

## Concise History of the Origin and Establishment of The Onderstepoort Veterinary Research Institute



The histories of the veterinary laboratories mentioned below and the Veterinary Faculty at Onderstepoort are inextricably linked to that of Sir Arnold Theiler, the “Father of Veterinary Research” in South Africa

### ***Daspoort & Onderstepoort laboratories***

#### ***Background***

Before the outbreak of rinderpest in South Africa in 1896, the only two bacteriological laboratories investigating the more important diseases affecting livestock were situated at Grahamstown in the Cape Colony and Allerton in the Natal Colony.

The advance of rinderpest into South Africa from the north was of major concern to the government of the Zuid-Afrikaansche Republiek (ZAR). This led to the appointment of Arnold Theiler (a Swiss veterinarian) as ‘gouvernements-veearts’ (government veterinary surgeon) in 1896 after the outbreak of rinderpest in April of the same year in the Marico district of the ZAR. With Watkins-Pitchford of the Natal Colony, a serum-virus type vaccine was soon developed against the disease. Recalled to Pretoria, Theiler joined forces with two researchers from France, establishing a laboratory in a roadside inn, Eberhard’s Hotel, at Waterval, north of Pretoria, where further research on the serum-virus vaccine was carried out. Robert Koch’s biologically unstable bile-vaccine was also used by the ZAR Government but later the Theiler and Watkins-Pitchford vaccine was widely applied



Ox dying from Rinderpest while still in the traces



Daspoort Bacteriological Institute and Laboratory (left) and Rinderpest Station (right) c.1906

#### ***Daspoort Laboratory***

In 1898 Theiler received funds to establish a laboratory on the outskirts of Pretoria, converting the existing Daspoort disinfection station for hides and skins into a vaccine factory. Apart from the rinderpest vaccine, vaccines against blackquarter and lungsickness for cattle and smallpox for humans were also produced here. In October 1899 the Anglo-Boer War started and at the end of the year the vaccine factory was converted into a research institute. Theiler was obliged to join the war-front in service of the ZAR Army’s Staatsartellerie and left the Institute under the control of two junior researchers.

In 1901, after the occupation of Pretoria by British troops, Theiler was appointed as Bacteriologist of the Transvaal and posted back to his Daspoort Bacteriological Institute and Laboratory. Most of the important diseases affecting livestock, such as redwater, blackquarter, pleuro-pneumonia (lungsickness), horsesickness, glanders, rinderpest and East Coast fever were studied and vaccines against smallpox, diphtheria, lungsickness and glanders also produced. On 31 May 1902 the treaty of Vereeniging, ending the War, was signed and the Institute came under the control of the Veterinary Division of the new Department of Agriculture. Theiler was placed in charge of the research institute as well as an adjacent rinderpest station. A year later the country was declared free of rinderpest and only small amounts of vaccine were produced for emergencies. Daspoort expanded with the erection of new stables and sheds and by 1905 it was not only a vaccine factory and research institute, but also a training centre for farmers, veterinarians and 'stock inspectors'. The expansion of the Daspoort facility, inadequate staff accommodation, limited and an apparently contaminated water supply and general unsanitary conditions as a result of seepage from huge numbers of disposed animal post-mortem remains, *inter alia* led to annual typhoid outbreaks from 1902 – 1906.

### **The Onderstepoort Veterinary Research Laboratory**

This fostered the decision to build a dedicated, custom-designed laboratory at a better site. The new laboratory, described as a "Palace of Extravagance" by some politicians and inaugurated in 1908, was erected on the farm De Onderstepoort. This soon led to use of the name Onderstepoort for the Institute currently known as the ARC-Onderstepoort Veterinary Institute. By 1926 several million doses of anthrax, bluetongue, blackquarter and horsesickness vaccine and wireworm remedy were produced here, and various diseases such as 'gouwziekte', sweating-sickness, infectious anaemia, bovine contagious abortion and 'snotziekte', as well as disease conditions caused by external and internal parasites had been researched and the extensive results published in the Director's Reports.



