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DEPARTMENT OF NATIONAL DEVELOPMENT
BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS

RECORDS:

1965/85



REPORT ON GROUNDWATER SCHOOL - 29th MARCH - 9th APRIL, 1965

ADELAIDE

by

D.A. White

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REPORT
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INTRODUCTION

The purpose of this note is to record the scope and other aspects of the Groundwater School held in Adelaide from 29th March, to 9th April 1965. I will not comment on the individual lectures presented at the school; notes of which will be issued later in a separate Bureau Record.

In 1962 the Education Sub-Committee of the Underground Water Conference of Australia (U.W.C.A.) recommended to U.W.C.A. that a refresher school be held for officers already working in the field of groundwater. The course was adopted by U.W.C.A. at its third meeting in Perth in 1963 and preparations were subsequently made to hold the school over two weeks from 29th March to 9th April 1965, in Adelaide. Since the 1963 Perth Meeting U.W.C.A. has been abandoned and the Education Sub-Committee has been responsible to the Technical Committee on Underground Water, which is part of the Australian Water Resources Council.

ORGANIZATION

The Department of Mines, South Australia greatly assisted the organization of the school by providing a Manager (Mr. A. Dutton), who was later assisted by Mr. C. Bleys, Senior Hydrogeologist of the Department, and equipment (at a nominal charge) for field demonstrations.

The participants were accommodated at the Ramsgate Hotel, Henley Beach, and the nearby R.S.L. Hall was used as a lecture room. All modern facilities for lecturing were provided and the whole proceedings including the discussions were recorded on tape. Revised notes of most of the lectures were issued in advance at the school.

SYLLABUS.

Appendix 1 lists the details of the syllabus.

The syllabus was designed to cover all aspects of groundwater investigation and development, these and the hours spent on each shown in brackets were:

1. Geology (5½ hours)
2. Geophysics (7hours) plus 2 days on field demonstrations.
3. Drilling (4hours) plus 1 day on field demonstrations.
4. Bore construction (4½ hours)
5. Pump tests (6 hours) plus 1 day on field demonstration.
6. Chemistry (3 hours)
7. Principles of groundwater flow (2½ hrs) plus 2 hrs on field demonstration.
9. Utilization (1½ hours) plus 1½ hours on laboratory demonstrations.
10. Meteorology (2 hours).
11. Legislation (2 hours).
12. Surface hydrology (1 hour).

The syllabus involved a total of 34 lectures.

4½ days out of the total 10 days for the school were spent on field demonstrations. The equipment for these demonstrations was supplied by the Department of Mines, S.A. resistivity, seismic refraction, pumping, and drilling) C.S.I.R.O. (equipment used in field measurement of hydraulic conductivity and water content), and the Bureau of Mineral Resources (electric logging.)

LECTURES

A total of 16 lecturers were used to cover the syllabus involving a total of 43 hours. The lecturers are listed amongst the participants in App. 2. The bulk of the lectures were given by the following 5 officers:

Mr. E.R. Smith, Principal Engineer, Water Conservation and Irrigation Commission, N.S.W.9 hrs
Mr. E.P. O'Driscoll, Chief Hydrogeologist Geological Survey of W.A.6 hrs
Mr. W.H. Williamson, Senior Hydrogeologist, Water Conservation and Irrigation Commission N.S.W.5 hrs
Mr. W.A. Weibenga, Geophysicist, Bureau of Mineral Resources. A.C.T.4 hrs
Mr. M.G. Chatfield, Chemist-in-charge of Water Testing, Services, Department of Agriculture NSW3 hrs
Mr. J.W. Holmes Soil Physicist, Soils Division, C.S.I.R.O. S.A.3 hrs

PARTICIPANTS

The total participants were 54 and they are listed in Appendix 2. All States and Commonwealth water authorities were represented, except the Department of Mines, N.S.W.

It is of interest to note that 31 of the participants were geologists, the remainder consisting of 7 geophysicists, 8 engineers, 2 soil-physicists, 1 bacteriologists, 2 chemists, 1 meteorologist, 1 agricultural scientist, and 1 soils technical officer.

