

The Story of

T. N. O.

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Central Organization for Applied Scientific Research Stimulates Prosperity for Holland

BY DR. H. W. JULIUS

Godfried Bomans, a noted Dutch wit, once wrote in "Delta" magazine that despite all evidence to the contrary, the world wants to think of Holland as the one spot where nothing is known about anything—the kindergarten of Europe.

T.N.O. is perhaps the largest single proof-positive that Holland is, despite all old impressions to the contrary, a country where a great deal is known about a great many things.

T.N.O. devotes its enormous energy to carrying out its appointed tasks and grants itself little time for publicity. "Netherlands-North American Trade" asked Dr. Julius and his colleagues to take time out for a self-portrait.

It is with no little pride that we now present the first of a series of six articles. This month, Dr. Julius discusses the Central Organization. In the coming months, separate articles will treat the special organizations working under the aegis of T.N.O.—which is certainly one of the most workable organizations of its kind in the world.

LET IT BE assumed that the so-called "technology gap" is a gap in innovation rather than a gap in technology. Even so, it is clear that the overall technological power of a small country can never compete with that power in a big country.

A small country must, however, keep up with the general progress and rising living standards of the Western world. To do this, it must build scientific research into its infrastructure.

The Netherlands universities have had a long history of scientific research, from the University of Leyden (1575) to today's Technical Universities. A special partner was brought in in 1932, when applied research was entrusted to a new organization created by law.

Serves Community

Its task was "to insure that such research is put at the service of the community in the most efficient manner possible." Its name is Centrale Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (Central Organization for Applied Scientific Research), or T.N.O.

T.N.O. was a remarkable creation of a farsighted policy. Out of the void, a body came into being that was empowered by governmental subsidy to cover the entire field of scientific research undertaken in the national interest.

The original idea arose from the strained circumstances in The Netherlands that resulted from World War I

even though the country had remained neutral. The organization sprang from the idealistic, but practical, views that existed at the Royal Academy of Sciences. From this very origin, T.N.O. was different from many scientific organizations in other countries.

In most of them, research was in answer to the request of industry, agriculture, or other sectors of human activity. T.N.O., on the other hand, was an offer on the part of the scientists to

assist the community in its progress toward prosperity.

Thus, the Central Organization T.N.O. is ruled by a board of which one half is appointed from among experts in the sciences and the other half from among persons considered to be experts in economic affairs or in the economic interests served by science.

Subsidized by Government

The Government grants the Central Organization an annual subsidy. A corporate body, the organization can also receive payment from any principal that has ordered research on contract and it is entitled to accept gifts and contributions.

All this, however, is nothing more than a basis. It has never been intended, and it would have been quite unrealistic to suppose, that this Central Organization could ever cover the whole field of applied science. It could do this neither by passing on results from other sources to national users nor by doing all the necessary research itself.

Thus the law made provision that the Central Organization, together with the Ministries concerned, can call into existence special organizations that are devoted to applied scientific research in specific branches of the national interest. The special organizations are corporate bodies as well.

The special organizations receive their subsidies from and report to the Central Organization. They have, how-

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ever, unlimited responsibility for their own research, their contracts and contacts, and their own employees, institutes, and activities.

The Government, as the subsidizing power, has to hold a very strong position in the organization. Delegates from the Ministry of Finance and of all other Ministries interested in the work of the organization participate in deliberations of the boards and can, if need be, control expenditures by a kind of veto.

This construction has the unique advantage that all applied research work is intrinsically coherent. Under the aegis of T.N.O., the following organizations are operating:

1. Organization for Industrial Research.
2. Organization for Nutrition and Food Research.
3. National Defense Research Organization.
4. Organization for Health Research.
5. The National Council for Agricultural Research.

These bodies will each be discussed separately in subsequent articles in this journal.

It should be mentioned, however, that the fifth group is not a special T.N.O. organization. It is a council for the coordination of agricultural applied research done by a large number of specialized institutes working under the jurisdiction of the Ministry of Agriculture, Fisheries, and Food. The budget of this council is part of the budget of the Central Organization T.N.O.

The total number of T.N.O. em-

T.N.O.'s new head offices are housed in this impressive and modern building at The Hague.

ployees at the end of 1966 was 4,134, of which 739 were fully qualified academicians, engineers, chemists, physicists, surgeons, biologists, economists, and other specialists.

The Central Organization has a general secretariat, which includes secretaries for each of the special organizations and the agricultural council, and a treasury. It also comprises a number of general service departments: Personnel Department, Medical Service, Statistics and Mathematics Department, Patent Department, Internal and External Relations Department, and the Economic Technical Department.

True cooperation depends upon personal interaction. All directors of the 34 institutes of T.N.O. proper, together with those of the nine affiliated institutes, and from time to time also the directors of the 30 agricultural research institutes, come together in bi-monthly meetings to discuss problems concerning the whole family of T.N.O. as well as scientific problems or projects for inter-institutional or inter-organizational cooperation.

It is the organization's concern to

find ways for a higher level of cooperation on such subjects as traffic and transport, urbanization, pollution of the environment, untoward and undesired side effects of pesticides, rehabilitation of the handicapped, and materials research.

These very modern fields for research (one might say they are very much "in fashion") could be brought together in new institutes of unpredictable dimensions.

It is now, however, the current policy to draw on existing activities in any of the T.N.O. institutes and on their facilities, technical equipment, and manpower, with special committees taking care of cooperation in the field.

Finally, it might be mentioned that two monthly publications speak for many of the activities of the T.N.O. family. *T.N.O. Nieuws* reports to the general public on research and technical work. *T.N.O. Kontakt* serves also as a communication medium for T.N.O. employees. It reports to them that even apart from science and research, T.N.O. has something to live for. #

T.N.O. Publications in English Are of World-Wide Interest

Many T.N.O. publications are printed in English and are of international interest. As only one example, the Netherlands Ship Research Center T.N.O. published a 24-page, heavily documented, illustrated survey entitled "Cost Relations of the Treatments of Ship Hulls and the Fuel Consumption of Ships."

The starting point of this report was the fact that there are now highly effective means of preventing corrosion and fouling of ships' hulls. As a result, a ship can stay out of drydock twice as long as it could ten years ago.

The study concluded that the cost of better pre-treatment of steel and better paint systems result in drydocking and maintenance savings in the long run.

T. N. O. Budget for 1966

(in millions of U.S. dollars)

	Government Subsidy	Other Sources	Total
Central Organization for Applied Scientific Research*	8.7	2.0	10.7
Organization for Industrial Research	8.7	5.3	14.0
Organization for Nutrition and Food Research	1.6	1.0	2.6
National Defense Research Organization	5.6	0.8	6.4
Organization for Health Research	3.4	1.3	4.7
Total	28.0	10.4	38.4

*Includes a limited amount for the National Council for Agricultural Research.