

National Academy of Science and Technology



Silver Jubilee - 2001

*Dedicated to promoting and developing a
national scientific culture and environment*

The academy is the nation's symbol of commitment to science. For two decades and a half, NAST continues to serve as the government's highest advisory and recognition body in science and technology (P.D. 1003-A and E.O. 818).

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INTRODUCTION

The Academy is the nation's symbol of commitment to science. The Academy is a recognition body... Its contributions to society come from the cumulative achievements of its members over a lifetime under less than encouraging circumstances, given the low value accorded to science in this country.



Pres. Corazon Aquino during the conferment of rank and title of National Scientist to Acd. Paulo Campos with National Scientists Dioscoro Umali, Fe del Mundo, and Luz Oliveros-Belardo.

(From Left to Right) National Scientists Alfredo V. Lagmay, Paulo C. Campos, Gelia T. Castillo, President Joseph Ejercito Estrada, Academician Perla D. Santos Ocampo, National Scientists Fe del Mundo and Dolores A. Ramirez, and Undersecretary Rogelio A. Panlasigui.

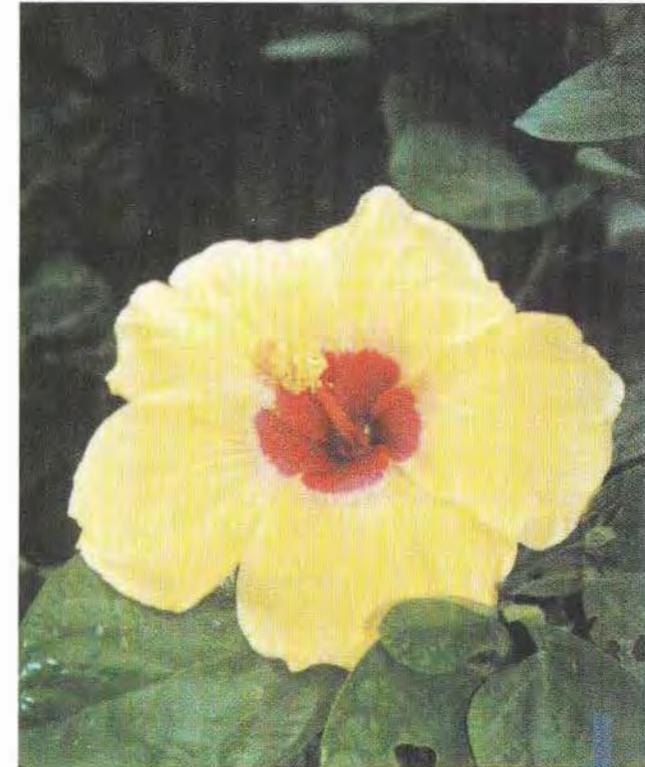
The honor bestowed on the Academicians is for work already done; for achievements already achieved; for contributions to society already made.

Every member is distinguished, known nationally and internationally in his or her own right. Collectively the members represent the best of what this country has produced in science.

To belong to the Academy is to be recognized by peers, for one does not apply; one is not hired; one is chosen among equally accomplished colleagues.

The achievements **Academicians'** are some of the most "untreasured" among our national treasures. The typical scientist is not a celebrity. The lives of the scientists do not suffer from "overexposure" and "overvaluation" of what they have done.

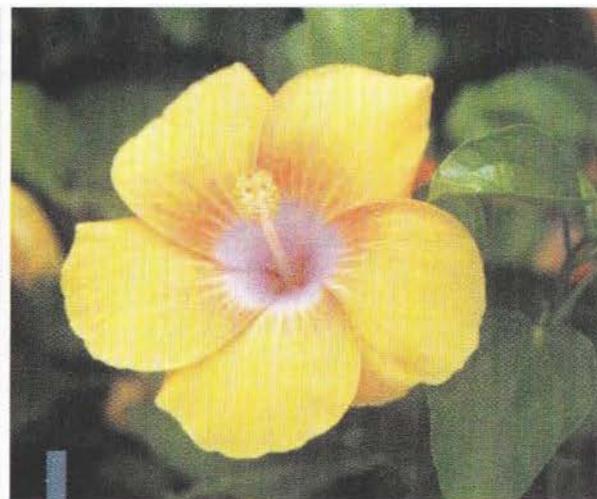
They never make the headlines the way politicians and celebrities do. A **science culture** as a valued part of our national life is anaemic...



Hibiscus 'Gelita Castillo'



Hibiscus 'Clare Baltazar'



Hibiscus 'Dolores Ramirez'



Hibiscus 'Emerita de Guzman'

Academicians spend a lifetime in research, teaching, and public service in the pursuit of science as an intellectual activity and its applications which are meant to serve a human purpose. They set the standards, so to speak, for substance, rigor, relevance, and intellectual quality which aspiring scientists can emulate.



Acad. Jose Juliano, Acad. D. Ramirez, DOST Sec. W. Padolina and Pres. C. Dayrit. 1994

*By its very nature,
science demands
intellectual honesty,
integrity,
independence,
intellectual quality, and
single-minded dedication to
chosen fields of study.*

These are qualities which should serve our society well beyond scientific endeavors and into public life. In the meantime, for the young, talented, and starry-eyed in science, the incentives are meager; the alternatives such as immigration, national and international consultancies, private industry, and administrative positions, which provide more perks, are very powerful countervailing forces.

The ACADEMY and its individual members, through their own work, serve as much-needed role models. The Academicians have been tempted and lured, but have resisted.

All of them pursued careers in science as the centerpiece of their lives.

Role models, if they are to be looked up to, must continue to have dignity in their day-to-day lives. A big medal and an elegant cap and gown, no matter how regal, do not suffice, for they do not meet daily needs.

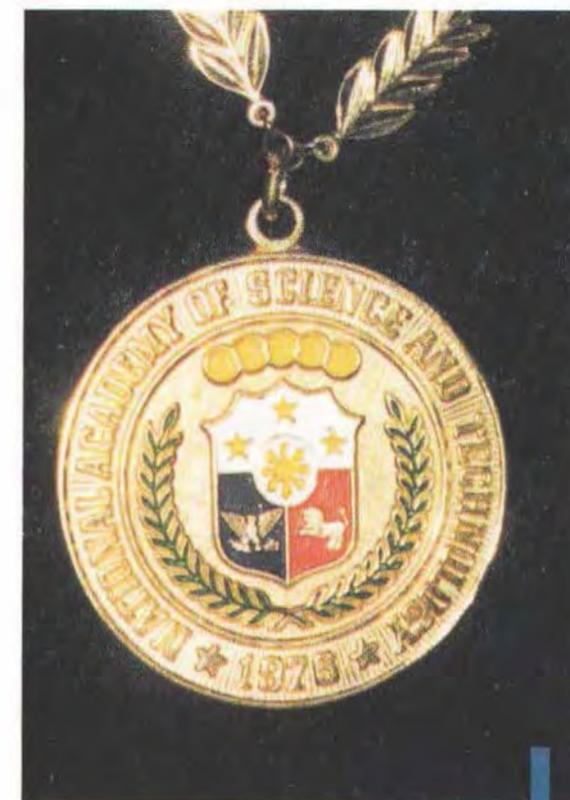
They only add color when draped over the “wooden box” on its final journey.



National Scientist Gelia T. Castillo



State funeral of National Scientist at the Libingan ng mga Bayani.



National Scientist Medal

HISTORY

Genesis 1976

Putting up a science academy was the brainchild of several scientists in the University of the Philippines. The group consisted of Drs. Joventino D. Soriano, Edito Garcia, Leopoldo V. Abis, Paz G. Ramos and Raul P. de Guzman. After a series of impromptu meetings, a draft proposal was prepared by Dr. Onofre D. Corpuz. In May 1976, the proposal was submitted to Dr. Melecio S. Magno, chairman of the National Science Development Board, who endorsed the plan for a government-funded academy of science.

On October 6, 1976 a Presidential Decree creating the National Academy of Science and Technology was signed by President Ferdinand E. Marcos (P.D. 1003). Certain provisions had to be changed and the academy became operational on June 11, 1978.



President Paulo C. Campos

First 10 Academicians:

- Paulo C. Campos
- Alfredo V. Lagmay
- Cecilio F. Lopez
- Tito A. Mijares
- Juan S. Salcedo
- Alfredo C. Santos
- Dioscoro L. Umali
- Carmen C. Velasquez
- Gregorio T. Velasquez
- Gregorio Y. Zara

In July, 1978, President Marcos named the first ten members of the academy. From them three were proclaimed National Scientists, the highest honor conferred by the President of the Republic of the Philippines, on a Filipino scientist. Academician Paulo C. Campos was named the first president in 1979. President Campos played a key role in putting the Academy on solid ground. Operating procedures were formulated, linkages were forged, and the needs of the Academicians attended to. Research fellowships for Academicians, guidelines for publication of their work, and travel grants were established.



Dr. Pedro B. Escuro took his oath as Academician before Science Deputy Minister Segundo V. Roxas, NSDB. Looking on are National Scientist Alfredo C. Santos and Pres. P. Campos. 1980

The annual scientific meetings were initiated and have earned the distinction of being the most prestigious scientific conference locally. An annual publication, "Transactions", was established and has become the most significant scientific publication coming from the Philippines.

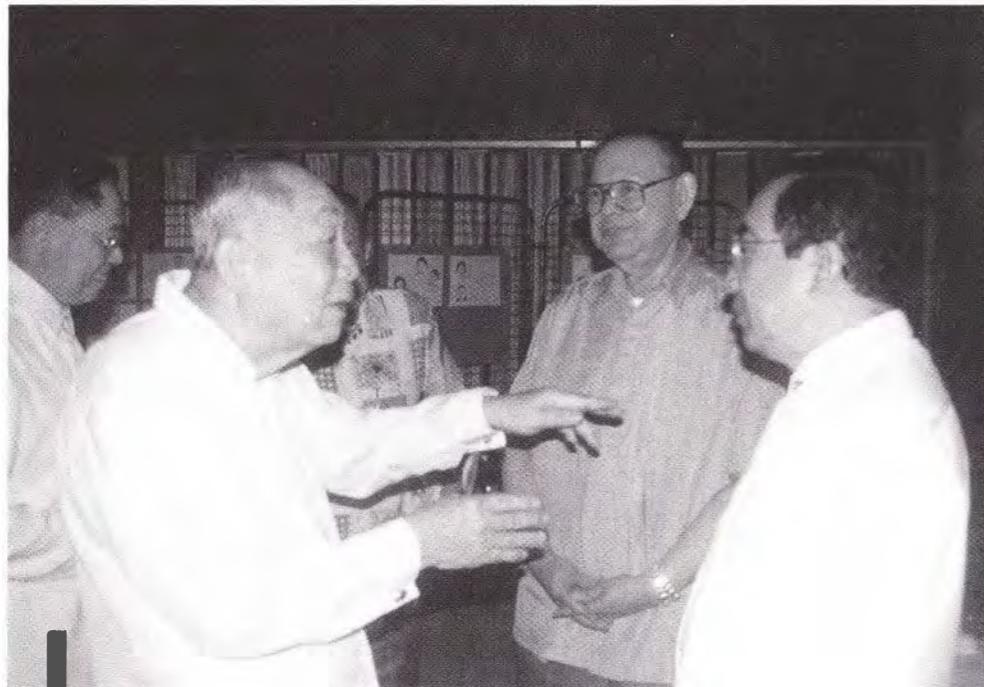
The role of the Academy as a recognition body was accomplished in three years after its founding and continues to this date.

Roundtable discussions were started in 1979 and have continued to the present.

Under President Campos, the Academy was aggressive in supporting the establishment of the 'science career service' in the government and protecting the scientific career positions.

The first of the many scientific linkages with the academies abroad was with the Royal Society of London and subsequently with the German Research Society.

The Academy was also responsible for the establishment of the Federation of Asian Scientific Academies and Societies.



National Scientist Paulo Campos discussing with Acd. A. Gonzalez and Acd. F. Uriarte the need for science technology education. 2001.

'...resolve to harness our knowledge and efforts, that the living conditions of our fellow countrymen could be better and in so doing lift mankind a little higher.'

Paulo C. Campos

The Academy mobilized scientists and gained the attention of the government and the public on issues related to science and science policies. The Academy had started to influence national policies.

For a decade, President Campos steered the Academy with determination and enthusiasm.

The first 3 National Scientists:

Juan S. Salcedo, Jr.

Alfredo C. Santos

Gregorio Y. Zara

HISTORY

The expansion years 1988-1992

President Dioscoro L. Umali succeeded President Paulo Campos. He expanded the role of the Academy and of the Academicians by creating a Speakers Bureau and specific Task Forces, making the expertise of the Academicians more available to the public. The Academy moved towards forging more linkages with its international counterparts.



President Dioscoro L. Umali served from 1988 to 1992



The Technology Applications and Promotions Institute building where NAST previously held office on the second floor.

From a one-room office in the first floor of the Department of Science and Technology, the Academy moved to the Technology Application and Promotions Institute Building in 1989. Adequate space was made available for the staff, the President and the council, and some Academicians.

The Academy played an important role in the formation of the biosafety guideline, the sponsoring of a public hearing, and its approval. The Philippines became the first to have a biosafety guideline in Southeast Asia, including China.

President Umali initiated the formulation of “Guidelines for Researchers on Ethics and Procedures” and sponsored public hearings. The guidelines were eventually published in 1995.

President Umali initiated the formation of the NAST Foundation to provide material and technical support to the undertakings of the Academy.



*The Academy co-sponsored an international workshop on biotechnology.
L-R: Acd. B. Vergara, Dr. C. Habito and Pres. D. Umali, 1990.*

Science information/legislative fora started in 1989, serving an important venue for local science information. The Academy also started reacting to House and Senate Bills, Resolutions, and Executive Orders.

National Scientist Dioscoro Umali did not finish his term as president of the Academy. He died of a heart attack on 01 July 1992.

HISTORY

A permanent home 1992

President Conrado Dayrit's term saw the academy moving into a building of its own. Although not completed, the building's portion for the Philippine Science Heritage Center was finished in 1998. The center or Salinlahi was formally inaugurated in late 1998 with the NAST Secretariat moving into the conference room of the center. The building has greatly enhanced the exposure of the Academy to the public.

The NAST Foundation was formally incorporated in May 1993. Several exhibits at the Salinlahi were supported through the Foundation.



President Conrado S. Dayrit



Front view of the Philippine Science Heritage Center (scale model)

Significant linkages with academies abroad and research institutions were forged.

Roundtable discussions, conferences, and science information/legislative fora were greatly accelerated.



The Academy of Sciences Malaysia signs Memorandum of Agreement with NAST, 1997.



The Academy's building still awaits funds for completion.

For the first time, the Annual Scientific Meeting of the Academy was held outside Metro Manila - in Davao.

NAST co-sponsored several international and national conferences.

The NAST Management Information System was initiated to enhance the Academy's efficiency in carrying out its mandate.

HISTORY

The silver years 1999-2002

Already, a new division was added, the Engineering Science and Information Technology, as an answer to the needs of present developments.

An aggressive campaign was carried out to make the Philippine Science Heritage Center (PSHC) a viable, self-sustaining activity of the Academy. President Gloria Macapagal-Arroyo signed into law on 14th April 2001 Republic Act 9107, establishing the PSHC.



President Perla D. Santos Ocampo- 1999-

The Hugh Greenwood Environmental Science Award was established through a donation of the English philanthropist. The award is given to the outstanding scientific and technological research works that contribute to environmental protection and conservation.

The millennium has ushered in a lady president for the Academy. The Silver Anniversary of the Academy will be celebrated under President Perla D. Santos Ocampo.

President Santos Ocampo has fast-tracked the approval of the bill on the Philippine Science Heritage Center, the increase in gratuities of Academicians and National Scientists, the development of the Management Information System, the publications of the Academy, and increase in the number of Academicians



L-R: Acd. W. Padolina, DOST Secretary E. Alabastro, the Awardee, President P. Santos-Ocampo, and National Scientist D. Ramirez

Advisory and advocacy activities were intensified by focusing on critical national issues such as information technology, biotechnology, genetically modified organisms, the human genome, and rice genome, through information and legislative fora, state-of-the-art monographs, position papers on legislative bills, and media announcements.

New linkages were formed such as those with the Association of Academies of Sciences in Asia and the Royal Swedish Academy of Sciences.



Additional exhibits were set up at the Philippine Science Heritage Center and new publications were launched.



Officers of the Malaysian Scientific Association visited the Academy in August, 1999.

As the Academy gets more mature and its programs and projects are realized, its visibility and prestige as the premiere science body of the country will be further enhanced.

NAST MANDATE

Recognition Function

The Academy recognizes the outstanding achievements of Filipinos in science and technology in the fields of mathematical and physical sciences; the biological sciences; the social sciences; the agricultural sciences; the health sciences; and engineering science and technology. The Academy provides meaningful incentives to those engaged in scientific and technological endeavors.

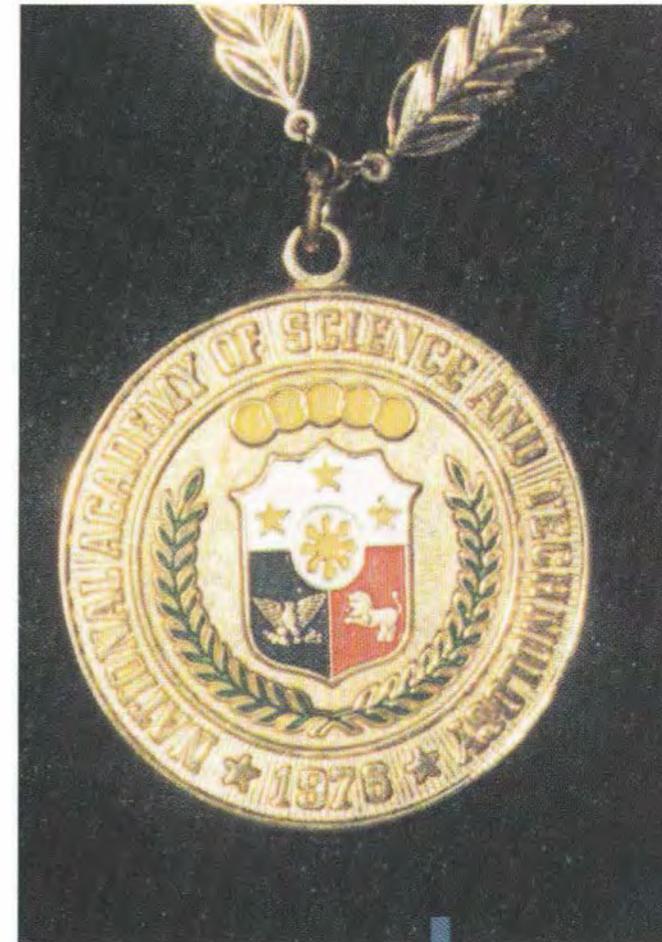




National Scientist

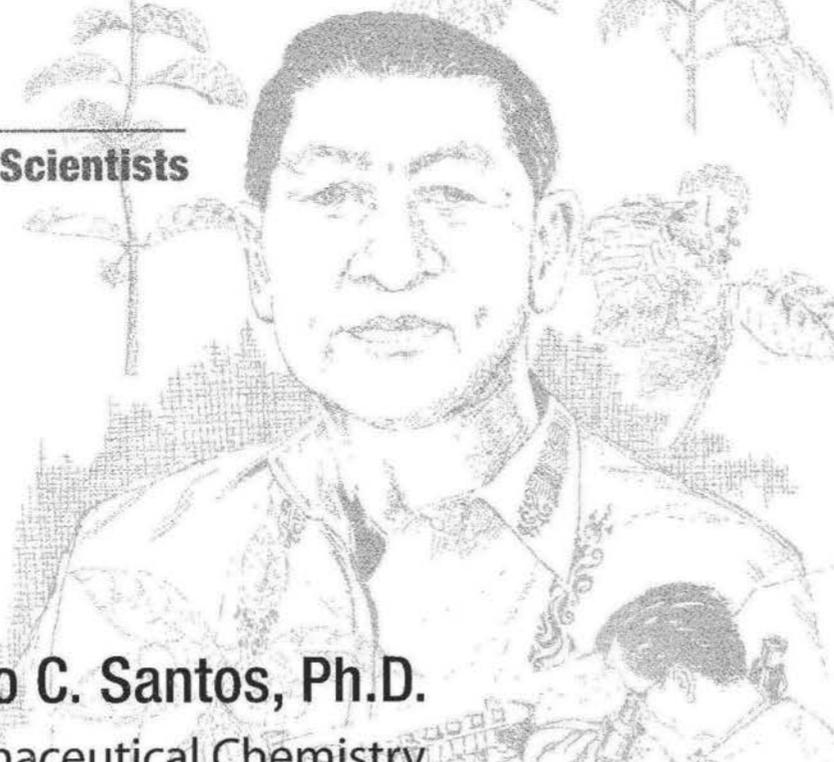
The National Scientist rank and title is the highest honor conferred by the President of the Republic of the Philippines on a Filipino scientist.

To date, 26 National Scientists have been named since the establishment of the Academy.



Medallion given to a National Scientist





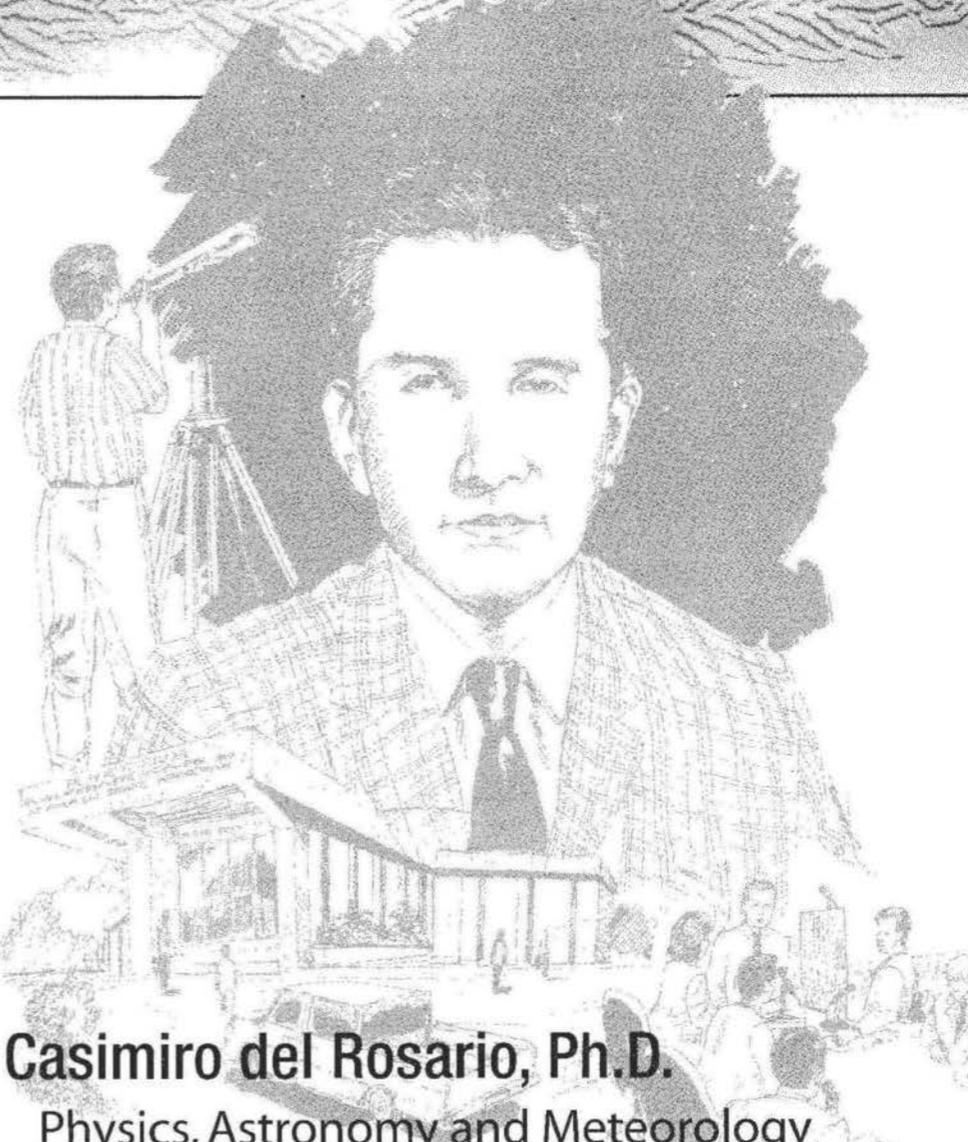
National Scientists

Alfredo C. Santos, Ph.D.

Pharmaceutical Chemistry

Date of birth : August 15, 1900 **Died** : April 11, 1990
Birthplace : Santo Tomas, Pampanga
Education : BS (Pharmaceutical Chemistry), University of the Philippines, 1921
Doctor in Pharmacy, University of Santo Tomas, 1925
Ph.D., Westfalische Wilhems-Universitat Munster, Germany, 1929
Year conferred as National Scientist : 1978

Dr. Alfredo C. Santos devoted his career in the study of chemistry of natural products and the search for medicinal properties of local species. A professor of industrial pharmacy by vocation, he conducted significant researches on the isolation and structure elucidation of phaeanthine and phaeantharine which are alkaloids from indigenous medicinal plants. He hoped to find ways to lower the high prices of drugs by reducing the use of costly imported raw materials. His empathy for the poor amongst us, especially the rural folks who are unable to procure medicines and the relief that medicines bring, spurred him to these studies. He is thus both a humanitarian and a scientist.

