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**PAN AMERICAN HEALTH  
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**SEVENTH MEETING  
24-28 JUNE 1968**

**ADVISORY COMMITTEE  
ON MEDICAL RESEARCH**

**WASHINGTON, D.C.**

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**REPORT TO THE DIRECTOR**

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**PAN AMERICAN HEALTH ORGANIZATION**  
Pan American Sanitary Bureau, Regional Office of the  
**WORLD HEALTH ORGANIZATION**

**WASHINGTON, D.C.**

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## PAHO ADVISORY COMMITTEE ON MEDICAL RESEARCH

Report to the Director

1968

Chairman René Dubos opened the Seventh Meeting of the Pan American Health Organization Advisory Committee on Medical Research and, with Vice-Chairman Marcel Roche, appointed the rapporteurs, Dr. John C. Waterlow and Dr. Roberto Caldeyro-Barcia.

The Director welcomed the Committee and expressed the continuing interest of PAHO in the development and strengthening of research. He reported on the decision to create a Department of Research Development and Coordination, which will be responsible for continuing the work that has been carried on up to now by the Office of the same name. He then summarized the topics to be discussed by the Committee during the course of the week and called attention to areas of particular importance to health in Latin America.

The Committee expressed its approval and support of the decision to create the Department of Research Development and Coordination.

1. The PAHO Research Program: A Proposal for Revision and Expansion

1.1 Over the past six years the PAHO research program has played an important role in stimulating and strengthening the resources and capabilities for biomedical research in the Americas. On the basis of guidelines provided by the PAHO Advisory Committee on Medical Research and the recommendations of consultants, PAHO has been implementing its research program principally by obtaining support for research projects that meet the standards of excellence required by granting agencies. The fruits of many of

the research efforts initiated in the last six years are yet to be reaped. It is clear at this time that in order to develop the health sciences component of the Regional Scientific and Technological Development Program promulgated by the Presidents of America, and in order for the support of research and research training to be more direct and in closer alignment with PAHO's priorities, a greater share of the Organization's own resources must be committed to these efforts.

A document outlining the structure, objectives, scope, and possible budget of the proposed expanded program was presented to the Committee. A basic feature of the plan is concentration on multinational programs, including, in each scientific field, collaboration among outstanding centers in different countries. Initially, three fields would be selected for support - viral zoonoses, clinical medicine, and regional library services - since some of the groundwork has already been done in these particular areas. Other subjects would be included later.

The expanded program also provides for research and training grants, increased facilities for biomedical communication (scientific meetings, symposia, and publications), and an allocation for operations research.

Two alternative budgets, with modifications based on the amount of money available and the administrative structure to be adopted, were presented. It was suggested that a full Department of Research Development and Coordination, with five operational units, be included within the Organization.

When asked to consider whether the document made an effective case for the expansion of PAHO research activities that was likely to influence contributing governments, the Committee made the following suggestions regarding the text:

- The document could be made more persuasive to Ministers of Finance and Planning by calling attention to the relationship between improved levels of health and economic development.

- The program outlined in the present document should be placed in the context of the total PAHO research effort in Latin America.
- The relevance of the program to the health needs of the Americas should be emphasized.
- The reasons for the initial choice of subjects for multinational programs should be clearly stated.

The Committee also made the following suggestions regarding the content of the program:

- Emphasis should be placed on biosocial as well as biomedical research.
- The great importance of parasitic diseases in Latin America should not be overlooked.
- The details of the budget might be reconsidered with a view to concentrating a larger proportion of the funds directly on research work (research and research training grants).

With these emendations, the Committee strongly supported the proposal for expansion of the PAHO research program and the Director's decision to establish a Department of Research Development and Coordination as an essential part of the Organization.

1.2 Since one of the intentions of the research program is to reduce incentives for migration, a report was presented to the Committee on recent developments in the migration pattern of scientists, engineers, and medical personnel from Mexico, the Caribbean area, and Central and South America to the United States. The data for 1966 and 1967 supplemented information previously published by PAHO.

These were the main observations:

- The single most notable development over the past two years has been the heavy migration of nurses from the Caribbean area. Migration of nurses from Central and South America has decreased.

- Migration of physicians has not increased significantly. However, it was pointed out that (a) migration was heavy in earlier years; (b) the statistics do not take differences in quality into account; and (c) a few particularly difficult situations still exist in which the migration of small numbers generates severe problems.
- Greater attention should be paid by the governments to the implications of migration for health policy, both in countries that are importing health manpower and in those that are losing it. Better statistics and studies of migration are needed, but it has proved difficult to stimulate the countries to take action in this area.
- If the Vietnam war ends, the migration of physicians to the United States may increase. On the other hand, the restrictions on immigration to the United States from Latin America that enter into effect on 1 July 1968 may reduce the current rate.

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## 2. Opportunities for Operations Research in the Health Services

The nature of operations research was described, and several areas of interest to PAHO in which these techniques might be useful were suggested. It was proposed that an officer be assigned within the Department of Research Development and Coordination to function mainly as a link between PAHO and university and industrial organizations engaged in operations research. Examples were given of problems in which technical cooperation of this kind might be feasible and productive.

In the discussion it was stressed that a proper balance must be achieved among various management techniques, such as systems analysis, the planning-programming-budgeting system, and operations research in the field. All these come under the heading of administrative research. It was pointed out that since health administrators will be the persons who apply the results of operations research, they must be properly trained in the theory and practice of organization and management.

The Director called attention to the recent establishment of a strong division of research in epidemiology and communications science at WHO,



and also to the creation, with the help from Columbia University, of a Latin American Center for Administrative Medicine in Argentina. These developments emphasize the growing importance of the subject.

The Committee endorsed the potential value of operations research and suggested that to the extent possible these techniques of control and evaluation should be built into future PAHO research programs. As a first step, it proposed that one or two areas should be chosen for the application of the operations research methodology, in order to demonstrate their practical value to PAHO. One suitable area might be the standardization of water supply technology.

### 3. Outline of a Program for the Support of Research and Research Training in Clinical Medicine

Earlier this year, at the request of PAHO, a member of the Committee visited nine Latin American countries in order to learn as much as possible about the status of existing activities and opportunities in clinical research and, on the basis of his findings, to make proposals for a new program.

It was pointed out at the start that a report based on visits of a few days each to so many countries could not be anything but superficial. The members of the Committee in these countries were most generous in giving their time and in contributing their experience to the undertaking. However, the report must be regarded as a summary of personal impressions, intended only as a starting point for further discussion and planning.

