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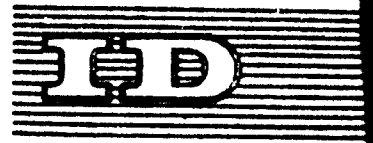
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MEXICO ^{1/}

by

David Galván Haro
Technical Adviser to the Director
Directorate-General of Industry
Mexico, D.F.

and

José Quevedo
Chief of Department
Information and Documentation Services Centre
National Council of Science and Technology
Mexico, D.F.

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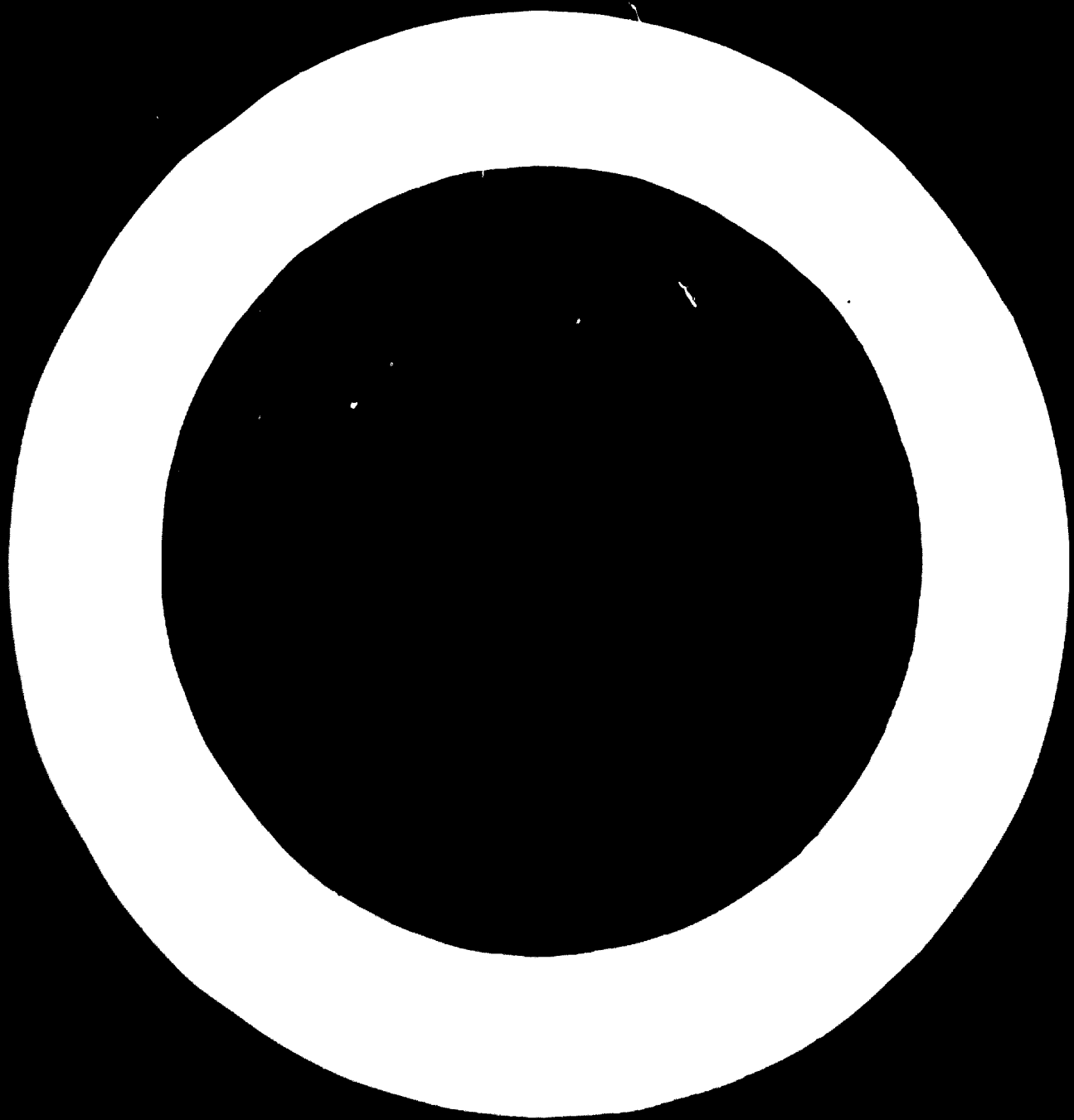
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I. INDUSTRIAL PROMOTION AND INFORMATION SERVICES

Report prepared by

David Galván Haro



SUMMARY

This report is divided into three parts:

- (i) Introduction
- (ii) Industrial promotion policy in Mexico
- (iii) Industrial information services guiding the establishment, development and consolidation of the nation's industry.

