

In Memoriam DrJaapBruijn

It is with sadness that the sugar cane community in South Africa and internationally has learned of the passing away of Dr. Jaap Bruijn on 29 June 2020 in France. Dr. Bruijn was a remarkable sugar technologist who has left his imprint on the South African sugar industry and beyond. ISSCT would like to convey its expressions of sympathy to Dr. Bruijn's family.

Dr Bruijn was well known to the industry in the 1960s, 1970s and 1980s, being an active researcher at the Sugar Milling Research Institute (SMRI) and later Director, and familiar to sugar technologists through his contributions in multiple areas of sugar technology.

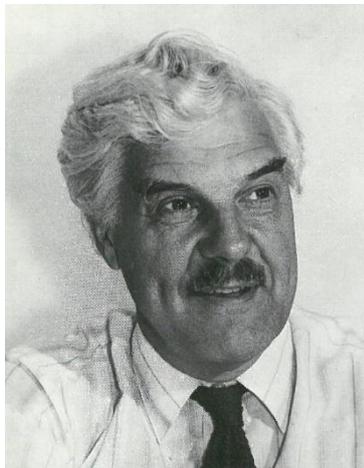


Figure 1. Dr Jaap Bruijn

Jaap Bruijn started at the SMRI on 12 December 1957 as a microbiologist (although a chemical engineer by training) under the first SMRI Director, Dr Kees Douwes Dekker, and subsequently worked under directors Dr Milo Matic and then Dr Bernard Ravnö, under who he served as Deputy Director. After Dr Ravnö resigned to move to the industry, Dr Bruijn was appointed as Director on 1 November 1986, a position that he held until his retirement on 31 December 1987, when he was succeeded by Dr Brian Purchase. During his time at the SMRI, he was awarded a PhD for his study "Changes in the chemical composition of sugar cane (*Saccharum officinarum*) during storage", involving the characterisation of gums and polysaccharides in sugarcane, still an active research topic at the SMRI.

While at the SMRI, Jaap applied his active mind to a wide range of topics covering all aspects of the sugar industry and was the proverbial master of most trades. As well as being a good engineer, he had an excellent knowledge of science and was very practically minded, being able to manufacture all kinds of equipment and devices, as is evident from some of his achievements listed below. At the SMRI there was a saying: "When in doubt ask Jaap". It was a tribute to a person who was always willing to humbly share his vast knowledge.

His research projects and consulting work to the factories over the years ranged very widely. A quick search of the 56 technical reports he wrote while at the SMRI illustrated how broad his interests were in the field of sugar manufacture, including the composition of the cane plant, cane deterioration and the discovery of sarkaran in cane, bagasse storage, starch hydrolysis, chemical analysis techniques, molasses exhaustion, refinery operations, the caking behaviour of refined sugar and effluent treatment.

He was intimately involved with the pioneering work at the Union Co-op mill leading to the development of the diffusion process in the South African industry. He and a team from the SMRI ran some sugarcane through the Union Co-op wattle extraction plant to see if they could make sugar. Based on the success of this project, Union Co-op proceeded to erect a sugar mill alongside their wattle processing plant to start making sugar.

Jaap is also remembered for manufacturing gas chromatography (GC) columns in the SMRI workshop at a time when GC for sugar analysis was in its infancy. The cost of purchasing proprietary columns from the chemical instrument companies was very high, so Jaap designed a small electrically heated furnace through which he could slowly draw a length of glass tubing (using a small geared motor) so that it would be softened as it passed through the furnace and was then drawn to a fine capillary and wound onto a cylindrical former to cool. In this way he could pack many metres of capillary column into a fairly small package. He and the resident GC fundi (Kevin Schäffler) worked out how to pack the columns with the necessary components to enable GC analysis of sugars in the 70s and 80s. This

ultimately led to the South African industry moving from a pol-based to a sucrose-based cane payment system in the 1981 season.

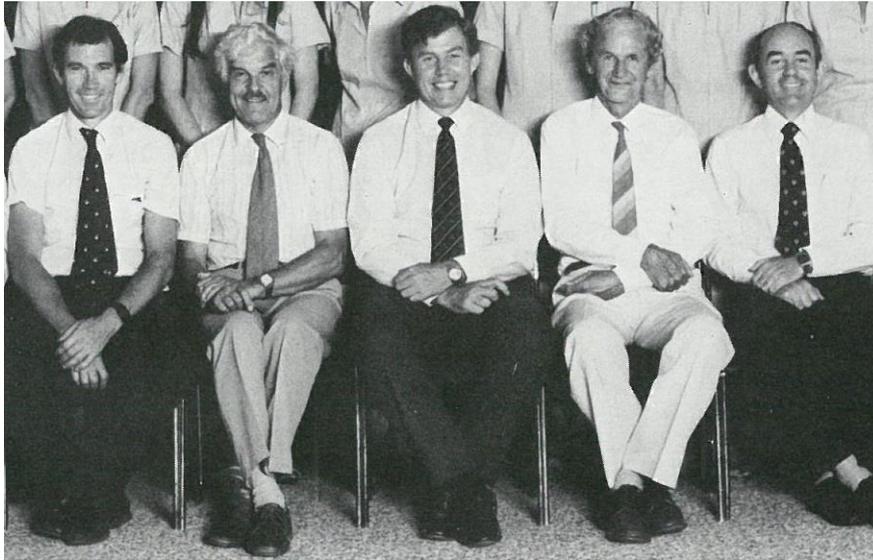


Figure 2. Portion of SMRI staff photo from February 1985, showing, from left to right, Kevin Schöffler, Dr Jaap Bruijn, Dr Bernard Ravnö, Neville Allan and Dr Brian Purchase

In about 1981 he took Dr Purchase on a consulting visit to the effluent plant at Umfolozi, and then asked if he would take over his role in the area of research and consulting on factory effluents, such as the use of trickling filters for sugar effluents. His initiation and encouragement enabled Dr Purchase to fill that role for almost 40 years (he still lectures on the subject for SMRI courses).

Dr Bruijn authored or co-authored ten papers at the annual congress of the South African Sugar Technologists' Association (SASTA) and was awarded the SASTA Talbot Crosbie factory prize (for the best paper in the Factory Section of Congress) in 1968 for his work on Enzymatic Hydrolysis of Starch, which was co-authored by RP Jennings of Tongaat Hulett.

Dr Ravnö recalls that Jaap was also a very accomplished carpenter and clock maker and he won a National Award for building a 13th or 14th century clock using only wood and twine – even the gears were wooden and the twine was for a rotating pendulum. The clock sat in his lounge and it worked, but the “pendulum” needed to be “re-spun” several times a day. Dr Purchase recalls that visits to Jaap's home were always a joy, with warm hospitality from the whole family and inevitably some fun and games. Tsoelbak (Dutch shuffleboard) was a game that he particularly enjoyed. His home workshop was enviable and was the source of much of his furniture and games.

Although originally from Holland, Dr Bruijn retired to a chateau in the south of France with his wife Stannie, who passed away in August 2019. Our sincere condolences to his family.



Figure 3. Dr Jaap Buijn (left) with his wife, Mrs Stannie Buijn, and SMRI Board Chairman, Dr Cees van der Pol (centre), in December 1982

Compiled by Steve Davis, with acknowledgements to Drs Bernard Ravnö and Brian Purchase for providing some of the interesting information and anecdotes. 2 July 2020.