido O. Juliano**
- Rapporteur : **Academician Tito A. Mijares**
- Speaker : **National Scientist Alfredo V. Lagmay**

SUMMARY

The paper is an attempt at broadening the cultural processes of problems in "loose societies" where rules, regulations and the law are not as well developed as established norms of conduct as in tight societies". Graft and corruption in government, crime and law enforcement, malfeasance in the judiciary are manifestations of loss of social control and lack of social discipline.

Solutions to these problems might be viewed from the perspective of improving information systems in society and developing an information culture in all aspects of social behavior to instill discipline and respect for the law and norms of conduct established.

The Philippines, in the author's view, has not yet caught on with the Information Age in which the world presently lives. Like printing, the telephone, radio, television, technological advances in computer and telecommunication systems are becoming a part of human daily life. In the Philippines, however, we are still on the thresholds of these developments. The relatively few who are well trained in information technology are either leaving the country or are serving others.

- Symposium title : **Choices**
- Moderator : **Academician Solita F. Camara-Besa**
- Rapporteur : **Academician Lourdes J. Cruz**
- Speaker : **Dr. Lourdes Vera-Lapuz**

SUMMARY

The Filipino is unique among Asians in not placing the importance of society over the individual. The lack of progress in the country may be traceable to its adoption of western democracy with its emphasis on individuals, grafted upon the group-oriented Asian nature. The conflict between the individual good and the social common good leads to compromise, which oftentimes is not satisfactory. The individual in making a choice must return to his conscience and be true to himself.

RECOMMENDATIONS

The individual must: (1) make a rational choice with full understanding of the alternatives, (2) exercise his autonomy over his own self in making such a choice, (3) be unwavering in his conviction that no matter how lonely his voice is in the crowd, he can still make a difference as a human being.

Symposium title : **Science and Technology Niches in the Philippines**
Moderator : **Academician Ernesto O. Domingo**
Rapporteur : **Academician Clara Y. Lim-Syllianco**
Speaker : **Mr. Antonio C. Abaya**

SUMMARY

Master Plans in Science cannot work out in the Philippines because of our political system. The best approach will be to harness the idea of a working genius in a particular field like what they do in Indonesia.

Develop deeply some niches such as:

1. Alternative energy sources like the solar, wind and combination of alcohol and diesel fuel (Lantano's).
2. Low cost housing that can be set up in hours.
3. Electric rail transit development

RECOMMENDATION

Adopt the proposal of Mr. A. Abaya.

Symposium title : **Intellectual Discipline for the Filipinos**
Moderator : **Academician Ruben L. Villareal**
Rapporteur : **Academician Faustino T. Orillo**
Speaker : **Fr. Jaime Bulatao, S.J.**

SUMMARY

The paper mentions two modes of mind or two ways of thinking: the objective-rational way and the subjective-intuitive way.

On the subject of intelligence, the paper says that the question is not intelligence per se but the quality of intelligence. Intelligence is made up of several factors which may be considered as distinct abilities. Different cultures differ in the composition of these abilities according to how that culture evolved in response to the challenges of its times. Filipinos have developed the subjective - intuitive factor of intelligence; they have not fully developed the objective rational.

The paper cites Sperry's left-brain, right-brain experiments which gave rise to the division of mind functions into two: left brain functioning which has to do with the verbal, rational, problem-solving ways of

thinking, and the right-brain functioning which has to do with the intuitive, emotional, artistic, etc. ways of thinking.

Following Lee Kuan Yew's call for social discipline, Fr. Bulatao is calling for intellectual discipline. To survive in the modern world, the Filipino has to learn to think rationally, objective, scientifically, and to develop left-brain functioning.

The cultural predominance of right-brained thinking over the left-brain manifests itself on the one hand in the Filipino's cultural artistry, his spontaneity in music and dance but on the other hand also in his poor handling of modern technology and in his inability to plan for the future. The present crisis in electrical power gives testimony to this.

The low-level rational-objective, problem-solving quality of thinking shows itself in the way Filipino culture has responded to other 20th century social needs as exemplified by the country's transportation problems.

The paper suggests: teach the Filipinos the three R's: Reading, 'Riting, 'Rithmetic on higher level.

