

DASPOORT AND THE 'RECONSTRUCTION' 1902-1903

1 PEACE BROUGHT no surcease. The appalling forces unleashed by War and Nature continued unabated. Fred Smith, soon to become Principal Veterinary Officer of the Army, calculated that 326,073 horses and 51,399 mules had died during the War and continued dying from numerous diseases. Rinderpest maintained its slaughter of cattle. Redwater, Lung Sickness and other murrains remained rampant. Human diseases proliferated equally.

2 'The whole country in which fighting has taken place is poisoned', the 'Ladies Commission' reported, 'Horses, mules and oxen are killed during battle and their carcasses are left to putrefy, poisoning earth, air and water. Thousands of other beasts are infected; rinderpest, horse sickness and every kind of disease claim their victims; the sick beasts crawl to the nearest stream and die on its brink and the water supplies of a whole country become tainted; or they die in the open country, the dust returns to the earth and the dust storms for which South Africa is famous scatter disease-laden particles over the length and breadth of the land . . . But this is not the only way in which War swells the death rate among non-combatants. Ordinary industries such as the production of foodstuffs and the rearing of cattle are brought to a standstill all over the theatre of War with the consequence that in some districts, no fresh meat, no fresh milk and no fruit or vegetables are obtainable for love or money. Over nearly the whole extent of the Orange River Colony and the Transvaal, fresh meat is poor, thin and comparatively innutritious. Sheep sometimes weighed as little as 11 lbs and were considered really good if they weighed 25 lbs. Fresh vegetables were at famine prices: Potatoes 3d. each, cabbages 5s. each, eggs 7s.6d. a dozen were not uncommon prices. Fresh milk was so scarce that the whole supply had to be commandeered for the hospitals and sometimes there was none even for the hospitals.'

3 A week after the signing of the Treaty, a Military Thanksgiving Service for the Restoration of Peace was held in Pretoria. As a man of stature among the authorities, Dr Theiler and his wife were allocated platform seats for the lengthy proceedings. It were better to have held a Day of Humiliation for the wreckage that had been wrought. On the 21st June 1902, Theiler attended the inauguration in the Raadzaal of Lord Milner (who was careful not to sit in Kruger's great chair) as Governor of the Transvaal Crown Colony, the nominated Executive Council then taking the oath of office in his presence. (Milner was thereupon advanced by the new King on the advice of the Prime Minister, Lord Salisbury, to Viscount Milner of St James - his lodgings in London - and the Cape.) On the 26th, a service celebrating the Coronation of King Edward VIIth was held in Church Square which the Theilers also attended and, due deference having been paid to ceremony, 'reconstruction' began in earnest.

7 F. B. Smith, urgently and zealously compiling his agricultural report for Milner, had been to see Theiler as Daspoort, inspected his laboratory and assimilated the significance of his work. Smith was peculiarly qualified to do so. A born bureaucrat of unprepossessing mien with a falsetto voice belying a modish heavy russet moustache sprouting from his nostrils, he had graduated from Downing College, Cambridge, then renowned for promoting scientific agriculture. A year younger than Theiler, he came from a farming family and by 1895, had become vice-principal of the South Eastern Agricultural College at Wye in Kent where he was Professor of Agriculture and Lecturer in Rural Economics. In 1900 to improve his knowledge of agricultural organisation, he had extensively toured Canada and the United States, recording his observations in a published work 'Agriculture in the New World' which sufficiently impressed

competent authorities to recommend him to the Colonial Office. He combined an exceptionally orderly mind with remarkable drive and vision which ideally fitted him for a virgin field. At no time had the Transvaal owned even the rudiments of a Department of Agriculture. It was the more surprising that he should find there a highly sophisticated bacteriological laboratory specialising in sera-therapeutics for animal diseases under the aegis of the Medical Officer of Health. Continuing his rapid survey, Smith noted it particularly.

8 Theiler was now fully reaping the benefit of the facilities ironically conferred on him by the Z.A.R. Government. The long-lost modern microscopes had revealed new expanses of the unseen world and *Trypanosoma Theileri* which Bruce had saluted, was only one example of a piroplasmic life that now continuously claimed his attention. Alfred, pursuing his zoological studies at Zurich, had acquired his first microscope on the advice of his Botany professor, Carl Schröter. Arnold offered him mature counsel on its use, begging him never to look through it without recording what he had seen. 'But your professors will tell you', he wrote, 'I myself have learnt about microscopic work by myself and had no one who could take me by the hand.' It was indeed phenomenal that a scientific crony of men of the stature of Nocard, Laveran, Bruce, Lignières and other world-wide investigators should be a one-handed self-taught bacteriologist working in a bog-bound tin-shanty. (He now asked Alfred to send him a new artificial hand according to the pattern left at Frick in 1899 and later, a gross of the black leather glove that covered it.)

9 The basic urgent inter-dependent problems were what the British called 'repatriation' or putting the people back on the land and 'restocking'. Theiler was essential to both. It had painfully been realised that the original idea of importing pedigree stock must fail. Apart from breeding services in rarified conditions, they quickly died from local diseases. Hutcheon had bought stud horses and cattle overseas and now Borthwick was sent to Spain to buy Catalan jacks to breed mules; but the idea of replacing local herds with imported pedigree animals had perforce to be abandoned except in the case of cattle from countries with similar conditions such as East Africa, Madagascar, Australia, Texas and the Argentine. The Imperial Government immediately initiated such a policy and was rewarded by a notable increase in Redwater, killing tens of thousands of cattle, and the appearance of mysterious new diseases.

10 Since his arrival in South Africa, Theiler had continuously studied Redwater. Now it was possible for him to see its causative piroplasma known to be due to the bite of ticks. Without benefit of an entomologist, he had long been examining ticks. Edington too had for years been investigating Redwater, particularly in its incidence after inoculation against Rinderpest and its association with other cattle diseases in the Eastern Cape. Early in 1902, a peculiar form of the disease afflicted Rhodesia. C. V. Gray telegraphed Edington for advice and later sent smears. They contributed little to his understanding. Gray then appealed to the Cape Government and in April 1902, Edington's deputy W. Robertson was sent to Salisbury to assist in the elusive diagnosis. With memories of Rinderpest, Natal became alarmed and early in June, sent Watkins-Pitchford to Rhodesia to examine the situation and to contribute his considerable experience to the problem. In August, Hutcheon arrived in Salisbury from the Cape to add his advice to the consortium of experts trying to deal with a disease run riot and a mortality of 90%. Rhodesia was being depopulated of cattle and a danger worse than Rinderpest now menaced the whole of Southern Africa. In September, the Cape Government ordered Edington (who had been investigating cattle diseases in Mauritius) to Bulawayo and, pursuant on one of his private theories, he asserted that the fatal epidemic was a combination of Red Water and Veld Sickness. 14 The Chartered Company then lost its head and sent for Koch (who had investigated Redwater at Dar-es-Salaam in 1897/98 and had identified the round- or oval-shaped bacillus, *piroplasma bigeminum* which Smith and Kilborne had shown in 1892 to be the cause of the disease). The 15

Company finally induced its colleague Governments to share the cost. A counsel of despair was fully justifiable. Rhodesia was already ruined.

16 Theiler himself had gone there to join the concert of experts. From the first days of Peace, his time had been completely occupied. F. B. Smith had properly demanded from Turner an account of the work of his 'bacteriologist' and Theiler has spent many days compiling what he called his First Annual Report. It was, he confided to Alfred to whom he now hardly had time to write, over 250 pages long. Under Turner, his work had boundlessly proliferated and he badly needed assistance, looking anxiously at Alfred and proffering advice on all hands, particularly on his student friends. Struck by his own 'social position', Arnold urged Alfred to remember that 'in every way – in his speech, his clothes, his manner and way of eating – one recognises the gentleman'. As the new calamity enveloped his time and attention, it was almost the last of his homilies.

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18 The Rinderpest bogy had supposedly reappeared in the Eastern Transvaal where the Administration was now sending 'repatriation cattle' to assist in the resumption of stock farming in districts previously densely populated with cattle. On the 12th June 1902, a bottle of 'Rinderpest blood' was sent from the area; but upon examination, Theiler found that the animal had in fact been afflicted with what was then thought to be 'a virulent form of Redwater'. Ten days later, oxen required for his Rinderpest-serum Station were purchased at Nelspruit in the same area and sent to Daspoort. Again he found them infected with 'Redwater'. Early in July, the same diagnosis obtained for a further consignment of oxen from the Elands River Valley whence, as from other parts of the Eastern Transvaal, reports now reached him that a mysterious and fatal disease had taken the place of Rinderpest.