The Committee endorsed the need for a program of research support in the area of clinical medicine and reaffirmed the view that such support should be given to people rather than to projects.

It was recognized that the part-time system, which is almost universal in Latin America, imposes great difficulties in that it disperses the activities of doctors. The Committee took the view that while PAHO should do everything possible to encourage the provision of more full-time posts in clinical medicine, it would be unrealistic at the present time to insist that grants should only be given to full-time salaried workers.

One of the weaknesses encountered in many clinical departments was the fragmentation of research, with each worker engaged on a different problem. The grants policy should be such that not only is more time devoted to research but also that more effort is concentrated on specific topics.

The Committee agreed unanimously that in this program priority should be given to research on problems that have special importance for Latin America. One type of research to which more attention might be given is the controlled clinical trial of therapeutic agents with proper statistical design.

It was further agreed that the main objective of the program should be to encourage and support the younger men who are just beginning to emerge as clinical research workers. In this way relatively small grants may produce a large return.

The question of the organization of the program was briefly considered, and particular thought was given to the possibility of making small block grants to selected medical schools.

The Committee felt that at this stage the program must be regarded as exploratory, and all aspects of it must be flexible. The Department of Research Development and Coordination should be given a free hand in shaping the program within these general guidelines.

#### 4. The Pan American Health Planning Center: Research Plans

The Center in Santiago is in charge of the health planning courses that PAHO has been conducting for the last six years in cooperation with the Latin American Institute of Economic and Social Planning. The courses have been related to a planning method developed in Venezuela jointly by PAHO and the Development Studies Center at the Central University.

It is planned that the Center will function in general as an investigator, promotor, and coordinator of the work to be carried out in the public health schools, the Ministries of Health, and other institutions in the participating countries.

The problems existing in health planning have been identified by the countries that are using the method taught by the Center. The lack of implementation of some of the formulated plans is one of the questions to be investigated.

These are some of the other questions that the Center is studying:

- What should be the relationship between resources assigned to the health sector and those assigned to other sectors?
- What is the relative importance of various diseases in the different countries?
- What type of indicators should be used to establish the priority of health problems in a given country?

Through this approach the Center hopes to deal with the four key concepts involved in health planning: (a) problem areas and their objectives, (b) resources, (c) community constraints, and (d) planning processes.

In the future there will be a staff of 16 professional persons at the Center, plus 3 stationed at PAHO headquarters and 2 more assigned to project evaluation. The Center operates with a budget of \$1.9 million from the United Nations Development Program, which, added to contributions from PAHO and the individual countries, will come to about \$7 million over the next five years. In addition, it will have the continuing advisory services of the Latin American Institute for Economic and Social Planning.

##### 5. New Perspectives for Research in the Pan American Zoonoses and Foot-and-Mouth Disease Centers

5.1 The Pan American Zoonoses Center at Ramos Mejía, Province of Buenos Aires, Argentina, concentrates its research activities mainly on four zoonoses: rabies, brucellosis, hydatidosis, and bovine tuberculosis. Its staff is small and should be enlarged so that the Center can expand its current program, which is directed towards clarifying epidemiological aspects of these diseases and carrying out basic investigation in related fields.

In the area of rabies, the immediate responsibilities of the Center are the continuous improvement of vaccine quality and control, as well as its evaluation for use in cattle. With respect to brucellosis, emphasis is put on the coordination of activities in different countries, including surveys on animal and human populations, as well as a pilot program on the control of caprine brucellosis. In regard to hydatidosis, special stress has been given to immunochemical studies on purified antigens from Echinococcus granulosus hydatid fluid, the screening of drugs for the treatment of canine echinococcosis, and the education of dog owners to avoid continuous reinfection of the canine population.

The Advisory Committee of the Centers recommended that a meeting be held in Buenos Aires in 1969 to discuss the control of bovine tuberculosis. After this meeting the Center could decide about the expansion of its activities in the tuberculosis program.

5.2 The Pan American Foot-and-Mouth Disease Center at São Bento, State of Rio de Janeiro, Brazil, has a very important function because of the great economic significance of the disease. FMD imperils an industry that is valued at more than \$30 billion and earns \$1 billion a year in foreign markets. The Center aims at protecting more than 300 million cattle, sheep, and swine. Its activities include the provision of guidance to laboratories engaged in the production of FMD vaccines, the typing of FMD viruses, the characterization of infections by vesicular stomatitis viruses, and the training of personnel for institutions engaged in the investigation and control of the disease.

The annual budget of the Center is only about \$1 million and should obviously be increased. For that purpose, additional sources of income have to be secured, and the financial support of the Inter-American Development Bank (IDB) was especially mentioned. The scientific staff of the Center has also to be increased, and among first priorities are two virologists, one immunochemist, one epidemiologist, three consultants to local governments, and at least two more investigators to deal with the problems of production and control of inactivated vaccines.

In the discussion the question was raised about the possibility of obtaining funds from industry to help the activities of the FMD Center. This is going to be done, and the IDB is possibly going to provide the instrument for this kind of approach.

5.3 In discussing the problem of applied versus fundamental research at the Zoonoses and FMD Centers, it was stated that both kinds of research should be pursued if the Centers are to acquire a reputation not only as a source of applied knowledge but also as a part of the scientific community. This development is of utmost importance in order to attract the interest and participation of scientists in the Centers' activities.

The viral zoonoses program suggested in the proposal for the revision and expansion of the PAHO research program does not interfere with the Zoonoses and FMD Centers; rather, the Centers will benefit from it. The new program will be concerned mainly with the investigation of arboviruses.

#### 6. The John E. Fogarty International Center for Advanced Study in the Health Sciences

An International Center for Advanced Study in the Health Sciences has been established at the National Institutes of Health as a memorial to the late Congressman John E. Fogarty in recognition of his contribution to health legislation in the United States. The mission of the Center will be twofold: (a) to facilitate the useful exchange of distinguished science leaders and scholars, as well as promising young scientists; and (b) to provide a favorable environment for the exchange, expansion, and evolution of ideas.

To fulfill these basic objectives, the Center will initiate the following programs:

##### - The Distinguished Scholars and Fellowship Program

Provision will be made for (a) scholars-in-residence; (b) exchange of distinguished scientists; and (c) international postdoctoral fellowships.

- The International Conference and Seminar Program

A series of working conferences on current directions in the medical, biological, and behavioral sciences will be offered. The possibility of joint sponsorship of international meetings by PAHO and the Center was brought out in the discussion.

- The International Research and Resources Program

The Center will carry out a variety of activities designed to satisfy immediate short-term needs and long-range objectives with respect to scientific information, research tools, resources of trained personnel, and the implementation of recommendations by the Center.