The introduction gives an outline of what the industrial development policy is, what its aims are and what limitations and drawbacks it has at the present stage in Mexico's industrial development.

The second part analyses the main lines of Mexico's industrial promotion policy and the aims it pursues in order to guide the nation's industrial progress.

The last part describes the main measures which the Mexican Government has taken with regard to specific industrial information services in order to promote Mexico's industrial and economic development, in view of the advantages that are to be derived from this kind of activity.

INDUSTRIAL PROMOTION
INFORMATION SERVICES

The development policy pursued by the Mexican Government has been designed to change the structure of economic activity, encouraging the development of industry, as the most dynamic sector, in order to overcome the limitations of the traditional sectors.

This process has been encouraged by both tariff and non-tariff protection and by public investment in the infrastructure.

The limitations and drawbacks encountered at the present stage of Mexico's industrial development can be summed up under four main headings: high costs, lack of credit, geographical concentration of industry and the limited impact of industrialization on total employment.

INDUSTRIAL PROMOTION POLICY

It has to be said that so far there has not been any formal plan for industrial development, but there has instead been a system of Government economic policy measures to encourage the establishment, development and consolidation of industries. This system has the support of the private sector, which has to undertake the activities that are directly responsible for bringing industrial development about.

Certain strategic branches of industry remain in the hands of the State, together with others in which there is no competition from private enterprise.

The main principles of Mexico's industrial promotion policy are as follows:

- (a) Investment in projects of general benefit, with the aim of creating a basic infrastructure for industry;
- (b) Production and distribution of power at advantageous prices, so that industry can develop under favourable conditions, and also in the places where it wants to;
- (c) Extension and integration of the internal communications network, with the aim of knitting the national territory together, so that the whole population is included in the domestic market and so that the transport of raw materials and finished goods is facilitated at the same time;
- (d) Establishment of regional manpower training centres, in order to increase workers' productivity;

- (e) Expansion of the system of secondary and higher educational institutions;
- (f) Cheap and easy credit for the establishment of new centres of industry and the expansion of existing ones;
- (g) Decentralization of industry;
- (h) Creation of a suitable economic, social and political climate for investment in industry.

The aims pursued with this policy are:

1. To raise the standard of living, both average and individual, of the population;
2. To speed up the harmonious and balanced growth of the economy;
3. To increase the degree of diversification and integration of the productive system, both regionally and nationally, in order to promote regional development;
4. To achieve a higher degree of integration of industry;
5. To absorb the increase in the population of working age productively and reduce the present level of unemployment, both overt and disguised;
6. To bring about profound changes in the occupational structure, so that increasing proportions of the population of working age have access to better-paid jobs;
7. To integrate into the market economy groups which have so far remained outside it;
8. To broaden the domestic market in order to bring about greater consumption of raw materials and finished goods, at the same time changing the structure and organization of domestic trade;
9. To promote the operation of industrial plants on a larger scale, with the specific aim of cutting operating costs and market prices;
10. To introduce the most advanced technology, both regionally and nationally, but adapting it to the characteristics of the national economy;
11. To bring about more efficient use of existing means of production;
12. To utilize resources which are at present idle;
13. To establish national control over natural resources in order to avoid waste;
14. To speed up the process of import substitution, with the aim of ensuring that the various sectors of industry quickly reach a level where they are competitive in international terms;
15. To increase the share of manufactures in the total volume of exports, in order to influence the terms of trade and thus avoid the ill effects of exporting primary products.

It is clear that these policies are not only aimed directly at broadening the domestic market, but also at promoting exports of manufactures, for which the Federal Government offers a range of incentives, such as free transfer of currency, subsidies to export production, credits, etc.

