ISSN № 0115-4095

ACADEMY NEWS

VOL. 4 NO. 3

NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY
National Science and Technology Authority

---

* deceased

ACADEMY NEWS
Vol. 4 No. 3 September, 1982

Bringing S&T to the Service of the Filipino People

* * *

NAST Head Sets on Foot In Reaffirming Dedication to Science Cause

The opening remarks during the Investiture of New Academicians, namely Benjamin Cabrera, M.D., parasitology and Emil Q. Javier, Ph.D., plant breeding and genetics, was delivered by the Academy President, Dr. Paulo C. Campos.

In his remarks, he compared the NAST to similar organizations in the developed countries and referred to the Academy as being relatively young. Yet, in the words of the Academy head, "it is a most appropriate recognition for men and women in science who have endeavored to cultivate in our society, the spirit of scholarship and research."

Stressing the significance of S & T, he said: "it has become a major factor in human progress . . . we are aware of the significant disparity in the socio-economic conditions between developed and underdeveloped societies. And this gap is progressively widening largely because of the superior scientific and technological capabilities of developed nations. No less than our government is aware of this; and is increasingly pinning its hopes on our scientists and technologists to close the gap."

He called forth on the Academicians "to join hands with the rest of our fellow scientists and reaffirm dedication, to the cause of science; and strengthen our 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."

This was the gist of the address of the Director General of the National Science and Technology Authority, Dr. Emil Q. Javier, during the Investiture of New Academicians. He was also one of the two newly-elected Academicians who took their oath at that colorful affair at the PICC last July 15th.

At the investiture, Dr. Javier spoke for an hour, taking off with these words:

"When I was appointed Director General of the NSTA, which is equivalent to Minister of Science, with it went my number one function: to bring S & T to the service of the Filipino people."

(To next page)

Director General Javier delivers his address at the Investiture of New Academicians.

There were only two invested this time, Dr. Javier and Dr. Benjamin Cabrera

Below: At the luncheon given in honor of the National Scientists, from left are: Alfredo C. Santos, national scientist; Academy President Dr. P. C. Campos and Dr. Javier.

The luncheon followed right after the Investiture.

Bringing S&T

(from page 3)

He knew what his country needs and ought to be wanting the Director General said and does not hesitate to lead the way, when he said –

With dedication and commitment the best among us, could help if not our own people at least, a part of mankind . . . to that state when we could be comfortable enough to think that knowledge could get into the marketplace of ideas and eventually into the marketplace of goods and services.

His talk reflected his desire to use S & T for the purposes of man.

(Some observers professed to see trends in that direction – editor.)

Excerpts:

Technological Development. It is essentially the building up of a basic capability for decision making and implementation in the generation and application of scientific knowledge in the daily lives of people and in the affairs of enterprises and the state. He went on to explain. It is a continuous process which includes the stages of generation, diffusion and application of knowledge.

Technological development takes place only when the three stages are harmoniously-developed and linked. Creation of new knowledge constitutes a supply that should be followed by their application. The capacity to apply knowledge on the other hand exerts a powerful demand – that promotes external knowledge and importation of technology.

Demand-Pull Approach. We have attempted a demand-pull approach to technological development thereby compliment with our present supply-push effort.

To begin with the activities of the present system - - - we should start with what the industry and our people demand and require. Our individual researchers as well as institutions should be in close contact with those they are to serve. This, we hope to achieve by–

Providing technology transfer units in our line agencies–to serve as a link between institutions and industry. Our R and D should have an advisory board composed of those from the private sector and other lead agencies from the government sector . . .

To make sure that these could become effective, we have adapted a system of councils, namely: the PCARRD, PCHRD and PCIERD and NRCP. Although the last one will remain a collegial body of scientists–the primary function of which is funding, coordinating and related tasks. He continued deducing that the creation of these councils also answer the perennial question of whether science could and should be directed.

National Comprehensive S & T plan. There is a challenge for us, the country is undergoing technical change. Have we really internationalized this technological change in our institutions? These technologies come from outside without involving the local S and T system. We are industrializing, yet in the words of many we the scientists are not technologizing.

We need to point out to the national leadership, to the captains of industry and our people . . . The technological requirements increase dramatically along the path of industrialization.

Technological Independence and Self-Reliance. We should make effort to evaluate, select and adapt and improve upon foreign technology. And eventually develop indigenous technologies.

Let us articulate a comprehensive S & T plan and this should be a formal part of the 5-year national economic and social development plan. Briefly, he moved on to the need for fixed tenures of office for scientists; R & D units being self-regulating and functioning autonomously; and the need to establish residential scientific communities.

We have the agricultural scientific community in Los Baños, basic sciences in Diliman and to rise soon, the industrial scientific community in Bicutan.

Basic Research. Our requirements for high level expertise will have to be trained in our national universities, locally to save dollars.

Role of Private Sector in R and D. Have the research foundations locate more relevant research by linking them with research institutions and universities.

