REPORT TO THE DIRECTOR

Ref: RD 8/15
13 June 1969

PAHO COLLE
CAIS / ACHR
271

PAN AMERICAN HEALTH ORGANIZATION

ADVISORY COMMITTEE
ON MEDICAL RESEARCH

EIGHTH MEETING
9-13 JUNE 1969
WASHINGTON, D.C.
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The Eighth Meeting of the Pan American Health Organization Advisory Committee on Medical Research was opened by Chairman Marcel Roche, with Dr. John Waterlow serving as Vice-Chairman and Dr. Philip Cohen as Rapporteur.

The Director welcomed the Committee and extended a special greeting to the new members Dr. Robert Marston and Professor Roger Revelle. In turn, he acknowledged the valuable contributions of Drs. Carlos Chagas, Alberto Hurtado and James Shannon, whose service with the Committee had recently ended.

In reporting on the Special Meeting of Ministers of Health of the Americas, held at Buenos Aires in October 1968, the Director stated that the proposal presented at the last ACMR meeting for revision and expansion of the PAHO research program had received the full endorsement of that body. The Meeting of Ministers also recorded its commitment to translate into concrete concepts and practical recommendations the decisions in the Declaration of the Presidents of America directly and indirectly related to health. An extensive analysis was made of health activities in the recent decades both in specific terms as well as in relation to the whole process of economic and social development. In the final report, the Ministers commended the work of the PAHO/ACMR and stated that "its annual examination of policy and current programs and studies has made a great contribution to the decisions taken by the Governing Bodies with respect to research." Moreover, in discussing research and technology for health and welfare, the Ministers declared that "in the biomedical disciplines research is necessary for the solution of relevant health problems, for the development of scientists of the future, for the maintenance of a tradition of
learning, and for the encouragement of a spirit of inquiry in university students."

The Director also made a number of special announcements.

- As a step toward implementing the Advisory Committee's recommendations, two new units in the Department of Research Development and Coordination have been organized and staffed, one for operations research and the other for the promotion and coordination of multinational research and research training programs.

- In accordance with the Committee's suggestion to give wider distribution to the material gathered for the Inter-American Investigation of Mortality, two pamphlets, one in Spanish and one in English, containing excerpts from *Patterns of Urban Mortality* have been published, and broad circulation is planned.

- The Inter-American Investigation of Mortality in Childhood, initiated in 1968 in 13 areas in Latin America, has been extended to include six counties in California and one area in Canada.

- A Latin American Center of Perinatology and Human Development is in the final stages of organization. Directed by a distinguished group of international experts, the Center's activities will include research, education and training, the provision of advisory services, and the exchange of scientific information. It will be sponsored by the Uruguayan Government, the University of Uruguay, and the Pan American Health Organization, and it will also receive financial support from foundations and other agencies.

- PAHO has been made solely responsible for administration of the Pan American Foot-and-Mouth Disease Center. The budget for 1970 is of the order of US $1,300,000.00, and one half of this amount has been allotted to research. The Scientific Advisory Committee for the Pan American Zoonoses and Foot-and-Mouth Disease Centers held its second meeting in November 1968.

- The Directing Councils of PAHO and of the Institute of Nutrition of Central America and Panama have accepted in principle the proposal to expand the activities of INCAP beyond the Central American Isthmus so as to encompass
all the Latin American region. In addition, the Institute will continue its services to countries elsewhere in the world. The Committee's views on the financial arrangement that has been developed for consideration by the Executive Committee of PAHO and subsequently by the PAHO Directing Council would be welcomed.

- An agreement has been reached with the Milbank Memorial Fund for a program aimed at the rational development of human resources for health in the Caribbean.

- The Textbook Program has been progressing very well. Textbooks in biochemistry, pathology, and pharmacology have been selected and distributed, most of them having been bought rather than borrowed by the students.

1. Research Training in Clinical Medicine

Pursuant to the proposal outlined at last year's meeting of the Committee, a pilot program for advanced training in clinical research has been developed jointly by PAHO and The Wellcome Trust. The program will enable citizens of the countries of the Caribbean, Middle America, and South America to take advantage of facilities offered by institutions throughout this region. Its primary purpose is to increase the capability and output of individual scientists in all areas of clinical medicine. It has been specifically designed to offer the following advantages: the trainee will be more closely oriented toward the problems and conditions he is likely to find in his own country when he returns; there will usually be no language barrier, so that much loss of time will be avoided; and the exchange of research workers generated by the program will help to promote an intellectual common market in the region. If the undertaking is successful, as is expected, it will lead to three long-term results: to new contributions to knowledge; to an improvement in the general standards of medical practice and medical education; and to a strengthening of the role of research as an important tradition in the life of the countries.

Also on the subject of research training, the Committee was gratified to hear a report that the groundwork discussed at its meetings in 1965 and
1966 has led to an agreement between PAHO and the Mexican Ministry of Health and Welfare for the establishment of a PAHO/WHO Immunology Research and Training Center in Mexico City. The training program involves the cooperative efforts of four laboratories and the collateral assistance of two other national laboratories. A three-year Ph.D. program, formalized by a degree granted through the Department of Microbiology of the National Polytechnic Institute, has been organized, and students are already enrolled. PAHO/WHO will participate in the program mainly through the provision of visiting professors and research training grants.

PAHO will issue a document in the near future describing this program and also the eight-month annual course being offered by the PAHO/WHO Immunology Research and Training Center in São Paulo.

In regard to the program for advanced training in clinical medicine, the Committee discussed the following questions:

- The possibility of providing the trainee with a grant for research support upon return to his home country.
- The need for identification of qualified research centers.
- The political aspects of selecting the trainees.
- A possible increase in the proposed level of support for the laboratory in which the trainee will be working.
- Encouragement of exchange of professors between centers.

The Committee welcomed the setting up of this program and expressed its appreciation of the contribution made by The Wellcome Trust. It strongly endorsed the actions taken so far by the Department of Research Development and Coordination and emphasized that the selection of trainees must be based entirely on scientific merit.