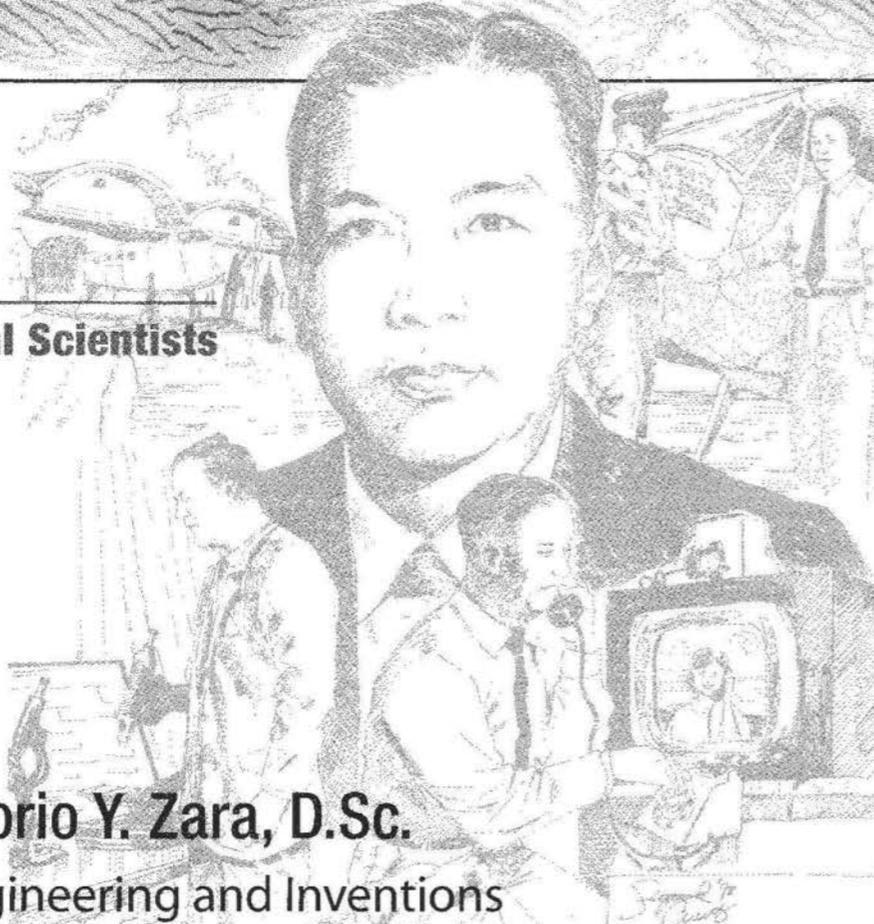


Casimiro del Rosario, Ph.D.

Physics, Astronomy and Meteorology

Date of Birth : June 13, 1896 **Died** : September 15, 1982
Birthplace : Bantayan, Cebu
Education : BS (Civil Engineering, with honors), University of the Philippines, 1918
MS (Physics), Yale University, USA, 1924
Ph.D. (Physics), University of Pennsylvania, USA, 1932
Year conferred as National Scientist : 1984

Foremost Filipino physicist who earned for himself and his country lasting honor and distinction for his researches on ultraviolet light of different wavelengths, effect of radioactive radiations on euglena, high voltage electrical discharges in high vacuum, and many others, which were all published in reputable international journals. Dr. del Rosario was accorded the Presidential Award in 1965.



National Scientists

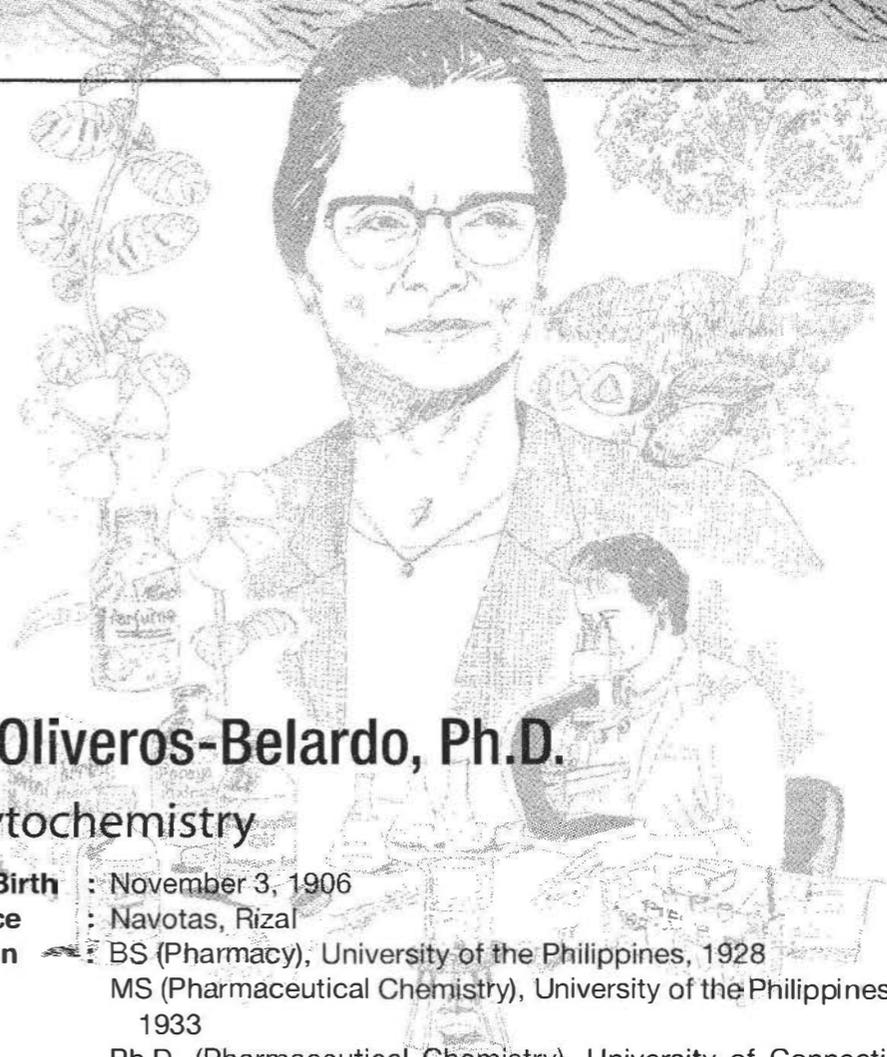
Gregorio Y. Zara, D.Sc.
Engineering and Inventions

Date of Birth : March 8, 1902 **Died** : October 15, 1978
Birthplace : Lipa, Batangas
Education : BS (Mechanical Engineering), Massachusetts Institute of Technology, USA, 1926
MS (Aeronautical Engineering), *summa cum laude*, University of Michigan, USA, 1927
Doctor of Science (Physics), *summa cum laude*, Sorbonne University, France, 1930
Year conferred as National Scientist : 1978

Dr. Gregorio Y. Zara made major contributions to the advancement of engineering and inventions in the Philippines.

As an administrator, mentor, inventor and engineer, he has always set the pace. Foremost among his contributions include the TV-telephone system, the wooden microscope, the semi-automatic propeller-making machine, and an aircraft propeller that is entirely made of wood. He designed the solarsorber and an airplane fueled by alcohol.

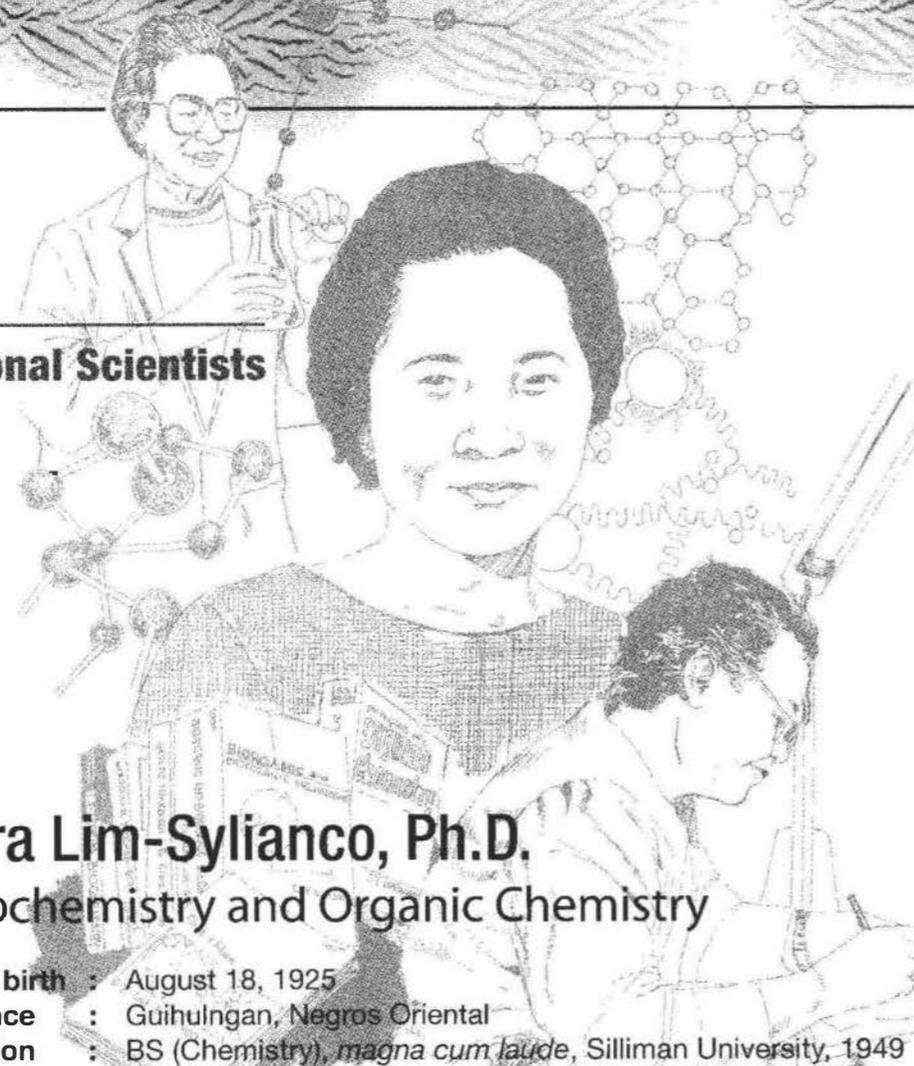
Dr. Zara has been ahead of his time. This quality was underscored by his pioneering research on solar energy source at a time when there was no energy crisis.



Luz Oliveros-Belardo, Ph.D.
Phytochemistry

Date of Birth : November 3, 1906
Birthplace : Navotas, Rizal
Education : BS (Pharmacy), University of the Philippines, 1928
MS (Pharmaceutical Chemistry), University of the Philippines, 1933
Ph.D. (Pharmaceutical Chemistry), University of Connecticut, 1954
Doctor of Science, *Honoris causa*. The Philippine Women's University, 1970
Year conferred as National Scientist : 1987

Dr. Luz Oliveros-Belardo is a distinguished scholar, chemist and researcher. She spent five decades of her life working on the chemistry of natural products specifically on Philippine medicinal plants. Her significant contribution to science is her work on essential oils from Philippine plants. She has extracted 33 new Philippine essential oils and studied their chemical and physical properties. In her twilight years, Dr. Belardo is still actively engaged in phytochemical research. Flavors from her new essential oils are now being tried in the creation of appetite enhancers and tested as possible medicinals. Results of her phytochemical analysis offered some answers to the search for scientific explanations in herbal medication.



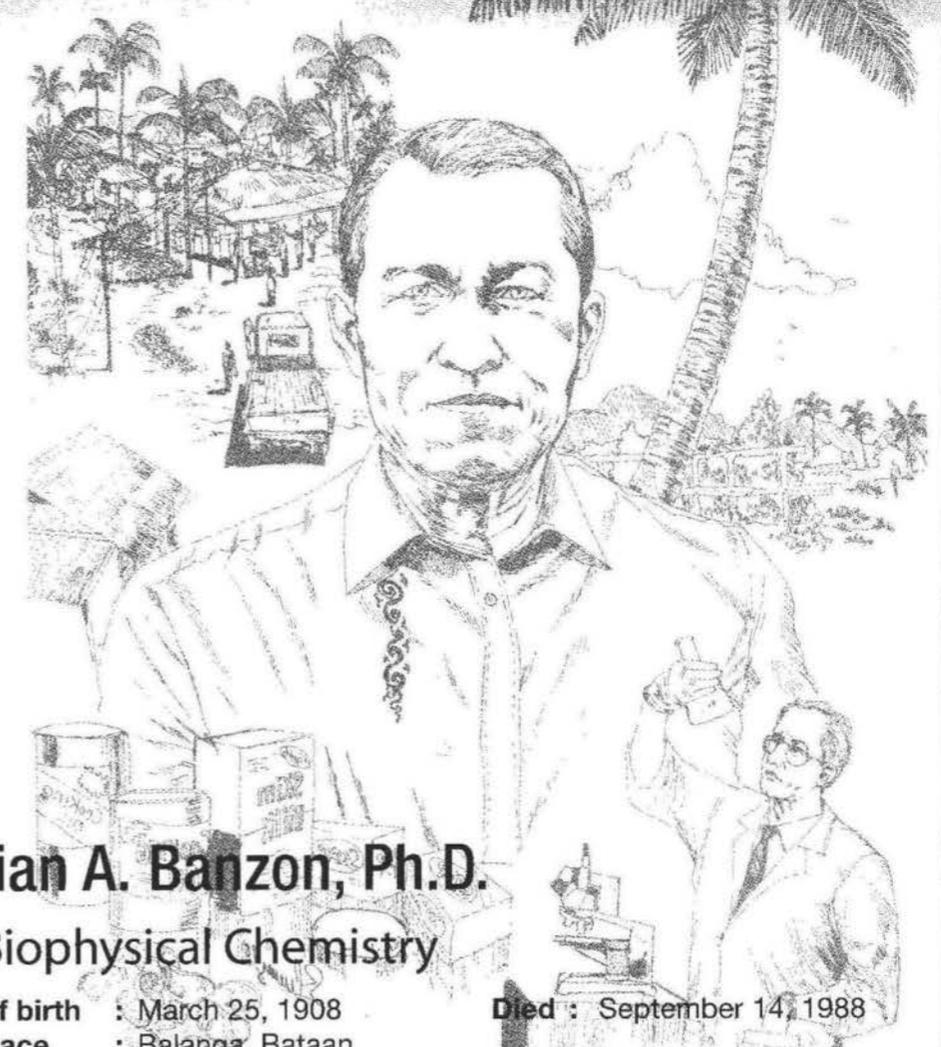
National Scientists

Clara Lim-Sylianco, Ph.D. Biochemistry and Organic Chemistry

Date of birth : August 18, 1925
Birthplace : Guihulngan, Negros Oriental
Education : BS (Chemistry), *magna cum laude*, Silliman University, 1949
MS (Chemistry), University of the Philippines, 1953
Ph.D. (Biochemistry and Organic Chemistry), University of Iowa, 1957

Year conferred as National Scientist : 1994

Dr. Clara Y. Lim-Sylianco is a foremost Filipino scientist and acclaimed teacher in the field of biochemistry. She has done a lot of work on mutagens, antimutagens and bio-organic mechanisms. Her numerous discoveries of environmental mutagens culminated in the designation of her laboratory at the University of the Philippines as an international training center for the detection of chemical mutagens by the Research Planning in Biological Sciences, Washington, D.C., USA in 1986 and in her appointment as a member of the International Advisory Committee on Antimutagens in 1989. She has published five books on organic chemistry, biochemistry, genetic toxicology and molecular nutrition. Her books are used as textbooks in college chemistry courses in many schools throughout the country.

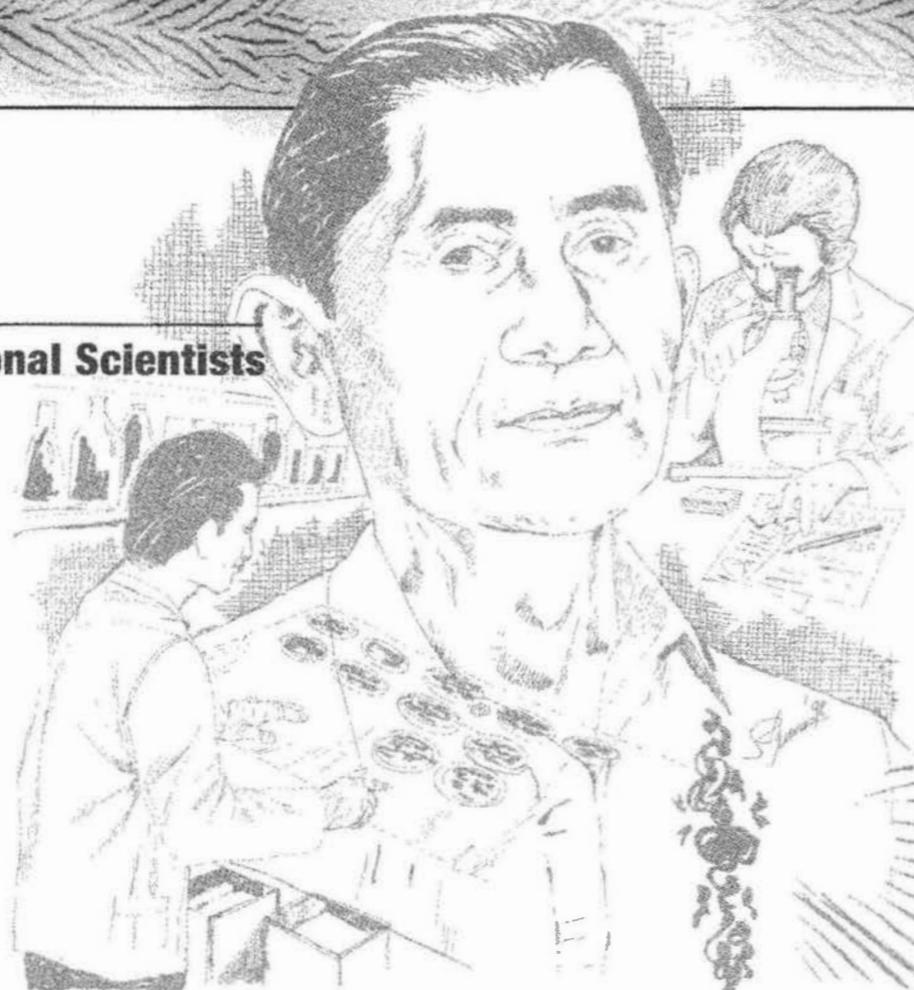


Julian A. Banzon, Ph.D. Biophysical Chemistry

Date of birth : March 25, 1908
Birthplace : Balanga, Bataan
Education : BS (Chemistry), University of the Philippines, 1930
Ph.D. (Chemistry), Iowa State University, 1937

Year conferred as National Scientist : 1986

Dr. Julian A. Banzon is an academician, distinguished scholar, scientist, professor, and biophysical chemist. He has dedicated a good portion of his life to scientific endeavors, concentrating his attention on that unique Philippine palm, the coconut. His studies have shown that this palm can very well be a renewable source of chemicals and fuels. The production of ethyl esters, coming from two Philippine indigenous crops, sugarcane and coconut, is one of the first studies on fuels. Dr. Banzon has devised some novel processes, noteworthy among these is the extraction of residual coconut oil by chemical, rather than by physical process.



National Scientists

Gregorio T. Velasquez, Ph.D.

Phycology

Date of Birth : September 2, 1901 **Died** : July 29, 1989
Birthplace : Calumpit, Bulacan
Education : BS, MS (Botany), University of the Philippines, 1925, 1931
MS, Ph.D. (Phycology), University of Michigan, 1937, 1939
Year conferred as National Scientist : 1982

Emeritus professor of botany in the University of the Philippines, scientist, scholar and educator, Dr. Velasquez has taught and developed generations of Filipino biologists, some of whom became members of the National Academy of Science and Technology. Dr. Velasquez contributed immensely to the study of algae, devoting 30 years of his life to it. He pioneered in the study of Philippine phycology and produced 47 basic and 77 scientific papers of great value, particularly on Philippine Myxophyceae.

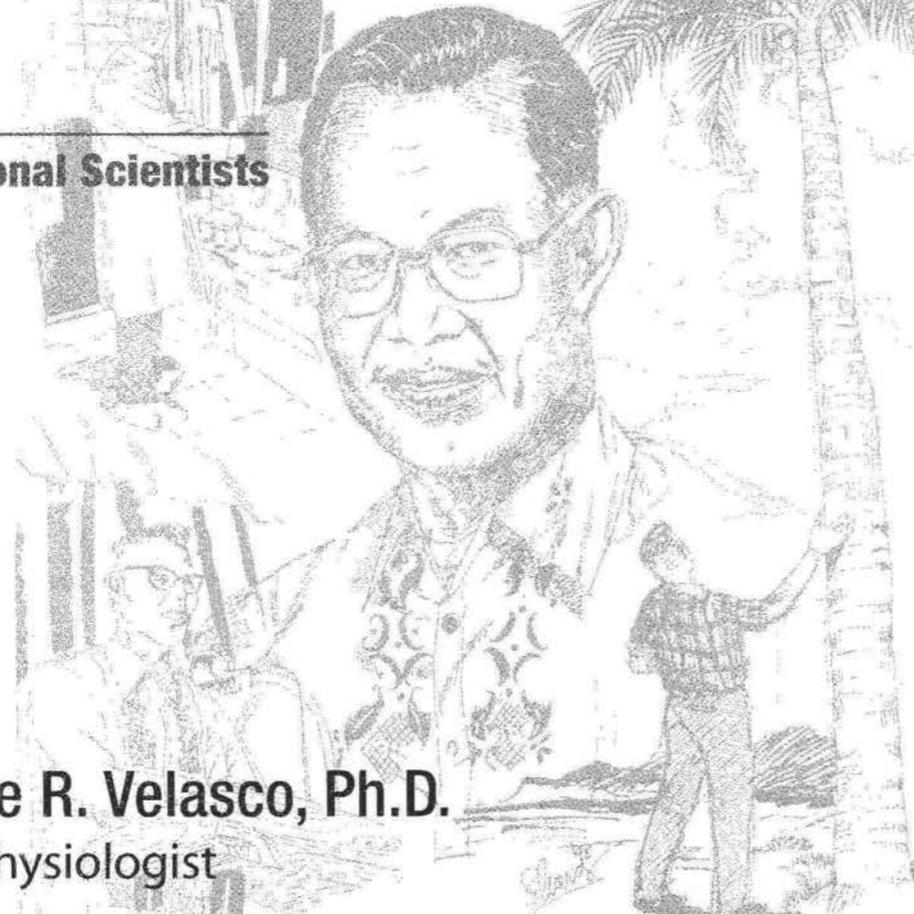


Carmen C. Velasquez, Ph.D.

Parasitology

Date of Birth : August 7, 1913 **Died** : October 16, 1994
Birthplace : Bayambang, Pangasinan
Education : BS (Zoology), University of the Philippines, 1934
MS (Zoology), University of Michigan, 1937
Ph.D. (Parasitology), University of the Philippines, 1957
Year conferred as National Scientist : 1983

Professor Emeritus of Zoology, University of the Philippines, scientist, and scholar, she holds the distinction of being the first Ph.D. graduate in Parasitology of UP. Her pioneering and untiring research efforts have resulted in the publication of 47 basic and about 45 scientific papers of value particularly in public health and conservation. Considered new to science are 32 species and one genus of digenetic trematodes in 13 families from Philippine food fishes, 2 from birds and 3 from mammals; 5 species and a genus of Monogenea from marine fishes; 9 life cycles of Digenea in 7 families and 3 of nematodes from freshwater and marine fishes. *Capillaria philippinensis* from the intestine of man in Ilocos Sur was first to be reported in the Philippines. Her book on 'Digenetic Trematodes of Philippine Fishes,' the first in Southeast Asia, provides a regional reference to fish parasitology and aquaculture management.



