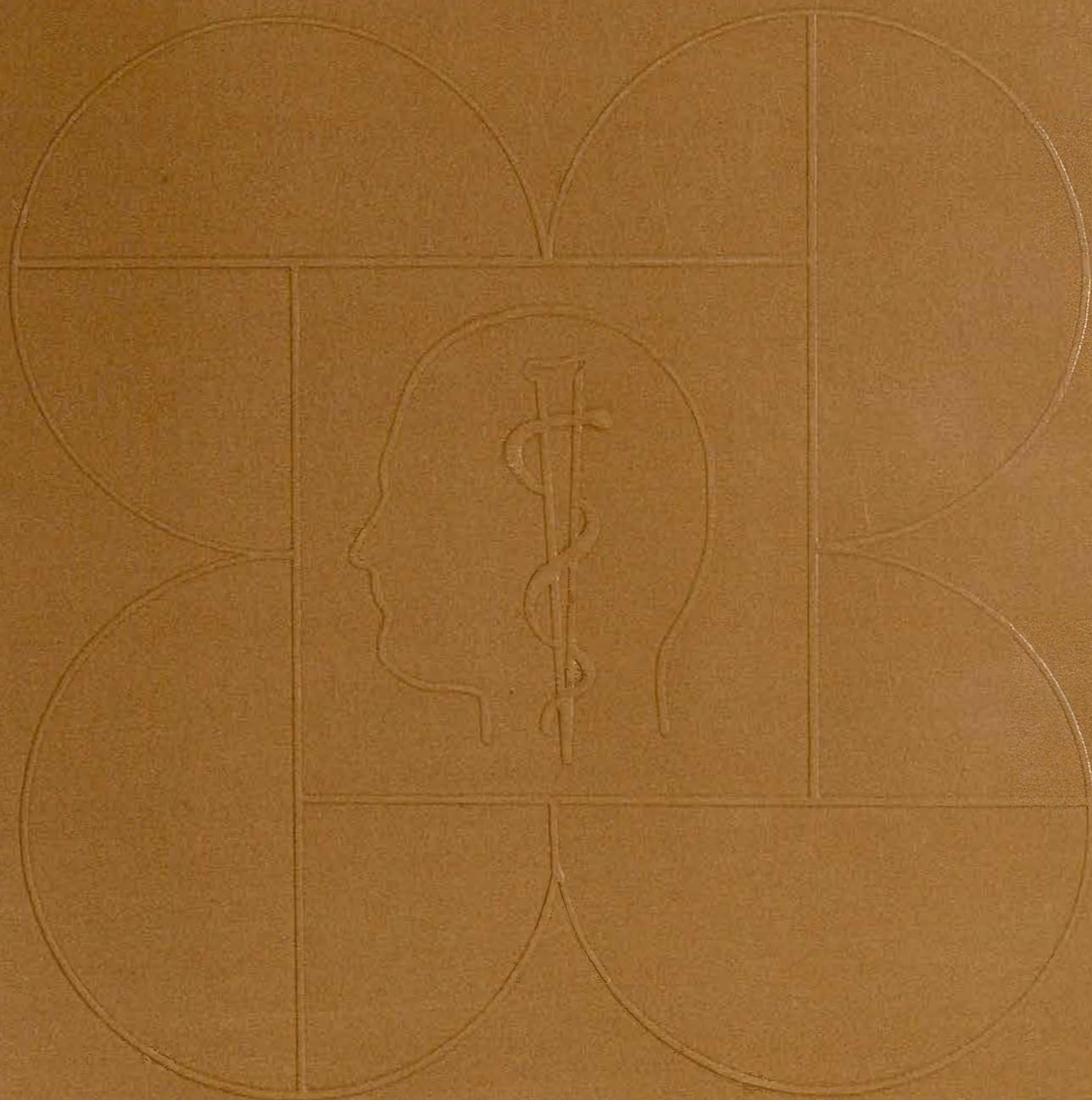


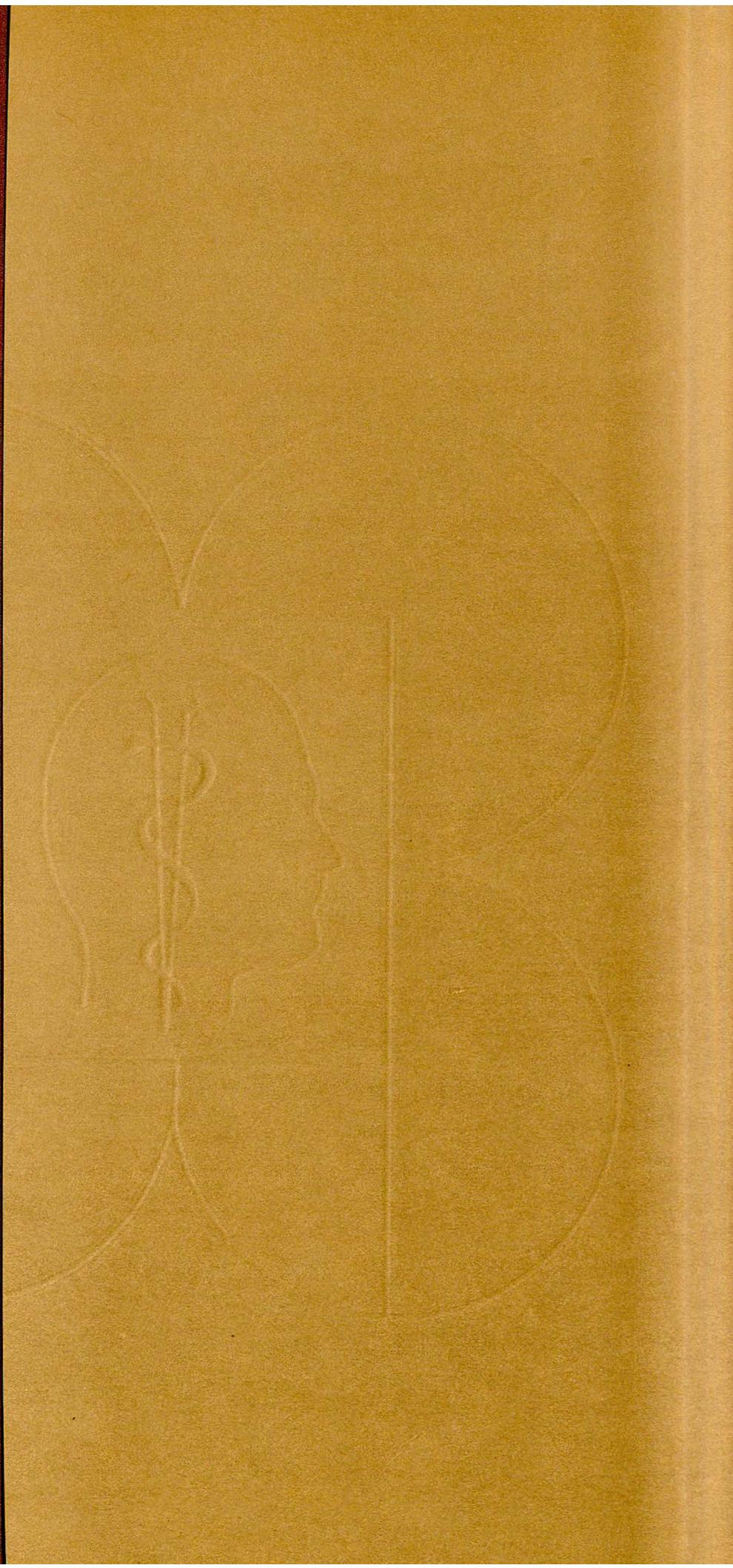
# **Annual Report 1986**



**PHILIPPINE COUNCIL FOR HEALTH  
RESEARCH AND DEVELOPMENT**  
National Science and Technology Authority

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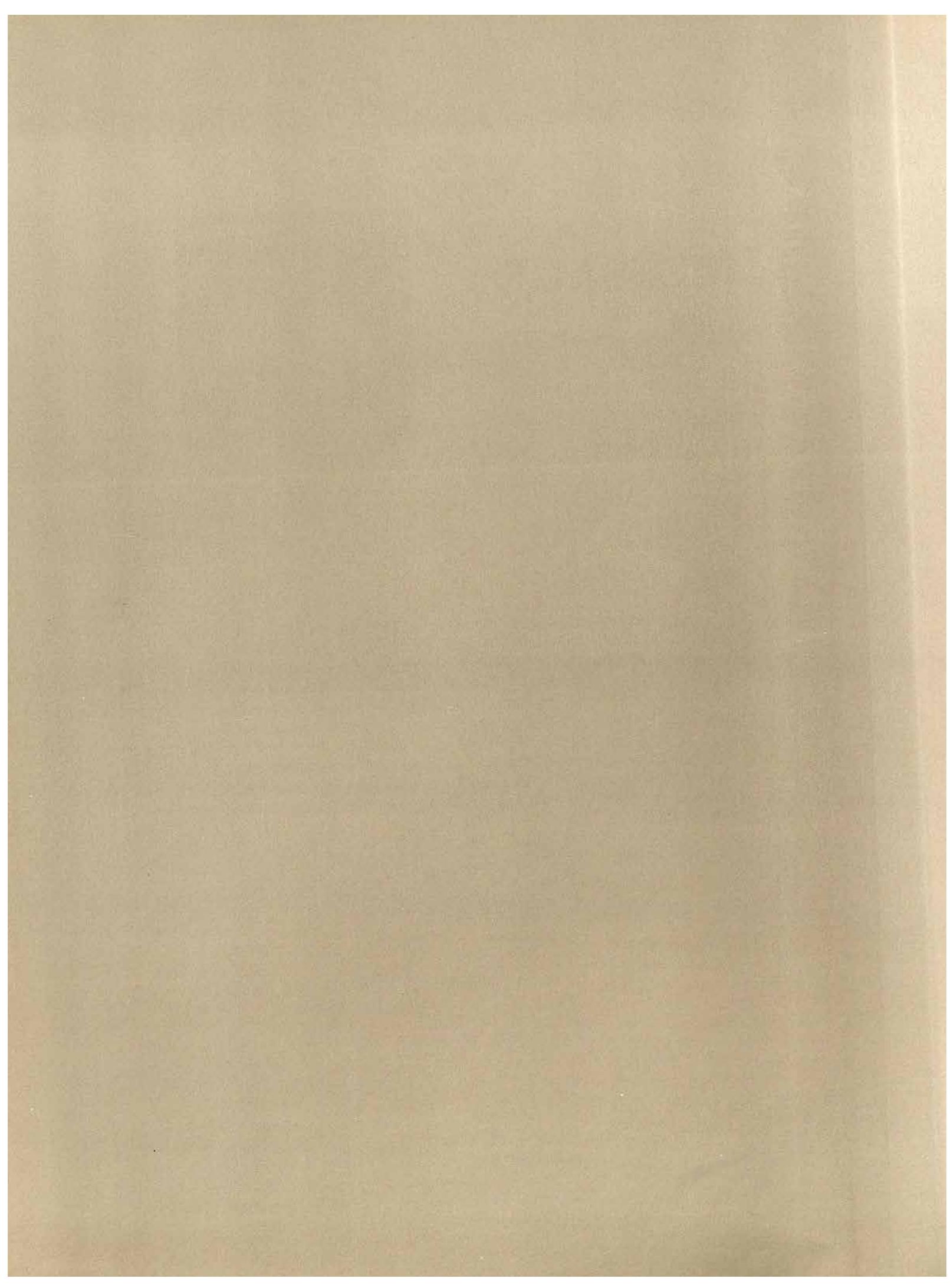
# MESSAGE

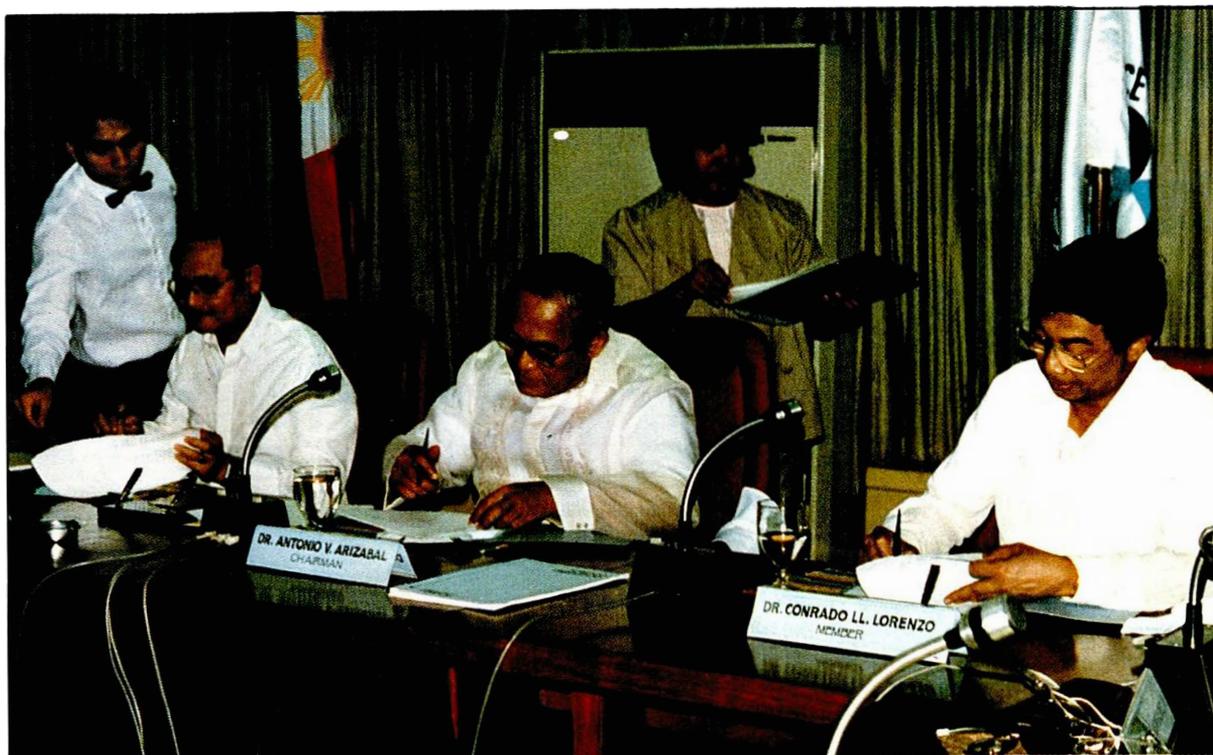


Notwithstanding various constraints and the political upheaval in February 1986 and the inevitable changes that followed, the Philippine Council for Health Research and Development has continued to make its contribution to the Philippine development scene in the year just past. The key accomplishments of the health research network in 1986 are presented in this Annual Report '86.

