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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION  
(of Unesco)

Thirteenth Session of the Assembly  
Paris, 12-28 March 1985

BRUUN MEMORIAL LECTURES 1985

Tuesday, 12 March 1985, Unesco House, Room II, 2.30 p.m.

S U M M A R I E S

5 AVR. 1985

The Bruun Memorial Lectures were inaugurated in memory of Dr. Anton Frederick Bruun (Denmark), first Chairman of the Intergovernmental Oceanographic Commission, who died on 13 December 1961 whilst holding this office.

The lectures are held biennially during the IOC Assembly and this year will celebrate the 25th Anniversary of the Commission.

Texts of the lectures and a résumé of the discussions will be published in the IOC Technical Series.

ON THE BENEFITS OF OCEAN STUDIES

by Prof. W.S. Wooster  
University of Washington  
Institute for Marine Studies HF-05  
Seattle - Washington 98195, USA

ABSTRACT

1. WHO MIGHT BENEFIT, AND HOW?
  - 1.1 What activities might be expected to benefit?
  - 1.2 What kinds of benefits could be anticipated?
2. KNOWLEDGE AND RESEARCH
  - 2.1 Empirical versus scientific knowledge.
  - 2.2 Different activities benefit from different kinds and domains of research.
3. BENEFITS OBTAINED DURING PAST 25 YEARS
  - 3.1 General review for all activities.
  - 3.2 Case study: the climate fishery connection.
4. THE ROLE OF INTERGOVERNMENTAL CO-OPERATION
  - 4.1 IOC and other international organizations.
  - 4.2 Impact of the new ocean regime.
5. CONCLUSIONS TO BE DRAWN

WHAT STEPS SHOULD BE TAKEN TO MEET THE CHALLENGES OF THE FUTURE  
IN OCEAN SERVICES AND TECHNOLOGY AND IN THE IDENTIFICATION  
OF DISTURBANCES CAUSED BY MEN?

by Dr. S.Z. Qasim  
Department of Ocean Development  
Mahasagar-Bhavan  
Block n° 12 - CGO Complex  
Lodi Road  
New Delhi 110003, India

ABSTRACT

1. OCEAN SERVICES

- (a) Ocean and climate.
- (b) Development of oceanographic data and information system.
- (c) Control of marine pollution.

Steps to be taken under (a) "Ocean and climate" will include forecasting the weather, storms, sea state and storm surge. The global climate programme will witness large-scale space-based platforms which have a continuous link with satellites and large computer capabilities for simulating ocean-atmosphere exchange. Under (b), the storage, retrieval and dissemination of oceanographic data will be dealt with within the framework of regional and global oceanographic data and information network. Under (c), suitable solutions to pollution problems in coastal waters and oil pollution problems in the high seas will be discussed.

2. OCEAN TECHNOLOGY

- (a) Living resources.
- (b) Use of biotechnology.
- (c) Mineral resources.

Steps to be taken under (a) are increased food production from coastal and offshore waters by using efficient and cost-effective technology of mechanized fishing and the extensive use of mariculture to generate a substantial increase in food production. Under (b), explosive development of biotechnology and its related science/genetic engineering have reached marine science. Fascinating natural products are being discovered in marine animals and plants and the new technology allows the transfer of genetic material from the organisms to bacteria whereby the compounds, metabolites or gene products will be produced by bacteria instead of the marine organisms. Under (c), the importance of coastal (placer) deposits of chemically stable minerals will be dealt with and their importance and value will have to be emphasized. Similarly, the development of technology to mine polymetallic nodules from a depth range of 4,000 - 6,000 metres and the extraction of economically important metals from the nodules will be summarized. In addition, production of oil and gas from the offshore areas and the development of various support services will be described.

3. IDENTIFICATION OF DISTURBANCES CAUSED BY MAN

- (a) Multiple use of the oceans.
- (b) Coastal zone management.
- (c) Engineering tasks.

Steps to be taken under (a) should include the concept that environmental protection will not be ignored in search of profitability and what is required is wise and judicious use of the sea so that the oceans will continue to fulfil our social, economic and recreational needs for a long time to come. Steps to be taken under (b) "Coastal zone management" will include resolving conflicting demands of exploitation of various coastal resources by different interest groups and user agencies. Need for the development of national policies and guidelines with requisite enforcing powers for managing the coastal zone. Under (c), the steps to be taken are to develop innovations to reduce the cost of engineering tasks which are many times more expensive than similar activities on land. Similarly to reduce the hazards of work which are far more risk-prone and the management operations more demanding than similar operations on land.