Unblocking the Road to the Future

He ended by citing the major issues that should influence the scientists' national effort. These are:

- Bring S & T to the service of the people;
- Generating knowledge is not an end in itself, in fact, we should work . . . providing a strong link between our scientific base and education.
- Let us not neglect basic research. We cannot link something with nothing. Have a strong scientific base.
- Bring into the forefront of national consciousness the importance of S & T into national plan and budget. The national S & T plan should provide positive steps and environment, conducive to science and hand in hand provide incentives to scientists and private sector.
- Let us make a serious effort of articulating our S & T plan towards these goals.

its fourth time

The Annual Scientific Meeting of the Academy

Sometime in July, during the National Science and Technology Week, scientists, researchers come out from their laboratories, desks or classroom and turn to scientific sessions—either to read their paper or simply listen and participate. In short, the scientists literally go out, they go to the people and for the Academicians, it was a matter of routine, because they have been holding this scientific meeting every year since 1979.

This year was no exception. Just as the National Science and Technology Week got in season, the Academy once more, was plunged into yet another of its hectic simultaneous scientific meetings.

The papers presented at this year's scientific meet reflect various levels of concern.

A resume of the papers, the details:

o SOCIAL SCIENCE

Alfredo Lagmay, Academician on The Reinforcement of Behavior: Theoretical and Practical Issues in the Experimental Concept.

In his paper, Dr. Lagmay chose on the word reward instead of reinforcers, it is an easier word to both the layman and scientist. Reward, he said, expresses an idea that is more easily recognized in actual practice either in laboratory or in the natural setting. In the words of Dr. Lagmay, rewards, in the form of food, water, praise, attention, money, and the like are given in order to strengthen behavior.

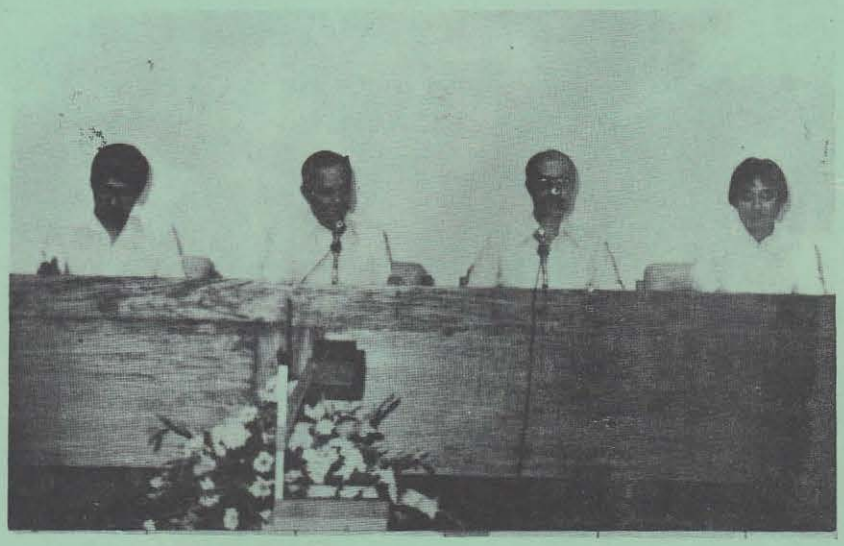
In education and clinical practice, rewards tend to be the usual culturally-accepted reinforcers such as money, privileges, cigarettes, sex, attention, praise and the like. He cleared up by saying that food, personal recognition, money and sex as rewards, however, generate their own problems. Eventually, these reinforcers find a counterpart in the unseen response of the organisms either in imagination, visualizations, fantasy, dreams and thinking.

One can obtain reinforcing effects by following a response with an imagined reinforcing experience. The eloquent Psychology professor continued, citing that for example, an hour's work on the type-writer could be reinforced by following it with a visualization of an eating session or a scene on the sunny beach with the cool winds blowing on your face. Important pointers excerpted from his paper—

o An aversive experience is reconditioned by imaginatively pairing it with a pleasant episode in one's life.

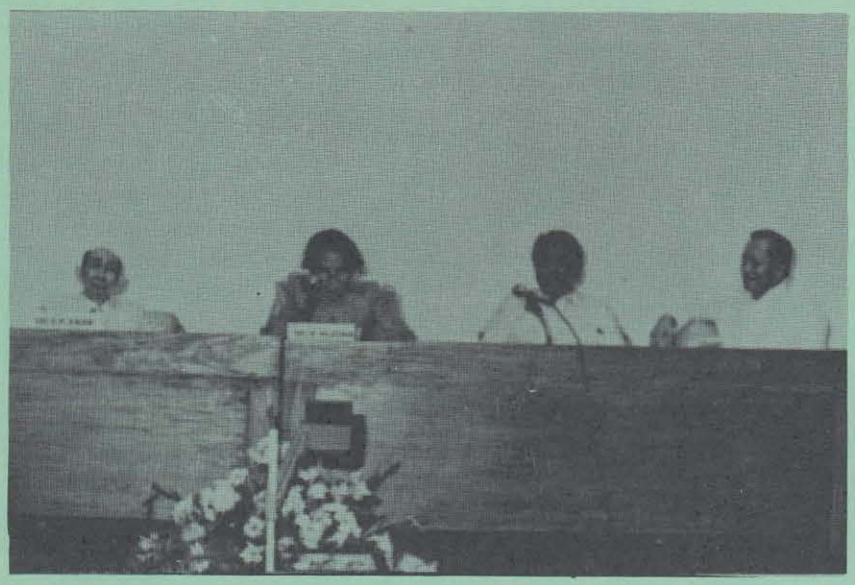
o Success and failure specially in competition may thus not affect the person whose belief system does not consider success and avoidance of failure as important to their times.

