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OCCASION

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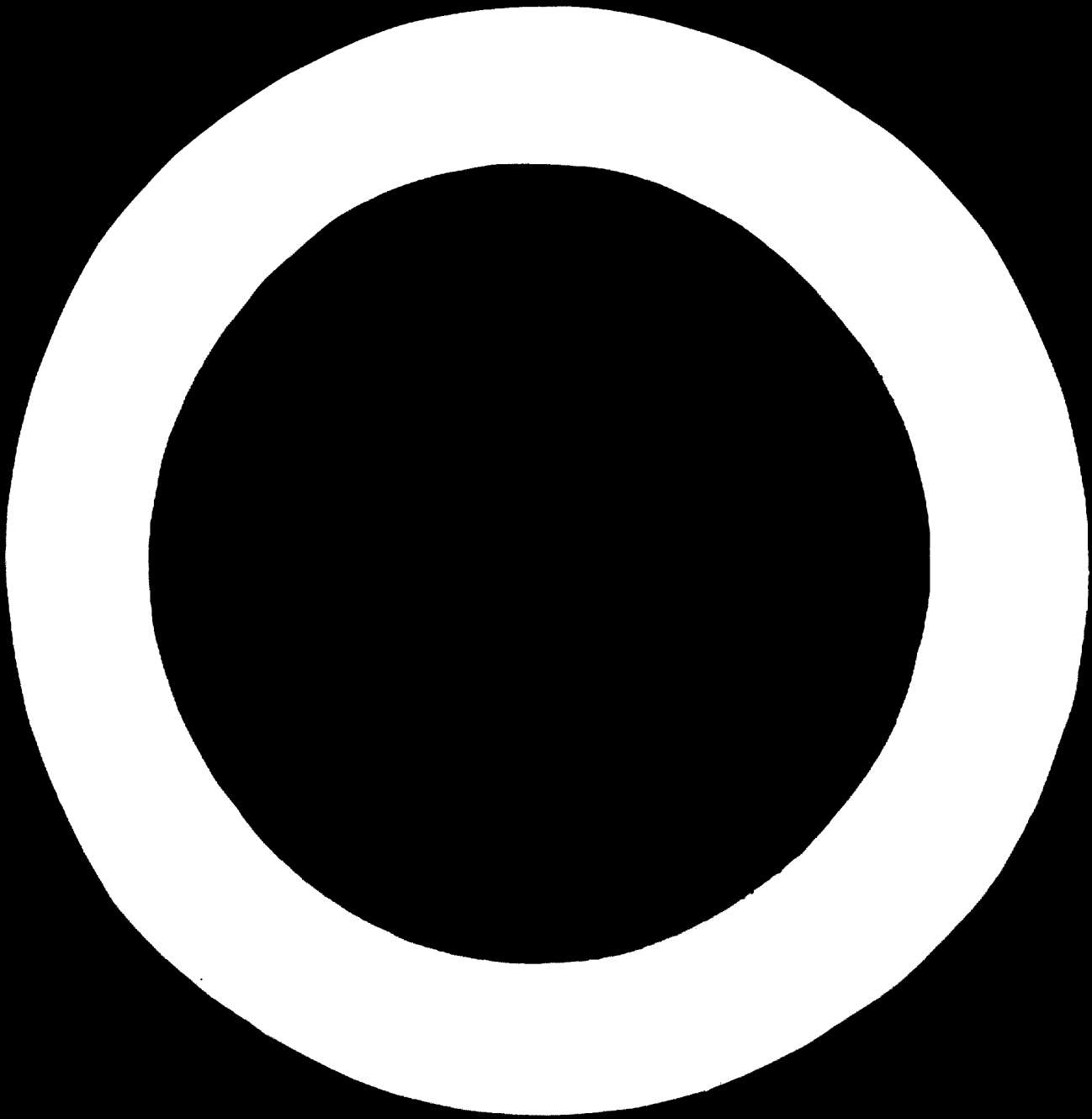
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El Instituto De investigaciones Tecnologicas (IIT)

(Institute for Technological Research, Bogotá, Colombia)

By Norton Young L., Director

The Institute for Technological Research in Colombia was established in 1955 as a subsidiary body of the Agricultural, Industrial and Mining Loan Bank. Its primary purposes are to carry out applied research, to find industrial uses for agricultural products and to investigate practical ways of improving existing industries.

IIT also executes technical assistance projects leading to the introduction or development of new production techniques in local industries, thereby promoting and accelerating the country's economic development.

During the organization of IIT, the Agricultural Loan Bank requested and obtained technical advice from the Armour Research Foundation of the Illinois Institute of Technology, an internationally known research body located in Chicago, Illinois (United States).

