INTRODUCTION

Agriculture in most parts of the country experienced a successful year, thanks to widespread, regular and good falls of rain. However, the northwestern parts of the country experienced its seventh year of drought, with resultant decrease in stock numbers and financial ruin for many farmers.

With the enactment of the Animal Diseases Act, 1984 (Act 35 of 1984) on the 1st of October 1986, great changes in the Animal Health functions of the Directorate took place. The permit system in Natal ceased operating, compulsory vaccination of cattle for Brucellosis and Anthrax became the responsibility of the farmer himself and regular farm visits for the purpose of livestock inspection ceased. A new approach of target planning and work performance was formulated, to accommodate the changes in inspectorate staff duties.

Enquine Influenza entered the country for the first time in history with little or no effect on the health of horses, but at tremendous financial cost to the racing industry and inland revenue loss.

No outbreak of Foot-and-Mouth disease occurred.

There was a sharp increase in the number of sheep scab outbreaks.

A single outbreak of swine fever was recorded, involving a small number of pigs only.

Mainly due to a lack of funds, a leveling out of tests performed in the Tuberculosis and Brucellosis schemes was encountered. However, a new system whereby all cattle in specific regions will be tested for Tuberculosis at least once every five years, was brought into operation recently and was well under way in some regions. The experimental use of the low dose Brucellosis vaccine was discontinued at the beginning of the report year, due to persistent antibody titres.

A sharp increase in the incidence of Rabies amongst dogs (Natal) and cattle (Northern Transvaal) took place.

Malignant Catarrhal fever caused serious losses in the Western Transvaal and a “snotsiekte” research committee was established to research the disease.
Racing pigeon breeders suffered losses from **Pramyxo-virus** infections; a disease which was also introduced to this country during the year.

Patrolling and maintenance of border fences were performed under increasingly difficult and dangerous circumstances. A large number of cattle were illegally introduced into the RSA, mainly from Mozambique and a situation has arisen where exotic animal diseases could be introduced from that country.

Except for diseases, devastating hailstorms, veldfires and lightning were responsible for many stocklosses, mainly in the Transvaal Region. An emergency fund was established by the Minister of Agriculture after a large area, stretching from Kinross to Bethal was swept by a devastating veldfire, killing at least 250 sheep.

Computer facilities were installed at the Regional Directors’ offices for streamlining administration of mainly the TB and Brucellosis schemes, but due to numerous pitfalls it is not fully operational yet.

**VETERINARY RESEARCH**

**MISCELLANEOUS APPLIED RESEARCH AND PROBLEM INVESTIGATIONS**

Various problem investigations, surveys and experiments were undertaken by scientists of the regional veterinary laboratories and veterinary laboratories.

Senecio poisoning in sheep was investigated by the VRI, Onderstepoort, and State Veterinarians in the Piet Retief district in the Transvaal Region to determine the effect of prophylactic treatment with activated charcoal before introduction to Senecio-infested grazing. Although partially unsuccessful, another observation made was the fact that sheep ate Senecio only for the first three to four days.

Three toxic components including 32A were isolated from the plant *Ornithogalum prassimum* in the Western Transvaal, in trails carried out by veterinary field staff, and scientists from VRI, Onderstepoort.

In field trials in TB infected herds in the Transvaal Region, the caudal fold method of testing for tuberculosis was performed to correlate the results on the two different injection sites and to endeavour to find a more reliable test in thick skinned Afrikaner type animals.

The veterinary laboratory at Potgietersrus in the Northern and Eastern Transvaal Regional investigated the incidence of Leptospirosis in 39 herds. From 500 serum samples examined, *L. tarassovi* (36.8%), *L. mini* (24.9%) and *L. hardjo* (18.6%) were found to be the most important serotypes.
In the Highveld Region bovine brucellosis investigations continued. The veterinary laboratory at Kroonstad investigated false negative Rose Bengal plate tests. Only 0.64% of 5,517 cattle tested from 78 herds gave false tests. This is within the acceptable range, but on a herd level this meant 7.2% false negatives on individual animals.

In a survey to determine the incidence of Brucellosis in the same region by means of milk ring tests, it was found to vary from 9% to 31%.

A questionnaire regarding the use of Strain 19 vaccine was circulated in the Highveld Region to dairy farmers. Of the 230 respondents 9% used the vaccine and 4.8% injected their heifers twice. Of the 209 users of vaccine, 475 only started using it as from 1980.

At the veterinary laboratory at Kroonstad it was found that the API system to identify spa of *Staphylococcus* was inadequate, but further investigations are being carried out.

The veterinary laboratory at Bloemfontein conducted the following investigations:

A concerted research effort is underway in conjunction with the Department of Toxicology at VRI, Onderstepoort to establish the aetiology and pathogenesis of Vryburg Hepatosis. It appears to occur on dolomite soil formation on the Ghaapse Berg and is characterised by severe pica, resulting in severe hepatosis, icterus, gastro-intestinal sand impaction, nephrosis and high mortalities. Affected livers have high levels of manganese.

A Trichomoniasis project was launched in the Northern Cape, and 950 sheath washes were done, showing a 15.4% herd incidence. Diagnostic time could be extended to 24 hours if specimens were kept on ice and then cultured. The Trichomonas organism did not survive the temperature of liquid nitrogen.

Extensive investigations were carried out at the regional veterinary laboratory Allerton, viz:

The effect of heifer caccination with the experimental low dose Crucella Strain 19 vaccine on MRT and CFT was extensively studied. Over the past three years the percentage positive MRT rose from 4.1% to 8.3%, whereas the total number of CFT positives decreased from 2.0 to 1.4%. The increase in MRT positives is probably because heifers vaccinated prior to service/AI came into milk over the past year. An apparent increase in the number of aberrant reactors, many with exceptionally high titres, was noted, mainly in Jersey herds. All 23 problem herds were regarded as Brucellosis-free.
Persistent vaccine reactors, some with extremely high serological titers, were found in a previously accredited pedigree Jersey herd, in 24 heifers vaccinated with low dose S19 vaccine at breeding age. Examinations on fetuses and the rest of the herd remained negative for at least two years, indicating that there had been no spread. Cultures for *B. abortus* were made from milk samples from the reactor heifers and these isolates conformed to the typing pattern expected of S19, except for a partial tolerance to erythritol in two of the isolates.

Attempts were made to isolate *Brucella abortus* organisms from a live cow from an infected farm, showing a positive titer to Brucellosis, using a supramammary lymph node biopsy. Bacterial results were negative, but it is intended to pursue the investigation.

Over 30 months, 100 animals exhibiting various serological titers to Brucella abortus, were slaughtered at Cato Ridge abattoir and cultures made from selected lymph nodes. Of the 56 culture-positive animals the supramammary lymph node (79%) yielded the most isolates, followed by the retropharyngeal (41%), iliac (36%), prescapular (23%) and parotid (18%) lymph glands.

It was suggested after veterinary investigation that an egg adapted vaccine strain of the *avian encephalomyelitis* virus was responsible for a sudden increase in mortality and the appearance of nervous symptoms in 3 week old pullets in a pullet rearing unit. There was a loss of 15% of the flock by 32 days of age, after which the problem ceased and the remaining pullets grew out normally.

Contrary to previous years, Coccidiosis outbreaks were rife in Natal during August to March in open to semi-open type poultry houses. A very wet summer prevailed in the region and it was concluded that ideal moist and warm conditions for rapid coccidial maturation were created. There had been no known outbreaks originating from controlled environment housing.

To establish the criteria for the revaccination of breeder hens, it was decided to determine the titers and antibody levels in these breeders at point of lay. This involves monthly sampling of 10 flocks, in an ongoing survey of 18 months.

During investigations to the widespread occurrence of footrot in small stock, the first diagnosis of footrot in Boer goats in SA was made.

From areas where BHC had been used as a locust spray, sheep carcases were monitored for contaminations levels. Over 1 800 sheep in more than 250 batches were checked. In all cases except two (still far below the legal limit) the level of gamma BHC in the renal fat was below the detectable limit of 0.02 ppm.

Outbreaks of enteritis in sheep, showing a profuse water diarrhoea, were investigated. It appeared that the syndrome was the result of *corona* virus, complicated by secondary bacterial infections.
A survey was conducted at Cato Ridge abattoir to determine the cause of ovine arthritis. The majority (80%) of specimens were positive for *Erysipelothrix rhusiopathiae*, and sheep of all ages and from all over South Africa have been affected.

Bovine Viral Diarrhoea was diagnosed in cattle in a number of districts in the Natal Region, where it manifested itself in three different forms, viz diarrhoea complex, abortions and mucosal disease. The disease complex which is of far higher economic significance than reckoned 5 years ago, constitutes a significant economic factor and vaccination on affected farms was advised. However, the vaccine is not available in South Africa, unless specially imported.

Fewer cases of Thrombo-embolic Meningoencephalitis (TEME) caused by *Haemophilus somnus* were diagnosed in only one feedlot and a vaccination trial had been completed. Interesting to note was that microscopic lesions of TEME were found most abundantly in the medulla oblongata and the spinal cord, most of which were small and not easily detected macroscopically. The first case of pneumonia caused by *H. somnus* had been found in the same feedlot. The organism has also been isolated from various samples of bull semen.

A number of investigations and surveys were carried out by the veterinary laboratories in the Eastern Cape and Karoo Region. The following were done by the regional veterinary laboratory Middelburg:

The harvesting and freezing of wilted *Tribulus terrestris* (duwweltjies) plants continued and extraction of previously collected material done. However, it was not possible to cause geeldikkop in lambs fed these duwweltjies or given per rumen fistula.

In at least five of 8 outbreaks of welling disease in angoras investigated, heavy roundworm infestations occurred, including brown stomach worm in all of these cases.

Investigations into krimpsiekte (Nenta poisoning) were taken further by an experiment where fresh *Tylecodon wallichii* material was dosed daily to Angoras until ruminal stasis or typical symptoms appeared. Then one group was treated with Amitriptyline HCl (“Tryptanol”), another group with activated charcoal and a third group no treatment as control group. A higher percentage of goats survived in both the treated groups, but treatment with Tryptanol had no significance above that of charcoal.