(To next page)

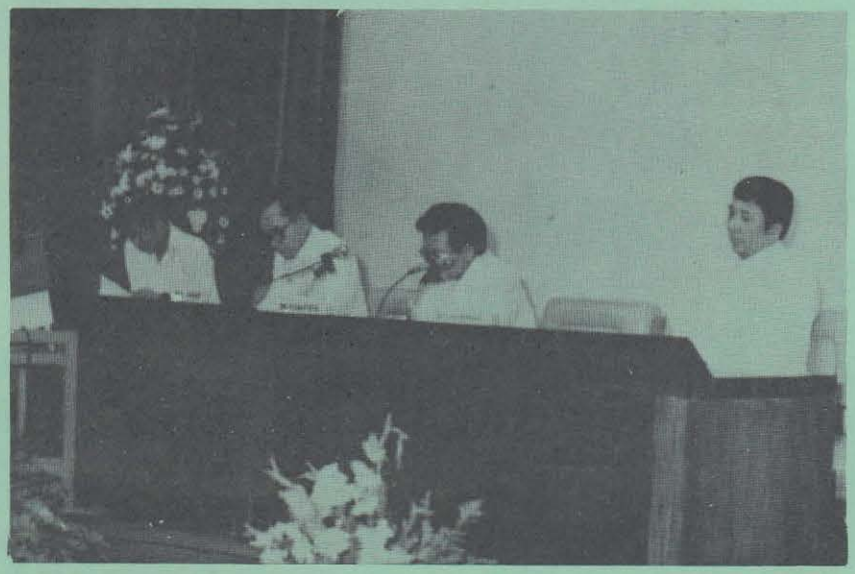


At the social sciences session, chaired by Alfredo V. Lagmay, (second from left) Academician, as he presents his paper on the Reinforcement of Behavior. He is flanked by discussants Virgilio G. Enriquez, Ph.D.; Fr. Jaime Bulatao, S.J., Ph.D.; and Horacio R. Estrada, M.D.

Scientific Meeting... *(from page 5)*



Encarnacion Alzona, Academician, as she reads the Three Letters of A. Mabini. To her left is Gregorio F. Zaide, Ph.D. and to her right is a representative of Serafin D. Quiazon, Ph.D. Dr. Lagmay looks on.



Romeo M. Bautista, Ph.D. presents the Recent Tariff Reform and Effective Protection Rates in the Manufacturing Industries.

From left are: Gonzalo Jurado, Ph.D.;, Vicente Valdepeñas, Ph.D., Dr. Bautista, and Florian Albano, discussants.

Encarnacion Alzona, Academician on the Three Letters of Apolinario Mabini (1864-1903).

These three letters were all addressed to Cayo Alzona (1869-1927), who was Mabini's classmate at the Faculty of Law at UST. His classmates then admired his extraordinary brilliance. One of these letters mentioned his election as President of the Supreme Court by the Congress. This was questioned, according to Mabini. In his letter, he stated, that "they allege only physical incapacity . . . for I can write and think as a healthy man. He said that if the law says that crippled men are unqualified for all judicial post, my election could be annulled . . ."