2. Review of the Research Program in Dental Health

In accordance with recommendations made by the Committee in 1962, the PAHO dental research program has proceeded along four tracks: epidemiological
studies, development of preventive methods, increase of clinical productivity, and establishment of a better distribution of dental services in the private and public sectors. Progress reports on activities in these fields were made to the Committee. These activities included a national study on the prevalence of dental disease in Venezuela, a national dental survey in Colombia, and studies on self-applied topical fluoride among schoolchildren in São Paulo, Brazil and on the fluoridation of salt in Medellín, Colombia. In addition, a variety of facilities and centers have been established, including a pilot clinic for providing low-cost comprehensive dental care to the community of Concepción, Chile; a center for social studies in dentistry in Porto Alegre, Brazil; an international center at the Central University of Venezuela in Caracas for standardization, quality control, teaching, and research in dental materials; experimental dental clinics in Medellín, Colombia, operated by the Dental Society of the State of Antioquia to provide low-cost dental care to large population groups; and the new Institute of Applied Research in Dentistry at the University of Zulia in Maracaibo, Venezuela. Finally, a start has been made on the development of models for national dental health planning in Venezuela and Colombia.

Special note was taken of the water fluoridation programs that PAHO and the W. K. Kellogg Foundation have been conducting in Latin America in cooperation with dentists and sanitary engineers.

The Committee heard these reports with great interest and expressed its approval of both the broad scope of the studies and the innovative aspects of the overall program. It was particularly impressed with the practical nature of the various approaches and felt confident that the next five years would show the fruitfulness of these developments.

3. Geographical Distribution and Possible Northward Movement of VE Virus in Central America and Mexico

The Committee heard a report on new epidemiological findings related to Venezuelan encephalitis (VE) virus, which for over thirty years has been recognized in South America and Panama as the source of repeated epidemics
and equine epizootics. There is reason now to believe that the virus may be spreading geographically in the Caribbean region. In 1962 Mexican investigators discovered VE virus antibody in serum from a human patient with neurologic sequelae in Campeche, in the State of Yucatán. The following year isolation of this agent from mosquitoes in sentinel animals in the State of Veracruz was reported by North American investigators participating in this study. Moreover, during these same two years the virus and antibody were found in the Everglades of southern Florida by personnel from the National Communicable Disease Center of the U.S. Public Health Service.

As a start in evaluating this new evidence, an investigation of the geographical distribution of VE virus in Central America between its main locations in Panama and Mexico was carried out. Material for the report was drawn from studies conducted in Guatemala, Honduras, and British Honduras during the period 1965 to 1968. Studies performed by the Middle America Research Unit (MARU) in Nicaragua and Costa Rica during 1967-68 will be recorded elsewhere.

The investigation revealed the presence of VE virus in the Atlantic lowlands of Guatemala, Honduras, and British Honduras during July-October 1967-68 and in the Pacific lowlands during July-August 1968. It was found in wet, marshy, or forested habitats, both near cities and in remote areas. The fact that VE virus antibody was present in humans as early as August 1965 in the Atlantic lowlands and August 1967 in the Pacific lowlands of Guatemala indicates that it probably existed in these regions prior to the dates in question.

These isolations in sentinel hamsters in the Atlantic lowlands of Nicaragua and the Pacific lowlands of Costa Rica, together with other findings as yet unreported, suggest that the virus has now spread throughout Central America from Panama to Mexico, at least along the Atlantic coast. Two possible explanations, both purely speculative, would be that (a) the virus has recently been transported from its previously known locations in Venezuela, Colombia, and Panama to Florida and through Central America to Mexico by ships or airplanes (carrying infected mosquitoes or humans), or by infected, migrating birds, or (b) the virus has been present in Central America, Mexico, and Florida for many years - centuries or longer - and has now just been discovered through
arbovirus investigations carried out in appropriate habitats. The geographical distribution of VE virus, at least on the Atlantic coast of Central America from Panama to Mexico, supports the latter possibility. Also, its presence in Central America in areas remote from ports favors the theory that it has existed for many years or that it was introduced by migrating birds rather than by recent traffic from ships or airplanes.

Thus, assumptions on VE virus movement in Central America and Mexico, are still only theoretical. Possibly the phenomenon can be studied by monitoring edges of virus activity where there are no natural habitat barriers to virus spread. The establishment of such an "edge" to the viral zone would be a most worthwhile undertaking. It could provide for continuous monitoring of the situation and permit the detection of any significant change. For example, if the virus moves out of small foci, or if it is spreading northward along the Gulf coast of Mexico, as suggested by the occurrence of the first recognized disease in Mexico (a horse epizootic at Tampico in 1966), investigators should be able to detect such movement by regular, repeated exposures of sentinel hamsters and by tests for antibodies in appropriate vertebrate hosts.

The Committee noted this work with great interest and emphasized the importance of continuing epidemiological studies of this kind in the field of virus diseases.

4. Symposium on Iron Metabolism and Anemia

Various aspects of the widespread problem of anemia were reviewed by the Committee in a half-day session on this subject.

Although iron is present in the body only in small quantities, it participates in a number of important biological processes. Almost all body iron is bound to proteins, thus rendering it nontoxic to tissues and imparting specific vital functions to these proteins - which functions are dependent upon the biochemical structure and composition of the proteins. Certain porphyrin-iron-protein complexes such as hemoglobin and myoglobin have the capacity to bind oxygen in a reversible manner. These organic complexes transport and
store oxygen for the body and permit the removal of carbon dioxide. The capability of iron to undergo oxidation and reduction makes it a suitable metal for enzymes that are needed for electron transport, i.e. cytochrome, xanthine oxidase, and succinic dehydrogenase. Catalase and peroxidase utilize iron to decompose hydrogen peroxide. In contrast, other iron proteins, such as transferrin, ferritin, and hemosiderin, seem to serve primarily as mechanisms for the transport and storage of iron.

In normal iron-replete humans most of the body iron (2.0 to 2.5 g) is found in circulating hemoglobin, 0.5 to 1.0 g is in body stores such as ferritin and hemosiderin, about 0.3 g in myoglobin, and small quantities are found in various essential enzymes. The plasma contains 3 to 4 mg of iron bound to transferrin, which acts as a carrier for iron and transports 20 to 25 mg daily to meet body needs. These internal requirements for iron are maintained by the absorption of 1 to 2 mg of dietary iron and the loss of an equal amount of iron from body surfaces and secretions.

The normal iron-replete human body maintains an iron concentration of about 60 parts per million throughout life. The fetus accumulates iron from maternal stores during pregnancy and has a body iron content of 250 mg at birth. Subsequently, the growing child absorbs each day an average of 0.5 mg of iron in excess of body losses, until a total body iron content of 3 to 4 g is reached at full growth. During adult life normal humans preserve a relatively constant body iron content by maintaining rigid control over absorption to balance losses; consistent errors in direction would result in iron deficiency or siderosis.