During an outbreak of *Melica decumbens* (dronkgras) poisoning six bags of the plant in seed and partly dry were collected and fed to a merino whether per riminal fistula for 3 weeks, without any ill effect.
An experiment to create wet carcass syndrome was done with 5 Dorper sheep kept in metabolism crates. The aim was to determine the size of the different fluid components (intravascular, interstitial and intraruminal) with the aid of tritiated water under wet carcass conditions. Each sheep had a ruminal fistula and subcutaneous polythene tube implanted. No wet carcasses resulted and no deductions could be made.

In an ongoing trial to determine Vit. E - Selenium deficiency in clinical cases of white muscle disease, it was found that the glutathione peroxidase levels of the blood tested normal before autopsy. However, typical white muscle disease lesions were seen on autopsy.

A trial was conducted to determine whether *Actinobacillus seminis* infection present in the sheath of a ram can influence the semen picture with regard to infection; also to determine whether the distal point of the urethra could be the focus of infection. Indications are that the distal part of the urethra could possible be the focus of infection, giving rise to an infected semen sample.

In another trial to determine the focus of *A seminis* infection in lambs born from infected mothers, 24 Dorper ewes were infected with the organism, just after natural mating. The ewes were then divided into two groups, one of which was slaughtered about 4 - 6 weeks before parturition. Complete sets of specimens from various organs were taken from ewes and fetuses for bacterial isolation. The other group was allowed to lamb normally and samples taken regularly from these lambs for genital infection. The results of the first group were negative.

In a trial to determine whether abscesses can develop as a result of “Iodet”-treatment for necrotic balanitis / vulvitis in sheep ten Dorper ewes were experimentally treated with “Iodet” and for *Corynebacterium pyogenes* organisms, with negative results.

Ten-month old and older Angora rams were regularly subjected to semen evaluation to determine their degree of fertility. It was found that they could produce a sufficient volume of semen for testing purposes from one year of age.

At the Grahamstown veterinary laboratory various trials, in conjunction with the Coopers animal Research Centre were conducted to determine the effectivity of the Coopers Bolo dip in the search for controlling Bolo disease. Of the 394 skin scrapings examined 65% were positive for *Corynebacterium bovis*.

At the Queenstown veterinary laboratory results of a study of the nematode egg counts of Angora goats in relation to climate and topography showed that *Haemonchus* egg counts were favourably influence by wet conditions in later summer and early autumn.
In a survey to determine bacterial pathogens in abattoir byproducts, eighty five blood, bone and carcass meal samples were examined for Salmonella sp. *S typhimurium* was isolated from one blood meal sample.

In the Western Cape Region the following projects were continued:

Bent leg in lambs has increased in intensity, affecting other breeds than the S A Mutton merino. There is no doubt that the front leg (just above the knees) give way to the increase in mass which occurs at a faster rate than mineralisation of the bone, leading to the culling of some of the best genetic material. To date no cause has been identified.

The cause of Stellenbosch photosensitivity, damaging hepatocytes and bileducts of mainly young sheep, has not been identified yet.

In a survey conducted in the Swellendam State Veterinary area to determine selenium and copper deficiencies in lambs, it was concluded from blood analyses that 20% were deficient in copper and 1,3% deficient in Selenium.

**RESEARCH ON GAME AND DISEASES OF GAME**

Surveys in the Transvaal Region to determine the presence of *Ornithodorus moubata* tampans in warthog burrows in swine fever controlled areas, continued. The survey has shown that tampans are only present in warthog burrows north of latitude 25° south. Since positive warthog sera and tampans on farms bordering Thabazimbi district have been found in the Brits district, this district should possible be proclaimed a swine fever controlled area. Since these findings were absent in the districts of Rustenburg and Swartruggens, swine fever restrictions could possible be lifted in these districts in future.

The State Veterinarian Skukuza in the Northern and Eastern Transvaal Region continued research on Foot-and-Mouth disease in impala and warthog. Of all the cloven hooved ungulates in the Kruger National Park the impala is the most frequently infected with Foot-and Mouth Disease and more than 16 outbreaks have been diagnosed and confirmed in impala since 1967.

A serological survey on animals at large was undertaken as well as experiments on animals in captivity, to research various aspects of the disease. Some observations showed that impala develop marked viraemia after infection but excrete lower titres of virus via their airways and other routes than cattle or buffalo and are potentially less infectious; and they are able to infect cattle in the acute clinical phase of Foot-and-Mouth disease.
From experiments with Foot-and-Mouth disease Strain SAT 1 carried out on 4 warthogs in the Kruger National Park, it was learned that warthogs are extremely susceptible to SAT 1 and all but one died acutely. They developed coronet, lip, tongue and myocardial lesions after an incubation period of 3 to 5 days.

In an effort to study the epidemiology and possible chemo-sterilisation of *Theileria parva lawrenci* infection in buffalo, it failed to infect buffalo with a *T. parva lawrenci* tick suspension. No rise in antibody titre could be observed either.

Over the past four years local epidemics of Rinderpest, with some spread have been reported in various countries stretching across equatorial Africa from the Serengeti plains to Nigeria. Both domestic stock and wild life have been affected.

It was therefore imperative that the efficacy and safety of the Onderstepoort Rinderpest vaccine in various susceptible wild ungulates be evaluated. In an attempt to study the effect of different modes of administration in buffalo and impala it was found that a protective titre developed if the vaccine was administered by means of manual injection of disposable plastic darts. The live vaccine virus did not spread to unvaccinated controls and the vaccine was both effective and safe.

The safety of the wildebeest strain of Besnoitia was evaluated in immune supressed cattle. Three months after intraperitoneal injection of schistozoites no clinical symptoms developed and bloodsmears remained negative.

The Tsetse fly survey along the Limpopo and Levubu rivers continued, but fly catches were low and no flies of the genus Glossina were identified.

**CONTROL OF ANIMAL DISEASES**

**CONTROLLED DISEASES**

**FOOT-AND-MOUTH DISEASE**

No outbreaks of Foot-and-Mouth disease were diagnosed in the Republic of South Africa. In the Kruger National Park 1 giraffe, 3 impala and 17 buffalo showed suspicious lesions but no Foot-and-Mouth virus could be isolated.

As a routine preventive measure 65 794 cattle and 9 914 small stock were vaccinated with a bivalent vaccine in the Northern and Eastern Transvaal Region. In the Transvaal Region 2 980 cattle and 5 145 small stock on farms adjoining the Foot-and-Mouth disease laboratory were vaccinated with a trivalent vaccine. These
animals are vaccinated every four months. In the self-governing states adjoining the Kruger National Park 113 961 cattle and 16 251 small stock in KaNgwane and 14 712 cattle and 12 948 small stock in Lebowa.

During / ... - 9 -

During the year under review the Mocambique / R S A border neared completion. This is a double fence with an electrified fence in between.

The severe drought in Botswana caused much misery. Due to a lack of food and water, a decent market in Botswana, the difficulty of fence inspections due to inadequate roads and the destruction of fences by stock farmers, as well as seasonal fluctuations in water level of the Molopo river, the illegal importation of animals into the RSA remained a problem. Consequently a total of 102 bovine (worth R19 325) 77 small stock (worth R2 360) and 2 equines (worth R100) crossed the border from Botswana into the RSA. Of these, 8 sheep were destroyed, 9 goats and 8 cattle driven back, 82 cattle, 9 goats and 2 equines returned to the owners and 12 cattle slaughtered. No compensation was paid.

There was an increase in illegal introduction of animals from Mocambique. Forty-two such incidents, involving 650 cattle took place into Natal. Ten cattle (valued at R4 500) illegally brought into the Kruger National Park were destroyed and no compensation paid. A further 7 cattle and 38 goats strayed into the Kruger National Park and were destroyed and compensation of R3 005 paid. Twenty-three cattle smuggled into the Barberton district from Mocambique were confiscated and slaughtered without compensation. Income from the carcasses amounted to R5 334.

From Gazankulu 37 goats strayed into the Kruger National Park. All goats were destroyed and compensation of R90 was paid for 2 animals only.

Thieves from Zimbabwe stole 95 cattle, 259 donkeys and 38 goats from Venda farmers.

The threat of land mines along our international borders has become a reality, making it difficult and extremely dangerous to patrol the stock fence.

RABIES

From 357 cases diagnosed during the previous year, the amount of positive cases rose drastically to 463 during the year under review. Of 1 436 specimens submitted to Onderstepoort Veterinary Research Institute 463 (32%) were found positive for rabies. The majority of cases was diagnosed in mongoose (180) in Highveld, OFS and Transvaal Regions followed by dogs (120) (86 of which in the Natal Region) and cattle (93) in the Highveld and Northern and Eastern Transvaal Regions.
Animals found positive were: 180 mongoose, 120 dogs, 93 cattle, 22 cats, 17 bat-eared foxes, 11 jackal, 6 meercats, 4 horses, 2 sheep, 2 goats, 2 unspecified species, 1 cane rat, 1 aardwolf, one hyaena and one genet. An interesting case occurred in the Hoopstad district where a dog savaged a mongoose. Four days after contact, the dog started showing symptoms and died four days later.

Cases/...

Cases also occurred in KaNgwane (one bovine) and Lebowa (5 dogs).

As a primary control measure all dogs in the rabies controlled areas are vaccinated annually. Where outbreaks occurred outside these controlled areas all dogs and cats within a radius of 16 kilometers of the outbreak, were vaccinated. During the year under review officials of the Directorate of Veterinary Services vaccinated 332,695 dogs, 44,112 cats, 10 horses and 16,480 cattle. Farmers themselves vaccinated 9,250 cattle in the Northern and Eastern Transvaal Region, where the jackal population reached plague numbers. The total vaccinated (402,547) was a considerable increase in comparison with last year (323,409).

In self-governing states 21,809 dogs and 759 cats were vaccinated in Gazankulu, 61,343 dogs and 65,733 cats in Lebowa, 105,873 dogs and 7,998 cats in KaNgwane. No cases occurred in KwaNdebele and no vaccinations were done there.

As an added control measure to keep the numbers of mongoose down, 253 colonies and 1,812 single burrows covering 5,642 hectare were treated with 784 Phostoxin or cyanide tablets in the Highveld Region, 82 colonies in OFS Region, and 100 single burrows using 500 Phostoxin tablets in an area of ± 766 hectare in the Transvaal Region. In an attempt to reduce the numbers of jackal in the Northern and Eastern Transvaal Region, a campaign was launched by farmers of the Pietersburg district. Possible due to an unco-ordinated campaign, a disappointing 50 to 60 jackal were poisoned by Strychnine bait. Thirty-eight ferral cats were destroyed in the Kruger National Park.

