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The Technical Information Service of the National Research Council of Canada

By R. E. McBurney

THE TECHNICAL INFORMATION SERVICE (TIS) was initiated in 1945 to assist Canadian industry, particularly small and medium-sized secondary manufacturing companies, to keep abreast of new developments in technology and research. This is a most important sector of the industrial community because about 96 per cent of the 33,000 manufacturing companies in Canada employ 200 employees or less, account for 40 per cent of the labour force and produce about 40 per cent of the manufactured goods.

Geographical, historical and economic factors affecting the development of Canada have resulted in a very unbalanced distribution of population, industrial manufacturing and sources of scientific and technical information. As is the case in other government programmes in Canada that attempt to redress these imbalances by some form of subsidy, the TIS service is free of charge to lessen the financial burden on small industry and to keep it informed on the availability and usefulness of technical information. The annual cost is approximately Can.\$1.5 million.

The Service consists of a central office in Ottawa providing technical support to eleven field offices across Canada, of which six are operated by Provincial Research Councils on repayment by the National Research Council of Canada (NRC). These are smaller research organizations than NRC and concentrate on developing the natural resources of their provinces and helping provincial industry to utilize them. The Service comes within the general jurisdiction of an NRC Vice-President responsible for industrial research assistance to industry, including scientific and technical information, research grants and industrial research scholarships. Its operations are directed by the Chief of TIS, who also administers the NRC Industrial Research Assistance Programme which makes grants to manufacturing companies to establish new research teams, or to expand existing ones. TIS field staff promote this programme, although they do not participate in its operations.

Information activities are organized into three sections, a Technical Enquiry and Answer Section, an Industrial Engineering Section and a Technological Developments Section. The first two sections are composed of field officers who visit individual companies to provide answers to technical production problems, and to give assistance in the application of industrial engineering methods that will improve productivity. These field officers are backed

up by an engineering staff of information specialists in Ottawa. The third section operates a technical awareness programme by mail from Ottawa to provide selected items of technical information to specific companies in the various fields of industry.

All TIS professional staff, of which there are 32 in the field and 20 in Ottawa, are university graduates with from five to 30 years of production experience in industry. They are mostly mechanical, chemical and industrial engineers as the majority of companies have problems in the areas represented by these specialists. There has been, however, an increasing demand for metallurgical engineers and biochemists to deal with food processing.

The field officers are key men chosen on the basis of their technical education, industrial experience, versatility, common sense and ability to co-operate with people. The personal call is the most effective way of making industry aware of the sources and the extent of information available and, in particular, of establishing friendly relationships on a personal basis that will encourage industry to ask for assistance when it is needed. The field officers have neither the capability nor the intent to tell an industrialist how to run his business. They simply open doors of which the industrialist may have little or no knowledge.

The field inquiry officer may help to solve problems from his own experience, or with the assistance of his own Council or other provincial or local organizations.

The Author: Mr. McBurney, an electrical engineer, served for 27 years in the Royal Canadian Air Force and held the post of R.C.A.F. Director of Telecommunications. Upon retirement in 1952, Mr. McBurney became associated with several large companies in the electronics, computer and aviation fields. In 1960 he was appointed head of the N.R.C. Technical Information Service and Chairman of the newly-formed International Federation for Documentation (FID) Committee on Technical Information for Industry. In 1962 he was made responsible for the organization and administration of the N.R.C. Industrial Research Assistance Programme and in 1969 was elected President of FID.

Failing this, he refers the problem to Ottawa giving details of the technical background of the problem, and the nature of the firm and the person making the inquiry, to enable the Ottawa staff to understand the problem and to provide a suitable reply written at a level of technical language that will be meaningful to the inquirer.

His wide coverage of industry in a region gives the field officer an important role in the "cross-fertilization" of technology, and even in business relationships among his industrial clientele. Although he must observe strict commercial security about what he sees and hears during his factory visits, he often is able, with the consent of the companies concerned, to suggest the application of clever production techniques and devices in other industrial fields. He helps companies to find local sources of supplies and to recruit technical personnel; he may suggest co-operative efforts between firms or even advantageous mergers. He can also put companies in touch with appropriate government or other organizations to facilitate financing, area development or co-operative marketing and purchasing, even though such activities may be outside his terms of reference.