Although excretion is quantitatively as important as absorption in the maintenance of iron balance, absorption plays the more active regulatory role. Iron absorption occurs mostly in the proximal small intestine, where the mucosa remains attuned to current body requirements for iron. The exact mechanisms regulating iron transport across the intestinal mucosa are unknown. However, many factors affecting iron absorption have been studied, and scrutiny of their effects has provided some insight into the pathophysiology of iron repletion. The simplest model of iron absorption must consider the mucosal uptake of dietary iron and the transfer of iron from intestinal cells
into the body. It provides three anatomic locations for studying regulatory factors: intraluminal, intestinal absorptive cells, and corporeal.

Ample dietary iron must be exposed to the intestinal absorptive surface for a sufficient interval of time and in a physicochemical form that permits absorption of enough iron to fulfill body requirements. The quantity of iron in the diet and the chemical form of dietary iron seem to be the most important intraluminal factors affecting iron absorption. Populations with an iron-deficient diet usually have a distinctive incidence of iron deficiency. However, the problem is more complex because iron deficiency also occurs to a significant extent in some populations that consume an iron-replete diet. In such cases, however, the diet is protein-deficient, containing little meat. Too, these people often have a high incidence of chronic diarrhea, chronic infection, hookworm infestation, and frequent pregnancies, which would contribute to their iron deficiency. Iron is absorbed more efficiently from meat and soybean than from vegetable foods. In part, this is caused by the better absorption of hemoglobin-iron from food than other forms of dietary iron. Hemoglobin-iron is absorbed into the intestinal absorptive cell as a metalloporphyrin and is not chelated by many dietary constituents that make inorganic iron less suitable for absorption. The addition of meat to the diet improves the absorption of vegetable iron, probably because amino acids from degraded globin bind non-heme iron and keep it in a more suitable chemical and physical form for absorption from the small intestine.

Factors such as chronic infection and chronic diarrhea diminish iron absorption: hookworm infestation and frequent pregnancies increase loss of body iron and thus also contribute to iron deficiency.

Iron-deficient subjects attempt to re-establish a normal body iron concentration by increased absorption of dietary iron. Intestinal absorptive cells receive information concerning body requirements for iron and act upon this information; they then absorb more or less dietary iron depending upon body needs. Increased body requirements for iron deplete the intestinal absorptive cells of iron, and this in turn permits a greater uptake of dietary
iron from the intestinal lumen. The exact mechanisms by which the body informs the gut of current body requirements for iron are poorly defined. Both the rate of erythropoiesis and the level of iron in tissue stores affect iron absorption. These stimuli can act independently; hemolysis causes increased iron absorption when body stores are iron-replete, and enhanced iron absorption continues in iron-deficient subjects after the hemoglobin mass is restored to normal levels and persists until the body stores become normally replete. Many investigators have looked for a humoral factor that may inform the intestine of body needs, but these studies have been unrevealing.

Previously, it was believed that the quantity of iron in the body was controlled solely by absorption, and that excretion played a passive role. However, most cells contain iron somewhat in proportion to the quantity of iron in body stores. Thus the daily obligatory loss of cells from the skin and gut and secretions such as bile, sweat, and sebum provide a limited but selective loss of iron. In addition, there is a normal daily fecal loss of about 0.7 ml of blood (0.3 mg of iron). Normal humans lose about 0.9 mg of iron every day. Iron-deficient subjects lose only half this amount, and iron-loaded humans excrete up to 2 or 4 mg. In women, iron loss is greater because of menstruation and pregnancy. The mean daily menstrual loss is 0.5 mg, but the range extends from virtually nothing to several milligrams. Likewise, the mean daily loss in pregnancy is estimated as 2.5 mg but may be as much as 5 mg. In many geographic areas of the world hookworm is an important cause of iron deficiency. A single *Necator americanus* causes a blood loss of 0.03 ml daily, and *Ancylostoma duodenale* produces four to eight times this loss. Thus, even a moderate hookworm infestation can cause significant iron loss. Severe iron deficiency occurs in the parts of South America where hookworm infestation is widespread. Reduction of hookworm infestation is followed by correction of anemia without iron therapy. Contrariwise, iron therapy improves the hemoglobin concentration without treatment of the intestinal parasites.

Iron deficiency has been identified as a major public health problem in many parts of Latin America and the Caribbean. An increased incidence of iron deficiency is observed in children and women during the childbearing
age because of their increased requirements for iron. If anemia is taken as the sole criterion for iron deficiency, surveys of some geographic areas show that more than half of the young women and children are iron-deficient. Although anemia provides a reasonable guide to the incidence of severe and moderate iron deficiency, it fails to indicate mild iron deficiency and does not provide any assurance of diagnosis in individual subjects. Accuracy may be increased by examination of smears of the peripheral blood, determination of red blood cell indices, and measurement of serum iron concentration and total iron binding capacity. Iron absorption studies are a more sensitive indicator of iron depletion, and their use has been increasing. Radiisotopic methods for measuring iron absorption can also be used to assess the absorbability of iron in foodstuffs consumed by native populations. To assure validity in iron absorption studies, care must be exercised in the selection of test doses of iron, the size of the study groups, and the reference methods used to provide a basis for comparison between groups and among various studies.

Despite the identification of iron deficiency as a widespread nutritional problem and the accumulation of much information regarding its etiology, little has been accomplished at the public health level to minimize the condition. Long-term goals can only be achieved through programs designed to improve dietary intake of iron by means of education and increased availability of foods containing sufficient quantities of readily absorbed iron, and by environmental sanitation campaigns to control and treat hookworm infestation. Short-term measures may be useful as well; iron supplementation of commonly consumed foodstuffs and administration of iron to schoolchildren and pregnant women could go a long way toward improving this problem in many geographic areas of the Americas. Since iron deficiency is worst in rural areas, where much of the food supply is grown by the local population, iron must be added to the imported foodstuffs if an iron supplementation program is to be effective.

The Committee agreed that this was a most useful and valuable symposium and expressed the hope that its proceedings would be published without delay.
5. Special Session on Perinatal Factors Affecting Human Development

A major goal of the health sciences is to promote the normal development of human beings. Many individuals fail to attain the full potential of their physical and mental abilities because of the action of noxious agents during pregnancy, labor, or the early stages of childhood when the infant is most vulnerable. Although the importance of genetic factors is fully recognized, this special session was restricted to factors that exert their influence after conception and nidation.

5.1 Insufficient nutrition for the intrauterine growth of the fetus

This condition results in deficient growth and development of the fetus and in the delivery of an infant of a low birth weight for the gestational age. Such infants show a higher incidence of complications in their development as well as more frequent signs of central nervous system (CNS) dysfunctions.