Facilities are being provided at the regional veterinary laboratory Allerton for Rabies diagnosis and the necessary equipment has already been purchased.

**ANTHRAX**

Four outbreaks were recorded all of which occurred in the North Western Cape in the OFS Region, affecting nine cattle and 2 goats. Three farm labourers who ate an Anthrax carcase developed typical skin lesions. A single case was confirmed in an impala in the Kruger National Park. A total of 712 blood smears taken from carcasses throughout the Kruger National Park were screened for Anthrax, with negative results.
An outbreak of iatrogenic Anthrax was diagnosed in 40 goats in Natal. It was established that syringes with which Ivermectin was inoculated were used the same day to inject Anthrax vaccine. It seems that enough viable \textit{B. anthracis} organisms remained to contaminate the Ivermectin which may have acted as a protectant to the vaccine strain, causing marked swellings at the injection site and the actual death of 7 animals. Cultures from these lesions revealed a non-capsulated (vaccine) strain of \textit{B. anthracis}.

Annual inoculation with an approved vaccine is compulsory for all cattle in the Republic. However, although the Minister of Agriculture announced during the year that this would be the sole responsibility of the owner, officials of the Directorate of Veterinary Services still vaccinated 2 847 377 cattle, 1 542 sheep, 138 goats and 52 horses to redeem stock. Owners themselves vaccinated 553 083 cattle (total 3 400 460 cattle), the total of which represents 42% of the cattle population in white areas.

In the self-governing states 63 232 cattle were vaccinated in Gazankulu, 482 138 in Lebowa, 27 778 in KwaNdebele, 488 010 in Kwazulu and 115 467 in KaNgwane.

\textbf{CORRIDOR DISEASE (\textit{T. parva lawrenci})}

A single outbreak involving 3 cattle on a farm in Pilgrimsrest district in the Northern and Eastern Transvaal Region occurred at the end of March 1987. Two animals died. A 5:5:4 dipping regimen was recommended.

A suspected form of Theileriosis was reported by the regional veterinary laboratory Allerton in a three-month old calf from the Polela district in Natal. Lymph node smears from this animal revealed Koch’s bodies in 50% of the lymphoblastic cells. No small piroplasms were seen in the erythrocytes.

A total of 131 buffalo, which originated from Corridor free areas are kept on eight farms in the Highveld Region.

One outbreak, involving one bovine was reported in the black state of Kngwane, adjacent to the Kruger National Park. Buffalo had been grazing in the area about six months previously.

\textbf{TUBERCULOSIS}

Judged by the amount of tests done the activities involving the tuberculosis eradication scheme showed a decline. However, steady progress was made towards the national eradication of the disease through the streamlining of the scheme.
The approach by this Directorate to have all cattle tested within a 5 year period, necessitated many herds to be reallocated from the annual diagnostic scheme to herd diagnostic tests, whereby these herds will be subjected to one test only during this period. The aim is to locate infection and concentrate on eradication rather than maintaining the free status of herds. This responsibility shifted to the owners when health legislation regarding this came to force during the year. Combined with the "milk is milk" drive by the Dairy Board, whereby all milk producers were regarded on equal level, these maintenance tests were being privatised by the State.

The duties of inspectorate staff, of which 232 are trained to perform TB tests, have now mainly shifted to the launching of mini-campaigns. In the Transvaal Regional mini campaigns were held in 14 districts, involving 3 302 herds with 356 151 cattle (average cost per animal 41,6c), in Northern and Eastern Transvaal in two districts, involving 30 068 cattle (average cost 36,3c per animal) whereas in the Eastern Cape and Karoo Regional virtually 100% cattle had been tested in 34 districts.

An estimated 40,7% of the national herd total in the RSA have already been subjected to TB testing.

TB testing has also shifted upwards on the priority list of Stock Inspector duties, since the type of "elder"-inspections has fallen away. This is clearly demonstrated by the increasing amount allocated to TB tests by personnel in comparison to last year's figure (R1,6 m vs R1,4 m of previous year).

The incidence (positive animals) in total animals tested decreased from 0,054% to 0,048%, whereas the percentage positive herds in herds tested, also decreased from 1,06% to 0,78%.

There are currently 14 511 (15 123) herds comprising of 1 780 288 (2 028 687) cattle which participate in the scheme (previous year figures shown in brackets).

During the year under review 1 065 (2 382) certificates involving 213 801 (419 138) animals were issued to accredited herds and 3 762 (4 850) herds comprising of 568 455 (806 277) cattle were tested under the annual diagnostic scheme. More infected herds were cleared during the year bringing the total infected herds down to 112 (153) with 24 779 (33 841) cattle undergoing testes in the process of clearing up. There were four (8) infected herds with 994 (2 328) animals subjected to INH treatment.

Positive reactors slaughtered under the eradication scheme amounted to 853 (1 105) and of these 32% (31,7%) showed localised lesions, 18% (14,3%) were totally condemned and 50% (54%) showed no lesions.
Compensation paid to the owners for compulsory slaughtered animals amounted to R632 920 (R672 171) and carcasses sold fit for human consumption brought in R353 466 (R343 710) which was paid into Miscellaneous Revenue.

The 407 veterinarians in private practice, who have entered into a contract with the Government to carry out tuberculosis testes on behalf of the State, were paid R985 773 (R764 191) for their services.

Total expenditure for the eradication scheme amounted to R4,2m (R3,9m).

A summary of all the tests carried out during the year is given in table 1.

TABLE 1  TUBERCULIN TESTES CARRIED OUT DURING 1986/87

<table>
<thead>
<tr>
<th>Test</th>
<th>No of herd tests</th>
<th>No of tuberculin tests</th>
<th>Reactions</th>
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</thead>
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<td></td>
<td></td>
<td></td>
<td>Pos</td>
</tr>
<tr>
<td>Accreditation</td>
<td>1 418</td>
<td>280 919</td>
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<tr>
<td>Annual Diagnostic</td>
<td>3 865</td>
<td>596 038</td>
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</tr>
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<td>Herd Diagnostic</td>
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<td>850</td>
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<td>INH treated</td>
<td>4</td>
<td>994</td>
<td>3</td>
</tr>
<tr>
<td>Export</td>
<td>46</td>
<td>2 245</td>
<td>-</td>
</tr>
<tr>
<td>Import</td>
<td>10</td>
<td>46</td>
<td>-</td>
</tr>
<tr>
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<td>136</td>
<td>2 589</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>15 886</td>
<td>1 931 444</td>
<td>853</td>
</tr>
<tr>
<td></td>
<td>(16 469)</td>
<td>(2 010 460)</td>
<td>(1 075)</td>
</tr>
</tbody>
</table>

Since 1985 five infected herds in the Transvaal Region have been subjected to caudal fold testing, using double strength bovine tuberculin in the caudal fold of mainly Afrikaner type animals.

These tests were done with simultaneous normal strength bovine and avian tuberculin on the neck sites to correlate the conformity between the two sites as well
as trying to establish a test site where thick skinned Afrikaner type animals, which are often anergic, would be more sensitive to the test.

In 20 herds tests on 8 491 animals 88 animals tested positive of which 31% had lesions on post mortem.

It was ascertained that the readings on the tailfold correlated well with those on the neck site, rendering this method equally effective. However, in certain breeds the caudal fold method could be favoured above the neck-site, as it was found that in a small number where a negative reaction occurred on the neck, but showed up positive on the tailfold, in fact had lesions on post mortem.

A total of 1 080 cattle were tested in Lebowa, 175 in KwaNdebele, 237 in Kwazulu and 567 in KaNgwane, all with negative results.

No cases of M bovis infection in pigs were reported. However, the incidence of M avium var. intracellulare in the Transvaal Region rose from 604 to 5 314 carcases or part thereof condemned at abattoirs.

Two pigs were condemned in the Highveld Region for the same condition.

Tuberculin tests were carried out on 694 baboons at the University of Witwatersrand. Fifty nine were found to be positive. Five were killed and the remainder treated. M tuberculosis was isolated from the specimens sent to Onderstepoort.

An interesting case of a jockey suffering from avian tuberculosis was reported from Western Cape Region. This was the first positive case in South Africa of avian tuberculosis in an adult, as sufferers usually succumb before reaching adulthood.

**BOVINE BRUCELLOSIS**

Judging by the amount of tests done in the eradication of Brucellosis, this year (1,39m) in comparison to the figure for the previous year (1,5m), a levelling out of activities involving the scheme without much progress occurred. However, slow but steady progress was made in the decrease of the national incidence which declined further from 1,7% to 1,55%.

Lack of funds and the changes in the system as a result of the privatisation drive by the Department, were main attributes to the decrease in activities involving the scheme. Putting its aims high, the Transvaal Region successfully privatised 211 herds comprising of 22 129 cattle. The Northern and Eastern Transvaal and Eastern Cape and Karoo Regions held mini campaigns and 42 569 animals in 460 herds were tested. Natal Region rain a monitoring system (apart from the scheme) whereby 109 1000 animals in approximately 1 000 herds were screened for infection by means of the milk ring test. In the Highveld Region investigation into improving diagnosis by means of lochia continued and 2 179 lochia smears and 1 516 lochia cultures were examined.
At the end of the year 204 (186) herds totaling 29 528 (26 254) cattle were certified free of brucellosis under the accredited scheme and 3 508 (3 879) herds, totaling 296 038 (301 073) cattle attained CA 3 status. Fewer herds, i.e. 3 712, were certified free this year compared to 4 065 of the previous year probably due to herds dropping out of dairy production due to the change in health legislation and the “milk-is-milk” drive by the Dairy Board. A total of 435 (233) certificates was issued by virtue of milking tests, which indicates favouring of this test for the renewal of certificates as a cost saving measurement. The Transvaal Region reported 23 clear herds to be reinfected by suspect introductions or congenital infection. A total amount of 1 406 infected herds were newly tested and discovered for the first time during the year.

The average percentage of infected herds in total herds tested, remained basically the same on 24,9% (25,5%) varying from 35,0% in the Highveld Region to 7,3% in the Eastern Cape and Karoo Region. The percentage infected cattle in these herds were 4,1%.