- Foreign visitor reception

The Center will serve as the focal point for the reception and guidance of scholars-in-residence, visiting scientists, and guests.

7. The Regional Scientific and Technological Development Program in the 1967 Declaration of the Presidents of America

The Committee heard a description of the genesis of this program and a report on the action that has been taken since the Declaration of the Presidents was issued at Punta del Este in 1967.

For the first time in the history of Latin America the Presidents decided jointly to provide funds for the support of science and technology. They directed that within 180 days a group of experts prepare the bases for a regional program for the development of science and technology. Accordingly, a group was set up, and in due time it presented a detailed plan covering organizational structure, definitions and criteria of policy, and concrete programs drawn up by experts of the region.

The group of experts decided to select initially certain specific fields, leaving open for the future the possibility of including other subjects in which the scientific method could be applied. It was decided that during the first phase priority should be given to basic sciences that are obviously weak (mathematics, physics, chemistry, engineering) and also to sciences that are of practical importance, even though their development in the region is more advanced (biochemistry, physiology, genetics, microbiology). At this stage subjects

would not be included in which other agencies are primarily interested (agriculture, medicine, socioeconomic sciences, astronomy). Special attention should be given, however, to the application of new techniques and to methods of increasing productivity.

All the programs would be multinational and directed to postgraduate training as a first step in stimulating research. A special effort would be made to train people from the less developed countries at existing centers of relative excellence in Latin America. These fellows would then receive further support in their countries of origin to ensure that their training would result in an increased output of national research.

Coordination with other agencies (PAHO, UNESCO) was considered to be essential.

The proposals of the group of experts were approved by the Inter-American Cultural Council at its meeting in Venezuela last February.

Recently the Council of the Organization of American States appointed an Executive Commission, with a president and seven members, to administer the regional program. It is noteworthy that this body includes two physicians. Under the Commission are two committees, on education and culture, and on science and technology. The latter currently includes a member of the PAHO/ACMR.

The Committee welcomed the foregoing report. Though the orientation of the regional program is different from that of PAHO, there are many areas of common interest, and the Committee therefore strongly approved the action taken by the Director in offering the Organization's collaboration.

8. Special Session on Biomedical Challenges Presented by the American Indian

The session opened with a review of the geological glacial, archaeological, and climatologic evidence accrued to date bearing on the Northeast Asiatic origin of the American Indian. Attention was drawn to the several archaeological sites in North America that suggest an antiquity of American man in excess of 20,000 years, but at the same time it was argued that the evidence, particularly the putative association of artifacts with datable

organic material, has not convincingly demonstrated that the presence of man goes back that far. Though the possibility of his entrance across the Bering Strait at that time was not dismissed, the burden of evidence suggests that man probably came to the New World from Asia in significant numbers some 15,000 years ago and slowly dispersed through the Hemisphere, retaining a locally differentiated but basically similar hunting and gathering culture until about 1500 B.C., when plant domestication led to the development of more advanced cultures.

The next presentation, which dealt with Indian origins in South America, pointed to several problem areas that deserve further investigation, particularly the possible use of boats by Paleo Indians in reaching various portions of the southern continent and the Antilles. The question was also raised of a nonlithic culture in Paleo-Indian times, it being argued that there is no inherent reason for Paleo man to have relied at all times on projectiles tipped with stone. The archaeological evidence in South America, particularly that dealing with chronology, suggests an antiquity of at least 15,000 years, and future findings might even reveal the presence of man as far back as 20,000 years ago. Thus, either man reached South America very shortly after his entry into the New World, or he reached the New World somewhat earlier than the majority of known North American sites imply; that is to say, an antiquity of 20,000 years appears more credible.

In the discussion that followed these two papers, it was pointed out that incontrovertible evidence for man's antiquity in the Americas before 12,000 B.C. is difficult to obtain. Glacial and marine geology indicate that if man reached the New World earlier than 12,000 B.C., then he very probably arrived around 24,000 B.C., since the sea level and ice sheets would have precluded easy movement during the period between 14,000 and 24,000 years ago.

With regard to the biological subdivisions of the Indian, serological and other genetic data were cited that permit taxonomists to distinguish the American Indian as a group from other groups of man. Findings were reported that show a considerable amount of genetic diversity within the various tribes of American Indians as well as between subtribes and even villages of



of the same tribe - a diversity that in the latter case frequently reaches surprising proportions. Attention was drawn to correlations between language groups and gene pools, with emphasis on the significance that cultural forces have in determining identifiable biological populations. Thus it is imperative to study these groups with a multidisciplinary approach that considers historical and specific social data as parameters in defining gene pools and accounting for their variability. Such studies will result in data and insights that will put American Indian taxonomy on a wider and therefore more adequate foundation.

One of the discussants warned of certain difficulties in utilizing genetic data as an exclusive basis of taxonomy, pointing out that the current data do not permit us to distinguish very many populations of American Indians from each other.

The importance of studying American Indian populations from a multidisciplinary perspective, drawing upon anthropology, medicine, and genetics, was stressed in the next presentation. The American Indians offer an almost unique opportunity to study human adaptability and biological microdifferentiation, since they constitute one of the very few large population groups that has entered a large land mass at a fairly definable point in time. This makes studies on the subject particularly germane to the International Biological Program's Human Adaptability Section, and it was urged that a more ambitious attempt be made to conduct multidisciplinary studies before the rapidly vanishing aboriginal populations of the New World disappear or become acculturated. The latter phenomenon - acculturation - presents both a moral, humanitarian challenge as well as an opportunity to study rapid biological adjustments initiated by cultural factors. The proposed studies of aboriginal populations may perhaps help the remaining American Indians to make a less traumatic transition as Western culture impinges on them - a process that has too frequently resulted in serious health problems and/or extinction of native peoples.

The session then turned its attention to some pressing practical issues. In spite of the difficulties in reaching a precise definition of

what "unacculturated" Indians are, it may be estimated that 2,000,000 such persons are still living in South and Central America, and that there are in the Americas an additional 16,000,000 relatively pure Indians in various stages of acculturation. Studies of the process of acculturation in these groups not only are basic for the understanding of human evolution but also represent opportunities for extending current knowledge on the specific medical problems that are associated with the phenomenon. It is important, as a moral issue, to ensure that knowledge of the American Indian's health problems is accompanied by a proper alleviation of them.