With admirable resiliency, judicious skill and dedicated work, the men and women of the Council have made the most of limited resources to assure continuous service and progress in the health research field.

ALBERTO G. ROMUALDEZ, JR., M.D.  
Executive Director





*Dr. Antonio V. Arizabal signs HERDIN Memorandum of Agreement with Minister Alfredo R.A. Bengzon and UP Manila Chancellor Conrado Ll. Lorenzo.*

### Introduction

1986 witnessed the Council's dynamism as the health R & D arm of the National Science and Technology Authority. With many health problems plaguing Filipino communities, the PCHRD paved the way for organized R & D activities to answer the scientific and technological needs of national development.

With the heightened thrust on biotechnical, pharmaceutical, and health services research and development, the PCHRD accomplished significant strides in R & D management, increased visibility in the regions, aggressive information dissemination efforts and technology transfer.

### Highlights

1986 was a fruitful year despite the turbulence and

uncertainty of the times. Major accomplishments for the year include:

#### 1. HERDIN Commitment Firmed Up

This year, the concept of the Health Research and Development Information Network (HERDIN) was drawn up in response to the felt need of users within the R & D, academe and health services delivery sectors for accurate, relevant and timely information and a Memorandum of Agreement between the PCHRD, the Ministry of Health (MOH), and the University of the Philippines (UP) was signed. Tangible outputs of the collaborative undertaking was the holding of a Seminar-Workshop on

Information for Health Care which tackled the problems ailing the health library system. Two (2) training courses, one (1) for health library auxiliaries and another for current library trends were held in Manila and Cebu, respectively.

To implement the HERDIN, the PCHRD sought financial assistance and the Canadian government through the International Development Research Center (IDRC) committed \$40,000 Canadian dollars.

With the initial success on the first year, a milestone in health information has been established which will strengthen accessibility

## PCHRD

to health data and information.

### 2. New RHRDC in Region VI

Iloilo is the latest addition to PCHRD's national network. The development of the regional RHRDC and recently concluded consultative workshop on health research and development paved the way for health research activities in the region. The RHRDCs continued to serve as structures through which the Council implemented its institutional development strategies to respond to regional R & D priorities.

The PCHRD coordinated and monitored closely three (3) other RHRDCs in Regions VII, VIII, and XI and continued to strengthen its center of excellence in Metro Manila, the Ermita Health Science Community (EHSC).

### 3. Herbal Medicine Program Reviewed

An external review of the National Integrated Research Program on Medicinal Plants was done by the NEDA to determine the program's adherence to its stated goals, to examine past achievements, and to study its organizational structures and processes. The review was meant to improve program effectiveness and relevance to this priority national concern of the government. Certain points such as an actual shift from studies leading to commercializa-



*The RHRDC in Region VI convenes to identify their health research strategies in Western Visayas.*

tion to studies affirming the therapeutic effects of medicinal plants, and a transfer of developed technologies to the private sector were raised. Major recommendations include strengthened promotion efforts, closer monitoring of projects, and specific changes in organization and management.

### 4. National Weight and Height Standards Developed

A breakthrough in the monitoring of malnutrition was the development of weight and height standards for Filipino children. The FNRI extensively prepared the weight and height standards for the 0-19 year old Filipino children which constitutes the best available data locally. These standard tables for weight-for-age, height-for-age, and weight-for-length/height for boys and girls as well as the recommended curves are now

available for health workers and nutritionists whose task is to define and assess malnutrition and prevent or mitigate its severity.

### 5. Modified Coconut Water as ORT Solution

The PCHRD reviewed past studies on coconut water as an oral rehydration solution for the control of diarrhea. The review revealed the need to fine-tune the technology for the modification of coconut water and develop the needed technical expertise.

### 6. Policy Recommendation on Drugs

The PCHRD prepared a position paper for the MOH pertinent to two (2) issues on pharmaceutical research – herbal medicine and research pharmaceutical companies. The Council's recommendations were designed to encourage R & D in the private sector and work towards a true drug industry.

# RESEARCH MANAGEMENT AND DEVELOPMENT

PCHRD

## A. State of the Art in Medicinal Plants

The RMDD has prepared the draft of the State of the Art of 20 medicinal plants, namely: *akapulko*, *alagaw*, *amorseco*, *ampalaya*, *balanoy*, *burburtak*, *bayabas*, *awang*, *buhok ng mais*, *cogon grass*, *ipil-ipil*, *lagundi*, *luya*, *mangosteen*, *niyog-niyogan pancit-pancitan*, *sambong*, *tsang gubat*, *tanglad* and *yerba buena*.

The draft was presented to different committees, the members of which were mostly researchers coming from the pharmaceutical, chemical, agricultural and medical sectors.

The draft is undergoing revision with more research materials being inputted including research papers of undergraduate and graduate students.

## B. NEC Report for 1986

The National Ethics Committee (NEC) acted on the ethical aspect of the following proposals and issues:

1. Impact of Vitamin A supplementation in Reducing Childhood Mortality and Morbidity
2. Establishment of Blood Plasmapheresis Centers
3. Use of Pig Valve for Mitral Valve Replacements

A workshop among the heads of research institutions based in Metro Manila was organized by the NEC and the Institution Development Department to introduce the National Guidelines for Biomedical Research Involving Human Subjects. Moreover,



The National Ethics Committee was created to protect the rights of subjects of research as well as researchers, Dr. Alberto G. Romualdez stresses here.

the workshop served as a forum for airing out ethical problems in health research.

One of the output of this activity is the cognizance of participating heads for the need to put up Institutional Ethics Review Committees (IERC) in their respective institutions. An important corollary to this is the organization of IERCs by Veterans Memorial Medical Center, and the Comprehensive Community Health Program of the University of the Philippines (UP), and University of Santo Tomas (UST).

## C. Completed (▲) and Ongoing (●) Health R & D Projects

### BIOTECHNICAL R & D

#### *Infectious Diseases*

#### ▲ GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENCY IN MALARIA ENDEMIC AREAS IN THE PHILIPPINES

Marietta C. Baccay, M.D.  
Research Institute for Tropical Medicine

Glucose-6-phosphate dehy-

drogenase (G-6-PD) deficiency, a hereditary biochemical defect of erythrocytes which predisposes to drug-induced hemolysis was detected among residents of malaria endemic areas on the big island of Luzon, Republic of the Philippines. A total of 774 individuals were examined, 1.5 to 68 years old consisting of 485 males and 289 females. The overall prevalence rate of 5.5% among Filipinos concurred with data from previous studies. Pedigrees of selected families conformed with Mendelian laws. The potential hazard of treating G-6-PD patients with anti-malarials such as primaquine, sulfonamides, sulfones, quinidine, and quinine, or combination thereof, is recognized.

#### ● MENINGITIS AMONG FILIPINOS: CLINICAL FEATURES, DIAGNOSIS AND MANAGEMENT

Lita Crisologo-Visconde, M.D.  
Research Institute for Tropical Medicine

The study aims a) to determine the efficacy of short-term chemotherapy in pa-

## PCHRD

tients with TB meningitis equivalent to six (6) months; b) study the clinical profile of TB meningitis among Filipino patients; and c) determine yield of routine bacteriologic examination, and identify the factors that affect the yield.

To date, a total of 152 patients diagnosed clinically as TB meningitis were enrolled in the study. Of these, only five (5) (3.2%) had definite diagnosis based on positive CSF culture for *Mycobacterium tuberculosis*. The other 23 cases (15.0%) had possible TB meningitis autopsy and serology. The meningitis diagnosis was based on clinical manifestations, CSF findings, CT scan and/or response to anti-TB therapeutic trial.

Fifty three (65.0%) had mild to severe hydrocephalus as proven on the CT Scan. Seventeen (17) of these cases required ventricular shunt, while the rest responded to medical management alone. Five (5) of those who were shunted died, and the remaining 12 patients have relatively fair to good outcome.

### ● ULTRASTRUCTURAL STUDIES ON *SCHISTOSOMA JAPONICUM*

**Normando C. Gonzaga, M.D.**  
Research Institute for  
Tropical Medicine

The project aims to establish a baseline ultra-structural description of the different stages of *Schistosoma japonicum* and relate the morphological changes during immunologic and therapeutic modalities and to provide an

ultrastructural understanding of the mechanism by which murine eosinophils contribute to the destruction of *Schistosoma japonicum* egg *in vitro* using transmission and scanning electron microscopy.

Two (2) strips were made to Mindoro to collect field snails. Cercariae were shed from infected snails and were used to infect a total of 235 mice.

Laboratory experiments consisted of collection of eosinophils from the peritoneal exudate cells of 8-week *S. japonicum* infected mice and from 50 day infected livers of Balb/C mic. In a similar experiment, eggs and eosinophils were co-incubated and processed at designated time points for electron microscopy upon harvest. A total of 82 specimens were collected for transmission electron microscopy (TEM). These are currently being processed and sectioning will follow upon polymerization of resin blocks. Preliminary examination of control peritoneal cells showed that there were many white blood cells other than eosinophils

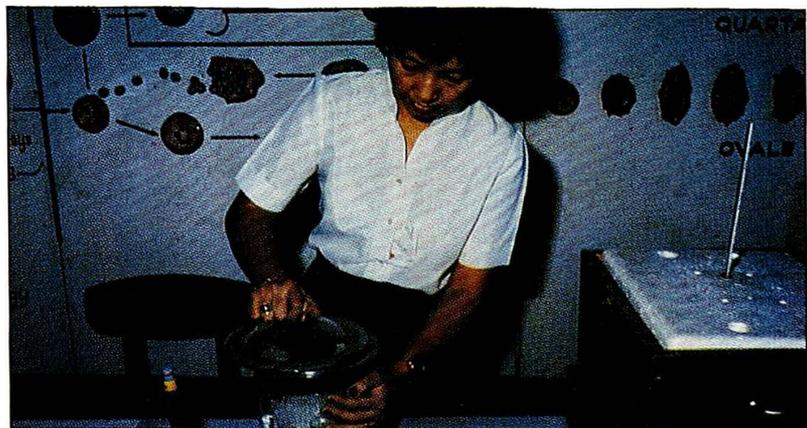
in the cell suspension collected from infected mice.

### ● EXPERIMENTAL INFECTION OF MOSQUITOES WITH MALARIAL PARASITES

**Nelia P. Salazar, Ph.D.**  
Research Institute for  
Tropical Medicine

The project aims to establish laboratory bred colonies of important malaria vectors and to develop an *in-vivo* experimental support system for the completion of the life cycles of animal and human plasmodia.

Collection of mosquitoes from natural habitats continue to provide the necessary materials for experimental study. To date, 17 species of Anophelines have been identified from collection sites in Laguna, Quezon, Rizal and Bataan. These include non-vector and vector species of which *Anopheles flavirostris litoralis*, *mangyanus* and *maculatus* are of particular interest. Infection studies in *a dirus* (= *A. balabacensis*) attest to its usefulness as an experimental



*The eradication of malaria has been the object of many researches. Here, laboratory experiments are conducted to find ways of totally eliminating this tropical disease.*

model apart from its role as an efficient field vector in Southeast Asia.

To overcome the difficulties attending the use of live mosquitoes *in vivo* culture systems are currently being developed using two (2) established mosquito cell lines in virology. The possible effects of anti-malarials on sporogenous stages of *P. falciparum* will likewise be tested.