19 Watkins-Pitchford was now confabulating with Gray and Robertson in Rhodesia; but Theiler took other counsel at the high level he had attained. He sent smears to Laveran in Paris and to Ligni eres who had made a special study of Redwater (tristezza) in the Argentine. They could find nothing new and confirmed Redwater but noted that its bacillus could take several forms with different effects. While the letters went forth and back, the presence of the new disease among repatriation cattle was reported in the Northern Transvaal. Turner and Theiler took train to Pietersburg early in August and conducted postmortems on oxen at Spelonken, 'the presence of the disease being clearly proved'. Hardly were they home when they entrained again for the Eastern Transvaal following advice from Captain J. Irvine Smith, a military veterinarian attached to the South African Constabulary who, sent to investigate Rinderpest in repatriation cattle at Komati Poort on the Mocambique border, had reported a different disease. It had been endemic in the area since May. Theiler made over 20 postmortems with Turner and Irvine Smith and, in his scrupulous manner, a number of microscopic slides. He was now in no doubt that the rapidly fatal disease was a virulent form of Redwater, its familiar pirosona bigeminum of endoglobular or round or oval form now being bacilliform or rod-shaped.

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23 Hankering after the sea and finding good excuse to travel the few miles from Komati Poort to Delagoa Bay where large numbers of repatriation cattle were landed from Australia and elsewhere, Theiler, accompanied by Irvine Smith, visited Louren o Marques and made the acquaintance of Dr Jose Rodriguez de Amalal Leal, Medical Officer of Health. Redwater concerned the Portuguese authorities as much as Rinderpest had done; but Theiler was unfavourably impressed by their lethargy. Emma had hoped that his duties would allow of some diversion. 'The days are too short for him', she wrote Alfred, 'although he gets up very early and at night, studies until 10 o'clock. I am glad that he is again away for a little as the eternal sitting over a microscope or books cannot be good for his stamina.' Arnold did indeed return refreshed but no one thought of Emma. During her ten years in Africa, she had not had a single holiday. For

six, she had been confined to the outskirts of Pretoria, three under strict Martial Law which still in part maintained. Her endurance was saintly.

For Theiler, it was work that was holy. As he pursued his investigation of the new disease, F. B. Smith submitted his Report and recommendations to Milner. They advocated urgently the immediate issue of a 'Handbook for Settlers' and, as soon as possible, a quarterly *Transvaal Agricultural Journal*. Since diseases of cattle were obstructing the regeneration of the country, Theiler must be a main contributor. Already acting as Smith's 'Veterinary Adviser', he wrote simple straightforward 'Veterinary Notes' to help English farmers in a strange country. They dealt with the main diseases and there was a glossary of Dutch terms. He was specially thanked by the editor (A. R. E. Burton). The Handbook was rushed out on the 21st August 1902 under the imprint of 'the Transvaal Department of Agriculture to assist Land Settlement in the Transvaal' - a remarkable feat of organisation by Smith who had been only three months in the country, most spent travelling.

24 Theiler then had to write three articles - 'South African Horse Sickness', 'Glanders or
25 Farcy' and 'Rhodesian Cattle Disease and Rabies' for the *Transvaal Agricultural Journal* whose
26 first issue was courageously planned for October. He wrote the first two and then was off again at the behest of the alarmed Stock Diseases Commission which he had assisted in drafting regulations for the control of the new disease. (They were enacted by the Transvaal Legislative Council on the 22nd August and approved by Milner who was then compelled to issue yet another Proclamation relating to Rinderpest, now lurking in the Rustenburg district.) Hutcheon was already in Rhodesia. Edington, immediately after his return from Mauritius, reached Bulawayo with M. Deixonne (a subordinate of Nocard at the Alfort Veterinary College who had been with him in Mauritius) on the 13th September. Theiler arrived soon after. Neither mentioned the other in their reports.

27 The Chartered Company could never be blamed for dilatoriness. The history of Rhodesia had been one of continuous calamity which Rhodes' men had bravely and imaginatively countered. By the time Theiler reached Bulawayo, Pasteur's nephew Dr A. Loir had come to Salisbury from the parent Paris Institute to establish a branch at the instigation of Dr Andrew Fleming, to combat with inoculation an outbreak of Rabies among domestic dogs. Theiler was
28 alarmed at the prospect of its afflicting wild dogs and jackals which might cross the Limpopo
29 and infect the whole of South Africa. Edington had dealt with an outbreak in the Eastern Cape in 1894. Against the unseen world, Man barely held his own.

30 In his investigation at Bulawayo, openhandedly assisted in transport, veterinary help and other facilities by the Administration, Theiler confirmed the observations of C. E. Gray, W. Robertson and Hutcheon - the disease was a peculiar form of non-contagious Redwater by which piroplasma begemium in rod form conveyed by ticks rapidly killed, not single animals, but whole herds at a time. 'During life', Theiler wrote in his succinct graphic way, 'the affected animal showed symptoms of severe illness and ceased to feed or chew the cud. The head would hang and the ears droop. There was also a slight running from the eyes which fell rapidly into their sockets and a slight dribbling from the mouth. There was very high fever and rapid loss of condition, the flanks heaving and a staggering gait and general weakness culminating in the animal lying down. There was constipation or diarrhoea (often mixed with mucous and blood), accelerated respiration, and collapse.' The poor beasts also moaned pitifully as the end approached.

The horrifying mortality in Rhodesia was beginning to be mirrored in the Transvaal. Not a beast remained in the Barberton district and more than half had died in the Lydenburg area. Figures were not yet available of deaths elsewhere. Dipping to kill ticks hardly helped. Within days, new hordes clambered aboard the unfortunate animals. No one was sure which tick was

31 the culprit though Theiler had his theory. The whole Eastern Transvaal was affected, Swaziland
32 also. Theiler's laboratory was open house to all who sought to avert the coming disaster. Natal
33 instructed S. B. Woollatt, its Principal Veterinary Officer, to tour its northern borders and pre-
34 vent infection with a cordon sanitaire ten miles deep while its veterinarians and amateur experts
35 pestered Theiler with enquiries at Daspoort. They could not understand why the Transvaal had
neither taken action nor promoted dipping as Natal had done. Theiler felt himself insufficiently
informed on the life histories of the numerous kinds of ticks and held his hand. C. E. Gray was
sending infected brown ticks (*Rhipicephalus appendiculatus*) to Lounsbury in Cape Town for
investigation and to determine whether they could cause the disease in sound animals. Mean-
while Theiler compared the smears he had taken in Bulawayo with those obtained at Komati
Poort and now in Pretoria itself, and found them identical, all indicating a virulent form of
Redwater. From a further outbreak, he was able to prove on the 19th November 1902 that a
consignment of cattle imported from German East Africa (Tanganyika) had brought the disease
to the Transvaal and themselves 'been wiped out'.

He hardly had time for laboratory work. Numerous Army District Veterinary Surgeons
posted in the Eastern Transvaal and elsewhere, constantly reported to him and he kept close
coöperation with Captain J. M. Christy who, like him, was still on Turner's staff. A procession
36 of urgently-imported veterinary surgeons, knowing nothing of Africa, appeared at Daspoort
to be instructed in local conditions and animal diseases. Theiler's interminable Horse Sickness
experiments continued together with his many investigations into trypanosome-produced
diseases, particularly Biliary in Horses. The Rinderpest Station continued his responsibility
37 (J. W. Phillips still operated it under great difficulty through lack of animals) and now, in Oc-
tober 1902, the full impact of F. B. Smith's Report to Milner smote him and changed the course
of his career.

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38 Like Theiler in the full flower of his talents, Smith had presented on the 31st July 1902 a docu-
39 ment as idealistic as it was realistic, as visionary as it was intensely practical – so valid in its
sense of values that every passing year could not assail but only affirm its integrity. To a
crucial moment in history, the right men had come – Smith in drafting a plan for the regenera-
tion of a country (subsequently imitated by others) and Milner in immediately agreeing to it and
providing facilities for its earliest implementation. His many enemies and critics, even Louis
Botha, would later never deny that 'the introduction of scientific agriculture into the new Colo-
nies was wholly due to Milner's inspiration'.

'At present, all is confusion', Smith told Milner. The urgent need for an Agricultural De-
partment had long been felt by the Z.A.R. but never fulfilled. Now opportunity provided to
establish a single organisation serving the Transvaal and Orange River Colony with such
efficiency that it could be left unaltered when Representative Government was introduced and
worthily take its place in an ultimate federation of the British Colonies. Such a concept would
avoid much duplication, overlapping and unnecessary cost. (Milner did not share his imperial
vision and confined him to the Transvaal – which remained a debateable point.)

40 'The aim of the Department', said Smith flatly, 'should be to further the interest of the farmer
by every means within its power and to render the country as productive as possible.' He em-
phasised the deplorable state of Transvaal farming which compelled the importation from abroad
of meat, milk, butter, timber, fruit and maize all of which could be produced locally (and in fact
were, on a princely scale, on Sammy Marks' estates to prove the point. John Buchan, busy with
'Land Settlement', marvelled that 'in 1898, agricultural produce, raw and manufactured, to the

value of nearly £2,500,000 was imported into the Transvaal' and that it required eight acres to raise an ox and two a sheep.) Elaborating, Smith introduced a novel point: 'The Department should be as readily accessible and as destitute of red tape as possible. Inquiries should be encouraged and promptly attended to. It should see everything, hear everything, so as to appreciate the needs of the country and be in a position to coöperate with the farmers in carrying out any necessary reforms or improvements.' It was a philosophy that Theiler himself might have expressed. Certainly he had practised it in all his days in the Transvaal – but Theiler spoke Dutch.

