

PEDIATRICS WORLD-WIDE

Incap and Incaparina

INCAP, the Institute of Nutrition of Central America and Panama, was founded in 1946. Its organizers and continuing supporters have been the Central American countries—Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama—along with the Pan American Health Organization and the W. K. Kellogg Foundation.

INCAP defines its primary functions as: (a) to examine the nutritional problems found in the region, (b) to work out scientifically the ways in which these may be solved, and (c) to assist its member countries in effectively applying these solutions. Centralizing the investigative laboratories, and the corps of well-trained workers in nutrition and allied disciplines in Guatemala, facilitates the activities way beyond the resources of any single participating country.

INCAP's Permanent Council consists of the Directors of Public Health from each member country, and a representative from the Pan American Health Organization. The expenses of its research and other activities have grown steadily year by year to a point where for the fiscal year 1967 the operating budget was \$1,870,188. In addition to the regular contributions from member countries, support for researches is given by the Pan American Health Organization, the U. S. National Institutes of Health (NIH), and private foundations.

INCAP's modern buildings stand in a grove of cypresses in the outskirts of Guatemala City. INCAP also maintains a 180-acre farm not far from the city for the carrying out of nutritional studies with animals and plants. It has established field stations in Guatemalan rural villages which are most valuable for epidemiologic studies.

Some 230 persons are at present on the staff of INCAP. Around 50 of these are professional workers—chiefly M.D.'s and Ph.D.'s special-

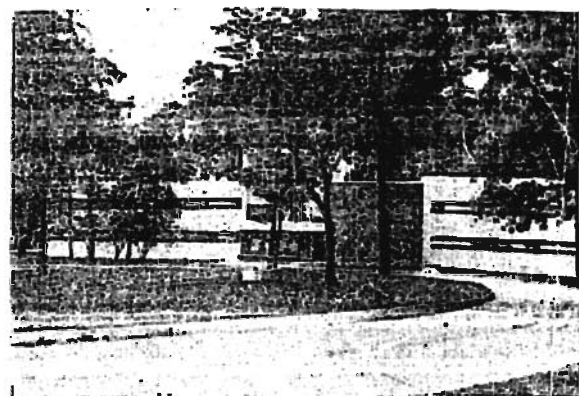
ized in a number of disciplines—who direct the research and training programs. This team of professionals is well supported by an efficiently organized Administrative Office, technicians, laboratory assistants, graphic arts workers, secretaries, and other service personnel. The Director is Moisés Béhar, M.D., M.P.H.

The research programs fall into several subdivisions covering mainly:

Improvement of food products; animal nutrition studies; methods for evaluation of nutritional status; studies of protein-calorie malnutrition; studies of nutritional anemias; interactions between nutrition and infection; effects of nutritional components on growth and development of children, with special emphasis on mental development; and influences of nutritional status upon physical working capacity.

As examples of areas in which INCAP's work has received general recognition, we could mention: improving the nutritional value of foods commonly used in the area; more efficient production and utilization of foods of high nutritive value; exploration of unconventional foods which could be practical sources of essentials which are lacking in the diets of local populations; methodology for the diagnosis of nutritional problems in general population groups; epidemiology and methods of the prevention and treatment of the protein-calorie malnutrition, vitamin A deficiency, and endemic goiter; studies on the epidemiology of atherosclerosis, with special inquiry into the roles of dietary factors.

In addition, INCAP carries out undergraduate and graduate training programs in nutrition and food sciences in cooperation with the



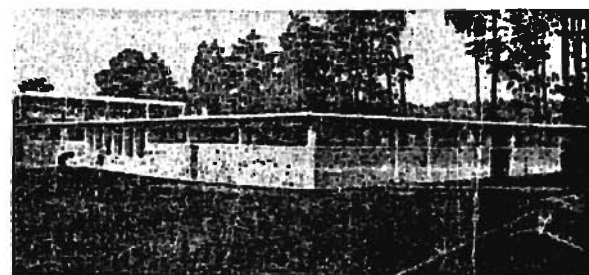
General view of the INCAP's Headquarters in Guatemala City.