In execution of ministerial instruction whereby vaccination became the responsibility of the owner, a decrease in the number of heifer vaccinations in comparison with last year was experienced. Officials of the Directorate of Veterinary Services vaccinated 430 946 (444 734) heifers and issued 394 851 (404 378) doses of vaccine to farmers. The use of the low dose Strain 19 vaccine in Natal and Western Cape Regions was discontinued at the end of the previous review year, but problems were encountered with very high and persistent serum titers and milking reactors in a number of adult vaccinates, which came into production during the year. In Natal, B abortus Strain 19 organisms were isolated from animals vaccinated at breeding age with low dose vaccine. These isolates conformed to the typing pattern expected of Strain 19, except for a partial tolerance to erythritol, which could possible account for high serum titers.

In 56 infected herds 5 916 cattle were vaccinated with the low dose vaccine under official supervision. Of the examined aborted fetuses 118 were positive for Brucella abortus.

For their share, to render services under the scheme on behalf of the State an amount of R402 030 (R389 307) was paid to veterinarians in private practice, of which 273 were actively involved in the scheme.

The total expenditure with regards to the eradication scheme amounted to R2 644 400 for the year under review.

Brucella abortus biotype I organisms were isolated from fluid extracted from carpal hygromata from two mature buffalo cows killed in the Kruger National Park.
A summary of tests carried out is given in Table 2.

<table>
<thead>
<tr>
<th>Type of test</th>
<th>Number of tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rose Bengal</td>
<td>1 106 793</td>
</tr>
<tr>
<td>Complement Fixation</td>
<td>106 700</td>
</tr>
<tr>
<td>Serum agglutination</td>
<td>12 217</td>
</tr>
</tbody>
</table>

**Milk tests**

<table>
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<th>No positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milkring tests</td>
<td>20 867</td>
<td>1 716</td>
</tr>
<tr>
<td>Bacteriological</td>
<td>157</td>
<td>19</td>
</tr>
</tbody>
</table>

Of the 12 560 blood samples tested in Lebowa 1.2% were positive. In KwaNdebele 186 cattle in 3 herds tested negative and in Kwazulu 2 031 cattle were tested, of which 0.9% was positive. No animals were bled in KaNgwane and Qwa Qwa.

Preventative vaccinations were performed on 43 455 heifers in Lebowa, 4 126 in KwaNdele, 33 545 in Kwazulu and 6 709 in KaNgwane.

**BRUCELLA MELITENSIS**

Problems were encountered with Rev 1 vaccine on 3 farms in the Transvaal Region. On a farm in the Bronkhorstspruit district 25/80 ewes out of a flock of 110 sheep aborted. The ewes, with an unknown vaccination history were introduced to the farm and were not vaccinated with Rev. 1 subsequent to arrival at the farm. Blood samples taken from 61 ewes and 1 ram, tested positive for Brucella and **B melitensis** was isolated from two foetuses. The VRI Onderstepoort then purchased 62 ewes and 24 lambs from the farmer at R3 800,00. **B melitensis** organisms were isolated from sheep sacrificed for tissue sampling.

On two additional farms 3 ewes aborted, and from all three a similar **B melitensis** (I S strain) was isolated.

An outbreak of **B melintensis** (I S strain) Rev 1 infection with testicular lesion in 13 out of 200 Angora rams was investigated by the VL Grahamstown in the Eastern Cape and Karoo Region. These rams developed orchitis and epidydimitis, caused by a mutant Rev 1 strain.

The vaccine was withdrawn by the VRI Onderstepoort, during June 1986. A new vaccine based on a Rev. 1 strain imported from France became available during November 1986 again.
TRYPANOSOMIASIS

NAGANA

No cases were reported.

DOURINE

Of 3,834 equine blood samples tested, 7 (0.18%) were positive for dourine. One of the positive mares was donated to Onderstepoort VRI for further research, one stallion was gelded and the rest destroyed, all without compensation.

TRYPANOMA EVANSI

At the Jan Smuts quarantine station 61 dogs were tested with negative results.

SHEEP

SHEEP SCAB

The responsibility of compulsory dipping of sheep rests solely with the owner. No official supervision was carried out and no dipping figures were thus available.

There was a considerable increase in outbreaks in white areas, amounting to 184 in 55 districts compared with 78 of the previous year. In the Independent and self-governing states were 263 outbreaks, compared with 384 in the previous year.

The magisterial districts in white areas where infestation occurred, together with the number of outbreaks in each area were as follows: Gordonia, 26, Elliot 19, Potchefstroom 13, Wepener 11, Lichtenburg 10, Hopetown 8, Maclear 5, Viljoenskroon 4, Smithfield 4, Kenhardt 4, Dannhauser 4, M. Currie 4, Underberg 4, Barkley East 4, Westonarea 3, Frankfort 3, Babanango 3, Prieska 3, Willison 3, Vereeniging 2, Vanderbijl 2, Pretoria 2, Winburg 2, Senekal 2, Odendaalsrus 2, Klerksdorp 2, Dewetsdorp 2, Bloemfontein 2, Boshof 2, Petrusburg 2, Hay 2, Vryburg 2, Randfontein 1, Heidelberg 1, Brits 1, Lindley 1, Kroonstad 1, Marico 1, Oberholzer 1, Bothaville 1, Christianna 1, Wesselsbron 1, Brandfort 1, Excelsior 1, Rouxville 1, Zastron 1, Herbert 1, Kuruman 1, Postmasburg 1, Ixopo 1, Mooi River 1, Impendle 1, Newcastle 1, Untrecht 1, Vryheid 1.

On farms in the white areas where outbreaks were diagnosed, 25,204 animals were visibly affected and 415,560 sheep and goats were at least dipped twice with an interval of 8 to 10 days or injected twice with an injectable remedy with an interval of 8 days.

Three owners were prosecuted in the Transvaal Region and one in OFS Region, without success, but in Highveld Region two owners were found guilty and one paid a fine of R100 and the other received a suspended fine of R150 of 75 days imprisonment.
A mini campaign was carried out in the districts of Barkley East, Maclear, Elliot, Indwe and Tarkastad in the Eastern Cape and Karoo Region.

In the independent and self-governing states 13 outbreaks were confirmed in Kwazulu, one in KaNgwane, 4 in Bophuthatswana and 245 in Transkei. Officials of the Departments of Veterinary Services of these states dipped or treated with Ivermectin 82 545 sheep and 557 959 goats in Lebowa, 15 418 sheep and 61 599 goats in KwaNdebele, 1 890 427 animals in Transkei and 2 200 in Bophuthatswana. Statistics for the other states are not available.

**MANGE**

**CATTLE MANGE (PSOROPTES)**

Twenty outbreaks in nine districts were recorded in various regions, which were considerable less than the 39 outbreaks reported the previous year. The use of systemic treatment was met with approval in most cases.

In the Transvaal Region 2% and 50% off cattle were affected in 2 outbreaks, in Northern and Eastern Transvaal Region 5 outbreaks involved 5% of the herds, in the Highveld Region 14% were affected in 4 outbreaks, in the OFS Region 14% were affected in 8 outbreaks and in the Western Cape Region 14% were affected in 8 outbreaks and in the Western Cape Region 11% of the herd were affected in one outbreak.

In Lebowa 31 cases in 3 districts were reported.

**GOAT MANGE**

No outbreaks were reported in the white areas.

In Lebowa 9 cases were reported and two outbreaks occurred in KaNgwane involving 158 goats. These were treated systemically with Invermectin. In Kwazulu 77 outbreaks were reported and 69 116 goats dipped.

**AFRICAN SWINE FEVER**

A single outbreak occurred in the Potgietersrus district. Twenty pigs were involved of which 16 died and 4 were destroyed for which compensation of R60,00 was paid.

The movement of pigs, bushpigs and warthogs and their products out of the swine fever control area is still under close control. Two persons were prosecuted for illegally transporting warthog carcasses or live domestic pigs without the necessary permits, and one was found guilty and fined R750,00 or 9 months imprisonment; the other still has to appear in court.
Excellent progress was made with the tampan survey. A total of 329 burrows on 54 farms in 7 districts in the Transvaal and Northern and Eastern Transvaal Regions were examined for tampans. It was shown that tampans are only present in warthog burrows north of latitude 25° south. Of 33 warthog sera 13 from Thabazimbi and Brits districts were serologically positive, whereas 5 domestic pig and 10 bushpig and warthog sera from the Potgietersrus, Waterberg and Groblersdal districts were negative for swine fever-antibodies.

There were 82 approved piggeries with 65 753 pigs in the white areas of the controlled area and 38 approved piggeries with 1 555 pigs in the controlled area of Lebowa.

**SWINE ERYSIPELAS**

A total of 85 outbreaks, involving 21 481 pigs, were reported, but as in the past, only 5 outbreaks were reported on clinical cases on farms; the majority being diagnosed at abattoirs.

In the Transvaal Region were 39 outbreaks, involving 20 065 pigs, with 69 carcasses condemned and 72 pigs treated. Most cases occurred under the age of 148 days in unvaccinated animals. Insurance, where 80% of the value is paid out, is more profitable than vaccinating expenses.

Thirteen out of 557 carcasses from one instance were condemned at the abattoir in the Northern and Eastern Transvaal Region and in another outbreak two affected pigs were slaughtered and 120 revaccinated.

One pig, in contact with 6 others, died in the OFS Region.

In the Highveld Region four outbreaks, with 32 carcasses condemned were reported. Clinical cases were only found on one farm.

No further cases could be traced back at the farms of origin of 16 carcasses condemned in 11 outbreaks reported in Natal Region.

In the Eastern Cape and Karoo Region three outbreaks were diagnosed involving 630 pigs, of which 5 were affected.

Twenty five outbreaks occurred in the Western Cape Region, where 52 carcasses were condemned and 5 animals clinically affected on 2 separate farms.

In all outbreaks vaccination and treatment were recommended.
JOHNE’S DISEASE

Five outbreaks, involving eight Santa Gertrudis and three Brahman cattle, were reported.

In the Transvaal Region three outbreaks occurred, involving one Brahman and 8 Santa Getrudis cattle. Five animals were destroyed under supervision and R1 720 compensation paid to the owners for 4 animals, whereas the insurance paid out for one bull. Two animals died and two were destroyed by the owner.

In the Northern and Eastern Transvaal Region a single case was diagnosed in a Brahman stud. The animal was destroyed and compensation to the value of R2 400 paid to the owner.

For a Brahman bull destroyed in an outbreak in the Natal Region, the owner was paid R500 compensation.

