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# ACADEMY NEWS

VOL.4 NO.1

**NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY**  
**National Science and Technology Authority**

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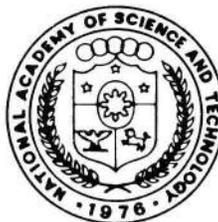
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\*deceased

# Philippines to Host First Meeting of

# Asean Scientists by End of '82



# ACADEMY NEWS

Vol. 4 No. 1, March, 1982

## NAST Head Elected Chairman

Asean Scientists convened in Kuala Lumpur, March 13-15 in an effort to form an organization to link scientists in the Asean region. The scientists present acceded on a consensus view about a link bringing together scientists in Asean region. They agreed to hold the First Meet of ASeam Scientists in Manila, some time before the end of 1982. (Actually, the name of the association has not been drawn hitherto as well as the composition whether to have institutional or individual members — ed.)

Dr. Paulo C. Campos, NAST President, together with council members Dr. Carmen Velasquez and National Scientist Dr. Alfredo Santos, represented the country in that KL meet. The areas where collaboration could be very effective according to Dr. Campos, are natural resources, ecology, genetic resource, conservation and many others.

Meanwhile, Dr. Campos was elected chairman of the Asean Association of Scientists which will be held some time late this year in our country. In informing the Executive Council, he said that the Secretariat as well as the Secretary and Treasurer will come from the country where the President resides. Two years was suggested on the tenure of the President, although no final decision was reached.

The meeting was initiated by the

Malaysian Scientific Association (MSA), who earlier invited the Academy officials to Kuala Lumpur. In his letter to the NAST, Dr. M.K. Rajakumar, president of the MSA, stated that science and technology must play a much greater role in planning and decision-making if developing countries are to emerge from backwardness. Adding that it seems that the contribution of our scientists and technologists is underrated. Concluding in an optimistic tone, he said, closer links between Asean scientists will at least enable the Asean scientists to come together to discuss common problems and to see how we can most effectively contribute to the modernization of our countries.

The scientists also took the organizer's draft on the issues of common interest. While modifications have been worked out during the KL meet, the details have not reached NAST office up to press time.

### ASEAN Association for the Advancement of Science

#### Issues of Common Interest

(for the advancement of science and  
technology)

#### 1. *Natural Resource Ecology*

There is a need for basic information on the ecology of natural resources, especially renewable resources and shared stocks for their sustainable use, management and development because of:

- (1) the rich diversity of natural resources both on land (especially lowland) and in water (especially rivers, estuaries and shallow seas);
- (2) their threatened extinction by various forms of extensive or intensive transformation or development, and conflicting allocations;
- (3) their potential in enhancing economic and social development; and
- (4) their inadequate development and management due to simplistic temperate-zone models.

(Continued on next page)

## Specialists Library for NAST

A specialists library of Academicians as well as for senior scientists is being established by the Academy.

The idea has evolved on the needs of the Academicians in their research work. Although some libraries carry some journals, they can not afford to get all. The library will represent current journals not found in most libraries but are essential for the present works/researches of the Academicians.

The library will likewise include the works of the National Scientists and Academicians.

## Preparations Up for 4th Annual Scientific Meeting and Investiture of Academicians

For the past three years, the usual practice was to hold the Investiture of Academicians towards the end of the day — right after the scientific sessions.

This year's Executive Council has decided to hold the Investiture in the morning and the scientific sessions in the afternoon. The tentative schedule as well

as other details though of this yearly affair will be elevated to the Academy at its April 24th meeting.

## 2. Genetic Resource Conservation

There is a need to develop an integrated system for genetic resource conservation in natural and synthetic ecosystems so that future generations may have access to their use and development because of:

- (1) the rich diversity of natural resources; and
- (2) their potential for industrial, economic and social development.

## 3. Environmental Impact Assessment

There is a need for enhancing environmental impact assessment especially in terms of technological impacts, risk assessment, hazard prediction, social costs, quality criteria and preventive measures because of:

- (1) the complex and fragile nature of the environment due to high insolation, precipitation and evolutionary state; and
- (2) the long lag-time for environmental restoration or recovery (at least 800 years) in the tropics.