No details of the years of experience of each participant were available, but the range of experience was perhaps between 1 and 15 years with the bulk of the participants having experience between 1 and 5 years.

CONCLUSIONS.

The Groundwater School held in Adelaide was to my knowledge the first of its kind to be held in Australia, and as a refresher course for officers already working in the field of groundwater the school was a success.

Until provision is made in Australia's Tertiary education scheme for a diploma or degree course in groundwater the task of educating personnel in groundwater will have to be borne by governmental water authorities. For this reason alone there is a need to repeat the 1965 groundwater school at regular intervals perhaps every two years.

Another reason for repeating the school is the likely increase in groundwater staff by government water authorities over the next few years, which has been made possible by the 1964 States Grants Act.

The demand for lecture material such as presented at the 1965 groundwater school by students, university and technology lecturers, and groundwater staff, warrants some effort to document the material and perhaps this could be done by publishing the material in the recently formed "Hydrological Series" publication of the Australian Water Resources Council.

- 9.00-5.00 Field Day. Demonstration of well logging
(S.P. and Resistivity) by Messrs. Wiebenga,
Polak and Mann, Geophysicists, B.M.R.
- 7.00-9.00 Radioactive tracers - notes on a test with
isotopes 1131 and Tritium as groundwater tracers
by W.A. Wiebenga, Geophysicist, Bureau of Mineral
Resources.

FRIDAY, 2.4.65

- 9.00 - 10.30 Drilling Methods and Equipment by E.R. Smith, Principal Engineer, Water Conservation and Irrigation Commission, New South Wales.
- 11.00 - 12.30 Well Hydraulics by J.S. Colville, Division of Soils, C.S.I.R.O., S.A.
- 1.30 - 3.00 Field measurement of conductivity and water content by J. W. Holmes, Division of Soils, C.S.I.R.O., S.A.
- 3.00 - 5.00 Field Demonstration of measurement of conductivity and water content by auger-hole and two-well methods by J. W. Holmes and M.W. Hughes, Division of Soils, C.S.I.R.O., S.A.

MONDAY, 5. 4.65

- 9.00 - 10.30 Pumping tests: Part 1 - Principles and Methods by W.H. Williamson, Senior Hydrogeologist, Water Conservation and Irrigation Commission, New South Wales.
- 11.00 -12.30 Pumping tests: Part 2 - Equipment and Procedures by W.H. Williamson, W.C.I.C., N.S.W.
- 1.30- 2.30 Pumping tests: Part 3 - Analysis and Interpretations by W.H. Williamson, W.C.I.C., N.S.W.
- 3.00 - 4.30 Factors involved in optimum development of ground-water reservoirs by J.W. Holmes, Division of Soils, C.S.I.R.O., S.A.
- 4.30 - 5.30 Drilling in alluvium and rock by E. R. Smith, Water Conservation and Irrigation Commission, N.S.W.

TUESDAY, 6.4.65

- 9.00 - 5.00 Field Day. Demonstration of a single-rate pumping test by W.H. Williamson, W.C.I.C., N.S.W. N.S.W. assisted by Mines Department, S.A.
- 7.00 - 9.00 Discussions on field pump tests by W.H. Williamson

WEDNESDAY, 7.4.65

- 9.00 - 10.30 Artesian Bore construction and specifications by E.R. Smith, W.C.I.C., N.S.W.
- 11.00 - 12.30 The use of cement in bore construction and reconditioning by E.R. Smith, W.C.I.C., N.S.W.
- 1.30 - 3.00 The relationship between geology and groundwater quality by W.H. Williamson, W.C.I.C., N.S.W.
- 3.30 - 5.00 Screened bore construction techniques by E. R. Smith, W.C.I.C., N.S.W.
- 7.00 - 9.00 Groundwater legislation by E.R. Smith, W.C.I.C., N.S.W.

THURSDAY, 8.4.65

- 9.00 - 5.00 Field Day. Demonstration of rotary, down-the-hole hammer, percussion and auger drilling by Department of Mines, S.A. and E.R. Smith, W.C.I.C., N.S.W.
- 7.00 - 8.00 Meteorology and meteorological instruments by L.N. Mitchell, S.A. Regional Office, Bureau of Meteorology.