University of San Carlos of Guatemala City. It assists member countries with the technical planning and development of their own nutritional programs.

To date INCAP has published more than 800 scientific articles in English and Spanish, many of the latter being translations of works issued originally in other languages. These give complete coverage of the range of activities carried out by the Institution. INCAP also publishes a detailed report on its work every year, in Spanish. Its staff occasionally prepares less technical material for lay magazines.

Incaparina

The most widely known development of INCAP has been the group of feeding mixtures known collectively as Incaparina. The culmina-



New building, constructed by the Government of Guatemala for the INCAP Clinical and Metabolic Unit, recently inaugurated. The edge of a much larger three-story building, now well advanced in its construction, which will expand greatly the present laboratory and teaching space, appears at the left side of the photograph.



Dr. Moisés Béhar. Director, INCAP.

tion of a dozen years of research, these are mixtures of low-cost vegetable products with added vitamins and minerals. With a balanced protein content of at least 25 per cent they are entirely comparable in nutritional quality with protein-high foods of animal origin (Table), and are proving very satisfactory for the feeding of young children.

Incaparina's major ingredients are deliberately selected from foods which are in abundance in most areas of the world with problems of overpopulation. Their vegetable nature keeps the costs of production much lower than those of the high-protein foods of animal origin (eggs, fish, meat, and milk) which people in more industrialized countries tend to rely on. The price of Incaparina, in the Central American countries where it is sold, is five to six times below that of fresh whole milk.

The preparations themselves look like finely ground flours. They are easily prepared in the home as an "atole" (warm drinks popular in Latin American countries) by the



A child one-and-a-half years old, with advanced form of protein-calorie malnutrition, enjoys drinking the Incaparina administered by his sister.

adding of water, followed by cooking for several minutes. Flavor is bland, and appearance somewhat like a thin pea soup.

One pound of Incaparina will yield 20 glasses of a drink, having a nutritive value similar to milk. The cooking purifies the water which has been added, and also conforms to the cultural patterns of the families. It may also be incorporated into soups, puddings, cookies, etc.

Currently authorized maximum prices of Incaparina to consumers vary, depending on the country, from U. S. \$0.11 to U. S. \$0.30 per pound. In many areas the actual selling prices are below these maximums.

Incaparina was developed primarily as a food supplement aimed to *prevent* chronic protein-calorie malnutrition, so prevalent among children of low income population groups, and is being promoted as a food rather than as a medicine. Nevertheless it is proving valuable also as an *adjunct to therapy* in the management of children who are already ill with protein-calorie malnutrition.

INCAP has secured already or is applying for the formula patents and the trade mark registry of Incaparina in those countries where commercial application appears to be feasible. This is to make certain that the authorized producers secure advance approval of all pricing, packaging, and advertising and publicity related to the product.

The first successful pilot trial of Incaparina was in Guatemala, in 1959, and the product is now



Incaparina, as packed for institutional use (50 pound sacks) and in the one-pound and 75-gram bags for retail use.

well established there. Two years later the Colombian subsidiary of Quaker Oats, "Productos Quaker, S.A.," arranged to produce and sell Incaparina in Colombia. The Incaparina recipe as used in Colombia calls for three parts corn flour to one part each of cottonseed and of soybean flours, with vitamins and calcium in adjusted amounts. The



Partial view of the Incaparina plant that "Productos Quaker, S.A." has installed in Cali, Colombia.

Comparison of Nitrogen Balance in Pre-School Children

	INCAP Milk V.M. 9	
No of children	9	9
Balance periods*	48	48
Average protein intake Gm./ Kg./day	2.3	2.3
Average % absorbed	82.6	68.9
Average % retained**	16.3	17.8

* 3 days each.
** Difference in retention is not significant.

resulting powder, after being mixed with water and cooked, is often served with panela (a crude sugar) and a flavoring.

The commercial distribution of Incaparina is now being extended throughout Central America and Panama. Sales are increasing year by year. Other countries, including some in Africa, are being considered as possible markets.