It has only been in the last ten years that investigators have come to the belated realization that fetuses may be small not only because of short gestation but also as a result of inadequate growth. Improper use of the term "prematurity" (based on birth weight only) is largely responsible for failure to appreciate this fact long ago, and in 1961 the WHO suggested a new term in its place: "infant of low birth weight." It has now been suggested that the term "prematurity" be avoided entirely and that "preterm birth" (at less than 38 weeks after the last menstrual period) be contrasted against fetal growth retardation. There are obviously transitional and combined forms.

Unfavorable conditions in utero affect growth much more than they do maturation. Compared with a preterm infant of the same weight, the growth-retarded one is more mature, though it bears the marks of chronic deprivation.

In experiments with rats, protein starvation of pregnant animals causes a reduction in the number of nerve cells in the brain, as shown by DNA determinations made at birth. It also results in a marked reduction in the learning ability of the offspring. Moreover, these prenatally malnourished rats are very susceptible to subsequent postnatal protein deprivation.
Human infants weighing less than 2,000 grams at birth (presumably because of intrauterine undernutrition) who subsequently died of severe malnutrition during the first year of life showed up to 60 per cent reduction in the total number of brain cells. This finding is in contrast to a 15 per cent reduction in brain cells found in children who also died of undernutrition during the first year of life but who had normal weight at term birth.

Placenta growth is also severely impaired by protein starvation of the mother in both rats and women. The clamping of one uterine artery in the rat results in retardation of both fetal and placental growth in the corresponding uterine horns. This effect is similar to that found in women suffering from chronic arterial hypertension or from severe preeclamptic toxemia, in whom maternal blood flow through the uterus and placenta is chronically reduced throughout pregnancy. Heavy smoking by the mother produces similar consequences, which are probably also present when the placenta is attached to the lower part of the uterus as well as when the mother suffers from significant hemorrhaging. All these complications were found to be related to mental subnormality of the infants.

Deprivation of zinc in the maternal diet markedly impaired fetal growth in rats and potentiated the undesirable effects of protein starvation.

A low blood level of amino acids in pregnant women was found to be related to a reduction in birth weight and size of the newborn and also in the intelligence quotient of the child.

Both twinning and rapid succession of pregnancies (less than one year between successive deliveries) were associated with low birth weight and small size of the infant and also with retardation in the development of CNS functions as the child grew older. These effects have been interpreted as caused by insufficient intrauterine nutrition of the fetus because of the increased nutritional demand on the mother that can not be readily met. An increased dietary intake of the mother, especially of proteins, could be helpful in such conditions.

Maternal acetonuria (produced by diabetes mellitus or by fasting) has an adverse effect on the neuropsychological attributes of the child, which
becomes evident from eight months to four years of age. Such effects were absent in the offspring of diabetic mothers free of acetonuria regardless of the severity of the disease.

Studies have shown that the birth weight of the mother and her size have a direct bearing on the growth of the fetus; the mother of growth-accelerated infants are taller and heavier than those of growth-retarded infants, and exceptional maternal shortness is strongly associated with mental subnormality of the child. The weight gain of the mother during pregnancy has a direct relationship to the weight of the newborn. When studies are made on the neuropsychological development of children, it is very important to bear in mind that the socioeconomic condition and the level of education reached by the mother have a marked influence on the intellectual development of the offspring.

5.2 Assessment of fetal growth and condition during pregnancy

New methods have been devised to explore the development of the fetus. Ultrasonic techniques have progressed to a point where the rate of growth of the human fetus can be measured from the fifth week of pregnancy to term. Early in pregnancy the gestational sac can be visualized and measured. This structure disappears during about the tenth week of gestation; at this time the biparietal diameter of the fetal head begins to appear and is measurable from the twelfth week onward. Uterine size can also be measured throughout the first 20 weeks of gestation.

Uteroplacental circulation can be explored by means of radioangiography, which shows the maternal vessels supplying the placenta. In chronic arterial hypertension and in severe preeclamptic toxemia a marked reduction is found in the number and caliber of uteroplacental vessels, suggesting a correspondingly sharp decrease in blood flow. This finding is usually associated with impaired growth of the fetus.

Fetal tolerance to transient episodes of reduced placental blood flow has been explored by two methods. One consisted of three minutes of controlled maternal exercise and the other of a series of five to ten labor-like
uterine contractions elicited by the intravenous infusion of oxytocin. Both testing agents caused transient stress to the fetus. Under normal conditions, the fetal heart rate does not change. If the fetus is suffering from chronic distress, its response to these tests is characterized by typical changes in the heart rate, which make it possible to recognize the condition before the onset of labor and to prevent the occurrence of severe intrapartum fetal distress. Fetuses showing intolerance to uterine contractions should not be subjected to the stress of labor, which will probably produce irreversible asphyctic damage; they should be delivered by cesarean section before labor starts.

5.3 Intrapartum disturbances of fetal homeostasis

Since each uterine contraction of labor compresses the intramyometrial portion of the maternal vessels supplying the placenta and produces a transient reduction of maternal blood flow through the placentas, there may be a brief period of fetal asphyxia. When the woman is in the supine position the uterine contractions may also compress the aorta or its bifurcation branches against the spine, causing a transient occlusion of these vessels and a consequent aggravation of placental ischemia. This effect can be readily recognized clinically by the disappearance of pulsations in the femoral artery during uterine contractions. Aortic compression is no longer produced when the woman's position is changed. It should be emphasized that the supine position is highly unphysiological for the parturient mother and may have harmful effects on the fetus. In primitive cultures not influenced by Western obstetrics, women deliver in a more natural and physiological position such as sitting or squatting.

During normal labor the fetus shows no significant changes in blood composition. However, when intrauterine asphyxia is produced by uterine contractions, the fetal blood shows the typical signs of hypoxemia, hypercapnia, lowered pH, increased base deficit, etc. These changes can be easily recognized by measuring the corresponding variables in microsamples of blood obtained from the fetal scalp. This is a very reliable method for diagnosing intrapartum fetal distress.
Another frequent cause of fetal asphyxia during labor is the undue stimulation of uterine contractions through overdoses of oxytocic drugs administered by the attending obstetrician to accelerate the progress of labor. Oxytocic drugs should not be given except when uterine contractions are so infrequent or reduced in intensity as to impair the progress of normal uterine labor activity. In this situation, the dose of oxytocic should not exceed what is needed to stimulate uterine contractions similar to those of normal labor.