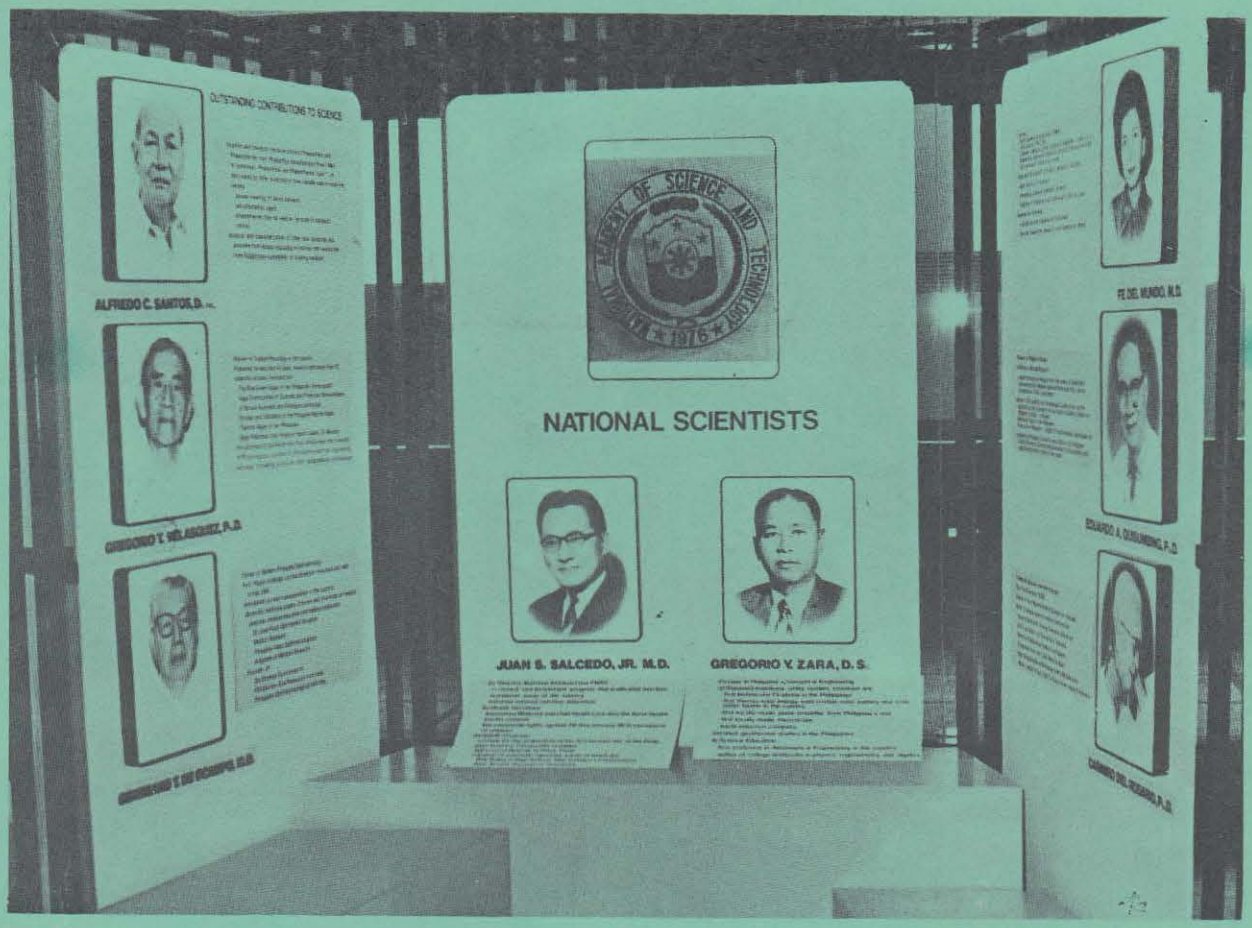
In her paper, Dr. Alzona reiterated that to the Filipino in general, Mabini was the brilliant, consistent and tireless defender of their human right, of their political independence.

Romeo M. Bautista, Ph.D., on The Recent Tariff Reform and Effective Protection Rates in Manufacturing Industries.

An assessment of the impact of the on-going tariff reform on "effective protection rates" in the manufacturing sector was made. He stressed that is, under the assumption that the scheduled tariff rate changes will be fully implemented.

Also an assessment of how the scheduled tariff changes from '81 to '85 would affect relative incentives for manufacturing industries, abstracting from any changes that might be implemented in other policy areas. Dr. Bautista disclosed in his paper, adding that even after the tariff reform a number of industries would continue to be heavily-protected like meat products and processed fish and other seafoods. Excerpts from his research paper:

(To page 10)



Eight National Scientists at the National Science and Technology Week Exhibit

During the duration of the observance of the National Science and Technology Week (July 11-17), exhibits from the National Science and Technology Authority and from its different line and support agencies as well as its councils — were displayed at the Philippine International Convention Center.

And very distinctly, at the booth of the National Academy of Science and Technology, they featured the eight national scientists we have today. The text showed their works and achievements in the name of science. Photo above shows the Academy exhibit for the occasion.

At the center portion are Juan S. Salcedo, Jr., M.D. and Gregorio T. Zara, D. Sc. (deceased).

Left portion, top to bottom are: Alfredo C. Santos, Dr. phil.; Gregorio T. Velasquez, Ph. D.; and Geminiano T. de Ocampo, M.D.

At right, top to bottom, are: Fe del Mundo, M.D.; Eduardo Quisumbing, Ph.D.; Casimiro del Rosario. Ph.D. (deceased).

The Historic Proclamation of National Scientists

Dr. Fe del Mundo is shown as President Marcos bestows on her the National Scientist's medallion with gold chain.

At left is Director General Emil Q. Javier, an Academician himself. While Academy President, Dr. Paulo C. Campos is shown at right with other national scientists, namely: Dr. Geminiano T. de Ocampo; Dr. Eduardo Quisumbing and Dr. Gregorio Velasquez (extreme right) and not in photo is Dr. Casimiro del Rosario.