National Scientists

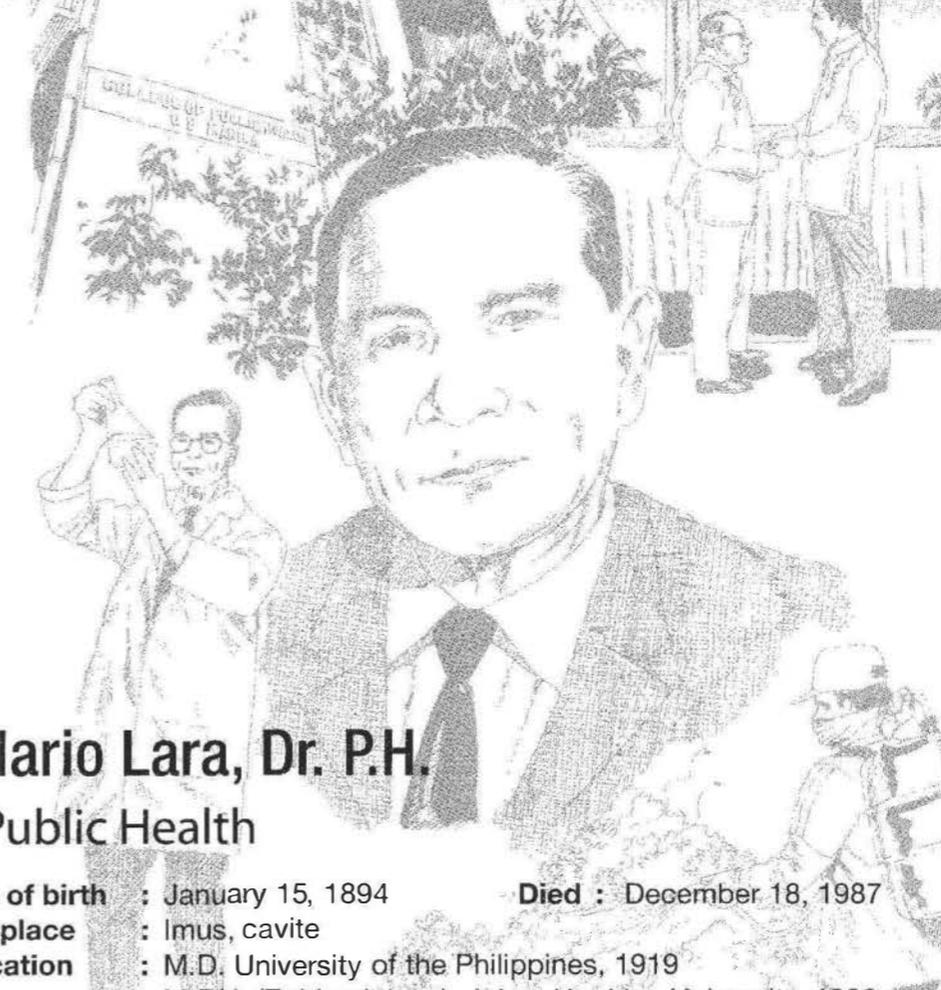
Jose R. Velasco, Ph.D.

Physiologist

Date of birth : February 4, 1916
Birthplace : Imus, Cavite
Education : B.S. (Agriculture), University of the Philippines, 1940
Ph.D. (Plant Physiology), University of California, Berkeley, 1949

Year conferred as National Scientist : 1998

Filipino plant physiologist, noted for his various researches on the soil and plant nutrition and photoperiodism of the rice plant as early as in the 1950s, mineral nutrition of areas planted to coconut and its relation to the growth and performance of the coconut plant and to the cadang cadang phenomenon, and the development and utilization of coconut products. Dr. Velasco has contributed significantly to S & T in the country not only through his researches but also through his being a science educator and administrator and has demonstrated his teachings and researches as a practical farmer and community leader.



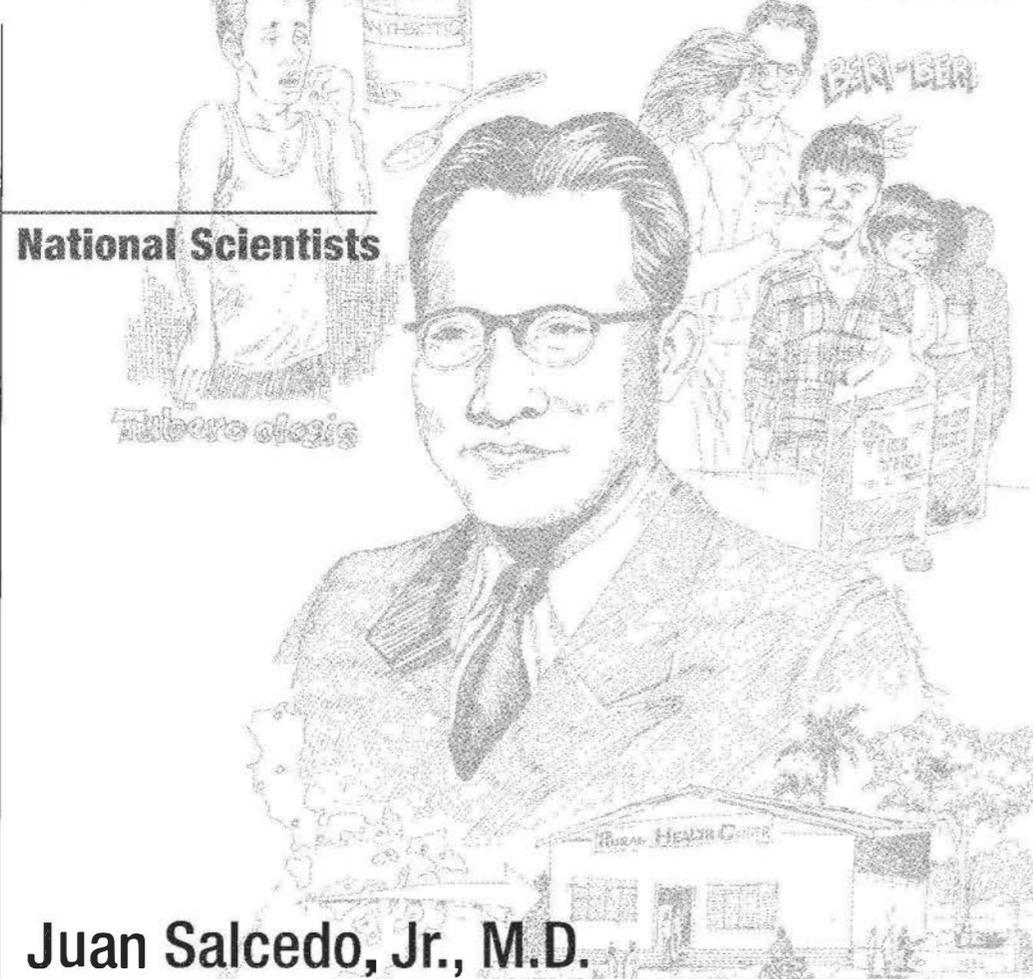
Hilario Lara, Dr. P.H.

Public Health

Date of birth : January 15, 1894 **Died** : December 18, 1987
Birthplace : Imus, Cavite
Education : M.D. University of the Philippines, 1919
M.P.H. (Epidemiology), Johns Hopkins University, 1923
Dr. P.H. (Epidemiology), Johns Hopkins University, 1924

Year conferred as National Scientist : 1985

Dr. Hilario Lara is recognized for his pioneering and significant contributions to public health and public health education in the Philippines. Eminent scientist and researcher, he devoted over five decades of his life to the pursuit, dissemination and application of knowledge pertaining to the epidemiology and prevention as well as control of disease, promotion and conservation of health and sanitation of environment which led to the control of cholera, typhoid fever, dysentery, measles and diphtheria in the country. Dr. Lara is a distinguished medical man and public servant, recognized for organizing and developing the Institute of Public Health, University of the Philippines, for establishing the first medical library in the country and for his pioneering work on the establishment of Community Health Demonstration Centers.



National Scientists

Juan Salcedo, Jr., M.D.

Nutrition and Public Health

Date of Birth : September 29, 1904 **Died** : October 25, 1988
Birthplace : Pasay, Manila
Education : M.D., University of the Philippines, 1929
 MS (Biochemistry), Columbia University, 1943
Year conferred as National Scientist : 1978

An authority in nutrition and public health and a medical statesman, Dr. Juan Salcedo Jr. conducted medical research to improve the health and nutrition of the Filipinos. He spent much of his lifetime studying health factors, ranging from fatty acids to vitamins. He has published more than 200 articles on medicine, science, and technology, all of which stressed the need for proper utilization of science, hand in hand with technology, in the process of shaping the nation not only from the economic plane but also from a social perspective.



Geminiano T. de Ocampo, M.D.

Ophthalmology

Date of Birth : September 16, 1907 **Died** : September 2, 1987
Birthplace : Malolos, Bulacan
Education : M.D., University of the Philippines, 1932
Year conferred as National Scientist : 1982

An outstanding ophthalmologist and a scholar of international renown, Dr. de Ocampo set up the first eye hospital in the Philippines and helped established the Philippine Eye Research Institute and the Philippine Ophthalmological Society.

He was the first Filipino to design in 1956 an ophthalmological instrument known as the de Ocampo corneal dissector, manufactured later by a US firm. As a surgeon, he introduced corneal transplantation in the Philippines. As a civic leader, he worked for the passage and amendment of Republic Act. No. 343 concerning donation of eyeballs for corneal transplantation.



National Scientists

Fe del Mundo, M.D., M.A.

Pediatrics

- Date of Birth** : November 27, 1911
Birthplace : Manila
Education : M.D., University of the Philippines, 1933 (*valedictorian*)
3rd placer- Medical Board Exam, 1933
MA (Bacteriology), Boston University & Massachusetts Institute of Technology, 1940
Honoris Causa
Philippine Women's University, 1968
Medical Women's College of Pennsylvania, USA, 1970
Smith College, Northampton, Massachusetts, USA, 1970
Year conferred as National Scientist : 1980

A leading pediatrician and distinguished scholar, humanitarian and exemplary citizen, Dr. Fe del Mundo has been the moving spirit behind the establishment of various pediatric institutions in the Philippines. She dedicated her life to the cause of pediatrics in the country. She did not confine herself only to research in different aspects of pediatrics but she also trained physicians, paramedics and lay health workers in child care. A medical researcher and writer, Dr. del Mundo has produced numerous articles and treatises on various scientific subjects, especially on pediatrics.



Paulo C. Campos, M.D.

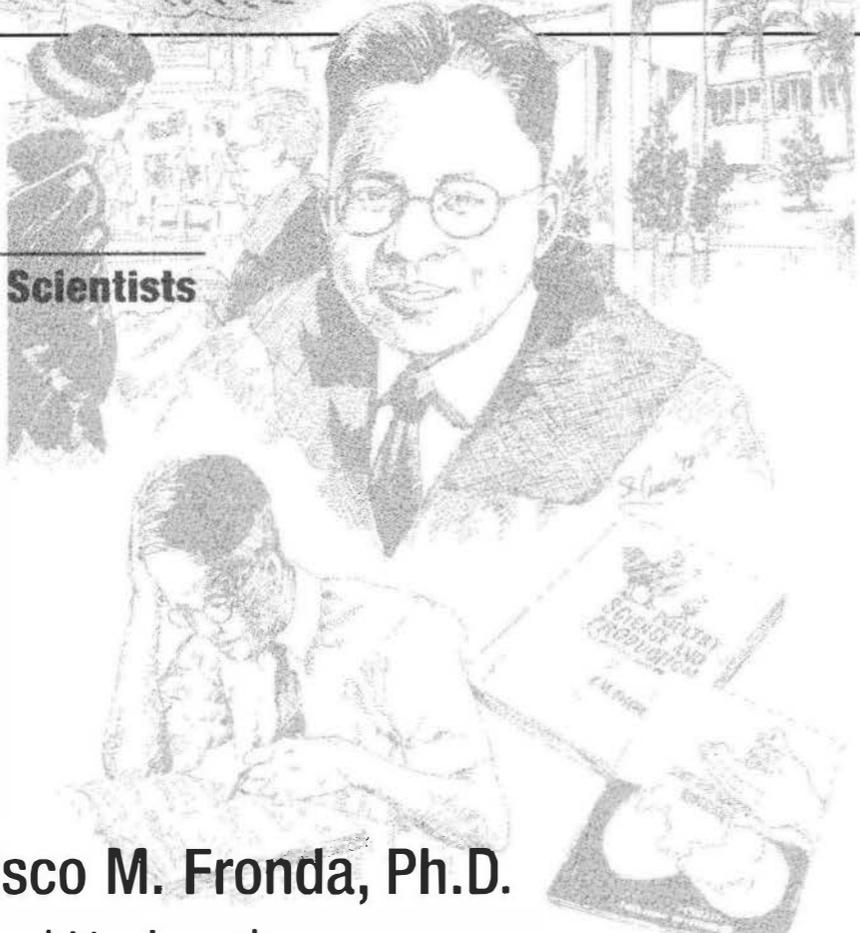
Nuclear Medicine

- Date of Birth** : July 27, 1921
Birthplace : Damariñas, Cavite
Education : A.A., College of Liberal Arts, University of the Philippines, 1940
MD, College of Medicine, University of the Philippines, 1945
Doctor of Science, honoris causa, University of the Philippines, 1990
Postgraduate Studies :
Johns Hopkins School of Medicine, 1952-1953
Harvard School of Medicine, 1953, 1958
Oak Ridge Institute of Medicine, 1958
Year conferred as National Scientist : 1988

Dr. Paulo C. Campos is recognized for his contribution to medical science, particularly his research work on "The Genetic Factor in Endemic Goiter" which was presented in Mexico City in 1961 and merited him a nomination by the International Atomic Energy Agency to the Nobel Prize Committee in 1970.

He played a major role in the vigorous development of science policy and administration, specifically as chairman of the division of medical sciences (1971-1981), as chairman/president of the National Research Council of the Philippines (1981-1984), and as president of the National Academy of Science and Technology (1978-1989).

He was behind the establishment of the Thyroid Clinic of the UP PGH Medical Center, the first Radioisotope Laboratory in the Philippines, the first Research Laboratory, UP College of Medicine. He spearheaded the organization of the Comprehensive Community Health Program of Bay, Laguna and the promotion of international scientific relations and exchanges.



National Scientists

Francisco M. Fronda, Ph.D.

Animal Husbandry

Date of birth : December 22, 1896 **Died** : February 17, 1986
Birthplace : Sto. Tomas, Aliaga, Nueva Ecija
Education : BS (Agriculture), University of the Philippines, 1919
MS, Ph.D (Poultry Science), Cornell University, 1920, 1922
Year conferred as National Scientist : 1983

Having devoted over six decades of his life to teaching, research and extension activities, Dr. Fronda contributed immensely to the development of the poultry industry not only in the Philippines but in Asia as well. In recognition of his pioneering contributions, he was cited as the 'Father of Poultry Science in the Philippines,' and 'Father of the Thai Poultry Industry;' an honor presented by her Royal Highness, the Crown Princess of Thailand in 1982. He has about 500 scientific articles of great value in the development of the poultry and livestock industry. He also authored a textbook in Poultry Science Production for students in agriculture and co-authored a series of books entitled 'Let us Raise Series' for secondary and elementary pupils.

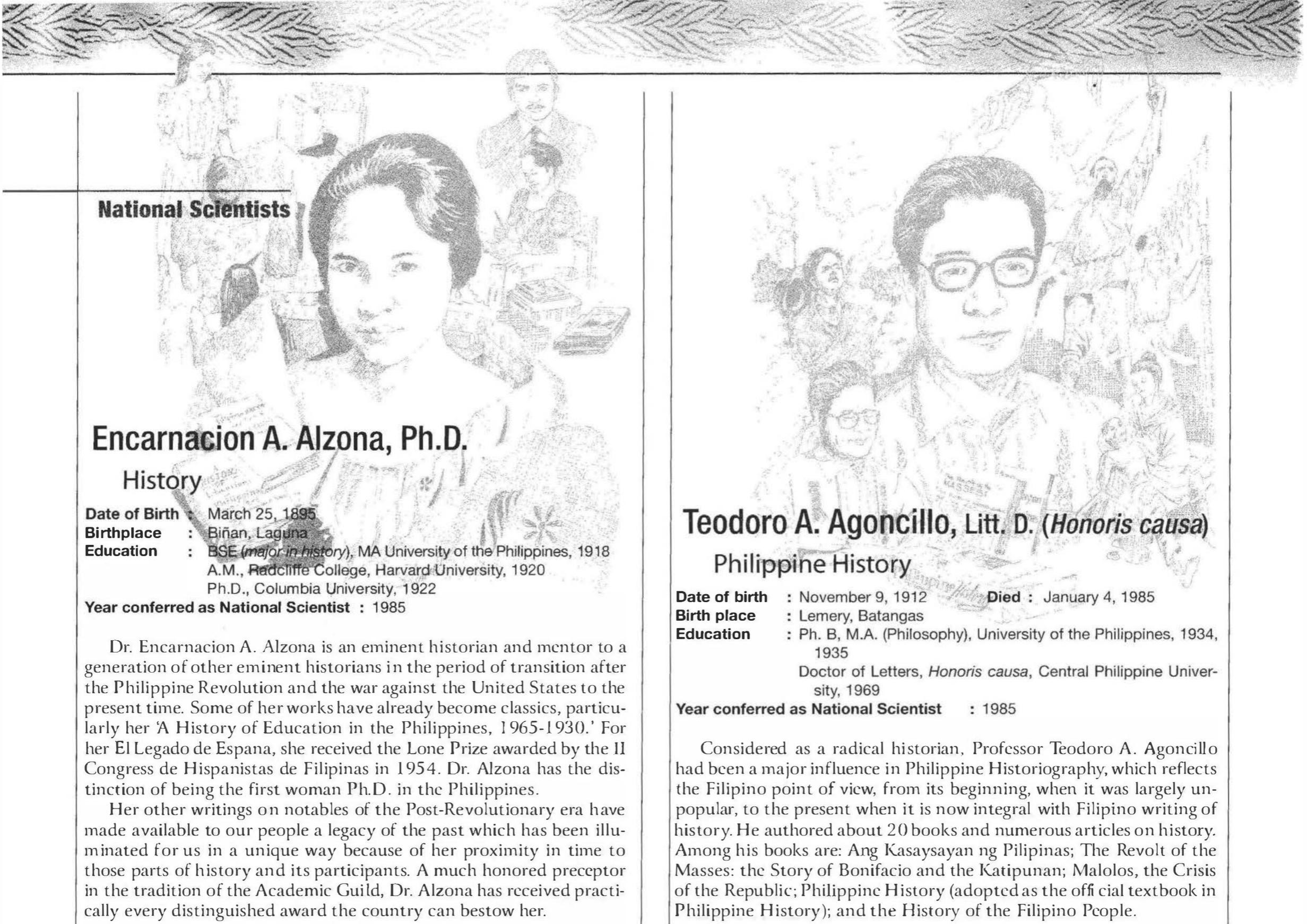


Pedro B. Escuro, Ph.D.

Genetics and Plant Breeding

Date of Birth : August 2, 1923
Birthplace : Nabua, Camarines Sur
Education : BSA (Agronomy, *magna cum laude*), University of the Philippines Los Baños, 1952
MS (Plant Breeding), Cornell University, 1954
Ph.D. (Genetics and Plant Breeding), University of Minnesota, 1959
Doctor of Science, *honoris causa*, University of the Philippines, 1979
Year conferred as National Scientist : 1994

"Dr. Pedro B. Escuro is an acclaimed plant breeder, geneticist, scholar and teacher. His researches led to the development of superior rice varieties like the classic C4-63 which are high yielding; resistant to many diseases and insect pests; of superior eating quality; and have become the standard for high quality rice in the Philippines as well as in many Asian countries. By his example, he encouraged and inspired his staff and students to become dedicated and hardworking scientists.



National Scientists

Encarnacion A. Alzona, Ph.D.

History

Date of Birth : March 25, 1895
Birthplace : Biñan, Laguna
Education : BSE (*major in history*), MA University of the Philippines, 1918
A.M., Radcliffe College, Harvard University, 1920
Ph.D., Columbia University, 1922
Year conferred as National Scientist : 1985

Dr. Encarnacion A. Alzona is an eminent historian and mentor to a generation of other eminent historians in the period of transition after the Philippine Revolution and the war against the United States to the present time. Some of her works have already become classics, particularly her 'A History of Education in the Philippines, 1965-1930.' For her *El Legado de Espana*, she received the Lone Prize awarded by the II Congress de Hispanistas de Filipinas in 1954. Dr. Alzona has the distinction of being the first woman Ph.D. in the Philippines.

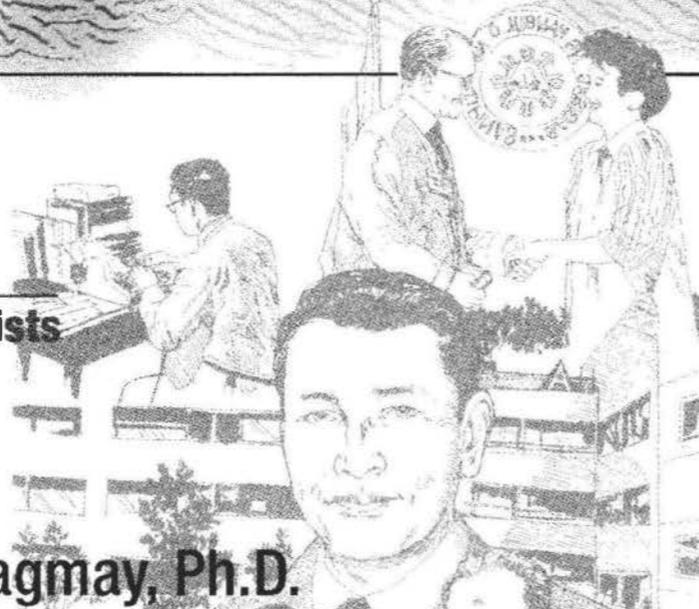
Her other writings on notables of the Post-Revolutionary era have made available to our people a legacy of the past which has been illuminated for us in a unique way because of her proximity in time to those parts of history and its participants. A much honored preceptor in the tradition of the Academic Guild, Dr. Alzona has received practically every distinguished award the country can bestow her.

Teodoro A. Agoncillo, Litt. D. (*Honoris causa*)

Philippine History

Date of birth : November 9, 1912 **Died** : January 4, 1985
Birth place : Lemery, Batangas
Education : Ph. B, M.A. (Philosophy), University of the Philippines, 1934,
1935
Doctor of Letters, *Honoris causa*, Central Philippine University, 1969
Year conferred as National Scientist : 1985

Considered as a radical historian, Professor Teodoro A. Agoncillo had been a major influence in Philippine Historiography, which reflects the Filipino point of view, from its beginning, when it was largely unpopular, to the present when it is now integral with Filipino writing of history. He authored about 20 books and numerous articles on history. Among his books are: *Ang Kasaysayan ng Pilipinas*; *The Revolt of the Masses: the Story of Bonifacio and the Katipunan*; *Malolos, the Crisis of the Republic*; *Philippine History* (adopted as the official textbook in Philippine History); and *the History of the Filipino People*.



National Scientists

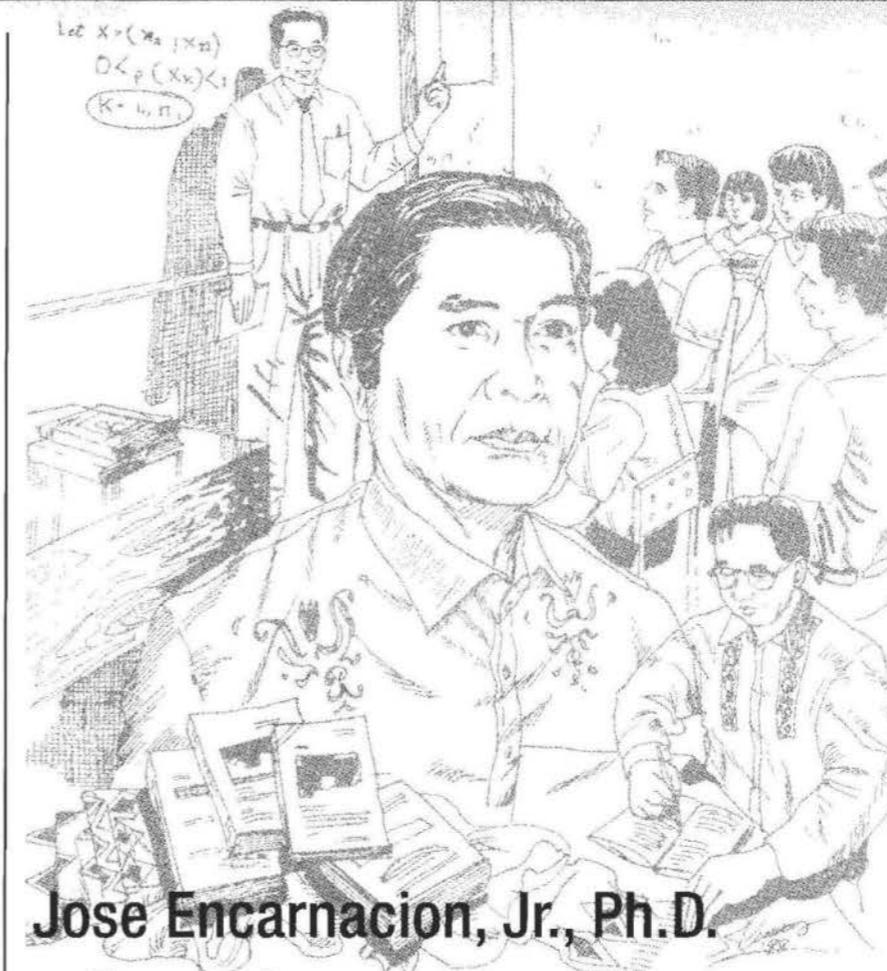


Alfredo V. Lagmay, Ph.D.