INDUSTRIAL INFORMATION SERVICES

The Mexican Government has set up a series of specific industrial information services in order to promote the industrial and economic development of Mexico.

Industrial development has been a constant concern of the Government, since it is fully aware of the advantages to be derived from progress in this area.

Among the measures at present being applied with the specific aim of directly stimulating the development of private industrial enterprise, there are the arrangements for financial assistance, the most important of which is the technical advice given by Nacional Financiera S.A. (National Finance Corporation) which, as the country's development bank, is responsible for channelling loans and investments. This institution has promoted the development of industries of key importance for industrial integration, particularly in iron and steel, paper and pulp, fertilizers and transport equipment. It has also helped to offset the lack of credit, particularly of medium and long-term funds, which has been one of the greatest obstacles for small and medium-sized enterprises. The Government has helped considerably to solve this problem by setting up funds to supplement the resources of private enterprises, as part of the effort to promote industrialization.

These include the Pre-Investment Studies Fund, the Guarantee and Promotion Fund for Medium and Small-Scale Industry, the Fund for the Study and Promotion of Industrial Estates, the Fund for Industrial Decentralization, the Fund for the Promotion of Exports of Manufactured Goods, the Guarantee and Promotion Fund for Small and Medium-Scale Mining, a joint revolving fund for each group and industrial credit unions.

Bodies operating in other fields but still of an industrial nature are the National Sugar Finance Corporation, which promotes the development of that industry, and the National Cinematographic Bank, which is concerned with financing production, studios, laboratories and exhibition for the film industry.

Another important body in the financial sphere is the Mining Promotion Board, which provides resources to support the national mining industry.

Although the State has been developing its activities in this area with excellent results, the needs of industry are still not satisfied, and more active participation on the part of the private sector is needed in order to meet the financial requirements of existing and future industry.

In addition, the Federal Government, acting through the Department of Industry and Trade, has developed a series of instruments to encourage and strengthen the nation's industry, the main aim being to give it technical guidance.

Among the most important of such instruments are the integration programmes, which can be defined as the means by which economic development is stimulated through industrial promotion, encouraging import substitution, directing investment into productive channels, persuading enterprises to plan their investment programmes, their manpower training and their market studies well in advance with the aim of getting to know possible suppliers and finding out the situation facing the product to be integrated into the market of other industrial products with which it has to compete.

Another instrument of economic policy has been designed to promote regional development, for which purpose a series of industry profiles has been started, relating to agriculture, forestry, stock raising, fishing, mining and manufacturing, in accordance with the Mexican Catalogue of Economic Activities of the Department of Industry and Trade.

In addition, in order to speed up import substitution and make better use of existing industrial plant, the attention of the sectors concerned has been drawn to a document listing 658 products which are imported on a considerable scale, so that they can consider the possibility that those new or limited-market activities could be undertaken in Mexico and take the place of goods which are at present imported.

The Department of Industry and Trade has also started a campaign to promote the establishment of "maquila" plants (plants processing materials supplied by foreign firms for re-export) in the country's northern frontier zone and along the coasts, as a means of providing employment for the available labour force and an opportunity to make use of raw materials of national origin.

