



Obituary: Dr Max Sterne

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This volume of the journal is dedicated to Max Sterne in recognition of his contributions to veterinary bacteriology

The death of Dr Max Sterne on 26 February, 1997 in Hampshire, UK, is a sad loss to the scientific world in general, and more specifically to the veterinary fraternity and his colleagues at Onderstepoort. He was born in 1905 in Trieste, of Austrian parents who emigrated to South Africa when he was 4 years old. He grew up in Durban, loved the outdoor life and as a young man excelled in boxing, swimming and athletics. Among his accomplishments were the South African Universities Welterweight Championship, the South African 100 yards Freestyle Championship and the South African Athletics 100 yards Championship.

Max studied Veterinary Science at the University of Pretoria (then Transvaal University College) and graduated from Onderstepoort in 1928. He then spent some two years as manager of a cattle ranch in the Belgian Congo before returning to South Africa. As a student he was known as an individualist and a "loner" and early on he set his heart on a career in research. Unable to obtain such a position at Onderstepoort on his return, he joined the government service and was posted to the Allerton laboratory in Natal to assist with the East Coast fever eradication campaign. After some years of mainly examining bloodsmears for ECF, during which time he carried out bacteriological experiments after hours in his garage and in his wife's kitchen and even published some papers on his "private" research, he succeeded in being appointed to the staff of the Onderstepoort Veterinary Research Institute in 1934. As assistant in the bacteriological laboratory of Prof. E.M. Robinson, he was given the task of producing the Pasteur anthrax vaccine. It was an unpleasant and unpopular responsibility because of the many deficiencies of the vaccine, but Sterne set his mind to improving the vaccine and soon obtained astounding results. His first reports to his colleagues of the isolation of an apathogenic anthrax bacillus without the characteristic "capsule" was met with scepticism and derision.

Everybody thought that he was dealing with a contaminant. He persisted, however, and soon proved that his strain protected guinea pigs against infection with virulent organisms. An experimental vaccine produced solid immunity in cattle and soon the "Sterne" spore vaccine replaced all other anthrax vaccines across the world. A measure of its success is the fact that this vaccine is still widely used today, 55 years after its discovery.

Sterne was also responsible for another development which had an enormous impact on production technology of bacterial vaccines. Studying the production of toxins by anaerobic bacteria, especially clostridial toxins, he observed that substances in the meat broth used to grow these organisms, as well as metabolic products formed during the process, inhibited toxin production. In order to remove these inhibitors he developed a technique for the cultivation of bacteria in dialysis bags immersed in culture broth. Using this technique he could produce toxins for use as vaccines, at concentrations manyfold higher than hitherto possible. This technique was used for the production of the first really successful vaccine against botulism in cattle (lamsiekte), and is still one of the most successful procedures used for the small-scale production of clostridial vaccines.

In 1947 Max Sterne obtained a Diploma in Bacteriology at the London School of Hygiene and Tropical Medicine and in 1951 moved to the UK with his wife, Tikvah Alper, an accomplished scientist in her own right. He joined the Veterinary Department of the Wellcome Research Laboratories where he continued his research on anthrax and botulism. His research on and development of fermenter technology for the production of clostridial organisms *inter alia* resulted in the highly successful Wellcome multicomponent clostridial vaccines, which remained the market leader for many years.

Max Sterne was a brilliant scientist but remained a modest man who did not seek acknowledgement. He will always be remembered, though, as the originator of the "Sterne" anthrax vaccine.