National scientists have made pioneering efforts as well as significant and exceptionally-thorough contributions to knowledge in their respective field. Their dedication and courage including erudition and their persuasive efforts made these.

Every year, the Academy recommends ten scientists from the members of the National Academy of Science and Technology for Presidential Awards. And we call the awardees National Scientists. That is, when the President of the Philippines grants them the rank and title of "National Scientists". They are scientists selected from the present members of the Academy. Foremost, for their distinguished achievement as well as collaborative ones in science and/or technology. The national scientists are given each a gratuity pay, the amount of which is fixed by the Academy. The National Scientists, likewise, are entitled to other benefits now enjoyed by the National Artists.

The ocacasion drew different reactions from the crowd. It was enlightening to many while inspiring to some. — **Editor**

Dr. Eduardo Quisumbing.

Dr. Gregorio Velasquez.

Scientific Meeting... (from page 6)

o Post '85 tariff reserves need to be directed to such industries of excessive profits and/or low levels of efficiency – are to be discouraged.

o In the past years, there was a sharp increased participation of public corporations and their subsidiaries in manufacturing activities and this is bound to increase with active promotion of the so-called 11 major industrial projects (MIPs).

o These MIPs represent a set of large scale capital intensive projects expected to be established during '83 to '87 to provide the "basic industrial infrastructures. Objective–that the 11 MIPs will produce until commodities and intermediate inputs at internationally-competitive prices.

o With this, it is imperative that heavy protection from competing imports via increased tariffs and other import barriers be avoided. This consideration should be explicitly taken into account in the feasibility studies in order to establish true economic viability of the projects."

Independent researchers do not have access to the feasibility studies of the 11 MIPs, he pounded hard, a situation not contributing to an informed public discussion, he said.

****

Ernesto M. Pernia, Ph.D., on the Performance and Prospective of Small and Intermediate-Size cities.

On the whole, small and intermediate size cities in the Philippines experienced depressed growth rates during the 50's and the 60's. And this is a general trend in developing countries. Quoting Dr. Pernia, he said that:

Small enterprises in the country hold a dominant position in the manufacturing sector, most specially in small and intermediate cities outside the industrial region.

Ernesto M. Pernia, Ph.D. (third from left) reads his paper on the Performance and Prospective of Small and Intermediate Size Cities.

From left are discussants Alejandro A. Herrin, Ph.D.; Leandro Viloria, Ph.D. and Dr. Pernia and Lita S. Domingo, Ph.D.

Small and intermediate size cities can really play a major role in promoting small industries attributed to the fact that small enterprises can prosper without the advantages of agglomeration and urbanization economics present in large cities.

He went on to discuss what the government can do to offer favorable climate to small enterprise like providing inexpensive infrastructures. In his paper, he recommends to have–

o a more general policy on SMCs before specific local projects are put in place.

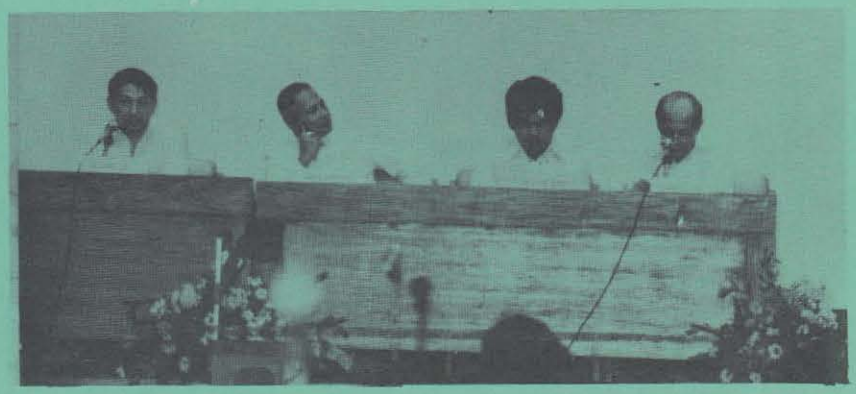
o That SMCs can be expected to flourish and thus spontaneously serve as agents in rural industrialization and regional development.

o ENGINEERING

Ely A.R. Ouano, Ph.D., on Pollution Control–An Incentive for More Efficient Industrial Process: The Oil Palm Processing Industry as a Case Study.

The pollutant generated from an industry is part of the raw materials purchased by the industry. The higher the pollution generated from an industry the higher is the raw material wastage and pollution control cost, according to Dr. Ouano. He presented the only paper in Engineering at the NAST. However, he said, the cost of pollution control could be reduced by improving the process efficiency of the conversion of raw materials to

(To next page)



Engineering session is chaired by Melecio S. Magno, Academician (second from right).

Ely A.R. Ouano, Ph.D. reads his piece on Pollution Control.

Discussants are Edwin Lee, M.D. leftmost and Benedicto L. Adan, Ph.D. at extreme right.

useful products or by-products.