1908

"Old Main Building", ARC- Onderstepoort Veterinary Institute



1926

(Originally known as The Bacteriological or Veterinary Research Laboratory at De Onderstepoort)

The main reasons for the establishment of the so-called "Palace of Extravagance" on the farm De Onderstepoort was that the Apies River ran through it, providing water, fertile arable land and good grazing. This was augmented by close proximity to the railway network that provided efficient transport for building materials and animals to the laboratory. There was also reasonably satisfactory access to Pretoria by animal transport. The site, north of the Magaliesberg, in a semitropical climate with bushveld vegetation, also allowed experimentation on some plant toxicoses and diseases such as horsesickness, which were particularly prevalent in the area.

Some 40 acres of the farm was used for the erection of the laboratory, dog kennels, pig sties, stables (*inter alia*: for research, reception of livestock and isolation purposes), a small-animal house, an incinerator, forage stores, a workshop for a farrier and saddler, sheds for transport and farm implements, kraals, and camps. The initial cost of the buildings was, for that time, a staggering £80 000 (approximately ZAR 100 million). This included a power station that supplied the entire facility with electricity, hot water, gas and steam; ice continued to be transported out to Onderstepoort from Pretoria. A local bore-hole with an electric pump supplied the Institute with running water. It also had the unprecedented convenience of boasting telephonic communication with Pretoria and elsewhere.



Interior of the Anatomy (Post Mortem) Hall, 1908



Histo-pathology laboratory, c. 1926

The plans for the Neo Queen Anne style main building were drawn up by the Public Works architect Patrick Eagle. There were several laboratories each fitted out for a specific line of research such as bacteriology, zoology, chemistry, pathology and serum production. Hot and cold water, gas, steam and electric light were laid on throughout the building and fume cupboards, incubators, vacuum pumps and small centrifuges were provided where required.

To support the laboratories, provision was made for sterilizing rooms with autoclaves, a still room for the production of distilled water, a centrifuge room, a micro-photographic room, post mortem hall, operating theatre and several offices. The second floor consisted mainly of a small museum, lecture hall and laboratory for students, even though there were no approved plans for training veterinary students at the time. Official veterinary education only started at Onderstepoort in 1920.

Associated with the laboratory were lands sufficiently large to produce green fodder for the experimental animals (9400 tons of green fodder were reaped from the lands in 1926). The adjoining farm, Kaalplaas, was acquired for free-ranging reserve stock and by 1926 up to 1600 - 1700 animals (sheep, goats, cattle, horses and mules) were housed at Onderstepoort.

*Research carried out at Onderstepoort during this period included:*

Protozoan diseases: redwater of cattle, biliary fever of horses, East Coast fever, gallsickness, theileriosis, spirochaetosis, heartwater and trypanosomiasis of cattle.

Viral diseases: horsesickness, rinderpest, bluetongue of sheep, pleuro-pneumonia of cattle, snotsiekte of cattle, infectious anaemia of horses and vuilbek of sheep.

Toxicology: dunsiekte and jaagsiekte of horses, geeldikkop and gousiekte of sheep, vermeersiekte and several other plant toxicoses.

Helminthology: safe dipping of sheep with Cooper's Dip (arsenic), safe dosing of sheep with copper sulphate, treatment of wireworm and other nematode infections.

Pathology: diseases, poisonings, helminthology and bone diseases (about 800 post mortem examinations were performed annually).

The staff consisted of a director, two sub-directors and 22 research officers. The administration staff consisted of a superintendent, two clerical administrators, Mr FT Mauchle who was in charge of the library and stock records, and a typist. The photographer, Theo Meyer, was also in charge of the maintenance of microscopes and other 'delicate' apparatus.



Traugott Mauchle, Clerk (c.1913) who worked with Dr A Theiler from the beginning at Daspoort until Theiler's retirement in 1927



Onderstepoort Staff, 1913. Second row, centre, Dr Dr W Robertson who acted as Director while the Theiler family was on holiday in Europe

*Some of the researchers at Onderstepoort before World War One included:*

Government Veterinary Bacteriologist: Dr A Theiler.

Assistant Government Veterinary Bacteriologists: Drs J Walker and W Frei

Zoologist: Dr LW Gouch, replaced by Dr WH Andrews when he became ill (employed first as assistant veterinary bacteriologist in 1910 and later as professor in physiology).

Pathologists: Dr KF Meyer, who came with Theiler from Daspoort and worked at Onderstepoort until 1910 and Dr D Kehoe.

Helminthologist: Dr F Veglia, who came from Italy.

Entomologist: GAH Bedford.

Researcher at Armoedsvlakte: Dr PR Viljoen.

