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Scientific Development in Thailand

27 Lugard Road,
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Hong Kong.

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Mr. R.H. Nolte,
Institute of Current World Affairs,
366 Madison Avenue,
New York 17, N.Y..

Dear Mr. Nolte,

Thailand is one of the few countries in Southeast Asia which has not been a colony. I was therefore curious to discover how the absence of a colonial scientific legacy might have affected the present scientific development.

During my brief visit recently, two factors struck me as potentially significant. The first is the language of instruction in secondary schools. In former colonies the medium of instruction was usually the language of the colonial power. These languages already had an established scientific terminology and a good supply of textbooks. In Thailand the medium of instruction was naturally Thai, and this has been a disadvantage for teaching advanced science largely because there are no Thai language science textbooks.

The second factor was that former colonies had the advantage of having well trained scientific workers who lived and worked in the colonies. They helped to create a tradition of research which did not exist in Thailand. I'm not sure how significant this legacy is today, but it may help to explain why the bulk of Thai science has been of a routine nature rather than research orientated.

However, the important thing is not the legacy from the past but the plans for the future. Thailand has just embarked on a bold new scheme which promises to revolutionize the scientific life of the country. The man largely responsible for drawing up this scheme is an Australian, Frank Nicholls, loaned to Thailand by the United Nations. Before describing his work and plans I shall give a brief resumé of some of the changes which have taken place in the organization of science in Thailand since the beginning of this century.

The earliest government involvement with science began around the turn of the century in the Assay Office of the Royal Mint. This office was later expanded to form the Department of Science. It was conceived as a central scientific laboratory which would satisfy the requirements of government and private organizations in technical matters. During more than sixty years of existence it has been moved from ministry to ministry, ending up in the Ministry of Industry.

There is an almost fairy-tale quality to the story behind the growth of Thai science. Early in the 1930's a young Thai, Mr. Tao, went to study science in Switzerland. There he fell in love with a Swiss girl, but his parents forbade the marriage. Later he returned to

Thailand and decided to "devote his life to science." This he did most effectively, and eventually became Director of the Department of Science. Under his leadership the Department thrived, but he was always conscious of the need for a more academic body in Thailand to promote research and to advise the government on scientific matters. He was therefore active in the early efforts to form a national research council. But the formal proposal for a council bogged down in the government ruling party and was never presented to the National Assembly in his lifetime.

The story now switches to another young Thai who also went abroad for higher education in science. His name is Pradisth Cheosakul, who went to America. After graduating he decided to remain in the United States. For awhile he worked in industrial research, and later spent several years on the staff of Cornell University. It was there that he met a beautiful Thai girl, also a scientist. They decided to marry and return to their own country. Dr. Pradisth went to work in the Department of Science and it was there that he learned of the efforts to form a national research council. He also discovered that the plans were still held up by the politicians. It happened that a close relative of Dr. Pradisth was Deputy Prime Minister, and it was not long before he was able to persuade his influential relative that a national research council would be in the best interests of the country. The bill was brought out, sent up to the National Assembly, and in 1956 the National Research Council was established by Act of Parliament.

As initially conceived, the Council had the Prime Minister as chairman. This was soon realized to be a drawback because he was too busy to preside over frequent N.R.C. meetings. In fact the Council was able to meet only rarely during its first few years. To improve this situation the N.R.C. was reorganized in 1959 and an executive committee was created which is empowered to transact the urgent business of the Council between full meetings.

The Council has both natural and social science divisions. It recommends national science policies to the Council of Ministers, and is empowered with duties of co-ordination in science and promotion of scientific research. But as it stood, the N.R.C. was not able to do research itself, and in 1959 the Department of Science again took the initiative and persuaded the government to ask the United Nations to supply an expert who could advise on the country's needs for applied scientific research.

Australia, anxious for influence in Southeast Asia, volunteered the services of Frank Nicholls from the Commonwealth Scientific and Industrial Research Organization. He was selected for the job by Thailand and arrived in Bangkok in June 1960. He spent a year in the country making a detailed study of the status of science and its problems, the applied scientific research needs, and the best way to meet the needs. His report is excellent. It is detailed, lucid, critical but never insulting, and always constructive. He clearly states what contributions applied scientific research can make to the development of the country, and his proposals are realistic.