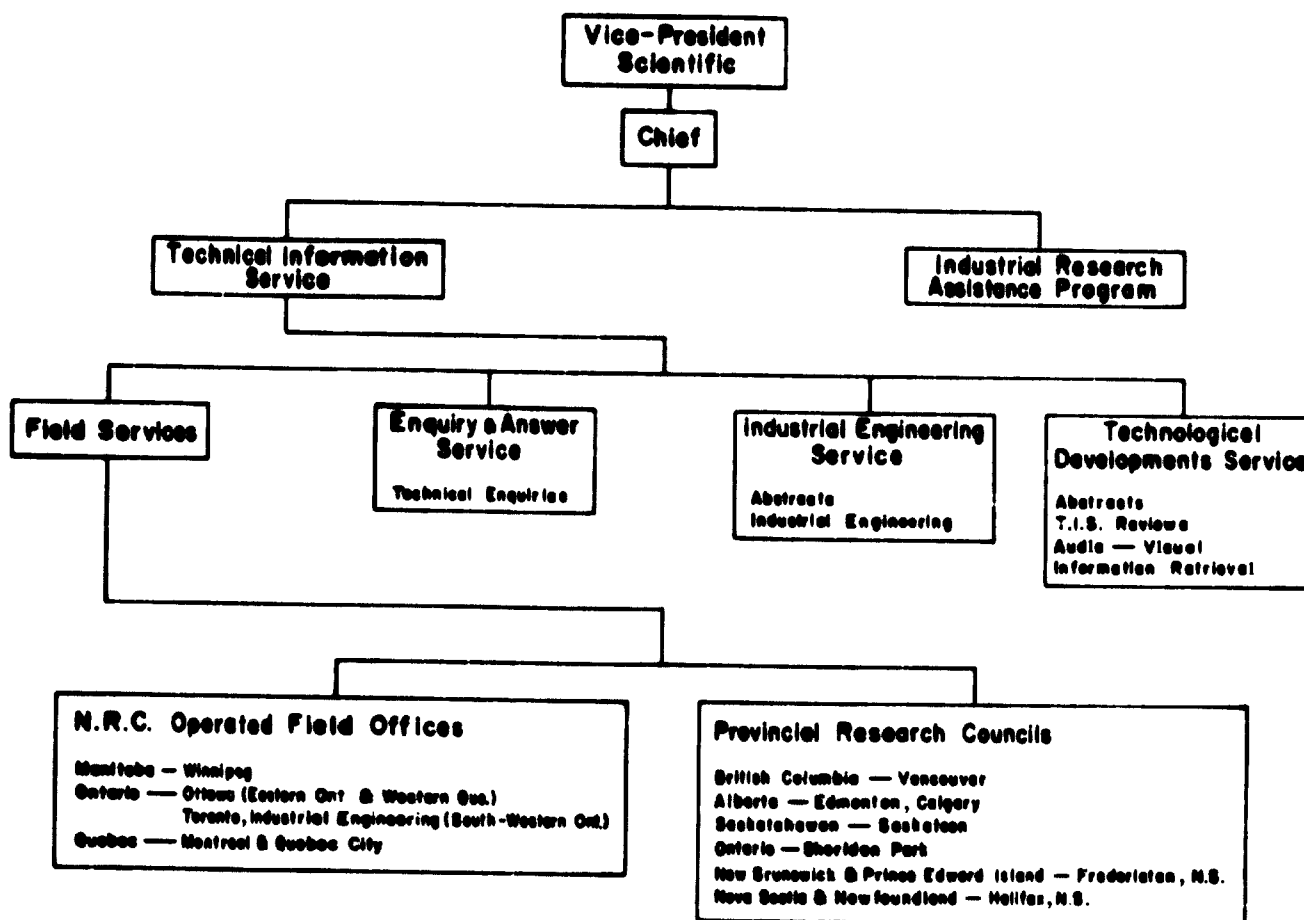
The Ottawa staff are selected for their breadth of knowledge and experience, maturity of judgement, their ability to express themselves in writing and their interest in this

type of information activity. Each staff member is assigned to a field related to his own experience such as plastics, metalworking or food technology, and he handles problems in this field as well as some miscellaneous problems.

The Ottawa staff provide a written or verbal answer to queries received through field officers or directly from companies, or referred by other government departments. The answer may summarize the general background of the problem, refer to specific items of pertinent information, and may give a professional opinion of the probable solution. A selected bibliography of pertinent textbooks or articles may be included to enable the inquirer to study the technical aspects extensively. An answer consisting only of references to literature is avoided, if possible, unless the inquirer requests it.

Photocopies of relevant articles or texts, if not too long, may be included with written answers when technical libraries are not readily available to the client, or when the time factor is important. Otherwise the client is referred to the source of the item, or informed of the nearest library holding the publications.