A primary function of the Department, Smith continued, was the formulation and administration of laws and regulations designed to protect and assist the farmer, ranging from providing facilities to preventing disease; but, he added warily, 'to attempt to introduce a series of sudden and drastic reforms would arouse a spirit of irritation and antagonism which would be greatly to be deplored at the present juncture.' Another function was to act as an 'Intelligence Bureau' keeping au courant with developments at home and abroad. In an unsettled undeveloped country, it would have numerous duties (such as encouraging agricultural shows, breed societies, coöperative associations, creameries, canning factories, transport facilities etc. etc. which might later be undertaken by private enterprise); but, he warned, 'the Department should be careful not to extend the principle of State aid and interference to too great lengths but should do its best to enlist the coöperation of private individuals and societies and to encourage them to act upon their own initiative as much as possible.'

Repudiating responsibility for 'Land Settlement' which he felt should remain the duty of the Land Board, sui generis an obsolescent body in common with the Repatriation Board, Smith outlined the Divisions of his Department beginning with what he called 'the Secretariat'. Second in importance was the Veterinary Division and at the head of its functions, 'the investigation of disease'. In a capsulated report of only a few pages designed for Milner's quick reading, Smith made no differentiation between veterinary research and services. He listed only the prevention and extirpation of diseases, sanitary inspection and transport of animals by rail. 'I should like to point out', he wrote, 'that the present provides an almost unique opportunity for stamping out contagious diseases because of the very limited amount of stock now in the country.' In his mind were heroic ideas which he reserved for later expression.

Further Divisions of the Agricultural Department should be Chemistry, Soils, Geology, Irrigation (where he doffed his cap to Willcocks' earlier report to Milner), Statistics, Entomology and Botany which would include many sub-divisions such as mycology, agristology, horticulture, seed-testing stations and forestry with all its ramifications. Smith laid emphasis on the importance of Publications to inform the farmer and to report on the Department's work, suggesting the initial issue of 'a comprehensive and carefully-prepared quarterly'. A library was likewise essential. Agricultural education at college level would have to wait (it was one of his principal aims) but much could be done in the meantime in various ways which he listed. Most urgent was the establishment of a number of Experimental Farms where burghers and settlers could see for themselves and 'learn object lessons' in how agriculture should properly be conducted.

Smith dealt lightly with Administration, indicating only that the whole complicated structure should be directed by a single Head with a seat on the Transvaal Executive Council. But on the subject of staff, he was explicit and visionary. 'Two distinct types of men will be required: profound scientists on the one hand to conduct investigations and research, and men with technical training on the other hand, experienced in administration and with an intimate knowledge of agriculture and the conditions obtaining in this country, to perform office duties, to act as inspectors, managers of experimental farms and so forth. Whenever possible, men of local

experience should be selected for this second class . . . ' In dealing with 'Cost' (he seemed to anticipate at least a quarter of a million pounds by referring Milner to the Cape's expenditure of £235,000 on agriculture in 1901), he made it clear that all money spent would be an investment in the future of the country. 'It has often been found in the history of other similar departments', he remarked pointedly, 'that the services rendered by a single division or perhaps by one skilled scientist have been worth more to the country than the total cost of the department.' The cap fitted Theiler and Smith saw that he wore it.

Acutely aware of the urgency, Milner referred the Report to the nominated Executive Council, installed barely six weeks before, who forthwith approved it and on the 20th August 1902, the Transvaal Department of Agriculture came into being, Smith being appointed its Director. Foregone development though it were, Smith had had only a few days to plan its operation and cast about for staff. The only effective existing institution was Theiler's Daspoort Laboratory and Rinderpest Station still nominally in the charge of Dr George Turner, the Transvaal M.O.H. Smith temporarily left it there while inspanning Theiler for urgent work in addition to his normal duties (now enormously enlarged by the Rhodesian Redwater epidemic) such as the 'Handbook for Settlers' and the first issue of the quarterly journal.

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42 Theiler had long envied Hutcheon and Watkins-Pitchford for their departmental journals. Hutcheon's *Cape Agricultural Journal* went all over the world and was occasionally reproduced in *The Veterinary Record* and germane publications. Its enterprising editor, J. B. Hellier, had died at his post at the age of 82 in October 1901, his place being taken by A. R. E. Burton F.R.G.S. whom Smith now lured to Pretoria as Head of the Publications Division. Vol. I No. 1 of the *Transvaal Agricultural Journal* was dated October 1902 and contained Theiler's three articles, as non-technical as he could make them; but 'Rhodesian Cattle Disease and Rabies' was sufficiently scientifically couched as to excite interest in the numerous institutions overseas to which it was sent and in his new scientific friends. At last a regular method of communication had been opened to him and he used it increasingly esoterically – to the mystification of the farmers.

Theiler was the embodiment of everything Smith envisaged for the future. He spoke Dutch and professed authoritatively to know 'the Boers'. Of indisputably high scientific standing to which Turner gladly testified, he had also travelled widely and was in fact the only man in the Transvaal closely acquainted with agriculture and stock diseases. He was a pearl beyond price and almost without parallel. When Smith first started to staff his Department, he was forced to import all his Divisional heads from overseas (with the possible exception of C. E. Legat who had been in the Cape Forestry Department). Some of his own students at Wye toyed with the notion of joining him, including a stocky young man who considered candidature for the Chemical Division and later became Sir E. John Russell, director of the Rothamstead Agricultural Experimental Station. From California, he obtained Joseph Burt-Davy, an Englishman trained at Kew, for his Botany Division. Herbert Ingle for Chemistry came from Leeds. R. A. Davies for Horticulture from Monmouthshire (via the Rhodes Fruit Farms at the Cape), Bourlay for Poultry also from England so on. They knew nothing of the Transvaal, its agriculture, its people or its languages. When it came to a Head of Veterinary Services or Principal Veterinary Officer, Smith searched unavailingly for almost a year before he found the right man. Meanwhile the initial vote for his entire Department – administration, planting trees and preparing nurseries pending the arrival of the Divisional experts – amounted to £12,000 while Theiler's two institutions, still under Health, received £9,212.

43 It was very clearly in Smith's mind that Theiler held the key to the locked door of agricultural development in stock-raising with all its ancillary benefits. The hydra-headed host of enemies – 'horses die of horse-sickness, sheep of scab and anthrax, cattle of rinderpest, redwater and the

44 immense variety of *ziektes* from *galziëkte* to *geilziëkte*' lamented John Buchan – was already fully engaged by him. Turner, himself overburdened, ceased his connection with the Rinderpest Station in October 1902 (devoting all his spare time to the Leper Institution) and Theiler now controlled both institutes at Daspoort. Based in his boggy domain where the summer rains produced stinking pools and rivulets and a continuous miasmatic menace, Theiler walked the corridors of power among men of vision and imaginative drive.

45 In his first Report issued a bare six months after the tentative debut of his department, Smith wrote – 'The work which the combined institutions (at Daspoort) are performing is of such vital importance to this Colony, and they have already proved themselves so useful that it has been decided to considerably enlarge their sphere of action. To this end, we are seeking a large and more appropriate site and plans are also being prepared for a complete set of buildings to place thereon. It is hoped that we may thus establish a thoroughly up-to-date and well-equipped institution which can be used for scientific investigations, the manufacture of vaccines, serums and anti-toxins, etc., and ultimately as a great Veterinary College for South Africa.' Five years later, the major part of these joint dreams, fantastic at the time, came to fruition.

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46 The Kindergarten were now putting Milner's careful planning into practice, equally opposed by Man and Nature. The burghers neither understood nor wished to understand the pale fresh-faced young men who bustled about Pretoria and toured the countryside telling them what they should do. Their leaders, if not actively hostile, held themselves aloof (Louis Botha had contemptuously refused £900 of the £20,000 claimed in compensation for the British Army's blowing up his Natal farmstead and other damages.) Three of the most glamorous and best known overseas – Generals Botha, Koos de la Rey and Christiaan de Wet – left for Europe to collect money to rehabilitate their countrymen and were rapturously welcomed by the English led by King Edward VII on their arrival in August 1902 before leaving for the Continent. (Their mission was scarcely successful, only £105,000 being collected; but while in Holland, Botha, an enlightened and extensive farmer, cannily came to an arrangement with the 'Netherlands Agricultural Committee' of sympathisers to collect 96 pedigree Fries bulls and heifers and send them to South Africa. As chairman of the 'Boer Help Funds Committee', Botha decided that they should be sold to farmers for cross-breeding. He, Commandant-General Piet Joubert and General D. J. E. Erasmus had earlier agreed that the cross-bred animal did better than the pure-bred and probably enjoyed a certain immunity to local disease. The Dutch committee generously continued the arrangement for several years, thus providing both funds and improvement in stock.)