No vaccinations were done.

NEWCASTLE DISEASE

Six outbreaks were reported.

One outbreak occurred in Northern and Eastern Transvaal Region where 800 fowls died and 400 were destroyed. Another outbreak occurred in the OFS Region where 350 out of 700 chickens died and two small localised outbreaks occurred in Natal Region, killing 29 birds.

From the Transvaal Region two outbreaks were reported from the Jan Smuts quarantine station, with 66/563 finches succumbing to the disease.

No cases in poultry were recorded in the Western Cape, but many pigeons were found to be serologically positive for the mutant strain PM V 1.

Eight outbreaks, involving a lentogenic virus were diagnosed by the Poultry Diagnostic Section.

In Lebowa 82 850 birds were vaccinated against the disease and in KwaNdebele 300.

PSITTACOSIS

A few outbreaks were reported, totalling 11.
In Transvaal Region one outbreak occurred at the quarantine station Jan Smuts with 1/60 Amazon parrots succumbing to the disease.

A single outbreak was diagnosed in a racing pigeon in Northern and Eastern Transvaal Region. The affected pigeon was destroyed and the rest treated.

In Natal 8 outbreaks, involving 11 birds were reported.

**Chlamydia psittaci** was isolated from a lovebird in the Western Cape Region.

**SCRAPIE**

No cases were reported and no new farms were placed under quarantine.

At present there are still four farms under quarantine in Transvaal Region and two in the State Veterinarian Middelburg (CP) area.

**BOVINE MALIGNANT CATARRH (SNOTSIEKTE)**

With the advent of game farming now recognised by the Department, and to cater for local and overseas hunters many farmers stocked their farms with blue and black wildebeest. In 125 districts out of a possible 270 in the RSA, 1 189 farms run wildebeest. Adjacent cattle farmers, mainly in the Thabazimbi district, experienced serous cattle losses, when at least 200 cattle in the Sentrum area died as a result of Snotsiekte, through direct contact with wildebeest or in some instances cattle died where the closest wildebeest were 1 km away.

In the Transvaal Region, 10 outbreaks, where 159 animals died were confirmed and another 8 unconfirmed outbreaks with 55 animals dead, were reported. Losses of 82, 52 and 42 animals on 3 separate farms were reported in the Thabazimbi district. Dissatisfied farmers in that district sent a memorandum to the Minister of Agriculture, claiming compensation from the Government for cattle lost and replacement of wildebeest with other species of game. Game farmers are willing to sell their wildebeest for R1 000,00 per animal.

A Snotsiekte Committee was established at Onderstepoort and basic research was started on the game farm Krugerspan near Sentrum, in the Thabazimbi district.

In the Northern and Eastern Transvaal Region ten outbreaks were reported and 26 animals died, after having been in contact with blue or black wildebeest. Eighteen out of a total of 19 blue wildebeest bled in the Messina district, were sero-positive for Snotsiekte.

Five confirmed outbreaks were reported in the Highveld Region, in which 10 animals died and in another unconfirmed outbreak a bull died, after having had contact with sheep.
Fifteen cattle died in 6 confirmed outbreaks in the OFS Region, in which four outbreaks could be linked with black wildebeest.

In all 5 outbreaks where 10 cattle died in the Natal Region, contact with blue wildebeest was established.

In total, the 45 outbreaks (36 confirmed) show a 50% increase above the 24 outbreaks of the previous year.

Wildebeest are found on 3 game reserves in KwaNdebele and one in KaNgwane, but no cases were reported.

**CONTAGIOUS EQUINE METRITIS (CEM)**

Contagious Equine Metritis has not yet made its appearance in this country. All imported mares and stallions are still being subjected to stringent tests to ensure that they are free from the disease.

Two sets of 10 swabs from 10 mares served by an imported stallion were examined in the Highveld Region; swabs taken from 53 mares and 28 stallions in the Transvaal Region, 120 swabs from 30 mares in the Eastern Cape Region, swabs from 219 mares in the Western Cape Region, and 79 swabs from stallions and 511 from mares were examined by the regional veterinary laboratory Allerton. All swabs were negative.

**EQUINE INFLUENZA**

For the first time in history outbreaks of this disease occurred in the RSA, after its introduction during December 1986. Although it has been accepted that the Jan Smuts quarantine station was the sole source from where it was introduced with a consignment of six horses from the USA, reasonable doubt still remains. These six horses were vaccinated and healthy at the onset of the journey, but on arrival some exhibited symptoms of a cold and travel fatigue, which is a general phenomenon where horses are transported over such long distances. Three days after their arrival two other imported vaccinated horses were released and transported by motor vehicle to the Western Cape. The same vehicle transported horses back to the OFS. The disease erupted at all offloading points, infecting a large area of the country. At this stage a positive diagnosis of Equine Influenza (Equi 2) was made by the VRI Onderstepoort.

The spread of the disease in a completely susceptible population was rapid and a total of 564 outbreaks, with 8 068 reported cases, occurred since December 1986. Twenty-five deaths were reported and 4 745 animals had to be treated; the Western
Cape and the Witwatersrand in the Transvaal being hardest hit. No cases were reported from Northern and Eastern Transvaal and Natal Regions.

Within a week of the disease being diagnosed here, vaccine was imported and made available to the industry. The bivalent Onderstepoort vaccine, containing both Equi 1 and 2 viruses, was released during March 1987.

The disease had a serious effect on the one billion Rand horse industry. Racing was stopped in the Transvaal and the Cape for 3 months and an estimated 70% of breeding stock were affected by either movement control, or other restrictions and severe financial losses, even by the State with regard to taxes, were incurred.

The disease was proclaimed in the Government Gazette No 10607 of 13 February, 1987 as a controlled animal disease and compulsory vaccination, quarantine measurements on an infected property, stricter control measures at quarantine stations and proper immunization of horses before entering the country, came into effect.

Several organisations e.g. the Jockey Club of SA, Show and Gymkhana Societies have also instituted their own set of rules to control movement of animals, which helped to contain the spread of the disease.

At the Johannesburg zoo, where horses, donkeys and zebra are kept in adjacent camps, horses and donkeys contracted the disease, with fatalities in both, but none of the zebra became ill. Donkeys seem to be more prone to death after contracting the disease.

A total of 48 imported horses were tested at the Jan Smuts quarantine station with negative results.

The disease was not reported from self-governing states.

**EQUINE INFECTIOUS ANAEMIA**

At the quarantine station Jan Smuts two imported horses were tested with negative results.

**EQUINE VIRAL ARTERITIS**
At the quarantine station Jan Smuts 81 imported horses were tested. All the horses were negative.

The following controlled diseases have as yet not occurred in the RSA:

- Aujezky’s Disease
- Swine Vesicular Disease
- Contagious Equine Metritis

Controlled diseases which occurred in the RSA but have been eradicated and have since then not reappeared are:

- Equine infectious anemia
- Glanders
- Contagious bovine pleuropneumonia
- Hog cholera
- Rinderpest
- Scrapie
- East Coast fever

NON-CONTROLLED DISEASES

BACTERIAL DISEASES

MASTITIS

The occurrence of mastitis is as widespread as ever, and is one of the most important factors affecting the dairy economy. Few outbreaks were generally brought to our attention. The mastitis control scheme was run in five regions and valuable information with regard to pathogens, carriers and treatment could be obtained. The "on farm" aspect of the scheme was privatised during the year in some regions.

Only 12 outbreaks involving 102/793 cattle were reported in the Transvaal Region. Somatic cell counts were done on 34 samples and *Staphylococcus aureus* was found to be the most prevalent pathogen. Four outbreaks of blue udder involving 10/754 cows of which nine cows actually died and 23/4 170 sheep were reported.

The veterinary laboratory at Louis Trichardt examined 20 milk samples, where *S aureus* was present in 25% of samples, *S agalactiae* in 15% and *Pseudomonas*
aeruginosa in 10%. Three herds participated in a mastitis scheme run by State Veterinarian Lydenburg. A total of 156 samples were cultured with S aureus present in 79%.

The Potchefstroom veterinary laboratory had 71 herds, with 4260 cows participating in the mastitis scheme. Although the Kroonstad veterinary laboratory had no participants in the mastitis scheme, 28253 somatic cell counts were made, as well as 6108 bacteriological cultures, from specimens from 3054 cows. Staph aureus was isolated from 974 cultures. Subclinical mastitis was present in 11% and teat canal infection in 5.7% of 16037 quarters examined by the Potchefstroom veterinary laboratory.

In 25 magisterial districts in the Highveld Region 100 outbreaks with 581 clinical cases in 4839 cows were reported as well as seven outbreaks of blue udder in sheep involving nine cases, caused by Pasteurella haemolytica in one case.

The number of herds participating in the mastitis scheme of the Bloemfontein veterinary laboratory declined further to 63 (89) with 3523 (5061) participating cows, due mainly to the drought and economic recession, although the number of samples tested declined marginally to 37833 (40159). Apart from the 37833 milk samples tested, 154 swabs of the rubber teatliners, 59 water samples and 67 teat dip samples were examined for the presence of pathogenic organisms. Staphylococcus aureus was found to be the most prevalent isolate (72%) from milk samples with a high cell count, while cases as a result of Pseudomonas aeruginosa infection rose sharply, mainly where hygiene was poor. Antibiograms were done on 423 specimens.

Farm visits amounted to 62, where 51 cases with acute mastitis and 172 with chronic mastitis was diagnosed in 539 cows examined.

Only 7 outbreaks of mastitis in cows were reported in the OFS Region and two outbreaks of blue udder, affecting 8 sheep and one Angora ewe were reported.

The regional veterinary laboratory Allerton and the veterinary laboratory Vryheid in the Natal Region had 198 herds with 21337 cows participating in the mastitis scheme and 53425 somatic cell counts were made. From the 15196 bacterial cultures that were done, pathogens could be isolated from 8867. Staphylococcus aureus as the pathogen, was identified in 44% of these.

In the Eastern Cape and Karoo Region 82 herds, representing 8079 lactating cows participate in the mastitis scheme. Of the 20074 milk samples analysed, 34% had high Somatic cell counts and Staphylococcus aureus was once again the most prevalent pathogen. Seventeen outbreaks involving 73 cows were reported. In six cases in sheep and Angora goats, Pasteurella haemolytica was the cause of blue udder, while S aureus was isolated in another 6 cases and Staphylococcus epidermidis in two cases.
The scheme, initiated by the regional veterinary laboratory Stellenbosch, has 31 dairy herds with 8 465 cows and 1 goat herd numbering 350 does, participating and most of the work has been privatised. Of the 645 milk cultures examined, 247 tested positive to pathogenic organisms, of which *S. aureus* was the most prevalent.