The devastation resulting from the introduction of the epidemic "diseases of civilization" into remote and newly contacted Indian populations is well known. This happens not only because the attack rate in "virgin soil" populations is very high, approaching 100 per cent, but also because complications are frequent and severe. Although the effect is commonly attributed to a constitutional susceptibility to these diseases, certain recent observations call for a reappraisal of this assumption. For instance, tuberculosis was recently introduced to certain Indians in the Xingú National Park in Brazil. Surprisingly, the course of the disease under the circumstances obtaining there was not greatly different from that in populations with a long experience with this illness. Also, in a recent experience in Venezuela it appeared that the primary response to measles was similar in the Indian and the Caucasian, the greater mortality in the Indian resulting to a large extent from secondary epidemiological factors. Thus, there is no theoretical reason to be satisfied with less than optimum results in the treatment of many diseases in the Indian.

An effort was made to review some of the outstanding current medical problems of the American Indian. The great difficulty in the control of malaria among the less acculturated and more nomadic groups was brought out. An example of how acculturation may have an adverse influence was the appearance of malnutrition among the Mayas in Central America, which turned out to be mainly due to a single change in the way of cooking corn induced by contact with European culture. The high prevalence of gallbladder disease and diabetes mellitus among the Pima Indians is also in line with an interpretation stressing the role of cultural changes in the pathogenesis of these diseases.

Moreover, it is proposed that cultural changes have contributed to the appearance of endemic goiter in certain primitive Indian groups, though an analysis of etiological causes of this condition in Southern Chile suggests that genetic factors of the Indians themselves and specific environmental causes, such as heavy consumption of the piñon nut found in this area, contribute to the variability in endemic goiter observed there.

The invited participants in the Special Session reached the conclusion that an emergency situation exists with respect to many indigenous groups in the Hemisphere, owing to their exposure to the risk of extinction by reason of the ready dissemination of infectious and contagious diseases, and that this problem is often further aggravated by the precipitous nature of the acculturation process. The group unanimously decided to recommend that PAHO suggest to the governments of the American nations that the following steps be considered:

- Improvement on an urgent basis of the local agencies responsible for the protection of Indian populations by providing such agencies with the appropriate means
- Intensification of measures for preventing infectious and contagious diseases among these groups
- Training of auxilliary personnel in simple diagnostic and therapeutic procedures, such persons to be members of the communities in question wherever possible
- Intensification of educational activities, particularly among children, for the purpose of overcoming language barriers
- Development of appropriate means for evaluating the acculturation processes followed until now, and adoption of those processes that are best suited to each particular area or population group

The PAHO/ACMR believes that the question of how best to implement these recommendations merits prompt consideration. It suggests, moreover, that a permanent committee be set up by PAHO to deal with the health problems of the Indian groups still in existence in the American countries, and, in particular,

to determine the best methods for protecting the health of Indians, in close co-operation with interested governments.

PAHO could allot funds to enable the committee members to visit and render advisory services to the national agencies responsible for the protection of the Indians. Even if it were not possible to allot funds for this purpose, the establishment of the committee would still be justified as an expression of PAHO's concern with the problem of the Indians in the Americas.

#### 9. Selected Research Activities in Nutrition

The problem of nutrition in Latin America is changing both in its magnitude and nature, and it is influenced by complex social factors. Increased growth of population is leading to a decreased production of food per capita, and internal migration is converting malnutrition from a rural to an urban problem - from a problem of ignorance to one of poverty.

PAHO's program of nutrition research has three main objectives: to increase basic knowledge of human nutrition, to define existing states of malnutrition and their consequences, and to develop new methods for the application of existing knowledge. There is no field in which such a wide gap exists between the available basic knowledge and its practical application.

The nutrition research program includes the following activities, among others:

- Studies of child growth and development and of capacity for physical work
- Studies on the development of the brain in severe malnutrition
- Epidemiological definition of nutritional anemias and of avitaminosis A
- Support of research on new sources of protein
- Field studies at the newly established Caribbean Food and Nutrition Institute
- Collaboration in the Inter-American Investigation of Mortality in Childhood

The Technical Advisory Committee on the Nutrition Program of PAHO, which met in March of this year, strongly endorsed the present program and urged that it be increased in scope and magnitude.

Because of the expansion of the program, a nutrition research officer was appointed to PAHO headquarters at the beginning of 1968.

#### 9.1 Nutrition, Physical Growth, and Mental Development

In a report on work in progress at INCAP, it was pointed out that the possible effect of malnutrition on mental development and capacity is one of the most important problems in the field of nutrition. A prime difficulty in tackling the problem is to separate nutritional from social and possibly genetic factors, since poor nutrition and social deprivation often go together. The study has been designed to overcome this difficulty as far as possible by using two groups that ideally differ only in their diet: one group remains on a natural diet and the other receives a supplemented diet.

Methods have been developed for the definition and quantification of the variables involved - state of nutrition, sociocultural factors, and mental development. It is possible that the methods will not be sensitive enough for quantitative assessment of mild degrees of impairment of mental performance.

Data on the diets of children and of pregnant and lactating women, on the composition of the placenta, and on the rate of development of the brain have made it clear that attention must be concentrated on nutritional experiences during pregnancy and the first two years of life, since it is at this time that the central nervous system is developing most rapidly.

In the discussion a number of questions were raised for future investigation. How far does the nutritional state of the mother affect that of the fetus? Is it a valid concept that the fetus is a parasite living at the expense of the mother? To what extent do infections during the neonatal period modify the development of the brain in the infant?

A further complication in this field of research is the matter of determining to what degree tests of mental performance really measure mental ability.

The studies make it clear that from a public health point of view more attention should be concentrated on nutritional factors during the perinatal phase of development. This represents a change of emphasis from previous years, when nutritional policies were concerned first with schoolchildren and then with preschool children.

### 9.2 Brain Development During Malnutrition

A report was presented showing that by inducing malnutrition experimentally in animals at different stages of development it is possible to influence separately the growth in number and the growth in size of brain cells. It is probable that the permanent effects of malnutrition will be most severe if it occurs at a time when the number of cells in the brain, judged by the DNA content, is increasing rapidly.

Brains have been collected from children dying of accidents and other causes. From measurements of brain composition (protein, DNA, and RNA content) a picture is emerging of the patterns of development of the human brain. Moreover, from these measurements a relationship can be shown between the circumference of the head and the amounts of protein, DNA, and RNA in the brain. Measurements taken on the brain of children dying from malnutrition in Chile show a reduction in size accompanied by the expected changes in chemical composition. So far not very many malnourished subjects have been studied.

The Committee expressed very great interest in this work and hoped that it would be continued and extended.