50 The resentment and hostility confronting the Kindergarten were paralleled by the vagaries of Nature. The summer rains were late, causing the usual stock epidemics which greatly diminished the 'repatriation cattle' carefully collected for issue to the burghers, and were followed by one of the worst droughts on record which took heavy toll of the remaining cattle. The burghers protested bitterly at the cost and condition of the beasts they were expected to buy from the Government at prohibitive prices. Originally, they alleged, the Army had disposed of all its broken-down stock – 'osse wat met drie pote in die graf en een op 'n piesang staan' (oxen with three feet in the grave and one on a banana skin) General Kemp wrote many years later – to the Administration which sold them with equally broken-down wagons and rotten seed to farmers facing starvation. The known diseases – an exceptional outbreak of Lung Sickness, lurking Rinderpest, Redwater and others – were now joined by Rhodesian Redwater. Though 52 Theiler again went to Lourenço Marques to inspect cattle coming from afar, there was nothing

he could do to stop the spread of the epidemic. Among recalcitrant Boers (and particularly in the mind of General J. C. G. Kemp who remembered it all his life), every evil might be blamed on the British.

54 In the meantime, the dammed-up forces of humanity in the local Refugee Camps and the concentrations of prisoners-of-war in various locations overseas, began their trek back to the devastated land, zealously if inefficiently assisted by the occupying power. 'Day by day and all day long for many weeks, clouds of dust were to be seen to rise as long spans of oxen and mules dragging waggon after waggon laden with food, tents and a strange assortment of domestic articles, crawled snakelike out of the canvas town on to the illimitable veldt, wending their way to some distant farmstead. The conductor knows that his waggons are not of the best and his animals none of the strongest. He cannot contemplate with equanimity a breakdown in the veldt . . .' In Pretoria, other 'conductors' contemplated the breakdown of the whole repatriation plan. If Rhodesian Redwater swept the country like Rinderpest, there could be no 'regeneration'.

55 While Lounsbury artificially produced the disease in an ox in Cape Town from a brown tick sent him by Gray in Rhodesia, Theiler went on with his experiments. Cripplingly overburdened
56 (and Smith no less) he maintained his laborious Horse Sickness sequence with hope of converting a serum-induced passive immunity to active, and further investigation of Equine Biliary. His trypanosoma theileri which caused it, was re-examined with results of such interest that he
57 wrote another paper intended for the Royal Society; but 'A New Trypanosoma and the Disease caused by it' was in fact published in the *Journal of Comparative Pathology and Therapeutics*
58 in September 1903. 'Of quite exceptional value', he thought (wrongly), was the discovery of the fly, Hippobosca, which carried the disease, entailing another long sequence of experiments. Having no entomologist (though Smith was trying to find one), he was continuing his own investigation of ticks. His staff was woefully inadequate. It consisted only of Charles Favre as his assistant, E. Heron as experimentalist, A. von Bergen as Lymph Maker, D. T. Botha as
59 Lymph Packer, D. Ferreira as Serum Assistant, P. R. Ferreira as Inoculation Assistant, B. Porta (a foundation member of the Schweizerverein Alpina) as Special Assistant for Horse Sickness experiments, and 8 natives. As the menace of Rhodesian Redwater increased and later, in 1904 when Daspoort expanded into an extensive research institute with massive records and correspondence, Stevenson Cameron was appointed secretary and the assistants were increased by J. Fletcher as stockman and a Swiss, J. Schneeberger (Charles Favre and D. T. Botha having left).

Had Theiler been merely a backroom bacteriologist intent on microscopic work, his lot would have been easier; but he was in constant consultation with Smith who, sitting on the Land and Repatriation Boards, needed his advice in organising his evolving Agricultural Department, and with George Turner whose M.O.H. work impinged on his own. Theiler taught and wrote uninterruptedly. Veterinary surgeons requiring tuition were imported in number. Even more demanding were the old and new settlers. For them Theiler produced at the end of 1902 'Some
61 Diseases of the Horse in South Africa', a sizeable handbook dealing with Horse Sickness, Biliary or Malarial Fever, Glanders, Strangles or Nieuwziekte, Pleuro-pneumonia, Diseases of the Digestive Organs, Internal Parasites, Contagious Skin Diseases and miscellaneous afflictions. Written with the pellucid simplicity for which he had genius, Theiler's work was edited
62 by A. R. E. Burton before he resigned in January 1903, his place being taken in February by
63 William Macdonald as Chief of Publications of the Agricultural Department. The handbook was published in May when the Department had attained fuller development and Theiler had become a regular contributor to its *Journal*.

His official duties did not preclude him from the obligations of a Civil Servant of stature.

64 Theiler was always keenly aware of what his position involved and from his first days in the Transvaal, had been notably punctilious in matters of manner, dress and ceremonial. Pretoria had always been English-orientated (despite strong Dutch and German influence) and he had taken readily to the concept of 'the English gentleman'. Now he joined the famous Pretoria Club and, properly garbed in frock-coat and top hat or full evening dress, participated in the official occasions to which he was entitled to be invited. Many were historic and none more so than the visit of Joseph Chamberlain, Secretary for the Colonies, which confounded the confusion and chaos characterising the end of 1902 and the beginning of 1903.

65 The Generals (who had been churlishly treated by him in London) hurried home some three weeks after Chamberlain had left via the East Coast, and reached Pretoria only a day or two before he arrived from Natal on the night of the 3rd January 1903. Pretoria had been agog for weeks. The town was slowly dragging itself out from suffocating military rule and adjusting itself to colonial administration under the Lieutenant-Governor Sir Arthur Lawley and Milner's young men. A few shops had opened, a few well-known citizens were trying to make a living in professional or devious ways, newspapers had optimistically reappeared including the new English daily, the *Pretoria News* and there were other signs of returning life despite the poverty and distress of most of the burghers.

66 Chamberlain had pronounced in Durban: 'I have come in a spirit of conciliation but also in a spirit of firmness.' The Boer leaders regarded him warily and themselves practised both principles. To Lawley's garden party for the distinguished guest attended by Viscount Milner, General Baden-Powell and high military and colonial officers came Louis Botha 'faultlessly arrayed' in a London suit, Generals de la Rey, Cronje, Smuts and others. They had come directly from a meeting (attended also by Kemp, Schalk Burger, Johann Rissik and many other Z.A.R. notables) convened to draft a firm address to Chamberlain (it made a point of the rooking of the burghers by the Government sale at £15 and £20 each of horses bought from the Army for £5). They had decided to coöperate with Chamberlain in resettling the country but not without redress of grievances. They were not alone in their feelings.

67 On the night of the 6th January 1903, Theiler donned his full evening dress and was driven in his Cape-cart from Daspoort to the Market Hall in Pretoria to attend the banquet in honour of the Colonial Secretary organised by the citizens. Everyone of note was there – the military, the Boer leaders, the Colonial Staff, the leading citizens. Bonhomie was manifest, even among some of the Boer generals though Botha was silent and thoughtful. In due course, it fell to the well-known Scots advocate Mark Greenlees (married to E. P. A. Meintje's daughter) to propose the toast of the High Commissioner, Viscount Milner. In a measured speech reviewing the Transvaal's situation, he pronounced that the country was not yet ready for representative government but it must come – 'what we want now is a form of Crown Colony Government with a little less Crown and a little more Colony' (applause). Milner was not amused at the implied criticism in the presence of the Colonial Secretary and replied petulantly. Theiler witnessed the embarrassing but memorable incident which the *Pretoria News* duly recorded in verse:

Oh Mr Greenlees! People say
You are a dreadful sinner
To talk of awkward matters at
The Chamberlain big dinner.

In camera you should be heard,
Your rulers' faults (ahem!)
Should not be mentioned till you lunch
In private with Lord M-.

Chamberlain went his elaborate way, touring the smallest centres of the two new Crown Colonies which struggled to come to grips with the forces that assaulted them.

* * *

71 Koch had set out to grapple with Rhodesian Redwater in response to a final letter of the 24th December 1902 from the Chartered Company. He was now an expensive commodity allegedly charging £10,000 which included a yearly fee of £6,000 for himself and £1,000 for each of his two assistants, Drs Neufeld and F. K. Kleine. The Company had refused a British bacteriologist offered by the Colonial Office, preferring the great man himself. Two-fifths of the cost were
72 borne by the Company and the rest by the South African Colonies where quizzical looks were exchanged. 'I contemplate my mission with more or less misgiving', Koch had said upon de-
73 parture early in January 1903, 'because the Rhodesian plague is of an absolutely mystifying nature. Such symptoms as I have so far examined indicate that the disease is wholly different from any species of Rinderpest (Cattle Plague) that has ever come under medical observation.' All the local veterinarians and bacteriologists but one had failed to solve the problem - C. E.
74 Gray, W. Robertson (appointed Bacteriologist to the Cape Agricultural Department on the 1st July 1902), Hutcheon, Edington, Watkins-Pitchford and Theiler. The exception was Wilfred
75 Watkins-Pitchford, brother of Herbert who had succeeded in having him appointed as Bacteriologist to the Natal Allerton Laboratory in January 1903. Chosen from 50 applicants, Wilfred was a physician and surgeon with experience of Bubonic Plague in India but never entered the lists against Rhodesian Redwater.