● **MICROBIAL CONTROL OF MALARIA VECTOR AND RELATED SPECIES OF MOSQUITO LARVAE**

Leodegario E. Padua, Ph.D.  
UP Los Baños

The study aims to evaluate the effectivity of PG-14 *Bacillus thuringiensis* as a larvicide against malaria vector and related species of mosquito larvae in Palawan.

Five (5) kilos of formulated PG-14 was produced. Shelf life for formulation A & B stored in the cabinet lost viability after 79 weeks of storage. Those formulations stored in the refrigerator and freezer were still considered highly toxic.

Field application included instar analysis which showed that second and third instar larvae were mostly affected with 72.0% and 50.0% reduction respectively, in average larval count. The presence of younger instars after six (6) days in the third instar indicated a short staying capacity. The weekly insecticidal application of 1 g/linear meter was found necessary to sustain reduced larval population in the field.

*Immunology*

● **INTERRUPTION OF MATERNAL-CHILD HBV TRANSMISSION – A COMPARATIVE STUDY OF EFFICACY OF THREE REGIMENS OF HBsAg VACCINE PLUS HBIG**

Augusto L. Lingao, M.D.  
UPCM Liver Study Group

The study aims to determine HBV infection rates among infants of HBsAg (+) and HBsAg (–) mothers in the Atlas Mines (Toledo, Cebu) communities.

Analysis of the one (1) year old HBV infection rates showed the following: Infants of all mothers: 19/506 (3.75%) became HBsAg (+) within the first year.

Of the 19 infected infants, 13 (68.0%) were from HBsAg (+) mothers, while six (6) or 32.0% were from HBsAg (–) mothers. The infection rate of infants of HBsAg (+) mothers was 13/29 (45.0%) while that of infants of HBsAg (–) mothers was 6/477 (1.3%). The risk of HBV transmission from mother to child was 36 times more (RR = 35.64, 95.0% CI = 14.61 – 86.94) if the mother was HBsAg (+).

Among the infants of HBsAg (+) mothers, 6/7 from HBeAg (+) mothers became infected, while only 7/22 (32.0%) from HBeAg (–) mothers became infected (RR = 2.7, 95.0% CI = 1.4 – 5.3).

Five (5) out of six (6) infected infants of HBeAg (+) mothers became carriers during the first year, while all the seven (7) infected infants of HBeAg (–) mothers only

had transient infection during the first year.

These data thus point out that out of 1.5 million Philippine births per year, 58,482 infants tend to be infected by their mother. Of these 26.0% (15.38) infants become carriers during the first year of life.

A tentative analysis of the second year infection rate showed that an additional 2.4% of infants of HBsAg (–) mothers were infected by the second year, suggesting that other modes of transmission were more important after the first year.

The intervention phase (Phase II) which is vaccination of infants of HBsAg (+) mothers was started when the Kitasato Institute HBsAg vaccine was made available. To date, there had been 246 deliveries, 17 of which were from HBsAg (+) mothers. Immunization of all the 17 infants of these HBsAg (+) mothers have been started. They were randomly subdivided into infants receiving one (1) dose versus infants receiving the conventional three (3) doses.

● **PILOT MANUFACTURE OF HEPATITIS B VIRUS (HBV) REAGENTS AND RAW MATERIALS FOR HBV VACCINE**

Augusto L. Lingao, M.D.  
UPCM, Liver Study Group

This project primarily aims to control HBV infection in the country by making available low cost HBV reagents and vaccines.

The following activities geared towards establishment and expansion of HBV Lab-

## PCHRD

oratory at the Research Institute for Tropical Medicine in Alabang were carried out:

- a) HBV marker testing – 1,389 Philippine National Red Cross donor units have been screened, of which 10.8% were HBsAg positive and of which 6.6% have high titers suitable for use in purification, HBeAg positivity has 19.0% and anti-HBe = 21.0%. A total of 8.4 liters have been collected and subjected to purification.
- b) HBsAg purification – 100 mg already purified by KBr bouyant density, KBr zonal rate, and sucrose gradient ultracentrifugation techniques to a final volume of 34 ml with approximately 102.7 mg HBsAg.
- c) AntiHBs production – to date 460 ml of rabbit antiHBs with a titer of  $2^{13}$  have been produced.
- d) Stabilization of sheep red blood cells – started for use in HBsAg testing reagent production.
- e) Setting up of the affinity chromatography method of HBsAg purification.

### ● SCHISTOSOMA JAPONICUM ANTIGEN PREPARATION FOR IMMUNODIAGNOSIS AND RESEARCH APPLICATIONS

Remigio M. Olveda, M.D.  
Research Institute  
for Tropical Medicine

The study aims to maintain the *S. japonicum* life-cycle in the laboratory by alternate passage of the infec-

tion in laboratory animals and *O. quadrasi* snails, to make available antigen preparations for use in immunodiagnosis, and identify serum factors which induce suppression of lymphocyte proliferative responses in schisto infection.

The life-cycle of *S. japonicum* is continuously maintained in the laboratory. The research personnel obtained *O. quadrasi* snails by field collection in Victoria, Oriental Mindoro. The researchers found it easier and less expensive to purchase the *O. quadrasi* snails from a local resident from Mindoro, ensuring a steady supply of field-infected snails for use in infecting of laboratory animals.

Adults worms collected from infected animals upon sacrifice and perfusion of mesenteric vasculature were pooled and frozen for later homogenization. Likewise, eggs obtained by trypsin/pepsin digestion of infected livers and intestines were stored frozen prior to use for antigen preparation. At present, the materials stored are five (5) mice livers, one (1) 15-cc vial of frozen pooled adult worms, three (3) rabbit livers, three (3) rabbit lungs and three (3) rabbit intestines. Preparation of soluble adult worm and egg antigens were scheduled at a later date upon availability of crude antigenic materials.

## Maternal and Child Health

### ● EXPRESSED HUMAN MILK IN THE FEEDING OF PREMATURES AND OTHER LOW BIRTH WEIGHT INFANTS

Amelia R. Fernandez, M.D.  
UP-PGH Medical Center

The project aims to a) establish the suitability of expressed human milk as feeding for prematures and other low birth weight infants; b) find out whether expressed breastmilk given to prematures and low birth weight infants can minimize occurrence of infections including necrotizing enterocolitis; c) compare the rate and pattern of growth of pre-term and term small-for-gestational age (SGA) infants fed with expressed human milk with term and preterm SGA infants given the standard bottle feeding; d) establish the index of contamination of expressed human milk with regards to bacteria; and e) instill among the mothers the proper techniques of breast milk collection and storage to minimize contamination and destruction of milk constituents.

The study group are fed with expressed human milk of the baby's mother or a non-maternal donor while the control group are given standard bottle feeding. Weight, height and incidence of infection are assessed until four (4) months of age. Expressed breast-milk are subjected to bacterial count right after expression, on day seven (7), and at the end of 24 hour storage.

To date, a total of six (6) infants have completed four

(4) months observation. No significant infection occurred on any of the infants. Screening and enrolment of subjects will continue to complete the total target for the first year implementation.

● **USE OF SUPPORT DEVICES MANUFACTURED FROM INDIGENOUS MATERIALS IN THE CARE OF THE SICK AND COMPROMISED NEWBORNS**

Pura Flor D. Isleta, M.D.  
UP-PGH Medical Center

This is a two-year project which seeks to determine the effectiveness and locally manufactured support devices. The devices include: a) bililight – used in decreasing the bilirubin level in the blood; b) oxygen hood – used in the management of newborns with respiratory distress; c) heat shield – used in maintaining normal body temperature; and d) Carden Positive Airway Pressure (CPAP) – used in the resuscitation of depressed and apneic neonates. These will be compared with standard machine types in terms of

durability and cost. Acceptance among users and complications that may arise from its use are also considered in assessing their effectiveness.

*Nutrition*

▲ **ANTHROPOMETRIC STANDARDS FOR NUTRITIONAL AND CLINICAL EVALUATION**

Rodolfo F. Florentino,  
M.D., Ph.D., et al.  
Food and Nutrition  
Research Institute

This project aims to develop standards for nutritional and clinical anthropometric standards for nutritional and clinical evaluation of Filipino infants, children and adolescents. This survey was conducted with the cooperation of the Philippine Pediatric Society in all regions except Regions IX and XII.

Results of the study showed that the present values for weight-for-age were lower than the 1971 FNRI standards by 7.2% to 16.9%. Height-for-age values were lower than the same standard by 2.05% to 8.08%. The 30th percentile values,

proposed as the cut-off for defining moderately underweight and underheight children were also lower than the corresponding 75.0% of FNRI weight standard and 90.0% of FNRI height standard.

Except in early infancy, present values were considerably lower than NCH standards. Weight-for-age/height values however, closely approximate NCHS standards. Comparison with other weight-for-height indices indicate that the subjects in this study had good nutritional status. The recommended standard tables for weight-for-age, height-for-age and weight-for-length/height for both sexes and the recommended curve was presented.

Field validation of the standard will be conducted in conjunction with the piloting of growth monitoring system by the National Nutrition Council. It will also be compared with other similar studies.

▲ **A STUDY OF THE ENERGY EXPENDITURE AND DIETARY INTAKE OF ONE TO NINETEEN YEARS OLD CHILDREN**

Ma. Patrocinio E. de Guzman  
et al.  
Food and Nutrition  
Research Institute

The study aims to a) determine the energy expenditure of children aged one to nineteen years; b) provide data on the energy cost of activities of children; c) determine the percentage of time spent by the children in various activities performed during the day; d) relate



*The head/chest circumference ratio is one key assessment tool in monitoring growth and development of pre-school children.*



*The Beckman E-2 oxygen analyzer is attached to measure energy expended while jogging.*

daily food intake with energy expenditure.

A total of 157 boys and 156 girls have been observed. Data collected includes gas collection, time and motion studies and assessment of food intake for seven (7) days.

A wide range of energy cost of basic activities were noted with increasing age. From the time and motion study conducted, a pattern of the main activities of the children by age group was determined, such as sitting, standing and walking. The children spent 32-50% of their time in bed and 12-28% sitting. The activity pattern of the children were very light in nature.

The mean energy intake of the boys were found to be 90% to 99% adequate against recommended levels. The girls had much lower intake with only 78% to 89% adequately of the recommended levels by age group. However,

their mean energy intake were still more than two-thirds of the recommended daily allowance (RDA).

The meals consumed by the subjects were high in protein, exceeding the recommended levels by as much as 171% among the boys and 158% in the girls. The percentage distribution of energy from protein, fats and carbohydrates indicates a greater emphasis on protein and fats in all age groups for both sexes.

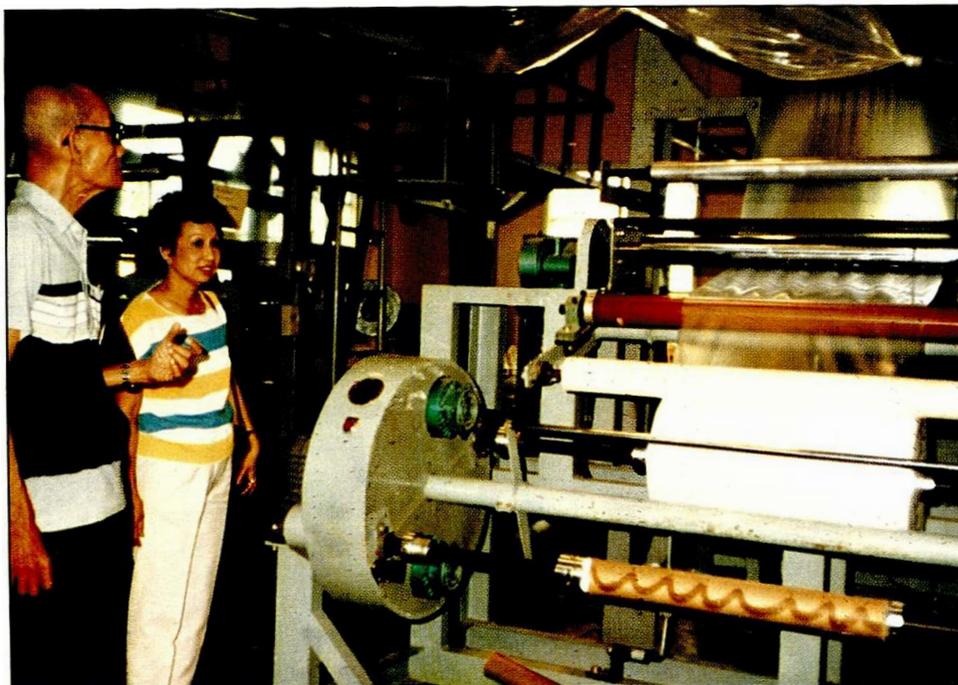
Snacking provided 1/3 of their daily energy intake which is equivalent to a single meal. Planning of nutritious snacks for the children should be given more attention, and inclusion of energy rich foods particularly among the girls should be encouraged.

The mean energy intake of the children exceeded their mean expenditure in almost all groups for both sexes except for boys in age group

16-19 years and girls in age group 10-12 years and 16-19 years old. The mean energy intake as well as energy expenditure of the boys increased consistently with increasing age. The same trend was evident among the girls until 10-12 years and decreased in the next group (13-15 years). This could be attributed to the adolescent girls' concern on weight reduction.