Experimental Psychology

Date of birth : August 14, 1919
Birth place : Manila
Education : Ph.B. (Philosophy) *cum laude*, University of the Philippines, 1947
MA (Philosophy) University of the Philippines, 1951
Ph.D. (Experimental Psychology), Harvard University, USA, 1955
Year conferred as National Scientist : 1993

Alfredo V. Lagmay, scientist and philosopher of distinction, and scholar in the humanist tradition, has been a major influence in the rise and growth of scientific psychology in the Philippines. His writings and publications, here and abroad, in experimental and clinical psychology, on Filipino values, and on the significance of the native culture bearer in indigenous research exemplify the high standard of excellence and originality that has made him an influential teacher for over four decades in the academe. He is founding father of the Psychological Association of the Philippines, of which he was president three times, and was Chairman of the Philippine Social Science Council, the national federation of learned societies in the social sciences. He is President of the Division of Psychology and National Development of the International Association of Applied Psychology. For outstanding contributions to psychology as scholar, researcher and administrator, he was conferred the Distinguished Service Award during the 1984 convention of the American Anthropological Association. He was recipient of the Award of Distinction in Psychology from the University of the Philippines and Gawad ng Pagkilala from the Pambansang Samahan ng Sikolohiyang Pilipino.

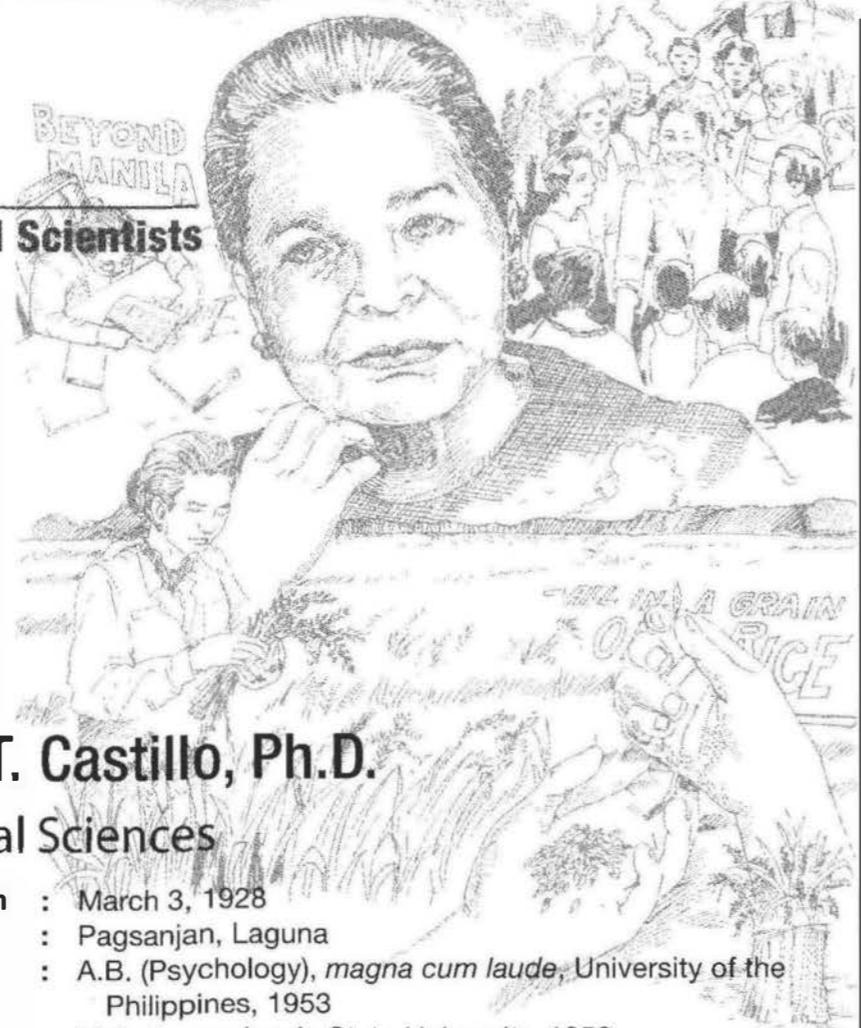


Jose Encarnacion, Jr., Ph.D.

Economics

Date of birth : November 17, 1928 **Died** : July 5, 1998
Birthplace : Manila
Education : Ph.B, MA (Philosophy), University of the Philippines 1950, 1954
A.M., Ph.D. (Economics), Princeton University, 1958, 1960
Year conferred as National Scientist : 1987

Dr. Jose Encarnacion was a noted economist, a theorist with interest also in the policy area, professor and dean, School of Economics of the University of the Philippines. He was the first Filipino to publish in an economic journal of international standing. His contributions to economic theory have appeared in major journals in England and the United States. His work as professor and dean of the UP School of Economics has been significant in making this institution a regional as well as a national resource, bringing recognition from abroad.



National Scientists

Gelia T. Castillo, Ph.D.

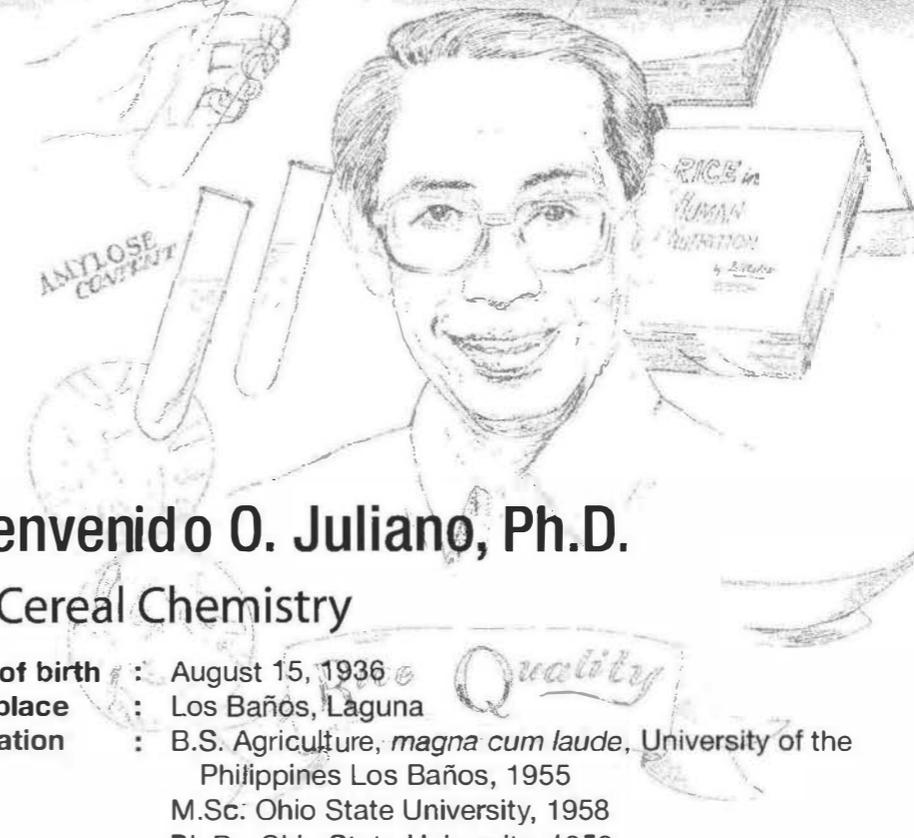
Social Sciences

Date of birth : March 3, 1928
Birthplace : Pagsanjan, Laguna
Education : A.B. (Psychology), *magna cum laude*, University of the Philippines, 1953
M.S. Pennsylvania State University, 1958
Ph.D. Cornell University, 1959
Year conferred as National Scientist : 1999

Dr. Gelia T. Castillo's excellent sociological research has contributed immensely to the acceptance and growth of empirically based social science both in the Philippines and abroad.

She has the rare ability to synthesize existing works and to elucidate difficult theories and concepts so that they become accessible to policy makers and ordinary citizens, and thus enhance the impact of social science contributions on the society at large.

She has the enviable capacity to inspire younger scholars, teachers, and students, by both her devotion to her craft and calling, and her ability to balance her multiple roles in academe and at home, and her national and international commitments.



Bienvenido O. Juliano, Ph.D.

Cereal Chemistry

Date of birth : August 15, 1936
Birthplace : Los Baños, Laguna
Education : B.S. Agriculture, *magna cum laude*, University of the Philippines Los Baños, 1955
M.Sc. Ohio State University, 1958
Ph.D. Ohio State University, 1959
Year conferred as National Scientist : 2000

Dr. Bienvenido O. Juliano is recognized for his significant contributions to the chemistry and technology of rice and rice food products, thus rationalizing the breeding strategies for rice grain quality all over the world.

His research on rice starch and its constituents, the protein-body nature of rice protein, nutritional values of rice and rice products, and new and improved methods of rice quality evaluation constitute a body of knowledge relevant to all rice-eating countries of the world.

Out of his over 350 publications, more than 150 articles consistently appeared in leading journals of international repute. He was the editor and major contributor to the 1985 edition of Rice Chemistry and Technology and author of the 1993 FAO publication, Rice in Human Nutrition.

He has trained scientists from national rice programs of many countries and inspired legion of graduate students, fellows and research staff with his expertise and dedication to the furtherance of rice science and technology.

Membership in the Academy

The Academy serves as a reservoir of competent scientific and technological human resources for the country. The members are called Academicians. At present, the total membership in the Academy is limited to 50 at any given time.



The first annual meeting of the Academy



Academicians Jose N. Rodriguez, Gregorio T. Velasquez, Encarnacion Alzona, Francisco Fronda, Geminiano de Ocampo, Carmen C. Velasquez, Alfredo Santos and President Paulo C. Campos.

The Academy held its first Annual Scientific Meeting on May 29, 1979. Acd. P. C. Campos who was appointed by President Ferdinand Marcos as President of the Academy, presided.



Others who attended: Acds. Jose Encarnacion, Bienvenido O. Juliano, and Fe del Mundo



“...Science...is useless unless it is applied to the greatest number of men, women and children...”

Perla D. Santos Ocampo

The Academy has five divisions: Agricultural Sciences, Biological Sciences, Health Sciences, Social Sciences, and Mathematical, Physical and Engineering Sciences. A sixth division was made in 1999 to update the current trend in science and technology: the Engineering Science and Information Technology Division.

Members of the Divisions meet to discuss specific topics in their line of expertise.



The Biological Sciences Division, 1999



The Mathematical, Physical and Engineering Sciences, 1999



Agricultural Sciences Division, 1999



Executive Council 1999-2002



Social Sciences Division, 1999

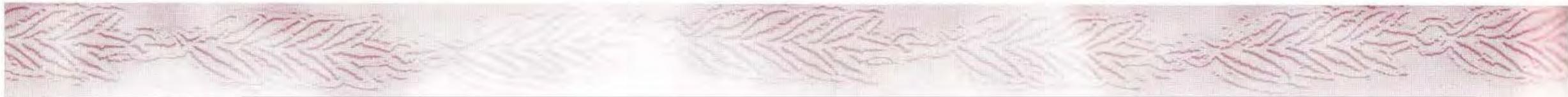


Health Sciences Division, 1999

The Academicians Meet Regularly

44th Academy Meeting, 1996





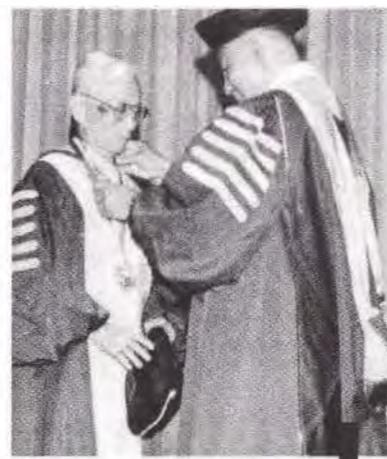
During the Annual Scientific Meeting, new members of the Academy are sworn in.



The Academicians in their official gowns.



Emerita V. de Guzman



Francisco O. Santos



Joventino D. Soriano



Clara Y. Lim-Sylianco



Magdalena C. Cantoria

The Academicians

Year elected **1978**



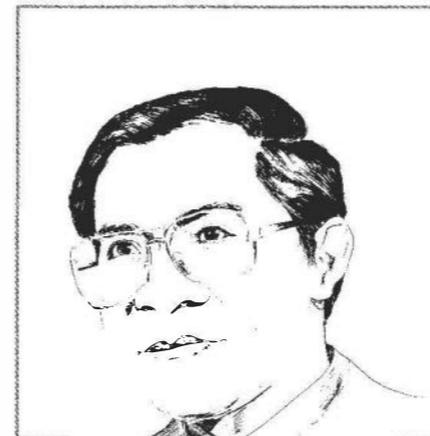
Paulo C. Campos
Nuclear Medicine



Juan S. Salcedo, Jr.
Nutrition, Public Health +



Cecilio F. Lopez
*Philippine Linguistics
Oriental Studies +*



Tito A. Mijares
Statistics



Alfredo V. Lagmay
Experimental Psychology

The Academicians

Year elected **1978**



Dioscoro L. Umali
Plant Breeding +



Gregorio T. Velasquez
Phycology +



Alfredo C. Santos
Physical Chemistry +



Carmen C. Velasquez
Parasitology +



Gregorio Y. Zara
Engineering, Inventions +

The Academicians

Year elected **1979**



Encarnacion Alzona
Philippine History +



Francisco M. Fronda
Poultry Husbandry +



Pedro B. Escuro
*Genetics
Plant Breeding +*



Jose Encarnacion, Jr.
Economics +



Raymundo A. Favila
Mathematics +



Teodoro Agoncillo
Philippine History +



Bienvenido O. Juliano
Organic Chemistry

The Academicians

Year elected **1979**



Melecio Magno
Physics



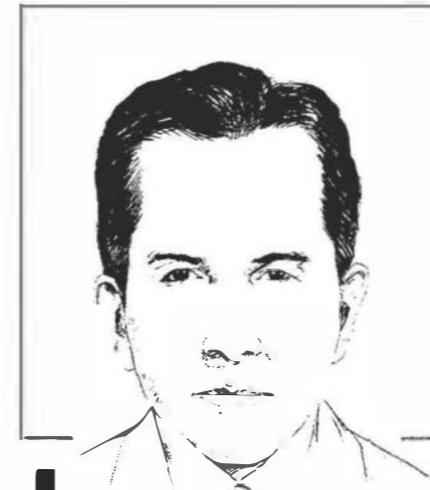
Geminiano T. de Ocampo
Ophthalmology +



Eduardo A. Quisumbing
*Plant Taxonomy, Systematics
Morphology +*



Fe V. del Mundo
Pediatrics



Casimiro del Rosario
*Physics, Astronomy,
Meteorology +*



Jose N. Rodriguez
Lepatology +

The Academicians

Year elected **1980**



Luz Oliveros-Belardo
Pharmaceutical Chemistry +



Francisco O. Santos
*Human Nutrition
Agricultural Chemistry +*



Joventino D. Soriano
*Cytogenetics
Mutation Research*



Emerita V. de Guzman
Plant Physiology +



Conrado S. Dayrit
Pharmacology, Cardiology



Clara Y. Lim-Sylianco
*Biochemistry, Organic
Chemistry*



Magdalena C. Cantoria
Botany, Pharmacy

The Academicians

Year elected **1981**



Armando M. Dalisay
Economics +



Julian A. Banzon
Biophysical Chemistry +



Claire R. Baltazar
Entomology



Benjamin D. Cabrera
*Medical Parasitology
Public Health*

Year elected **1982**



Emil Q. Javier
*Plant Breeding
Genetics*

The Academicians

Year elected **1983**



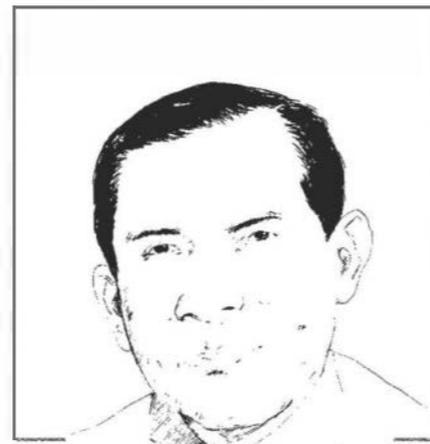
Gelia T. Castillo
Sociology



Jose O. Juliano
Nuclear Chemistry
Nuclear Physics



Bienvenido F. Nebres
Mathematics



Hilario D.G. Lara
Public Health +



Faustino T. Orillo
Mycology



Jose R. Velasco
Plant Physiology

The Academicians

Year elected **1985**



Gregorio F. Zaide
History +



Quintin L. Kintanar
Environmental Medicine

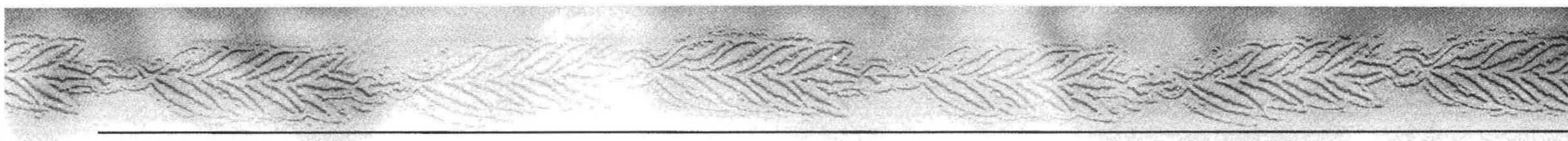


Quirino O. Navarro
Nuclear Chemistry

Year elected **1987**



Prescillano Zamora
Plant Anatomy
Morphology



The Academicians

Year elected **1987**



Solita F. Camara-Besa
Biochemistry



Lourdes J. Cruz
Biochemistry



Edito G. Garcia
Medical Parasitology



Filomena F. Campos
*Plant Breeding
Cytogenetics*



Carmen Ll. Intengan
Nutrition



Benito S. Vergara
Plant Physiology



Dolores A. Ramirez
*Biochemical Genetics
Cytogenetics*

The Academicians

Year elected **1988**



Ricardo M. Lantican
Plant Breeding

Year elected **1990**



Apolinario D. Nazarea
Biophysics



Leopoldo S. Castillo
Animal Science



Ruben L. Villareal
Horticulture

Academics

Year elected **1992**



Mercedes B. Concepcion
Demography



Rafael D. Guerrero III
Fisheries Management



Ernesto O. Domingo
Internal Medicine
Gastroenterology



Evelyn Mae T. Mendoza
Biochemistry

The Academicians

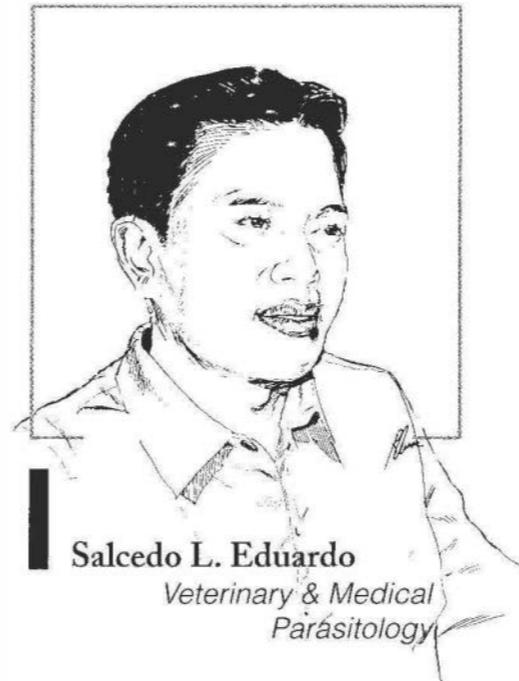
Year elected **1993**



Ramon F. Abarquez, Jr.
Cardiology



Teodulo M. Topacio, Jr.
Veterinary Medicine



Salcedo L. Eduardo
*Veterinary & Medical
Parásitology*



Edgardo D. Gomez
Marine Biology

The Academicians

Year elected **1994**



Perla D. Santos Ocampo
Pediatrics

Year elected **1995**



Ledivina V. Cariño
Sociology



William G. Padolina
Phytochemistry



Raul V. Fabella
Economics

The Academician's

Year elected **1996**



Veronica F. Chan
Microbiology



Andrew Gonzalez
Linguistics

Year elected **1999**



Onofre D. Corpuz
*Political Economy
Government*

Year elected **2000**



Filemon A. Uriarte, Jr.
Chemical Engineering

Honorary Membership

The Academy's recognition is not limited to Filipino scientists alone. In 1980, NAST recommended an honorary degree and also gave a special award to Lord Alexander Robertus Todd, 1957 Nobel Prize Laureate in chemistry. Recently, NAST conferred honorary membership on Dr. Norman E. Borlaug, 1970 Nobel Prize Laureate for Peace and renowned as "Father of Green Revolution".



Norman Borlaug



Lord Alexander Robertus Todd signing memorandum of agreement between NAST and the Royal Society of London, 1980.

Science Awards

Outstanding Young Scientists Award

This is a vital project of the Academy in promoting and encouraging young scientists. Besides the award, the DOST program called “OYS-on-the-Go”, which started in 1994, provided financial assistance to the awardees to conduct research. In 1994, more than half a million pesos were awarded to selected OYS.

Several of the awardees have become members of the Academy—Salcedo L. Eduardo, Rafael D. Guerrero III, Lourdes J. Cruz, William G. Padolina, Evelyn Mae T. Mendoza and Filemon A. Uriarte, Jr.



First Outstanding Young Scientist Awards given in 1980 by President F. E. Marcos.



The Outstanding Young Scientist Awardees, 1998.

Science Awards

Outstanding Young Scientist Awardees

1980

Ernesto J. del Rosario, Chemistry
Salcedo L. Eduardo, Parasitology
Rafael D. Guerrero III, Fisheries Management
Rufino H. Ibarra, Physics
Florian M. Orejana-Ward, Fish Processing and Quality Control
Ely Anthony R. Ouano, Environmental Engineering
Ernesto M. Pernia, Economic Demography
Alberto Romualdez, Medicine
Thelma E. Tupasi-Ramos, Infectious Diseases
Victoria A. Vicente-Beckett, Chemistry

1981

Romeo M. Bautista, Economics
Paciente A. Cordero, Jr., Marine Biology
Lourdes J. Cruz, Biochemistry
Severino V. Gervacio, Mathematics
Esperanza A. Icasas-Cabral, Cardiology
Ernesto P. Lozada, Agricultural Engineering
Manolito G. Natera, Physics

*“Of all the resources of a nation,
man is the most important.”
Francisco O. Santos*

1982

Carmelo A. Alfiler, Pediatric Medicine
Rodolfo P. Cabangbang, Agronomy
Virgilio G. Enriquez, Psychology
Alejandro N. Herrin, Demographic Economics
Jose G. Marasigan, Mathematics
William G. Padolina, Phytochemistry
Percy A. Sajise, Ecology
Benito L. Tanhehco, Biomedical Engineering

1983

Ponciano S.M. Halos, Plant Pathology
Remigio M. Olveda, Parasitic Diseases
Vicente B. Paqueo, Human Resource Economics
Luzvisminda U. Rivero, Chemistry

1984

William T. Chua, Cardiovascular Medicine
Reynaldo E. dela Cruz, Forestry
Evelyn Mae T. Mendoza, Biochemistry
Roger R. Posadas, Physics
Eufemio T. Rasco, Plant Breeding
Filemon A. Uriarte, Jr., Chemical Engineering

1985

William D. Dar, Agriculture
Alumanda M. dela Rosa, Radiation Chemistry
Ann Inez N. Gironella, Statistics
Jose A. Magpantay, Physics
Corazon M. Raymundo, Population Science
Mediadora C. Saniel, Epidemiology
Amaryllis T. Torres, Psychology
Regalado G. Zamora, Animal Science

Science Awards

Outstanding Young Scientist Awardees

1986

Edwin A. Benigno, Entomology
Ida F. Dalmacio, Food Microbiology
Ma. Concepcion C. Lizada, Biochemistry
Ernesto S. Luis, Food Chemistry
Manolo G. Mena, Metallurgy
Glorina N. Pocsidio, Zoology
Danilo M. Yanga, Physics

1987

Ruperto P. Alonzo, Economics
Dante B. Canlas, Economics
Rene P. Felix, Mathematics
Miguel D. Fortes, Marine Plant Ecology
Ruben M. Gapasin, Plant Pathology
Wilfredo I. Jose, Chemical Engineering
Felino P. Lansigan, Statistics
Reynaldo C. Mabesa, Food Science
Manuel F. Montes, Economics
Linda S. Posadas, Physics

1988

Francisco M. Basuel, Animal Science
Ma. Cynthia Rose B. Bautista, Sociology
Manuel M. Lantin, Plant Breeding
Rolando E. Ramos, Mathematics
Polly W. Sy, Mathematics
Benito C. Tan, Botany

1989

Efren C. Abaya, Electrical Engineering
Candida B. Adalla, Entomology
Christopher C. Bernido, Physics
Virginia C. Cuevas, Botany
Mary Ann D. Lansang, Clinical Epidemiology
Alfinetta Fermina B. Zamora, Agronomy

1990

Ambrosio Raul R. Alfiler, Entomology
Adelina A. Barrion, Insects Genetics
Manuel M. Dayrit, Epidemiology and MPH
Emmanuel M. Lagare, Mathematics
Rodel G. Maghirang, Vegetable Breeding
Roberto N. Padua, Theoretical Statistics
Lilian F. Pateña, Plant Tissue Culture
Manuela Fe H. Tarroja, Physics
Wilfred U. Tiu, Parasitology/Immunology

“I take pleasure in teaching the younger generation to explore the unknown, to acquire the spirit of research that cultivates self-discipline and orderliness...”