### 9.3 Iodized Oil Prophylaxis in Endemic Goiter

A program to evaluate the effectiveness of iodinated oil in the prevention of endemic goiter was begun in rural Ecuador in April 1966; intensive effort has been made since that time to evaluate the results. Two towns a few miles apart were chosen for the study, one serving as a control. The incidence of endemic goiter, cretinism, deafmutism, and short stature was comparable and exceedingly high in both villages. The program is being evaluated in terms of

effect on prevalence of goiter, linear growth, and iodine metabolism; particular attention is being given to evidence of retardation in new persons born during the course of the project in the two communities being studied. At the end of two years a substantial reduction in goiter has occurred in the treated group. Of the 300 children born, several in the control group are retarded, but none in the treated group.

The program has been in effect for too short a time to permit definite appraisal of its effectiveness in preventing cretinism, mental deficiency, or deafmutism, but the findings so far suggest that it has been effective in preventing these disabilities. It is obvious that continued intensive follow-up is needed on these points.

Iodinated oil seems safe and useful in goiter prophylaxis. The recommendation may be made that prophylaxis with iodinated oil should be extended to other communities where iodination of salt is impractical, and that intensive studies should be undertaken to seek correlations between changes in the thyroid gland, mental retardation, and physical development. Support from PAHO is needed to continue the program and to extend it.

The Committee, recognizing the great amount of human disability caused by endemic goiter, welcomed the results obtained in the Ecuador trials. The Committee recommended that PAHO should continue its support of this work and increase it if necessary.

#### 9.4 Prevalence Studies in Nutritional Anemias

Following a symposium held in Caracas in September 1963, a Reference Laboratory and Training Center for Applied Research in Nutritional Anemias was set up at the Venezuelan Institute of Scientific Research (IVIC). Its purpose was to serve as a reference and training center for the Americas, and its activities were to include the study of liver iron storage; prevalence of iron deficiency anemia and folate and vitamin B<sub>12</sub> deficiency in pregnant women; and nutritional anemia in children. It was also to be concerned with pathogenetic studies of iron deficiency anemia and folate and vitamin B<sub>12</sub> deficiency. Work began in January 1965, and the program has been carried out satisfactorily. For

the study of nutritional anemia in pregnancy, 953 determinations of B<sub>12</sub>, 1253 of serum folate, 1162 of serum iron, and 1186 of unsaturated iron binding capacity have been carried out.

The investigation of the prevalence of nutritional anemia in Latin America has served to stimulate joint studies related to causation and pathogenesis. Collaborative studies of long-term iron excretion have been performed by the laboratories in Caracas, Seattle, Johannesburg, and New Delhi. Also, since 1963 the Caracas and Seattle laboratories have been investigating iron absorption from staple foods, and one of the interesting findings is the increased absorption of iron from vegetable sources when animal proteins and aminoacid mixtures are added.

The meeting of the PAHO Scientific Group on Research in Nutritional Anemias to be held in Caracas this coming August will mark the end of a period in which a group of investigators assisted by a scientific advisory panel have developed a general approach to the study of nutritional anemias in Latin America. This effort not only has provided information about the prevalence of iron, folate, and B<sub>12</sub> deficiency in the populations examined but also has helped to introduce precise hematological methods to be used for future studies. It is hoped that the enthusiasm displayed by the participants in this program will continue during the following year so that efforts will be made to learn more about the etiology and pathogenesis of nutritional anemia. However, this enthusiasm could turn into frustration if adequate financial support is not granted.

The Committee congratulated the Reference Laboratory and the Organization on this collaborative work, which offers an example for the development of scientific research on a multinational basis.

#### 9.5 Research and The Caribbean Food and Nutrition Institute

The Caribbean Food and Nutrition Institute (CFNI) began operations early in 1967 as a collaborative project of PAHO, FAO, the University of the West Indies, and the Governments of Jamaica and of Trinidad and Tobago, with support from the Williams-Waterman Fund. It has a multidisciplinary staff and two centers, one in Jamaica and the other in Trinidad. It covers the 15 countries of the English-speaking Caribbean.



The functions of the CFNI include coordination, advisory services, training, and applied research. The Institute is concerned with all factors influencing nutrition at the community level, and it will attempt to act as an information bridge between different islands, different disciplines, and different centers of knowledge. It has an important role in making the community aware of nutritional problems.

The CFNI research activities are concerned primarily with measurement of the size, nature, distribution, and epidemiology of public health nutrition problems, and with assessment of the cost-effectiveness of food and nutrition programs.

The area served by the Institute offers the following advantages for research in community nutrition problems: a single language, small circumscribed population units, fairly reliable vital statistics, and available information on precise ages of children.

Research will be undertaken on an interdisciplinary basis, and emphasis will be placed on the rapid practical application of knowledge gained by the countries' health and development plans. The studies will frequently be collaborative - with other centers (in the Caribbean and elsewhere), with government services, and with international agencies. For example, a study on indexes of protein-calorie malnutrition is planned in cooperation with the Tropical Metabolism Research Unit in Jamaica. Also, a field study has been carried out on the island of St. Vincent in collaboration with government health, agriculture, and education services in order to assess the prevalence of protein-calorie malnutrition in early childhood in relation to protein availability and consumption in the community.

It is hoped to develop two mobile CFNI field research units in the near future - the PCM Evaluation Unit and the Population Nutrition Unit - in order to broaden the base of applied nutrition research in the Caribbean area.

10. Report on the Latin American Training Program in the Biology of Reproduction

In the past, lack of proper attention to the biology of human and animal reproduction in Latin America has resulted in

- A shortage of well-trained academic personnel
- Insufficient development of teaching methods and of basic and applied research in the subject
- Deficient technological development in animal reproduction

Since at the present time not a single university in Latin America has all the facilities and personnel necessary to offer a good training course in reproduction, ten research and teaching centers, from four universities in Argentina, Chile, and Uruguay, have decided to pool their resources in order to offer a program in this field.

The first course, sponsored entirely by the Ford Foundation, was started in May 1967, with an enrollment of eight trainees. The initial 12 months have been successfully completed. A second group of nine fellows, three sponsored by PAHO, one by the Population Council, and five by the Ford Foundation, started to work on May 1968.

The program has the following specific aims:

- To train scientists in the field of human and animal reproduction so that they will be able to work independently in research and teaching at their own universities.
- To establish working conditions for research so as to reduce incentives for the migration of reproductive biology scientists to the developed countries. For this purpose the strengthening of existing centers is the first and immediate step; the development of new centers will be coming very soon as the trainees return to their respective countries.
- To promote cooperation and exchange among the different groups in Latin America that are working in the field of reproductive biology through periodic meetings of teachers participating in such courses, rotation of trainees among the different centers, and the planning of joint research projects involving the participation of two or more institutions.
- To improve the teaching of human and animal reproductive biology at the university level, in the faculties of medicine and the schools of veterinary science, respectively.