Reading

Unlike the Chinese, Japanese, and the Korean, the Filipino simply does not read or does not read enough. In the Philippines, even today's college students cannot or do not read. When assigned scientific articles for them to read and evaluate, there are feelings of helplessness because they simply do not know how to teach themselves from the printed page. In the absence of reading, self-learning becomes impossible. The Filipino must read a lot if he is to survive as a nation in the modern world.

'Riting

Verbal ability is closely related to rational thinking words give a person control over his world. The ability to manipulate mental symbols, i.e. language, (1) allows the speaker to organize his own thoughts, to improve rationality, to make his unconscious, conscious and (2) allows social communication and makes possible thinking and acting in groups. As the saying goes: "One learns from what one says rather than from what one hears." In regards to language, Fr. Bulatao suggest a bilingual policy that even the Tausugs and Maranaws can accept. Let there be two languages, Tagalog and English. Set a goal of education equal facility in both and if possible let there be no mixture of both.

'Rithmetic

Quantified thinking is the basis of modern science. Up to now, Philippine culture has not adequately evolved this form of objective-rational thinking but has relegated this function to the Chinese and Americans in its midst.

It is safe to assume that the Filipino mind is not anatomically or physiologically inferior to the Chinese or Americans. The deficiency in mathematical functioning can be seen as cultural in origin: (1) it is taken for granted that mathematics is hard, (2) there are no real demands that Filipinos study math or do problem-solving, (3) the teachers themselves, being part of this culture, do not practice quantitative thinking and accordingly do not demand this kind of accurate and exact thinking.

A culture change is needed. The setting up of science high schools is a step in the right direction towards solving the aforementioned shortcoming in the scientific and rational thinking of the Filipino.

APPENDIX C

**PAPER PRESENTORS AT THE 15TH ANNUAL SCIENTIFIC MEETING
HELD AT THE PHILIPPINE INTERNATIONAL CONVENTION CENTER
ON JULY 7-8, 1993**

SCIENTIFIC SESSION	PRESENTOR	TITLE OF PAPER
Mathematical, Physical and Engineering Sciences	Minella C. Alarcon Department of Physics Ateneo de Manila University Loyola Heights, Quezon City	A Mie Lidar System for Monitoring: Design Considerations
	Severino V. Gervacio IMSP, University of the Philippines Los Baños, College, Laguna	Singular Graphs: The Sum of Two Graphs
	Caesar Saloma National Institute of Physics University of the Philippines Diliman, Quezon City	Imaging 2-D Objects Having Fractal Edges: Characteristics
	Benito O. De Lumen Department of Nutritional Sciences University of California	Cloning and Charac- terization of Sucrose Synthase cDNA From Rice Seed
	Raoul E. Cawagas SCITECH R&D Center Polytechnics University of the Phil. Sta. Mesa, Manila	Construction of All Cayley Algebras of Order 2R by the ZSM Process
	Anacleto M. Argayosa Natural Science Research Inst. University of the Philippines Diliman, Quezon City	Lectins and Lectin Receptors from Acanthamoeba Sp.
	Luzminda C. Gurra Cental Mindanao University Musuan, Bukidnon	Morpho-Histochemical Studies of Commonly Used Medicinal Plants in Bukidnon
Biological Sciences	Juanita C. Mamaril BIOTECH University of the Philippines Los Baños, College, Laguna	Biodecontamination of Hg, Pb, and Cd by Selected Strains of Rhizobium

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SCIENTIFIC SESSION	PRESENTOR	TITLE OF PAPER
	Virginia S. Cariño Institute of Biology College of Science University of the Philippines Diliman, Quezon City	The Paracale Mines and Its Environment-An Assessment of its Biological and Physico-chemical Characters
	Anabelle A. Herrera Institute of Biology University of the Philippines Diliman, Quezon City	Impact of Acute Copper intoxication on some Organs of <i>Clarias macrocephalus</i> Gunther
	Cesar P. Madamba Institute of Biological Sciences College of Arts and Sciences University of the Philippines Los Baños, College, Laguna	Occurrence of Root knot Nematodes in Perrenial and Un-usual Plants and Their Control Using Bacteria
	Enriquito V. Queaño Institute of Biology College of Science University of the Philippines Diliman, Quezon City	Genetic Analysis of <i>Acanthamoeba</i> spp. Isolated from Different Geographic Regions of the Philippines
	Helen T. Yap Marine Science Institute College of Science University of the Philippines Diliman, Quezon City	Investigations of Energy Dynamics in Coral Reef Ecosystems
Agricultural Sciences		
	Dominador G. Gonzal Department of Forestry Visayas State College of Agriculture Baybay, Leyte	Growth Responses of <i>Gmelina arborea</i> with VA Mycorrhiza Inoculation and Nitrogen Fertilizer in Volcanic Ash
	Maxima O. Mabbayad Plant Pathology Division International Rice Research Institute Los Baños, Laguna	Biological Control of <i>Sphenoclea zeylanica</i> Gaertn, with a Leaf Blight Pathogen
	Francisco J. Zapata Tissue Culture Laboratory Plant Breeding, IRR1 Los Baños, Laguna	Transformation of Indica and Japonica Rices
	Leo P. Balito National Tobacco Administration Cagayan de Oro City	Effect of Gamma-Ray Irradiation on the Regeneration of Buds and Plantlets from Haploid and Diploid Calli in <i>Nicotiana</i> Species

