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An Overview of R.O.C. – Canada Technological Cooperation

In the twenty odd years since diplomatic relations were severed on October 13, 1970, the bilateral relationship between the R.O.C. and Canada has mostly been limited to consular affairs and matters concerning nationals living abroad, handled at the offices of the R.O.C.'s Coordination Council for North America (CCNAA) in the U.S. In addition, a small amount of trade is handled by the R.O.C.'s Far East Trade Service Inc. in Canada. But as far as scientific, educational or cultural exchanges are concerned, for twenty years the situation has been near a standstill.

With a surface area of 9,976,186 square kilometers, Canada is a great nation rich in natural resources. With the arrival of immigrants from the two countries of England and France in the 15th century, Western culture was transplanted to Canada, and since the end of World War Two, the development of science and the humanities in Canada has paralleled that in the United States.

Recently the R.O.C. has been working to strengthen the substance of relations with other countries and, assisted by the R.O.C.'s economic strength, the number of countries to establish de-facto diplomatic relations has been constantly increasing. As new areas of contact between the R.O.C. and Canada are developed, their relationship is no longer limited to trade, but has encompassed academic and technological exchanges. Consequently, these exchanges have become an important focus of the National Science Council's international cooperation work.

Working in coordination, the San Francisco office of the CCNAA's Division of Science has recently made visits to important science and technology research and decision-making bodies in Canada. It thereupon compiled the document, "A Comprehensive Report with Recommendations Concerning Technological Cooperation with Canada," and delivered copies to this Council. The Division of International Programs of the National Science Council further modified the recommendations contained in this report, drawing up short- and mid/long-term plans for implementing technological cooperation. Below are listed the major items of technological cooperation with Canada to be implemented in the near-term (the 1994 accounting year).

The emphasis of short-term technological cooperation is on developing a substantial bilateral cooperative relationship. As the Deputy Director of the Asia Pacific Regional Coordination Div., Canadian Ministry of External Affairs and Int'l Trade, Mr. David Lysne indicated, although he is willing to assist our side by promoting the signing of formal cooperative agreements, the most important task at hand is to consolidate a relationship of mutual assistance and mutual benefit by expanding the actual substance of cooperation. This again shows that the short-term goal of technological cooperation with Canada should be to expand actual cooperation, rather than signing formal agreements or setting up science divisions.

The Canadian province of British Columbia (B.C.) borders on the Pacific Ocean and is Canada's door to the Far East. Therefore, it is appropriate that technological cooperation between the R.O.C. and Canada should start at Vancouver B.C. The President of the Science Council of British Columbia, Mr. Ron Woodward, visited Taiwan from April 25-28 of this year after being contacted by the San Francisco office of the CCNAA's Division of Science. During this time the National Science Council arranged his visits to the Hsinchu Science-based Industrial Park, the Industrial Technology Research Institute and National Taiwan Ocean University. In addition, preliminary agreement was reached with Mr. Woodward to assign priority grades to guide the successive implementation of cooperative projects encompassing such areas as medical engineering, biotechnology, energy, ocean technology and information science.

Responding to an invitation from the Science Council of British Columbia, The National Science Council expects to send a delegation of observers to Canada in September of this year. Besides promoting cooperation in the area of biotechnology with the Canadian Genetic Disease Network in this province, the delegation will rely on findings made during its visit to develop other areas of cooperation.

Situated in Vancouver, TRIUMF is Canada's only large national laboratory. The National Science Council is planning to accept the recommendation of the San Francisco CCNAA Division of Science and, together with the Atomic Energy Council, invite the Director of TRIUMF, Dr. E. W. Vogt, to Taiwan this fall in time for the completion of the cyclotron of the Institute of Nuclear Energy Research, Atomic Energy Council. Using the cooperation agreement between the National Science Council and the Argonne National Laboratory in the U.S. as a blueprint, a cooperation memorandum will be signed with Dr. Vogt.

The National Research Council of Canada has North America's second largest technological materials center in terms of stored materials, and The National Science Council plans to follow the recommendations of the San Francisco CCNAA Division of Science by promoting a cooperative relationship with this agency, including exchanges of information and mutual visits by personnel. This relationship will be conducted via the Science and Technology Information Center which is under the authority of the National Science Council. This relationship can then gradually expand to include effective cooperation between various universities and research organizations in Taiwan and the research agencies under the authority of the National Research Council of Canada.

