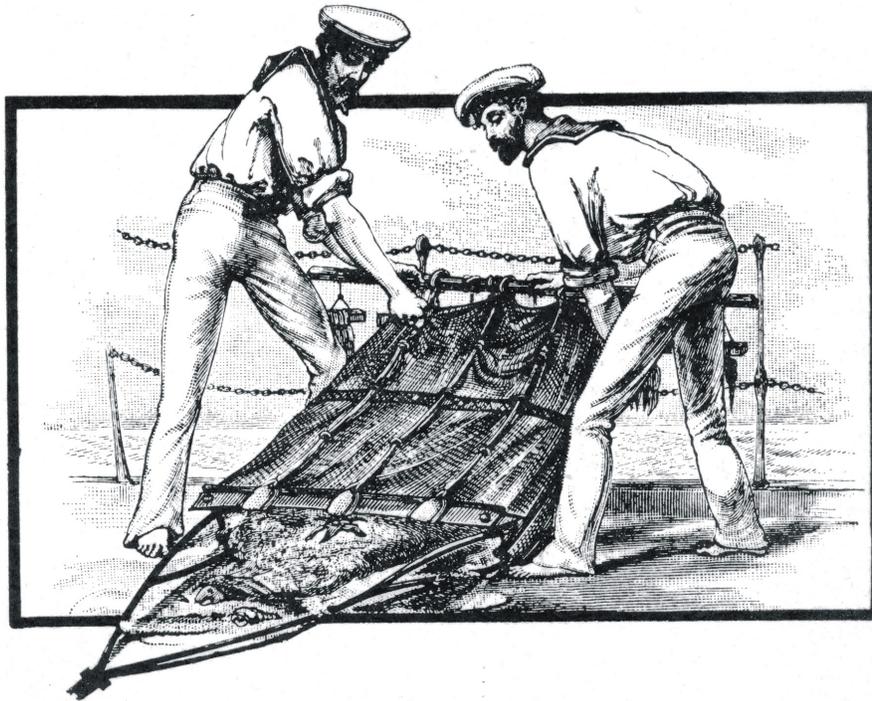


International Marine Minerals Society



MOORE MEDAL

1998 CITATION

In 1998, the *J. Robert Moore* Award** for Initiatives in Marine Mining* was spearheaded by Dr. Michael J. Cruickshank, then Chairman of the IMMS Awards Committee. In formulating the award, he penned the following:

In memory of our late dear friend and founder, Robby Moore, the Board of Directors of the International Marine Minerals Society has established the J. Robert Moore Award to be presented to selected recipients who have contributed notably to the goals and initiatives of the Society.

It is my pleasure, as Chairman of the Awards Committee, to inform you that you have been selected to share the award for 1998 with a group of friends and colleagues who have contributed significantly throughout their professional careers to the cause that has brought so many of us together during the past 29 years.

We hope to be able to present the citation to you in person at the next General Meeting of the Society to be held in conjunction with the 29th Annual Underwater Mining Institute in Toronto, Canada, October 21-24, 1998.

Do let us know that you will be able to join us at the UMI and can accept the award in company with your colleagues and your admirers. It will give great pleasure to all of us who are currently building on the foundations that you and your colleagues have so diligently laid down for us.

As envisioned by Dr. Cruickshank and others, most of the recipients below participated in the UMI in Toronto and at the banquet ceremonies received The Moore Award.

Marne Dubs, Kennecott Corporation

Conrad G. Welling, Lockheed Missiles and Space Company

John Crawford, U.S. Bureau of Mines

John L. Mero, University of California

John Shaw, International Nickel Company, Ltd.

Jack Flipse, Deep Sea Ventures

*Professor J. Robert Moore conducted marine minerals research at Cardiff University in Wales, Great Britain and the Universities of Harvard, Wisconsin, Alaska, and Texas in the United States. He was committed to the intelligent integration of government, industry, and academia to address the development of marine minerals. Robby founded the Underwater Mining Institute and IMMS, and he committed his research and many other considerable personal efforts to the multidisciplinary development of marine minerals. *The Moore Medal* is not awarded on any regular basis, but is reserved for those rare occasions when the career of an eminent figure in marine mining and minerals activities warrants such an honor.