SCIENTIFIC SESSION	PRESENTER	TITLE OF PAPER
Health Sciences	<p>Rufino M. Leaño College of Agriculture Nueva Vizcaya State Institute of Technology Bayombong, 3700 Nueva Vizcaya</p>	<p>Analyzing the Monocyclic Process in Sheath Blight of Rice Under Semi- Controlled Conditions</p>
	<p>Rita P. Laude Institute of Biological Sciences College of Arts and Sciences University of the Philippines Los Baños, College, Laguna</p>	<p>Protein and DNA Analysis for Identification of Hemoglobin Variants</p>
	<p>Gilda C. Rivero Institute of Biology College of Science University of the Philippines Diliman, Quezon City</p>	<p>Identification and Partial Charac- terization of Lectins from Vigna Species</p>
	<p>Clara Y. Lim-Sylianco Institute of Chemistry College of Science University of the Philippines Diliman, Quezon City</p>	<p>The Polycyclic Aromatic Hydro- carbon Profile of Polluted Air in Metro Manila</p>
	<p>Perla D. Santos-Ocampo Department of Pediatrics College of Medicine University of the Philippines Manila</p>	<p>Are there Prognostic Factors for Failure of Oral Dehydration Therapy in the Management of Acute Diarrhea in Children?</p>
Social Sciences	<p>Allan B.I. Bernardo Department of Psychology University of the Philippines Diliman, Quezon City</p>	<p>Language Use and Transfer in Mathematical Problem Solving: Revisiting the Whorfian Hypothesis and Appraising the Medium of Instruction Issue</p>
	<p>Ma. Cecilia G. Conaco Department of Psychology University of the Philippines Diliman, Quezon City</p>	<p>Social Categorization and Identity in the Philippines</p>

**POSTER PAPERS PRESENTED AT THE 15TH ANNUAL SCIENTIFIC MEETING
HELD AT THE PHILIPPINE INTERNATIONAL CONVENTION CENTER
ON JULY 7-8, 1993**

POSTER SESSION	AUTHORS	TITLE OF PAPER
Mathematical, Physical And Engineering Sciences	Raoul E. Cawagas SCITECH R&D Center Polytechnic University of the Philippines Sta. Mesa, Manila	A Simple Associativity Test for Finite Algebraic Structures
Biological Sciences		
	Norma O. Aguilar Institute of Biological Sciences University of the Philippines Los Baños, College, Laguna	Update on Taxa of Legumes in the Philippines
	Victor B. Amoroso, F.M. and H.P. Pava Central Mindanao Univ. Musuan, Bukidnon	Some Endemic Ferns in Mt. Apulang, Kitanglad Range Bukidnon
	Nellie C. Lopez Institute of Biology College of Science University of the Philippines Diliman, Quezon City	Crustacean Parasites from Philippine Fishes: A Review
	Melodia R. Cariaso, M. D. Ebuenga, A.V. De Lara, and B.F. Cayabyab National Crop Protection Center University of the Philippines Los Baños, College, Laguna	Golden Apple Snail: An Abstract Bibliography 1981 1992
	Bonifacio F. Cayabyab, C. R. Baltazar, F.F. Sanchez, N.O. Aguilar, and A.W. Tejada National Crop Protection Center University of the Philippines Los Baños, College, Philippines	A Survey of the Rhopalocera Lepidoptera of Mt. Makiling
	Nelson M. Pampolina Dept. of Forest Biological Sciences University of the Philippines Los Baños, College, Laguna	Ectomycorrhizal Fungi Associated with Dipterocarps in Mt. Makiling