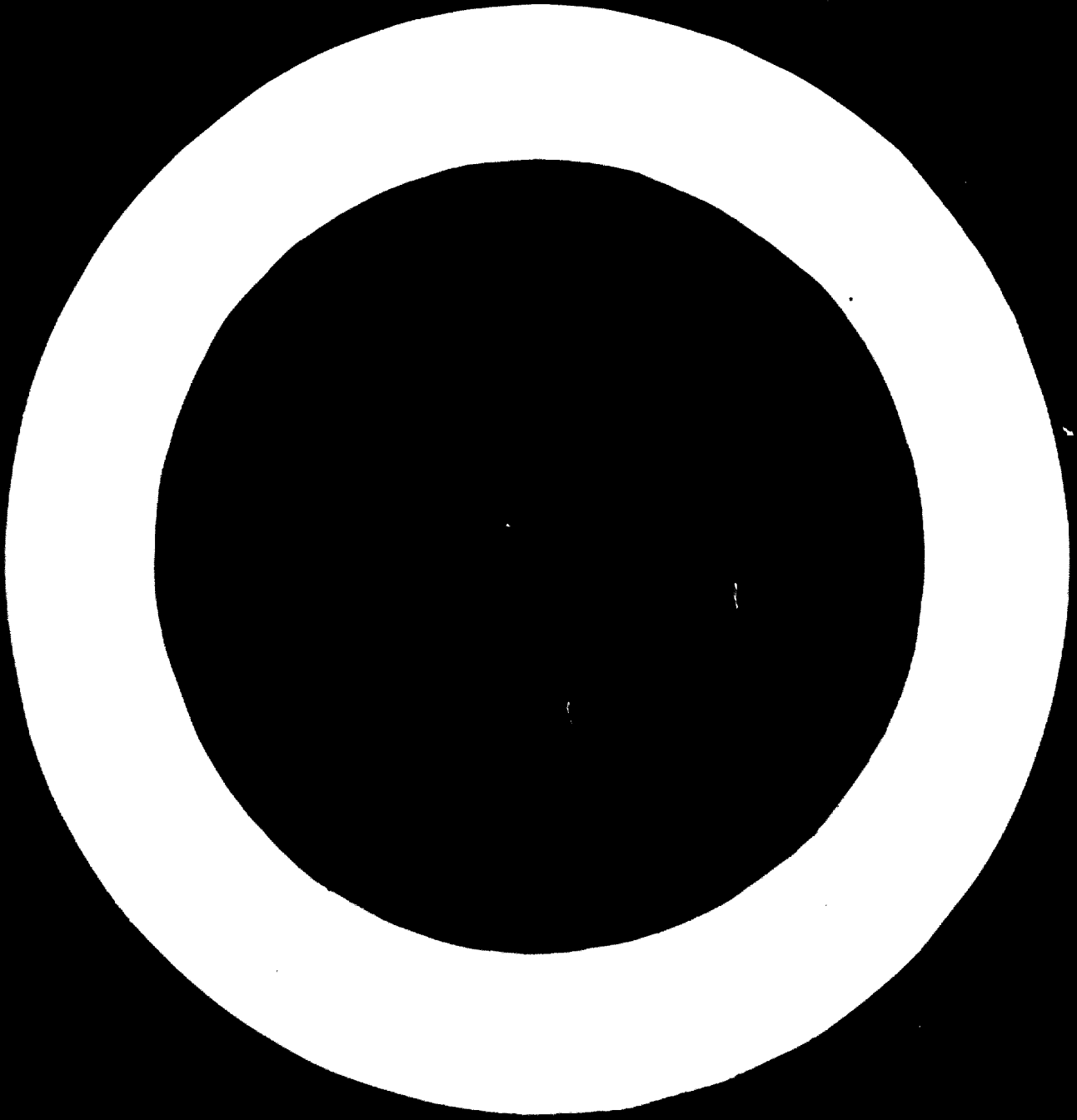
As a result, these areas have seen a development of "maquila" industry, which has attracted considerable investment and generates a large amount of employment. It needs to be regulated in such a way that its growth continues without detriment to existing national industry.

Finally, the Mexican Government has made available to the country's productive system the services of the Mexican Foreign Trade Institute, which is responsible for promoting exports, and thus helping to raise the incomes of both rural and urban workers, to strengthen the domestic market and to improve the standard of living, all of which are dependent on foreign trade, as an instrument for social and economic progress.

II. INDUSTRIAL INFORMATION

Report prepared by

José Quevedo



SUMMARY

This report is divided into three parts:

- I. Introduction
- II. Example of an information service
- III. Activities of the Information Centre of the National Council of Science and Technology

Part I describes the relationship between population growth, the process of industrialization and the need for industrial information.

Part II analyses in detail the activities of a research institute in the field of industrial information.

Part III discusses the need for the Information and Documentation Centre of the National Council of Science and Technology to establish a scientific and technical information system at the national level.

The studies made for this purpose have been divided vertically into four sectors:

1. Education
2. Research
3. Public administration
4. Productive sectors.

At the same time three aspects are considered horizontally:

1. Planning and re-planning of information services
2. Training of staff to run information services
3. Measures to educate the users of information.

