

JOINT COLLOQUIA

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1. THE ROLE OF W.M.O. IN WATER RESOURCES DEVELOPMENT AND MANAGEMENT

by M. A. Kohler

Mr. Kohler, Chief Research Hydrologist of the United States Weather Bureau, remarked that there was no completely satisfactory organization to look after the development of Water Resources of the world. At present several organizations such as the United Nations took an interest in it, but co-ordination between these organizations is lacking. W.M.O. maintains a commission on the relation between Hydrology and Meteorology.

Rainfall and snowmelt cause streamflow which leads to floods, so that the forecasting of hydrologic events is highly dependent on weather forecasts. By the preparation of a hydrograph, stream flow or stage height and the time of reaching a particular height at a certain point could be forecast. Hydrographs can be predicted by means of the unitgraph technique, or by the use of flood routing methods to predict downstream river levels together with allowance for local inflow due to rainfall over the downstream areas.

Flood control can often be effected by the provision of a reservoir. Then if an operator knows the rainfall and can predict a hydrograph, he is able to control a flood.

Multipurpose projects are now being constructed for both power and flood control. However, efficient production of power requires maintenance of a high reservoir water level, while a low water level and consequent availability of empty storage is necessary for flood control. Hence weather forecasts, especially longer range forecasts, are very necessary for effective operation of multipurpose projects.

Several U.N. Agencies are actively concerned with Water Resources Development.

FAO - organises research centres all over the world,

UNESCO - is organizing the International Hydrological Decade,

WHO - is concerned with health and water supply and pollution problems,

WMO has been in a state of flux. The former IMO, which WMO replaced, was non-governmental, being only an organization of Directors of Met. Services.

An international organization of Governments was found necessary, hence the change to WMO. IMO provided a commission for hydrology, but this became inactive and was dropped when IMO was reducing its activities. The activities of WMO are now increasing.

The Organisation received a request from U.N. for guidance in the design and operation of hydrometeorological instrument networks, and in subsequent processing, publication and analysis of the data.

It was at the time passing through a change in organization but from 1959 has taken full responsibility for providing international guidance in the application of meteorological science to hydrology.

The Third Congress of WMO discussed extension of the Organisation's role in the field of Hydrology. Some Members opposed such a move and favoured the formation of a new international organization for Hydrology. However, the Third Congress established a commission for Hydrometeorology and its first meeting was held in April 1961. Its activities were to include problems of a meteorological nature, water balance, hydrological and meteorological networks, and to prepare a guide for these activities. Broadly it was in the future to provide guidance in the fields of meteorology and hydrology.

UNESCO has taken the initiative from EUTG, IUGG, IUSU and IASH (in which Australia is not an active participant) and is organizing a Hydrological Decade as part of the U. N. Development Decade to stimulate social and economic development.

Summing up, Mr. Kohler stressed that water was a very important commodity, and finance and managerial ability were urgently required for the more efficient use of the available water in nearly all countries.

2. THE INTERNATIONAL HYDROLOGICAL DECADE

by W. B. Langbein

Mr. Langbein, Staff Scientist of the U. S. Geological Survey, Washington, commenced his talk by stressing the importance of water to the social and economic welfare of man. His organisation is greatly interested in the proposed Hydrological Decade and will play a major role in the United States contribution to the Decade.

Water is as yet freely available in the Western World, but in areas such as Pakistan and Latin America there is a serious lack of water. Water science has now become a technology in the United States and its know-how is available for export to other countries.

Improvements in the design of water resource development works were slow until the last few decades because of the absence of reliable long term hydrological records. In 1890 the River Murray Commission began measuring the flow of the Murray River at Jingellic. This was one of the earliest systematic measurements of streamflow made, and the data have been used in many studies carried out in other countries.

Long period records of rainfall and river heights are required for the design of reservoirs. In the design of reservoirs without records, the first on a stream is easy to build, but the second and subsequent storages are difficult. Models of various complex processes of the hydrologic cycle need to be developed from an analysis of hydrological records. Not even the U. S. A. has an adequate range or quantity of data. The U. S. S. R. has a vast store of information and the U. S. A. is looking forward to an exchange of information.

UNESCO is organising the proposed International Hydrological Decade. Because of the spatial and temporal variability of hydrological elements, ten years is the shortest period from which useful results can be expected. The 1964 meeting of the WMO Commission for Hydrometeorology will discuss fully the UNESCO plans and the role that WMO might play in the Decade.

The next UNESCO meeting on the Decade will be held in April 1964. Principal subjects for discussion will be:-

- (i) Collection of basic data and improvement of networks;
- (ii) Collection of special data for specific research projects;
- (iii) Education in Hydrology;
- (iv) Bench Mark Stations - Research.

Attention will also be given to such subjects as:-

Bench mark stations in areas where free land development and use is permitted;

Collection of data for special studies of water balance and evapotranspiration;

Chemical quality of water;

Soil conservation.