Researcher: Dr EM Robinson.

Biochemist: Dr HH Green.

Housing for married researchers was built at the same time as the laboratory. Each house was well screened with mosquito netting as the locality was rife with mosquitoes. The residential area was laid out as a garden city, each house having a large garden. Although the laboratory was equipped with electricity, candles and paraffin lamps had to be used in houses. The unmarried staff had to stay in a corrugated-iron 'hut'. A hostel for students, although not used for that purpose for 12 years, was built at the same time.



Staff house (Married quarters), c. 1908



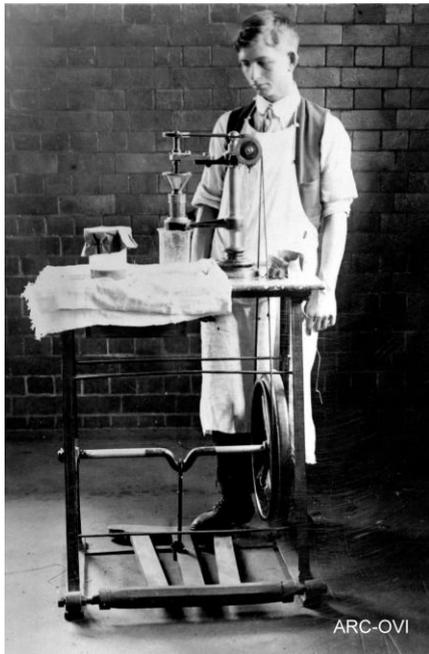
Reading room, Library, 1932

An administration block was built in 1913 and in 1917 a new post mortem hall was erected that was enlarged in 1923 to serve as the Pathology building. The Surgery building, later known as the Hospital, for teaching surgery and medicine in the new veterinary faculty, founded in 1920, was also completed in 1923. The library with its beautiful reading room, funded by the Empire Marketing Board, was inaugurated in 1932.

A Biochemistry wing was added to the Main Building in 1921. Further additions and upgrades up to 1926 were done at a total cost of roughly R 900 000. Theiler decided to retire at the end of 1917 and in 1918 Dr RE Montgomery became Director of Onderstepoort. Theiler was later recalled to Onderstepoort in 1920 as Director of Veterinary Research and Dean of the Faculty of Veterinary Science. In 1927 he was succeeded by Dr PJ du Toit as Director of Veterinary Services in the Department of Veterinary Services and Animal Husbandry.

By 1926 -

- 2 million doses of anthrax vaccine were issued free of charge annually
- Bluetongue vaccine: 750 000 to 2.5 million doses per year
- Blackquarter vaccine: 750 000 doses per year (500 doses in 1905)
- Wireworm remedy: some 7 million doses per year
- Horsickness vaccine to immunise mules: 3000- 4000 per annum
- Redwater, gallsickness and contagious abortion vaccines
- Mallein and tuberculin for diagnostic use in cases of glanders and tuberculosis.



Bottling vaccines, 1908



Vaccines boxed and ready to be sent to clients, 1924

#### Associated Research Stations

1. At Armoedsvlakte, near Vryburg in the then northern Cape Province, special investigation was done into lamsiekte (botulism). In 1912 the McKee brothers who owned the farm offered its use, free of charge, as a government experimental station. The Government eventually bought the farm in September 1916. From 1919 – 1920 the staff consisted of two research officers, one scientific assistant, one clerical officer, two laboratory assistants, one stockyard assistant and four yard foremen and animal attendants. Other research carried out on the station included *inter alia*: methods of stock raising; investigations into climate; pasture and feeding experiments; medication and general treatment of cattle to attain maximum production. Veld plants in the area were also studied and analysed for their phosphate content.



Armoedsvlakte farm, c.1916



Dosing cattle with phosphorus at Armoedsvlakte

2. One researcher studied intestinal parasites of sheep and toxic plants at a government experimental station at Nootgedacht near Ermelo.
3. Bestersput Experimental Station near Immigrant in the Free State was utilised largely as a breeding and reserve grazing farm, but tape worms in sheep were also studied there.

*Sources:*

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**Compiled by Heloise Heyne - January 2014**

[\[LINK – Storyline: Sir Arnold Theiler\]](#)

[\[LINK – South African National Veterinary Museum\]](#)



Mobile laboratory, c. 1900