



International Organization
for
Chemical Sciences in Development

IOCD: Thirty years of achievement in promoting the chemical sciences for development

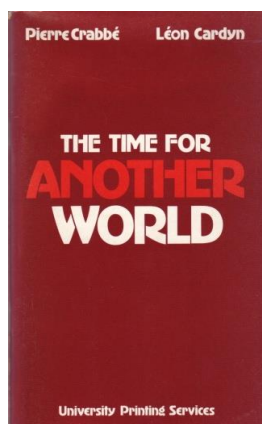
Stephen A. Matlin

Time for another world

IOCD's founder was Pierre Crabbé, a Belgian chemist with a distinguished career in research and a strong commitment to pursuing science for the benefit of people everywhere. Crabbé had worked in the newly developing steroid industry in Mexico in the 1960s and also undertook research and teaching at the university in Mexico City.

In the early 1970s, Crabbé returned to Europe and, while working as an academic at the University of Grenoble, he also served as a chemistry consultant for the World Health Organization (WHO) and UNESCO. His experiences in Mexico and elsewhere opened Crabbé's eyes to the many barriers that hinder the efforts by scientists in low- and middle-income countries (LMICs) to carry on research and to contribute to national development: low levels of funding for science, inadequate laboratory equipment, a lack of up-to-date books and journals, long periods of isolation from mainstream scientific activities, etc.

His experiences convinced Crabbé that chemistry had much to offer in helping scientists to improve the health, nutrition and environment of people – especially those living in poor conditions. Crabbé's deep ethical concern for the plight of people everywhere and his vision for a better world^[1-2], were captured in a book which he wrote with Léon Cardyn in French in 1981, 2 years later re-published in English under the title "*The Time for Another World*". Not only a visionary, Pierre built on his experiences of organizing successful international science programmes in which the skills of chemists in LMICs were engaged to synthesise compounds for pharmaceutical evaluation^[3-4]. Crabbé designed IOCD to stimulate capacity building in LMICs and enable chemists in these countries to contribute to key science and technology areas for development^[5-6].



The greatest shame of our time is still to accept that every day tens of thousands, perhaps one hundred thousand people continue to die of hunger.

Pierre Crabbé, Léon Cardyn, *The Time for Another World*
University Printing Services, Columbia, Missouri, USA, 1983

IOCD was launched in Paris in 1981 as the first international non-governmental organization specifically devoted to enhancing the role of the chemical sciences in the development process and involving chemists in LMICs. Crabbé worked hard to convince others to join him and in 1981 a group of distinguished scientists from 15 countries meet with him at UNESCO, Paris, to consider giving sustained support to the research of chemists in LMICs. The result was the birth of IOCD – created by

UNESCO and chartered two years later as a non-governmental organization (NGO) in Belgium. The founding group elected officers: as President, Glenn Seaborg, a Nobel Laureate chemist from Berkeley, California, USA; as Vice President and Treasurer, Elkan Blout, Dean of the Harvard School of Public Health, USA; also as Vice Presidents, C.N.R. Rao, Head of the Indian Institute of Science, Bangalore, India, and Sune Bergström, Nobel Laureate chemist from Sweden.

IOCD builds Working Groups

The founders set up two initial scientific Working Groups, one on development of compounds for male fertility regulation, and one on development of agents to treat tropical diseases. These groups enabled chemists in LMICs and high-income countries to collaborate in research and to network through IOCD-sponsored site visits and conferences.



In this 1986 photo taken in Berkeley, California, several founding members of IOCD can be seen. *From left to right:* Carlos Rius, IOCD's first secretary; Pierre Crabbé, IOCD founder; Elkan Blout, IOCD's first treasurer and one of three founding vice presidents; Carl Djerassi, one of the inspirations behind IOCD; Sune Bergström, a founding IOCD vice president; Sidney Archer, the director of the Lawrence Berkeley National Laboratory; Thomas Goodwin of Hendrix College, Arkansas, Glenn Seaborg, IOCD's first president and associate director of the Berkeley Lab; C.N.R. Rao, a founding IOCD vice president; and Joseph Fried, of the University of Chicago.