The mean energy intake of the boys ranged from  $1158 \pm 215$  kcal to  $2505 \pm 398$  kcal per day. Their mean energy expenditure ranged from  $818 \pm 312$  kcal to  $2722 \pm 661$  kcal per day. The difference between mean energy expenditure and mean energy intake were found to be significant in all age groups except for the 16-19 years age groups.

On the other hand, mean energy intake of the girls ranged from  $1020 \pm 217$  kcal to  $1912 \pm 289$  kcal per day



*Drs. Francisco Jose and Eulalia Venzon visit a plastic manufacturing firm to see the work environment of the workers.*

while the mean energy expenditure ranged from  $784 \pm 120$  to  $2218 \pm 289$  kcal per day. Differences between mean intake and mean expenditure were significant in all age groups except the 13-15 years and 16-19 years age groups.

*Environmental Health,  
Safety and Rehabilitation*

**▲ ASSESSMENT OF THE  
WORK ENVIRONMENT  
AND HEALTH OF  
WORKERS IN THE  
PLASTIC MANUFACTURING  
INDUSTRY**

**Quintin L. Kintanar, M.D.,  
Ph.D., et al.  
National Institute  
of Science and Technology**

The study aims at assessing the work environment and health of workers in the plastic manufacturing industry and at providing scientific data which will serve as

basis for formulating policies, regulations and recommendations for the improvement of work environment.

A total of 313 letter surveys were sent to plastic companies throughout the country inquiring on the use of vinyl chloride monomer (VCM) and other potentially toxic chemicals, flow chart of activities and facilities available. Out of 52 respondents, 22 were ocularly visited and screened prior to final selection of 10 companies for indepth study involving the measurement of concentration in the work environment and medical examination, blood chemistry, blood counts and x-rays of the chest and hands of a sample of exposed and control workers.

Results of physical and laboratory examination of selected subjects showed normal findings without evidence of diseases associated with vinyl chloride exposure such as sclerotic syndrome

and acroosteolysis, thrombocytopenia, hepatosplenomegaly and abnormal hepatic function test. Measurement of VCM in the work environment showed higher than permissible levels in air of vinyl chloride in 4 out of 10 companies. Results of observation and appropriate recommendations for improvement of existing condition were sent to each of the companies under study.

Review of liver cancer cases from 1980-1983 at the National Central Tumor Registry of the Philippine Cancer Society and the Medical records of hospitals, showed a lone case of possible occupational angiocarcinoma of the liver.

To promote education and information on the hazards brought about by the plastic manufacturing industry, 2 posters were prepared and distributed to the management and workers of various plastic companies through the MOLE.

● **ASSESSMENT OF ADEQUACY OF PROTECTION OF PESTICIDE HANDLERS**

Nelia C. Maramba, M.D.  
UP Department  
of Pharmacology

The study aims to ensure the health of workers highly exposed to pesticide through an in-depth study of proper protective clothing and equipment adapted to the local setting, optimum working conditions and health monitoring.

Three (3) groups of pesticide workers were studied; workers in formulating plants, farmers and certified pest applicators.

A total of 145 workers in seven (7) pesticide formulating plants were subjected to occupational health and safety and environmental hygiene surveillance. Physical examination showed cardiovascular dysfunction as the main abnormality observed. Laboratory examination showed increase in abnormal low erythrocyte cholinesterase values. Hematologic studies showed eosinophils as the most common abnormality which is associated with exposure to toxic chemicals, malnutrition and poor medical management.

The second group of workers studied were 100 farmers in five (5) barrios in Nueva Ecija. Hematologic and biological parameters were found to be within normal limits except for eosinophils. No statistically significant difference in the red blood cell cholinesterase during the first and second

visits was noted.

The third group studied were certified pest applicators from 16 pest control firms. There were 100 workers on the first examination and 69 during the second examination. The high rate of dropouts (39%) suggests that there is greater mobility among this group of workers since they are assigned in different places from time to time and there is lack of security of tenure for the worker. Hematologic studies conducted showed presence of thrombocythemia in 40% out of 100 subjects (1st visit) and 72% out of 69 subjects (2nd visit) studied. Independent t-tests undertaken to compare the mean cholinesterase in subjects with direct and indirect exposure by nature of their work, in those with and without protective clothing and equipment and in those who were and were not alcoholic drinkers. The result showed statistically significant difference in those applicators who were coveralls as protective clothing. Multiple regression analysis of certain risk factors and cholinesterase levels did not reveal any statistically significant association with the duration of exposure to pesticides, hemoglobin and platelet levels and de Ritis quotient.

It was recommended that further study on the combined effects of alcohol intake and pesticide exposure be undertaken through pre-employment examination and conduct of at least yearly monitoring of liver function among workers actually exposed.

Moreover, collaborative ef-

fort of the Ministry of Health, Ministry of Agriculture and Food and Ministry of Labor and Employment in putting up an occupational health program for these exposed workers must be solicited.

**PHARMACEUTICAL R & D**

● **PHARMACOLOGICAL AND TOXICOLOGICAL STUDIES OF PHILIPPINE MEDICINAL PLANTS**

Horacio R. Estrada, M.D.  
UP Department  
of Pharmacology

This study seeks to discover the therapeutic applicability of Philippine medicinal plants, and give basic pharmacologic support, equipment support, cooperation and expertise with related researchers and institutions.

Acute toxicity tests show that LD<sub>50</sub>'s were determined in 28 plants, 42 batches of *lagundi* powder, 20 batches of *tsaang gubat*, 12 batches of *yerba buena*, four (4) batches of *sambong* powder and two (2) batches of *niyog-niyogan*. Lethal dose of the four (4) priority plants were also established. In 1985, LD<sub>50</sub> screening for *sambong* showed that three (3) batches had LD<sub>50</sub> 130g/kg. For *lagundi*, LD<sub>50</sub> of 165-85, 170 and 430 g./kg. were the results of the screening of three (3) batches of *lagundi* materials.

Effective dose studies on *tsaang gubat* and *lagundi* were done. Bioassay procedure for *tsaang gubat* was established and interpreted

using a dose response curve compared with standard ED<sub>50</sub> curve previously prepared. One (1) batch of test materials was found to have a dose response curve almost similar to the standard curve. For *lagundi*, ED<sub>50</sub> determination was established using a dose effect curve analysis of data resulting from cat tracheal chain bioassay.

For the pharmacodynamic studies, effects of fractions from *lagundi* leaves were determined using cat's tracheal chain bioassay. The contraction, relaxation and dilatation effects showed pharmacologic response of the fractions tested.

#### ● CLINICAL SCREENING OF INDIGENOUS PLANTS USED IN TRADITIONAL FOLK MEDICINE IN THE PHILIPPINES

Nelia C. Maramba, M.D.  
UP Department  
of Pharmacology

This project evaluates indigenous medicinal plant/products through clinical and pharmacologic studies.

It seeks to verify as rapidly as possible, in selected patients, the folkloric claim regarding the efficacy of indigenous plant products used in traditional folk medicine; determine the right dosage, preparation and concentration of medicinal plants that will produce the desired pharmacologic action; and observe untoward or adverse effects that may occur during administration of the plant products.

Rapid screening of 14 medicinal plants were done, 11 of which have been proven

effective and used clinically: *lagundi* as antitussive; *yerba buena* as analgesic/antitussive; *sambong* as diuretic; *tsaang gubat*; *mangosteen* and *bayabas* as anti-diarrheal; *akapulko* as anti-fungal; *niyog-niyogan* as anti-helminthic, and *balanoy* and *alagaw* as antitussive.

The project research staff devised the following designs/protocols for use in the clinical study of medicinal plants: a) open clinical trials of *lagundi* (antitussive) and *mangosteen* (antidiarrheal) decoctions; b) a placebo controlled, double-blind comparative study between *lagundi* and aspirin and *yerba buena* and acetaminophen as analgesic; c) a clinical trial on the diuretic effect of *sambong* and the antihypertensive effect of *buhok ng mais*; d) a double-blind comparative study on the anti-fungal effect of a 5.0%, 10.0%, 15.0% *akapulko* ointment as against 10.0% sulfur ointment and the anti-asthmatic effect of *lagundi* decoction as against salbutamol; e) a double-blind, placebo-controlled study of *bayabas* leaves decoction in the treatment of pressure sores.

In 1985, clinical trials on *lagundi* tablet and syrup preparation as antitussive, *tsaang gubat* tablet as anti-diarrheal/anticoagulant, and *niyog-niyogan* as antihelminthic showed positive results. Study of control of non-bacterial cough in children using *lagundi* tablets generally have good responses to the treatment. Consultation services were also provided to the Council for Primary Health Care in the conduct of comparative clinical trials of *lagundi*, *niyog-niyogan*, *tsaang*

*gubat* and *akapulko* in four (4) communities namely: Mountain Province, Nueva Ecija, Bulacan and Metro Manila.

#### ● PILOT PLANT PRODUCTION OF DOSAGE FORMS FROM MEDICINAL PLANTS

Leticia B. Gutierrez  
UP College of Pharmacy

The study involves the manufacture of dosage forms from clinically tested priority medicinal plants; conduct of seminar-workshops to train regional representatives on the technology of dosage forms, production and establishment of mini pilot plants in the different regions; utilization of output of related/relevant NSTA-funded research projects; accommodations of other agencies in the same endeavor; and development of potentials of our resources.

With the NSTA Pilot Plant now operational, tablets were supplied to the MOH, other projects, and to the Philippine Herbal Group Incorporated (PHGI). Additional pharmaceutical data were generated from the plant batches delivered, and currently, tabulated results are being analyzed. Extension services through seminars and lectures (7) were likewise given by the project staff.

**Table I**  
**Stability Studies for 1985 and 1986\***

Formulation	1985	1986
<i>Lagundi</i> tablet	1/2	1/2
<i>Sambong</i> tablet	1	1
<i>Sambong</i> suspension	½	½
<i>Yerba buena</i> tablet	1½	1½
<i>Tsaang gubat</i> tablet	1½	1½
<i>Niyog-niyogan</i> tablet	9 months	9 months
<i>Mangosteen</i> tablet	—	—
<i>Akapulko</i> ointment	—	—

\*Stability in years at room temperature

● **DOSAGE FORMULATION FROM PHILIPPINE MEDICINAL PLANTS**

Natividad F. de Castro, Ph.D.  
UP College of Pharmacy

The study seeks to a) formulate and manufacture pharmaceutically elegant, safe, stable and effective dosage forms from Philippine medicinal plant materials; b) utilize indigenous pharmaceutical excipients or additives in formulation; c) set specifications for raw materials and processes; and d) train regional pharmacists on the technology of dosage formulation.

For 1986, the following were accomplished: Dosage forms of approved priority plants were formulated and manufactured; stability studies were continued (Table 1), and the quality control standards were developed.

● **PHYTOCHEMISTRY OF *VITEX NEGUNDO* L. ISOLATION OF PHARMACOLOGICALLY ACTIVE PRINCIPLES**

Fabian M. Dayrit, Ph.D.  
PIPAC, Ateneo University

The project involves phytochemical investigation on the purified active components present in the leaves. This study also develops local expertise in the chemical identification and structure determination and seeks to isolate and purify the various chemical components of *lagundi*.

The past years involved bioassay studies which supported the hypothesis that most pharmacologically active compounds are of moderate polarity. In 1986, two (2) compounds were isolated and identified in two (2) active fractions, namely: B-sitosterone and Casticin. Two (2) more compounds from the active fraction have been tentatively assigned, (5, 3<sup>1</sup>, 4<sup>1</sup>, — trihydroxy — 3,6,7 — trimethoxy flavor, luteolin) and further spectroscopic

work is in progress on these assignments. Other compounds obtained are p-hydroxybenzoic acid and a terpenoidal compound (mp-122°C). Two (2) other compounds were purified from the more polar methanol extract but assignments have not yet been made.

These preliminary findings implicate the flavonoid compounds. Another significant correlation is the presence of the catechol ring in the flavonoid.

● **STUDIES ON THE NON-VOLATILE CONSTITUENTS OF *YERBA BUENA***

Magdalena C. Cantoria, Ph.D.  
UP College of Pharmacy

The study aims to isolate, characterize and identify the non-volatile constituents of *yerba buena* with antipyretic and/or analgesic activity. It also aims to develop a quick and efficient method of determining the amount of active constituents present in plant samples or in finished dosage forms.

Eight (8) concentrated ethanolic and chloroformic extracts were prepared from the *yerba buena* leaves. With the use of an immiscible solvent, all these extracts were subjected to pharmacologic studies resulting to three (3) fractions with analgesic effects namely: neutral chloroformic, moderately polar chloroformic and the moderately polar ethanolic.

The separated fractions were then subjected to thin layer chromatography (TLC) using various solvents thus getting six (6) fractions which will be submitted for bio-assay study.