He indicated in his dissertation that a number of industrial processes were developed when concern for the environment, raw materials, power and by-product utilization was minimal The waste material or pollutant discharge was once part of the raw materials purchased by the industry. He mentioned that treatment of the polluting effluent from an Industry should be considered a priority for an existing plant. The development of more efficient processes, he believes, could be stimulated by a properly motivated environmental program.

****

o MEDICINE

Patrocinio Sevilla Santos, Ph.D., The Antibiotic and Anti-tumor Activities of Selected Philippine Thallophytes.

Microbes are the main producers of antibiotics, she explained, but in the search for new antibiotics other organisms such as algae, lichens, green plants and even animal cells were tapped.

She mentioned the attempts to establish an antibiotic fermentation plant. This is traced to the progressive annual increase of 1.5 to 3 million dollars until the importation for antibiotics reached the $20 million dollar mark in 1979.

Out of a total of 905 Streptomycetes studied, 466 showed varying degrees of activity against the gram positive, gram negative and acid fast bacteria, the yeast and yeast-like organisms, plant pathogens and Ehrlich ascites tumor cell she reported in her paper adding that—

An initial survey of 172 basidiomycetes gave 169 sporophore aqueous extracts which inhibited mainly the gram positive test bacteria. Subsequent samples also indicated the same inhibitory activity.

Five basidiomycete species namely *Polyporus cinnabarinus, P. sanguineus, Lentinus squarrusulus, calvatia lilacina* and *Psathyra umbonate* were successfully grown in the laboratory and were found to produce the antibiotic substance.

Some 40 basidiomycete samples were shown to have inhibiting property on Ehrlich ascites tumor cell (EAT).

Ether extracts of Sargassum samples and *Chlorella pyrenoidosa,* showed inhibitory activity on the gram positive bacteria. Some species gave indication of antitumor activity, she pointed out.

Antibiotic research, she observed is a very expensive endeavor. One should have sufficient and available funds, in order to keep experienced and efficient research workers and provide them with income, security and facilities.

She recalled that this research on antibiotics started at the Bureau of Research and Laboratories, Department of Health under the sponsorship and guidance of Dr. Walfrido de Leon Sr. This was then transferred to the National Institute of Science and Technology, NSDB thru the leadership of Dr. Paulino Garcia (Chairman), Dr. C. Manuel and Dr. J. Velasco, Commissioners, where it stayed for some time. At present, she is continuing this research at the Research Center of the University of Santo Tomas. The research has been largely and generously funded by the National Research Council of the Philippines.

****

Fe del Mundo, National Scientist, on Linking Hospitals with the Community and Medical Reorientation Relevant to Primary Health Care in the Philippines.

In her paper, Dr. del Mundo strongly suggests a referral system and linkages between hospitals and the community. According to her, this should be done to improve orientation and community exposure of medical and paramedical graduates and undergraduates.

She deplores the present situation of relying mostly on the rural midwife and on local or indigenous health workers adding that the type of care may be second or third rate.

Linking hospitals with the community as part of medical training, according to her, could provide the medical trainees the opportunities to understand the health needs and problems of the communities, to relate the causes of illness/diseases to problems of community environment and to realize the need to develop an integrated curative, preventive, promotive and rehabilitative services to improve the quality of life of the people.

She presented simple and feasible ways of upgrading primary health care in peripheral communities unreached by advances in modern technology and medical progress. She pointed out that it is well known that primary health care has been accepted by all countries and all sectors as the key to achieving health for all in the next two decades.

She chose to look forward prescribing that to prevent primary health care from becoming second or third rate, she recommended two concepts: 1) linkages between the community and hospitals of different levels and 2) reorientation of medical graduates. Simple built-in evaluation, a follow-up of the accomplishments in the communities, and the effects of exposure and experiences in these areas in the medical participants are most encouraging and noteworthy.

****

o CHEMISTRY

Julian A. Banzon, Academician, on Decarboxylation of the Fatty Acids of Coconut Oil.

Here he presented the significance of ethylene production from coconut oil. Ethylene is the raw material needed in manufacture of polyethelene ware, sheets, pipes,

fibers; extremely durable plastic sheets; and lately even in the manufacture of modern detergents. In the USA, ethanol is commercially produced from ethylene.

The present industrial source of ethylene is petroleum hence the need for local renewable sources, Dr. Banzon commented. In India, ethylene is produced from ethanol because of shortage of petroleum, he said, the case of India emphasizes the need to find replacements of petroleum for fuel and manufacture of goods.

The urgency of the situation is shown by the following world development:

'69 Symposium on non-food uses of coconut oil; '76 study on renewable sources for industrial materials in the USA; '78 world conference on future sources of organic materials; '79 new crop developments for industrial oil; and '79 fats and oils as chemical intermediates.

****

o BIOLOGICAL

Jose R. Velasco, Ph.D., on The Response of Rice to Light

Through the process of conjecture and refutation/confirmation, according to Dr. Velasco in their research on the response of rice to light, they seem to have established the following facts and we quote:

1. The stage of ripeness to flower is attained at the age of 15 days. However, the number–a short day cycle for flower induction decreases as the plant grows older. The optimum age for short day treatment is 45-60 days.