The program is mainly intended for medical doctors or veterinarians, since these are the people who have the greatest opportunity to influence their communities. It is also open to biologists, biochemists, demographers, and sociologists. Preference is given to young professionals who have graduated within the past eight years. High priority is given to those who have a full-time teaching or research position in a university.

The program has two well defined stages. During the first stage (7 months) the trainees receive an intensive series of lectures on the different aspects of reproductive biology and participate actively in laboratory exercises. They rotate through the ten participating centers. Each center teaches in the field in which active research is being conducted. During the remaining 17 months each trainee is supposed to carry out a research project on a given subject, to be conducted at one or more of the participating centers. At the end of each stage the trainees participate with the teaching staff in an open evaluation of the course.

The Committee expressed its gratification at the successful development of the program and stressed the significance of its multinational nature and of the fact that efficient cooperation has been achieved among the ten participating centers. It also agreed on the importance of teaching the biology of reproduction and population dynamics in Latin America and supported the steps taken by the Director to increase the number of PAHO fellowships for the program.

11. Progress Report on the Inter-American Investigation of Mortality in Childhood

After two years of preparatory work, including pilot testing, the Inter-American Investigation of Mortality in Childhood, which has received financial support from the U.S. Agency for International Development, will be initiated on 1 July 1968 in 13 areas of Latin America.

To analyze the underlying and associated causes of death and to study the interrelationships of infectious diseases, nutritional deficiency states, and sociological factors, complete data on deaths of children under 5 years of

age are to be collected following standard definitions and procedures. In addition, to study and compare biologic and social differences in those who died and in those who live, data on living children under 5 years of age are to be collected through probability sampling of households and of children under 5 years of age. It is planned to collect data over the 24-month period from 1 July 1968 to 1 July 1970. Questionnaires will be completed for approximately 35,000 deaths and 20,000 living children under 5 years of age. Processing of the data will be carried out currently so that tabulations and analyses of data for the first year should be available in 1970 and for the two years in 1971.

All the field projects have been designed so that they involve and will benefit medical education and health services. Specialists in a variety of fields - pathology, nutrition, pediatrics, preventive medicine, epidemiology, and statistics - will participate in the projects. Assessment of nutritional status is to be an important phase of the Investigation.

The discussion of the program centered on the use of the findings from the Inter-American Investigation of Mortality reported in the book Patterns of Urban Mortality. The publication of a 30-page summary of this book in Spanish, for distribution to the medical professions, medical students, and health officials, is planned.

It was suggested that PAHO develop a program whereby material from the Investigation would be presented in seminars and small group meetings and methods of utilizing the data for health planning would be discussed.

In answer to a question regarding applicability of the results of the Investigation to cities in the United States, it was stated that there were similarities in the problems and thus the report would be useful in many instances.

In one country - Chile - the medical and health professions have already expressed great concern with certain health problems revealed by the Investigation and are conducting additional research and making plans for corrective measures.

12. Disturbances in Fetal Nutrition and Homeostasis with Special Reference to their Consequences on Perinatal Mortality and Child Health

Disturbances of fetal homeostasis have great medical and social significance, since they interfere with cell functions and may lead to irreversible structural damage with permanent postnatal sequelae. A substantial proportion of cases of neurological diseases and mental retardation detected in children are thought to be the result of damage caused to the brain of the fetus or newborn by alterations in the composition of the blood, such as hypoxemia, hypercapnia, acidemia, and hypoglycemia. These alterations may be chronic, lasting for a long term during pregnancy and constituting a type of "fetal malnutrition" that interferes with the growth of the conceptus, or they may be acute, lasting for a few hours during labor (acute intrapartum fetal asphyxia).

The central aim of the project is to study the disturbances occurring in fetal homeostasis during labor, both under normal conditions and fetal distress.

It is hoped to determine the diagnostic and prognostic significance of latent fetal distress signs detectable during pregnancy and labor and to explore methods for making early diagnosis of homeostatic disturbances and correcting them before irreversible damage has occurred in the fetus.

The ultimate goal of the research is to prevent permanent damage to the child caused by too marked and too prolonged disturbance in fetal homeostasis.

Uterine contractions have been shown to be one important cause of fetal distress. The contraction reduces maternal blood flow to the placenta by the following mechanisms: (1) compression of the intramyometrial part of the vessels supplying blood to the placenta; and (2) compression of the abdominal aorta or the common iliac arteries.

The normal uterine contractions of labor acting on a normal fetus and placenta produce no ill effects as can be judged from records of FHR and measurements of pH,  $pO_2$ ,  $pCO_2$  and Hb saturation in fetal blood, or by the conditions of the newborn (evaluated by the Apgar score).

Abnormally strong or frequent contractions cause clear signs of fetal distress in FHR and fetal blood and lead to depression of the newborn and even to the death of the fetus. Contractions of normal intensity and frequency but

in too great a number owing to undue prolongation of labor also cause fetal distress.

In cases of intrapartum fetal distress, changes in fetal blood were shown to be consistently associated with a low Apgar score at birth and with a rise in the basal FHR and transient falls in FHR occurring after uterine contractions.

The consequences of intrapartum fetal distress have been studied in the newborn (low Apgar score) and in the child (higher incidence of respiratory distress syndrome and of neurological damage). The latter results need to be confirmed in a larger number of cases.

The Committee was greatly impressed with the quality of this research and its potential for widespread application in the practice of obstetrics. The Committee commended PAHO for its support of this project and urged continuation of its funding.

### 13. Parkinsonism and Dopa: A Proposal

Pursuant to the studies on chronic manganese poisoning reported on at the Fifth Meeting of the PAHO/ACMR, a progress report was presented on the further use of Dopa (D,L-dihydroxyphenylalanine) in the treatment of both chronic manganese poisoning and Parkinsonism.

It was found at the Brookhaven Laboratory that administration of L-Dopa induced amelioration of symptoms, ranging from modest to dramatic, in 27 Parkinsonians. L-Dopa was used to correct the known diminution of melanines and catecholamines in the Parkinsonian brain, since this amino acid is a common precursor to both classes of missing substances. Neurochemical information was lacking on chronic manganese poisoning, but the effects of Dopa administration themselves were expected to provide the investigators with neurochemical insight.