● **MUTAGENICITY AND ANTIMUTAGENICITY POTENTIAL PREPARATIONS FROM PHILIPPINE MEDICINAL PLANTS PRODUCED BY NSTA PILOT PLANT**

Clara Y. Lim Sylianco, Ph.D.  
UP Department of Chemistry

This study aims to study the mutagenicity/clastogenicity potentials of drug preparations from Philippine medicinal plants; the anti-mutagenic potential of non-mutagenic preparations against mutacarcinogens; and the reduction of mutagenicity potential of mutagenic preparations.

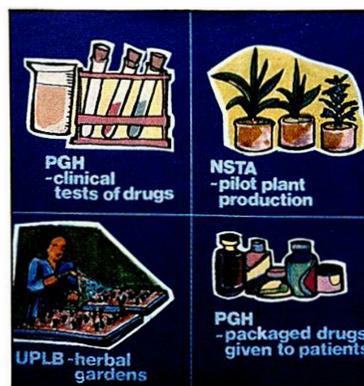
Tests on mutagenicity, clastogenicity and antimutagenicity using Rec Assay, Ames test, Host mediated and Micronucleus test were done in the tablets of the four priority plants: *lagundi*, *tsaang gubat*, *yerba buena*, and *sambong*. Results indicate that the tabletted forms of these plants are non-mutagenic, non-clastogenic as well



*The mangosteen carp has an anti-diarrheal effect.*



*Medicinal plants are cultivated to provide sources of raw materials for herbal medicine.*



*Inter-agency efforts are harnessed in the implementation of the herbal medicine program in the country.*

as possessing anti-mutagenic properties.

Samples of *akapulko* decoction and lotion, *niyog-niyogan* suspension and *sambong* syrup both peppermint

and lemon flavored were found to be non-mutagenic, non-clastogenic and possessed anti-mutagenicity activity.

● **ESTABLISHMENT AND MAINTENANCE OF GENE BANK FOR POTENTIAL MEDICINAL PLANTS (MERGED WITH 7716. 2Ag-PROPAGATION OF MEDICINAL PLANTS)**

Ernesta G. Quintana  
UPLB, Department  
of Horticulture

As of December 1985, a total of 486 accessions of plants with purported medicinal uses were planted at the gene bank. Propagation of clinically tested plants like *tsaang gubat*, *sambong* and *yerba buena* was done to ensure availability of these materials for both researchers and the general public.

A preliminary study on the length of storage, storage temperature and kind of packaging material and its effect on the ability of *lagundi* cuttings to regenerate shoots and roots was also conducted. Various packaging materials such as newspaper, saw dust, coir dust, sphagnum moss and rice hull were tested. Results showed low percentage of survival in all treatments except those with sphagnum moss.

Three (3) confirmatory experiments on propagation of *lagundi* and *tsaang gubat* were conducted. Findings showed the effect of size of stem cuttings on survival of both plants in plastic bags. Medium size cuttings gave the most number of roots

and produced more shoots. Effect of indole butyric acid (IBA) 200 ppm. soaked for one (1) hour for *lagundi* and naphthalene acetic acid (ANAA) 100 ppm. soaked for four (4) hours for *tsaang gubat* on the survival of varying sizes grown in mist beds. Medium size cuttings gave the best performance and treated cuttings with IBA enhanced better survival compared to non-treated for *lagundi*, while for *tsaang gubat*, small treated and ANAA excel in all cases. As to the effect of medium in the basal stem cuttings, the highest number of roots was observed by in 1/2 garden soil river sand, while roots was exhibited by garden soil plus 1/2 and 1/3 river sand hog manure

● **ESTABLISHMENT OF A MEDICINAL PLANTS GARDEN AND PRODUCTION FARM**

**Rodel G. Maghirang**  
UPLB, Department  
of Horticulture

This study aims at establishing and maintaining a garden of medicinal plants; establishing and maintaining production farms of medicinal plants; and providing sufficient supply of raw materials for all on-going researches in medicinal plants.

In the last five (5) years, two (2) production areas of medicinal plants which serve as source of raw materials for the other projects

under the integrated program were maintained. In addition to production farms, a garden is being maintained for instruction and extension purposes.

In 1986, observation for nutritional status, pest and disease damages were done on the IPB production farm. Among the five (5) plants, only *sambong* had good growth during the dry season while the others have pest damages.

Maintenance of the area was continued through irrigation, cultivation and weeding. *Yerba buena* was propagated using strips of banana leaves as bagging material and later these were transplanted in the field.

● **ESTABLISHMENT OF A MEDICINAL PLANTS GARDEN AND PRODUCTION FARM**

**Nenita E. de la Cruz**  
Central Luzon State  
University

The project packages technology for the production and post-harvest of the raw materials (medicinal plants) to meet the demands of the local medicinal plant processing industry. As of March 1986, a four (4) hectare plantation of *lagundi*, *tsaang gubat*, *niyog-niyogan*, *sambong* and *yerba buena* was maintained. The farm also supplied the required raw materials of the pilot plant.

Studies on intercropping of leguminous crops showed that *lagundi* and *sambong* yielded best results when intercropped with soybean and cowpea, respectively. Studies on the effect of rice straw

mulch on *yerba buena* production and the survey on insect pests were also completed. Mulching prolongs the life span of *yerba buena* while the latter identified the major insect pests infesting the plants being produced by the farm.

Research is being done on nitrogen application to *yerba buena*; different thickness of rice straw mulch; testing for insecticidal properties of *yerba buena*, *lagundi* and *sambong*; population dynamics of common pests; and cost of production of raw materials.

Two (2) studies on nitrogen application and cost of production were completed wherein it observed the different rates of nitrogen application and the different times of application using urea as fertilizer. The highest numerical yield was obtained from plants applied with 60 kgs N/ha. Production cost for dry, clean *tsaang gubat* and *lagundi* leaves was P20-30/kilo and ₱23.50/kilo, respectively. The high production cost was attributed to the low yields due to non-fertilization and non-spraying for control pests.

**PESTICIDE (RESIDUE) MANAGEMENT IN MEDICINAL PLANTS (New Project)**

**Virginia R. Ocampo, Ph.D.**  
UPLB, Department  
of Entomology

The study aims to develop sound crop protection practices as a component of pest management in herbal production; monitor pesticide residues in medicinal plants;

and determine the effect of processing plants on pesticide residues.

Methodologies will involve crop protection where supervised trials on selected pesticides will be conducted in five (5) priority plants, namely: *lagundi*, *tsaang gubat*, *sambong*, *niyog-niyogan* and *yerba buena*. In pesticide residue monitoring, sampling of treated plants will be done at various time intervals between pesticide application and harvesting. A dissipation curve for each pesticide will be constructed to pinpoint safe intervals between last application and harvest. Processing activities undergone by the plant materials before formulation will be screened for presence of residues. Bioassay testing will be done at the UP Department of Pharmacology, after which a cost-effectiveness analysis on pesticide usage will follow.

**COOPERATIVE STUDY OF LAGUNDI AND SALBUTAMOL TABLETS AMONG PATIENTS WITH CHRONIC AIRFLOW OBSTRUCTION (New Project)**

**Josefina B. Blanco, M.D.**  
UP Department  
of Pharmacology  
Pulmonary Disease Section

The study aims to compare the efficacy and safety of *lagundi* with salbutamol in patients, with chronic airflow obstruction. The methodology will involve selection of patients, visits (which will include medical/physical examination and routine laboratory tests), routine labora-

tory procedures, pulmonary function test, advance reaction and data analysis.

**HEALTH SERVICES R & D**

● **A TIME STUDY OF PUBLIC HEALTH NURSES AND RURAL HEALTH MIDWIVES IN REGION VIII**

**Sostenes Gler, M.D.**  
Regional Health Office No. 8  
Tacloban City

Based on the common observation that public health nurses and rural health midwives spend more time in the accomplishment of records and reports and other technically related activities, this study sought to evaluate how PHNs and RHMs in Region VIII allocated their time in rendering basic services in the community as first and second level workers. It also aims to monitor the necessary work component of health services, manpower and facilities.

Data from public health nurses and rural health midwives were collected through

a structured questionnaire consisting of 21 questions and a diary of daily activities accomplished for a period of one (1) month.

Findings of the study revealed that consultation is the most popular activity with a response rate of 100.0% indicating actual performance of their defined roles. Of the five (5) impact programs of the Ministry of Health, The TB Control Program topped the priority concerns of nurses and midwives, followed by the MCH program, and the Schistosomiasis Control Program indicative of the prevailing disease problems in said communities.

● **DEVELOPMENT/ VALIDATION OF INDICATORS OF COMMUNITY PARTICIPATION IN PRIMARY HEALTH CARE**

**Leoncio P. dela Cruz**  
UP Comprehensive  
Community Health Program

The project aims to vali-



*PHC underscores the importance of community participation in the identification of health and health-related problems as well as solutions to such problems.*

date indicators for community participation in primary health care.

Study areas are towns in Laguna which include San Pablo City, Calamba and San Pedro for the urban areas; and Pila, Victoria, and Calauan, for the rural areas.

Pre-testing of survey instruments was conducted in three (3) barangays of Bay, Laguna namely Tagumpay, San Antonio and Tranca. Revision/finalization of the instruments were also undertaken. Orientation/training of interviewers was held prior to the actual survey.

*Infectious Diseases*

● **MASS TREATMENT AGAINST SCHISTOSOMIASIS IN LEYTE**

Lilia O. Arteche, M.D.  
Palo, Leyte

Intensive campaign on case finding and treatment was launched at the start of the year through health education dissemination at the different endemic barangays. To

support this activity, the environmental sanitation section stepped up the installation and construction of sanitary toilets in households in endemic communities. Construction of hand pumps for water source in the community were also provided to prevent the people from wading or keeping in contact with schistosomiasis infested water sources. This was coordinated by the National Irrigation Administration (NIA) and the Ministry of Public Works and Highways (MPWH).

A total of 86,248 persons (or 40.65% of the exposed population) for case

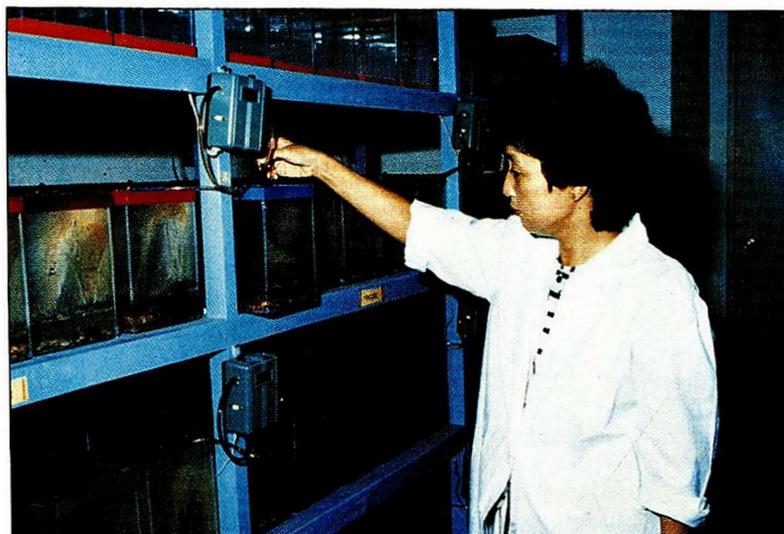
findings was accomplished. The areas covered were 21 municipalities out of the 23 towns and one (1) city endemic to schistosomiasis.

Medical technicians performed the stool examination and processed their specimen at the barangays to ensure continued community participation.

Prevalence rates exhibited a decreasing trend from the start of the project in November 1982 but re-infection maintained the rate of disease occurrence relatively high to prevent the transfer of prevalence control from the provincial to the municipal level (RHUs).



*Electrocardiography stress test screens persons suspected to have cardiovascular disease.*



*Snails infected with schistosoma japonicum are maintained in the laboratory for research uses.*

*Degenerative, Metabolic and Mental Disorders*

● **COMPREHENSIVE CARDIOVASCULAR COMMUNITY CONTROL PROGRAM (CCCP)**

Jose V. Yason, Jr., M.D.  
Philippine Heart Center  
for Asia

The study aims to develop and evaluate the prototype of a feasible control programme for the common cardiovascular diseases (CVD) at the community level. It also

envisions to integrate the program into the PHC program of the country.

The Cardiovascular Disease Clinics (CVD) in the intervention areas (Rosales and Alcala, Pangasinan) have attended to a total number of 399 cases, 348 of which are confirmed CVD cases. Purok teachings in centers have been conducted in 67 puroks out of 267 puroks. In Alcala, teachings were done in 38 puroks of 12 barangays. During purok teachings, the blood pressure was taken to find hypertension cases and to attract participants to the activity. The household teachings were conducted by Barangay Health Workers (BHW) with the supervision of rural health midwives.

Mortal validation yielded 926 health certification from four (4) communities (intervention and control areas) for the year 1981-1982. Of these deaths, 913 or 98.60% of the respondents (relatives of the deceased) were interviewed regarding signs and symptoms observed before the death of the subjects. The cause of death was based on the responses of the relatives of the dead. A panel of cardiologists compared said responses with the cause stated in the death certificates. Only 5.0% of the accomplished forms have been reviewed.