2. If we schematize the process of flowering into a)flower induction; b) flower and initiation; and c) flower development, short days seem to affect all the 3 stages. On the other hand, mild temperature (21°C) during the dark period seems to affect markedly only flower development. It cannot replace short days in flower induction.

3. Synthetic growth accelerators and growth inhibitor seem to have supplementary effects on short days.

4. The youngest, fully exerted leaf seems to be most responsive to short day treatment, and

5. The flowering stimulus does not seem to migrate to other induced tillers.

****

Ofelio R. Exconde, Ph.D., on The Quest for the Control of Philippine Corn Downy Mildew.

The corn downy mildrew control is not a history, Dr. Exconde commented in his paper. The recent breakthrough on the chemical control of Philippine corn downy mildew according to him was caused by *Peronosclerospora philippinensis* with the use of Apron 35 SD. This has answered the long sought solution to the most destructive disease of corn in the country.

He recalled that the Philippines had an annual loss estimated at 205,470 m.t. of corn valued at ₱267,111,000.00.

Seed treatment. This fungicide can control corn downy mildew from seedling emergence until harvest, easy to apply and only a small amount is needed to sustain 100% control, he took note and concluded by stressing that—the development and release or resistant varieties/hybrid to downy mildew and wide-scale planting of these varieties is another key factor that would provide solution to the once dreaded corn downy mildew.

****

Carmen C. Velasquez, Academician, on Accidental Human Philopthalmiasis in the Philippines.

Dr. Velasquez related that three flukes out of six removed from the eye of a woman patient from the north, was referred to her for diagnosis.

The biological Sciences session was chaired by Clare R. Baltazar, Academician. She is shown here at extreme left.

Ofelia R. Exconde, Ph.D. (second from left) presents his paper on the Quest for the Control of Philippine Corn Downy Mildew.

Others from left are: discussants Manuel M. Lantin, Ph.D. and Fernando F. Sanchez, Ph.D.

For three years, the patient complained of lacrimation and purulent exudate.

She presented that the trematodes belong to the genus Philopthalmus Leess, 1899 which was created for flukes infecting the eyes of birds. It was found out to be the first case of human philopthalmiasis in the Philippines and the third only in the world.

An intensive research study was done on this, Dr. Velasquez drew this conclusion in her paper:

> . . . That the philopthalmid infection from the human eye in the Philippines case might have taken place through the *carcarial* or *metacarcarial* stage directly by washing the face with contaminated water or bathing in contaminated waters frequented by birds.

****

Joventino D. Soriano, Academician, on Pesticide-Induced Chromosomal Aberrations and Inheritance of Viable Seedlings Mutations in Sorghum.

Pesticides used in the modern technology of crop production have been found to be sources of potentially hazardous substances to man. A more or less continuous pesticide application is needed specially where cropping is year round.

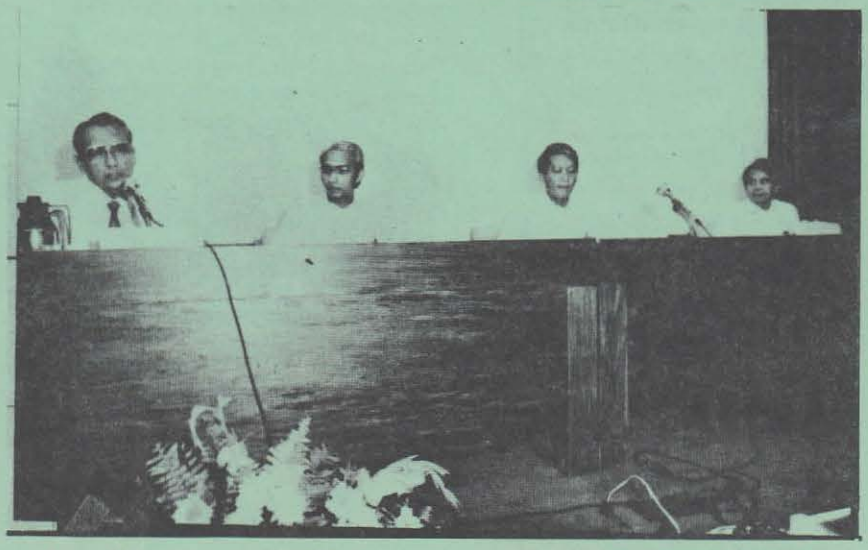
The types and frequencies of chromosomal aberrations and chlorophyll mutations induced by Folidol pesticide was determined in this study. Likewise, touching on the inheritance of the viable types of mutant seedling characters. Dr. Soriano stated in his paper, setting into the bottom, added that—

> The pesticide appears to be a more effective treatment for inducing numeral rather than structural changes in chromosomes.
>
> In order to unravel new knowledge for the advancement of manking, he strongly recommends the need to determine the genetic nature of induced mutant characters in experimental mutagenesis.