To provide support and capacity building for scientists working in settings with limited resources, IOCD began a programme in the 1980s to provide analytical services for chemists in LMICs. This was initially a North-South network, with chemists in the Mexico, the UK and USA receiving samples from chemists in a range of countries in Africa, Asia and Latin America and providing, free of charge, infrared, ultraviolet, NMR and mass spectra and, at the invitation of the submitting group, giving assistance with the interpretation of spectra and the elucidation of structures of synthetic and natural products. In 1992, IOCD assisted with the launch of a new activity, the Network for Analytical and Bioassay Services in Africa (NABSA), based at the University of Botswana. NABSA has worked to promote the development of scientific activities in Africa by offering analytical, bioassay and literature support services to chemists; cooperate with active scientists in a joint short-term intensive-research undertaking by inviting them to the reasonably well equipped laboratory in Botswana; and promote the professional development of young scientists by arranging sub-regional symposia. From 2005, NABSA's focus shifted into research cooperation with research groups in selected countries and institutions, particularly in Cameroon, Ethiopia, Nigeria, South Africa, Tanzania and Zimbabwe, in order to help build and strengthen capacities and increase the overall impact of the collaboration.

Tragically, Pierre Crabbé was killed in a car accident in 1987. IOCD perpetuated his memory in a number of ways – most importantly, by sustaining the organization he founded. IOCD established the Pierre Crabbé Award, which is offered from time to time to outstanding scientists working in low- and middle-income countries. For example, the 20th anniversary of IOCD's registration in Belgium as an international NGO was marked by giving the Pierre Crabbé Award to [three distinguished chemists](#) working in Africa.

Following Crabbé's death, IOCD found a new Executive Director to take forward the organization – Robert Maybury, a retired chemist from UNESCO then working at the World Bank in Washington, DC.

Within two years, Maybury organized two additional working groups, one on plant chemistry and one on environmental analytical chemistry, convincing outstanding chemists to accept leadership of these new groups. Then, in 1992, the US National Academy of Sciences invited IOCD to assist

Professor Thomas Eisner of Cornell University to set up a global body that could carry on expansion of bioprospecting in LMICs. IOCD accepted this challenge and organized the Biotic Exploration Fund (a name proposed by Professor Eisner) as an IOCD working group responsible for promoting ethical bioprospecting in LMICs.

In 1996, at the request of the Council for Scientific and Industrial Research of South Africa, IOCD helped lay the foundation for a national bioprospecting initiative in South Africa, and in 1998, IOCD worked with the International Centre of Insect Physiology and Ecology in Nairobi, Kenya, to establish that country's bioprospecting programme. Preliminary work was also undertaken in Guatemala. IOCD is currently working with the Uganda National Council for Science and Technology and with the Government of Kenya to establish bioprospecting in those countries.

In 2004, IOCD established the Books for International Development project to help organize the transfer of large quantities of journals and technical materials to developing countries. IOCD has also promoted the use of micro-scale chemistry, helping support an international programme that provides low-cost, small-scale equipment to enable students to gain hands-on practical skills in experimental chemistry even in very resource-poor settings.

With the retirement of Robert Maybury in 2010, the distinguished Belgian chemist Alain Krief took up the role of Executive Director. As IOCD celebrated its 30th anniversary in 2011, a new organizational strategy for 2011-2020 was approved at the annual meeting of IOCD's governing body and IOCD continues to work to strengthen the role of the chemical sciences in development.

30 years of IOCD achievements

In its first 30 years of operation, the overall impact of IOCD has been to:

- **help highlight the importance of chemical sciences as contributors to development;**
- **raise the profile of the field and its practitioners;**
- **initiate, promote or sustain a number of technical, managerial, policy and collaborative projects or networks advancing chemical sciences in LMICs; and**
- **contribute to vital resources for teaching, learning and research.**

IOCD began by recognising why it has been so difficult to pursue chemistry and related sciences in low- and middle-income countries (LMICs) in the past. By the 1980s, many chemists from LMICs had been, or were being, trained in research in universities in high-income countries, but found it difficult to engage in productive and rewarding careers in research in the growing number of university chemistry departments in their home countries. Common problems included lack of access to funds, laboratory supplies and equipment and difficulty in staying abreast of the latest advances in their fields. *IOCD's initial response was a twin track approach of active research support and capacity building, achieved through the operation of its scientific working groups (WGs) and analytical service centres.*

Impact of IOCD

Overall, the impact of IOCD has been to help highlight the importance of the chemical sciences as contributors to development; to raise the profile of the field and its practitioners; to initiate, promote or sustain a number of technical, managerial, policy and collaborative networks and projects advancing chemical sciences in LMICs; and to contribute to vital resources for teaching, learning and research.