Luz Oliveros-Belardo

1991

Victor B. Amoroso, Botany
Alberto T. Barrion, Entomology
Ma. Cecilia Gastardo-Conaco, Psychology
Emerenciana E. Ballelos-Duran, Biophysics
Ma. Socorro H. Gochoco-Bautista, Economics
Joseph Anthony Y. Lim, Economics
Florentino C. Sumera, Chemistry
Violeta N. Villegas, Fruit Breeding and Genetics

1992

Arsenio M. Balisacan, Economics
Rhodora A. del Rosario, Health Science
Portia G. Lapitan, Forest Biology
Luz R. Nochefranca, Mathematics
Valentino C. Perdido, Crop Science
Caesar A. Saloma, Applied Physics
Irene M. Villaseñor, Chemistry
Ma. Helena T. Yap, Marine Biology

1993

Josephine U. Agravante, Postharvest Horticulture
Ma. Alicia M. Aguinardo, Chemistry
Porfirio Alexander M. Aliño, Marine Biology
Angelina M. Bacala, Physics
Severino S. Capitan, Animal Physiology/Nutrition
Emmanuel S. de Dios, Economics
Gerardo C. Janairo, Chemistry
Shirley R. Tiong-Palisoc, Physics
Graciano P. Yumul, Jr., Geology

1994

Teresita H. Borromeo, Plant Breeding
Cherrie L. Bunag-Pascual, Chemistry
Sergio S. Cao, Mathematics
Elda B. Esguerra, Postharvest Horticulture
Manuel L. Logroño, Plant Breeding and Genetics
Desiree I. Menancio-Hautea, Plant Genetics and Molecular Biology
Cecilia P. Reyes, Entomology

1995

Abundio A. Balgos, Pulmonary and Internal Medicine
Jose Maria P. Balmaceda, Mathematics
Allan Benedict I. Bernardo, Cognitive Psychology
Armando C. Crisostomo, Colon and Rectal Surgery
Maribel L. Dionisio-Sese, Plant Physiology
Zenaida N. Ganga, Plant Breeding
Randy A. Hautea, Plant Breeding
Antonio Carlos Laurena, Agricultural Chemistry
Merlyn S. Mendiolo, Genetics
Fidelina B. Natividad-Carlos, Economics

1996

Antonio L. Acedo, Horticulture
Jezie A. Acorda, Veterinary Medicine
Eliezer A. Albacea, Computer Science
Carmelita A. Belda-Baillie, Zoology
Jose E. Hernandez, Plant Breeding and Genetics
Eduardo C. Lim, Immunology
Jose M. Oclarit, Applied Biochemistry
Jossie M. Rogacion, Pediatrics, Nutrition and Gastroenterology
Roland V. Sarmago, Physics
Tessa T. Torres-Edejer, Clinical Economics

Science Awards

Outstanding Young Scientist Awardees

1997

Rhodora R. Aldemita, Botany
Orville L. Bondoc, Animal Breeding/Genetics
Leonorina G. Cada, Chemistry
Antonio Miguel L. Dans, Clinical Epidemiology
Ricardo T. Jose, History/Area Study
Rodel D. Lasco, Forestry
Damasa M. Magcale-Macandog, Botany
Blessilda P. Raposa, Mathematics
Cesar L. Villanoy, Physical Oceanography
Edward H.M. Wang, Orthopedics

1998

Vermando M. Aquino, Plant Pathology
Philbert S. Bonilla, Plant Physiology
Mark J. Encarnación, Technical Mathematics
Mario R. Festin, Obstetrics and Gynecology
Ma. Emma Concepcion D. Liwag, Psychology
Ronald R. Matias, Zoology
Jaime C. Montoya, Microbiology
Felix P. Muga II, Mathematics
Edilberto D. Redoña, Genetics
Ma. Jamela R. Revilleza, Biochemistry

1999

Vicente Y. Belizario, Jr., Tropical Medicine/Hygiene
Merdelyn T. Caasi-Lit, Plant Science/Entomology
Sergio R. Canoy, Jr., Mathematics
Cesar G. Demayo, Entomology/Genetics
Danilo B. Largo, Aquatic Environmental Science
Bernadette D.L. Libranda-Ramirez, Immunology
Eric R. Punzalan, Chemistry
Leocadio S. Sebastian, Plant Breeding



New members of OYS, Inc. being inducted by
Pres. P. Santos Ocampo, 2000.

2000

Rafael C. Bundoc, Orthopedics
Arnel N. del Barrio, Ruminant Nutrition
Ireneo L. Lit, Jr., Entomology
Pablito M. Magdalita, Plant Breeding
Francisco A. Magno, Political Science
Roberto M. Malaluan, Chemical Engineering
Perry S. Ong, Behavioral Ecology and Evolutionary Biology
Ishmael D. Ordoñez, Chemistry
Ricardo Jose D.L.T. Quintos II, Vascular Surgery
Jose Ramon T. Villarin, S.J., Atmospheric Physics

*“Be the heroes we never were...
Dioscoro L. Umali*

Science Awards

ASEAN Outstanding Scientist and Technologist Award



Academician Bienvenido O. Juliano receiving the award in 1998.

ASEAN Young Scientist and Technologist Award



The Academy coordinated the first award in the Philippines in 1988. Joseph Dobouzet was nominated and represented the country in the regional contest. It was a three-way tie for first place by Dobouzet (extreme right) and candidates from Malaysia and Indonesia.

Science Awards

NAST-TWAS Science Prize

This science prize is given to outstanding young Filipino scientists by the Academy and the Third World Acade of Sciences (TWAS). The award consists of US\$2000 and a plaque.

NAST-TWAS Science Prize Awardees

2000 in Mathematics	-	Eliezer A. Albacea
1999 in Chemistry	-	Leonorina G. Cada
1998 in Biology	-	Rhodora R. Aldemita
1997 in Physics	-	Cesar A. Saloma
1996 in Mathematics	-	Jose Maria P. Balmaceda
1995 in Chemistry	-	Antonio C. Laurena
1994 in Biology	-	Maria Helena T. Yap
1993 in Physics	-	Christopher C. Bernido
1992 in Mathematics	-	Polly W. Sy
1990 in Biology	-	Wilfredo U. Tiu



The NAST-TWAS Science Prize awardee, Dr. Rhodora R. Aldemita (middle), 1998.



National Scientist Dolores A. Ramirez, Dr. Leonorina G. Cada, (NAST-TWAS awardee), and Pres. Conrado S. Dayrit during the awarding ceremonies, 1999

Science Awards

Philippine Talent Search for Young Scientists

The search for Young Scientists is a project of the Academy to encourage young people to pursue a career in science. During the annual scientific meeting a trophy and cash prize are given to the three best scientific papers presented during the Science Congress.



The Philippine Talent Search for Young Scientists winners, 1998

Science Awards

Awards for Outstanding Scientific Publications

These awards are given annually for such books and/or monographs published in the Philippines or elsewhere by Filipino authors or co-authors within five years preceding the award. The awards for outstanding scientific or technical journal is given to nationally published journals, also within five years preceding the award. Papers are judged for their quality and originality of content, clarity of presentation, thoroughness of documentation. Plaques of recognition are also given.

Outstanding books/monographs



V. A. Bautista, M. C. P. Alfiler, and E. E. Nicolas, authors of the book "Forging Community-Managed Primary Health Care", received the award from National Scientist Dolores A. Ramirez and Pres. Conrado S. Dayrit, 1999

2000

Pagkatao at Teknolohiya: Mga Isyu ng Etika sa Makabagong Medisina
Cognitive Consequences of Literacy: Studies on Thinking in Five Filipino Communities
Agricultural Biotechnology: Priorities and Policies in the Philippine Setting
Philippine Textbook of Medical Parasitology
P.G.H. Handbook on Medical Research

1999

Forging Community-Managed Primary Health Care
The Kris in the Philippine History: A Study of the Impact of Moro Anti-Colonial Resistance, 1571-1896
Rehab: Psychological Rehabilitation for Social Transformation (Some Programs and Concepts)
The Philippine Senate
Biodiversity of Livestock and Poultry Genetic Resources in the Philippines
A Century of Public Health in the Philippines

1998

An Economic History of the Philippines
Technoguides for Agricultural Production and Livelihood Projects
Perspectives in Physical Therapy

1997

Poverty, Growth and the Fiscal Crisis
Pesticides, Rice Productivity, and Farmer's Health (An Economic Assessment)

1996

Landlords and Capitalists: Class, Family and State in the Philippine Manufacturing
Cavite Before the Revolution (1571-1896)
Riceland Spiders of South and Southeast Asia
Basic Otolaryngology
Primary Care Surgery for Family Physicians

1995

Poverty, Urbanization and Development Policy: A Philippine Perspective
From victims to Survivors Psychosocial Intervention in Disaster Management

1994

In the Shadow of the Lingering Mt. Pinatubo Disaster
Fishers, Traders, Farmers Wives: The Life Stories of Ten Women in a Fishing Village

Science Awards

Centennial Award for Science and Technology

As part of the centennial celebration of the Philippine independence, the Centennial Awards for Science and Technology were given to National Scientists Fe del Mundo and Disocoro L. Umali.

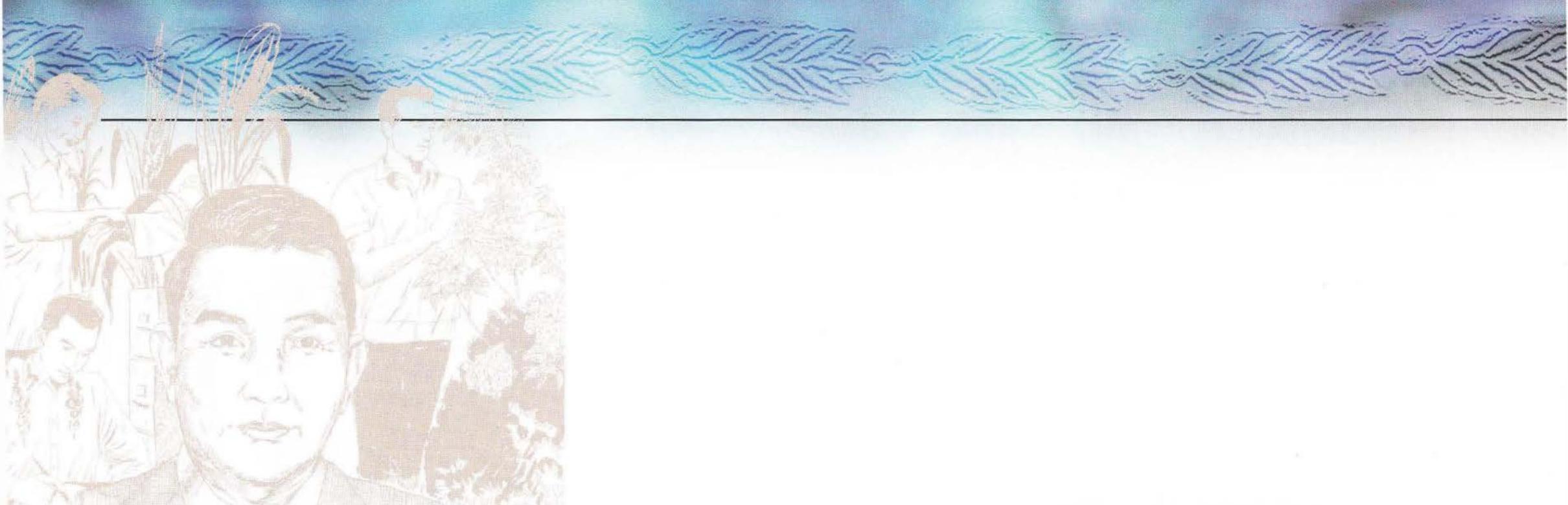


From left to right: Acd. R. Villareal, Secretary W. Padolina, National Scientist Fe del Mundo, Acd. P. Santos Ocampo, and Acd. C. Dayrit

*Fe del Mundo, M.D.
(Pediatrics)
Nov. 27, 1911-*

The citation:

A leading pediatrician and distinguished scholar; humanitarian and exemplary citizen, noted for her contributions to medical education as a pioneer in community pediatrics and community medicine, and as a teacher who by lecture and example inspires medical students and young physicians to serve the underprivileged among us; for being a role model of physicians as she cares for and heals children and mothers; and for being the moving spirit behind the establishment of various pediatric institutions in the Philippines.



*Dioscoro L. Umali, Ph. D.
(Genetics and Plant Breeding)-
Posthumous
Nov. 29, 1917- 1992*

The citation:

Geneticist and plant breeder, development administrator and science statesman, noted for his works in the breeding of improved varieties of foodgrains, legumes, fruits, and ornamental plants, his research output and writings paved the way for launching programs of rainfed and upland agriculture, social forestry, environmental conservation, and rural poverty alleviation; and for being a strong advocate of people's participation in planning and decision making and of the adoption of technology and development models consistent with a country's geography, traditions, and social history.



Mrs. Zenaida Umali receives the award. With her are Secretary W.G. Padolina and Acd. C. S. Dayrit

Science Awards

Special Awards

The Academy and the Department of Science and Technology recognized the important role of Dr. Frank Co Tui as pioneer and advocate of Philippine Science and Technology.



Ms. Rosario Tanda, niece of Dr. Frank Co Tui, receives the plaque from Pres. Fidel V. Ramos. Looking on are Sec. W. Padolina (extreme left) and Pres. C. Dayrit.

“This nation, in order to be prosperous, must learn to appreciate its scientists. They are its most precious talents. Do not allow them, by your indifference and lack of faith to be lost to countries with greater appreciation of their skill and training”.
Frank Co Tui, May 1967

Philippine Science Heritage Center (Salinlahi)

The Salinlahi was built to honor Filipino scientists and their scientific contributions to the world of science. It is envisioned to be a lasting and fitting tribute to the numerous Filipino scientists and technologists who have endured and have devoted their studies and lives unselfishly for the betterment of the country.

The Salinlahi, located at the DOST compound in Bicutan, was inaugurated on December 4, 1998 by the Honorable William G. Padolina, Secretary of the Department of Science and Technology.

In the 2000, Salinlahi received more than 100,000 visitors.



Students viewing the exhibits at the center

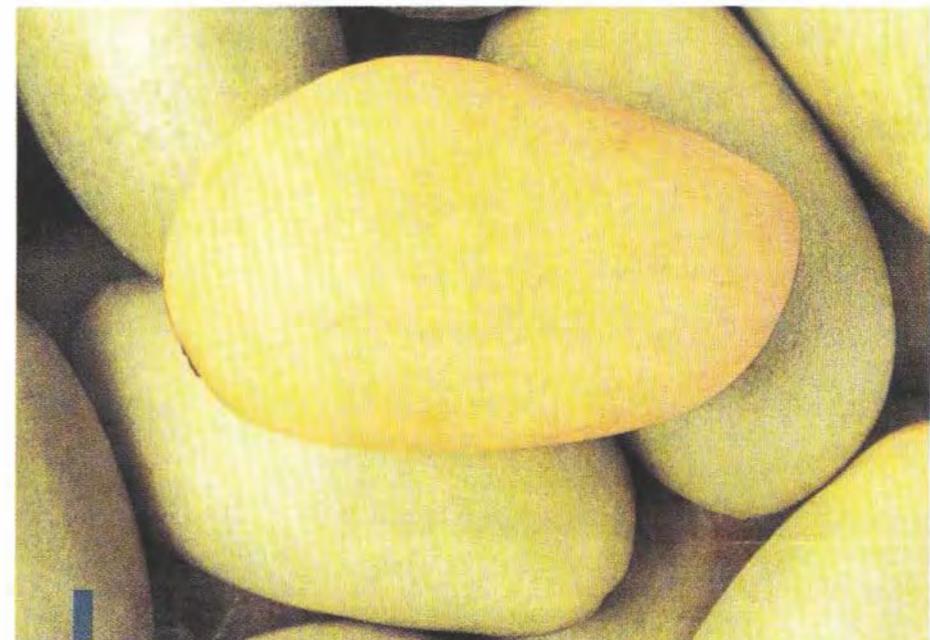


Mrs. Yoshida, one of the Sponsors of the Alibata display. Alibata is the Filipino ancient script. 1999.

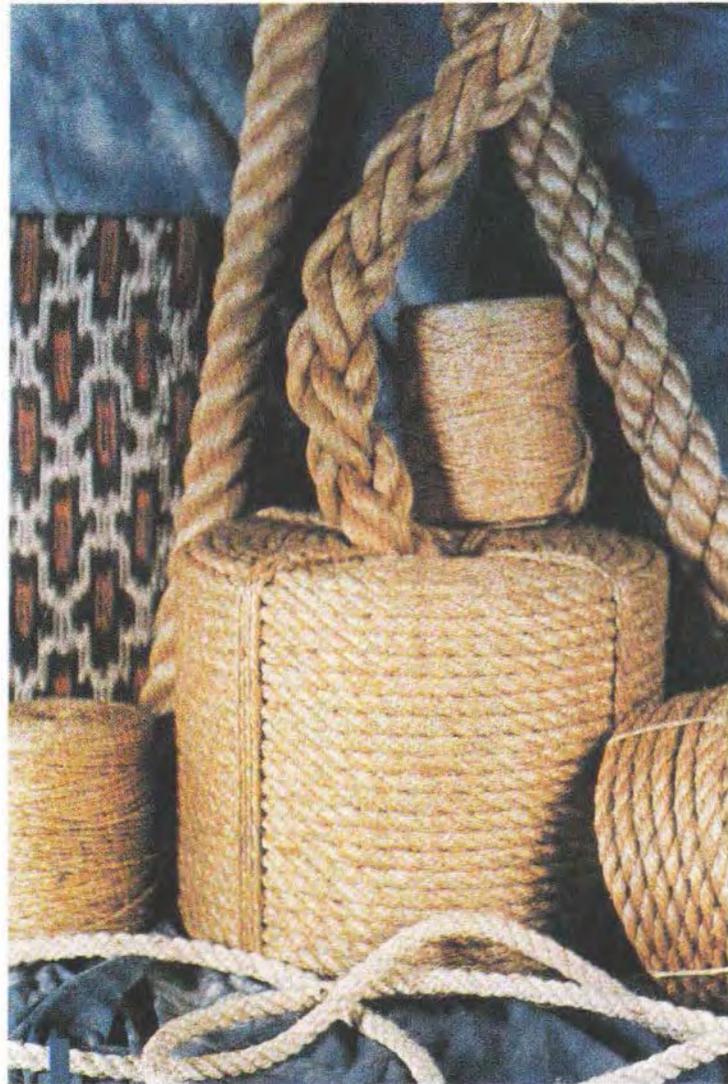
Filipino contributions to the World



Nata de Coco is a century-old Filipino product first discovered in Laguna. It is produced by a microorganism growing on top of piña extract. Coconut water was later used as a growing medium.

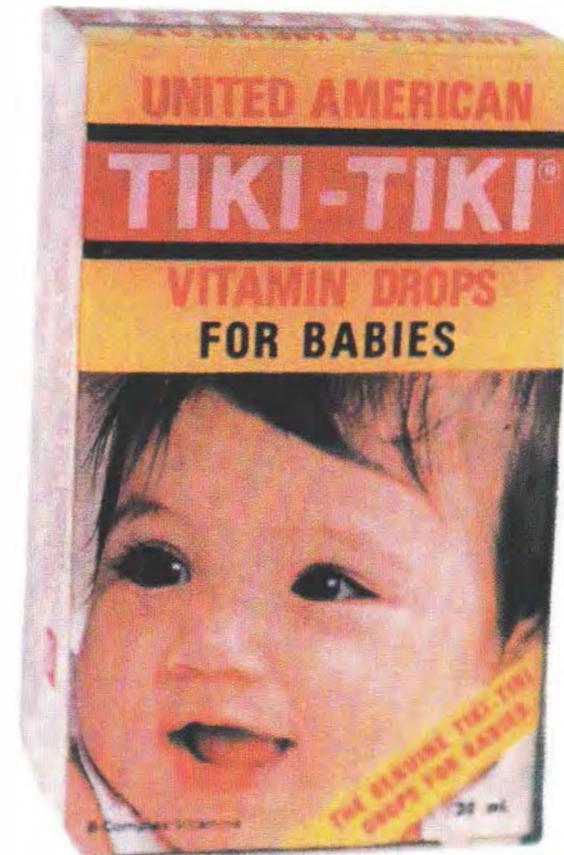


Carabao mango – The summer mangoes are now available whole year round. This was made possible by the research of Dr. Ramon Barba. Mangoes have become a major export item.



Abaca - Three hundred years before the western world discovered the vital applications of abaca, the Filipinos had already mastered the art of using it. It is the strongest natural fiber. Abaca is biodegradable and is a renewable resource. It has many uses including the manufacture of Manila paper, Manila envelope, and paper money.

Tiki-tiki – a Filipino product that has saved the lives of many children, is an outstanding contribution to the children of the world.

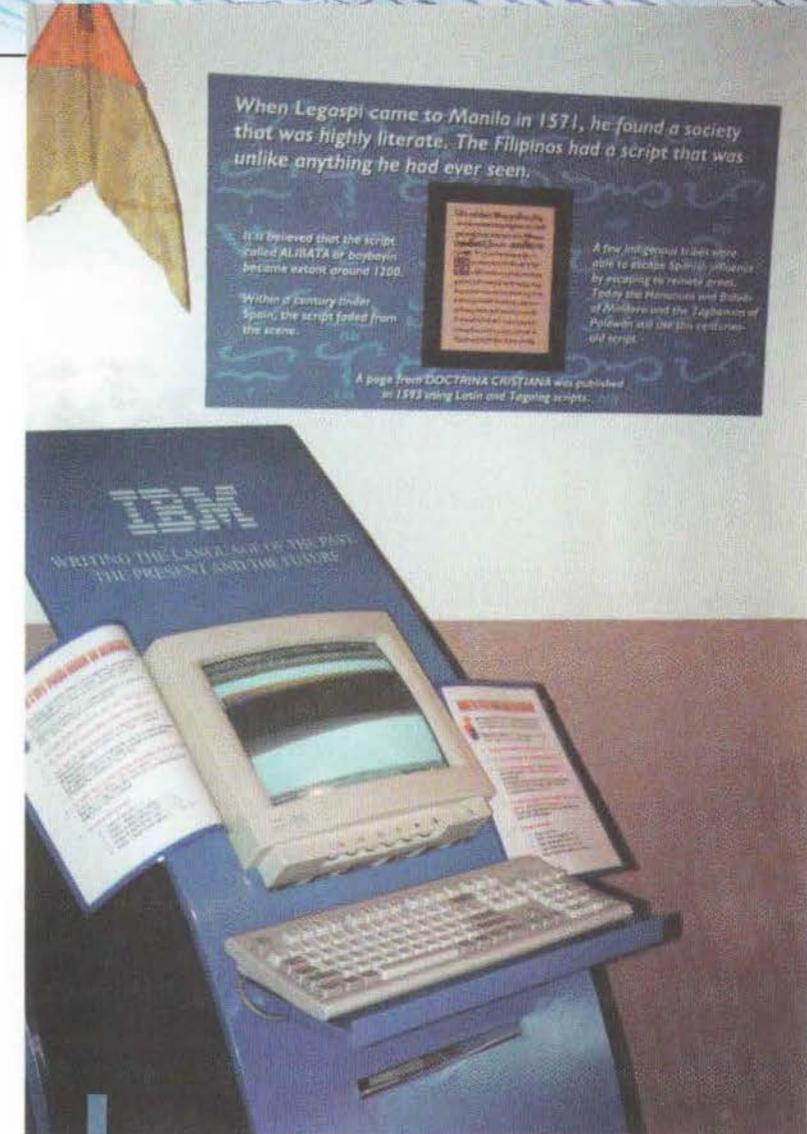


Filipino contributions to the World



Ilosone – This wonder drug is a broad-spectrum antibiotic discovered from a soil in Iloilo, Philippines

Quink – (Quisumbing's Ink) – In 1923, Dr. Francisco Quisumbing, a Filipino chemist, formulated an ink that does not dry easily and does not run out of the pen. This famous ink is still in use at present.



Alibata, the ancient Filipino script is a popular display at Salinlahi funded by IBM Philippines, Shouichi Yoshida Memorial Fund, Ayala Foundation, and Acd. Mercedes Concepcion.



Waling-waling is one of the most beautiful orchids in the world, discovered in Mindanao in 1880. Most commercial Vanda hybrids contain genes from Waling-waling (*Vanda sanderiana*).



Filipino ingenuity made yoyo a popular toy all over the world. The difference in our yoyo is the way we tie the string, making the yoyo "sleep".



Pili is an endemic plant in the Bicol region. The nuts are made into sweets while the pulp can be boiled and eaten. Manila elemi is the resin from the tree exudate.



The Academy is especially grateful to the Friends of Salinlahi for their monetary contributions that enabled the center to put up additional displays and start the museum store.