Gray and his coterie of peers had tried every possible expedient from the transiently effective dipping and serum injections to inoculations with quinine. Unlike Rinderpest, the disease moved slowly but inexorably. Cattle could be neither effectively immunised nor cured. The advancing epidemic could destroy South Africa. Koch, travelling via the East Coast, made useful enquiries at Mombasa, Tanga, Zanzibar, Dar-es-Salaam, Kilwa, Ibo and Mocambique (at each of which he collected ticks) before disembarking on the 18th February at Beira where Gray met and fully informed him. Travelling inland, he found no purpose in examining the situation at Umtali and Salisbury as no animals remained. His headquarters were established at a camp $1\frac{1}{2}$ miles outside Bulawayo and, whilst speculating on the origin of the disease, he wrote to Theiler to ask for blood smears from Transvaal areas of infection. 'Mr Theiler most kindly complied with my request', Koch wrote and suprised no one with the statement that they revealed the identical
76 disease as in Rhodesia. After a month, the Natal Government became restive and telegraphed for a report which Koch duly submitted, admitting the existence of a new disease, before settling into routine experiments.

Further South, the times were catalytic. With Milner's young men now in the saddle and his departmental heads completing the staffing of their operations, the machinery of Crown Colony Government moved into higher gear while the local inhabitants considered their possible part in it. Political activity had been dead for nearly five years. Each man now had to search his own conscience and decide on which side he could stand up and be counted. Early in February,
77 Louis Botha gave a much-publicised lead. He sold his properties and severed his connection with Natal, buying a large farm at Standerton in the Transvaal and a house in Pretoria. It was expected of him as the recognised leader of the burghers to play a part in the new legislative processes; but when Milner issued his invitation to Generals Botha, Koos de la Rey and J. C. Smuts to join the Legislative Council as nominated members, they refused, being disinclined to participate in legislation implying 'public decisions on many topics on which public feeling is still in a state of unhealthy irritation'. At a time of 'high tension', resentment and hatred, they

This permits bearer to pass in and out of Municipal Limits on days mentioned on Pass.

TRANSVAAL PASS

No. 1228 Place Pretoria
Date 4th March 1901

Name (in full) Arnold Theiler
Farm (No. on Map) Tet: Farm
District To pass through 22 guards and
Reason of Issue anywhere within Outpost line
Mounted on horse

DESCRIPTION OF HOLDER.

Age 34 Height 5-7 Eyes Light brown
Complexion Dark Nose straight
Colour of Hair Face Black beard & moustache
Head Dark brown
Shape of Face Oval
Marks of Identification Left hand missing

PASS OFFICE

M. 4 MAR 01

PRETORIA.

Signature of Holder A. Theiler
Signature of Issuer J. G. Maxwell

Theiler's Official Pass issued and signed by the Military Governor John Maxwell on the 4th March 1901 enabling him to move fairly freely during the day.

Colonel F. Smith



Dr A. Theiler



Dr G. Turner



*The Incubus of
'Concentration Camps' –
Boers stride towards a
'Protection Camp' while
their wives and children
travel in an open wagon.*



*Highly-infectious Animal
diseases proliferated –
British Army horses
being dipped at
Kimberley in 1901 in an
effort to combat mange
which was endemic.*

*Bleeding a horse at Daspoort where Theiler
ceaselessly tried to combat Horse Sickness,
Equine Malaria and other fatal diseases.*



objected to officiating without authorised representation or election by the burghers. Though plainly inclined toward political participation, none was prepared to be a Milner catspaw. With much on his mind and often ill, Botha held his hand for a considerable time but was always a presence. During that time, the Milner men wrought prodigies in restoring his country.

78 F. B. Smith (a lifelong bachelor and 'a club man' whose proclaimed recreations of 'hunting, shooting and golf' were seldom indulged) worked day and night to organise and staff his huge Department among people who had not the slightest notion of what he was about nor had any intention of coöperating. Nor had he any means of communicating with them except through
79 the later Dutch editions of the quarterly *Agricultural Journal* and departmental papers. It was hardly likely that the dissident burghers read them though they were supplied free.

By the beginning of 1903, many of Smith's divisional experts had arrived or were on their way (Ingle of Chemistry and Burt Davy of Botany bringing particular joy to the colleague-starved heart of their associate at Daspoort) and had begun their thankless tasks in improvised accommodation with few facilities. Only the favoured Theiler had some semblance of organisation and efficiency; but, like Mahomet's coffin, he hung between the Heaven of an idealistic Agricultural Department and the practical earth of George Turner as Medical Officer of Health.
80 On the 1st February 1903 by Resolution 80 of the Executive Council, Turner was relieved of his responsibility and Theiler and all his works were transferred to the Department of Agriculture under Smith who in turn was responsible to the newly-appointed Commissioner of Lands,
81 Adam Jameson who took office on the 26th January 1903. An experienced agriculturist, previously Minister of Lands in the Western Australian Government and a fine speaker, Jameson promoted his highly diversified domain in the Legislative Council where Smith, also entitled to a seat as a departmental head, fought strenuously for his aims and particularly for money for Theiler.

The reorganisation had been en tapis for some time. J. W. Phillips left Daspoort to assume his
82 original appointment as Superintendent of the Leper Institution (where the number of inmates had leapt from less than 50 in 1900 to over 250 including many Afrikaners). Turner, who had spent his best efforts on Rinderpest serum production, feared that Theiler 'would not be able
83 to devote sufficient time to its proper supervision'. His concern was justified - Theiler was grossly put upon. Turner offered to help as much as possible though hardly less pressed. A close and mutually respectful relationship had developed between them which endured after separation. Due to go on six months overseas leave after five years' hard work in the Transvaal (his
84 Health officials gave him an inscribed travelling bag), Turner mused on his colleague to whom there was presently delivered a silver cigar-case inscribed:

Pignus Amicitia

G.T. ad A.T.

26th March 1903

85 Theiler used it until the end of his days.

Glutton for work as he always was, Theiler now lived through probably the most frenetically busy period of his life. The Transvaal, crippled by the cruel drought and pervading depression, tottered on the edge of total agricultural disaster. Smith was introducing 25 civil veterinary surgeons to complement the dwindling Army vets in combatting the chaos created by old and new diseases. Theiler trained them all though it was no part of his duties. Smith was still unable to find a Director of Veterinary Services - the vital figure in a country whose agricultural districts had never known the benefit of veterinary surgeons. Only Natal had one for every district
86 and the Cape, huge in extent, was totally inadequately supplied. Clamant farmers constantly demanded more. The Cape Government could not afford them; but in the Transvaal, Smith had carte blanche and slowly manned his Veterinary Division. Its impeded development and par-

87 ticularly its inability to deal with Rhodesian Redwater, now well established in the Transvaal and rapidly reducing the cattle population, compelled a desperate Repatriation Department to appeal to the Cape for help. Early in January 1903, Hutcheon was sent to advise and assist the Transvaal Government.

88 Rinderpest and the War had made a white-haired old man of the veteran veterinarian but at 61, Hutcheon's vigour and wisdom were in no way impaired and he remained a commanding presence in the South Africa field. Theiler joyfully met his venerable friend whom he had been instructed to assist in his survey. Together they did postmortems in Pretoria, Machadodorp and Middelburg (the disease had appeared also at Balmoral, Warmbaths and other places) and examined smears in the Daspoort Laboratory. Their work was facilitated by Smith, the Land Settlement Board and by A. C. Macdonald, Director of Stock of the Repatriation Department; 89 but in his report, Hutcheon paid special tribute to 'the cordial coöperation and valuable assistance of Dr Theiler - we have consulted together on every point connected with the peculiar character of the disease and the manner in which it is propagated and spread'. Hutcheon, while destroying Edington's thesis and confirming Theiler's diagnosis that it was an entirely new disease, could propose no panacea. It lay in the hands of two experts more than a thousand 90 miles apart - Theiler engaged in drastic experiments at his new out-station in the Elands River Valley between Machadodorp and Nelspruit (he killed 27 precious Texas, Cape and Africander oxen merely to prove that there was no immunity to natural infection) and Charles Lounsbury 91 experimenting with infective ticks at the Cape. Inevitably the two would have to come together.

In the meantime, Theiler's treadmill became almost intolerable. Dutifully he took Hutcheon to Johannesburg to attend the historic inaugural meeting of the Transvaal Veterinary Medical Association on the 16th February 1903 at Long's Hotel. A few civil and military veterinary 92 surgeons attended and Captain J. I. Irvine-Smith was elected president. Pledged to their cause, Theiler supported the association whenever he could. Similarly disposed, he had been too busy 93 to attend the meeting in Pretoria at the end of January that had founded a branch of the South African Association for the Advancement of Science which had originated in Cape Town in 94 1902 - events which inspired the parent British Association to announce within weeks that its Council had resolved to hold its next full meeting in South Africa in 1905.