The Natural Science Council and Engineering Research Council of Canada supports research plans at 70 Canadian universities, and its task of using science development funds to support academic research at universities is similar to that of the National Science Council. The National Science Council intends to go through contacts made by the San Francisco CCNAA Division of Science to invite the President and other officials in charge of international affairs from this agency to visit Taiwan.

The National Science Council's mid/long-term objective for implementing technological cooperation with Canada is to establish science divisions in locations such as Toronto, Vancouver and Ottawa at an appropriate time. These divisions would represent this Council in signing agreements of an official nature with agencies including the National Research Council (in chargé of national laboratories), the Natural Science Council and Engineering Research Council (in charge of supporting academic research at Canada's universities) and Industry, Science and Technology, Canada (ISTC – in charge of scientific and technological policy). In addition, they would also promote cooperative activities according to agreement. In light of the enthusiastic reaction of the scientific and technological community in Canada to the suggestions for mutual cooperation proposed by the San Francisco CCNAA Division of Science, it will not be difficult to realize this mid/long-term objective.

Summary of the Third Conference of Scientific Editors

The Science and Technology Information Center (STIC) of the National Science Council sponsored the Third Conference of Scientific Editors on the morning of March 17 at the National Central Library. It was attended by close to 200 editors of academic publications from the fields of physics, engineering, medicine, agriculture, the humanities and the social sciences. Chairman Kuo Nan-Hung of the National Science Council (NSC) also attended the conference and delivered an address.

STIC invited Dr. Eugene Garfield, founder and chairman of the Institute for Scientific Information, and Dr. Richard K.C. Hsieh, director of international programs at the U.S. National Library of Medicine, to deliver lectures during the conference.

The topic of Dr. Garfield's lecture was a statistical analysis of the publication of academic papers in the Republic of China. Highlights included:

1. Statistics on the number of papers published and the Cited Impact Factor (CIF, the number of times a publication is cited within a certain period of time, divided by the total number of articles which appeared in the publication) between 1981 and 1992. A comparison was also made with seven other countries and regions in the Asia-Pacific area: Hong Kong, Singapore, Indonesia, Malaysia, the Philippines, South Korea and Thailand.

2. A comparison of the Taiwan and mainland regions on the basis of the Total Impact Factor and CIF.

3. An analysis of the proportion of ROC-published papers in the total of the Asia-Pacific area in the fields of physics, engineering, medicine and agriculture (The greatest proportion was in physics, with 29.1 percent). The countries and regions in the area are also compared on the basis of the CIF.

4. The lecture also included a list of the ROC academic papers cited most often, the agencies with the greatest number of papers published, and a list of the top twenty academic authors in terms of both papers published and number of citations.

According to Dr. Garfield's analysis, there has been 300 percent growth in academic papers in those 20 years, and the ROC has published more monographs than the other seven countries mentioned above.

Dr. Hsieh, meanwhile, explained the standards employed by Medline in choosing publications for inclusion. He said the work of reviewing publications was the responsibility of the Literature Selection Technical Review Committee. The LSTRC meets three times a year, and generally gathers opinions from experts, professional institutes, and international medical studies information centers. Final approval must be given by the committee and the director of the National Library of Medline before a publication can be included.

Finally, the Science and Technology Information Center presented a discussion of the use of rewards to raise the quality of academic periodicals. Dr. Ma Tao-Hsing, Director of STIC, and section chief Lu Tung-Chi of NSC reported to the attendants separately. They presented an analysis of the current situation surrounding science and technology periodicals in the ROC, and the important points of NSC's efforts to subsidize the publication and management of periodicals dealing with academic research.

Participants in the conference engaged in lively discussion of this issue. STIC shall organize the suggestions as a reference when making amendments to the rules and regulations governing subsidies.

The Promotion of Patent and Technology Transfer

The fruits of research projects carried out by academic and research institutions with subsidies from the National Science Council are national property belonging to the NSC. To effectively utilize in private industry these crystallizations of the intelligence of scholars and experts, and to provide full legal protection for intellectual property rights so as to safeguard the proper interests of the developers of technology, the NSC instituted "patent application and copyright registration" and "technology transfer" operations in 1987 and 1989, respectively, as a means of promoting the results of its research successes.