Intrapartum fetal asphyxia is usually associated with typical changes in fetal heart rate (FHR), which are most useful for early diagnosis of the condition. The most important change in FHR to be recognized is a transient fall occurring immediately after each uterine contraction. These falls are known as "dips II" or "late decelerations." They can be very easily identified in a continuous tracing of FHR taken at the time of the uterine contractions. This type of instrumental monitoring during labor is recommended for all high-risk pregnancies. The equipment is not too complex or expensive, and it may save fetal lives or prevent damage to the fetal brain. If monitoring equipment is not available, the diagnosis can be made clinically by counting the FHR in several consecutive 15-second periods during and after each uterine contraction.

When signs of intrapartum asphyxia are present, the situation should be corrected as soon as possible before irreversible damage is produced to the fetus.

Uterine contractions may also produce fetal asphyxia by compressing the umbilical cord. Again, this effect causes characteristic changes in the FHR.

### 5.4 Compression received by the fetal head during labor

The marked deformation seen in the heads of some newborn infants is produced by uneven compression during labor, particularly during each uterine contraction. Compression is greater on the equatorial zone than on the vertex and other areas of the head. This explains the bulging of parietal
bone, which becomes disaligned with respect to the frontal and occipital bones. By strongly compressing the fetal head, each uterine contraction causes a rise in cephalic pressure that is greater than the rise in the pressure of fetal body fluids. Increased intracranial resistance reduces brain blood flow during each uterine contraction and causes transient brain ischemia. This may stimulate the vagus nerve and produce a transient fall of FHR ("dips I" or "early deceleration") which is synchronous with the uterine contraction. Rupture of the membranes helps to bring on head compression and deformation and also the production of "dips I" from uterine contractions. This fact should be kept in mind as a caution against the systematic rupture of membranes in early labor.

The fetal brain may be damaged by ischemia and dislocation during fetal head compression. The record of fetal EEG after the rupture of membranes during labor shows a slowing of the rhythm at the peak of some uterine contractions. This change in EEG is frequently coincident with "dips I" in FHR. A similar EEG change has been experimentally produced in the fetal lamb by strong compression of the fetal head and also by hypoxia of the ewe. In some human fetuses that were severely depressed after birth, epileptic-like discharges had been recorded in the fetal EEG during labor. These discharges usually coincided with "dips II" in FHR. The epileptic-like discharges persisted in the newborn for several days, suggesting a long-lasting disturbance in brain physiology. Fetal EEG may become a useful means for detecting alterations in brain function during labor. It is desirable that the methods for recording and interpretation of the tracings are standardized in order to facilitate the comparison of results from different investigators.

5.5 Long-term consequences of fetal asphyxia

Profound acute asphyxia of the newborn rhesus monkey produces anatomical lesions in the CNS, which are symmetrical and located primarily in the brain stem, basal ganglia, cerebellum, and spinal cord. Cortical lesions are rarely observed. The neurological manifestations in surviving animals are varied and include postural changes, loss of locomotor control, lack of manual dexterity, and behavioral aberrations. There is a tendency for improvement in neurological symptomatology as the animal gets older, but some
behavioral or learning deficits apparently persist.

Subacute or chronic asphyxia of the fetal rhesus monkey produces marked brain swelling. Depending on the duration of the insult, different types of lesions may be observed. One of the important findings was cortical sclerosis of the paracentral sulci and degeneration of white matter - lesions that are similar to those observed in man.

The data on the correlation of clinical indicators of asphyxia or anoxia to neurological and intellectual development of children up to age four reveal only small inconsistent effects on intellectual development. Differences in motor function and an increase in certain neurological abnormalities are reported in children with clinical evidence of asphyxia. Consistent with other data in man, these observations suggest that asphyxia or anoxia of the fetus during labor or in the early neonatal period may not be an important factor in the etiology of mental retardation.

The differences between the experimental data and the results of clinical longitudinal studies may not be as profound as they currently appear to be.

Insults of the type used to produce asphyxia neonatorum in the rhesus monkey were extremely severe, and comparable experiences with women under modern obstetrical care would be extremely uncommon. The differences between the experimental data and the clinical data are largely quantitative. The greater severity of the insult in the experimental animals and the greater "noise" in clinical data may very well account for these differences.

5.6 Treatment of intrapartum fetal asphyxia

The administration of pure oxygen to the mother may raise fetal $pO_2$ in some instances, but not in every case. Some benefit may be derived from this method, but it does not correct the hypercapnia, acidosis, lack of glucose, or other disturbances in fetal homeostasis. The administration of glucose to the mother may increase the level of fetal blood sugar; however, this is less likely to occur when maternal or fetal circulation to the placenta is impaired.
Rapid delivery (by vaginal route or by cesarean section) and prompt ventilation of the newborn with pure oxygen is an efficient way to treat intrapartum fetal asphyxia. The intravenous injection of glucose, and base (bicarbonate or TRIS) may be beneficial, but it is not an entirely innocuous procedure. A new approach is suggested: once the diagnosis of intrapartum asphyxia is made, uterine contractions should be inhibited; in this way, placental blood flow will increase and the fetus will recover normal homeostasis; the fetus should be delivered only after blood composition is normal and all signs of asphyxia have disappeared. Remarkable recoveries have been obtained with this method, even in fetuses suffering from very severe intrapartum asphyxia and acidosis. The drug used for inhibiting uterine contractions is Orciprenaline (Alupent) a stimulant of the beta adrenergic receptors. It is administered by continuous intravenous infusion at doses of 20 to 40 mg a minute.

The Committee expressed its appreciation for the high quality of the papers presented at this special session and also for the comprehensive coverage of a rapidly developing field considered to be of primary importance in the health sciences.

The Committee indicated that PAHO should make efforts to promote basic and applied research on this subject and expressed its support of the establishment in Montevideo of the Latin American Center of Perinatology and Human Development.

6. Operational Research on Health Economics and Medical Care

In conformance to the Committee's expression of interest in operations research at the 1968 meeting, a statement of the factors involved in this activity was presented.

Although social considerations call for the extension of health services to the entire population, if possible, technical considerations demand that the proper quality of these services be maintained. Since the maintenance of high quality implies the cost factor, the goal should be to reconcile costs with the provision of services that are both high in quality and adequate in quantity.
In operations research, top priority should be given to studies on organization and methods to improve the utilization of services. An example would be studies to improve hospital management, which would most probably raise the bed occupancy turnover rates and make available beds otherwise occupied for long periods of time.