Suddenly everything he had wanted and needed was becoming available when he was too 95 fully occupied to participate. His family life was disintegrating. Months had passed since he had last written to Alfred, commenting sarcastically on his brother's proposal to become a Catholic (which he soon fulfilled) and piously proclaiming the pleasures of the pursuit of Pure Science with the reward of Truth within it. Alfred needed guidance but Arnold had no time to write. His household had been rendered almost unmanageable by the departure of Mathilda and the impossible burden imposed on Emma. 'I am overwhelmed with work', she wrote 96 pitifully, 'and have no one to look after Trudi and Max'. Margaret was now attending the Loreto Convent School (where no one understood her Schwizerdutsch and she understood no one) and Hans was doing well. Arnold was now often away but in a rare moment at home before worse preoccupation beset him, he managed to tell Alfred his troubles:

97 'You can have no idea what work I have and how my job claims me in every direction. The Laboratory and Rinderpest Station provide a colossal amount of work. For the production of serum, we have at the moment 200 oxen. The blood flows in hectolitres every week and in hecto- 98 litres we prepare serum (it served the Transvaal, Natal, East Africa and German South West). Then we must be on our guard in every respect lest we propagate other diseases such as Lung Sickness and Redwater. Microscopic investigation and clinical observations are therefore a daily routine there. At the moment, I have about 350 animals on the Station which are under

observation and almost daily we make experiments. Everything is under my personal direction and responsibility.

'So far I have still no assistant but hope within a short time to receive a veterinary collaborator for the clinical work.

'I have equipped a temporary research station in the Eland's River Valley where I place horses to test whether the serum I have devised protects them from the Sickness infection. There also I am conducting experiments for the study of the devastating new Redwater. In this I shall soon be supported by one Mr Lounsbury, Entomologist of the Cape of Good Hope who will chiefly examine the transmission of the disease by means of ticks. We are convinced that this kind of Redwater is conveyed by a new kind of tick (*Rhipicephalus*). My assistants posted there also collect mosquitoes and, I hope, will bring the solution of Horse Sickness nearer.

'I have at the moment ten white assistants under me and thirty Kaffirs. You can see from this that our department needs much supervision.

'Together with this work, there is much else to do. I am always making Calf Lymph, then vaccine against Lung Sickness. Then of course I always take an interest in everything that offers something unknown to me and thereby find something new. Then comes the daily correspondence with my direct superior, the Director of Agriculture, then articles for the *Agricultural Journal*, advice for legislation, advice for cattle importation, advice by letter and telegram to farmers and veterinary surgeons, reports on material submitted to me and when, somewhere out on the veldt no one knows what to do, they send him to me.

'With all this come too my earlier friends whose cattle and horses I once treated and who seek me out whenever they need advice – people of the Old Republic, my comrades in the old Staatsartillerie etc. Then there are my official reports which I must write, then articles for scientific journals. And with all this, I must keep up with current literature and not forget the old!'

99 He did not mention the continuous correspondence with international colleagues which began to burgeon when his *Agricultural Journal* articles were reprinted in various scientific journals – particularly with Neumann of Toulouse (the tick expert) and with David Bruce who, with Nabarro, Castellani, Mrs Bruce and an Army medical technician formed a Commission to investigate Sleeping Sickness in East Africa. It arrived in Uganda on the day after Arnold wrote to Alfred and, in establishing that a trypanosome borne by tsetse flies (as in Nagana) produced the disease, soon brought Theiler again into Bruce's research orbit.

100 Charles Lounsbury arrived from the Cape a day or two later and Theiler and he set off for the hot humid unhealthy valley, endemic with malaria where the 'Experimental Station' was situated. There was no accommodation and they bivouacked in the bush. Theiler daily took a whisky sundowner to prevent malaria but Lounsbury, less wise, contracted it. As always, Theiler continued his chatty relationship with the farmers in the Nelspruit district, now denuded of cattle. 'In those days under Lord Milner's Government, we had a first-class Agricultural Department', one of the best known, Hugh Hall, remembered, 'At the end of the Boer War, Theiler came to Nelspruit to study East Coast Fever which had carried off all the cattle in these parts. He camped in a tent and I saw a lot of him and always admired the energy he put into his work in spite of the way he had to rough it. His department was always run in a businesslike way. When we sent blood-smears for examination, we got a reply at once stating what was the matter.' Theiler made much use of Hall's lands for his experiments and valued a tenacious and enterprising pioneer farmer.

102 Regardless of what Koch was doing, Theiler and Lounsbury had to determine precisely which ticks conveyed the trypanosome into the animal; how, when and where it did it; and, once possessed of this knowledge, how to combat it. It was incredible to some farmers such as the pioneering tick-fighter Joseph Baynes of Natal, that dipping was ineffective. Others considered it

logical to fire the veld and burn the ticks. No one had thought that they might convey the infection only at a certain stage of their complicated life-history and that eliminating them at a certain time by fire might be no solution. Lounsbury had already done useful work with the specimens sent him by Gray in Rhodesia and had inculcated the brown tick. Now he sent Eastern Transvaal brown ticks to his standing collaborators, Hutcheon and Robertson in Cape Town, to test whether they could infect cattle. They immediately did.

103 Both Theiler and Lounsbury had bred brown ticks and now they closely studied the process from egg to tiny larva (or seed-tick) to nymph and finally adult. The rudimentary stages showed remarkable longevity. As the two men peered at the tiny moulting creatures, they realised that much work would have to be done to determine at what stage the insect became a carrier. Its saving grace was thought to be that it inhabited principally the Lowveld and consequently the disease could be contained by quarantine and to some extent by dipping with arsenic. Both
104 investigators published distinguished papers (Theiler's was reprinted widely in Europe); but the basic problem had merely been engaged. Quarantining and restricting the movement of cattle were, as the Rinderpest old hands knew, virtually impossible expedients, nullified by the lack of fencing, intransigence, carelessness and the nocturnal flittings of natives with their beasts over wide areas. The 'wild' natives of the Northern Transvaal were a particular problem.

* * *

Theiler returned to Daspoort and Lounsbury to Cape Town to continue their interminable experiments. One of Theiler's assistants was always stationed at Nelspruit which he frequently visited scatheless; but all four assistants, one after the other, became malaria cases and the continuity of the work was consequently disturbed. (P. R. Ferreira, 'a most able and excellent official', died of the fever.) Theiler had known that the excessive burden he carried would soon
105 be alleviated. Smith's long search for a Principal Veterinary Officer had ended in April in India
106 where the Civil Veterinary Department had surrendered its brilliant pathologist, Stewart Stockman, the proponent of an African Veterinary College. To accommodate so distinguished an academic and administrator, Smith reconstituted his Division of Veterinary Science into two sections: (a) Contagious Diseases - Principal Veterinary Officer, Stewart Stockman (b) Bacteriological Laboratory and Experiment Station - Government Veterinary Bacteriologist, Dr Theiler (its telegraphic address was 'MICROBE' which was permanently retained). Stockman's appointment at £1,000 a year dated from the 1st May 1903. Theiler, confronted by an
107 alert, energetic, highly-qualified and experienced colleague, warmly welcomed him more as a congenial fellow-scientist than as a relief to the burden he had been shouldering. Stockman and his force of district vets would at last make a reality of regulations but better, he would understand and coöperate in the delicate experiments now necessary to combat the major diseases. In no time, they were cordial collaborators.

Though well versed in similar diseases in India (particularly Rinderpest and Redwater), Stockman had no knowledge of South African conditions and, pending such survey of his territory as he could quickly make, left the administration of his enormous Division to his deputy, J. M. Christy. Some days after his arrival in May, he went with Theiler as cicerone to the Lydenburg and Barberton districts and was rudely informed of some of the difficulties with
108 which his new friend had been dealing for more than a decade. 'Our object was to meet the local farmers in order to instruct them regarding the nature of Rhodesian Redwater which was playing havoc in these districts', he wrote in his first Annual Report, 'We found it impossible to convince them all that the disease was due to ticks and spread by transport-riding. They could not be got to make up their minds what they wanted done except in the case of a few whose

proposals were extravagant. We received little assistance from these meetings as the various individual interests were apparently too diverse to admit anything approaching unanimity.'

109 Theiler and Stockman returned to Pretoria and sat down immediately to frame regulations (as drastic as those for Rinderpest) to control the spread of the disease. Notices Nos. 599 and 600 were gazetted on the 18th June 1903 and in their restriction of movement, quarantining, compulsory notification of cases, permits, etc. antagonised the farmers even further. It was merely the beginning of the Stockman/Theiler work in safeguarding the cattle population. They continued with regulations controlling other diseases (Rinderpest, Lung Sickness, Redwater, Anthrax, Glanders, Scab, etc.) and earned a full and admiring editorial in the leading professional journal in England. 'It is humiliating', *The Veterinary Record* announced, 'to find that our veterinary regulations are far behind those of the Transvaal.' At last the battle against malevolent Nature was fully engaged and the ideal of agricultural prosperity hove in view. The Theiler/Stockman collaboration extended even further into the laboratory where Smith 'had strengthened Theiler's hand' with new assistants and Stockman hovered over his experiments, making suggestions of his own, knowing that they could make or break his work.