The Ottawa staff draw on several major sources for information, including their own experience, which covers a wide variety of industrial production. They may refer to some 85,000 previous inquiries and answers and



a collection of company technical bulletins and other publications not covered by standard reference indexes.

The National Science Library and the wide network of technical libraries and documentation centres with which it is associated is one of the most important sources of information. The library subscribes to some 16,000 scientific and technical journals and maintains a good selection of standard textbooks and reference publications. The Library is part of the NRC structure.

Another major source of information is the group of several thousand scientists and engineers employed in the research laboratories of the NRC and in the departments of agriculture, mines, forestry, fisheries and defence; in the operating divisions of departments such as public works, transport and industry, trade and commerce; and in many other special organizations. At least one or two experts in every sector of science and technology can be found in Ottawa, many of international repute, and each having his own channels of information to which TIS may be referred. In some cases the departments may wish to reply directly to the inquirer so the inquiry is referred to them.

Industrial companies and associations are most co-operative in providing information. They do not reveal trade secrets, but frequently they provide information not known to small companies and they refer the TIS to likely sources of information, including foreign ones.

University and research organizations elsewhere in Canada and abroad, particularly in the United States, are most useful information sources, as are the many technical information services in various parts of the world. Personal contacts have been established with many of the services and information is exchanged on an informal basis. In 1969 TIS answered 12,617 inquiries in the field offices and 4,153 from Ottawa, including 215 inquiries from foreign sources.

The Industrial Engineering Section (IES), established in 1962, is designed to meet a real need of small industry to provide information and assistance in improving the efficiency of production. Most small industrialists have never received training in the elements of plant layout, material handling, inventory control, cost analysis, production planning and similar functions that are vital to success in an increasingly competitive world.

The industrial engineer (IE) field officer assists small companies to apply IE techniques on a do-it-yourself basis at their own pace, thus combining the industrialist's technical know-how with the IE's know-how of specialist techniques. The involvement of company personnel has a self-educational benefit which persists after the project is completed.

Contact with companies usually occurs through inquiry officers or referrals by satisfied clients. The company is asked to extract certain data from its production and accounting records. This may take several weeks, perhaps requiring urging from the IE officer who then indicates the areas in the plant operations that need improvement, and suggests what might be done. Preferably one area at a time is considered, such as production planning, inventory control or plant layout. As the company pro-

ceeds, the IE helps it to overcome unmanageable obstacles. The company is encouraged to train some of its staff in IE methods, even at an elementary level, in order to assist the IE in his work with the company. IE officers may spend from 20 to 60 hours with a company involving from five to ten visits over a period of six months or more.

The IE Section has received tremendous response from industry and has had most gratifying results which, unlike the other two sections, can be assessed from a cost/benefit viewpoint. Unfortunately, the IE staff is so limited that it cannot handle all requests; however in 1969 660 companies received IE staff assistance.

The Technological Developments Section, established in 1964, is organized to keep Canadian companies informed of research and technological developments of potential value to them. It issues technical reviews and operates an audio-visual service, but these are limited by staff shortages. Its main effort is concentrated on a Selective Dissemination of Information service.

Of the 33,000 manufacturing companies in Canada—all of which were invited to submit listings or profiles of their company's particular technical interests—some 3,000 companies both large and small have complied. These profiles have been put on tape and are compared at regular intervals, using a computer, with recently perfected technology, the latest research results, and the most recent industrial engineering developments of possible interest to the companies. Engineers on the TIS staff select the subjects from the latest scientific and technical literature.

The subjects are described in a ten word title and each of the 3,000 companies receives an individualized list of approximately ten to 25 titles selected and printed by the computer. From the total response, the titles requested by the 3,000 companies are re-compiled into group lists which are then mailed to every company listed by the Dominion Bureau of Statistics thus disseminating pertinent information to various industries such as paint, machinery, food, and the like. The lists represent a selection of material screened by the industry itself.