**ENTEROTOXAEMIA (PULPY KIDNEY)**

Numerous outbreaks were recorded in all regions. This is entirely due to negligence on the part of farmers, as they have an excellent vaccine at their disposal to control the disease.

The following outbreaks were reported:

In the Transvaal Region 45 outbreaks with 496 deaths in sheep, in the Northern and Eastern Transvaal Region 13 outbreaks with 64 sheep dead, in Highveld Region 43 outbreaks, with 134 sheep dead, in OFS Region 35, 4 and one outbreaks with 299, 12 and 6 sheep, Angora and cattle deaths respectively, in Natal 52 outbreaks in sheep and 2 in goats killing 270 and 21 respectively, in Eastern Cape and Karoo Region, 54 and 8 outbreaks occurred, killing 364 sheep and 52 Angora, and in the Western Cape Region, 197 outbreaks in sheep and Angora, killing 1 054 sheep and 43 Angora. The cattle deaths were confirmed by the VRI Onderstepoort.

Officials assisted farmers with the vaccination of 450 sheep in the Transvaal Region, 958 sheep and 413 goats in the Northern and Eastern Transvaal Region, and 1 530 sheep in the Highveld Region. A total of 2 246 010 doses of vaccine were purchased by farmers in the Western Cape Region.

No / ...

- 26 -

No cases were reported in the self-governing states. In Lebowa 933 sheep were officially vaccinated.

**QUARTER EVIL**

Mortality as a result of Quarter Evil was once again prevalent in all regions:

Transvaal Region 108 cattle and 1 sheep in 45 outbreaks; Northern and Eastern Transvaal Region 191 cattle and 4 goats in 43 outbreaks; Highveld Region 35 cattle and 2 sheep in 15 outbreaks; OFS Region 25 cattle, 14 boer-goats, 1 blue wildebeest and 1 eland in 13 outbreaks; Natal Region 366 cattle and 1 sheep in 131 outbreaks; Eastern Cape and Karoo Region 13 cattle, 19 sheep and 15 Angora in 11 outbreaks, Western Cape 4 calves in 4 outbreaks.
Officials of the Directorate of Veterinary Services assisted farmers in inoculating 138 571 cattle, 200 goats and 180 sheep.

One case was diagnosed in kwaNdebele. In Lebowa 218 164 cattle were vaccinated against Quarter Evil, 4 487 in KwaNdebele and 103 599 in KaNgwane.

**CLOSTRIDIUM SEPTICUM**

In a total of 19 outbreaks, the following animals were reported to have died: Two cattle, 7 sheep and 9 goats in Northern and Eastern Transvaal Region, 4 cattle and 2 sheep in Highveld Region, where officials assisted in vaccinating 209 cattle, one sheep in OFS Region, 7 sheep and 8 goats in the Eastern Cape and Karoo Region and 8 lambs in Western Cape Region.

**CLOSTRIDIUM NOVYI** (Thick head)

A severe outbreak of *C1 novyi* infection caused the death of 7 adult cows two days after a group of 25 was vaccinated with *Moraxella bovis* vaccine, in the Western Cape Region. In the Northern and Eastern Transvaal Region two cattle died after anthrax inoculation. In 28 other outbreaks, 3 sheep died in Transvaal Region, 4 cattle and 6 sheep died in Highveld Region, 1 lamb died in OFS Region, 29 cattle and 2 sheep in Natal and 13 sheep in Western Cape Region.

At the Dairy Research Institute at Irene two bulls in a group of 340 died of *Clostricium perfringens* infection.

**BOTULISM**

Cases of botulism were recorded in more than 70 outbreaks in all regions. Severe losses were incurred in intensive feeding systems. In a feedlot in the Eastern Cape and Karoo Region where poultry manure was fed to 50 unvaccinated animals 26 died and the rest underwent emergency slaughter. In the Transvaal Region 31 imported stud Ile de France sheep valued at R200 000 died of Botulism over a period of 2 months, before a diagnosis could be made. Two sick sheep were treated with antitoxin and recovered.

Apart from these two outbreaks, the following deaths were reported:

Transvaal Region 67 cattle; Northern and Eastern Transvaal Region 27 cattle and one recovery after treatment with antiserum; Highveld Region 8 cattle, 7 geese, 1 turkey, 1 muscory duck, OFS Region 55 cattle, 208 sheep, 6 goats, 1 ostrich; Natal 3
cattle, 1 sheep; Eastern Cape and Karoo Region 34 cattle, 78 sheep, 1 ostrich; Western Cape Region 336 sheep and 14 cattle.

Officials of the Directorate of Veterinary Services assisted farmers in inoculating 31 787 cattle and 2 365 sheep and goats and 166 018 doses of vaccine were reported to have been sold in the Western Cape Region.

In Lebowa 2 225 cattle and in KaNgwane 523 cattle were inoculated against botulism by officials of the Division of Veterinary Services.

**TETANUS**

Once again many lambs and kids were lost as a result of castration, tail docking or shearing wounds becoming infected with *Clostridium tetani*.

The following losses were reported in the regions of :

Transvaal 31 lambs and 5 calves, Northern and Eastern Transvaal 32 sheep and 8 goats, Highveld 23 lambs, OFS 79 lambs, 1 kid and 2 cattle, Natal 7 sheep, Eastern Cape and Karoo 33 lambs, 11 Angora and 1 bovine and Western Cape 143 lambs.

**LAMB DYSENTERY**

After a quiet previous year, lamb dysentery had struck in mainly the Eastern Cape and Karoo Region, where 260 Angoras, 20 boergoats, 12 Dorpers and 25 Merino lambs died of the disease. A few more outbreaks were reported in Transvaal Region with 10 lambs dead, in the Highveld Region with 2 lambs dead and in the Western Cape with one death.

**REDGUT**

Redgut is a disease of sheep occurring mainly in the Western Cape Region. A total of 67 outbreaks with 813 deaths was reported in that Region and for the first time also reported in piglets, killing 8 out of 10.

Deaths reported in other regions were as follows :

5 sheep, 3 Angora and 1 boer goat in Eastern Cape and Karoo Region, 10 sheep and 1 Angora in OFS Region and 1 sheep in Highveld Region.

**CORYNEBACTERIOSIS**
This disease is widespread throughout the country especially after wound infection (e.g. shearing) and heavy tick infestation, but is seldom reported.

*Corynebacterium pyogenes* and to a far lesser extent *C. ovis* organisms were once again responsible for abortions, metritis, septicaemia, otitis media, pneumonia and abscessations in various organs of cattle, sheep and goats. Hypophyseal abscesses in goats feature strongly, and *C. pyogenes* organisms were isolated from 6 aborted fetuses.

Twentyseven outbreaks with 77/8 411 sheep and 11/1 559 cattle dead were reported in the Transvaal Region. *C. pyogenes* was also isolated from an aborted bovine fetus.

In the Northern and Eastern Transvaal Region *C. pyogenes* was isolated from various organs of 5 aborted foetuses and the genital tract of 3 cows and one ewe after abortion. Pupulent pneumonia caused the death of 2 sheep, 46 goats, 80 kids and 3 calves; skin abscesses were noted in 18 sheep and 25 goats; one kid suffered from haemolytic anaemia; multiple abscessation was responsible for the death of 1 bovine, 3 boergoats and 2 sheep and for emanation in 25 ewes and one ewe died of a brain abscess, all in the same area.

Eight outbreaks, in which 5 cattle died and 4 recovered after treatment, as well as 9 outbreaks in which 5 sheep and 1 goat died and seven sheep affected, were reported in the Highveld Region.

Seventy outbreaks, involving 62 cattle, 629 sheep, 22 goats and 1 Black wildebeest were reported in the OFS Region. Hypophyseal abscesses in goats and a spinal abscess in a bull were also diagnosed.

In Natal Region 2 796 sheep carcases were condemned at the Cato Ridge abattoir for abscessations caused by *C. pyogenes*.

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The 65 reported outbreaks, claiming the lives of 213 animals in the Eastern Cape and Karoo Region, are an underestimation, as many more deaths were reportedly encountered. In a persistent outbreak of infectious keratitis, affecting 250 out of 400 merino lambs on irrigated pastures, a secondary infection with *C. pyogenes* was determined. Lambs on natural grazing did not develop keratitis.

One horse, 3 cows, 2 goats and 150 sheep (mainly as a result of infected shearing wounds) died in the Western Cape Region in 2 outbreaks of the disease.

Officials of the Directorate of Veterinary Services assisted farmers in inoculating 595 cattle, 471 sheep and 191 goats in the Northern and Eastern Transvaal and Highveld Regions.
In KwaNdbele 34 cases of Corynebacteriosis were reported, involving 14 cattle, 2 goats, one sheep and 18 dogs.

**BOLO DISEASE**

Bolo disease remained a problem in the Stutterheim district in the Eastern Cape and Karoo Region, where it was first encountered. A new dip to control the disease was launched by a pharmaceutical firm. A total of 32 skin swabs were examined from cases in 5 suspected new outbreaks.

Three outbreaks, involving 40 sheep were reported in the Natal Region and two unconfirmed outbreaks involving 17 sheep were reported from OFS Region.

**PASTEURELLOSIS**

This is one of the most important bacterial diseases of ruminants in the country, but, with regular vaccinations the disease can be kept under control.

A total of 43 outbreaks was reported in the Transvaal Region in which 309 sheep and 68 cattle succumbed to the disease. Nine cows and 22 ewes also suffered from blue udder.

In 19 outbreaks in the Northern and Eastern Transvaal Region, 131 sheep, 307 goats, 5 cattle, one pig and ten angora rabbits died.

In the Highveld Region 39 sheep died in 34 outbreaks and in 20 outbreaks in cattle, 17 were reported to have died, as well as one rabbit and one dog.

Despite regular vaccinations two farmers in the OFS Region lost up to 300 sheep per annum from Pasteurellosis. In all together 55 outbreaks in the region, 25 cattle, 175 sheep, 15 Angoras, 100 boergoats and 3 rabbits succumbed to the disease. In 11 outbreaks 8 ewes died of blue udder.

