

# JOURNAL OF HYDROLOGY

NEW ZEALAND

Published twice annually by the New Zealand Hydrological Society

Volume 3

JUNE 1964

Number 1

## EDITORIAL NOTES

### FLOODS AND HYDROLOGISTS\*

Last March devastation swept Opotiki; but not only Opotiki, though because of its location and development a great deal of damage and hardship was concentrated in this town.

Apart from their personal concern as citizens in calamities like the Opotiki one, hydrologists have a special technical interest in floods. In considering some of the ways in which hydrologists and associated staff are intimately bound up with floods we can conveniently think of three aspects in relationship to the flood event — past, present and future.

It is from past hydrological observations, and from basic theory developed in accordance with the accumulated hydrological experience of the past, that the frequency and magnitude of flood flows are predicted. The efficiency of works built to give protection from floods can be no better than the accuracy and sufficiency of the hydrological information used in the design of those works.

As for the present — during the flood itself — this is a time affording a rare opportunity to obtain special hydrological information relating to the extreme conditions. This information may be of immediate importance; to determine the magnitude of the flood and to explain where the water came from and, perhaps, where it went. Even if rating curves were already accurately determined and all the physical facts were being accurately recorded by instruments, it is still important for hydrological staff to be “on the spot” during floods whenever possible, and to be alert to all that is taking place; not only because it is often during floods that rivers do unexpected things but also because it is good for public relations that they be in the thick of the battle. Information that can be given promptly by expert people who were working at the scene of the flood is just as important as information that can be derived later from the records of instruments. So, hydrological field parties should always be among those who have to face inconvenience and danger during floods.

\*Contributed by N. W. Collins

Looking to the future lessons can be learnt from floods. Hydrological observations at flood times can assist in determining desirable improvements to existing protective works or those under construction. This will very likely be an outcome of the recent Opotiki flood. In addition, the very existence of flood conditions, and the consequent damage, encourage property owners to think more seriously about remedial measures, and what they can do to achieve them. When people want to protect their property, and themselves, against floods hydrologists must be ready to co-operate enthusiastically in the teams of experts who will be called on to show how this can be done.

## FLOODS AND RESEARCH

Mr A. J. Dowling, Chairman of the Otago Catchment Board, told the annual conference of the New Zealand Catchment Authorities' Association, on 6 May at Invercargill, that if the Government was prepared to spend millions of pounds on the destruction of noxious animals it should be prepared to spend more money on conservation hydrological research; and specifically on the many problems of depletion, erosion and run-off in the mid and high altitude tussock grasslands, for which there is inadequate data. Persons like Mr Dowling have a foresight that is rare.

It is timely to note the lack of data in connection with the Opotiki floods. It is wise, even essential, to gather information during a flood to allow the designers to plan protective measures. But such measures frequently comforting only to the public, do not consider causal factors.

For example, do we know the real effects of various types of catchment vegetation on flooding? Perhaps on small areas we have some ideas that these effects may be very great. But for large areas we presume that the effects are of little consequence. Is this presumption sufficiently close to the truth for practical purposes? Under some conditions it might well be; under others it could merely serve to delude us.

Are we fully appreciative that every large catchment is composed of many small catchments; and that manipulation of small-catchment storage and times of concentration could well result in significant reduction of flood peaks from the overall large area? And for many large catchments this approach holds possibilities. But it must necessarily await the results of much intensive hydrological research; which in turn must lag until continued finance, in the necessary proportion, is made available.