

ABSTRACTS

ABSTRACTS of Hydrology Symposium: Soil Conservators' Refresher Course, Blenheim, 21 March, 1963.

Held on the evening of 21 March, the meeting was attended by some 40 members of the New Zealand Association of Soil Conservators and 10 members of the New Zealand Hydrological Society.

The symposium took the form of a question and answer session; questions which had been circulated beforehand were put by an independent chairman to a panel of four. This comprised: M. Yates, Dept of Agriculture, Wellington and R. Dixie, Dept of Agriculture, Nelson, representing the N.Z. Association of Soil Conservators; with A.P. Campbell and C. Toebes, both of Ministry of Works, Wellington, representing the N.Z. Hydrological Society.

The questions were answered by the hydrologists following which comment was made by the soil conservators on the panel and then by the audience.

The discussions were organized to bring out general information rather than specific points of agreement. As such the meeting achieved its object well, as the questions had been well chosen and participation covered a wide range of opinion. In addition, a welcome measure of agreement was apparent particularly amongst members of the panel all of whom have major responsibilities for current work in this field.

In the summary below, the following abbreviations have been used for sub-heads: Q - Question, A - Answer, R - Recommendation.

Q.1 -

The soil conservator is concerned with figures of comparative runoff, and to his mind there seems to be insufficient emphasis by hydrologists on this field of work. What comparative figures (N.Z.) have been produced to date and what proposals are operating to give further figures?

A.1 -

The usefulness of studying comparative data on runoff is, at this stage, open to question and a study of relationships between soil and vegetation data and hydrological characteristics will be more useful. Data on infiltration and surface detention will give the required information.

R. -

That the number of deliberate hydrological studies of paired catchments be held, more or less, at the present level meantime.

Q.2 -

"Basic investigation" or "basic information" are terms often heard from hydrologists. What does such a phrase imply in terms of work and what progress has been made in N.Z. during the last 15 years?

A.2 -

Basic information in hydrology is what soil survey methods are to pedologists. They are essential for education, staff training, research, field investigations and codes of practice for design in all S.C. & R.C.C. work. Accurate field data is essential and this comes mainly from bench-mark catchments (small) and regional catchments (large); defined methods of analysis are used to process data. Progress in the last three years has been considerable. See Provisional Standard Procedures, Hydrology Annuals 1959, 1960, and Hydrology and Land Management (publ. of S.C.R.C.C.).

R. -

That the emphasis in hydrology should be on basic investigations.

Q.3 -

For some years the hydrological survey has been doing regular gauging of rivers. Of what value are the data on stream flow, rating curves, hydrographs etc., to soil conservators? To what use can these figures be put?

A.3 -

Most of the data collected so far have been for specific engineering applications. More data could be collected for soil conservators if they state their requirements by means of hydrological observation programmes.

Q.4 -

The assertion that runoff from catchments is not affected by soil conservation practices and the claim that conservation works are the complete answer to flood control are both wide of the mark. What is the true position?

A.4 -

Runoff like rainfall is a general term and to explain the effects it is better to speak about peak discharges and runoff volumes.

Peak discharges may be reduced considerably on small areas by soil conservation practices. On large catchments reductions in peak discharges will be small because of the modifying effect of storage. Runoff volumes are not easily reduced but runoff may be re-distributed by soil conservation practices e.g. surface runoff may be reduced to give a subsequent increase in subsurface runoff.

R. -

Important conclusions concerning the effects of a variation of catchment condition on floods and erosion are set out on pp 95-96 of Hydrology and Land Management. This statement should be quoted for conservation publicity and if there are to be exceptions, accurate data must be available in supporting other contentions.

Q.5 -

Present hydrological services present a confusing aspect to the outsider, there being numerous people operating in this work: Hydrology Section, Ministry of Works, Wellington and district hydrological survey offices; Soil Bureau, D.S.I.R., Wellington; Department of Agriculture; Forest Service; Hydro Investigations, Ministry of Works and Catchment Boards. What is the tie-up between these various agencies? How does it work? Can it be improved?

A.5 -

An appreciation of the organisation in hydrology must start with a recognition of three separate tasks. These are: pure hydrology, applied hydrology (engineering applications) and conservation hydrology.

The responsibility for co-ordination rests with the central agency (S.C. & R.C. Hydrological Service). Co-ordination is initiated by publishing working procedures, training staff and standardising forms for processing and publishing data.

Consultation takes place with all fields of applied hydrology to ensure that appropriate work is developed in pure hydrology to provide basic data.

Co-ordination of field work is mainly through the five field organisations of Ministry of Works which act as local co-ordinators of catchment authorities or other observers. An important medium for co-ordination of field observations in any district is the hydrological observation programme (S.C.C. Form 34).

The organisation is believed to be basically sound, but should be strengthened in two ways both of which will take time. Firstly, in pure hydrology, quick growth has thus far not produced enough experienced leaders and trained staff. This gap must be filled. Secondly, in applied hydrology, in all fields of work there is a lack of specialists who understand modern hydrological data and can use it in specialist research or in developing codes of working practice.

R. -

That there be in soil conservation a specialist responsible for the planning and direction of research, plus an adequate supporting team.

Q.6 -

Should the quantity of sediment in a stream be

relied upon more than at present to give a real assessment of the condition of a catchment?

A.6 -

More reliance should be placed on sediment data when it is reasonably certain that the sediment in the stream is produced by catchment erosion.

R. -

That subject to availability of specialist trained staff, sediment data be collected on all critical catchments.

Q.7 -

In what specific ways can soil conservators assist hydrologists and vice versa?

A.7 -

The hydrologists replied that although specific help in data collection is valuable it is more important for soil conservators to develop a better understanding of practical possibilities in the collection and use of hydrological data. Co-operative work between soil conservators and hydrologists is retarded most by the lack of understanding of the possibilities and requirements together with the lack of specialist staff with defined responsibilities.

R. -

More active co-operation is most desirable for the future and action by soil conservators to improve co-operation must begin at the top and should include the following:

1. Establishment of specialist staff as recommended under Q.5.
2. Formulation of a statement to the central hydrological authority of future objectives in data collection.