FRIDAY, 9.4.65

- 9.00 - 10.30 Chemistry of Groundwaters:
Part 1 - Relation to use for irrigation by
M.G. Chatfield, Chemist, N.S.W. Department
of Agriculture.
- 11.00 -12.30 Chemistry of Groundwaters, Part 2 - Relation
to use for stock watering by M.G. Chatfield.
- 1.30- 3.00 Utilization of groundwater for town and
industrial supply by D.R. Orchard, Senior Engineer,
Engineering and Water Supply Department, S.A.
- 3.30 - 5.00 Groundwater quality: Bacteriological factors by
J. JohnstoneEngineering and Water Supply
Department, S.A.
- Demonstration of techniques for the bacteriological
examination of groundwater by D. Lane, Engineering
and Water Supply Department, S.A.
- 7.00 - 9.00 Wind up discussion - Chairman, A.H. Dutton,
Manager of Groundwater School, S.A.

APPENDIX 2.

GROUNDWATER SCHOOL, 1965.

PARTICIPANTS (51)

(* indicates lecturers)

SOUTH AUSTRALIA (21)

C. Bleys	Geologist - Geological Survey, Department of Mines.
J. Hussin *	Geophysicist " " " "
G.T. Roberts*	Geologist " " " "
R.G. Shepherd*	Geologist " " " "
T.M. Steel	Geologist " " " "
R.R. Hancock	Engineer - Drilling Branch" " "
J. Boyd	Engineer - Drilling Branch" " "
D.I. Johnstone	Engineer " " " "
R.J. Wilson	Engineer " " " "
J.S. Colville*	Physicist - C.S.I.R.O. Soils Division.
J.W. Holmes *	" " " "
M.W. Hughes	Technical Officer " "
D.R. Orchard *	Engineer - Engineering & Water Supply Department.
D. Lane*	Bacteriologist " " " "
J. Johnson*	" " " "
R.B. Wilson	Geologist - Geosurveys Ltd.,
L.N. Mitchell*	Meteorologist - Bureau of Meteorology.
J. Canaple	Geologist, French Petroleum Aust. Pty. Ltd.,
P.H. Magner	" " " "
B. Yonge	Delhi Aust. Pty. Ltd.
R.J. Chugg	Engineer Kenneth Smith, Civil Engineers.

WESTERN AUSTRALIA (8)

E.P. O'Driscoll *	Geologist - Geological Survey, Department of Mines.
A.D. Allen	" " " " "
R.A. Fairbridge	" " " " "
R. Passmore	" " " " "
D. Probert	" " " " "
C.C. Saunders	" " " " "
P. Whincup	" " " " "
B.S. Sadler	Engineer - Public Works Department.

VICTORIA (5)

C.R. Lawrance	Geologist - Geological Survey, Department of Mines.
B.R. Thompson	" " " " "
D.T. Currey	" State Rivers & Water Supply Commission
S.F. Bridley	" " " " "
L.F. Bartels	Agricultural Scientist, Department of Agriculture.

NEW SOUTH WALES (4)

E.R. Smith*	Engineer, Water Conservation & Irrigation Commission.
W.A. Williamson*	Geologist " " " "
G.F. Willson	" " " " "
M.G. Chatfield*	Chemist, Department of Agriculture.

QUEENSLAND (4)

H.V. MacDonald	Geologist, Irrigation & Water Supply Commission
P.S. Whitmee	" " " "
J.W. Laycock	" Geological Survey, Department of Mines.
A.C. Lumsden	" " " "

NORTHERN TERRITORY (2)

W.H. Morton	Geologist, Water Resources Branch, Northern Territory Administration.
D. Woolley	" Mines Branch, " "

AUSTRALIAN CAPITAL TERRITORY (7)

G.M. Burton	Geologist, Bureau of Mineral Resources.
D.A. White	" " " "
L. Kevi	Geophysicist " " "
P.E. Mann*	" " " "
J.S. Milsom	" " " "
E.J. Polak*	" " " "
W.A. Wiebenga*	" " " "

FOREIGN (1)

T. Sundararamayya Geologist, Department of Industries & Commerce,
Madras, India.
(United Nations Fellow)