## 4. Natural Resources Reference Centres

There is a need for establishing a system of natural resources reference centres including live and preserved material for accurately determining the resources, and enhancing resource development because of:

- (1) the acute shortage of reference material in this region since most of the old collections are in temperate countries; and
- (2) the shortage of expertise in this region due to national preoccupation with applied sciences for economic development.

## 5. Bio-Engineering Capability

There is a need to develop bio-engineering and biotechnological capability especially in terms of the genetic, biochemical and/or microbial transformation of primary, secondary or tertiary compounds into useful products such as alternative energy sources, food subs-

titutes, industrial materials, pharmaceutical products because of:

- (1) the rich diversity of natural resources and their high economic potential (e.g. 10% of plant species being medicinal plants); and
- (2) the traditional dependence on petroleum-based products and temperate zone imports.

## 6. Individualistic Science Education

There is a need to review and reinforce science education especially around individual development and experience at the primary, secondary and tertiary educational levels through an evaluation of the curriculum, laboratory and practical work and individual experiments and projects, of the role of various institutions such as technical and vocational schools and technical colleges, of non-formal and adult science education, of international student and teacher exchanges and of adequacy and accuracy of teaching-learning materials because of:

- (1) the exponential growth of science and technology;
- (2) the inadequacy of indigenous scientific and technological expertise, and
- (3) the need for a rapid transition into a post-industrial economy.

## 7. Choice of Technological Life-Style

There is a need to evaluate the choice of technological life-style in terms of the acquisition of technology, the appropriateness of technology, the consumer demand for technology, the indigenous generation of new technologies, investments in science, the institutional mechanisms for technological transfer, the conservation of trained human resources and the popularization of science and technology through institutions like science centres because of:

- (1) the need for a rapid transition into a post-industrial economy without losing national identity;
- (2) the unique richness of endowed natural resources; and

- (3) the competitive nature of international and interregional market and economic forces.

## 8. Socio-cultural Impact of Technology

There is a need to evaluate the socio-cultural impact of science and technology especially in terms of belief systems, value systems, kinship systems, organizational systems, cultural systems, national identity and political systems because of:

- (1) the almost instantaneous dissemination and diffusion of science and technology and
- (2) the rich diversity of socio-cultural systems in the region,

## 9. Institutional Roles

There is a need to evaluate the roles of various institutions involved in scientific and technological research and development, such as universities, professional institutions, statutory institutions, government departmental institutions, international institutions and private institutions in terms of their focus on research and/or development, on research and/or training, on pure and/or applied research, on routine and/or futuristic research and development and on research evaluation and coordination because of:

- (1) the need to accelerate scientific and technological development, and
- (2) the difficulty in achieving a state of creative production of science and technology even in the best of climates.

## 10. Centres of Excellence

There is a need for identifying centres of excellence in various areas of science and technology, both within and without universities, and supporting their development through according a status to research leadership and academic scholarship that is commensurate to that of senior management and ministers of government, providing adequate support staff, providing adequate research facili-

# International Conference on Plant Protection in the Tropics, Held in Kuala Lumpur

Around 600 delegates from South East Asian Countries convened for the International Conference on Plant Production in the Tropics in Kuala Lumpur last March 1-4. Speakers from Australia, US and UK were invited.

## ASEAN Scientists...

ties and grants, providing communications support, providing a system of rewards, incentives and awards and providing a psycho-social environment that is conducive to advanced research because of:

- (1) the need to upgrade the quality of science and technology;
- (2) the need to train the future leaders of science and technology around eminent scientists and technologists; and
- (3) the difficulty in creating an environment for academic and research productivity even in the best of circumstances.

### 11. Information Network

There is a need for developing a network for storing, exchanging and retrieving information on science and technology in order to accelerate research and development and enhance modernization because of:

- (1) the monopoly of information banks by the industrialized countries; and
- (2) the unique natural resource, environmental and socio-cultural setting in this region.