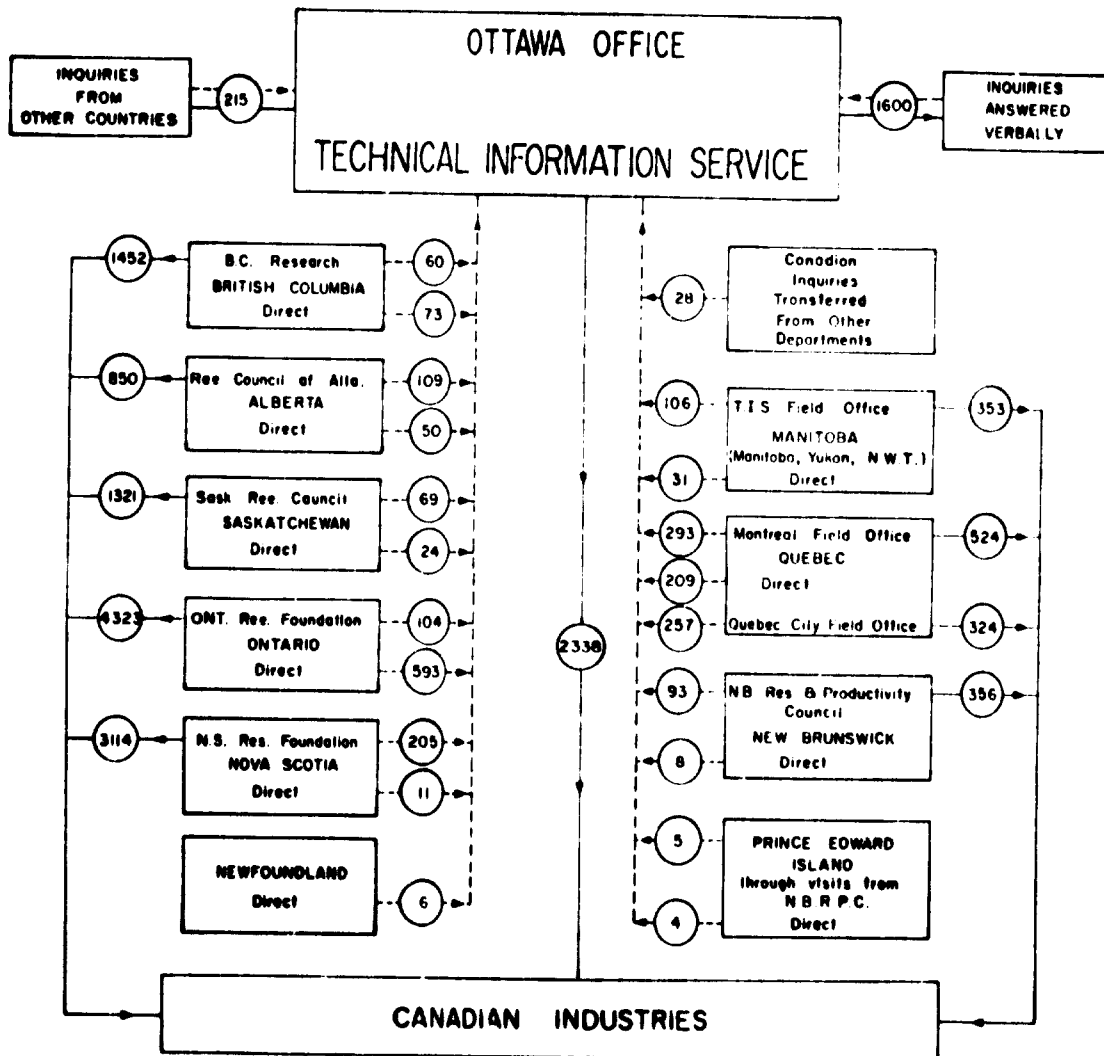
A survey in the first half of 1969 produced replies from 1,400 companies requesting 20,000 titles. Companies stated that five per cent of the articles were useful for future planning and development, 18 per cent had immediate application to their business, 57 per cent of the articles were useful for current awareness, 19 per cent were of no value and 1 per cent had been seen previously. An improved computer programme is now being evolved to reduce the 19 per cent ineffective material. Nearly all companies requested a continuation of the service.

A fourth activity, which would be desirable to develop in conjunction with the Canadian External Aid programme, is the extension of TIS facilities to developing countries that could use its assistance. This would mean the establishment of field offices in such countries, to be operated preferably by indigenous engineers, although assistance in training or the loan of staff might have to be offered initially. Comparable field offices established by other agencies would be suitable also for TIS technical support. Budgeting and manpower difficulties at present

NATIONAL RESEARCH COUNCIL OF CANADA

TECHNICAL INFORMATION SERVICE

ORGANIZATION & OPERATING REPORT FOR 1969



Key: INCOMING INQUIRIES - - -
REPLIED TO INQUIRIES - - -

T.I.S. PUBLICATIONS DISTRIBUTED IN 1969 - 222
TECH. GROUPS DISTRIBUTED BY TD SECTION IN 1969 - 70000
TECH. GROUPS DISTRIBUTED BY DE SECTION IN 1969 - 300

