

JOINT COLLOQUIA

23 March 1961

The Combination of Meteorology and Engineering Hydrology
for the Development of Water Resources

by D.N.Body

Mr. Body, of the Bureau of Meteorology, at the commencement of his talk stated that planning for the development of the water resources of a region can be considered in two phases. These are firstly the determination of the volume of water which is likely to be available as runoff in the region, that is, the expected yield of the streams, and secondly the determination of peak discharges for the design of diversion works, spillways and protection works.

The best procedure for the solution of both the above problems would be to analyse records of streamflow obtained over a number of years. Unfortunately, in many cases such streamflow records are not available and in those cases where they are, the period of record is too short to enable confident predictions to be made of the required design criteria.

Generally speaking, rainfall records are available for longer periods than are those for streamflow and also in most areas there are at least a few rainfall stations. Because of these two facts, meteorological factors have formed the basis for design in many projects connected with the development of water resources.

Where streamflow records are not available, the determination of yield behaviour requires the combination of rainfall and evapotranspiration to provide estimates of the missing data. The yield behaviour during the future period when the reservoirs are to be operated will depend upon the variations in meteorological factors. These are both fields in which the meteorologist has a primary responsibility.

In the determination of peak discharges for the design of hydraulic structures the lack of streamflow data again requires that many designs be based upon the analysis of rainfall records. The fact that final construction must be based upon a single discharge figure places a heavy responsibility upon the meteorologist and upon the engineer who converts the design rainfall data provided into stream discharge.

The advantages to be obtained by the close co-operation between meteorologists and engineers for the solution of these problems is obvious. Unfortunately, in the past, this co-operation has not always been attained, but for future work it is hoped that the Bureau's hydrometeorological section will provide the required link.

27 April 1961

Some Impressions of Micro-Meteorology Abroad

by I.C. McIlroy

Mr. McIlroy of the Division of Meteorological Physics, C.S.I.R.O., discussed briefly a small selection of the more interesting micro-meteorological work he had seen while overseas recently.

During the first month of his trip he had directed a course in Arid Zone Micro-Climatology for U.N.E.S.C.O. This was held in Cairo in November 1960, and was attended by thirty graduates from eight Middle East countries. The participants were competent, enthusiastic and comparatively well-informed but somewhat lacking in practical experience. It became obvious that both in Egypt and most other countries of the region little real micro-meteorology had been done as yet.

As might be expected micro-meteorology in England was fairly well based and advancing steadily. A number of organizations were active, the fields of those visited ranging from more or less fundamental work at Rothamsted Experimental Station, Cambridge Met. Office Research Unit, Chemical Defence Research Establishment at Porton and Imperial College, London, to work of direct agricultural application at Nat. Vegetable Research Station, Met. Office Agricultural Service, and again at Rothamsted.

In several instances (notably at R.E.S. and N.V.R.S.), major benefits could be seen from close teamwork between specialists in several fields - a practice which should be more widely adopted here!

In Holland conditions were somewhat similar, with a number of teams and individuals doing very good work. At Wageningen at least the emphasis seemed very much on controlled experiments ("phytatronics" and lysimetry) - so much so in some cases as to give an appearance of artificiality to the work.