Indeed, in associated trials in Chile three young ex-miners suffering from severe, dystonic muscular rigidity caused by chronic manganism exhibited a striking alleviation or disappearance of the rigidity upon being given L-Dopa according to schedules developed at Brookhaven.

The observations reported indicate that dopaminergic receptors play a cardinal role in a disease other than Parkinsonism, and suggest that some "degenerative" neurological disorders may be, at least in part, deficiency diseases.

The Committee expressed great interest in this work and urged that PAHO make every effort to encourage and support its continuation.

14. Report of the PAHO Program of Research, Education and Training  
in Environmental Sciences and Engineering

The presentation opened with a brief review of the rapid environmental changes taking place in Latin America and the economic, social, and political factors relating to the changes. The current massive programs for water supply and sewerage were described, and projections for the remainder of the Alliance for Progress decade were made. Three significant developments that have accompanied these broad sanitary public works and services programs were cited: (a) the strengthening of undergraduate, graduate, and continuing professional education programs in the universities; (b) the initiation of research training and applied research programs in the universities; and (c) the establishment of a Regional Center for Environmental Sciences and Engineering in Peru.

The capability of Latin America to produce trained manpower for environmental needs has been markedly increased through the improvement of educational programs. The initiation of research activities is being made possible by the provision of full-time faculty, laboratories, and grants to students within newly formed graduate programs. Coordination between the universities that are conducting such activities and the government agencies responsible for environmental facilities and services is important and mutually profitable. In the immediate future, as it has been up to now, emphasis should be placed on the application of known principles to the problems in Latin America, with fundamental inquiry being blended into the picture as the most critical applied needs are met. The Organization's approach to activities in research, education, and training has been to stimulate rather than underwrite the establishment of high-quality, self-reliant local institutions.

In the discussion that followed the report, the sanitary engineering accomplishments in Latin America were praised on three main fronts:

- The production of professional and subprofessional manpower and the concurrent improvement of training programs in educational institutions
- The development of a solid organization and management structure for water supply services
- The establishment of sound financial bases and the obtention of large commitments of capital for sanitary public works and services

These accomplishments were cited as remarkable and of significant value to other developing areas of the world.

The history of environmental controls and their contribution to public health was briefly reviewed. It was pointed out that there has been a ten-year lag in recognizing the new "environmental dimensions of health" - the physical, the racial, the biological, and the psychological - and it was urged that these dimensions be brought into the planning and execution of health programs.

The special significance of environmental influences from conception through ages 3 to 4 was stressed. Many biological effects of environmental pollution are so delayed and indirect that they are commonly overlooked. Moreover, exposure to low levels of certain air pollutants induces tolerance against the acute effects of higher concentrations, but this tolerance is achieved through histological changes that result in chronic conditions later in life. Human beings may tolerate without complaints concentrations of pollutants not high enough to interfere with economic activity, but continued exposure to such low levels, especially during early life (the newborn is particularly susceptible to toxic substances), can generate pathologic effects that may not become evident until decades later.

#### 15. Present Status of Leprosy Research in Some Countries of South America

A survey of research activities in leprosy, based on a visit made at the request of PAHO to Venezuela, Colombia, Argentina and Peru, was presented. In



Venezuela, research on many aspects of this disease is being vigorously prosecuted. In Colombia much original work is being done, with very little in the way of resources and support. The consultants were able to see little of the activity in Argentina in the course of this visit, and none was identified in Peru.

The observations may be summarized as follows:

- Leprosy is a major problem over a large area of the Western Hemisphere and particularly in South America.
- Current national expenditures for leprosy treatment, control, and research are not producing any identifiable reduction in the problem; hence there is need for a different approach.
- There are identifiable people scattered throughout the area who have both the willingness and the ability to participate in an effective leprosy control program.
- It is necessary to bring together all talents and available means into one international center in which they can be used with the greatest effect.
- It is suggested that Venezuela could be the location for such an international center.
- Ideally, all countries of the Western Hemisphere should participate, both professionally and financially.
- Financial participation could be adjusted proportionally to the magnitude of the leprosy problem in the countries in question.
- Effort should be made to solicit nongovernmental subsidy of this proposed center from interested foundations, industries, and private individuals.

#### 15.1 Progress Report on Research in Leprosy and Other Tropical Diseases in Venezuela

The Committee heard a report on the following main lines of work being carried out in Venezuela:

- Experimental research on the inoculation of animals with human leprosy.

- Development of improved methods for the identification of M. leprae
- Serological studies
- Studies on the behavior of skin homografts in leprosy
- Controlled trials of thalidomide therapy
- Studies of the natural history of mycobacterium infection in asymptomatic subjects

#### 15.2 Support and Future Development of Leprosy Research

Although an effective drug has been present for 25 years, the leprosy problem of the world has not improved. In 1966 the Premier of Japan and the President of the United States met and decided that the two governments would unite to increase research on diseases that affect the peoples of Asia; leprosy was one of the diseases selected for further studies. As a result, interest in leprosy research both in the United States and in Japan has risen significantly. Three scientific meetings have been held by the United States Leprosy Panel and two scientific meetings dealing with leprosy research have been held jointly with scientists from the United States and scientists from Japan. Because of this program, which has received funds from the National Institutes of Health, there has been a threefold or more increase in U.S. Government support of leprosy research.

In view of the seriousness of the leprosy problem and the close collaborative relations between the U.S. Government and the Pan American Health Organization, it was suggested that periodic meetings be held between the U.S. and Latin American scientists engaged in this field, and that consideration be given to the formal establishment of a cooperative medical science program between the U.S. Government and PAHO on leprosy research.

Specifically, given the success of the research and control program in Venezuela, it is recommended that now there be considered the development of a collaborative research program on the chemotherapy of leprosy among scientists from the United States, Venezuela, and PAHO. One of the great needs in leprosy research is the establishment of programs whereby new drugs can be tried.

The Director informed the Committee that a seminar on leprosy control would be held in Mexico in July of this year. He reported that leprosy control is being built into the health services of that country and that in three other countries - Argentina, Ecuador, and Venezuela - methods for incorporating such programs are being tested. He proposed that the survey of leprosy research in South America be extended to other countries, in addition to those already visited. Upon completion of the survey, a meeting might be organized to plan a collaborative program in which preventive measures should be discussed, such as control of vectors and environmental determinants.

The Committee congratulated the Venezuelan group on its work and expressed the hope that support might be found for continuing and extending it. The Committee endorsed the views expressed on the importance of the problem of leprosy in Latin America and supported the steps being taken by the Director for developing further research in this field.