Clare Baltazar, Ph.D., Academician, attended this international gathering. Different sessions covered Biology and Ecology of Insect Pests; Biological Control; Chemical Control of Insect Pests; New Development in Pesticides; Pesticide Application Techniques; Quarantine, Legislation and Extension and Integrated Pest Control.

At this meeting she exchanged views on the natural enemies of the cacao pod borer, which is a common pest in Southeast Asia and Strepsiptera parasites of the planthoppers of rice. Our entomologist also met her peers from various parts of the globe among others India, Malaysia, Thailand, Indonesia, Japan, Australia, Papua New Guinea, United States and United Kingdom.

While there, she too represented the Philippines in the International Organization for Biological Control in Southeast Asian Regional Section. This was held simultaneous with that meet on Plant Production.

Earlier, Dr. Baltazar prepared an article titled "Biological Control Attempts in the Philippines, which appeared in the Philippine Entomologist in 1981. A copy was furnished the President of the IOBC-SEARS, Dr. Sankaran. Because of this, a resolution was passed that each country prepare a summary of biocontrol activities similar to the report, she submitted. President Sankaran even got the permission of our Academician that the paper



Dr. C. Baltazar

be cited and reviewed in the "Global Newsletter", which is circulated in member countries of the International Organization for Biological Control.

Similarly, our entomologist was able to obtain information on parasites available from the Commonwealth Institute of Biological Control, Bangalore, India, for importation to control common pests. Such as *Heliothis*, *Spodoptera*, *Graminaceous stemborers*, *flies*, *rice leafhoppers* and some weeds.

### Insect Identification Service

By the way, this institute is willing to accept identification of rice pests and their natural enemies. She learned from Dr. D.B. Reddy, representing FAO Bangkok, that his office would be willing to lend support for Identification Service, the identification of natural enemies, most specially.

# NAST - UP College of Forestry Join Hands with Royal Society of London on Collaborative Study of Rain Forest Ecology

The Royal Society of London is working on a program based principally on two main forest research sites in Southeast Asia, with plans of integrating studies in the future overall plans.

In the proposed program (see text below), the Royal Society of London intimated its desire to collaborate with local scientists and actually seek their active play towards the development of plans. This was stated in a communication sent by Dr. R.W.J. Keay, the soci-

ty's executive secretary.

Because of this, the NAST Executive Council called for a meeting with forest experts like Dean Celso Lantican of the UPLB and a representative from Forest Research Institute.

Already, last January 7-17, a two-man team composed of Forest Science Professor M.F.D. Poore of the University of Oxford and G.E. Hemmen, a senior member of the society's staff was here. They came to the Philippines, and Sabah to

serve as the two main field sites. Here, they discussed practical aspects directly with our scientists and forest authorities. The project if carried out will not only be fruitful for the British scientists and students alike, but also those of the Philippines.

The Southern Zone Research Committee of the Royal Society of London has prepared the following background paper for this study.



## Academy Launches Search for '82 Top Young Scientists

Since the early part of January this year, the NAST has launched the search for the '82 Outstanding Young Scientists under these disciplines — medicine, mathematics, physics, engineering, agricultural and social sciences. A trophy and cash award of P10,000 will be given each individual awardees by the Academy.

Now on its third year, the awarding will be announced during the celebration of the National Science and Technology Week around July this year.

To be an awardee, one must be a Filipino citizen and not more than 40 years old on July 10, not a day older; bachelor's degree holder in any of the sciences, and major researcher of a project or a research activity.

Criteria for selecting the awards include relevance of research activities, quality of scientific works and publications, productivity as well as significance of research work.

To qualify, an awardee should be willing to read a paper within a year on conferment of the award.

Nomination must be submitted by heads of government and private research institutions as well as colleges and universities.

Accomplished forms mailed or hand-carried must reach the NAST Secretariat at P.J. Garcia Hall, Pedro Gil, corner Taft Avenue, Manila on or before March 15, regardless of post mark.