POSTER SESSION	AUTHORS	TITLE OF PAPER
	<p>Imelda F. Pagulayan and Z.G. Baoanan Institute of Biology College of Sciences University of the Philippines Diliman, Quezon City</p>	<p>Studies on the Effect of Methyl Parathion on the Sperm Morphology of the ICR Strain Mouse</p>
<p>Agricultural Sciences</p>	<p>Zosimo M. Battad, N.D. Longboy, and R.R. Sair Mariano Marcos State University Batac, Ilocos Norte</p>	<p>Chemical Composition and Feeding Value of Hedge <i>Lucerne desmanthus virgatus</i> (L) Will., in Formulated Broiler Ration</p>
	<p>Ricardo D. Braza Forest Research Department Paper Industries Corp. of the Phil. Tabon, Bislig, Surigao del Sur</p>	<p>Important Insect Pests of Mangium, <i>Acacia mangium</i> Wild</p>
	<p>Bonifacio F. Cayabyab, R. G. Davide E.A. Benigno, M.D. Ebuenga, S.M. Bato, P.G. Gonzales, and R.G. Bayot National Crop Protection Center University of the Philippines Los Baños, College, Laguna</p>	<p>Integrated Pest Management of Asian Corn Borer, <i>Ostrinia</i> <i>furnacalis</i> (Guenee) on Corn, <i>Zea mays</i> Linn.- Including the Use of Monitoring and Fore- casting in Three Comprehen- sive Agrarian Reform Program (CARP) Areas</p>
	<p>Clara L. Davide, I. G. Sarmago, and R. F. Rocafort Dairy Training and Research Inst. University of the Philippines Los Baños, College, Laguna</p>	<p>Development of Natural Part Skim Mozzarella Type Cheese for the Pizza Industry</p>
	<p>Belen Morallo-Rejesus and J. B. Obra Department of Entomology University of the Philippines Los Baños, College, Laguna</p>	<p>Sensitivity of <i>Cotesia plutellae</i> and <i>Diadegma semiclausum</i> Parasitoids of Diamondback Moth (<i>Plutella xylostella</i> L.) to Several Insecticides</p>
	<p>Cristina M. Bajet, M. Hussein, and L. C. Araez National Crop Protection Center University of the Philippines Los Baños, College, Laguna</p>	<p>Preparation and Evaluation of Controlled Release Formulations of Herbicides Using Radiochemical Techniques</p>
	<p>Takashige Ishii, D. S. Multani, D. S. Brar, and G. S. Khush International Rice Research Institute Los Baños, Laguna</p>	<p>Molecular Tagging of the Gene for Brown Planthopper Resistance Transferred from Wild Species <i>Oryza Austreliensis</i> into Rice <i>O. Sativa</i></p>