Next in importance are studies on health manpower and productivity. The availability of services by doctors and nurses, for instance, varies widely depending on their output per unit of time. This output can be improved by a proper distribution of work and by the use of nonmedical personnel to take care of purely administrative tasks. Studies on the quality and cost of medical services are of the utmost importance. Quality is usually expensive, but sometimes the cost is unnecessarily increased by the use of fancy devices that are not absolutely essential for good diagnosis and treatment. The definition of what is good quality in medical care is yet to be determined, and research on this matter is needed. Consideration should also be given to the problem of striking a proper balance between the need for highly specialized services for a few individuals and the essential requirement for basic services of satisfactory quality for a whole community.

The rapid progress of medicine entails the adoption of new hospital procedures as well as the abandonment of old diagnostic and therapeutic practices. Different systems have been devised to help meet the problem of financing and administering health care services. It is necessary to evaluate the results of each one in order to have the necessary statistical, epidemiological, and social elements to determine the proper system for each of the various aspects of health care. Computers and systems analysis have been introduced as tools for the development of research in the hospital field.

This is a rather new aspect of the research activities of PAHO, which was first discussed by the ACMR in 1968. There was unanimous agreement in the Committee on the absolute necessity for evaluation of the cost-effectiveness of health programs and hence for research that will make this evaluation possible. The proposals put forward in the report were considered to be clearly set out, well conceived, and practical.
7. The Role of Molecular Biology in Health and Medicine

In response to the paper presented on the role of molecular biology in health and medicine, the Committee recognized that this area is of profound importance in modern medical education and biomedical research. It reemphasized that the solution of practical health problems requires continuing basic research, and it recommended that PAHO recognize the need for supporting the sciences that deal with the concepts of molecular biology in order to ensure effective medical education for future physicians and to promote the advancement of biomedical research.

8. The Institute of Nutrition of Central America and Panama (INCAP)

The Committee reviewed a brief statement on the activities of INCAP over the last two decades. During these twenty years, the Institute has provided assistance to governments in the field of nutrition through advisory services, training, and research. Since its establishment, INCAP has progressively expanded the scope and range of its services until it now functions at a continental level. These expanded services have been developed without formal definition of the Institute's regional role and without a secure financial basis on which to operate at so broad a scale. Meanwhile, grant support for INCAP, which in the past constituted a major source of financing, has progressively diminished for reasons beyond the Institute's control. PAHO, therefore, proposes to expand its financial support to INCAP on a permanent basis to enable it to function as a regional resource institute in the field of human nutrition. At the same time, in view of the fluctuation of grant funds, the Organization also proposes to provide a temporary reimbursable reserve fund to stabilize a basic research program and eliminate the undesirable effects of unpredictable changes in this type of financing.

The Committee recorded its recognition of INCAP as one of the effective mission-oriented institutions in Latin America. Realizing that substantial support for basic research is needed to ensure a sound and successful approach to the practical aspects of nutrition to which the Institute is committed,
the Committee fully concurred with the proposed action of PAHO to provide additional funding for its operations and to establish it as a regional resource facility by underwriting the basic financing of an expanded program.

In addition, the Committee recommended that PAHO endorse and encourage research in the newer areas of nutrition, particularly those concerned with the adaptation of population groups to diets and with the critical evaluation of dietary standards currently applied to the geographic area in question.

Finally, the Committee expressed its interest in being involved in any future assessment of the INCAP program in relation to regional needs. Accordingly, it asked if further background information could be sent to its members as soon as it becomes available so that they could comment on the program next year, even if time is not available for a formal presentation and discussion.

9. PAHO Regional Library of Medicine

Reports on the PAHO Regional Library of Medicine (RLM) were presented by the Director of the U.S. National Library of Medicine, who is also Chairman of the RLM Scientific Advisory Committee, and by the Director of the Regional Library.

The background of the establishment of the Library was reviewed, and the contributions of the member of the PAHO/ACMR who served as interim Director in the initial stages were noted. At the first meeting of the Scientific Advisory Committee on the PAHO Regional Library of Medicine, in September 1968, top priority was given to the appointment of a full-time Director who could provide strong, competent, and continuous leadership, and in January 1969 the post was filled.

The Director of the Regional Library reported to the Committee on the status of the Library as of May 1969. Modifications have been made in the physical layout so as to facilitate operations, and a general analysis and reorganization of personnel resources has been carried out. Periodicals subscriptions increased from 350 to 1200, and the monograph collection now has 3800 volumes, 850 of them donated by the U.S. National Library of Medicine. A free-of-charge photocopying service is now in operation, and about
500 scientific articles are currently being reproduced each month. Cooperation has been initiated with other Brazilian libraries and with the biomedical community, and library subcenters have been designated in seven major Brazilian cities.

Services to biomedical institutions in Brazil were started on a regular basis on 1 February 1969. Since that date, more than 1500 interlibrary loan requests have been received and 54 percent of them were filled through the Regional Library's own resources.

In the discussion that followed these presentations, it was pointed out that since the percentage of requests filled tended to decline as the number of incoming requests increased, the Library's capacity to meet these demands could not be evaluated. Also, in the light of these figures, the criterion of limiting the periodicals collection to the last five years was questioned, and it was suggested that a period of eight years might serve as a better basis for Latin American requirements.

The need for qualified personnel was emphasized, and the filling of two posts was considered urgent. It was also pointed out that if the Regional Library is to become a demonstration and training center for librarians and professionals in the health sciences, more staff members should be recruited from other Latin American countries.

The Committee agreed that in this transitory stage services should be provided first within Brazil, but it expressed the hope that they would be expanded to other geographical areas as soon as possible. In addition, the Committee strongly recommended that the Library keep abreast of scientific developments in Latin America so as to be able to meet upcoming needs for teaching and research.

10. Report of the Round Table on the Intestinal Microbiota of Man

The agenda of the Second Central American Congress of Microbiology, held at Panama in December 1968, included a round table discussion on the intestinal microbiota of man sponsored jointly by PAHO and INCAP. The
Committee heard a summary of the nine papers presented, which dealt with the following general topics:

- The development of the microbiota of man and animals.
- The experimental implantation of indigenous bacteria in germ-free animals.
- The role of the intestinal flora as a defense mechanism.
- The pathogenesis of chronic diarrhea and malabsorption.

An important feature of the conference was the report on microorganisms, usually considered pathogenic, which are so prevalent in preindustrial countries that they appear to be part of the indigenous microbiota. These microorganisms are often related to clinical manifestations, particularly diarrheal diseases. The host-parasite relationships of these microorganisms were discussed and the factors involved in pathogenesis were illustrated.

From the report and the discussion that followed, it became evident that more knowledge is needed in the following areas:

- The composition and characterization of intestinal microbiota in the feces and in various segments of the gastrointestinal tract of both healthy and diseased individuals.
- The relationships between indigenous microorganisms and pathogenic species.
- The host-parasite relationship in the intestinal lumen and at the cellular level, to disclose the significance of the flora in host nutrition and disease processes.