NAST MANDATE

Advisory Function

Annual Scientific Meeting

The NAST Annual Scientific Meeting is a leading forum for the presentation of the latest developments in S&T. The number of papers, posters, and attendance has greatly increased. The first annual scientific meeting was in 1979 and attendance has grown to more than 650 in the last two years.



Sen. Leticia Ramos Shahani,
keynote speaker in 1993

Distinguished personalities have graced the plenary sessions:



Keynote speaker Sec. Edgardo J. Angara, 1999

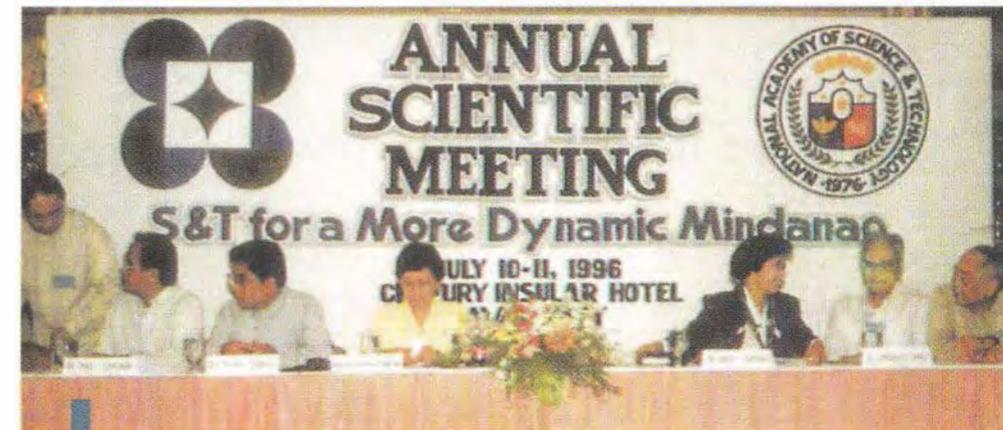
Advisory Function

Annual Scientific Meeting

In 1991, the meetings had specific themes with invited speakers for the plenary sessions. The themes vary from 'Coping with natural disasters', 'Science for better health', 'Food, population and environment', 'Ethics and politics of public service' to 'Science in the 21st Century'.



The annual scientific meeting is usually held during the science week in July. The Academy and the Academicians participate in the annual science fair. Shown above are the DOST officials visiting the Academy's display in 1993.



Meetings are held in Manila except for the meeting in Davao in 1996



A plane full of scientists for the meeting in Davao

Advisory Function

The science academy is the body that the government turns to for objective advice on science and technology. The academy, through its advisory activities, addresses national issues and concerns on S&T. The academy formulated official statements on issues such as nuclear education, information and power, biosafety, collection of biological materials,...

Science Information Fora/Science Legislative Fora

Science information and science legislative fora were started in 1989. That year, there were 28 fora held on various topics from food to climate change to biotechnology. The fora involved concerned sectors of the society, as well as Academicians, National Scientists and Outstanding Young Scientist awardees. To date, more than 60 topics have been covered.

The Academy also played an active role in the national S&T master plan.

An important activity was the consultations on the implementation of biosafety guidelines in the Philippines leading to the creation of the National Biosafety Committee.

A national public consultation was made for setting the guidelines on the collection of biological specimens in our country.



Science information forum for science reporters.

Advisory Function

Roundtable Discussions (RTD) on S&T Assessments

The Academy initiated Roundtable Discussions (RTD) on science and technology in 1979. The Outstanding Young Scientists, Inc. subsequently took over in organizing the RTD.



Secretary of Education Andrew Gonzalez gives his reactions and final statement on different science and mathematics education issues, 1998.



L-R: Acads. J. Juliano, P. Santos Ocampo, and F. Uriarte with Mr. A. Lagman and Mr. A. del Rosario



The Science Information Forum on "The Important Role of Coconut Oil Derivatives as Nutraceuticals", 1998.

Some of the topics discussed were:

Health concerns of children in the Philippines- several discussions were conducted on primary TB, pneumonia, amoebiasis, neonatal infections, reaching unserved children, promoting children survival, etc.

Rice- rice self-sufficiency, rice action plan, consultative meetings

National Botanical Garden

Code of ethics for researchers

Mega-issues- science information management, science education, venture capital, transportation, housing, flood control, water supply, water management.

Assesment on chemical sciences, physical sciences, ornamental horticulture, mathematical science.

Biosafety

Knowledge economy



Medinilla magnifica

The reports of the RTDs are used by the Planning and Evaluation Services of the Department of Science and Technology. The reports are submitted to NEDA.

Guidelines on Ethics for Researchers was drafted by Academicians, subjected to a series of roundtable discussions and published by NAST in 1995.

The NAST Secretariat accepts suggestions on issues and concerns for roundtable discussions.

Advisory Function

NAST Rice Task Force made significant recommendations in the continuing effort to help the rice farmers and consumers.

For science literacy and awareness, the Academy regularly conducts science literacy fora for science writers of the media.

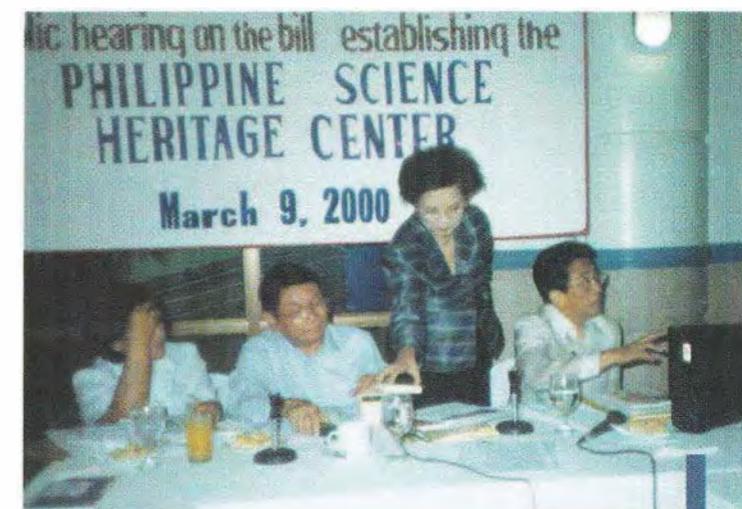
Several bills on S&T have been evaluated by NAST and Academicians have appeared before house and senate hearings. Since 1990, the Academy has reviewed 53 House and Senate Bills, including executive orders.



Science legislative forum with Senator Nikki Coseteng, 1987.



R. Magsaysay discussing with DOST Secretary F. Uriarte the Senate Bill on the establishment of the PSHC.



Congressional hearing of the House Bill establishing the PSHC. Congressman Enrique Garcia, Pres. Perla Santos Ocampo and Congressman Salacnib Bateria

Advisory Function

Speakers Bureau

The Academy offered the services of Academicians and awardees as speakers or lecturers.



National Scientist P. Campos



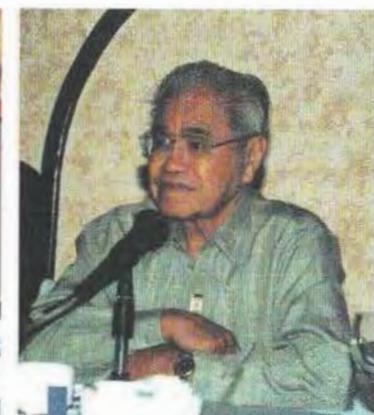
Acad. R. Villareal



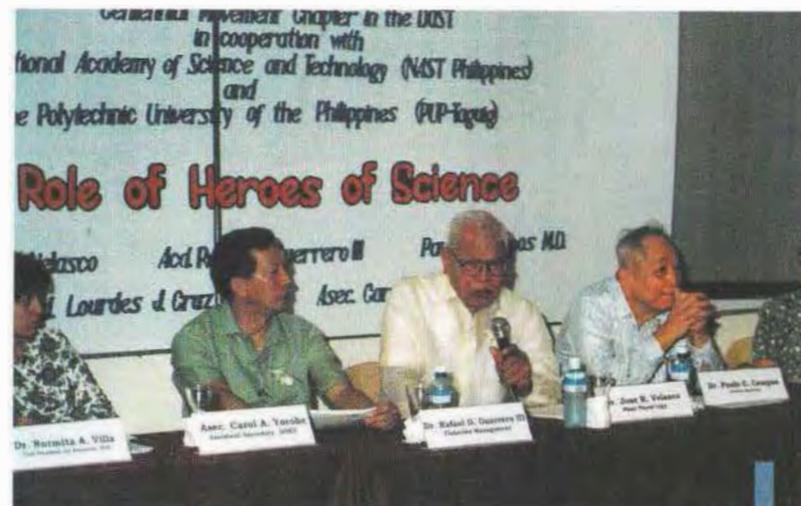
Acad. L. Cariño



Acad. M. Concepcion



Acad. C. Dayrit



The "Role of Heroes of Science" was conducted thrice in 1998 by different Academicians and Awardees.



Guest Speaker Sec. E. Angara

Advisory Function

The Academicians have been most active in advisory capacity... rightly so, for they have vast experience in their field of specialization.



Acads. Benito S. Vergara, Evelyn Mae T. Mendoza and Lourdes J. Cruz discussing plans with Dr. Filemon A. Uriarte, Jr., DOST Secretary. 1999.



National Scientist Dolores A. Ramirez, Asst. Sec. Carol M. Yorobe and Dr. Patricia L. Zara during the review of NAST 1999 Accomplishments and Plans for year 2000.

Scientific Linkages

As early as 1978, NAST started forging national and international scientific linkages with other science, technology, and engineering academies and similar organizations.

Several international meetings in the Philippines have either been hosted or jointly sponsored by the Academy. Visits of scientists and their lectures have provided state of the art information on different aspects of science.

The linkages aim primarily to promote and encourage scientific cooperation through exchange visits and joint collaborative projects.

'In the developing countries, science is not merely helpful, it is essential if they are to achieve anything like the standard of living of the more developed countries.'
Sir George Porter, 1967 Nobel Prize Winner in Chemistry.



Sir George Porter giving a lecture at the University of the Philippines, Diliman. 1985



Signing of scientific linkage with the Royal Swedish Academy of Sciences, 2001.

International Scientific Linkages

Royal Society of London–1980
Indian National Science Academy–1981
German Research Society (Deutsche Forschungsgemeinschaft)–1983
Federation of Asian Scientific Academies and Societies–1984. NAST is a founding member.
Chinese Academy of Sciences–1986
Third World Network of Scientific Organizations–1988
Third World Academy of Sciences–1988
American Association for the Advancement of Science–1990
Academy of Sciences Malaysia–1997
Malaysian Scientific Association–1997
Philippine-American Academy of Science and Engineering–1980
ASEAN Council of Academies of Science and Engineering
Australian Academy of Science–1999
Association of Academies of Sciences in Asia–2000
Royal Swedish Academy of Sciences–2001



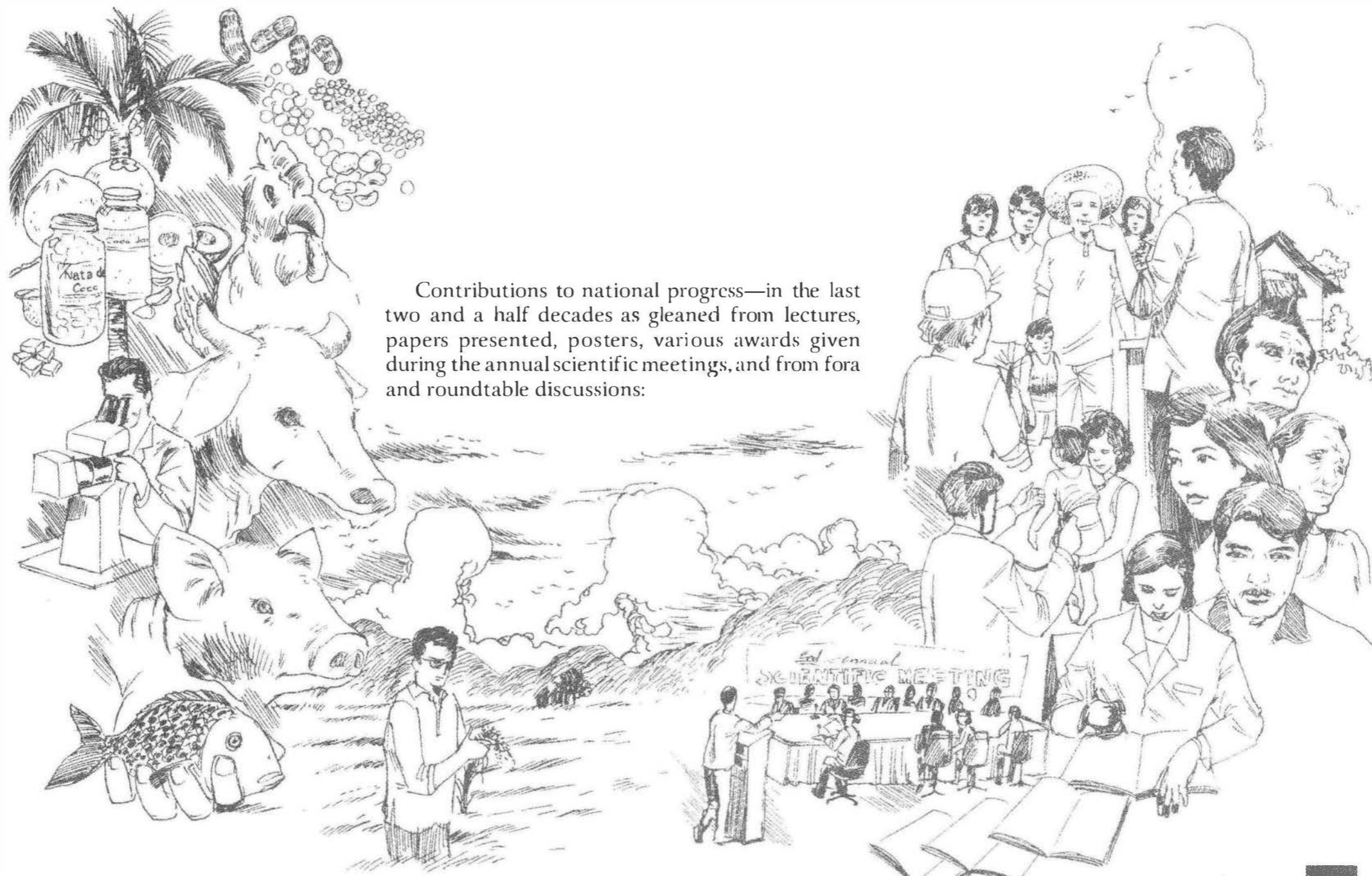
Acad. Lourdes J. Cruz, head of the Center for BioMolecular Science Foundation, Inc., and NAST President C. S. Dayrit signing a memorandum of agreement for scientific collaboration.



The Science and Technology Congress sponsored by the Academy and PAASE. 1998

*“as traditional disciplinary barriers are falling, scientists from all over the world can work together in sustainable worldwide partnership”
Perla D. Santos Ocampo*

Research Accomplishments of Filipino Scientists



Contributions to national progress—in the last two and a half decades as gleaned from lectures, papers presented, posters, various awards given during the annual scientific meetings, and from fora and roundtable discussions:

Research Accomplishments of Filipino Scientists

Agricultural Sciences

A large and dynamic group of agricultural scientists have come up with findings of national and international applications.

Tissue culture research was started leading to:

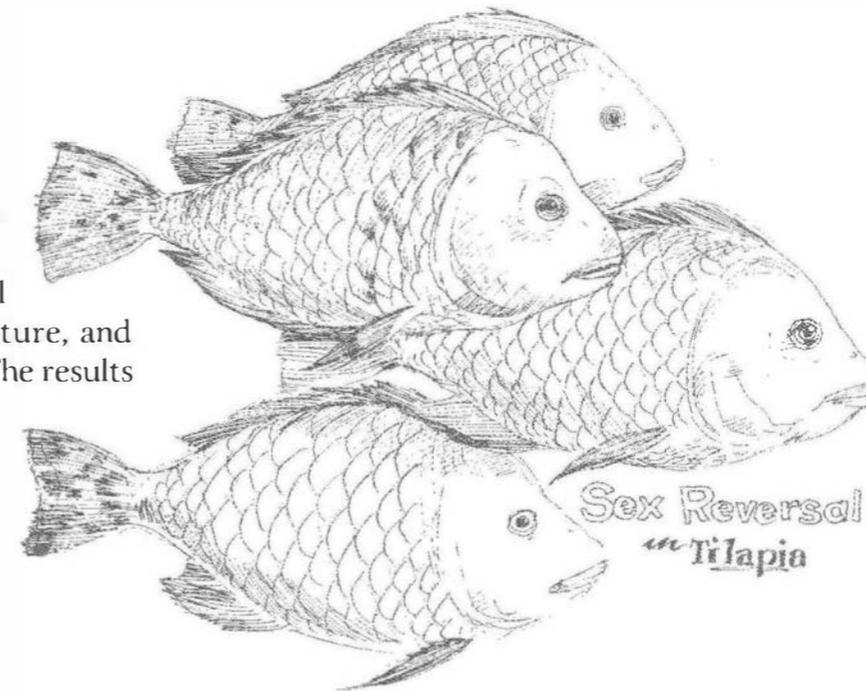
culture of makapuno embryo resulting in 100 percent pure makapuno bearing trees;
rapid propagation of bananas which is a main export of the Philippines;
method of rapid propagation of cassava which is now used worldwide.

Tissue culture of many important crops such as orchids, calamansi, etc.

The discovery of a method to induce flowering of mango has resulted in a million dollar export industry.



Having become profitable, tilapia culture greatly expanded and has become a main source of protein. This is largely the result of research on sex reversal technique and the rearing of only one sex, cage culture, and associated products and practices in tilapia culture. The results are now used in other countries. Research on hybridization has provided and will continue to provide better adapted and highly productive fish.



The Sloping Agricultural Land Technology method of cultivating the upland areas, a proven management practice developed in Mindanao, has caught the interest of many countries with problems of soil erosion resulting from cultivation of steep landscape.

Artificial culture of crabs and other marine life has also been developed.

Alternative livestock feed using indigenous materials have greatly helped the livestock industry.

Pioneering research on animal acupuncture has provided an alternative procedure for treatment of animals.



Research Accomplishments of Filipino Scientists

Agricultural Sciences

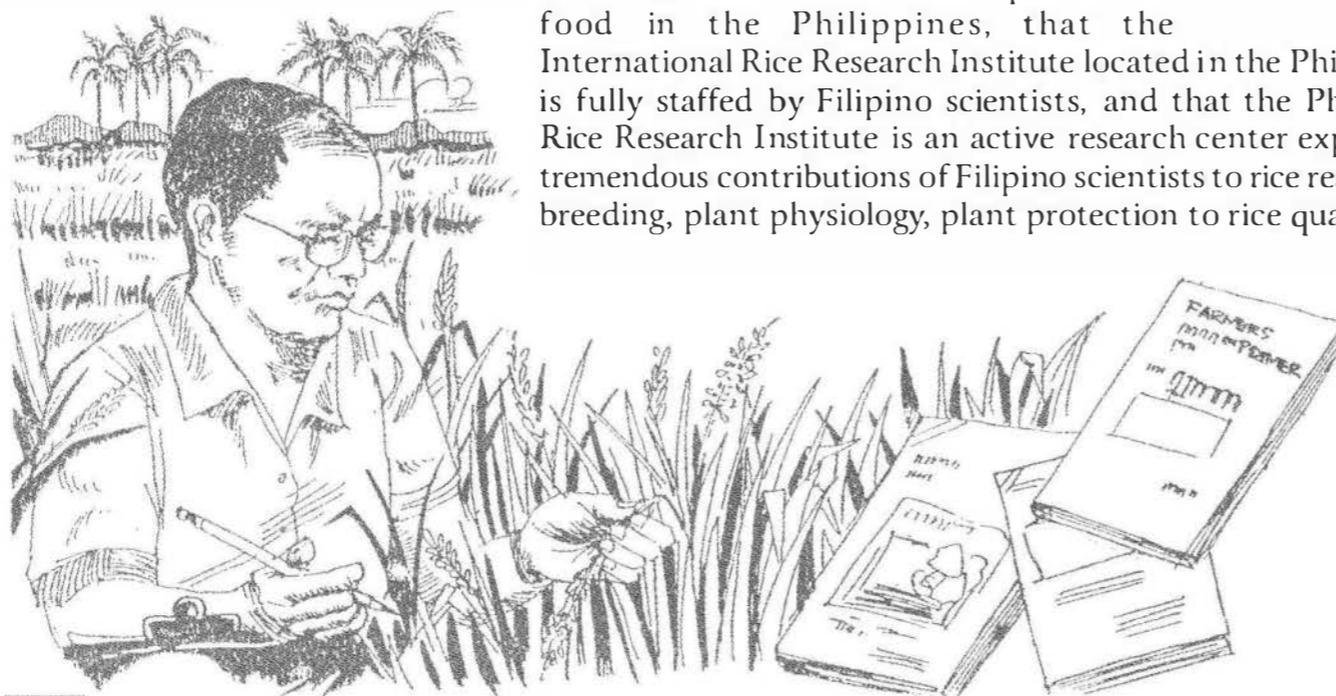
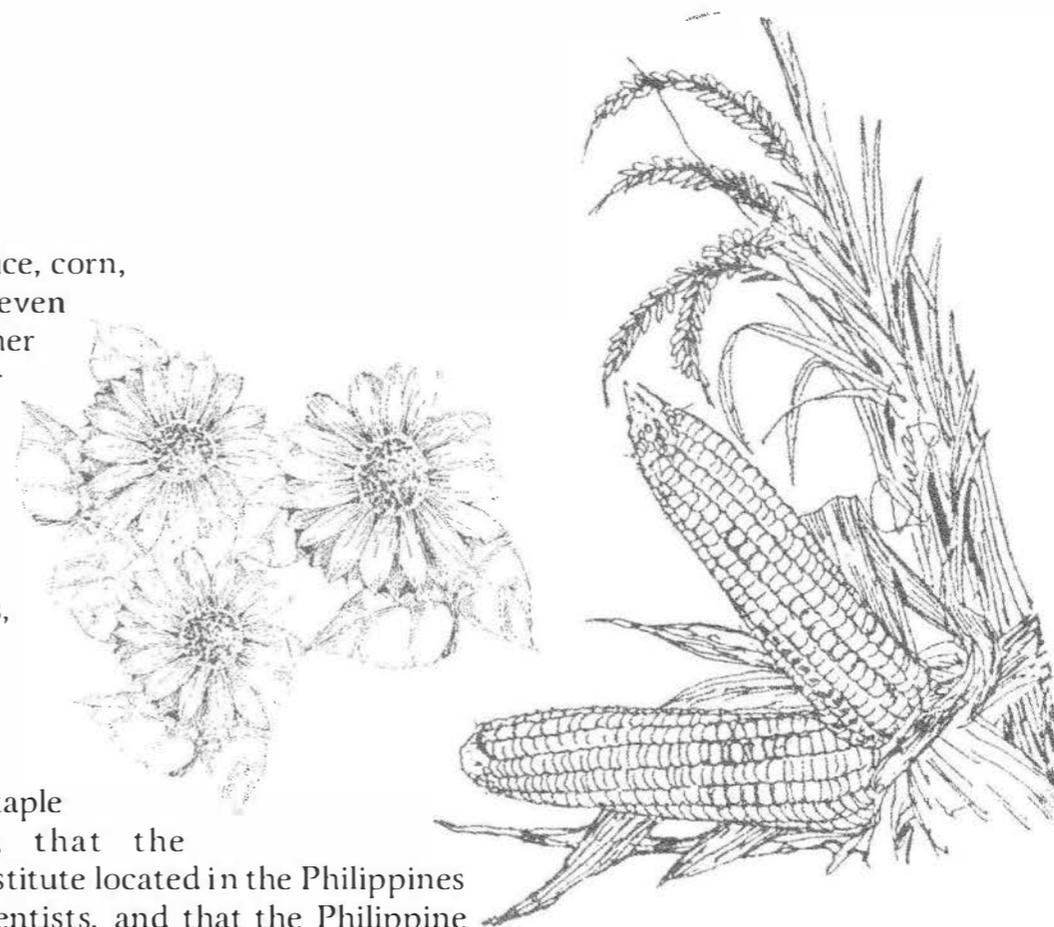
Varietal improvement of primary crops such as rice, corn, coconut, sugarcane, vegetables, fruit crops, and even ornamental crops have seen better produce—higher yields, greater pest and disease resistance, and better quality. Most improvements have been made possible by the basic research conducted, including the use of biotechnology as a tool to identify and isolate useful genes.

Genetic resources conservation of food crops, established earlier, has been aggressively pursued.

The fact that rice is the staple food in the Philippines, that the International Rice Research Institute located in the Philippines is fully staffed by Filipino scientists, and that the Philippine Rice Research Institute is an active research center explain the tremendous contributions of Filipino scientists to rice research ...from plant breeding, plant physiology, plant protection to rice quality.

Many rice scientists of world renown are Filipinos.

The agricultural scientists have contributed greatly to the progress of the country.