110 The spectacle of their ruined countrymen drove Botha, Smuts, Kemp and others to bitter public expressions of rage and resentment. Penurious burghers hopelessly roamed the streets of Pretoria or drove about in makeshift donkey-carts in the depths of poverty hoping for transport hire. Emily Hobhouse sent money to buy spans of oxen for ploughing but few benefitted from little assistance. The desperateness of the situation was reflected by Sir Arthur Lawley at the opening session of the Legislative Council in May 1903 when the Council was expected to approve formidable Votes for Agriculture. 'The initial expenditure in rendering such a huge Department thoroughly efficient is great but if, as I hope, we may by experiment and research discover the cause and the cure of the many pests with which this country is rife, if by the application of Science we may expand the producing capacity of this vast territory to its highest limit, then the original cost will be insignificant compared with the enormous addition which will accrue to the wealth of the Colony.'

111 The nominated legislators demurred a little but perfunctorily. Sir Percy Fitzpatrick loquaciously proposed that the Government should offer a prize for a cure for Horse Sickness. (The Natal Government had at that time published Blue Books containing Watkins-Pitchford's very detailed and painstaking 'Introductory Note' written on his return voyage from England in December 1900, and his 'First and Second Interim Reports on Horse Sickness' which had previously appeared in the *Natal Agricultural Journal*.) An amendment accepted by Sir Percy extended the proposal to a similar prize for a cure for Rhodesian Redwater. Smith and Jameson strongly attacked the motion, defending Theiler's longstanding work supported in 1902 by £6,000 for Horse Sickness alone; but Sir Percy's plausibility prevailed and the motion was carried. The departmental heads, old hands at the game, practised masterly inactivity and, beyond taking the opinions of the Cape, Orange River Colony and Rhodesia which were subsequently tabled, made no attempt to implement it. Ultimately the massive vote of £134,845 for Agriculture was agreed with the enthusiastic support of an ex-Z.A.R. official, Johann Zulch de Villiers who had been president of the Witwatersrand Agricultural Society when Burgomaster of Johannesburg. 'The Boer must be taught how to go about his work', he said and pledged the support of his agricultural colleagues in the Council.

112
114 Theiler and Stockman toiled on, unimpressed by Koch's determined intention to find a serum injection for Rhodesian Redwater. They knew that the secret lay in the ticks. Hutcheon, cogitating in Cape Town on Pitchford's work and Theiler's 'Some Diseases of the Horse', concluded that they agreed on a blood-sucking insect causing Horse Sickness and that animals should be protectively stabled during the fly season.

The stifling drought, the heavy mortality from stock diseases, the hostility of much of the population and impediments of every other kind did not prevent the Milner men from pressing ahead with their idealistic plans (only F. B. Smith held his hand with his grand concept of Agricultural Colleges – they would be premature, he said, ‘we wish first to blend our scientific training with the best of the wisdom and experience of the people of the country.’) On the one hand, in the knowledge that Milner proposed early representative government for the two Crown Colonies (the Boer leaders began to show signs of political activity), an Inter-Colonial Council was formed to deal with matters of mutual interest, notably railways. On the other, the economy was stimulated at its grass roots by the subsidising of agricultural societies (Klerksdorp and Zeerust had already held successful Shows) and calculated encouragement of the Transvaal Agricultural Union.

During the War, its secretary, F. T. Nicholson in his scholarly manner had prepared papers on ‘matters of interest to farmers’ and subsequently managed to organise the first post-war Conference of the Union on the 3rd September 1903. Only 13 delegates attended under the chairmanship of J. Z. de Villiers but the movement was considered of sufficient importance for the Director of Lands, Adam Jameson and F. B. Smith, Director of Agriculture, to address them, four other agricultural officials attending. Smith ingratiatingly stated that ‘he had very largely based the present Department upon the recommendations and views expressed in the Union’s reports so that they might look upon the Department as the outcome of the efforts of the Union in the past.’ Nicholson and Gunning, present and pushful, might well congratulate themselves. The Agricultural Union movement throughout the land would develop into a force so powerful as to coerce Governments and their servants.

Milner himself, worn out by exceptional exertions, went to Europe for a Kur on five months leave (Lawley took his place as High Commissioner). His men continued their ‘reconstruction’ with undiminished vigour and a more stable atmosphere settled on the land. The ‘experts’ continued to arrive and Theiler at last had his entomologist. Smith had appealed to his friends in the United States Department of Agriculture who had recommended the Cornell-educated C. B. Simpson. He took office in Pretoria on the 26th August 1903 (subsequently marrying Jules Perrin’s daughter) and though his speciality was the codling moth, he might become interested in ticks (he was in fact diverted to locusts). Toward the middle of 1904, Simpson moved from his makeshift office in town to a corrugated iron shed, divided into 8 rooms, at Theiler’s Daspoort laboratory and shared its unhygienic conditions. There were other progressive developments. The indefatigable Smith (supported from the 3rd October 1903 by A. C. MacDonald of the obsolescent Repatriation Board as Assistant Director) had succeeded in opening a Government Experimental Farm at Potchefstroom where large numbers of animals were in the charge of an expert, Alexander Holm, and the Boer might well begin to learn how to go about his work.

In this growing galaxy of teachers, Theiler was the doyen. His aptest and preoccupying pupil was Stewart Stockman; but somehow he found time to lecture disbelieving farmers on the nature of Rhodesian Redwater and to set the feet of inexperienced veterinary surgeons along the right paths. The quarterly meetings of the Transvaal Veterinary Medical Association, sparsely attended because of the distant duties of its members, sometimes sorely exercised his patience but his criticism of papers was generally tempered with encouragement. Theiler had always wanted to be a teacher but his time had not yet come. Now (August 1903) he journeyed to Potchefstroom to make an acolyte of Holm. In the midst of a long sequence of experiments (Theiler was never concerned by the number of animals he destroyed, nor their cost), he wanted to prove that if a susceptible animal were injected with blood from one immunised against Redwater, it would develop a fever and its blood would then contain *piroplasma bigeminum*

(Redwater) and at a later stage, piroplasma parvum (as he called the rod- and ring-shaped bacilli of Rhodesian Redwater). He contended that the rings and rods represented a phase in the life-history of piroplasma bigeminum in the immune ox. At Tōtchefstroom, Holm had received 18 thoroughbred heifers of the Hereford, Shorthorn, Jersey, Lincoln, Polled Angus and Aberdeen Angus breeds. Theiler taught him to inoculate them, read their temperatures, take blood smears and generally provide his laboratory with the information he needed for a
121 report on 'The Piroplasma Bigeminum of the Immune Ox' (subsequently published in the *Journal of the Royal Army Medical Corps*).

Emma saw little of him. In September, he was away investigating the same 'foot-rot' in donkeys that he had identified in 1897. He protracted his journey to Delagoa Bay to inspect the arrangements made to prevent tick-infection of arriving cattle (Texan cattle had been ordered
122 in batches of 5,000) and again took the opportunity to go aboard European liners and to chat
123 to Dr Leal. Emma had no such refreshments. She had not seen the sea for ten years. Her life was now one of drudgery, its social obligations a bore and an embarrassment. Arnold was expected to attend Colonial administrative occasions but not military. He had not been present at the formal Military Parade when his friend Colonel T. Flintoff A.V.D. was invested with the D.S.O. by Prince Arthur of Connaught, then Commander-in-Chief; but there was no way of refusing an invitation to a Ball at Government House on the 7th October 1903. 'Neither Emma nor I have
124 ever really learnt to dance', he told Alfred ruefully in one of his cautionary tales, 'and it is therefore unfortunately impossible for Emma to accept the invitation. On such an occasion, men can find some diversion but women who cannot dance are superfluous and bore themselves. Many sins of omission were visited on us in our youth for which we are in no way to blame. If one is promoted to a position such as mine, one ought to have the necessary qualifications for the social round that one cannot acquire in youth.' He went alone. Then he was off again to
126 Nelspruit to look at his horses and his fever-stricken cattle and his malaria-stricken assistant – twice in October, twice in November, twice in December with an intervening visit to the Magaliesberg to lecture the farmers on Rhodesian Redwater, leaving Emma alons.

His activities at Daspoort, now beautifully recorded, tabulated, classified and tallied by his
127 secretary, Cameron, were enormous – 'an immense amount of work rendering most valuable services', Smith reported. With Stockman, he was making progress with the new cattle disease in investigating the various kinds of ticks and possible antidotes. In other fields, he was assisted (and overwhelmed) by material poured into Daspoort by his cognisant friends, Colonel Fred Smith, Colonel T. Flintoff and their numerous Army veterinary surgeons while Stockman's own corps, led by Christy, reported to him and sent him specimens from all parts of the Transvaal.
128 Even his old civil alternate, J. F. Scott who had continued his practice in Johannesburg, sent
129 him specimens, particularly of a new ulcerous disease in horses and mules widely known overseas and patently imported by the Army. Theiler dealt with it in a typically elegant if somewhat ungrammatical paper on 'Epizootic Lymphangitis' in the *Transvaal Agricultural Journal* of October 1903. His work was now closely studied locally and worldwide but the triumph which he most wished to record – the prevention of Horse Sickness – still eluded him. He could hyper-immunise horses with progressively severe doses of the disease and the resulting serum successfully immunised mules; but when injected into sound horses to protect them, they died
130 horribly. Their blood corpuscles were vitally dissolved by Haemolysis. 'The more one exerts
131 oneself to understand the riddle of the different appearances of Nature', he told Alfred, 'the more complicated they become. So I am at the moment very busy with the Haemolysis of Horse Blood which is involved in immunisation and presents me with great difficulties.'