These three horizontal aspects are discussed with reference to the field of industrial information, with emphasis on the importance of taking users' needs into account if information services are to be planned properly and of educating and motivating the users to make effective use of the information.

INDUSTRIAL INFORMATION

I. BACKGROUND

A. Population

Mexico has at present (1970) a population growth rate of 3.4 per cent per year (1) one of the highest in the world. Forty-six per cent of the population are under 15, which means that a large amount of employment will have to be created and that the economic and social development of the country will have to be boosted.

B. Industrialization

The process of industrialization has been a fundamental factor in the Mexican economy over the past decade. The sector is marked by vigorous expansion, reflected in an annual average growth rate of 8.9 per cent between 1960 and 1969 (1) and in the fact that secondary activities - mining, oil, manufactures, building and power - accounted for 33.7 per cent of the gross domestic product in 1969.

Major infrastructure projects such as highways, irrigation, telecommunications, power stations, etc., combined with a favourable tax policy and various kinds of protection for industry, have given a strong stimulus to the private sector, resulting in large-scale industrial growth.

The industries so far established need to optimize their operations so as to reduce costs and improve the quality of their output, and to do this they will have to improve their technology. That will enable them to open up new markets in the face of ever increasing competition.

C. Industrial information

Industrial information covering such aspects as industrial processes, equipment, patents, management techniques, raw materials, markets, etc. is an essential element for the optimum operation of existing industries and the proper planning of new ones.

It should be noted here that market information has a two-fold importance:

1. It is the basis both for establishing a new industry and for operating it. Before making an investment it is necessary to have information on the market in order to determine the capacity of the new enterprise. In order to operate an existing plant properly, it is necessary to have an operating budget, derived from the market information on which sales estimates are based, and finally a forecast of the enterprise's financial prospects;
2. Businessmen are interested in anything to do with their firms profits, and market information is therefore a vital means of selling them the idea of information and getting them interested in it.

An information service for industry needs to be based on general and specialized libraries. Although some of them may have very useful collections, it is essential, firstly, to expand them and improve their services, and, secondly, to encourage the establishment of new libraries where necessary. Mexico's existing libraries do not suffice to meet the new responsibilities imposed by the country's economic and social development.

II. INFORMATION SERVICE OF THE MEXICAN INSTITUTE OF TECHNOLOGICAL RESEARCH (IMIT)

The IMIT service is an example of information for industry in general.

IMIT was set up about twenty years ago and its purpose is to carry out research and studies on the application of scientific knowledge to the utilization of natural resources and the development of the country's industrial activities and to co-operate with national and international institutions of a scientific and technical nature pursuing similar goals (2).

Various activities have to be undertaken to achieve this aim:

- (a) Bibliographical and patents research;
- (b) Development of industrial techniques and processes;
- (c) Studies on the transfer of technology;
- (d) Laboratory and pilot-plant trials, etc.

The information service is a key element in the Institute's activities. Every project is passed first to the Department of Bibliography and Patents, where the following work is done:

1. Bibliographical research;
2. Patents research;
3. Selection of methods of analysis, standards and specifications;
4. Statistical research.

The IMIT library has 5,500 books, 4,500 volumes of periodicals and 10,000 pamphlets. The number of periodicals subscribed to is 150.

Apart from its own collection, it also consults specialist libraries, such as:

- (a) PEMEX
Specializes in sub-soil, petroleum and petrochemicals
Number of volumes: 30,000
Number of periodicals subscribed to: 850
- (b) Bank of Mexico
Specializes in economics
Number of volumes: 53,000
Number of periodicals subscribed to: 2,000
- (c) Industrial Research Department, Bank of Mexico
Number of volumes: 12,000
Number of periodicals subscribed to: 500
- (d) National Agricultural Research Institute
Specializes in agriculture
Number of volumes: 14,413
Number of periodicals subscribed to: 1,293

The information obtainable in the country may be supplemented, where necessary, by information from libraries and information services abroad, with which constant contact is maintained.