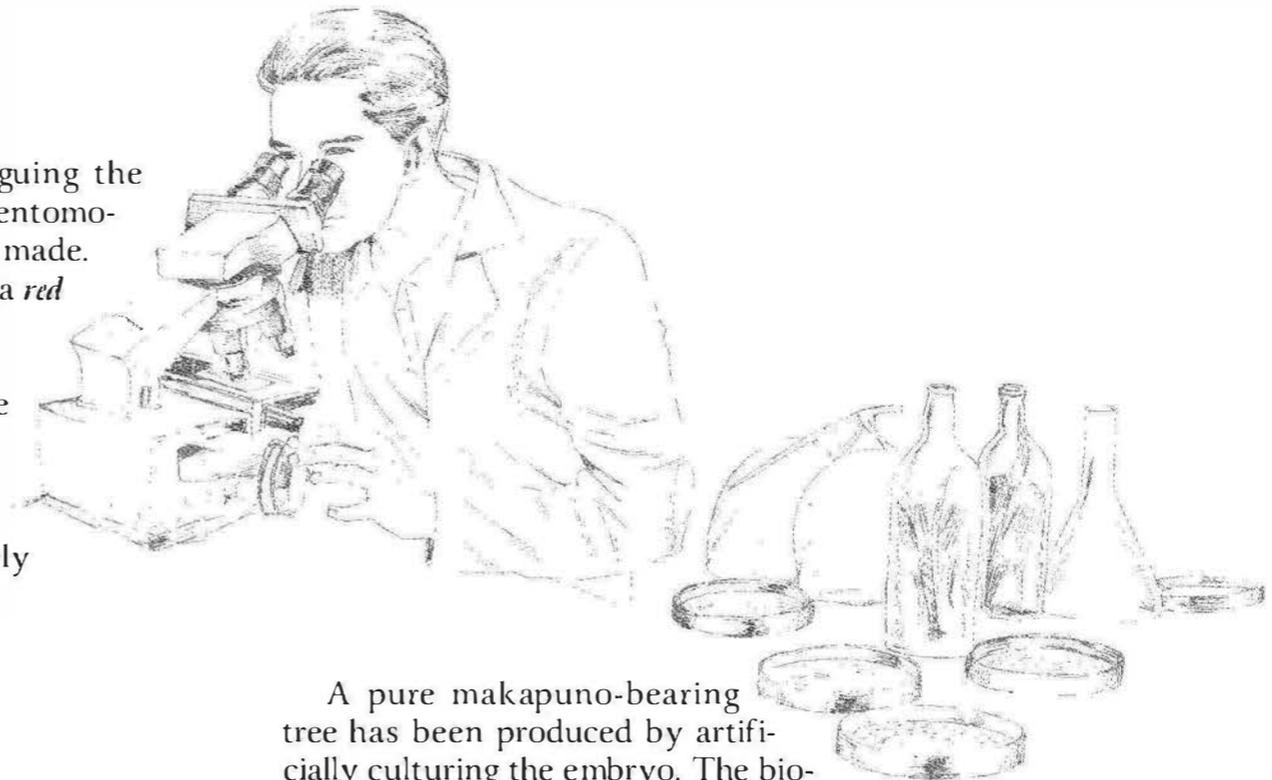


Research Accomplishments of Filipino Scientists

Biological Sciences

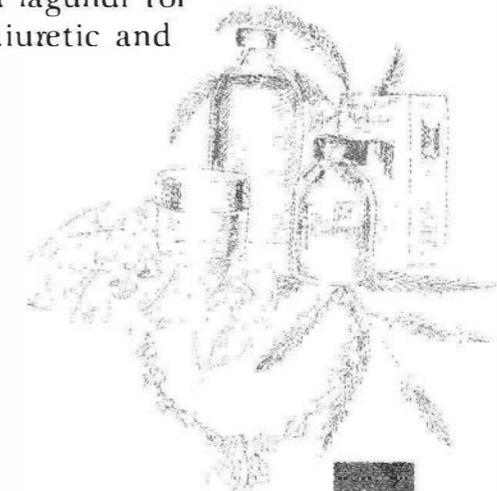
Great efforts have been made in cataloguing the biodiversity of Philippine biota especially in entomology where outstanding monographs have been made. On plants, studies have resulted in providing a *red book* on endangered plants.

Studies on conotoxin initiated in the Philippines have attracted worldwide interests for their potential use in medicine and as tools in neurological research. Conotoxins such as 'contulakin' and 'conantukin' are definitely Filipino isolates of conotoxin.



A pure makapuno-bearing tree has been produced by artificially culturing the embryo. The biochemistry as well as genetics of makapuno was also studied.

Research on medicinal plants has produced the now standard lagundi for asthma and sambong as diuretic and anti-urolithiasis.



Research Accomplishments of Filipino Scientists

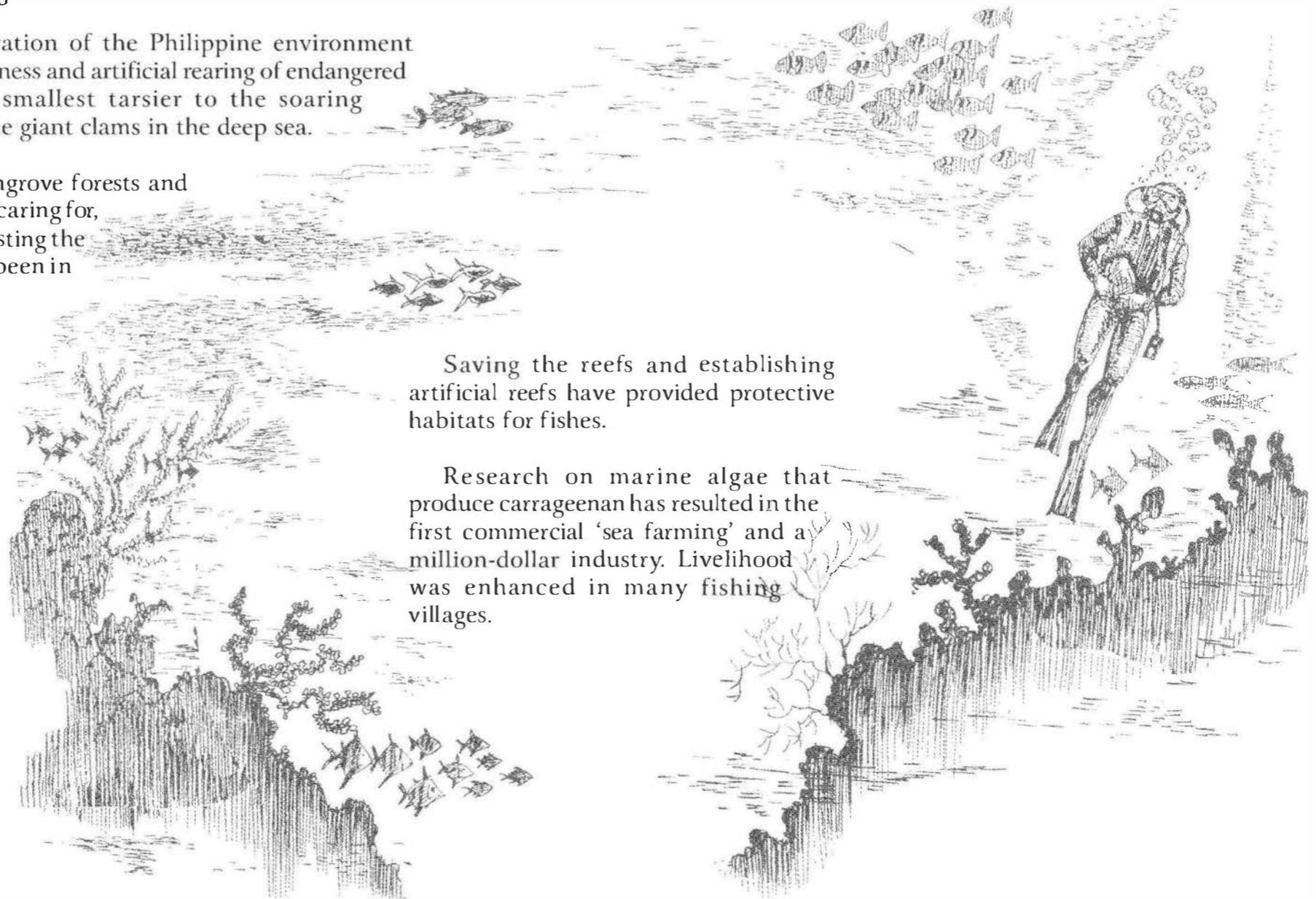
Biological Sciences

Work on conservation of the Philippine environment involved public awareness and artificial rearing of endangered animals—from the smallest tarsier to the soaring Philippine eagle to the giant clams in the deep sea.

Replanting of mangrove forests and community efforts in caring for, protecting, and harvesting the litoral products have been in place in many areas.

Saving the reefs and establishing artificial reefs have provided protective habitats for fishes.

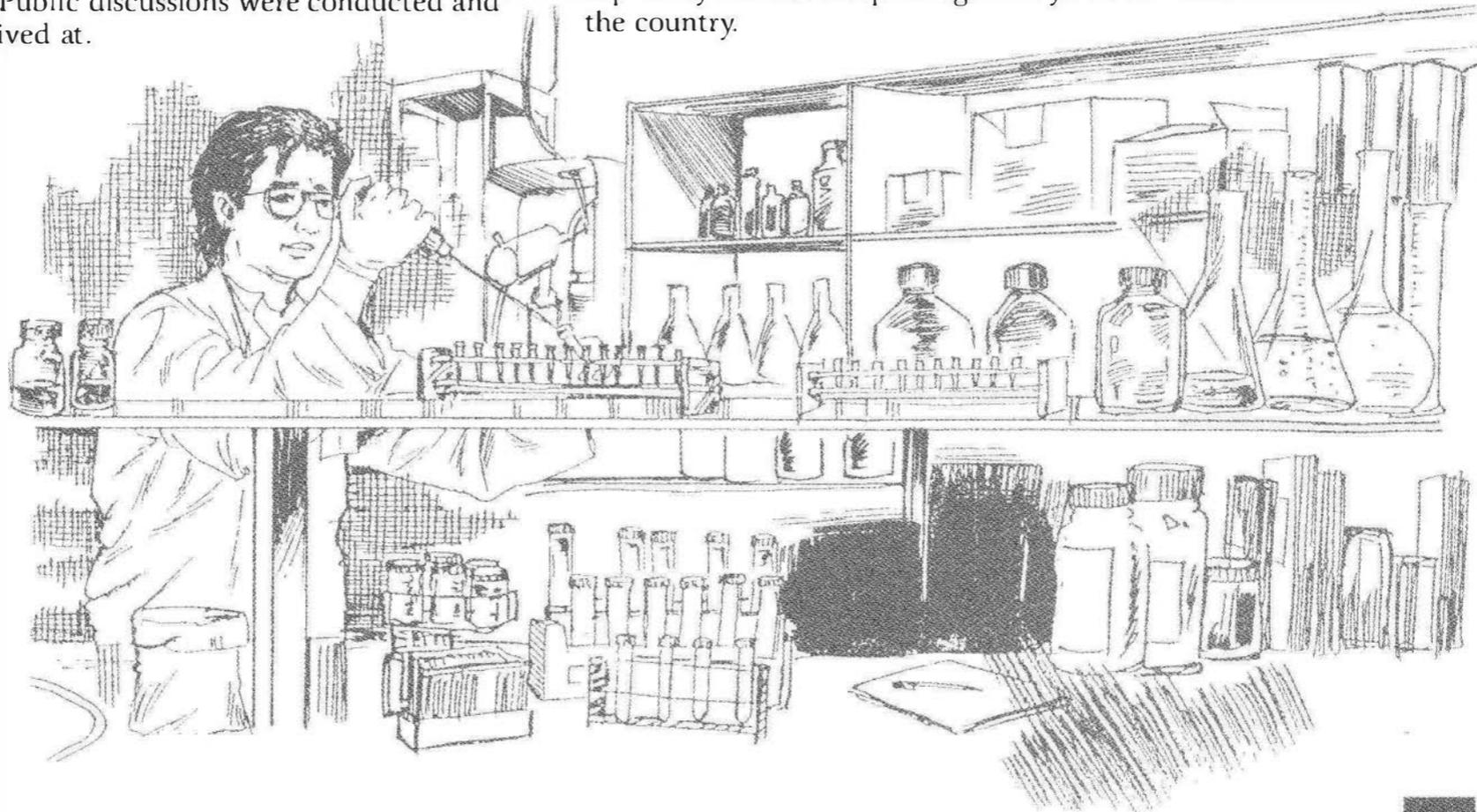
Research on marine algae that produce carrageenan has resulted in the first commercial 'sea farming' and a million-dollar industry. Livelihood was enhanced in many fishing villages.



Biotechnology is an active option and tool in research in the Philippines as seen in numerous scientific papers generated in the last 10 years. Anther and tissue culture of plants for rapid propagation has been the immediate results of such research.

In biotechnology, the Academy was involved in the formulation of guidelines in the use of biotechnology as a research tool, protocols for field testing of genetically modified organisms, and in public awareness on the benefits and risks of biotechnology. Public discussions were conducted and consensus was arrived at.

Although Filipino scientists conduct research using biotechnology as a tool, the pool of experts and local facilities available are still wanting. The trend of international collaboration with other laboratories that have specific capability will be the paradigm for years to come in the country.



Research Accomplishments of Filipino Scientists

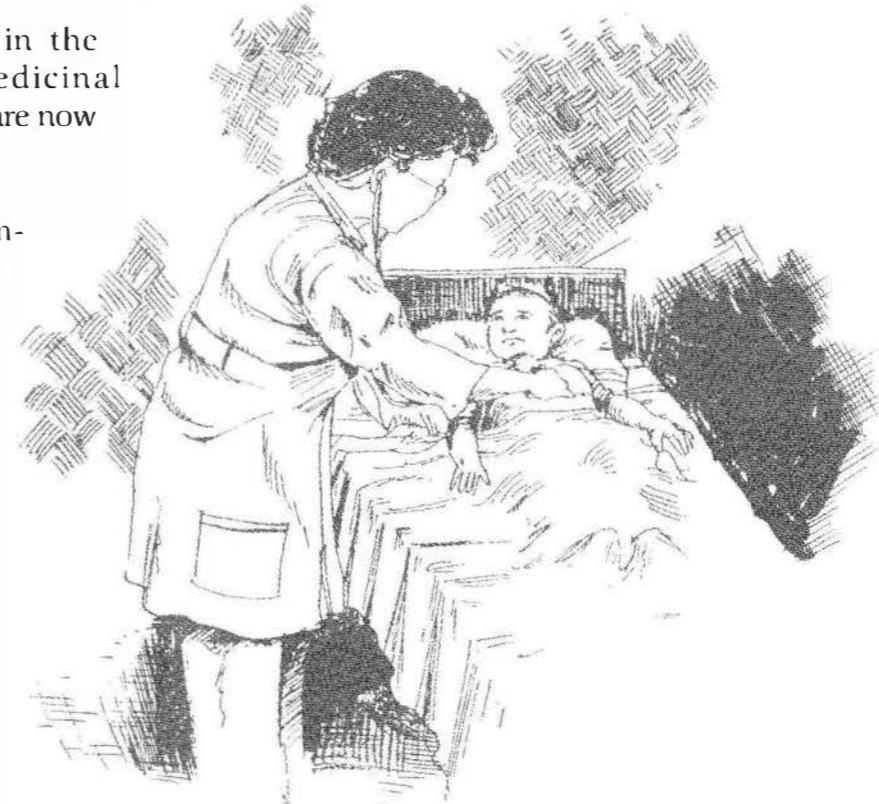
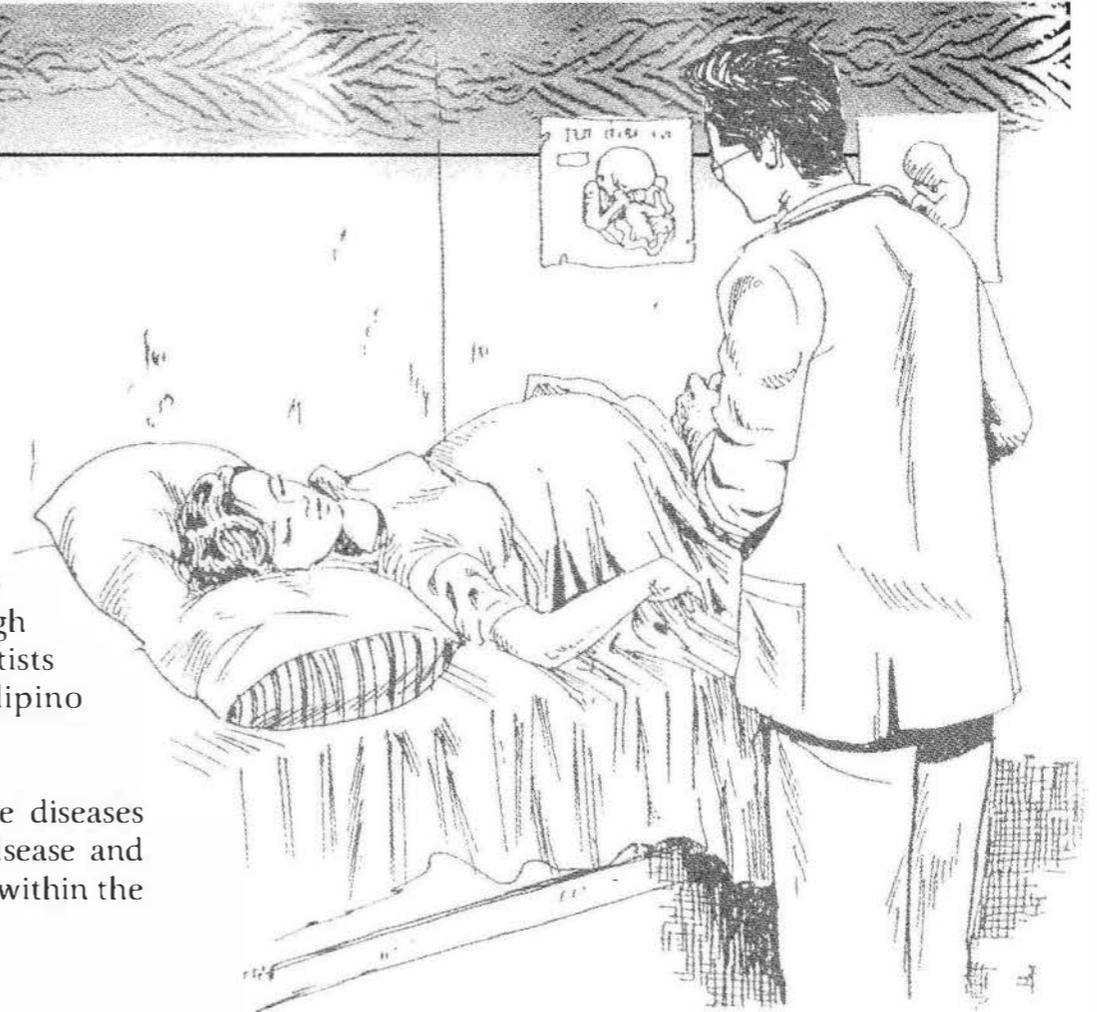
Health Sciences

Infectious and tropical diseases such as diarrheal diseases, respiratory infections, viral hepatitis, dengue, tuberculosis, leprosy, malaria, schistosomiasis, and nutritional disorders have been the major research areas by Filipino medical scientists. Their research in these diseases is of high scientific quality. Extensive research collaborations with scientists in other countries attest to the high esteem accorded Filipino medical investigators.

Accurate assessment of the epidemiology of degenerative diseases notably diabetes mellitus, hypertension, rheumatic heart disease and other cardiovascular diseases, and cancer have been achieved within the last ten years.

Filipino pharmacologists are in the forefront of exploring the medicinal potentials of plants, some of which are now available for general use.

Pioneering programs in community health and innovative methods of developing and producing health practitioners for rural communities have been introduced in the last quarter century. These have since been models for third world countries.

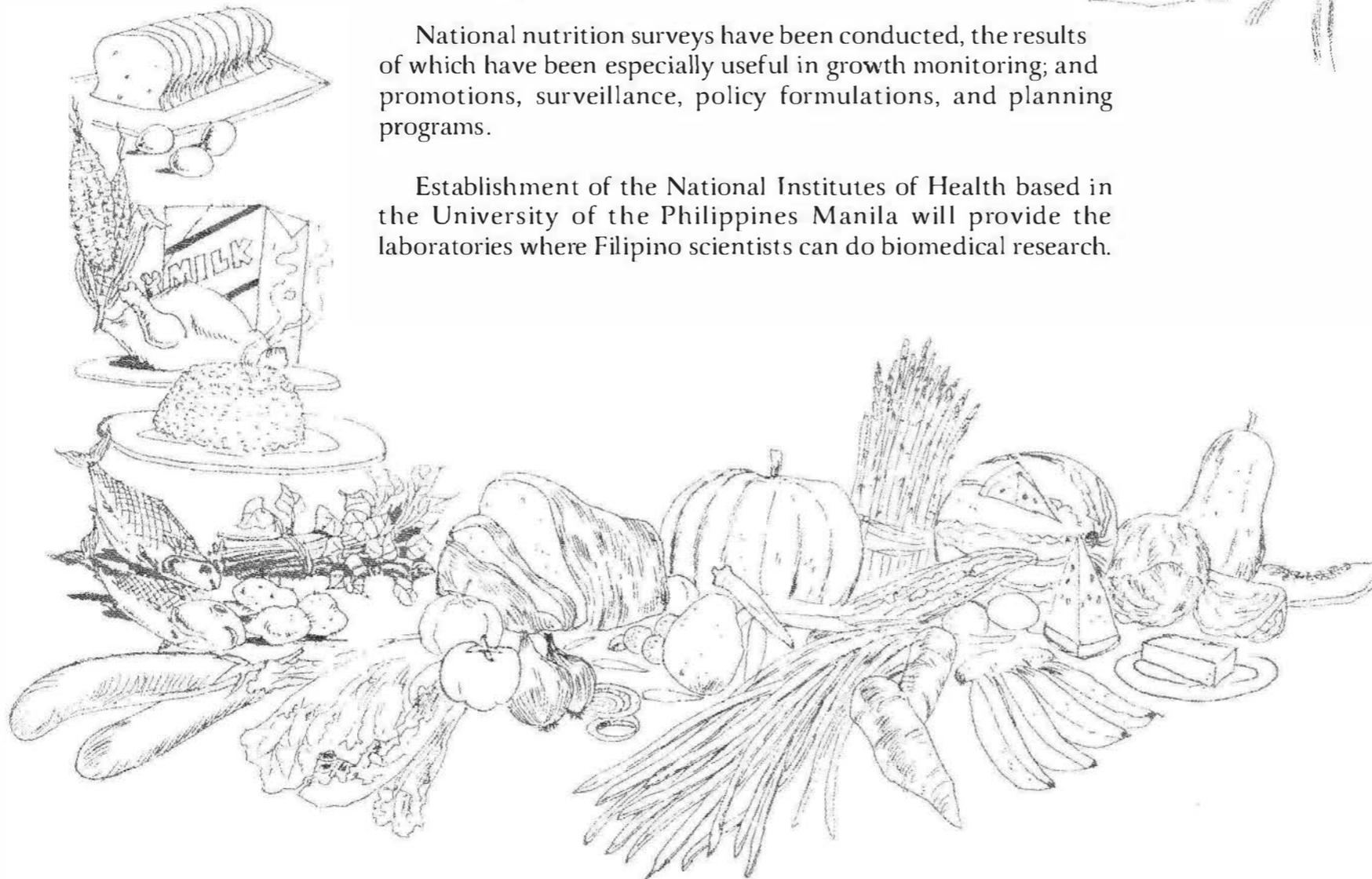




Significant accomplishments in health care have been achieved. Near eradication of poliomyelitis and small pox; reduction of infant mortality rate; prolongation of life span through improved overall health services delivery; establishment of tertiary hospitals which provide state-of-the-art diagnostic and therapeutic services.

National nutrition surveys have been conducted, the results of which have been especially useful in growth monitoring; and promotions, surveillance, policy formulations, and planning programs.

Establishment of the National Institutes of Health based in the University of the Philippines Manila will provide the laboratories where Filipino scientists can do biomedical research.