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	<p>Maria Rebecca C. Laza, S. Peng F.V. Garcia, and K.G. Cassman International Rice Research Institute Los Baños, Laguna</p>	<p>Improving Yield Potential of Wet Season Rice Crop: The Importance of Panicle Size</p>
	<p>Victoria C. Lapitan, and L. F. Pateña Institute of Plant Breeding University of the Philippines Los Baños, College, Laguna</p>	<p>Somatic Embryogenesis and Plant Regeneration in Type IE, Type IIE and Long-Term Callus Cultures of Maize (<i>Zea mays</i> L.) CV. IPB VAR 4</p>
	<p>Crisanto A. Tandang, V. C. Lapitan, and L.F. Pateña Institute of Plant Breeding University of the Philippines Los Baños, College, Laguna</p>	<p>Callus Induction and Organogenesis i in Pechay (<i>Brassica chinensis</i> L.) cv. Black Behi</p>
	<p>Julieta G. Dimaculangan, L. F. Pateña, R.A. Avenido, and R.C. Barba Institute of Plant Breeding University of the Philippines Los Baños, College, Laguna</p>	<p>Induction and Long-Term Maintenance of Callus from Encosperm Tissue of Calamansi (<i>X Citro fortunella mitis</i> J. Ingram and H. Moore)</p>
	<p>Ramon C. Barba, S. M. Rasco, and L.F. Pateña Institute of Plant Breeding University of the Philippines Los Baños, College, Laguna</p>	<p>"Basic Seed" Production in Potato (<i>Solanum tuberosum</i> L.) CV Banahaw and ASN 69.1</p>
	<p>Editha M. Abrigo, F. J Zapanta, G. C Ghosh Biswas, C.Y. Wu, S. Zhang V.M. Kumar, L.B. Torrizo, M.S. Alejas, and W. Chen International Rice Research Institute Los Baños, Laguna</p>	<p>Plant Regeneration from Indica and Japonica Rice Protoplasts and Cytologi- cal and Field Studies of Regenerated Plants</p>
	<p>Violeta B. Salda and F. M. Rodriguez Benguet State University La Trinidad, Benguet</p>	<p>Evaluation of Traditional Processing Methods of Nami (<i>Dioscorea hispida</i>) in Terms of Chip Quality, Nutrient and Dioscorine Contents</p>
	<p>Gloria C. Cabuslay and T. L. Setter International Rice Research Institute Los Baños, Laguna</p>	<p>Daily Growth Rate Measurements Demonstrate Osmotic and Ionic Effects of High Salinity Treatments on Rice</p>
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	John L. Gaunt, and H. U. Neue International Rice Research Institute Los Baños, Laguna	Environmental Impact of New Rice Growing Technologies: Soil Microbial Biomass in Wetland Rice Soils
	Imelda Rizalina, S. Soriano, D. M. Matias, and J. C. Prot Plant Pathology Division International Rice Research Institute Los Baños, Laguna	Plant Parasitic Nematodes Associated with Upland Rice as Affected by Different Duration of Cultivation in West Sumatra, Indonesia
	Antonio Alfonso, V. N. Villegas, and T.H. Borromeo Phil. Rice Research Institute Muñoz, Nueva Ecija	Cytology, Morphology and Pollen Fertility of Interspecific Hybrids Between <i>Oryza sativa</i> and <i>O. officinalis</i>
	Lillian F. Pateña, E. A. Perez, and M. L. Logrono Institute of Plant Breeding	Embryogenic and Organogenic Callus Induction, Maintenance, and Plantlet Regeneration in Maize (<i>Zea mays</i> L.)

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	University of the Philippines Los Baños, College, Laguna	cv IPB VAR 4 and Inbred Line Pi23
	Candida B. Adalla, F. B. Alzona, and E. A. Magsino Institute of Plant Breeding University of the Philippines Los Baños, Laguna	Farmer Empowerment Thru Participatory Research: The Case of the Integrated Nutrient and Pest Management (INPM) Extension and Women Project
	Regina D. Dalmacio, D. S. Brar, T. Ishii, L. A. Sitch, S. S. Virmani, and G.S. Khush International Rice Research Institute Los Baños, Laguna	Identification and Transfer of a New Source of Cytoplasmic Male Sterility From Wild Species <i>Oryza Perennis</i> Into Rice
	Prem N. Maini, B. M. Rejesus, and B. Maligalig Phil. Rice Research Institute Maligaya, Muñoz, Nueva Ecija	Derris: A Potential Molluscicide for Golden Snail (<i>Pomacea</i> Spp.) Control
	Milagros T. Lopez, and S. S. Virmani International Rice Research Institute Los Baños, Laguna	Breeding for Thermo-Sensitive Genetic Male Sterility in Rice
	Osmundo D. Orense, E. P. Rillo and A. W. Ebert PCA-Albay Research Center Banao, Guinobatan, Albay 4503	Somatic Embryogenesis of Callus from Immature Coconut Embryos
	Tessie C. Nuñez and M. Paz Regional Coconut Research Center Visayas State College of Agriculture Baybay, Leyte 6521-A	Yield of Seven Dwarf Coconut Cultivars Under Varying Fertilizers Levels
	Violeta N. Villegas, F. B. Aurigue and R.B. Pimentel Institute of Plant breeding University of the Philippines Los Baños, College, Laguna	Wide Hybridization in Papaya (<i>Carica papaya</i> L.)
	Reynold B. Pimentel, and V. N Villegas Institute of Plant Breeding University of the Philippines Los Baños, College, Laguna	Protoplast Isolation from Embryogenic Callus of Calamansi (<i>X Citro fortunella mitis</i>)

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