11. Scientific Advisory Committee for the Pan American Zoonoses and Foot-and-Mouth Disease Centers

The Committee was brought up to date on the activities of these two centers and the far-reaching implications of their work.

South America has a human population of 190,000,000, and an animal population (cattle, goats, horses, sheep, and swine) of over 430,000,000. The cattle population emperiled by foot-and-mouth disease (FMD) numbers
184,000,000, and the total value of these animals is US $20 billion. The risk of their contracting FMD is 10 per cent per year. Thus, if the losses resulting from FMD are calculated at 50 per cent of their value, the estimated annual loss is one billion dollars or more. This does not include loss in terms of personal income, taxes, or potential foreign income. No economy can absorb such a great deficit.

The Pan American Foot-and-Mouth Disease Center is the keystone to the control and elimination of this disease in South America. It provides laboratory services, training, and consultation throughout the Hemisphere. Although its services have been adequate so far, there is an urgent need for their expansion if they are to serve the new programs that are being put into effect. The Inter-American Development Bank and the World Bank have shown considerable interest in FMD control and have arranged for loans totaling $100 million or more in this area. The countries, for their part, are providing 80 to 90 per cent of the total cost, which amounts to nearly a billion dollars. Expenditures of such magnitude call for careful planning based on sound epidemiological data. The shortage of qualified epidemiologists in most countries puts the burden of investigation on the FMD Center, which urgently needs to expand its staff trained in this field. If the sorely needed personnel is not made available soon, intelligent planning will be impossible, and the ensuing waste and inefficiency, in addition to discrediting animal health campaigns in general, could amount to a loss that no society can afford.

The Pan American Zoonoses Center is the only facility of its kind to serve the Americas and occupies the same position as the Foot-and-Mouth Disease Center in animal disease control. The zoonoses, which include bovine tuberculosis, brucellosis, rabies, anthrax, salmonellosis, encephalitis, and parasitic diseases, are a major cause of socioeconomic problems in South America. The cost of these diseases runs into the billions of dollars. Bovine tuberculosis affects 12 per cent of the cattle population, with a dollar loss that exceeds one billion annually. Brucellosis affects even more animals and causes dollar losses that are just as great as for tuberculosis. A special report of the UN Development Program on rabies in South America stated
that the animal losses from this disease alone exceeded $100 million. It is estimated that one million animals die of rabies every year in the Americas. Anthrax is one of the oldest known animal diseases and remains a serious problem in the developing countries. Salmonellosis is also widespread and causes considerable morbidity and some mortality in both man and animals. The encephalitides take their toll in animal and human lives year after year. And the many parasitic diseases of animals including tapeworms, flukes, round worms, and others can cause disease and sometimes death in man.

The Pan American Zoonoses Center has confined itself to the major problems in tuberculosis, brucellosis, rabies, and hydatid disease. If these diseases could be brought under control, the annual savings and increased earnings would exceed all the foreign aid that South America receives from North America and Europe.

The Foot-and-Mouth Disease and the Zoonoses Centers both have budgets of slightly over $1 million dollars. Just to carry on their current activities will call for an annual increment of at least 15 per cent; to increase their services will require annual increases of from 50 to 100 per cent over the next decade. Both the centers need new buildings - a requirement that should have top priority. The FMD Center has outgrown its present facility and the Zoonoses Center will have to give up in the near future the space it now occupies. It is hoped that these problems will be solved in the next year.

The Committee recognized the extreme importance of the work of these two centers from the scientific and from the economic point of view and commended the policy of PAHO in devoting some of its resources to the study and control of animal diseases. One particular aspect on which it was felt that further research is clearly needed is the development and standardization of vaccines.


After hearing a report on progress in the research program on endemic goiter, the Committee engaged in a discussion of PAHO's role in relation to
the future pattern of activities in this field. It was felt desirable that PAHO continue to sponsor basic research on the problems of endemic goiter in Latin America, to help give the program a wider education impact among young physicians and investigators, and to promote prophylactic programs wherever possible.

Several members of the Committee made the point that iodine deficiency is not the only contributing cause to endemic goiter but that other factors present in water may be involved and are in need of identification through research. This fact was borne out by a description of iodine deficiency in unacculturated Indians without endemic goiter.

The Committee recorded its recognition of this work as an excellent example of a comprehensive scientific endeavor involving both basic research and the practical application of results. It also noted the effective leadership of the project and the active collaboration of the participating scientists.


A meeting of the Scientific Group on Research in Nutritional Anemias was held at Caracas, under the auspices of PAHO in August 1968. The purpose of the meeting was to review the following topics:

- The results of studies on nutritional anemia in pregnancy carried out by cooperating laboratories over the last four years.

- The activities of the Reference Laboratory and Training Center for Research in Nutritional Anemias established at IVIC in Caracas.

- The results of studies carried out by individual laboratories on the etiology and pathogenesis of nutritional anemia.

The final report of the meeting outlined a program for the prevention of deficiencies conducive to nutritional anemia and made recommendations for future studies. This report was supplemented by a description of studies and
statistical analyses performed by cooperating laboratories in various Latin American countries to determine the incidence of anemia and of deficiencies in iron, folate, and vitamin $B_{12}$ among pregnant women. The protocol developed in 1963 by the PAHO/WHO Scientific Group on Nutritional Anemias was adopted for this work. A total of 1,042 pregnant women in their last trimester, 485 nonpregnant women, and 313 men were covered. The protocols of these studies provided sixteen parameters; however, only 13 were used in this preliminary statistical analysis.

Iron deficiency was identified as the most common and important cause of anemia in pregnant and nonpregnant females. There was little evidence in the case of folate and none in the case of vitamin $B_{12}$ that the serum levels of these nutrients were related to hemoglobin concentration.

Individual cooperating laboratories have been carrying out investigations pertinent to nutritional anemia in areas of special interest, including studies on the relationship between protein malnutrition and anemia (in Guatemala and Colombia), the effect of altitude on erythropoiesis and hemoglobin levels (in Peru), the role of erythropoietin (in Argentina), the role of malabsorption in nutritional anemia (in Haiti), standardization (in Mexico), and hookworm infection (in Venezuela). The group in Venezuela has also been collaborating since 1964 with the Department of Medicine and Botany of the University of Washington in Seattle on a study of iron absorption from food in which radioiron has been incorporated biologically.