Research Accomplishments of Filipino Scientists

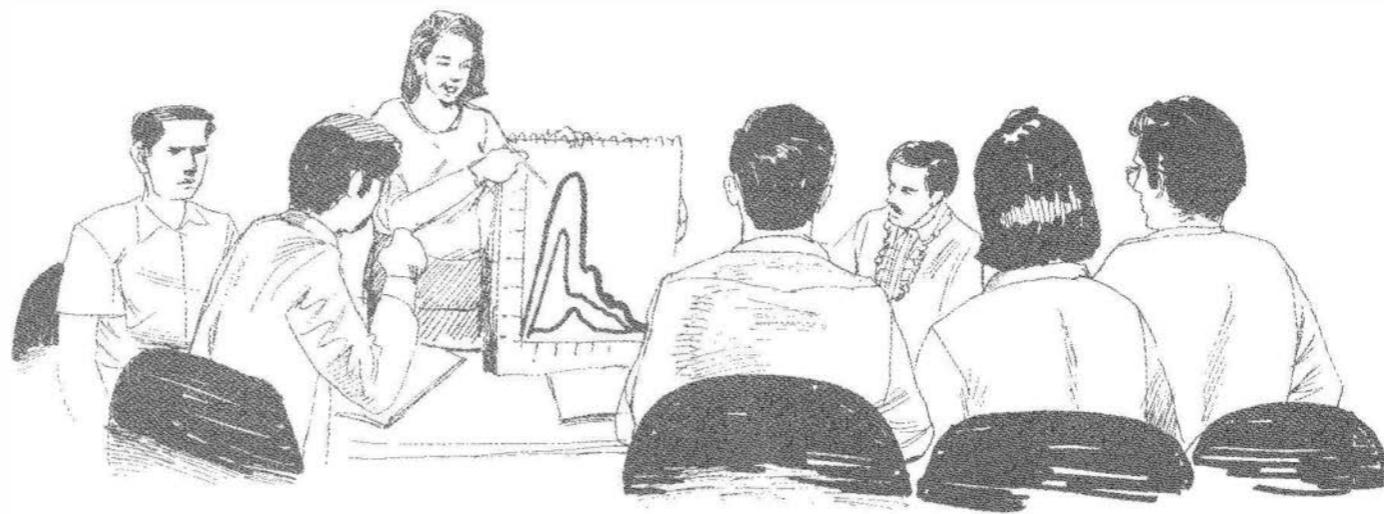
Social Sciences

- Economics
- Public Administration
- Philosophy
- Communication
- Sociology
- Political Sciences
- Social work
- Statistics
- Anthropology
- Geography
- History
- Linguistics
- Demography



Theoretical/Conceptual/Methodological perspectives
Development of indigenous perspectives (e.g. Sikolohiyang Pilipino) and culture and gender sensitive methodologies
Development, refinement and adoption of participatory research methodologies for various development-oriented and multidisciplinary programs

Institutional Development
Social survey institutions:
Pulse Asia, Inc.
Social Weather Stations, Inc.
Philippine Social Science Council
Philippine Institute of Development Studies
Development Academy of the Philippines





University-based Social Science Research Institutions:

Center for Policy Studies, University of the Philippines at Los Baños
 Population Institute, University of the Philippines at Diliman (UPD)
 Center for Integrative and Development Studies, University of the Philippines System
 Center for Local and Regional Governance, UP
 Center for Citizenship, Leadership and Democracy, UP
 Institute of Philippine Culture, Ateneo de Manila University (ADMU)
 Institute of Church and Social Issues, ADMU
 Center for Policy Studies, ADMU
 Social Development Research Center, De La Salle University
 Research Institute for Philippine Culture, Research Institute for Mindanao Culture

Selected policy contributions and networks:

Health Education and Human Development
 Active involvement in the establishment of multisectoral and multidisciplinary research and action networks (e.g. Philippine Health Social Science Association, Health Advocacy Information Networks)
 Design of the Philippine Health Insurance System
 Development and monitoring of indicators of human development
 Formation of networks such as the Human Development Network, a network of academics, private sector, as venue for policy discussions and advocacy for sustainable development and Social Watch as cross-country network that monitors government's commitment to international conventions
 Policy research for the decentralization thrust in education
 Formation of the Philippine Migration Research Network to enlighten policy research on international contact migration

Research Accomplishments of Filipino Scientists

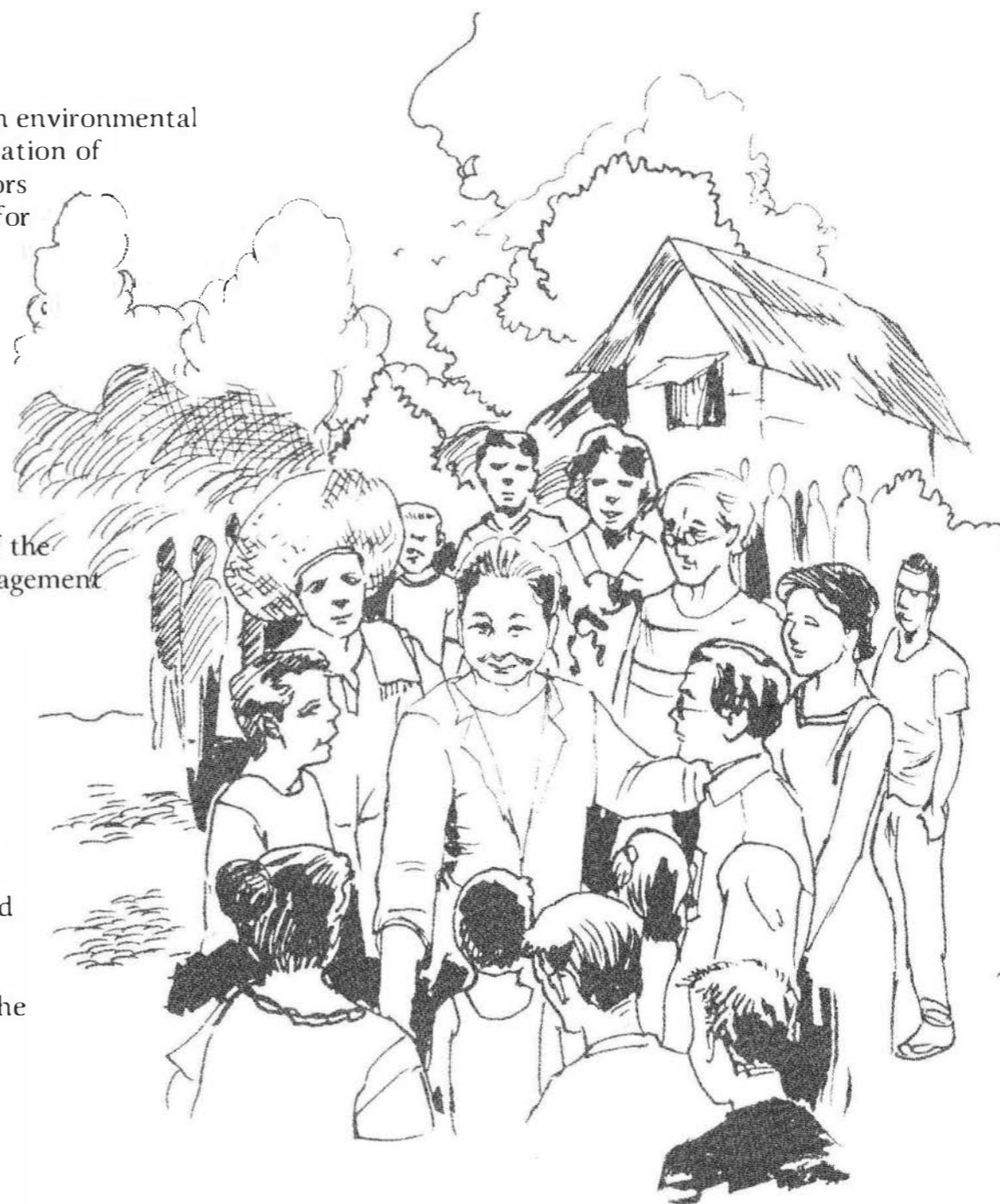
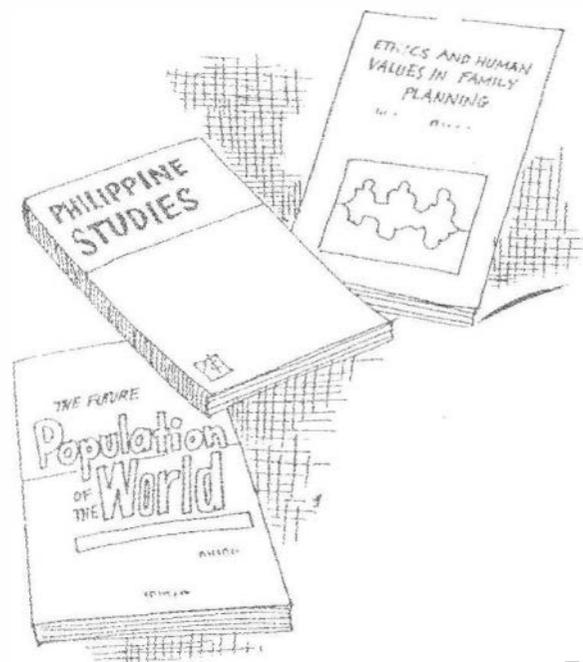
Social Sciences

Population, Environment and Resources

Economic valuation of changes in environmental and natural resources and formulation of sustainable development indicators
Development of analytical tools for assessing natural resource adequacy and sustainable development (e.g. natural resource and environmental accounting)
Formulation of market-based instruments for Complementing Command and Control Regulatory Mechanisms
Contribution to the formation of the Community-based Forestry Management policy

Economy, Governance and Politics

Process documentation and institutionalization of participatory local planning and development
Development and plot testing of good governance indicators
Development of opinion polls and democratizing methodologies
Formulation and critique of government economic policy in the post EDSA I period



Research Accomplishments of Filipino Scientists

Mathematical, Physical & Engineering Sciences

Chemistry

The contribution of chemistry in the last 25 years is in the increased body of knowledge on:

Factors affecting the nutritive value and acceptability of cowpea, mung bean, and underutilized Philippine legumes.

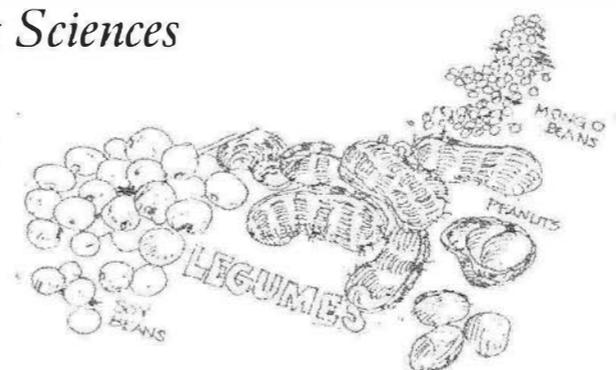
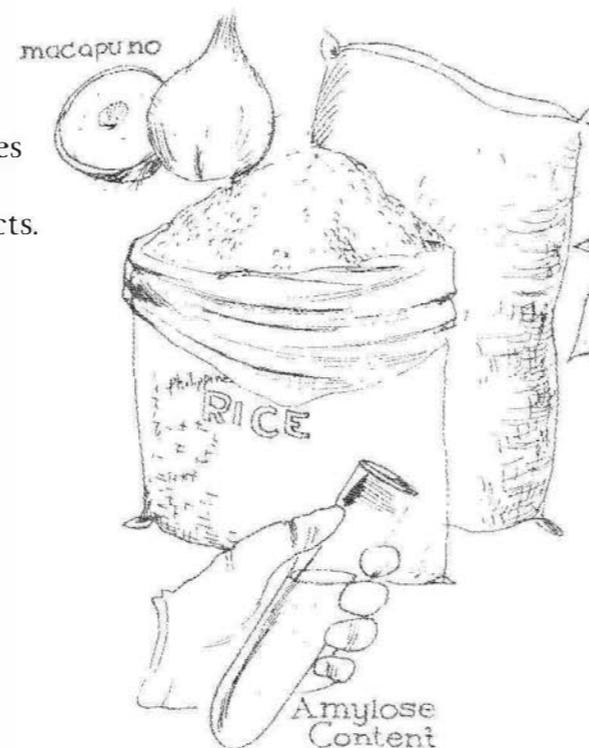
Biochemistry of toxic peptides from the venom of the marine snail, *Conus geographus*.

Chemistry of natural products and essential oils from Philippine plants.

Biochemical basis of the makapuno phenotype in coconut.

Mutagens, antimutagens, and bioorganic mechanisms.

Chemistry, eating quality, and nutritive value of varieties of tropical rice and rice products.



Research Accomplishments of Filipino Scientists

Mathematical, Physical & Engineering Sciences

Physics

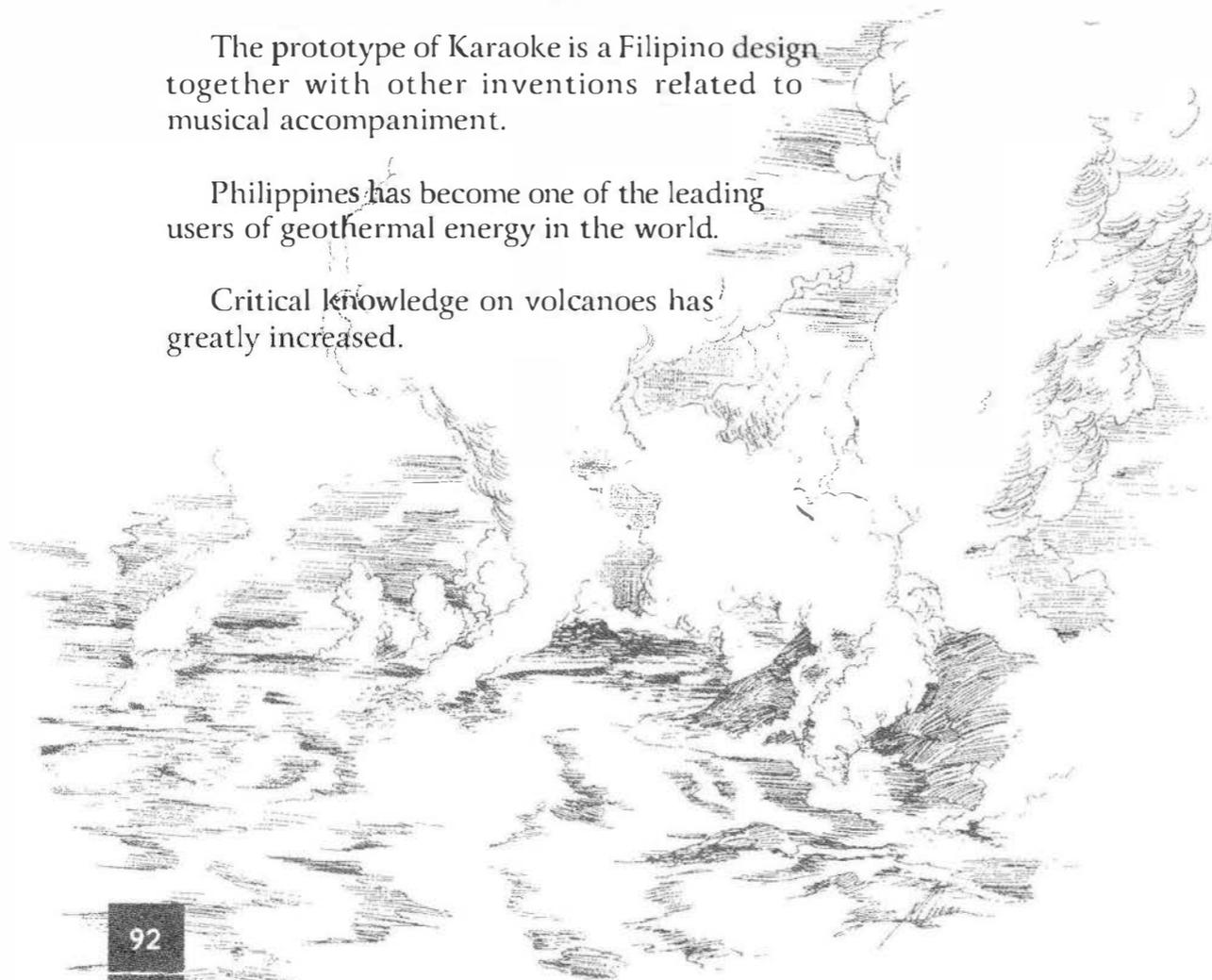
In Information Technology, Filipino scientists have been responsible for the single-chip graphical interface accelerator (S3), electronic telephone, one-chip digital camera, and the original microchip.

Theory of automatic control and mapping of polynyas (sea ice) in the North and South Poles are contributions of Filipino scientists working abroad.

The prototype of Karaoke is a Filipino design together with other inventions related to musical accompaniment.

Philippines has become one of the leading users of geothermal energy in the world.

Critical knowledge on volcanoes has greatly increased.



Mathematics

Research in Mathematics only began to develop in the Philippines in the last two decades. Among the contributions are:

Theoretical research in Algebra, Graph Theory and Combinatorics. These fields have been used to solve optimization problems in industry. Many of the mathematics needs of industry in the Philippines have to do with optimization and control and these fields, together with Operations Research, have played an important role in improving efficiency in several Philippine industries. They are also contributing to applications in the new world of Information and Communications, specifically in coding theory and cryptography.

Analysis and Ordinary and Partial Differential Equations. Analysis and Differential Equations are central in physics and engineering and, therefore, very important for the development of engineering industries in the country.

High Performance Computing Systems have been developed using clusters of PCs. These systems provide supercomputer capabilities at much lower costs and are being used now in some Philippine Universities to do mathematical modeling in biology, finance, and other areas.



What do Academicians do beyond NAST?

As a body which recognizes the lifetime and near-lifetime accomplishments of Filipino scientists, NAST has, in its membership, individuals who continue to contribute to the intellectual vitality of the science community and the human purpose of science and technology.



National Scientist D. Ramirez discussing biotechnology with Pres. P. Santos Ocampo, Acads. R. Villareal, R. Lantican, E. Javier and L. Cariño

Significant S&T positions held–

Academicians exercise their influence in the national as well as international science community through their participation and leadership positions in S&T policy-making bodies which are almost always involved with setting research directions and priorities, identifying and defining research problems, evaluating R&D projects, and assessing their impact.

Publications–

in 1999 alone, a total of 72 papers were published by the body on diverse subjects. Included were booklets on the Philippine contribution to the world of science and technology, part of the project of the Philippine Science Heritage Center.

Researches-

many of the Academicians are conducting research in their institutions, from basic to relevant problems.

S&T policy program implementation activities including conferences, workshops, etc.-

Academicians are heavily involved in these activities, as organizers, active participants, invited presentors, discussion leaders, etc. in national and international fora, research reviews and planning workshops, professional meetings.

Individual honors and recognition received-

Academicians continue to be honored and recognized nationally and internationally for contributions made in the past and at present for they have devoted their life's work to the service of science and society.



Acad. Edgardo Gomez showing the results of the experiments on giant clams to Pres. F. Ramos. Acad. Gomez was named Pew Marine Conservation Fellow with a \$150,000 award.



Pres. P. Santos Ocampo attending the Tropical Pediatric and Nutrition with Dr. Michael Krawinkle. 2000



Brown rice- National Scientist D. Ramirez, and Acads. E. Javier and B. Vergara are active in the Asia Rice Foundation and its projects such as brown rice and rice ecology.

Academicians in action



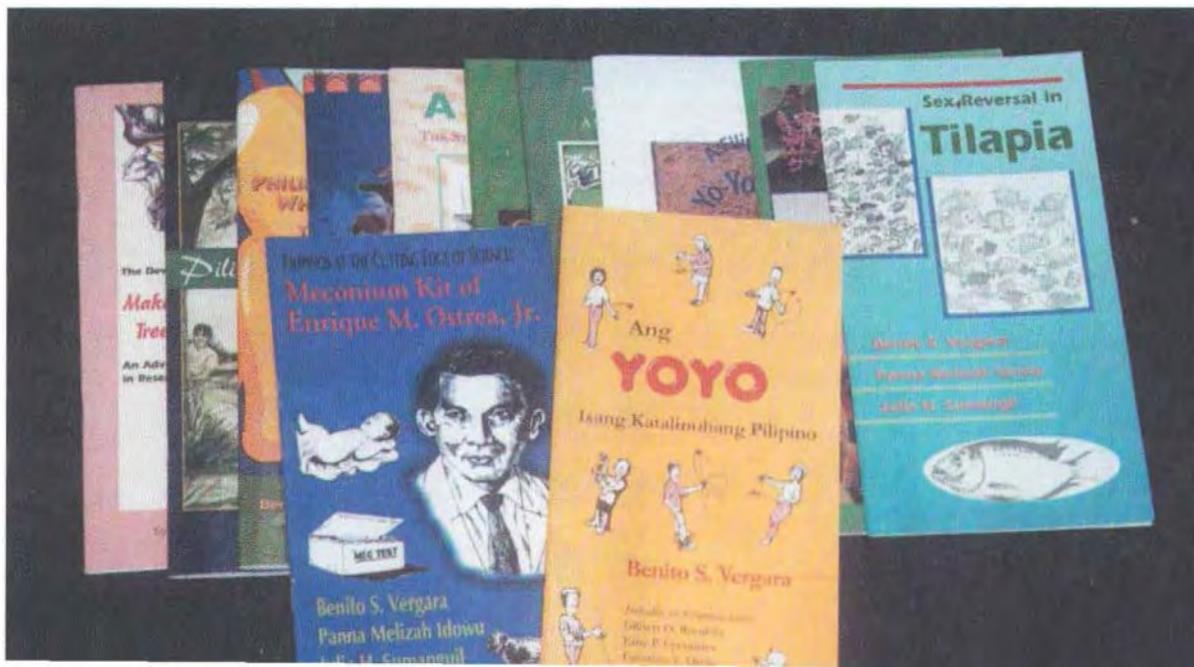
Acad. Ruben L. Villareal at the Academi Sains Malaysia 2000 with the Minister of Agriculture and a member of the Academy.



Acad. Lourdes Cruz working on conotoxin.

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Photo taken during the Executive Council meeting, April 2001



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*“...science for humanity
scientists with souls...”
Perla D. Santos Ocampo*



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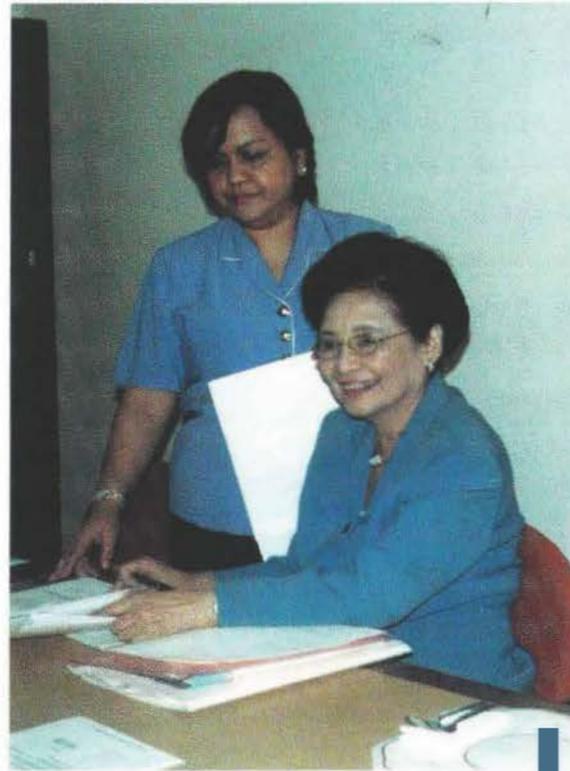
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*The President of the Academy,
Perla D. Santos Ocampo and
NAST Executive Director
Luningning Samarita.*

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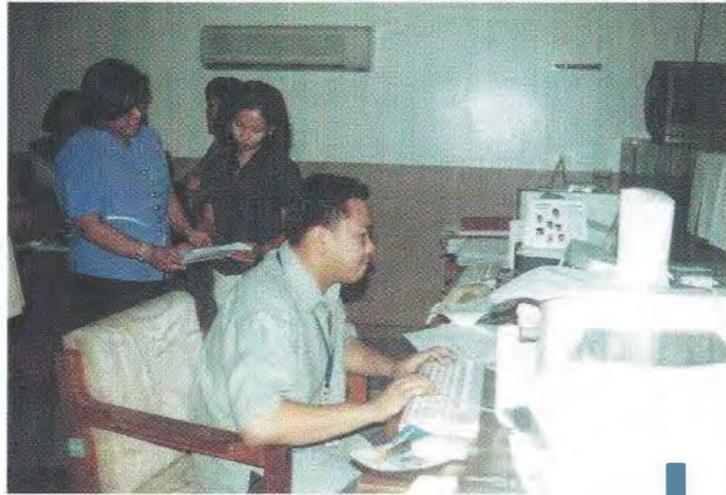


*Staff of the Administrative Services Division handling finances
L-R: Zenaida Mapua, Chona Santos, and Rose Espino*



*NAST Auditors Peregrino Cruz and Tina Estremos
discussing with the Administrative staff.*

Technical Services Division (TSD)



Carlo Castillo preparing the Management Information System.



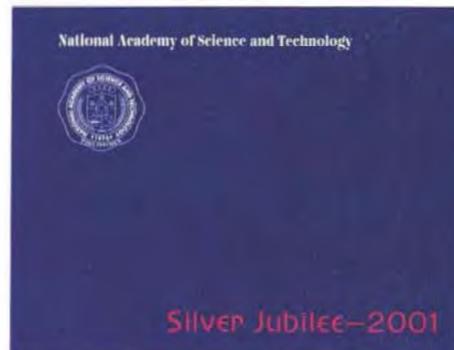
Preparing the documents for the meeting. L-R: Ferdinand Gutlay, Charyl Castilleja, Carlo Castillo, and Rowena Briones.



Richard Apuyan designing the exhibit for the National Science and Technology Week.



Eliseo Raganit, photocopying the documents of Exec. Dir. Luningning Samarita.



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