SUMMARY:

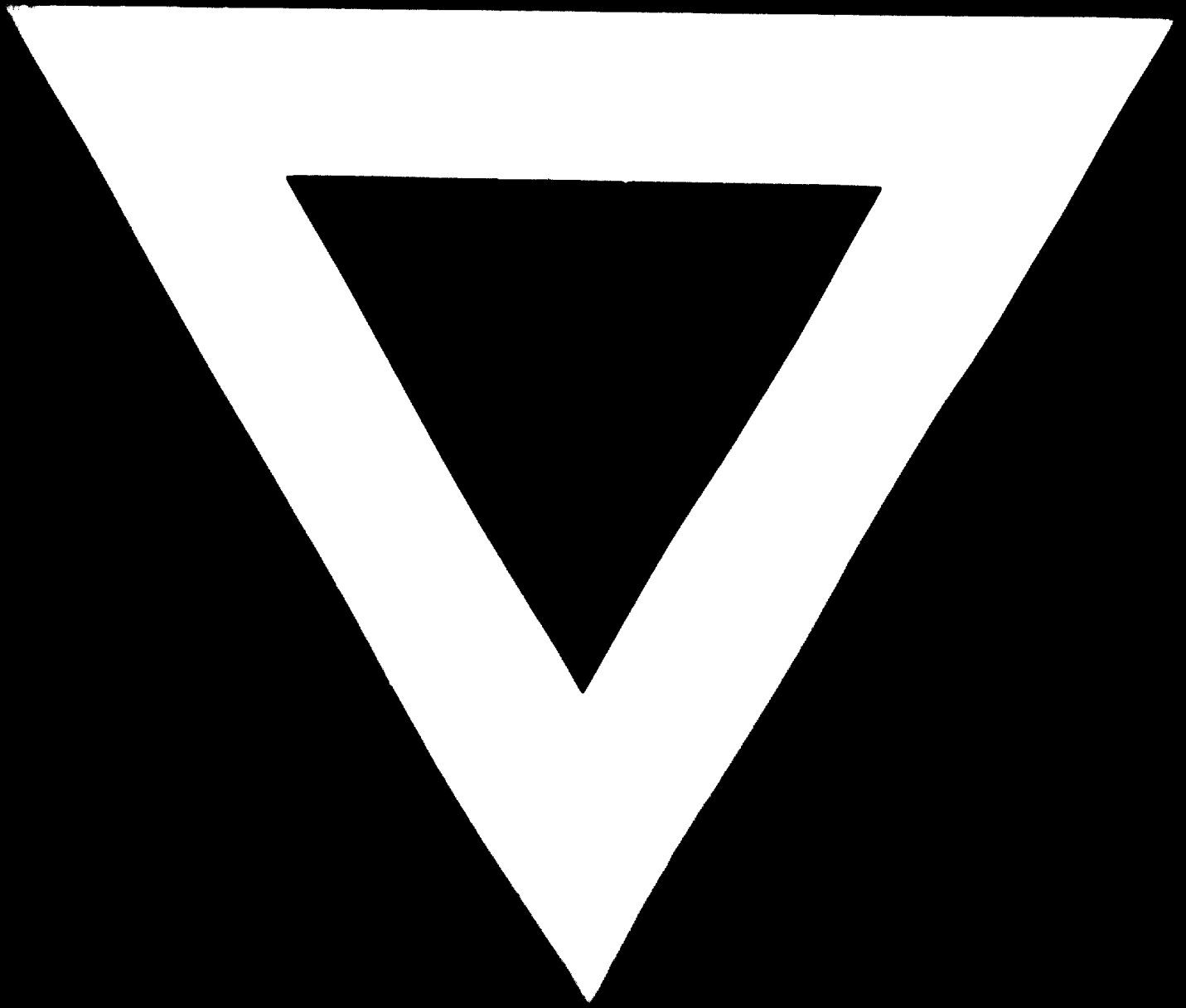
INQUIRIES HANDLED AT T.I.S. OTTAWA	
BY LETTER	2000
VERBALLY	1600
INQUIRIES HANDLED AT FIELD OFFICES	
BY LETTER &/OR VERBALLY	1007

TOTAL INQUIRIES IN 1969 - 16770

prevent the formal establishment of this service, which is now limited to answering informally inquiries that are directed to TIS.

A recent decision has been made by the Canadian Government to form a national centre for scientific and

technical information of which the nucleus will be formed by the National Science Library and TIS. This will influence the future development of TIS, and may result in a more rapid expansion of its activities both nationally and internationally.



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