Forty cattle, 58 goats and sixty sheep died in 43 outbreaks in the Natal Region.

In the Eastern Cape and Karoo Region 158 cattle, sheep and goats died in 31 outbreaks of the disease. 44 Cases involving 192 animals were examined by the veterinary laboratories in the area. *P haemolytica* was isolated in 80% of cases and *P multocida* in 2.5%. Two Angora rabbitries showed a high incidence, which was solved by vaccination.

Total deaths recorded in the Western Cape Region were: 25 sheep, 120 cattle and 2 goats. In 76 outbreaks of blue udder 155 affected ewes were treated and 196 died.
Officials of the Directorate of Veterinary Services assisted farmers in inoculating 3,733 sheep and goats and 4,847 cattle. In Lebowa 289 cattle were inoculated.

**COLIBACILLOSIS**

The medication of feed concentrates and vaccination are of great importance in controlling the disease, especially in piggeries.

Fourteen outbreaks involving 89 calves and two outbreaks involving 25 chickens were reported in the Transvaal Region.

Two lambs, 5 goatkids, 5 calves and 39 piglets died of the disease in the Northern and Eastern Transvaal Region, as well as a goat ewe with post-parturient septic metritis. Approximately 200 calves developed scourrs after a weaning period of 48 hours, followed by two weeks “kraaling” prior to the onset of an A I programme in the same region.

Nine outbreaks were reported in the Hihgveld Region, causing the death of 2 cattle, 3 sheep and 7 pigs, as well as an abortion in a cow. A pathogenic *E. coli* strain together with *Klebsiella ozanae* were isolated from the cervix of a mare.

Eleven outbreaks, involving 43 lambs, 10 Angora goats, 21 calves, 60 goat kids and six fowls were reported in the OFS Region. Vaccination resolved the problems.

In Natal, 49 outbreaks were reported, involving 44 sheep, 14 horses, 19 cattle, 48 fowls and 15 pigs.

In 22 outbreaks in Eastern Cape and Karoo Region 70 sheep and goats, 3 Angoras, 5 calves and 1 pig died and another 16 Angoras and one sheep were affected.

Recorded cases in the Western Cape Region were: 4 calves, 4 sheep, and 25 piglets dead and 36 calves, 1 cow, 1 sheep and 30 foals affected. Positive cases were also found in squirrels, monkeys and 2 springbuck.

Three from …

Three unconfirmed outbreaks, affecting 14 chickens and one calf and killing 16 chickens, were reported in KwaNdebele.

**LEPTOSPIROSIS**
The disease, mainly diagnosed in cases of abortion, occurred more widespread according to blood tests, than commonly thought.

In the Transvaal Region 359 blood samples were collected on several farms where abortions and fertility problems occurred and tested for leptospirosis, 192 had positive and 6 suspicious reactions.

From 37 farms experiencing fertility problems and abortions in the Northern and Eastern Transvaal Region, 416 blood samples were tested and 34 farms showed positive serological titers with 45% of specimens positive. From seven farms randomly selected, but without fertility or abortion problems, 203 blood samples were tested. All seven farms had positive serological titers and 52% of blood samples were positive.

In the same area local State Veterinarians, in collaboration with the VRI Onderstepoort, isolated Leptospira mini for the first time in the RSA. From 134 samples from 13 herds in the Pietersburg area with abortion problems 12% were positive for L mini and 2% for L hardjo. In another State Veterinary area 14 cows were bled and 21% were positive for L tarassovi, 14% for L hardjo and 7% for L pyrogenes. L tarassovi is not mentioned in the literature as a cause of abortions. A total of 5 962 cattle were vaccinated by staff of the State Veterinarian Nelspruit.

Only 2 samples from 1 800 pig sera tested in the OFS Region, showed positive titers.

L pomona and L hardjo were the most common species identified in 49 outbreaks, involving 153 bovine and 1 pig in the Natal Region.

Sixteen cases of acute haemolytic anemia in calves on a farm in the Western Cape Region preceded an outbreak of abortion due to Leptospira pomona in cattle. The same organism was responsible for another outbreak where animals had access to effluents from a piggery. As a result of a Leptospirosis flare-up in piggeries in the same region 2 500 tests were performed in a monitoring operation, but all proved negative. However, 5 kidneys from pigs slaughtered from another piggery were positive for L pomona. Six out of 44 meat inspectors tested for leptospirosis, were found to be positive.

PSEUDOMONAS / ...

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PSEUDOMONAS

Pseudomonas aeruginosa was isolated from 23 horses, 3 dogs, 1 bird and one angora rabbit which suffered from the disease in the Eastern Cape and Karoo Region. Pseudomonas organisms were also responsible for chronic mastitis in a cow and fatal pneumonia in a goat in the Northern and Eastern Transvaal Region;
the death of one sheep in Highveld Region as well as different forms of infection in 2 birds, 7 horses and 19 cattle in Natal Region and one horse in the Eastern Cape and Karoo Region.

**ACTINOBACLLOSIS AND ACTINOMYCOSIS**

Few cases were reported, viz: one case of Actimycosis in cattle in Transvaal Region, two cases in cattle in Northern and Eastern Tranvaal Region, three cases in the Highveld Region, one out of which *Actinomyces odontolyticus* was isolated from subcutaneous abscesses which developed at vaccination sites, 3 cattle and 17 sheep (one with brain abscess) in OFS Region, one case in Natal, and two in Eastern Cape and Karoo Region in a bull and a ram.

*Actinobacillus lignieresi* was the cause of facial abscesses in 10 sheep in Northern and Eastern Transvaal Region and epidydimitis in a sheep in Highveld Region.

**FOOT ROT AND FOOT ABSCESS**

The disease can be considered endemic in certain parts of the wet Boland area. In 34 known outbreaks in the Western Cape Region, the incidence in both cattle and sheep ranged from 1% to 60% in affected herds. *Bacteroides nodosus* was also isolated for the first time from sheep in the Region.

Despite good rains in the Transvaal Region the disease was not much of a problem and 44 outbreaks, involving 94 cattle and 56 sheep were recorded.

Sheep kept on intensive pastures on two farms in the Northern and Eastern Transvaal Region experienced severe foot abscess problems, affecting 180 ewes out of 2 350 animals. The condition was also seen in two goats and 3 sheep in another district.

Only three cases of footrot and six of foot abscess were reported in the Highveld Region.

In OFS Region 35 cases were reported, 33 in sheep and 2 in cattle.

**Moist / …**

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Moist conditions in Natal caused widespread outbreaks of footrot in sheep and 87 samples from 24 farms were investigated, yielding 37 positive identifications on 13 farms. The commercial vaccine made valuable contribution to the control of Footrot. The first diagnosis of Footrot in boergoats in SA, was also made in this Region during February.
In Eastern Cape and Karoo Region at least 185 ruminants were affected in 28 outbreaks.

These conditions occurred commonly throughout Lebowa and KaNgwane (with seven reported cases in Lebowa) and seven cases were diagnosed in KwaNdebele.

**LISTERIOSE**

Only three outbreaks were reported:

Four sheep out of 70 were affected in Western Cape Region, 1 cow aborted and a pig died as a result of *Listeria murrayi* in the Highveld Region.

**KLEBSIELLA INFECTIONS**

Infections with Klebsiella organisms were diagnosed in imported horses at the quarantine station Jan Smuts and six different strains were isolated from 7 horses.

*K ozaenae* was isolated from a mare in Highveld Region as well as from fetus and placenta samples taken during an outbreak of abortions, affecting 18 out of 70 ewes.

Eleven *K pneumonia* isolates were made from 1,579 mare swabs examined in the Natal Region, but only one isolate proved to be pathogenic type 2.

*K ozaenae* was isolated from a calf and a horse in the Eastern Cape and Karoo Region and *K pneumonia* from 1 horse.

**STAPHYLOCOCCUS AUREUS INFECTION**

Apart from its prominence in mastitis, this organism was diagnosed in several cases of abscessation as well.

In the Transvaal Region the organism was isolated from 382 milk and abscess samples and five dairy cows were affected in two outbreaks of mastitis.

In the Northern and Eastern Transvaal Region a bovine and a sheep developed spinal myelitis, 3 piglets developed arthritis, one goat had pleural abscesses, several broilers died from hepatitis and it infected a compound fracture in a lamb.

In Highveld Region only three cases were recorded in a mare, a dog and a lovebird.
Staph aureus as causal organism for infection was recorded in 5 horses, 8 birds, 11 dogs, 12 cattle and 1 pig in Natal Region.

Various forms of abscessation and infections were reported in 3 dogs, 2 calves, 35 angoras, 13 merinos, 3 goats and 2 birds in the Eastern Cape and Karoo Region.

Uterine swabs from dairy cows with conception problems tested positive in Eastern Cape.

HAEMOPHILUS SOMNUS (T E M E)

In Natal fewer cases of thrombo-embolic-meningo-encephalitis (T E M E) caused by this organism, were diagnosed in only one feedlot and a vaccination trial had been completed. The first case of pneumonia was found in the same feedlot. The organism had also been isolated from various samples of bull semen in the same region.

In the Transvaal Region the organism was isolated from the sheath washing of a bull. In the Northern and Eastern Transvaal Region 2/3 rams had unilateral orchitis. The organism was subsequently also detected in the vaginal mucus of a number of ewes in the flock. In a herd with a low calving rate, the organism was isolated from sheath washings of 3 bulls and vaginal mucus of 3 cows. In Eastern Cape and Karoo Region the organism was isolated from two sheep fetuses.

OTHER BACTERIAL INFECTIONS

Steptococcus zooepidemicus was isolated from a calf which died of white scours in the Transvaal Region, 43 isolates were made from mare swabs in Natal and 27 Angora kids and 7 lambs died in 4 outbreaks in Western Cape Region.

Necrobacillosis caused the death of a sheep and a bovine in Northern and Eastern Transvaal Region, two ewes and five boer goat kids in Highveld Region as well as the death of one lamb and one bovine in Eastern Cape and Karoo Region.

Salmonellosis caused the death of a bovine in Highveld Region, five cattle died acutely in OFS Region and it caused the acute death of a ram in Eastern Cape and Karoo Region.

PROTOZOAL DISEASES

BABESIOSIS
This remained one of the most common tick born diseases in the country and many more cases than reported were treated by private veterinarians and farmers, 
**B bigemina** infections played a major role in outbreaks.