(To next page)

Carmen C. Velasquez, Academician as she presents the Accidental Human Philopthalmiasis in the Philippines.

Others in photo are, from left: Clare Baltazar, Academician, chairing the session; Dr. Geminiano T. de Ocampo, national scientist and Edito Garcia, M.D., discussant.



From left are: Joventino Soriano, Academician; Rafael Guerrero III, Ph.D. goes over his piece on Induced Androgenic Sex Reversal as a Population Control Method for Tilapias. Also shown are Jose Carreon, Ph.D. and Ernesto A. Rigor, Ph.D., discussants.

* * *

Disappointing results from capital investment have been caused by ignoring ecological consequences and problems concerning the resource base. The costs for environmental protection and processing waste must be paid either now or in the future. Incorporation of environmental protection and processing waste into useful by-products are recommended as the most effective methods of handling waste.

— Environmental Protection Within the Context of the Work of UNIDO

Scientific Meeting.... *(Cont'd from page 13)*

Rafael Guerrero III, Ph.D. on Induced Androgenic Sex Reversal as a Population Control Method for Tilapias.

Tilapias are important food fishes, but its great disadvantage is the prolific breeding habit. This overpopulates and stunts growth, killing some. Dr. Guerrero pointed out that induced androgenic sex reversal is one method that has great promise for controlling populations of the tilapia in commercial culture. In his paper, he went into saying that—

Androgen treated fish are not hazardous to human health while it is effective, easy to apply and economical.

Studies showed that 100% males can be achieved with treatment of ethynllestosterone and methylniltestesterone at 60 mg./kg. and 30 mg/kg. diet, respectively

The administration of oral androgens for sex reversal of tilapias is relatively easy he said and there are three steps involved. Briefly: 1) collection of newly-released fry measuring 9-11 mm. total length from the brood pond; 2) rearing of fry in suitable indoor tanks where they can be fed adequate amounts of the androgen treated feed throughout the necessary treatment period; and 3) stocking of androgen treated fry in production ponds devoid of females.

****

Salcedo L. Eduardo, Ph.D., on Taxonomy Value of Tegumental Structures in the Identification of Some Species of the Family Paramphistomidae Fishoeder, 1901 Occurring in Mammals.

Accurate identification of the species involved is important in any parasitic infection as well as a prerequisite to studies of epidemiology, physiology and immunology of the parasite. Dr. Eduardo discussed in his paper stressing that the family Paramphistomidae is no exception, actually it is a large assemblage of species affecting almost all kinds of vertebrates.

He admitted preparing specimens for examination is already a tedious process, besides being time-consuming. So that those difficulty he cleared up, has led to many inaccurate record of species ensuing from misidentification. A geographical distribution record of the species based on the literature is, he feared, far from accurate.

Commenting on this he said, another way of finding out other stable characters is to separate species of the group and this can ease this difficulty. In his paper, he showed the techniques how to prepare and process paramphistomes for light and scanning electron microscopy.

Tegumental papillae have some value in the identification of paramphistomes, he concluded. They are of value at the specific level as differences exist among different species as to their occurrence distribution and they are consistent in the same species even from different hosts and localities.

****

Claro M. Santiago, Ph.D., on Intraspecific Hybridization in *Volvariella Volvaceae* by Protoplast Fusion Technique.

He dealt on the significant development of fusion technology made at intraspecific level which may increase the possibility of improving different commercial mushroom strain.

A comprehensive investigation, was undertaken to demonstrate heterokaryon formation following induced into a specific fusion between protoplast of nutritionally complementary auxotraphs of volvariella volvaceae solutions containing polyethelene glycol.

Believing that additional information derived from this work may be of great value to potential mushroom investors, Dr. Santiago figured out that it even may lay the foundation for future breeding experiments which would undoubtedly lead to the discoverv of high yielding strain.

****

John P. Peberdy, Ph.D., from the University of Nothingham, England on New Technique for Genetic Manipulation of Industrial Microorganisms.

Natural mechanisms for recombination in micro-organisms have long been understood. He disclosed and adding that these include sexual and parasexual processes in fungi and more specialized mechanisms in prokaryotes. However, strain improvement programmes for industrially important micro-organisms have rarely involved these approaches, relying extensively on mutagenesis and selection.

The past decade he commented, we have seen microbial genetics revolutionized with the discovery and development of other mechanisms for genetic recombination. The recombinant DNA technology which allows the manipulation of single genes and the possibility of expression of foreign genes in prokaryotes, which he considers to be the most dramatic. Increasingly, Dr. Peberdy said, these techniques are being developed and exploited in eukaryotes delivered to be useful for industrial processes in the future.

He touched on the utilization of protoplast fusion as a tool for polygenic recombination which he weighs to be the second major aspect of this revolution.

ACADEMY NEWS

— a quarterly newsletter published by the
National Academy of Science and Technology
Paulino Garcia Memorial Hall
Pedro Gil. Corner Taft Avenue, Manila

— entered as Second-Class Mail
at the Manila Central Post Office
on December 5, 1980.