When economic studies, market studies and information analysis and evaluation are undertaken, whether as part of the technical and economic work relating to some research project by the Institute or upon a direct request from some firm, the bibliographical information is supported by information obtained directly from the sources which have it, whether private companies or institutions or official bodies, such as:

- (a) Directorate-General of Industry
- (b) Directorate-General of Statistics
- (c) National Bank of Foreign Trade
- (d) Bank of Mexico
- (e) National Finance Corporation, etc.

The information process is illustrated graphically in figure 1.

The institute also provides a monthly information service to industries requesting it, based mainly on references. For this purpose the industry selects the subjects of interest to it and the periodicals to be used and the Institute draws up a report on the basis of the articles selected.

The staff of the Institute's Department of Bibliography and Patents are professionally qualified in the field of chemistry, since this is the area in which most research is done, and they are trained in the handling and use of information by the Department itself.

III. NATIONAL COUNCIL OF SCIENCE AND TECHNOLOGY (CONACYT)

The importance of information has been dwelt on briefly in the first part of this paper and must now be brought out more fully.

Any activity to be undertaken in the scientific, technological, social or other field must be based on the knowledge accumulated in the past, in order to avoid duplication and wastage of economic resources, and information is thus a vital element which has to be taken into consideration.

CONACYT's Information and Documentation Services Centre has been entrusted with establishing a national scientific and technical information and documentation service, for which it will have to make the maximum possible use of existing information resources, strengthening them and creating new ones where appropriate. To this end it will establish objectives and policies, as the situation requires, acting as co-ordinator and promoter in information matters.