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### 1. BACKGROUND

Two years ago the Southern Zone Research Committee of the Royal Society reviewed its achievements of the past 20 years in promoting British scientific research overseas and considered that although the kinds of work overseas that were needed had changed, there was as great, if not greater, need for active involvement of the Royal Society. The Committee decided to examine carefully the kinds of overseas ecological research which may require attention by the Royal Society in the coming decade.

The results of this study emphasized the immense value of ensuring that British scientists had continuing opportunities to gain experience of work overseas and identified subjects and geographical areas deserving attention by the Royal Society. In many of these areas it was not considered necessary to take any positive steps to stimulate suggestions for work but to be prepared to

# NAST-UP Forestry Join Hands... (Continued from p. 4)

respond to proposals either from enthusiastic individuals or groups or from overseas administrations and organizations wishing to undertake cooperative work.

It was concluded, however, that there is an urgent need for some positive initiative by the Royal Society to promote an integrated programme of tropical ecosystem studies aimed at utilizing, testing and developing recently formulated ecological theory. The most apparent and urgent needs were (a) to promote intensive research of tropical rain forest ecology and (b) to study the recovery of tropical ecosystem (terrestrial and marine) following disturbance.\* The Committee considered a number of possible locations for such a programme and decided that the region of South East Asia comprising Southern China, the Philippines, Borneo and Indonesia held the greatest promise for long term research coordinated by the Society.

In reaching this decision account was taken of a number of factors: the scientific priorities of tropical forest ecology, island ecosystems, plate tectonics, bio-geography and succession; the requirements for a well founded taxonomic base; the breadth of interest of UK scientists: the existence of both large and small land masses; a wide range of habitat types; the existence of national parks and local research institutes; the practical considerations of the probability of British researchers being welcomed over a period of time to work with local scientists; and relative ease of access.

## 2. TROPICAL FOREST ECOSYSTEMS

Scientific study of tropical forests is urgent because they are rapidly disappearing and few of the major areas of primary rain forests are likely to exist in their present state ten years from now. There are many aspects of tropical forests into

which scientific research is needed. Some important examples are:

- a) To obtain biological information for the many tropical plant and animal species for which it is not available. For example, knowledge of the physiology and autecology of many tropical forest trees is rudimentary. Research should include work on pests and predators, reproductive capacity, seed germination and establishment and the ability of species to grow on soils of low nutrient content.
- b) A study of nutrient cycles and nutrient conservation in tropical soils would be economically rewarding as well as scientifically interesting. The nitrogen economy and mycorrhizal relations of tropical plants are of particular importance.
- c) Little is known about the mechanisms by which tropical forests regenerate and maintain their species composition or about the successions following environmental change and man-made disturbance. Such knowledge is important as a base for improving tropical forestry and agriculture.
- d) There is a great need for factual information and long-term observations about the local and global effects of tropical forests and deforestation on climates, micro-climates and soils.
- e) Studies are urgently required of management techniques for conserving tropical forests, especially the minimal areas which would be viable and self-maintaining if conserved.

While some useful ecological knowledge can be obtained by quick comparative surveys, the important contemporary ecological questions and hypothe-

ses can only be answered or tested by conducting observations and experiments for several years. Major advances in contemporary British ecology have been firmly based on continuing research at permanent field sites. Ideally, British scientists should be encouraged to engage in long term programmes of research in forest ecology, taxonomy, bio-geography and evolution integrated with applied ecology, agriculture and forestry. The Royal Society could provide a forum for UK research workers to exchange ideas, experience, plans and results and might promote and organize a programme of field studies in collaboration with and in support of research institutions in the relevant overseas countries.