The information accumulated on the incidence of anemia and deficiencies of iron, folate, and vitamin $B_{12}$ in the Latin American countries indicate the desirability of continuing the general program on the prevalence of such deficiencies in other areas, with emphasis on the etiology and prevention of these states. Preliminary studies reported at the Caracas meeting pointed up the need for further work along the following lines:

- For purposes of detailed evaluation, past dietary information has not been very helpful, because questions critical to individual deficiencies have not been answered. Now, with knowledge of the population status in relation to iron, folate, and vitamin $B_{12}$ deficiency, it will be
possible to make significant correlations between diet and food preparation, on the one hand, and the blood levels of these nutrients, on the other.

- In view of the large differences in iron availability among various foods, it is important to determine the factors that govern the variability of dietary iron.

- The role of malabsorption in the production of iron, folate, and vitamin B12 deficiency should be studied. Further investigations of the relationship between proteinemia, hypoproteinemia, and anemia, as well as the effect of severe protein-calorie malnutrition on the red cell mass, are also desirable.

- The effect of altitude on hemoglobin levels should be better defined so as to improve criteria for the diagnosis of anemia.

Although an effective program of prevention against iron-deficiency anemia cannot be initiated without understanding its pathogenesis, the need to start the correction of this deficiency by iron supplementation is clear. Any program of food iron fortification for a large population group should first be evaluated by isotopic methods in a pilot study of a sample population exposed to the same environmental conditions.

While iron food enrichment may be directed at the total population, special attention should be given to the vulnerable groups. Thus, pregnant and lactating women should receive a daily supplement of 60 mg of elemental iron and 100 µg of folic acid, and in hookworm areas and other regions where iron deficiency is severe schoolchildren should receive 30 mg of elemental iron in ferrous form every day throughout the school year.

Folate, in some cases, will probably have to be provided through diet fortification or supplementation, since it is difficult to change the people's eating habits and customs of food preparation.

In the discussion of this important report, several members of the Committee expressed concern about the artificiality of defining one particular hemoglobin level as the dividing line between normal and anemic subjects. This difficulty is avoided by the correlations presented in the latest report.
of the PAHO collaborative studies on nutritional anemias (Ref: RD 8/14), which clearly indicate the overwhelming importance of iron supply in determining hemoglobin levels and also provide guidelines for the direction of future research.

The Committee expressed the hope that this work will be continued and extended to the study of other groups such as lactating women and infants and preschool children.


Attention was called to hypovitaminosis A as a public health problem in Latin America and the Caribbean area at the first and second PAHO Technical Advisory Committee Meetings in Nutrition in 1962 and 1968. The problem was also brought to light in a worldwide survey of xerophthalmia sponsored by the World Health Organization in 1962.

The results of many nutrition surveys show that low dietary intake of vitamin A is widespread in the Americas. Clinical and biochemical studies also indicate that hypovitaminosis A exists in certain portions of the population. Partial and total blindness resulting from severe vitamin A deficiency in association with protein-calorie malnutrition has been reported, often in connection with high case fatality rates.

It was considered important that the Pan American Health Organization provide some guidelines on the control and prevention of this condition, and a scientific group was convened for this purpose in 1968.

The following definition for hypovitaminosis A, as it may be applied to human populations in the context of public health practice, was proposed:

The presence of depleted tissue stores and low serum levels of vitamin A which may result from a prolonged deficient dietary intake and lead to serious clinical lesions of the eye.

Criteria for diagnosis should include clinical, biochemical, and dietary measurements. Any one indication by itself is not sufficient proof of vitamin A
deficiency, but it should arouse suspicion. Many factors - nutritional, physiological, and pathological - can influence vitamin A status and must be taken into account.

From available data, it was evident that xerophthalmia is generally found in those parts of the Caribbean area and Central and South America where living standards for the majority of people are low. Preschool children, or more specifically those from six months to four years of age, constitute the most vulnerable group in the socially deprived sectors and are especially difficult to reach and protect.

The biochemical data from surveys by the Interdepartmental Committee on Nutrition for National Development (ICNND) in Latin America and the West Indies showed that from 5 to 45 per cent of the total population surveyed had serum vitamin A levels under 20 mcg per 100 ml. Among the vulnerable groups, including children and pregnant women, the proportion of persons with low or deficient values was even higher.

With regard to vitamin A values in diets, the intake was also deficient by the standards of the FAO/WHO Expert Committee on Vitamin Requirements in a large majority of the persons studied.

On the basis of the information accumulated, the Scientific Group made specific recommendations for the treatment and prevention of vitamin A deficiency and defined areas in which PAHO should encourage research.

The Committee, upon hearing the foregoing report, made the following suggestions:

- The report by the British Medical Research Council on Vitamin A should be included in the list of references on this subject.

- Clinical surveys should include adults, along with other segments of the population, to determine the problems in the total group.

- In planning and implementing preventive programs, consideration should be given to the fact that the deficiencies are multiple in any community.
- The skim milk that is currently being distributed should be fortified with Vitamin A.

- A map should be developed showing the important nutritional deficiencies that occur in each area and specifying the guidelines used for the interpretation of data to define the deficiencies.

- More attention needs to be given to objective criteria for defining hypovitaminosis A, since the tables in the report show some contradictions between intakes of vitamin A and serum concentrations. There are many possible reasons for such discrepancies. The usefulness of serum vitamin A concentration as a diagnostic measure needs further evaluation.

15. Selection of the Topic for the Special Session of the Ninth PAHO/ACMR Meeting and Other Matters

"Metabolic Adaptation and Environment" was chosen as the topic for the Special Session of the Ninth Meeting of the PAHO/ACMR. The Committee also decided to devote one half day to special aspects of medical education and another half day to an assessment of the PAHO/ACMR's own functions and activities.

It was agreed that as a general policy special topics should not exceed one day and that the number of formal speakers should be kept small to allow more time for discussion.

A member of the Committee suggested that PAHO organize studies on the chemistry and pharmacology of natural substances, and that a document be prepared to serve as a guide for the coordination of activities of Latin American investigators in this field. The Committee agreed on the usefulness of such a document, and the Director pointed out that work on this subject could be carried out in the future by the Pan American Institute for Drug Quality Control to be established in Uruguay. This led to a discussion of unethical practices in the advertisement and distribution of drugs in Latin America, and PAHO was urged to consider the problem. Finally, the need for studies in the field of immunology was stressed. In reply, the Director cited the work in immunology already being done by PAHO through the centers in Mexico City and São Paulo and proposed that a report on the activities of these two centers be presented at the next meeting of the Committee.
The date of the Ninth PAHO/ACMR Meeting, to be held in Washington, D.C., has been tentatively set for 15-19 June 1970.