**Robert W. Cooke earns a living designing and making monumental sculptures for many customers, mostly in the Northwest. Before becoming a full time artist, Bob was the Exploration Manager for the International Nickel deep seabed mining consortium. He attended many UMIs and became a good friend of the Institute and many of its participants. He designed and made the Moore medal when IMMS decided to initiate the award.

Marne Dubs

Kennecott Corporation, Industry Leader, Diplomat, and Visionary

As leader of the marine minerals effort for the Kennecott Consortium (KCON), Marne Dubs became one of the key figures in negotiations at the United Nations Law of the Sea Convention, to clarify and achieve a balanced framework to accommodate the needs and rights of both industrial and less developed nations. Although the Treaty had not yet been ratified by the United States, the rights for which Mr. Dubs and others labored, so hard and long were finally adopted by the United Nations in amendments passed by consensus after the treaty became Law.

Conrad G. Welling

Lockheed Missiles and Space Company, Industry Leader, Innovator and Visionary

In 1963, the advanced research team of Lockheed Aircraft International, seeking new developments for the company, briefly investigated the potential of marine minerals and finding it positive, passed the baton to Conrad Welling at Lockheed Missiles and Space Company. Mr Welling formed an industrial partnership with International Minerals Company and then with the U.S. Bureau of Mines. During the subsequent years Lockheed's Ocean Minerals Company (OMCO), an international consortium, became the first US licensee under the Deep Seabed Hard Mineral Resources Act and in 1978 successfully tested a remotely operated mining vehicle, for which the technology has yet to be matched. The Lockheed system has influenced the design of mining systems throughout the world and added credibility to a venture regarded by many at that time as too futuristic.

John Crawford

U.S. Bureau of Mines, Scientist, Bureaucrat, and Visionary

In 1963, John Crawford, a supervisory researcher in nuclear fuels with the Bureau of Mines, sent out his scouts to find a connection with nuclear fuels and manganese nodules. From the information he received he realized at once the potential for economic development of seabed minerals and initiated within the Bureau the nucleus of a new program. In 1964 he was appointed the first Director of the U.S. Bureau of Mines' Marine Minerals Technology Center located at Tiburon, California. Though closed in 1973 on a political whim, the Center did much to put marine minerals on the agenda of other government agencies and lives on in name to this day, as a consortium of Universities funded directly through the U.S. Congress.

John Mero, Ph.D.

Mining Engineer, Academic, and Visionary

In 1958, while a post-doctoral fellow at the University of California, John Mero was asked to look at some unusual black nodules dredged up from deep water in the Pacific during a Scripps cruise. He recognized them as the same nodules described in detailed reports of the HMS Challenger Expedition, in 1873. His analyses confirmed that the nodules, were they on land, would represent rich ores of manganese, copper, nickel, and cobalt. His subsequent publications and enthusiastic projections of the value of these marine minerals to society resulted in the investment of hundreds of millions of dollars in research and development over the next 20 years and laid the foundation for the marine mining industry as we know it today.

John Shaw

International Nickel Co., Ltd., Industry Leader, Internationalist, and Visionary

International Nickel Co. was quick to realize that manganese nodules were a potential ore of nickel, and were thus in potential competition with the nickel empire the company controlled in Canada. John Shaw's steady hand at the helm of INCO's program laid the groundwork of credibility as the company formed Ocean Management Incorporated (OMI) an international consortium which included one Canadian, one U.S., three German, and 19 Japanese companies. Leader of one of the four US pioneers in the Clarion Clipperton Zone, Mr. Shaw left his mark in technology, diplomacy, and management.

Jack Flipse

Deep Sea Ventures Inc., Industry Leader, Confrontationist, and Visionary

In 1963, Jack Flipse, then a senior official at Newport News Shipbuilding Co., initiated a program, based on John Mero's work, to develop a commercial operation to produce metals from deep seabed manganese nodules. He formed a new company, Deep Sea Ventures Inc., later the lead partner in Ocean Mining Associates (OMA), and carried out the first serious tests on the production and environmental effects of deep seabed mining, in 1966 on the Blake Plateau. This test was very successful and effectively put to rest the then current myth that mining the seabed at that depth would reawaken some long dormant species of sea creature which would at the very least envelop the mining vessel and all its crew with an impenetrable coating of green slime. More than innovative, DSV was refreshingly open about the work they were doing, and the goals they had set. Mr. Flipse was always ready to argue his case publicly, and secrets were not a part of his company's approach.