Engineering Heritage Australia

National Engineering Oral History Program
Biographical Notes

David B Sugden (1920-)

Mechanical Engineer

Birth & Family: Born 31 January 1920, Perth. One brother. Father born in England, migrated to WA, initially as farmer. Volunteered for war service in World War I, was wounded in Gallipoli, and arm amputated. Skilled mechanic. Married young woman from SA.

Schooling: Attended State Primary School in York (WA), to Junior Certificate, followed by two years as boarder at Guildford Grammar School and private study to obtain Leaving Certificate, including subjects required to study Engineering at University. Engineering Cadetship with the Public Works Department, WA, 1938.

Qualifications: Bachelor of Engineering, University of WA, 1942

Memberships: FIEAust.

Awards: Prince Philip Design Merit Award, 1973
Tasmania Division Award of Merit, 1985
Allen Neyland Memorial Award, Aust. Underground Construction and Tunnelling Assn, 1996
Order of Australia, 2002
AGM Michell Medal, 2003

Work History: Became Assistant Engineer with PWD, WA in 1942. Performed mechanical services for Government Laboratories. Produced specifications for automotive gas producers. Inspected designs and drawings for same. Manager, Central Plant and Automotive Workshops.

Joined Hydro Electric Commission of Tasmania as Assistant Plant Engineer in 1947. Plant Engineer, 1949.

Introduced new system of plant control, whereby technical, maintenance and cost control rested with Plant Section, while operational control rested with individual projects. Development of a spare parts system and a workshop control system. Development of hire system to distribute costs fairly over projects.

Development of a heavy transport section required to transport heavy gates, valves and transformers equipment for power schemes. Design and commissioning of 120 ton capacity, self-balancing transporter.

Design and development of specialised equipment required for construction programme, including a three-tower cableway, a pipe spinning factory, tunnel jumbos and rail systems, rubber-tyred tunnelling equipment, head tower and cage for vertical access to Poatina power station.

Operation of operator training schemes and provision of field services.

Transportation of prefabricated housing to isolated construction sites.

Appointments to Science Centre, CSIRO State Committee, Advisory Committee to the Minister for Industry, Planning Committee

Kingsborough and Technical Advisory Sub-Committee to Southern Metropolitan Planning Authority.

In 1967, commenced private practice as Consulting Engineer, on instigation of Robbins Co., manufacturer of tunnel boring machines, of Seattle, USA.

Practice in Australia mainly concerned with underground construction, with Robbins as major client. Associated with all major tunnels in Australia, advising owners, contractors, or Robbins on design of suitable machine, or modification of existing one. This involved site inspections, including assessment of geology and estimates of machine performance, including cutter wear.

Development of proposals for specialised TBMs, like Melbourne Eastern trunk sewer, Melbourne Underground Rail loop, decline machine for Coalcliff mine, Sydney outfall sewers and risers.

Other Australian assignments: investigation of ANU Homopolar generator, Forest Products woodchip mill foundation failure at Triabunna, hydraulic drive and berthing facility for Risdon ferry, fishing boat hydraulics.

Private ventures: Design and development of hydraulic transmission system. Design and development of a new type ships' propeller, design and development of the first major modification in some 400 years to the violin class of musical instruments.

Served on Australian University Technical Association Committee attended tunnelling conferences and mining industry expositions in USA, London tunnelling conferences, served on Musica Viva Committee, Tasmanian Design Council. Foundation Member of Kingston Rotary (Honorary Member).

Overseas consulting work mostly for Robbins, including Channel tunnels, Kirchoff, White Pine long wall system, La Coche. USAF rapid exit machine, US Atomic waste disposal, TBM computer program predicting performance, design software.

Mining innovations: Mobile miner, hydraulic raise drills, hydraulic drive box hole drills, mini-borer, blind shaft sinker, cutter design studies, water jet assisted rock cutting.

Prepared by Dick van der Molen, August 2003 from oral history interview conducted on 10 and 18 March 2003.