Actual intervention activities integrating CVD control in the school curriculum was finalized. In the high school, CVD education is being taught in YDT and science subjects and in the elementary, in the science subject.

Hypertension case finding survey was started by the midwives and BHWs to maxi-

mize registry. To date, 70 cases have been registered.

#### **NSTA-UP INTEGRATED RESEARCH (PROGRAM C)**

#### **BIOTECHNICAL R & D**

##### *Infectious Diseases*

#### ● ISOLATION OF BACTERIAL MOLLUSICIDE FOR THE BIOLOGICAL CONTROL OF *ONCOMELANIA HUPENSIS QUADRASI* SNAIL HOST OF *SCHISTOSOMA JAPONICUM*

Antonio V. Jacalne, Ph.D.  
UP-Institute of Public Health

The study hopes to isolate and identify bacterial pathogens of fresh water snails which infect the snail host of *S. japonicum*, *Oncomelania hupensis quadrasi*.

Morphological and cultural studies on isolated bacteria from the collected snails have been done. Studies on pathogenicity/toxicity of isolates using experimental animals have been started. One (1) *Bacillus* isolate gave a slight toxicity while five (5) samples from the *Clostridia* group produce severe reactions in mice. Among the other isolates tested, *Pseudomonas aeruginosa* was the most pathogenic.

#### ● ISOLATION AND *IN-VIVO* EXTEROTOXICITY TESTING OF *CAMPYLOBACTER*

Nidia M. Manuson  
UP-Institute of Public Health

The project generally seeks

to identify and characterize campylobacter from gastroenteritis cases and determine enterotoxicity of campylobacter isolates by *in-vivo* method using ligated loop technique.

The second batch of isolates produced the same morphological and biochemical characteristics as the first group of isolates. All are Gram-negative, comma-shaped bacilli, motile, catalase and oxidase-positive and sensitive to 30 mg. disc of nalidixic acid.

Among 207 diarrheal cases studied, there were more female cases (75.0%) than male cases (25.0%) from whom positive campylobacter isolates were obtained with ages ranging from 15 days to 30 months.

Enterotoxicity testing of the isolates by ligated loop-technique have been started.

##### *Degenerative Diseases*

#### ▲ A STUDY OF THE EVOLUTION OF OPTIC NEURITIS CAUSED BY ETHAMBUTOL IN RABBITS

Rosie Reyes Noche, M.D.  
Institute of Ophthalmology  
UP-PGH Medical Center

The study determines histologically the sequence of events that lead to optic neuritis due to prolonged intake of ethambutol and to characterize the substance(s) that could be involved in inducing optic nerve injury.

Studies on ultra-structural changes and biochemical analysis on demyelination have been done.

Greater focal axonal dila-

tion and demyelination was observed on rabbits treated with higher concentration of ethambutol (200 mg). Biochemical analysis shows that pyridoxine levels of the retina decreased significantly as duration of treatment progresses which results in demyelination with nerve atrophy.

Isotope labelling studies of some enzymes and metabolites analysis have been initiated.

● **THE EFFICACY OF VARIOUS MODALITIES OF TREATMENT IN THE DIFFERENT SUBSETS OF KIDNEY STONE FORMER**

**Marietta B. de Luna, M.D.**  
UP-PGH Medical Center

The study aims to determine the distribution of various types of urolithiasis, the metabolic abnormalities associated with the subsets of urolithiasis among patients and to determine the efficacy of different therapeutic modalities in the treatment and prevention of stone recurrence. It also aims to develop a national program for national consciousness of people at risk in developing kidney stones.

Among the 79 patients registered at the Stone Clinic, 45 were males while 34 were females. Most of them were in the 31-60 years of age group.

Calcium stone formers (34.1%) composed most of the patient population, uric acid, second (25.3%) and mixed stone (10.1%), third.

Surgical intervention undertaken revealed significant improvement in the renal

function of patients compared with those without surgery.

*Metabolic Diseases*

● **PRELIMINARY STUDIES ON THE FETAL CORD BLOOD AS A MEANS FOR EARLY DETECTION OF METABOLIC DEFECTS**

**Marita V.T. Reyes, M.D.**  
UP-College of Medicine

The project is designed to establish baseline nutritional and metabolic parameters in fetal cord blood, identify unusual patterns and correlate these with the clinical picture of both the mother and the child in order to establish guidelines for the use of fetal cord blood assay as a means for the early detection of metabolic defects.

The effect of different factors such as age of mother, parity on total proteins and the different protein fractions in the newborn were studied. Total proteins, albumin, alpha, beta and gamma globulin fractions of fetal cord blood associated with the different maternal age groups were not significantly

different from each other. Only the alpha<sub>2</sub> globulin fraction of fetal cord blood was significantly higher in the maternal age groups 20-24 and 30-35 years.

**PHARMACEUTICAL R & D**

*Immunology*

● **STUDY OF COMMON PHILIPPINE ALLERGENIC POLLENS: SELECTED POLLEN SURVEY, CROSS-ALLERGENICITY, ANTIGEN FRACTIONATION AND POLLEN STANDARDIZATION**

**Benigno F. Agbayani, M.D.**  
UP-PGH Medical Center

The project generally aims to determine applicability of other parts of the yard grass besides pollens as antigen in skin testing and for immunotherapy as well.

Pollen survey, collection and pollen propagation have been conducted during the first six-months of the study. Preparation of pollen antigen extraction and fractionation have been started. Atmospheric conditions in Cebu City which are input in the



**Mimosa Inosa (H)** – one of the most common allergenic pollens that cause B. Asthma, allergic rhinitis and urticaris.

interpretation of the pollen survey have been determined.

Antigenicity/allergenicity of pollen versus other parts of the yard grass and pollen counts will be started.

#### *Dental Health*

#### ● **ANTIBACTERIAL EFFECT OF BAYABAS AND GINGER AGAINST DENTAL PATHOGENS IN VITRO AND IN VIVO**

Dr. Irene Achacoso-Porter  
UP College of Dentistry

The project determines the antibacterial activity of ginger extract and guava leaves decoction against aerobic and anaerobic dental pathogens found in the root canal system.

Sensitivity tests of the guava leaves decoction showed a 50.0% reduction in the bacterial colony counts isolated from patients who underwent root canal therapy. For the ginger extract, all of the cases positive for bacterial growth showed significant reduction in bacterial colony counts. Such reduction was slightly higher than that seen in guava leaves decoction.

Longer exposure of the

root canal for either of the two extracts (48 hrs.) showed no significant growth in both aerobic and anaerobic cultures.

#### *PRIMARY HEALTH CARE FINANCING PROJECT (FUNDED BY USAID)*

##### *\*Special Studies*

#### ▲ **A STUDY OF HEALTH MANPOWER DEVELOPMENT PHASE I – THE STUDY OF THE MEDICAL COLLEGES**

Commission on Medical Education Foundation  
for the Advancement of Orthopedics and Other Sciences Inc.

The project is an in-depth study of the 27 medical schools in the Philippines. It aims to study the quality and status of medical education in the light of the current performance/quality of medical graduates produced by the present system of medical education. The study covers various aspects such as governance of medical schools, responsiveness to actual health needs and problems in the country, man-

power and financial resources, facilities, studentry, curricula.

Individual reports describing each medical school on the following areas: the College of Medicine; curriculum; facilities and financial status; and teaching hospital and the studentry were prepared. Each area were analyzed using the evaluation guidelines/criteria set by the project and compared with the existing standards for medical schools. The schools were rated per area and were then categorized. Sanctions to be applied when the medical school was found deficient in some or in all areas of investigation were recommended.

The cost-effectiveness aspect of the study is currently being undertaken and a consolidated final report will still be prepared.

#### ▲ **ANALYSIS OF THE PERFORMANCE OF MIDWIVES AND BARANGAY HEALTH WORKERS IN PRIMARY HEALTH CARE**

Amaryllis T. Torres, Ph.D.  
Population Center  
Foundation

The study aims to determine the effectiveness of MWs and BHWs in the performance of their functions as an integral component in the implementing structure of PHC.

Field survey was conducted in six (6) regions (I, IV, VI, VIII, XI, XII) covering 18 provinces, 50 districts, and 130 municipalities. Two (2) model barangays in each of the sample region (within the sampled provinces were



*Guava leaves are found to be an effective anti-bacterial agent against dental pathogens.*

purposively selected for comparison purposes). Secondary data gathering in the regions and MOH central office was likewise undertaken.

A total of 3,878 sets of interviews was accomplished.

Data processing and analysis were completed and the final report is currently being prepared.

● **FORMULATING A COMPREHENSIVE AND SUBSTANTIATED DEVELOPMENT CONCEPT FOR THE ALABANG COMPLEX**

**Andres A. Angara, M.D.**  
**Integrated Health Care Services, Inc.**  
**(INTERCARE)**

The project aims to study the development of the Alabang Complex for the provision of adequate supply of vaccines and other biologicals, reagents and diagnostic materials. Likewise, the project will render support to the clinical diagnostic research and training activities of the MOH and other institutions involved in the development and preparation of vaccine and other biological products.

To date, studies conducted by INTERCARE resulted in developing a recommended list of vaccines/biologicals on the organizational set-up and physical development of the complex, and identification of diversification possibilities. The study on financial analysis and implications and the conceptual planning of the Alabang Complex are being finalized.

● **ESTABLISHMENT OF QUALITY CONTROL BIOASSAY PROCEDURES FOR MEDICINAL PLANT PRODUCTS**

**Romeo F. Quijano, M.D.**  
**UP Pharmacology**

The project aims to establish bioassay quality standards to assess adequate pharmacologic potencies of medicinal products.

The study focus on different experimental techniques assessing the antitussive, analgesic, anti-diarrheal, diuretic, and anti-helminthic effects of five (5) medicinal plants namely *lagundi*, *yerba buena*, *tsaang gubat*, *sambong* and *niyog-niyogan*. Other project activities involve batch testing of medicinal plants and products utilizing bioassay procedures already shown to be sensitive enough to determine the pharmacologic effects.

To date, experiments on charcoal tracing for anti-diarrheal effect, analgesic and metabolic cage for analgesic and diuretic effects, respectively were completed.

*\*Health Care Financing Schemes*

▲ **ESTABLISHING A MINIMART TO AUGMENT THE INCOME OF THE MEDICARE COMMUNITY HOSPITAL**

**Enrico R. Dasal, M.D.**  
**Dumarao Medicare Community Hospital**

The project aims to improve and expand the scope of health services being delivered by the hospital to the community and to generate more funds to support hospital operations.

The one-year implementation period ended on September 30, 1986. Utilizing the available secondary data,



*The minimart concept was developed as a Medicare financing scheme to augment the income of community hospitals.*

field visit/monitoring reports, technical and financial progress reports and the baseline survey information gathered by UP Manila, the final write-up on the project was initiated. The decision on the possible continuation of the minimart operation will be made upon receipt of the next year plan of activities from the project leader.

● **PILOT TESTING A HEALTH MAINTENANCE ORGANIZATION (HMO) AS A HEALTH CARE FINANCING SCHEME**

**Andres A. Angara, M.D.**  
Integrated Health Care  
Services, Inc.  
(INTERCARE)

The project aims to pilot test the Health Maintenance Organization (HMO) as a Health Care Financing Scheme for two (2) basic types of population: (1) employees of private companies that do not have company-funded benefits beyond legal requirements and (2) people living in communities served by a mix of private free-for-service providers and government funded health care. The *Kristiyanong Alyansa ng Mamamayang Obrero* (KAMAO), an alliance of some 12,000 workers whose places of work are geographically distributed over Metro-Manila and the four (4) barangays in Marikina, have been identified as target communities.

Project implementation was officially initiated on November 1986. A baseline survey was conducted in the KAMAO community to obtain data needed for the ini-

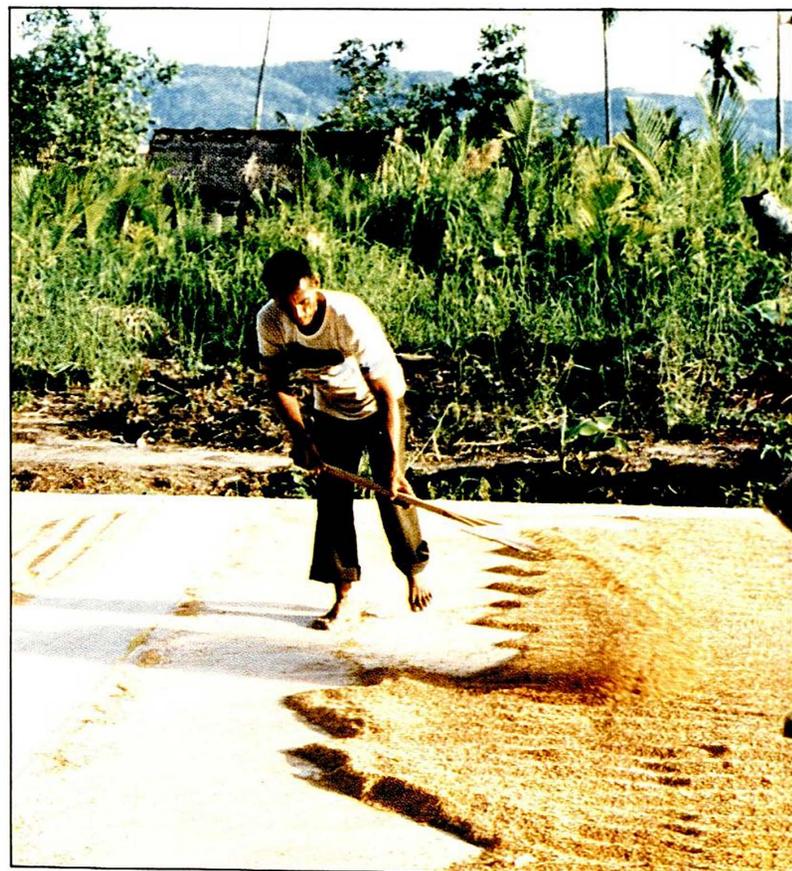
tial formulation of the HMO's package of health benefits and corresponding premiums, the operating structures and mechanisms to render such benefits, and the marketing strategy.