#### 4. CONCLUSION

Future oceanographic programmes in all countries of the world and more particularly in developing countries should be carefully planned to suit many important and urgent steps, described above, so that a new era of exploration and exploitation of our vast ocean resources opens.

In all the sectors, the steps will highlight the related programmes of IOC and the tremendous incentive the IOC has provided for the promotion of ocean science, ocean services and training, education and mutual assistance in marine science.

HOW CAN THE INTERNATIONAL SCIENTIFIC COMMUNITY WORK TOGETHER  
IN THE ERA OF AN EMERGING OCEAN REGIME  
TO HELP ALL PARTNERS TO ACHIEVE A BETTER UNDERSTANDING  
OF OCEAN PHENOMENA AND THEIR IMPACT ON MAN

by Prof. A. Yankov  
Professor of International Law  
Complex Lenin - Blocus 73  
1111-Sofia, Bulgaria

ABSTRACT

1. The significance of the United Nations Convention on the Law of the Sea as a general legal framework for the promotion of international co-operation in the uses of the seas, the exploration and exploitation of their resources and the protection of the marine environment
  - 1.1 The new Convention should be assessed as an attempt to reflect the increasing role of the world's ocean in the context of the major economic and political developments of our time.
  - 1.2 The provisions on marine scientific research and transfer of marine technology express the growing perceptions as to the prominent role of ocean science and its application in the effective utilization and management of the seas and their resources.
  - 1.3 The impact on the freedom of oceanic investigation of the emerging new concepts of maritime law justifying the expansion of the scope and field of application of national jurisdiction over large areas of the ocean space, such as the exclusive economic zone and the continental margin.
  - 1.4 The new trends in ocean affairs have called for new legal framework for international co-operation in the area of marine scientific research and development of marine technology in order to strike a meaningful balance between the zonal approach to the regime of marine scientific research and the global dimensions of the exploration, exploitation, management and preservation of the seas and their resources.
2. International co-operation as a fundamental principle underlying the new regime for the conduct of marine scientific research and transfer of information and technology
  - 2.1 The scope and significance of the principle of international co-operation under contemporary international law.
  - 2.2 Partnership as the main aspect of international co-operation relating to marine science and technology.
  - 2.3 The emerging trends in the practical implementation of the requirements for international co-operation: promotion of marine sciences and acquisition of competence; creating favourable conditions for oceanic research; education and training; enhancing research and technological infrastructure; dissemination of scientific information; encouraging the establishment and operation of national, regional and international institutions in the field of marine science and technology.

2.4 The main provisions of the UN Convention on the Law of the Sea relating to international co-operation in the field of ocean science and technology.

2.5 The functions of the new regime of marine scientific research viewed not only as a framework defining the rights and obligations of researchers and coastal states but also as a legal set-up for effective partnership and mutual confidence in the conduct of ocean investigation and enhancing the scientific and technological capabilities of the partners and particularly those from the developing countries.

3. The institutional aspects of the new regime for the promotion of marine scientific research and the development of marine technology

3.1 The role assigned by the new Convention to international organizations on local, regional and global levels through bilateral and multilateral agreements and the implementation of regional and global programmes for action.

3.2 The special mission of IOC under the provisions of the new Convention to facilitate, promote and create favourable conditions for the conduct of marine scientific research; to strengthen the co-ordination of marine scientific activities; and to render ocean services.

3.3 The need to improve the functioning of the international institutional system in view of the new requirements and challenges of maritime activities in general and the conduct of marine scientific research in particular.

4. Conclusion

The regime of marine scientific research under the new Convention should be regarded not as a legal restraint but should be considered in a positive way as a foundation for promoting mutual confidence and stability in the conduct of marine scientific research and furthering international co-operation in marine science and technology.

In this connection, the IOC, together with other international organizations, is in a position to make an invaluable contribution towards the integration of the efforts of the scientific community in achieving a better understanding of ocean phenomena and promoting the peaceful uses of ocean space and its resources. This would represent a new stage in the evolving new role of IOC.