It is not practical to attempt to plan, from the outset, a wide-ranging and long-term programme so, bearing in mind the priority (b) of studying the recovery of ecosystems after disturbance, it has been decided to concentrate initially on increasing the understanding of natural distribution and functioning of undisturbed forests in South East Asia and on the processes which are involved as they recover from disturbance of various types and intensities. This basic task would be of intrinsic scientific interest but also important in relation to the rational utilization of these forests. Associated studies might be concerned with the effects of forest disturbance on other ecosystems and their recovery, of the significance of South East Asia as an area for advancing evolutionary theory linking biogeography with geological history and other important factors. A programme focussed initially on recovery of rain forests, would provide a pattern in terms of site selection, the phasing of various aspects of study and the identification of core and peripheral elements, which would prove of value in developing proposals for other aspects of a broader programme.

## 3. OUTLINE OF PROGRAMME

A feasibility study by correspondence of a programme of recovery of  
(Continued on next page)

\* A second priority identified for attention by the Royal Society was a multi-discipline study of Lake Malawi but that is not the subject of this paper.

tropical rain forests after disturbance included the circulation of British scientists known to be interested in working in South East Asia. More than 50 individual research proposals were received which were arranged in six groups covering major areas of study as follows:

- (1) Ecosystems, mineral to include study of the changes in minerals and biomass as forest progressively recovers from disturbance.
- (2) Hydrology, geomorphology and soil includes erosion, outwash of sediments and ions in solution, water balance and changes in physical and chemical properties of the soils during and after disturbance.
- (3) Meteorology includes meteorology in gaps and in the forest and the microclimate associated with disturbance changes.
- (4) Decomposers includes both qualitative and quantitative aspects of decomposer pathways with particular emphasis on termites.
- (5) Forests, as habitat for animals attempts should be made to quantify the known difference between the fauna (e.g. birds and invertebrates) of primary and secondary forest.
- (6) The adaptive characteristics of secondary and primary forest tree species includes (i) seed biology, including phenology, dispersal, dormancy and seed storage, longevity and germination; (ii) growth rate of seedlings and response to microclimate changes in the soil and in the air; (iii) mineral budget changes and root system studies and the role of mycorrhiza; and (iv) the requirement for canopy gaps for germination and growth and the varying response to different gap sizes.

A phased programme is planned

consisting of independent but linked investigations grouped to ensure that closely related aspects are studied in the same locality. Ideally groups (1) to (4) should be undertaken at one locality, (1) and (2) being the first phase studies; only simple laboratory facilities would be required. The complex of research projects associated with (6) would benefit greatly from being undertaken close to laboratory facilities.

For a variety of reasons it is suggested that it would be beneficial to establish two main lowland forest sites as field centres for UK-based research workers in cooperation with local scientists. Suggestions are for main sites in the Philippines, (possibly in the forest areas of North East Mindanao or Mindoro), and in Sabah, (possibly in the Danum Valley area). For both areas it is known that there is local support for the development of collaborative programmes with the Royal Society: the Society sent expeditions to Sabah in 1961 and 1964 and interest in further collaboration has been expressed and the recently negotiated exchange agreement between the Royal Society and the Philippines Academy of Science should facilitate work there. However, work should not be confined only to two main sites, but relevant individual studies elsewhere in the region should be integrated into the programme and the collaboration of existing centres of excellence in the region should be sought.

Thus a plan might be developed incorporating the following elements:

- (1) Two main field sites where British scientists would concentrate work, in cooperation with and in support of local scientists, in a phased programme.
- (2) The coordination of this work with advanced forest research of local institution such as those in Malaysia, Thailand and/or Indonesia.
- (3) Relevant individual research studies by UK scientists working with other institutions in the area (such

as in Sarawak, Brunei, Indonesia or elsewhere) be incorporated.