#### 16. Progress Report on Field Studies with a Long-Acting Antimalarial Drug

The Committee heard a report on the results obtained so far with single injection of the long-acting antimalarial drug Camolar. This drug is active against sporozoites but it has no gametocidal effect.

Trials have been carried out in Gambia, New Guinea, and Guatemala. With P. vivax a single injection may provide protection for six months. With P. falciparum protection has been observed for two to five months, depending on the sensitivity of the parasite. The effectiveness of the drug is intimately related to the degree of drug resistance of the parasite.

A mass trial was begun in Guatemala in May 1967 in an area where conventional methods had failed to interrupt malaria transmission. Two per cent of the subjects who received the drug had localized reactions at the site of injection. In spite of this, over 80 per cent of the population accepted a second injection of Camolar, which shows that they felt beneficial effects from the first injection.

After four months, no case of infection with P. falciparum was found among the subjects who had been injected. The prevalence of infection was 30 times greater in untreated subjects.

The initial results of the Guatemalan studies are therefore encouraging and suggest that Camolar may be useful when conventional methods of malaria eradication have failed. Enough is now known for the practical aspects of expanding the program to be evaluated.

The Committee viewed with satisfaction the encouraging progress of this work. It was pointed out, however, that the problem of drug resistance in malaria is still unsolved and is one that needs intensive investigation.

17. Report of the Scientific Group on Comparative Studies of American and African Trypanosomiases

The First Meeting of the Scientific Group on Comparative Studies of American and African Trypanosomiases was held in Washington from 11 to 15 December 1967, under the auspices of the World Health Organization.

It was the task of the Scientific Group to review the advances to date in the relevant disciplines, placing particular emphasis on those aspects of research that were common to the two diseases and would lend themselves to comparative study.

In order to permit more thorough consideration of the details in each of the specialties involved, the Group was organized into the following four subgroups: General Biology, Physiology, and Chemotherapy; Epidemiology; Pathology; and Immunology. Each of the subgroups pointed out the research needs in their respective areas:

- General Biology: studies for distinguishing strains; chemical and histochemical composition of trypanosomes; mechanisms of drug resistance
- Epidemiology: definition of strains in man and vectors; better methods of isolation; further investigation of insect behavior and host preferences

- Pathology: reasons for different pathological pictures in different regions
- Immunology: antigenic characteristics; development of protective vaccines; significance of increased IgM levels

Definite proposals and recommendations will form a part of the complete report, which is still in preparation. The final report will also include the Group's detailed observations concerning differences and similarities in the various aspects of American and African trypanosomiasis. It was generally agreed that in many facets of the research to date either similar phenomena have been observed or else similar methods could be used to elucidate the phenomena.

The Group felt that meetings of this kind of experts from different regions were valuable, that the exchange of information and ideas among the individuals of this specific group had been very useful, and that the holding of similar meetings in the future would be desirable, perhaps at intervals of not less than three years.

In the discussion that followed, the Committee heard a summary of PAHO's current work on Chagas' disease. The program includes encouragement of longitudinal studies of the course of the disease, studies on the pathology of the heart lesions, and collaborative work on complement-fixation antigens in order to obtain a standardized antigen. When the last mentioned task has been accomplished, it will be possible to organize prevalence studies in different countries.

Arrangements are being made for a meeting of a small group in 1969 to discuss some of the problems of Chagas' disease. The Committee was invited to make suggestions for the agenda of this meeting.

The Director pointed out that Chagas' disease is a problem of increasing concern to governments in Latin America. Efforts are being made to obtain loans for housing construction in areas where the disease is common in order to reduce the hazard from the vectors. It was emphasized that more investigation needs to be done on the habits of the vector and the possibility of

vector control. It was felt that this subject was not sufficiently considered by the aforementioned Scientific Group.

The Committee agreed unanimously that Chagas' disease is a problem of the very greatest importance in the region and expressed the hope that PAHO will do everything possible to stimulate and support research on all aspects of this subject.

18. Report of the WHO/PAHO/IBP Meeting of Investigators on Population Biology of Altitude

The theoretical structure underlying the meeting, as derived from the International Biological Program, was reviewed. This structure is based on an ecological approach and stresses populations as study units. It was explained that by using the comparative approach the IBP program hopes to provide new insight into both the origins and the health implications of the many differences that have been found between high and low altitude populations.

Progress was then reported on the recommendations made by the participants. It was noted that coordination of high altitude research was being organized by WHO and by the International Biological Program. It was also noted that, while research on the topic is advancing satisfactorily in areas outside the Western Hemisphere, a drastic shortage in funds is currently restricting research on this important topic within the Hemisphere.

The discussion that followed the presentation centered on three questions:

- Are there genetic adaptations to high altitude?
- What is known or being studied concerning oxygen supply to the human fetus and newborn?
- What research is proposed on enzymatic and hormonal changes during acclimatization to altitude?

In response to the first question, it was agreed that there exists much presumptive evidence for genetic adaptation but that at this time no specific genes that confer adaptation to high altitude can be identified in man. The meeting suggested comparisons of low and high altitude populations and the use

of twin studies in relation to the most promising physiology parameters as methods for approaching this question.

With regard to the second point, the speaker said he was not aware of any studies under way or proposed on oxygen transmission in the human fetus, although several studies on the placenta at delivery and on the newborn infant had been made and further study of the newborn has been proposed. It was agreed that this represented an important aspect of altitude adaptation in man.

In reply to the third question, it was noted that in past studies the hormonal changes that are known to occur during short-term altitude exposure had not been found in individuals who were native to high altitudes or had gone through a short period of altitude acclimatization. This may explain the current lack of interest in the topic, although the effects of altitude on both hormone and enzyme production remains only partially investigated.

19. Selection of the Topic for the Special Session of the Eighth PAHO/ACMR Meeting

For the topic of the Special Session of the Eighth PAHO/ACMR Meeting, the Committee selected the subject "Human Growth and Development," with emphasis on perinatal aspects. It also considered that a half-day session on the subject "Iron Metabolism and Anemia" would be highly desirable, in view of the dimension of this problem in Latin America.

In addition, the Committee suggested to the Director that sometime in the future a PAHO lecture be presented on the question of the behavioral sciences and their relation to health programs, and that this subject could also be the topic for a special session in some later year.

Finally, it was requested that a summary of the role of molecular biology in medicine and health be prepared for the Eighth Session as a step towards having a special session on this topic at a future date.

The date of the Eighth PAHO/ACMR Meeting has been tentatively set for 9-13 June 1969 in Washington, D.C.