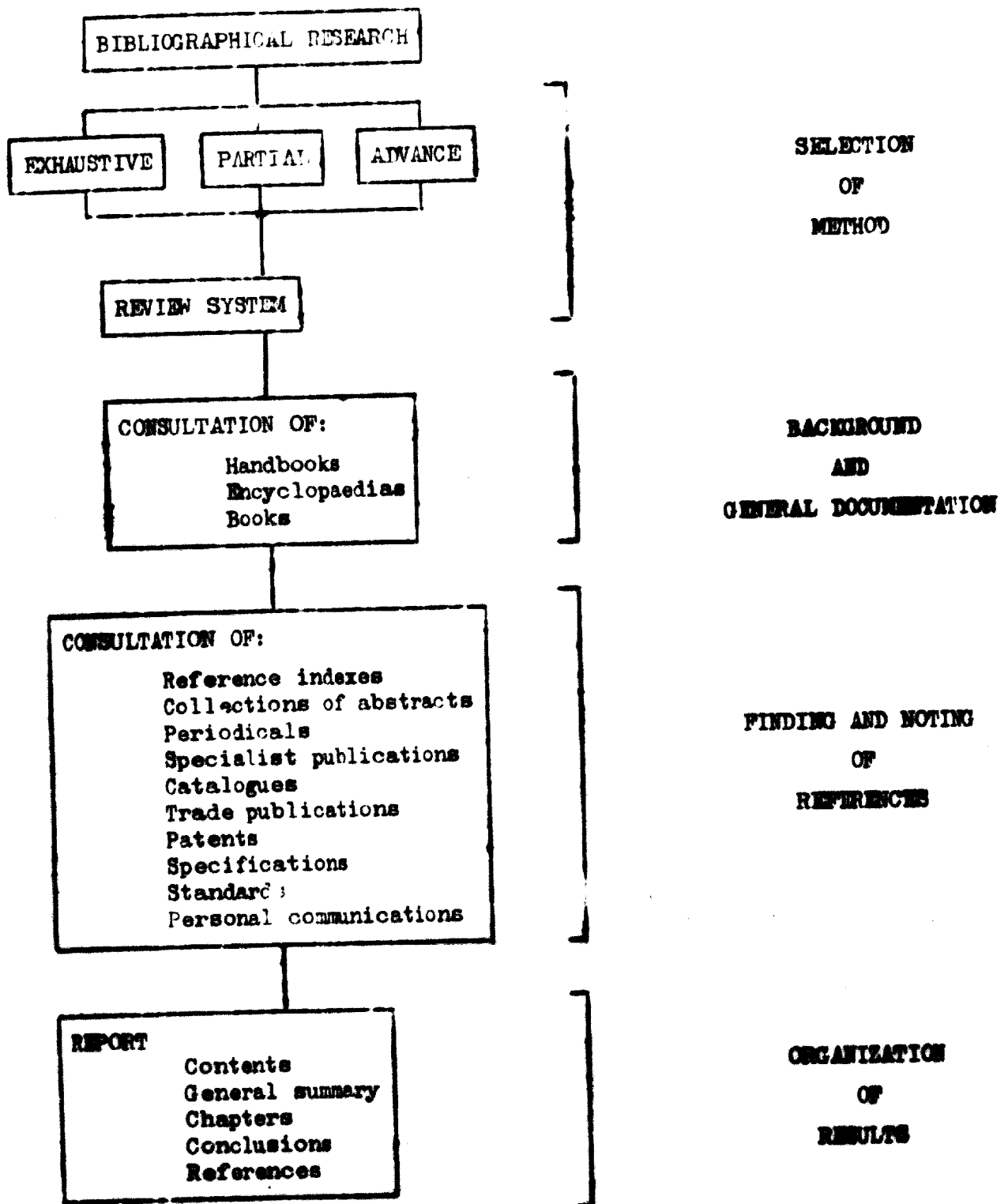


Fig. No. 1

Its studies and activities have been divided into four vertical sectors:

1. Public administration
2. Education
3. Research
4. Productive sectors

and into three horizontal sectors:

1. Information services
2. Training of staff to run information services
3. Measures to educate the users of information.

Productive sectors

In view of the importance to the country's economy of primary activities such as agriculture, stock-raising, forestry, etc., consideration has been given, in conjunction with the secondary and tertiary sectors, to the idea of establishing information services to meet the needs of all the country's productive sectors.

Plans have been drawn up, together with the National Livestock Research Institute, for the first stage of a co-ordinated information system for the live-stock sector.

A pilot study is at present under way to determine information needs in the productive sectors. This study, together with previous work and the experience accumulated by other countries in the information field, will make it possible to arrive at a methodology for determining information needs in these sectors throughout the country.

Information to industry

1. Information services: In the industrial sphere, which comes under the heading "Productive sectors", it is necessary to establish an industrial information system based on users' needs, existing facilities and foreign experience adapted to local conditions.

At the same time as the study to determine information needs in the productive sectors in general is being carried out, information centres are being planned for chemicals and metallurgy. To this end the users have been identified, including enterprises, chambers, associations and higher educational and research institutions. The resources of the country's leading libraries in these fields have been determined and lists of reference works, indexes and basic periodicals have been drawn up, in

order to establish what material needs to be acquired. In addition, questionnaires have been drawn up and a representative sample of enterprises has been selected, so that needs in the information field can be identified. A study is being made of the services that these information centres can provide, and finally an economic study will be made covering costs and financing.

The purpose of these centres is to supplement the country's basic collections in these fields and to act as reference centres for industry. Subsequently, they will become integral parts of the national information system, which should include the following elements:

1. Collections (general and specialist libraries)
2. Reference centres
3. Centres for selective analysis and dissemination of information
4. Advice and guidance services to industry.

2. Staff: The information services for industry will require office staff, consisting of librarians and engineers, and field staff, consisting of engineers with broad industrial experience, which will enable them to advise and guide users with regard to the efficient use of information, at the same time developing the demand for it.

Studies are being made with a view to the inclusion of material on industrial information in librarianship courses. Steps are also being taken to set up courses and seminars to train people qualified in other fields in documentation.

3. Education of the users: Courses are being started in the chemistry and engineering departments of the University to train future graduates in the proper use of information. This type of course will later be extended to other areas.

The necessary material is being prepared for the organization of lectures and discussion groups on information in associations and chambers of industry, the aim being to encourage businessmen to make use of information and to promote the establishment of centres providing appropriate services.

Any information service must be planned in accordance with the users' needs. However, the users have to be considered not just from the standpoint of supplying their needs, but also as regards their education and motivation.

For an information service to be successful, it is necessary to make the general public aware of the importance and value of information. Initial attempts are being made to achieve this through the use of mass communication media, and in particular television. The first programmes are at present being prepared, the second of which is on industrial information. In this way it is hoped to reach the scientist, the technical expert, the politician, the economist (planner), and so on.