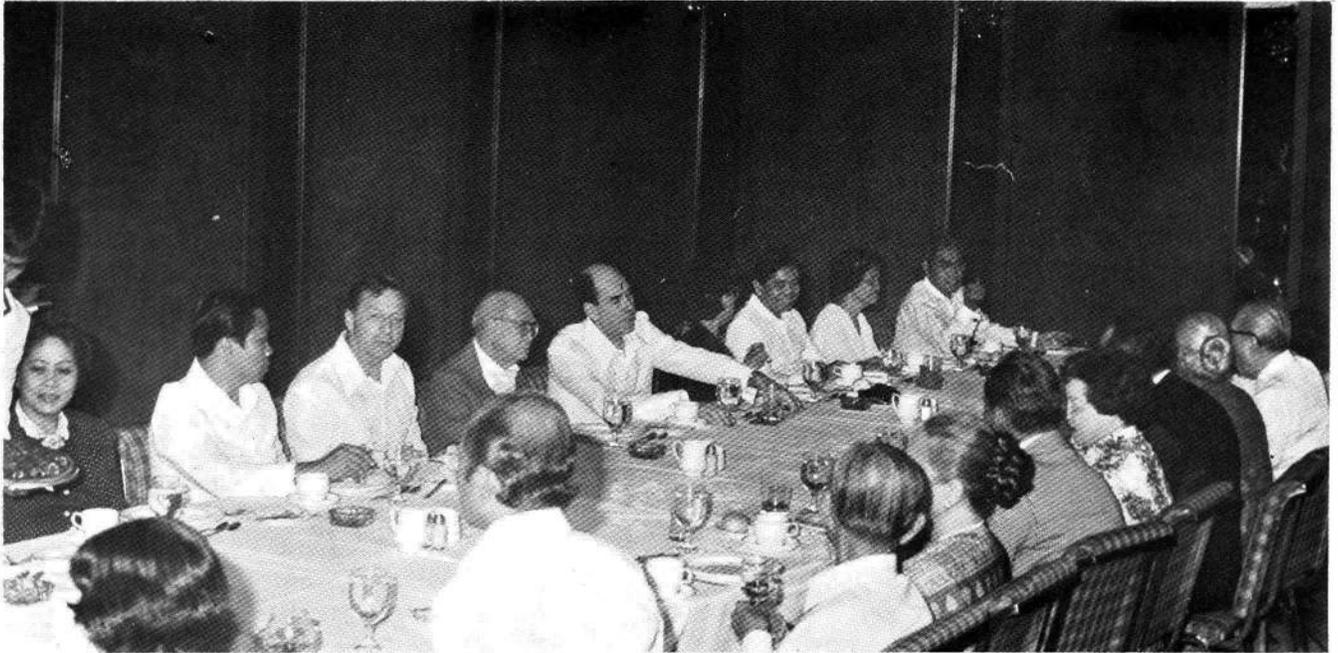
- (4) Studies developed on a multi-discipline interactive basis.

## 4. SUMMARY OF THE PROPOSALS DEVELOPED SO FAR

Extensive discussions so far held in the United Kingdom have identified clearly the whole region of South East Asia as one where many important ecological studies can be undertaken and as of particular interest to United Kingdom scientists. The understanding of the functioning of tropical rain forests is of prime urgency. The Southern Zone Research Committee of the Royal Society has recommended the initiation of a long term programme in which the interests of British scientists may be coordinated for studies not only in lowland and montane tropical forests but in rivers, coastal systems, inshore marine systems and island ecosystems. A mechanism is needed whereby UK scientists of many disciplines and with interests in many segregated regions of South East Asia can be put in touch with one another and from time to time can be brought together to discuss their research. Particular points are:

- (1) The initial focus should be on the recovery of lowland tropical rain forests after disturbance.
- (2) The study should include detailed comparative ecological investigations of different types of lowland rain forests.
- (3) Similar studies of other ecosystems such as coastal systems and montane forests should follow.
- (4) The research programme should be designed in such a way that it involves collaboration between institutions and scientists both from the United Kingdom and from South East Asia. An objective should be the training of local personnel for longer term, continuing research and conservation.

*(Continued on page 8)*



## The Academicians with Foreign Counterparts

The Academy tendered a dinner at Holiday Inn Manila in honor of Prof. M.E. D. Poore and G. E. Hemmen of the Royal Society of London. The Academicians attended the affair with their ladies.

Here, Dean Celso Lantican of the UP College of Forestry exchange views with Prof. Poore; Dr. Alfredo Santos, national scientist (in dark suit with glasses);

G. E. Hemmen drives a point; back to camera is Ms. de Ocampo; Dr. Joventino Soriano; Mrs. Magno and Dr. Conrado Dayrit. At extreme left is Mrs. Lagmay.