Edington, with none of Theiler's new facilities but aided by a new and mature bacteriologist,
132 Thomas Bowhill (author of a standard work 'Essential Bacteriology and Technique'), con-

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tinued his work on cattle diseases and Watkins-Pitchford equally. Professionally, everyone waited for Koch to wave his wand over Rhodesian Redwater and produce an immunising serum; but for months, nothing eventuated though Koch made it clear that such was the line he was pursuing. A considerable degree of local resentment and xenophobia was generated in Natal where Joseph Baynes' friend and journalistic collaborator G. D. Alexander who was an ardent proponent of Pitchford, revived the issue of Koch's intrusion on the local scientists' field. 'If Messrs Pitchford, Gray and Robertson would alter their names to say Herr Pitchforditsha, Signor Graysini and Monsieur Robertsoni', he wrote in the *Natal Witness* (sympathetically reproduced in *The Veterinary Record*) 'they might be given the opportunity at present denied them . . . When any investigation is needed, the powers that be wire at once for some Continental scientist and give enormous sums and a blank cheque for expenses although there are equally good men here . . . No recognition was given by Koch to Mr Pitchford F.R.C.V.S., the true discoverer of the Rinderpest serum treatment.' There was pointed omission of Theiler, a 'Continental'.

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The resentful climate of professional opinion (in which Theiler shared, having little regard for the old man's ability to deal with Rhodesian Redwater or Horse Sickness in which he was likewise engaged, nor for his pontificating reports) in no way affected the current drive for Inter-Colonial and Inter-State coöperation which had brought him out. Animal diseases were still the greatest menace to the future of Southern Africa. Finding concurrence, the British convened a conference to deal with them, beginning with the lurking Rinderpest. It was on all hands desirable at least to have common regulations. There assembled at Bloemfontein on the 3rd December 1903 (ostensibly only to discuss Rinderpest) Hutcheon supported by the Cape Under-Secretary for Agriculture, W. Hammond Tooke; Watkins-Pitchford and the Natal P.V.O., S. B. Woollatt; Theiler and the Transvaal P.V.O., Stewart Stockman; Colonel Flintoff and an Orange River Colony legislator, Barry Gradwell; Southern Rhodesia's P.V.O., C. E. Gray; T. P. Kennan representing Basutoland; Colonel Panzera of Bechuanaland; Consul Friedrich von Lindequist (based at Cape Town but soon appointed Governor of S.W.A.) and Dr W. Rickman, director of the German South West Africa Bacteriological Institute; Dr J. R. de A. Leal, M.O.H. of Mocambique; and Dr Robert Koch who had come specially from Bulawayo at the behest of his then employers. All were spoiling for a fight.

There was no agenda and, having agreed to appoint the representative of the host country, Flintoff as chairman, the convocation was prepared to discuss Rinderpest until a sub-committee submitted a programme. Koch fared badly in an atmosphere of cold politeness. He proclaimed his bile method which no one would dispute as an emergency expedient (practised by Turner and Theiler in Basutoland); but none would agree that it did not convey infection as he claimed. Theiler pressed for correct diagnosis of cases and Gray failed in his plea for a central common serum station. In an unprecedented gathering of Rinderpest experts, the highly-informed and sometimes contentious discussion continued for a day and a half with Koch wisely silent after his debut. In less than an hour, the Agenda sub-committee decided the order of further consideration, its list representing the most serious diseases in diminishing sequence - African Coast Fever (as Koch had rechristened Rhodesian Redwater), Lung Sickness, Tuberculosis, Glanders and Epizootic Lymphangitis followed by Scabies, Swine Fever, Rabies, Foot-and-Mouth Disease and Scab.

As a matter of courtesy, Koch led the discussion on 'East African Coast Fever' and shocked the gathering, despite the 'loud applause' at the end of his address. He stated that the carrier was the Blue Tick when everyone knew that Lounsbury and Theiler had inculcated the Brown; that quarantine was unnecessary; that animals should be immunised by the serum he had devised only in infected areas and not wholesale; and that the disease would penetrate the whole

of South Africa until ultimately cattle became naturally immune to it. Theiler was at once on his feet. Politely he said that 'Professor Koch drew the prospect too black' and challenged him on the tick question. Stockman challenged him on the fact that all inoculated animals must become carriers of infection. Theiler came back to the attack. Koch refused to discuss his inoculation methods (a lengthy treatment involving continuous inoculation for weeks) and referred the gathering to his printed report. Pitchford tried to disconcert him by asking why he had not identified the new disease in 1897. Koch admitted that he had mistaken the smaller ring- and rod-shaped parasite as the young of the pear-shaped form. Theiler saved his face by stating that both Laveran and Nocard (who had died in August, widely mourned) had also stated that it was a form of Redwater. The belief had persisted until, at Nelspruit, he had produced the disease in cattle highly immunised against Redwater. Gray came further to Koch's rescue with a resolution on fencing. The spotlight was providentially removed from him. Failing to profit by it, he intruded once more to declare Hutcheon's resolution calling on the African Governments to consider the eradication of ticks, as 'futile - wherever it had been attempted, it had failed'. Undismayed Hutcheon persisted and Theiler, verbally amending it, got it passed. Thereafter Koch made only incidental comments. In a concert of expert veterinarians, Hutcheon dominated until the end.

136 As with all Conferences, much was accomplished outside the portals. Koch admitted privately to 'experiencing very many interesting things' and, in addition to resuming his acquaintance with Hutcheon and Theiler, enjoyed meeting in Bloemfontein Otto Henning of Rinderpest days in 1896/97, and Consul von Lindequist and Dr Rickman. Theiler paid zealous court to the great but passé savant, speaking his language and plotting his pleasure. Letters and telegrams were rushed to Pretoria when he persuaded him to stop there on his way back to Rhodesia. The extra-cameral colloquy of the sub-continent's veterinary scientists was on all hands valuable, especially to Stockman who knew none of them. The shape of 'Closer Union' was looming. Among the 24 resolutions passed by the Conference (all of practical application on a common basis), there was none recommending a further convocation to continue the work. 'The next meeting' was taken for granted and a committee of Principal Veterinary Officers appointed to prepare its agenda.

137 A happy German-speaking party left on the 5th December by the over-night train for Pretoria. Koch, who considered that Kohlstock had saved South West Africa from Rinderpest by his method, was glad of the company of Gray, Theiler, von Lindequist and Rickman, director of the Bacteriological Institute near Windhoek with four out-stations in his care. His territory had interesting variations - Rinderpest had been abolished but Horse Sickness was bad (an 8% mortality); Redwater, Lymphangitis and periodic Ophthalmia were present but there was neither 138 Tuberculosis nor Glanders. (Rickman worked conscientiously for a week in Theiler's Laboratory before returning to South West Africa.)

139 Koch, everywhere revered as one of the fathers of bacteriology, was on the point of celebrating his 60th birthday (he retired in 1904) but was game for everything that Theiler had organised. On the Sunday afternoon of their arrival, they called on Dr Gunning at the Zoological Gardens. 140 On Monday, the whole party closely inspected the Daspoort Laboratory and Theiler could not conceal his gratification when Koch appreciatively commended his Institute and the work done in it. The next moment was Emma's. Forewarned, she had prepared at the house an excellent luncheon with appropriate delicatessen. Koch sat next to her in high good humour and the affair was a great success. It marked the highest point in Theiler's professional career.

141 Before surrendering himself to his local compatriots, Koch saw his Kimberley colleague, George Turner (recently returned from leave), for whom he had always had admiration and affection. 'He is just the same', he wrote Kolle, 'he now actually lives among the lepers in Pre-

142 toria but looks very well and stout. He quickly told me a few Boer War stories.' Turner had that day taken his seat in the Transvaal Legislative Council and heard Sir Arthur Lawley open its first session with a speech outlining the importation of indentured labour – an issue ultimately involving Chinese coolies to work on the gold mines which fundamentally affected English and South African politics. Turner himself was deeply involved in regulating the health conditions of the mining industry but his heart and mind remained with the lepers.

143 The finale of Koch's 36-hour visit was a 5 p.m. reception at the Imperial German Consulate attended also by Theiler, Rickman and von Lindequist. Suitable salutations of the great man were made (he was belatedly awarded a Nobel Prize for Medicine in 1905 'for his investigations and discoveries in regard to tuberculosis') before the whole gathering bore him off to the station to catch the Rhodesian train, signalling his departure with loud Hurrahs. It had been an exciting time for Theiler. Dizzying though it were to consort with the great, he had not forgotten the past nor the manner in which Pitchford and he had been cheated of their just reward. Koch must be watched lest it happen again.

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