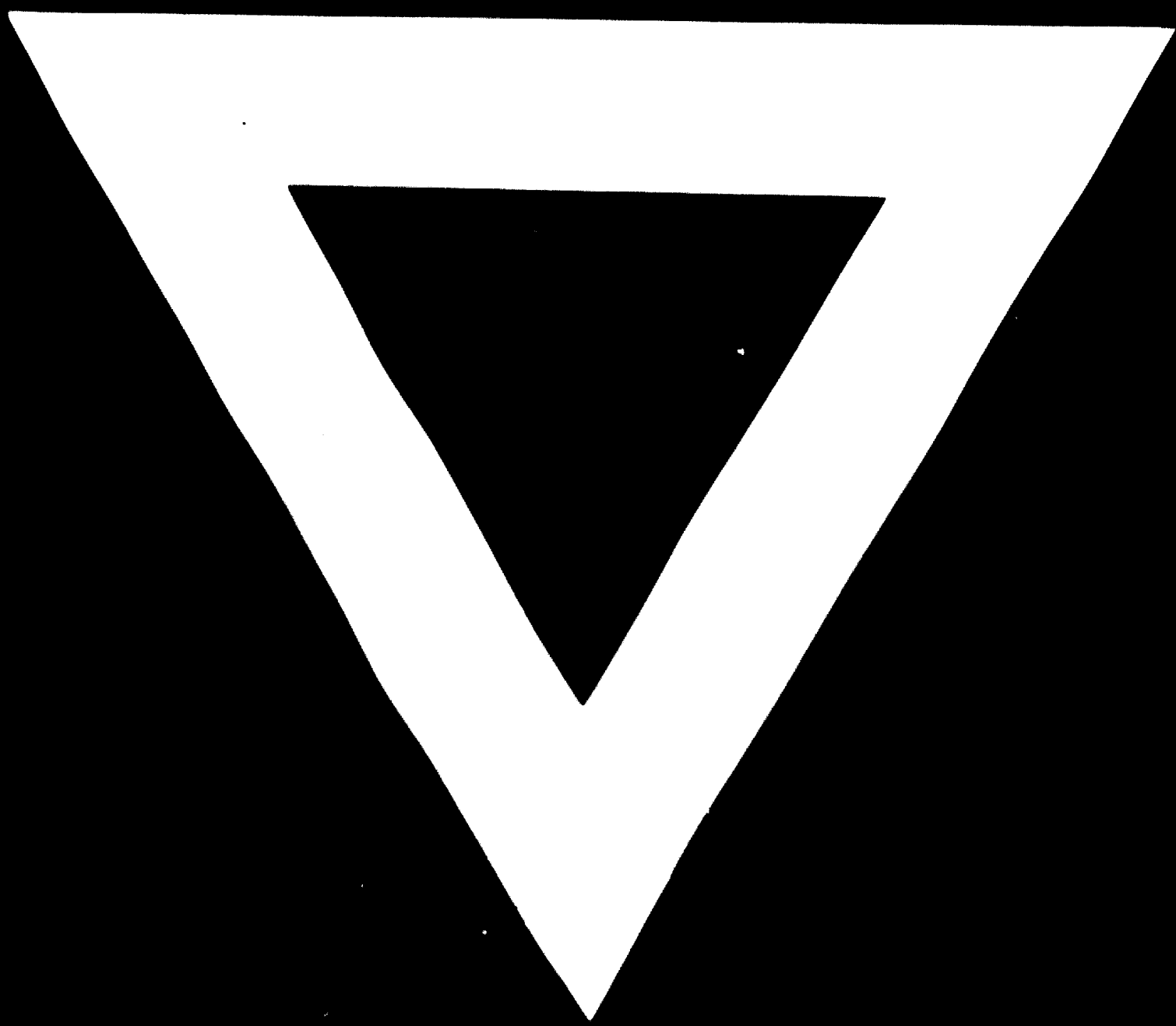
Finally, it should be emphasized that all users have one thing in common: they tend to take the easiest way to get the information they need, which is to ask a friend. That is why there is a need for an advice and guidance service (industrial information service) employing information officers for these purposes. The process can be facilitated, however, by educating the users of industrial information, which is the reason for the measures discussed in the first two paragraphs of this section.

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