Below, taken at the same affair are: Dr. Gemiliano de Ocampo; Dr. Carmen Velasquez; Dr. Paulo C. Campos; Mrs. Hemmen; and Dr. Alfredo V. Lagmay.



# Elect New Academicians, April 24th

The Academy will hold its second regular meeting this year on 24 April at 10:00 a.m. at the Paulino J. Garcia Memorial Hall, following nominations made after a series of different committee meetings. The committees represented the different disciplines.

Among the key issues to be taken up are the proposed Executive Order amending Presidential Decree 1003-A, guidelines for Academy fellow, and nominees for the Outstanding Young Scientists. Also up at the agenda charts for the information of the Academy will be the report on

the Kuala Lumpur meet by the Executive Council (story on page one) and the creation of the National Science and Technology Authority replacing NSDB.

## The NSTA and the NAST

The reorganization of the NSDB was announced by Prime Minister Cesar Virata at CASTASIA II conference, following the signature of Executive Order 784 by President Ferdinand Marcos.

Specifically, section 8 of the EO states:

Agencies under Administrative Supervision. The Authority shall exercise administrative supervision over the following agencies:

a) The National Academy of Science and Technology;

b) The Philippine Atomic Energy Commission which is transferred from the Office of the Prime Minister; and

c) The Science and Technology Councils provided under Section 10 of this Executive Order, except the National Research Council of the Philippines.

## NAST-UP Forestry Join Hands... *(Continued from page 6)*

(5) The programme should consist of a phased series of independent but linked studies.

(6) Two main field sites (for UK research scientists) should be established, one in the Philippines and one in Sabah (in both places it is believed that local scientists are anxious to cooperate).

(7) Certain core studies should be undertaken at one or other of these sites; but other individual projects undertaken elsewhere in the region where British scientists have good personal contacts should be integrated into the overall programme. Related investigations may be undertaken in peninsular Malaysia, Sarawak, Brunei, Thailand and Indonesia.

(8) Studies on other ecosystems should be incorporated into the initial five year programme when opportunity offers.

(9) The programme should not only consist of coordination of the field work but should also provide an umbrella for discussion in the United Kingdom of scientific results.

(10) Special attention must be given to taxonomic needs.

Some 50 British scientists have shown active interest and most have put forward specific research proposals which can be integrated into the overall scheme. The scale of the programme cannot be specified in detail at this early stage but the following overall outline is envisaged:

(1) One of the two main field sites would need access to adjacent laboratory facilities.

(2) Participation from the United Kingdom would be about four to five scientists at each site at any one time, including graduate students who might spend six to 12 months in the field.

(3) Senior university scientists would probably concentrate on vacations and sabbatical periods although scientists from Government institutions such as the British Museum (Natural History), the Royal Botanic Gardens, Kew and the Research Councils would probably be available at other times.

## 5. SCHEDULE OF PLANNING ACTIVITIES

Professor M.E.D. Poore and a member of the Royal Society staff will visit the area in early 1982 for direct discussions with officials and scientists in the area.

After the reconnaissance, the Southern Zone Research Committee of the Royal Society will establish a planning group or subcommittee to develop the proposal for the five year initial programme to the stage of an application for financial support. The programme outlined in this document will have to be refined considerably and the following chronological steps are envisaged:

(1) The reconnaissance — on the ground preliminary discussions with local institutions and scientists in the Philippines, Sabah and elsewhere.

(2) Establishment of steering, or planning groups to prepare practical proposals for implementing a programme. This would probably include the appointment of a rain forest coordinator and possibly also coordinators in other fields and would involve extensive consultation by correspondence.

(3) Seeking of financial support in principal from ODA, foundations, trusts, etc.

(4) The submission of a detailed, costed proposal for a long term programme to the Council of the Royal Society, grants board etc.

(5) Establishment of field facilities and initiation of programme.

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