● **COOPERATIVE RICE MILL AND STORES FOR COMMUNITY-BASED PEOPLE'S HEALTH PROGRAMS**

**Eddie G. Dorotan, M.D.**  
Lingap Para sa Kalusugan ng Sambayanan (LIKAS)

The study aims to test the effectivity and viability of a farmer's cooperative model as a financing scheme for the Community-Based People's Health Program.

The Cooperative, which includes a rice mill, buy palay, sell rice venture and three (3) cooperative stores, was formed to generate funds for the People's Health Program being implemented by the Sandigan Community Health Workers in 19 selected communities in Irosin, and Bulusan, Sorsogon. The store in Bulusan and one in Irosin were officially opened last July, while the third store in Gabao, Irosin was opened in August. Prices of commodities being sold in the stores were pegged at market prices. Some basic items like rice and sugar however have much lower prices than those prevailing in the market. The rice mill became operational only last October 1986.



*Community economic ventures can support People's Health Programs to benefit farmers.*

### Accomplishments of the Regional Health Research Development Committees

Regional Health Research and Development Committees (RHRDCs) are envisioned to carry out PCHRD's institution development programs particularly in promoting and coordinating health research-related activities in the regions.

This year, the PCHRD vigorously pursued the development and maintenance of these RHRDCs as crucial mechanisms for the Council's regional outreach. Major accomplishments include:

#### *\*Regionalization of Health Research Capabilities*

Continuous activities in the four (4) regional RHRDCs resulted in:

- a consultative workshop on health R & D in Iloilo identified R & D priorities of said region
- a medical librarian from Cebu Doctor's College was trained at the UP-CM, and as a result, the CDC became the sub-focal point for SEAMIC
- two (2) research projects were completed in Region VIII and 22 protocols were revised
- a training on clinical trials results in protocols on *lagundi* and *tsaang gubat*

#### Operationalization of the EHSC

The heads of member institutions of the Ermita Health Science Community (EHSC) has formally signed



*The promotion and coordination of health-research activities have reached substantial gains with the formal launching of the EHSC.*

its Memorandum of Agreement last January 1986. The creation of standing committees and the EHSC operational guidelines are being finalized.

#### Manpower Development

The PCHRD supported the on-going scholars from five (5) health research institutions, namely, RITM, UST, PHCA, RHRDC Region 8 and the Remedios T. Romualdez Medical Foundation. Four (4) new scholars from NPCC, RITM, and the UP College of Pharmacy were chosen for the year 1987.

Two (2) training courses, such as anaerobic bacteriology techniques and the third post-graduate course on clinical pharmacology were sponsored by the Council to upgrade skills of potential researchers in the country.

#### Institutional Ethics Review Committees

A workshop with experts

sharing insights and experiences relative to institutional ethics review was convened to discuss the establishment of Ethics Review Committees in every institution.

#### Proposed Research Center

The proposal on "A Research Center for Biologically Important Natural Products: Strengthening Research Facilities" approved last year enabled the research centers of UST to pursue further thesis studies on medicinal plants and biologically important natural products. Similarly, a training program on laboratory diagnosis in diarrheal diseases was approved to upgrade skills of medical technologies.

#### PCHRD Staff Development

A training program on the Development and Evaluation of Project Proposals was conducted to enable them to assist researchers in protocol preparation and review.

# SCIENTIFIC AND TECHNOLOGICAL SERVICES

PCHRD



*The Agham Ugnayan sa Press continues to be a vital medium of PCHRD's dissemination efforts. Here, Dr. Carmencita Reodica expounds on the benefits of Primary Health Care.*

## Technology Transfer and Commercialization

The creation of the Technology Assessment Unit was conceptualized to take charge of activities like technology assessment, sourcing, dissemination and utilization.

Two (2) herbal tablets, *lagundi* and *tsaang gubat*, are currently being market-tested by a private entity, the Philippine Herbal Group, Inc. A seminar at the Population Center Foundation was also conducted as part of the technology's dissemination program. Regional lecture assignments on the use of medicinal plants were also coordinated by the secretariat.

## Research Results Dissemination and Utilization

To continuously build up information resources and disseminate health-research-based data and information, the PCHRD embarked on concrete activities designed

to cater to varied audiences, most prominently policy-makers, health researchers, mass media and the general public.

Eight (8) sessions of the *Agham Ugnayan sa Press* were coordinated. Topics discussed dealt on Primary Health Care, Tuberculosis, Schistosomiasis, Oral Rehydration Therapy, The Work Environment and the Health of Workers in the Philippines (The Case of Plastic Industry), Manpower Development for the Health Research Network, Dental Research, Leprosy Research, Metro Manila Health Profile and Radioactive Contamination of Food. Press releases and media coverages on significant events were likewise prepared.

To further boost the information drive of the Council, a total of 11 publications were developed, printed and distributed to the health research network.

Publications	Copies
PCHRD Annual Report 1985	1,500
PCHRD Briefing Material	1,500
National Guidelines for Biomedical Research Involving Human Subjects	1,500
PCHRD Bulletin (Vol. II Nos. 2-5)	1,000/quarter
Proceedings of the Consultative Seminar-Workshop on Information for Health Care	500
Information Brochures on PCHRD's Scholarship Programs Thesis Assistance Programs	500
Directory of Laboratory Equipment Supplies Part II	100
Survey of Fellowship Programs and Research Grants for Medical Research and Related Fields	100
Proceedings of the Consultative Workshop on Health Research and Development for Region VI – Iloilo City	60
Compilation of Reference Materials on the Ethical Review of Biomedical Research	50

## Research Information Support System

Data bases on health R & D are being strengthened through continuous data gathering. To date, the data bank has 1,897 research abstracts, and 3,315 R & D titles. Substantial computerization activities will peak up

## PCHRD

with the lease-purchase of micro-computers.

As part of the in-house scientific documentation program, access on 97 titles of publications was made available at the PCHRD library. An inventory of health related information was also conducted to increase utility of in-house reading materials.

The PCHRD, through the Technical Inquiry Service (TIS) was able to assist students, researchers, professionals and other people from all walks of life on inquiries related to health R & D and its allied sciences.

To support the library information needs of the research community and institutionalize the library system into a rich source of health research materials, the Health Research and Development Information Network (HERDIN) has firmed up its implementation plan with the expected assistance of the International Development Research Center (IDRC).

The PCHRD, through the Committee on Publications (COP) granted a total of ₱208,336 for the production and printing of the following materials:

- a. "Abstract-Bibliography of Selected Medicinal Plants in the Philippines"  
Project Leader:  
Prof. Ernesta Quintana,  
UPLB  
Project Grant: ₱40,000
- b. Printing of one (1) issue of the "Philippine Health Education Journal"  
Project Leader:  
Ms. Zenaida Villaescusa  
President, Health Educators Association of



*The professional upgrading of health librarians is a continuing effort in support of research information.*

the Phil.

Project Grant: ₱8,000

- c. "Production of Handbooks on Research Methodologies"

Project Leader:

Dr. Fernando Sanchez, Jr.  
Dean, UERMMM

Project Grant:

₱156,336

- d. Printing of a "Monograph Series No. 2, Nuclear Technology"

Project Leader:

Dr. Minerva Belen-Inciong

Executive Director,  
Nutrition Foundation  
of the Philippines

Project Grant: ₱4,000

In cooperation with the United Nations Development Programme (UNDP), symposia on Medical Librarianship and Medical Thesaurus were conducted. Likewise, two (2) training courses, sponsored by the World Health Organization (WHO) and the British Council were conducted to upgrade health library manpower. They are 1) National Training convened at the National Teachers'

Training Center – UPCM (NTTC-UPCM); and 2) Seminar-Workshop on Current Trends for Professional Librarians, held in Cebu City. Two experts, Nicola Jane Whitsed and Roy Tabor from the Charing Cross Hospital Medical School and Wessex Regional Library Information Service, respectively, were the resource speakers in Cebu City.

The proposal defining the Philippine participation in Asia and the Pacific Information Network for Medicinal and Aromatic Plants (APIN-MAP) has been finalized and submitted to the United Nations Educational Scientific Cultural Organization (UNESCO). Thru the Philippine Office, UNESCO-Paris had already signified commitment of \$25,000 for the project.

# ESTABLISHMENT OF LOCAL AND INTERNATIONAL LINKAGES

PCHRD



*Delegates of the Swedish Committee for Alternative Medicine are briefed on the current developments in health R & D, and on herbal medicine in particular.*

With sustained liaising efforts, linkage with local and international fund-granting institutions were renewed and strengthened. Data on the 1986 Health R & D funds granted nationwide by ten (10) leading foreign agencies revealed that a total of \$17.75 million was spent for health R & D in the Philippines. The health profile of ASEAN countries (Malaysia, Indonesia, Singapore and Thailand) were to provide information on their health research thrusts, objectives, priorities, S & T cooperation as well as their health research projects.

The Drug Association of the Philippines (DAP) provided support to one (1) student summer research awardee with a grant of ₱5,000. The awardee represented the College of Pharmacy of the Philippine Women's University with a proposal on "Tannin from the Bark of Duhat for Mouthwash Formulation." Now, on its second year of implementation, the CVD Project funded by the Fernando Lopez Biomedical Research Foundation was also coordinated by the Council.



*Tannin from the bark of duhat was proven to be a good mouthwash by Ms. Gina Liza V. Tecson in her summer research study funded by the Drug Association of the Philippines.*

A total of 30 capsule protocols were submitted to foreign NGO's for possible funding, of which three (3) were already endorsed. The Council coordinated the visits of experts from IDRC to evaluate three (3) new proposals and monitor five (5) on-going IDRC projects.

Linkages with the UNDP, UNFPA, WHO, CIDA, ADAB, PAEF, Ford Foundation, the Australian and New Zealand Medical Research Councils and the National Institute of Health in Bethesda, Maryland were strengthened for possi-

ble funding assistance.

Health R & D protocols covered by bilateral agreements were prepared and submitted to the PROC, Cuba, New Zealand, and Japan for possible funding and implementation.

An observation tour to the herbal farm at UPLB and the NSTA Pilot Plant was coordinated by the MOH and PCHRD in connection with the visit of 21 members of the Swedish Committee for Alternative Medicine.