Frank Nicholls was recalled to Thailand a year later for a

further stay of three months, during which time modifications were made to the earlier recommendations. These modifications were approved by the National Research Council and the National Economic Development Board. The Prime Minister gave authority for the project to be implemented without delay. A request was made to the United Nations Special Fund and a grant of U.S. $2 million was approved. This is met by $4 million from the Thai Government, plus $1,200,000 in land and building. Frank Nicholls was asked to return to Thailand for five years to help establish the project. He returned there six months ago, and the plans are going forward on schedule.

Nicholls' first report, issued in 1961, showed that there was a good deal of scientific work going on within the various ministries, but most of it was routine with very little research. Most of the activity was concentrated in the Department of Science, although in agriculture there were fifty experimental stations scattered throughout the country. There was however, much duplication of effort and little co-ordination of any kind. Nicholls estimated that less than .05% of the national budget was spent on scientific research.

He found that one of the main problems is that the government is almost the only employer of scientists. Government offers very low salaries and there is no technical ladder for promotions. As a result, most of the best scientists cross over to administration at an early age, leaving relatively second rate people for the actual scientific work. This gives science a poor reputation and discourages promising students from taking up natural science at the university. Most of the potential men scientists study medicine and engineering with the result that 80% of the science graduates are women.*

The problems of scientific manpower training were also studied by Nicholls. At secondary schools the main difficulties in teaching science are: shortage of trained teachers; no Thai language textbooks; and shortage of equipment for practical work. These result in students poorly equipped for university entrance. There are five universities in Thailand, one of which, Chulalongkorn University, gives degrees in science. At this University, Nicholls found the main problems which relate to science teaching to be inadequate provisions of administrative services; insufficient funds; low pay; and high staff/student ratios. For the students the problem of language is severe. Although teaching is in Thai all the students are expected to be able to read texts in English. Frequently their English is not sufficiently good to meet this requirement. There is very little research done at the University, so that it is very difficult for a Thai scientist to get research training in Thailand.

After a careful analysis of existing facilities and the need for research to solve problems of specific interest to Thailand's

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* When Frank Nicholls and I discussed this statistic we wondered why, in general, women make poor research scientists. The number of outstanding women scientists is relatively few. Fewer than, say, outstanding women lawyers. We couldn't arrive at any good reasons for this. Any suggestions?

development, Frank Nicholls proposed the establishment of an Applied Science Research Corporation. This proposal was accepted and the Corporation is now legally established. One of the special features of the Corporation is that it lies outside the civil service bureaucracy. It is free to hire and fire staff on its own terms and can give promotions on scientific merit. It is also free to decide on priorities and the distribution of funds which are received in bulk from the government.

In the first instance the Corporation will consist of an agricultural research institute, and a technological research institute. Medical research will be added later. In addition there will be ancilliary services consisting of a documentation center, instrument repair and calibration center, a national standards laboratory, and a center for Thai standard specifications. The documentation center, initiated by the N.R.C., has been under way for the past three years with UNESCO assistance, and is scheduled for completion this year. All other laboratories will be new. It is hoped that good working conditions will attract both Thai scientists now abroad and those who have jobs in Thailand in fields which make no use of their scientific training.

The Corporation is not meant to replace existing scientific activities in government. These are still necessary. Nor will it duplicate the work of, or replace the need for, the National Research Council. Hopefully what it will do, is to create the right environment where the scientific resources of the country can be brought to bear most effectively on the problems of development.

In conclusion I should mention that Dr. Pradisth continued his good work with the National Research Council in his capacity as Deputy Secretary. When Frank Nicholls came to Thailand they found they shared similar views about the country's scientific needs, and Pradisth is now Nicholls' official counterpart on the board of governors of the Applied Science Research Corporation.

Yours sincerely,

C.H.G. Oldham.

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