1. Patent Application

The NSC instituted two new measures in 1987: "Outline for the Handling of Patents, Copyrights, and Other Technological Rights for the Results of Research Projects Subsidized by the National Science Council" and "Matters Regarding Patent Application and Copyright Registration for the Results of Research Projects Subsidized by the National Science Council." Under these measures, the Third Section of the Central Processing Division accepts patent applications submitted to the NSC by the project chiefs; following examination and approval by the NSC's Science and Technology Rights and Interests Committee, a patent office is commissioned to submit an application to the patent authority. Since the number of patent applications is too low in comparison with the number of research projects subsidized by the NSC, the Council began revising its various incentive measures last year so as to offer a bonus of NT$5,000 to NT$20,000 to inventors or writers at the same time as they receive their patent certification. In the case that the same research project results in patents granted by more than one country, the bonus can be increased by a maximum of NT$10,000. The purpose of this incentive is to encourage scholars and researchers to pay more attention to the protection of intellectual property rights as they engage diligently in their research. With vigorous promotion by the NSC, the number of patent application cases submitted to the Council soared from 55 in 1991 to 133 in 1992. By the end of April 1993, a total of 475 patent applications had been submitted both at home and abroad, and 139 patents had been granted: 112 by the Republic of China, 24 by the United States, and one each by Japan, England, and Korea.

2. Technology Transfer

In the area of technology transfer, since most of the research projects subsidized by the NSC are of the nature of basic academic research, few involve practical technology that can be directly transferred for use by manufacturers. Only 11 cases of technology transfer involving the results of research have been accomplished, these including further research by the Industrial Technology Research Institute and the Development Center for Biotechnology, and then direct application by private manufacturers. In addition to receiving a royalty paid by the manufacturer at the time of the technology transfer, the inventor of the technology can continue to receive royalties annually when the technology is matured and begins yielding returns. This provides an appropriate compensation for the time and effort expended by the researchers in developing technology. Currently, negotiations are going on between manufacturers and the owners of technology for four or five more technology transfer cases.

To promote the development of technology throughout the country and accomplish the objectives of its six-year medium-term plan, the NSC will commission experts and scholars to carry out three studies regarding intellectual property rights-related issues that might arise in the transfer of the fruits of NSC-subsidized research projects for practical application. The three studies are as follows:

(1) Distribution and Management of Intellectual Property Rights Resulting from Technological Research

The Reliance International Law Office has been commissioned to carry out a one-year study which, in addition to a review of the stipulations regarding ownership and distribution of intellectual property rights to the results of research as contained in the ROC's current intellectual property rights law, will also include separate investigations into laws and regulations in the U.S., Japan, and other countries regarding the ownership and distribution of intellectual property rights, as well as how those laws and regulations are actually applied. The study's main points and directions will encompass the following: (a) scope of protection of the fruits of technological research, (b) stipulations, and their application, regarding the ownership and distribution of intellectual property rights to the fruits of technological research at home and abroad, (c) overseas development trends regarding the ownership of the fruits of technological research, and means of making improvements in this area at home, and (d) the legal management of intellectual property rights resulting from technological research that should be applied by high-tech industries in the ROC.

(2) Feasibility Study on Patent and Copyright Application in Mainland China

Lee and Li Attorneys-at-Law has been commissioned to carry out a half-year study, the objective of which is to analyze the feasibility of applying for mainland Chinese intellectual property rights and to set up an application model appropriate to the present political situation and legal norms on both sides of the Taiwan Straits. The main contents of this study include: (a) current mainland Chinese policies and disposition methods regarding ROC applications for the protection of intellectual property rights there, (b) the mainland Chinese patent system and related legal practice, (c) the mainland Chinese trademark system and related legal practice, (d) the mainland Chinese copyright protection system and related legal

system, (e) the mainland Chinese computer software protection system and related legal practice, and (f) the feasibility of direct application to the mainland Chinese for patents and copyrights by the NSC, and related adaptive measures.

(3) Means and Strategies for the Transfer of the Fruits of Technological Research

The Institute of Management Science, National Chiao Tung University, has been commissioned to carry out a one-year research project to study and analyze means of transferring to industry the fruits of research by academic institutions, and to provide the results of the research for reference in policy planning and industrial development. The goal is to achieve effective utilization of overall technological research resources to reduce barriers to the introduction of technology needed by manufacturers, make full use of the nation's existing intellectual resources, and enhance the ROC's worldwide competitive ability.

In addition, a "National Science Council Patent Application, Copyright Registration, and Technology Transfer Operating Manual" has been compiled to help project heads understand patent application procedures. The manual will be distributed to various academic institutions for use.

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