IOCD has a strong record of achievement in its first 30 years:

- As the first international NGO specifically devoted to enhancing the role of the chemical sciences in development, IOCD helped raise awareness of the importance of the field at national and international levels and the profile of chemists and their contributions to development in LMICs. This was aided by success in attracting prominent chemists to IOCD's cause, including the Presidents (two Nobel laureates), Council (included four additional Nobel laureates) and WG leaders and members.
- The early work by the Male Fertility Regulation and Tropical Diseases WGs was valued by international partners (including the two World Health Organization Special Programmes for research in fertility regulation and tropical diseases; UN Population Fund, Walter Reed Army Institute; and USA CONRAD programme) and helped raise awareness of these neglected areas while providing LMIC synthesis groups opportunities to undertake medicinal chemistry.

- The later WGs in the areas of medicinal chemistry, natural products, the environment and bioprospecting made important contributions to training, capacity building and networking, attracting support and collaboration from international agencies such as the International Union of Pure and Applied Chemistry (IUPAC) and from the private sector. The work to enhance LMIC capacities and develop national frameworks for sustainable, ethical bioprospecting has impacted on policy making.
- IOCD's analytical services gave essential support to many chemists striving to conduct isolation, structure elucidation and synthesis work in resource-poor settings. Successful localization as NABSA (Network for Analytical and Bioassay Services in Africa) has ensured that national and regional work is being sustained in service provision and in capacity building at individual, institutional and system levels.
- Contributions have been made to strengthening teaching capacities through the creation and dissemination of web-based open and distance learning materials in organic and medicinal chemistry, donations of books and computers and support for micro-scale laboratory kits which enable science to be taught where resources and chemical supplies are very limited.

Acknowledgements

The author is grateful to Prof Alain Krief, Executive Director of IOCD, for suggesting this article and Marie Noelle Crabbé, daughter of the late Pierre Crabbé, for archive material and a photograph. The article is based on a presentation made at the 30th Anniversary Meeting of the IOCD General Assembly held in Strasbourg on 2-3 April 2011.

Citation of this paper:

S.A. Matlin. *IOCD: Thirty years of achievement in promoting the chemical sciences for development*. Namur: International Organization of Chemical Sciences in Development 2011, 4p.

Background materials

1. Crabbé, P.; L. Cardyn. *The time for another world*, University Printing Services, Columbia Missouri. **1983**, 70pp.
2. Crabbé, P. *A new challenge for the university*, *Interciencia*, **1983**, 8, 279.
3. Crabbé, P.; E. Diczfalusy; C. Djerassi. *Injectable contraceptive synthesis: an example of international cooperation*, *Science*. **1980**, 209, 992-994.
4. Crabbé, P.; S. Archer; G. Benagiano; E. Diczfalusy; C. Djerassi; J. Fried; T. Higuchi. *Long-acting contraceptive agents: design of the WHO Chemical Synthesis Programme*, *Steroids*, **1983**, 41, 243-253.
5. O'Sullivan, D.A. *Group to use chemistry to solve developing countries' ills*, *Chem. And Eng. News*, **1983**, 21-24.
6. Seaborg, G.T. *An international effort in chemical science*, *Science*, **1984**, 223, 9: click [here](#).
7. Lehn, J.-M., Blout, E. R. Maybury, R. H. *IOCD: 20 Years of Building Capacity in Chemistry in Developing Countries*, Chemistry International, 2002, 24 No. 3. click [here](#).
8. S.A. Matlin. *The Pierre Crabbé Memorial Oration*. Paper presented at **First Asian and Oceanic Congress of Andrology**, 9-12 November 1992, Nanjing, China, 5pp. Available at the IOCD website, www.iocd.org.