Although IIT's initial research work met certain needs, the demand for its services continued to increase. The range of activities had to be extended to embrace the entire country, and in order to facilitate its operations, sufficient autonomy and adequate resources were required. IIT therefore became an autonomous corporate body in 1958.

Organizational structure of IIT

For operating purposes, IIT is divided into six sections, the general responsibilities of which are briefly described below.

The Applied Chemistry and New Product Development Section is concerned with chemistry and chemical engineering research, especially in food chemistry; fruit and industrial fermentation processes; chemical processes; process and product improvement and evaluation; individual

chemical engineering operations; packaging and related materials; and quality control of raw materials.

Its research is geared to establishing new industries; evaluating potential industrial uses for resources and industrial by-products or wastes; making economic and technical feasibility studies and surveys for national and foreign investors; and exploring the possibilities of locally adapting economic and technical processes from other countries.

The Agricultural Chemistry Section primarily concentrates on two major factors affecting soil productivity and management: agronomy, or plant nutrition in relation to soils, and crop yields.

Its technological work is predominantly in areas concerned with the rational and economic use of organic and inorganic fertilizers; the application of technology to production; the development of fertilizers particularly suited to Colombian soils and crops; identifying the requirements for increasing domestic production of raw materials for fertilizers, insecticides, weed killers and fungicides; solving problems connected with the production, evaluation and analysis of those products in order to reduce imports; and increasing agricultural productivity through the efficient use of pesticides.

In fertilizer technology this Section is equipped to provide the following services: reports on fertilizer formulation and granulation; studies of fertilizer conditioning and evaluation of various conditioning agents; reports on storage conditions for fertilizers and assessment of the effect of environmental conditions (temperature and humidity); surveys on the various factors affecting efficiency in the fertilizer industry; testing fertilizing agents under hothouse conditions and in the field; and the de-

velopment of new fertilizers in granular, liquid and suspended form.

The Section's facilities include hothouses covering an area of some 300 sq. m. in which methods of fertilization, new fertilizing agents and lime additives, and insecticides and weed killers are studied.

The Analysis and Quality Control Section carries out qualitative and quantitative analyses using, in addition to traditional methods, spectrophotometric, chromatographic, fluorimetric, polarographic, microscopic, electrometric and colorimetric equipment. It performs control and research analyses both for agricultural and private industrial firms, as well as official bodies.

It provides services and advice to numerous industries, some of which produce tinned foods, animal food concentrates, drugs and cosmetics, petroleum and organic solvents, plastic and resins, and ceramic building materials.

In addition to offering practical demonstrations of quality control methods for many of these industries, this Section undertakes physical and chemical analyses to determine the composition of products in its sphere of interest and/or the establishment of standards, specifications and analytical methods for testing of national and foreign products.

The Engineering Section affords a wide range of services to national industries. Chemical process design, design of industrial machinery and technical and economic appraisal of processes are examples. It advises on all matters relating to the preparation of tender specifications and gives necessary guidance for the purchase of equipment and consideration and technical evaluation of tenders. Moreover, in co-operation with the Economic Section, it contributes to technical and economic studies in connection with the establishment of new industries, the improvement of existing industries, and the efficiency of working plants and equipment.

The Economic Section makes technical and economic studies of industrial projects, markets for individual products and construction of new factories.

In connection with the latter point, an estimate is made of production costs and the volume of capital investment on the basis of conditions prevailing in the region; how



A United Nations expert (right) and a Colombian engineer in the IIT laboratory adjust a machine used to mix preserves which are steam heated.

costs and investment would vary according to plant capacity; the price of competing imported products; the size of the probable market and its anticipated growth; and the distribution costs of national manufacturers, taking account of geographical factors.

On questions of site location for factories, surveys are made of raw material supplies; distance between points of consumption and supply; availability of power, water and fuel, communication systems and the various social services.

Studies on the structure of costs deal with the total cost of sites, buildings and equipment; existing fixed capital and working capital requirements; unit costs of production; potential profit yield of the process; and profitability of the investment.

Technical Assistance, an activity which has been carried on by IIT since it was founded, is considered of great importance to the development of national industry.

In general, the aims of this programme are (a) to develop operating techniques which will ensure optimum use of raw materials and equipment; (b) to establish control systems to ensure an acceptable product of uniform quality; (c) to plan the development of new products, taking into consideration the absorptive capacity of markets and the availability of raw materials, capital and labour; (d) to develop new techniques for small-scale and medium-scale industries; (e) to encourage other bodies, public and private, to secure higher productivity in industrial development projects; (f) to co-ordinate (in co-operation with public and private credit institutions and industrial development agencies) investments in small-scale and medium-scale industry; and (g) to train the technical staff needed to maintain a level of research which will ensure adequate technical assistance for the country's industry.