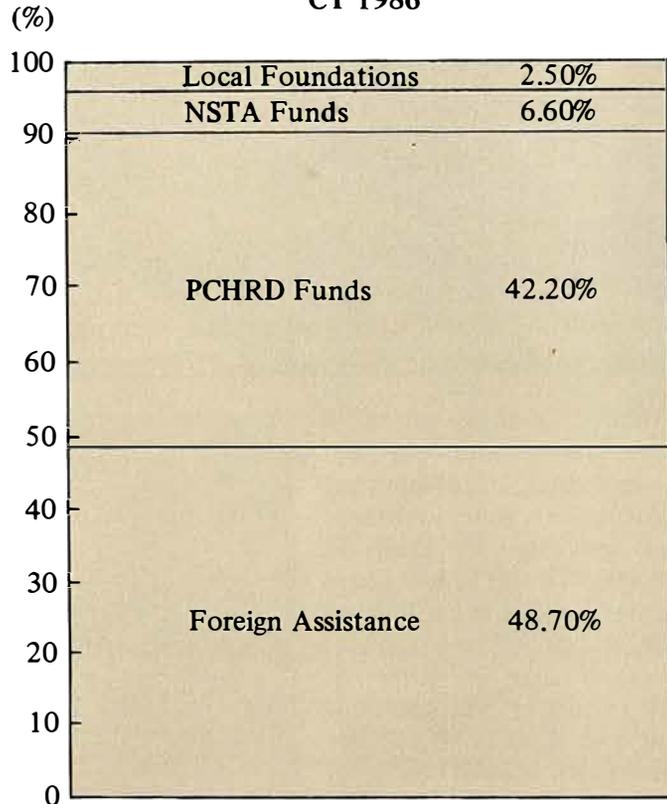
# FINANCIAL HIGHLIGHTS

## PCHRD Funding Sources

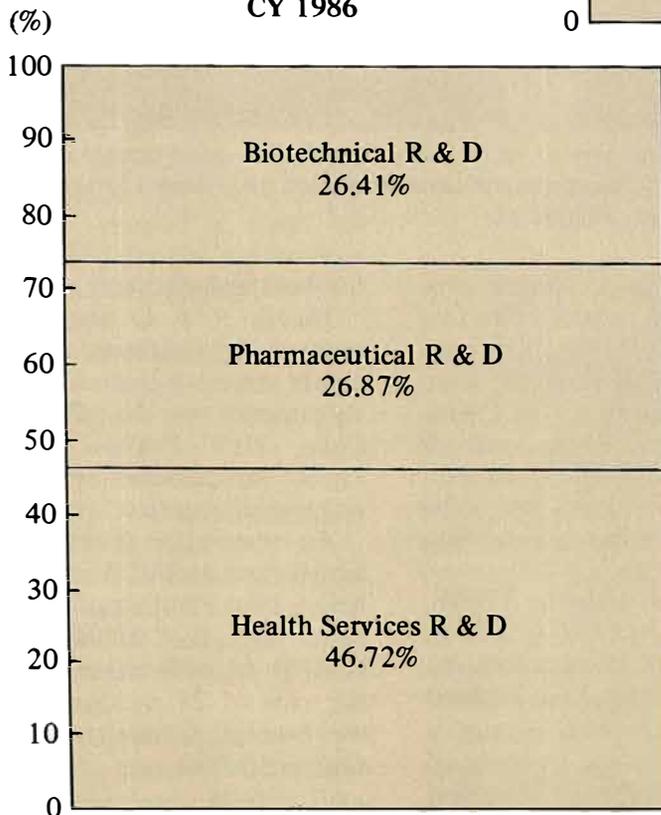
Total funding released for the year was ₱21.70 M which came from:

- a) PCHRD funds with a contribution of ₱9.15 M or 42.20% of the 1986 total budget
- b) NSTA funds with a contribution of ₱1.44 M or 6.60%
- c) Foreign Assistance with a contribution of ₱10.56 M or 48.70%
- d) Local Foundations with a contribution of ₱0.55 M or 2.50%

**FIGURE 1**  
Distribution of Funding Sources  
CY 1986



**FIGURE 2**  
Expenditures\* for Health  
R & D by Research Thrust  
CY 1986



## Expenditures for Health Research and Development (R & D) by Research Thrust

The total health R & D expenditures for this year was ₱10.17 M\* distributed as follows:

- a) Biotechnical R & D expenditures was ₱2.69 M or 26.41%
- b) Pharmaceutical R & D expenditures was ₱2.73 M or 26.87%
- c) Health Services R & D expenditures was ₱4.75 M or 46.72%

\*Total health R & D expenditures of ₱10.17 M was exclusively from the GIA. R & D expenses charged against the Secretariat fund were not included.

TABLE 1  
Distribution of 1986 Health R & D Expenditures by  
Research Thrust and Program Area

The total health R & D expenditure of P10.17 M for research thrusts was distributed to the following research areas:

Program Area	Research Thrust			Total (M)
	Biotechnical R & D (M)	Pharmaceutical R & D (M)	Health Services R & D (M)	
Communicable Diseases	₱ 1.80	₱ 0.91	₱ 0.94	₱ 3.65
Degenerative, Metabolic and Mental Disorders	0.21	0.91	0.99	2.11
Maternal and Child Health	0.68	0.91	0.94	2.53
Malnutrition	—	—	0.94	0.94
Environmental Health, Safety and Rehabilitation	—	—	0.94	0.94
<b>Total (M)</b>	<b>₱2.69 M</b>	<b>₱2.73 M</b>	<b>₱4.75 M</b>	<b>₱10.17 M</b>

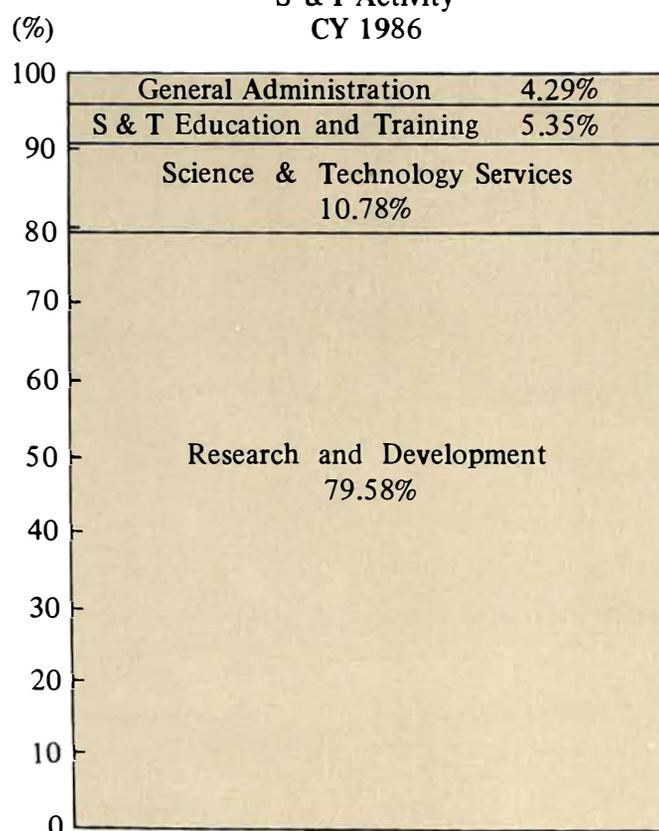
FIGURE 3  
PCHRD Expenditures by  
S & T Activity  
CY 1986

**Expenditures for Health  
Research and Development  
by S & T Activity (1986)**

The total expenditures of PCHRD amounting to ₱16.31 M were spent on the following S & T activities:

- Research and Development - ₱12.98 M\* or 79.58%
- Science and Technology Education and Training - ₱0.87 M or 5.35%
- Science and Technology Services - ₱1.76 M or 10.78%
- General Administration - ₱0.70 M or 4.29%

\* Amount reflects not only R & D expenses from GIA (P10.17 M) but also R & D expenses charged against the Secretariat.



### Top Ten Leading Foreign Funding Agencies for Health R & D

A total of \$17.75M for Health R & D were contributed by funding agencies such as the United States Agency for International Development (USAID), International Development Assistance/International Bank for Rural Development (IDA/IBRD), Japan International Cooperation Agency (JICA), United Nations International Children's Emergency Fund (UNICEF), United Nations

Fund for Population Activities (UNFPA), Australian Development Assistance Bureau (ADAB), World Health Organization (WHO), Board of Science and Technology for International Development (BOSTID), International Development Research Center (IDRC), and the Asian Development Bank (ADB). The areas or studies funded dealt on primary health care financing, population (planning and health component), institutional grant, health manpower

training, nutrition, maternal and child health, acute respiratory infection, schistosomiasis control, diarrheal diseases, mental health, malaria control, and social welfare (urban poor).

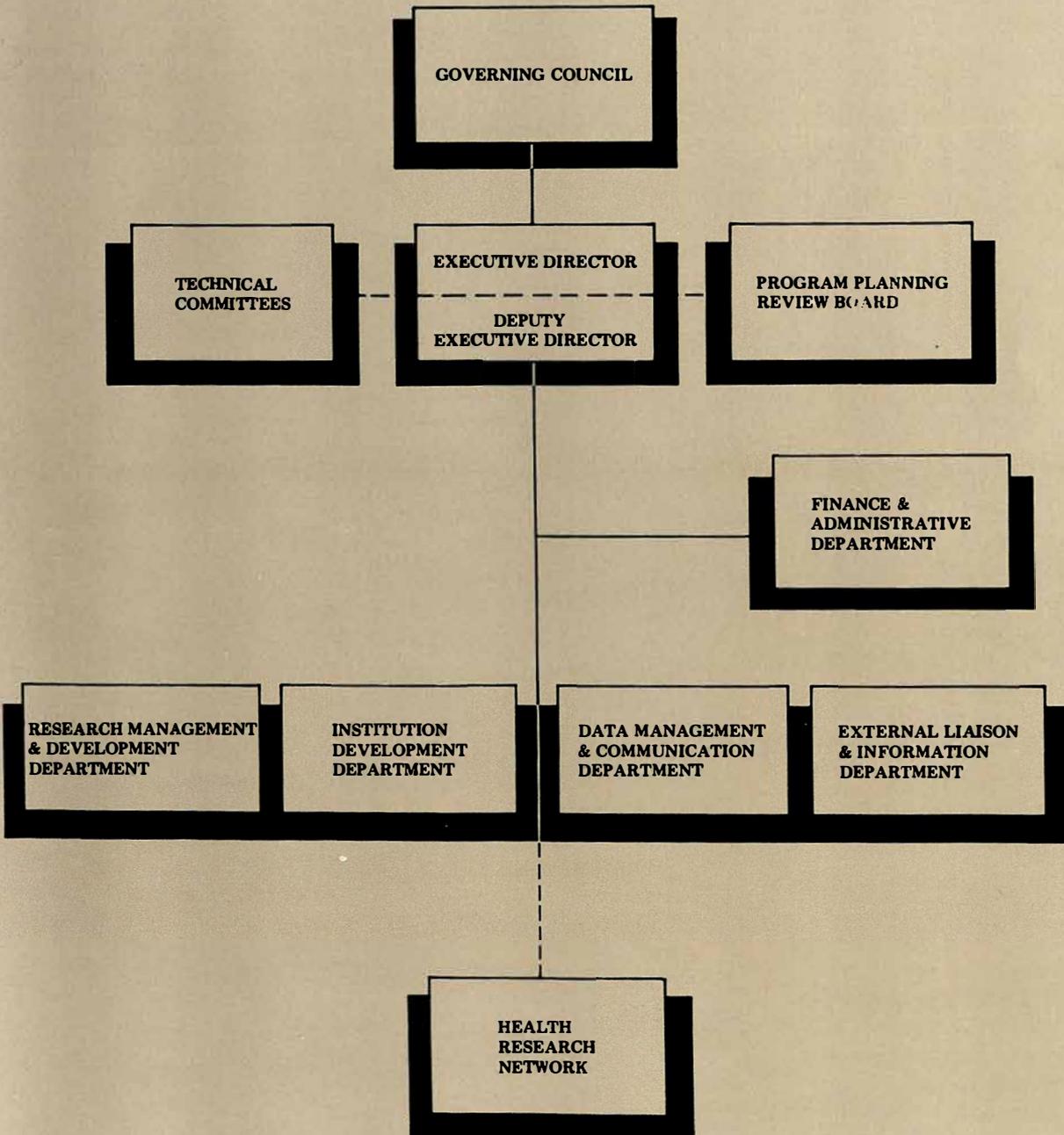
TABLE 2  
Top Ten Foreign Funding Agencies For Health R & D  
CY 1986

Foreign Funding Agencies	Amount (in Million \$)	Recipients
1. USAID	\$9.73 M	Ministry of Health (MOH); PCHRD
2. IDA/IBRD	\$2.88 M	MOH
3. JICA	\$1.80 M	Research Institute for Tropical Medicine (RITM)
4. UNICEF	\$1.08 M	MOH, Negros
5. UNFPA	\$0.91 M	National Economic & Development Authority (NEDA); Population Center Foundation (PCF); Commission on Population (PopCom)
6. ADAB	\$0.52 M	RITM; Sorsogon; Negros
7. WHO	\$0.30 M	MOH; UP Manila
8. BOSTID	\$0.28 M	RITM; UPCM Liver Study Group
9. IDRC	\$0.14 M	UP Los Baños; Notre Dame University
10. ADB	\$0.11 M	MOH
Total amount contributed for Health R & D	\$17.75 M	

# ORGANIZATIONAL STRUCTURE

PCHRD

## Philippine Council for Health Research and Development Organizational Structure 1986



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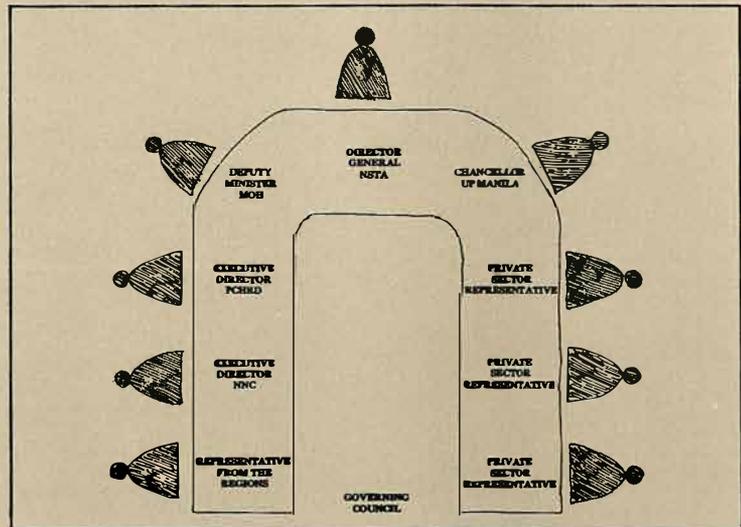
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