Staff

IIT's work programmes presently demand a staff of fifty-five professional workers, thirty of whom have pursued graduate studies abroad; and a group of foreign experts, specialized in relevant subjects.

Financial status

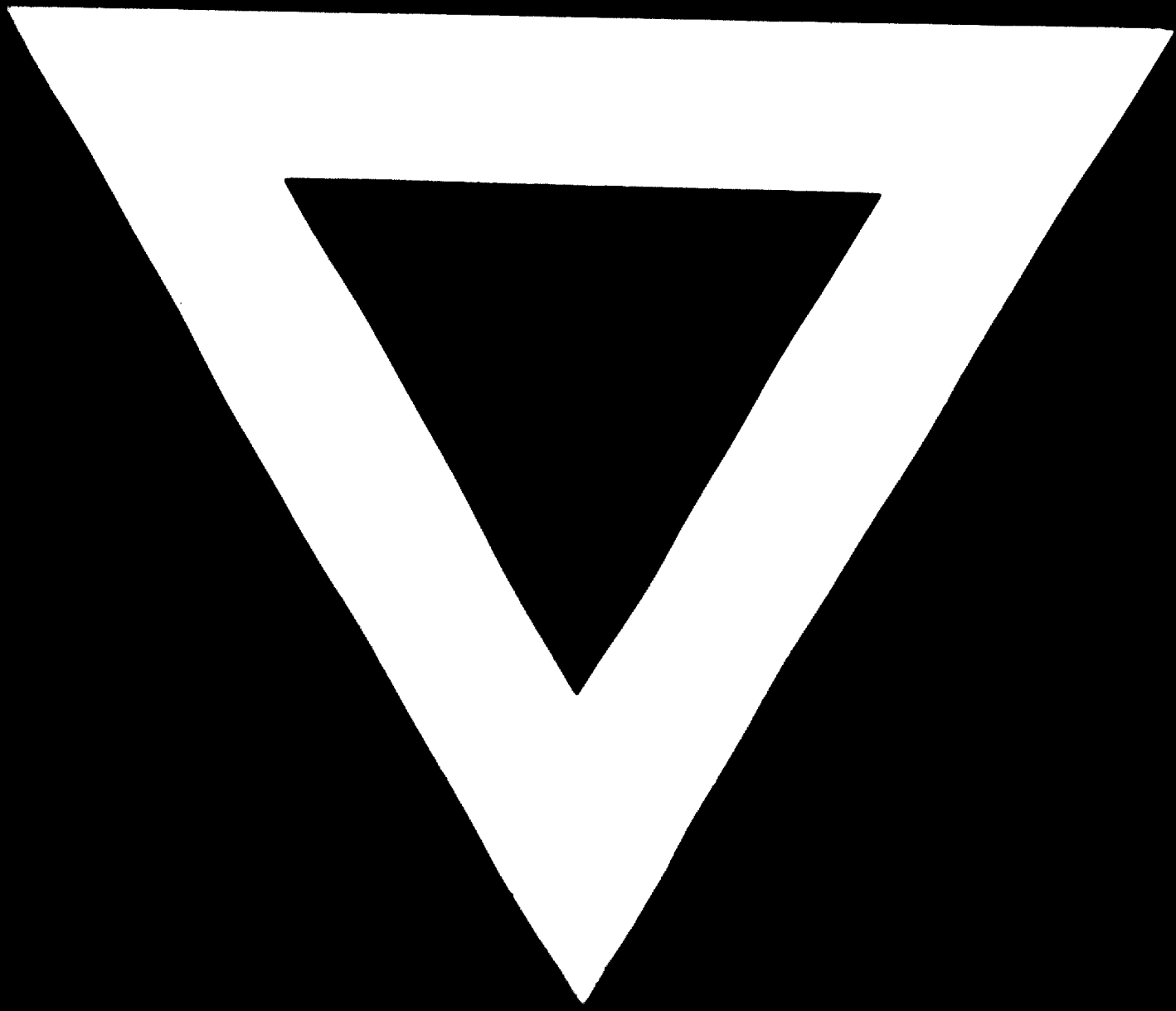
Since 1958, approximately 40 per cent of IIT's budget has been financed by contributions from the following sponsoring bodies: the Agricultural Loan Bank, the National Reserve Bank, the National Federation of Coffee Growers, the National Petroleum Company and the Institute for Industrial Development. The remaining 60 per cent is derived from contracts with third parties, international programmes, donations and other sources.

Laboratories and pilot plants

The Institute's research laboratories and pilot plants are equipped with modern analysis apparatus and research equipment. The establishment of these laboratories, the first of their kind in Colombia, cost approximately 10 million pesos.

Library

For documentation and reference, the IIT has a specialized library, periodically brought up to date, which contains 2 400 books, 12 000 technical publications, 400 specialized periodicals from various countries and 325 microfilms.



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