The following numbers relating to cattle were reported: Transvaal Region 328 dead and 261 affected in 92 outbreaks, Northern and Eastern Transvaal Region 167 dead, 113 affected and 7 abortions in 58 outbreaks, Highveld Region 10 dead and 12 affected in 18 outbreaks, Natal 1 506 cases in 491 outbreaks, Eastern Cape and Karoo Region 139 dead and 105 affected in 91 outbreaks and Western Cape Region 88 dead and 649 affected in 108 outbreaks.

Five cases of Equine biliary fever and one death occurred in Transvaal Region, 13 in Northern and Eastern Transvaal Region, 2 in Highveld Region, 26 in Eastern Cape and Karoo Region, and 5 in Western Cape Region. **B equi** was diagnosed as the cause of abortion in a mare in the Western Cape Region. The aborted foal had an exceptionally high paracytaemia.

Forty two dogs in various regions were reported to have suffered from the disease. 61 Imported dogs at the quarantine station Jan Smuts were tested for **Babesia gibsoni**, with negative results.

In Lebowa 6 cases were treated; in KwaNdebele the number of cases increased to 30 (11) in cattle as a result of cessation of dipping during the unrest as well as cases in one horse and 40 dogs; in KwaZulu where a breakdown in dipping as a result of drought and water shortage was experienced, 588 positive cases were diagnosed on smear examination; and in KaNgwane several cases of cerebral redwater were reported.

### ANAPLASMOSIS

Cases of Anaplasmosis were recorded throughout the country, with Natal Region heading the list.

The following cases were reported:

Transvaal Region 23 sick and 16 dead in 21 outbreaks, Northern and Eastern Transvaal Region 36 sick and 7 dead in 24 outbreaks, Highveld Region 39 sick, 25 dead as well as one congenital case in 47 outbreaks, OFS Region 45 sick and 20 dead in 29 outbreaks, Natal Region 743 cases in 270 outbreaks, Eastern Cape and Karoo Region 97 sick and 46 dead in 70 outbreaks, Western Cape Region 425 sick and 71 dead in 152 outbreaks.

Sixteen cases were treated in KwaNdebele and 41 cases reported in KwaZulu.
**BESNOITIOSIS**

Besnoitiosis was mainly diagnosed in the Northern and Eastern Transvaal Region where 8 outbreaks with seventeen animals affected were recorded. In two outbreaks in the Transvaal Region 2 animals were affected and in another outbreak in the Highveld Region a single animal was affected. In Lebowa 253 cattle were vaccinated, in KwaNdebele one suspected case and in KaNgwane another suspected case reported.

**COCCIDIOSIS**

Coccidiosis infections were common in almost all regions, with specific losses in Angora goats, which seem to be more susceptible than any other species.

In the Transvaal Region most of the 11 outbreaks occurred where zero grazing or irrigated pastures were used, killing 10 calves and 107 lambs and in the Northern and Eastern Transvaal Region 90 calves were reported to have suffered from the condition, 7 of which succumbed.

Eleven outbreaks, involving 2 cattle, two sheep, 54 poultry and one pigeon were reported in the Highveld Region.

In the OFS Region 128 cases were reported, involving 102 sheep of which 50 died, 1 Angora goat and 25 boergoats and in Natal Region 28 cases in bovine, 13 in goats and 2 in sheep were reported.

Fifty six outbreaks occurred in Eastern Cape and Karoo Region, 42 of which in Angora, often manifested in chronic diarrhea with simultaneous tapeworm infestation. Nine calves, 42 sheep and 432 Angora goats were affected as well as 126 Angoras killed. Fairly high oocyst counts were seen in goats under natural grazing conditions during surveys carried out at the Jansenville experimental farm, indicating the sensitivity of the Angora to this infection.

In the Western Cape Region 29 outbreaks occurred with 3 250 sheep affected and 10 dead, 611 Angoras affected and 21 dead and 86 calves affected.

In KwaNdebele 4 avian and 1 caprine were successfully treated in 3 outbreaks.

**MILD / …**
MILD BONINE THEILERIOSIS

A mild form of Theileriosis was reported by Natal Region in a 3 month old calf. Lymph node smears revealed Koch’s bodies in 50% of the lymphoblastic cells, but no small piroplasms were seen in erythrocytes. Sixteen suspected cases were diagnosed in KaNgwane.

EPERYTHROZOONOSIS

A single pig in the Highveld Region died of this condition.

VIRUS DISEASES

BLUE TONGUE

In some regions ideal climatic conditions prevailed for outbreaks of blue tongue, but problems were mainly encountered where vaccination was inadequate.

The following cases were reported:

In Transvaal Region 29 outbreaks (unconfirmed) with 48 sheep dead and 72 sick, Northern and Eastern Transvaal Region 199 cases and 1 dead in at least 20 outbreaks, Highveld Region 7 sick and 5 dead in 5 outbreaks, OFS Region 211 sick and 116 dead in 18 outbreaks, Natal Region 168 cases in sheep and 4 in cattle in 31 outbreaks, Eastern Cape and Karoo Region 14 outbreaks with 122 sick and 10 dead and Western Cape Region 70 outbreaks in which 90 sheep died and 451 were affected.

In Natal Region it has been confirmed that the Blue tongue virus was the cause of abortions in cattle, when high levels of antibodies were found in fetal fluids from aborted fetuses, on a number of farms. Abortions occurred in small storms of up to 2.5% of breeding cows during late summer and autumn and on one farm 9 out of 10 newly introduced pregnant heifers aborted.

In the Highveld Region officials assisted farmers in vaccinating 1 027 sheep and in Western Cape Region 654 522 doses of vaccine were sold for use on part of the sheep population of 4.3 million of that region. In Lebowa 144 sheep were vaccinated; two outbreaks with 5 sheep affected occurred in KwaNdebele, and one outbreak involving 6 sheep was reported in KaNgwane.
AFRICAN HORSE SICKNESS

Although good rains and the common occurrence of the vector were beneficial to horse sickness outbreaks, only a few were reported:

Transvaal Region 4 outbreaks with 5 sick and 3 dead, Northern and Eastern Transvaal Region eleven sick and 4 deaths, OFS Region one death, Natal Region 14 outbreaks with 15 cases and Eastern Cape and Karoo Region one outbreak with 2 deaths.

Officials assisted farmers in inoculating 134 horses in Northern and Eastern Transvaal Region.

One case was diagnosed in KwaNdebele and one in Kwa Zulu. In Lebowa 169 and in KwaNdebele 13 horses were vaccinated against horsesickness.

HEARTWATER

This disease remained one of the most prevalent tick born diseases in certain regions, mainly bushveld areas of the country. An international workshop was held in the Kruger Park to discuss Heartwater matters and was attended by 3 officials of this Directorate.

In Transvaal Region 100 outbreaks were reported, causing the death of 178 cattle, 128 sheep and 45 goats.

Regions where heavy losses were incurred, were the Northern and Eastern Transvaal Region with 947 cattle deaths and 35 recoveries, 529 sheep deaths and 221 deaths in goats in 589 outbreaks and the Natal Region with 361 cattle, 255 sheep and 99 goats dead in 199 outbreaks. In the Eastern Cape and Karoo Region 100 outbreaks were reported in which 445 sheep died and 300 affected and 32 cattle affected.

Nine outbreaks, claiming the lives of 50 cattle were reported in the Vryburg district of the OFS Region. In the Highveld Region a single outbreak occurred on a farm where Amblyomma ticks were introduced 5 years ago, killing 2 animals and farmers were assisted in vaccinating 21 cattle. In Western Cape Region 14 sheep died and 58 affected in 3 outbreaks as well as 6 deaths and 12 affected cattle in 2 outbreaks.

The disease was also prevalent in the self-governing states, with 182 cattle, 5 sheep and 126 goats treated as well as 203 cattle, 30 sheep and 156 goats immunized in Lebowa. In KwaNdebele 24 outbreaks were reported in cattle with 26 affected and 2 deaths and in sheep and goats 30 outbreaks with 55 animals affected and 10 deaths in goats. Officials in this state vaccinated 45 cattle, 44 goats and 2 sheep. No statistics were available for the other states.

EPHEMERAL / …
EPHEMERAL FEVER (Three-day-stiffness)

Except for Natal Region, where the disease was widespread during last year, the incidence increased in most regions.

The following cases were reported:

Natal Region 59 outbreaks affecting 499 cattle, Transvaal Region 41 outbreaks with 170 cases and 9 deaths, Northern and Eastern Transvaal Region 98 cases and 3 deaths in more than 13 outbreaks, OFS Region 27 cases, Eastern Cape and Karoo Region 15 outbreaks affecting 50 cattle and one death and 184 cases in Western Cape. Despite vaccination, 33 out of 120 cattle on 3 farms in Western Cape Region contracted the disease.

In the self-governing states 103 cases were diagnosed in Lebowa and in KwaNdebele 27 outbreaks with 30 cases. In Lebowa 87 cattle were vaccinated with official aid.

RIFT VALLEY FEVER AND WESSELSBRON DISEASE

No cases of Rift Valley Fever were reported throughout the country.

In the Eastern Cape and Karoo Region Wesselsbron disease was diagnosed in 54 cases on at least 13 farms, the disease being manifested in abortions and cases of hydrops amnii. Typical oversized arthrogryposis type fetuses were recovered through caesarian section carried out on these cases.

Officials helped farmers to vaccinate 1 977 cattle in the Highveld Region.

PULMONARY ADENOMATOSIS (Jaagsiekte)

Cases of Jaagsiekte were reported from most regions.

A farmer in the Northern and Eastern Transvaal Region reported that he had to sell out his flock of 1 500 sheep over the past year due to the occurrence of jaagsiekte.

A new outbreak was confirmed in the Highveld Region, where 60 sheep were reported to have died over a 2 - 3 year period and 3 sheep died in two other farms, known to be infected.

In OFS Region jaagsiekte has been a consistent problem over the last 4 to 5 years with a death rate of 2 - 3% (out of 3 000 Dorpers). Two other outbreaks were reported, with 2 sheep deaths.
Sixty out of 500 merinos died in Eastern Cape and Karoo Region, where *C. pyogenes* played a role as secondary infective agent. A single case was reported in Natal.

**INFECTIOUS OPHTHALMIA**

The condition is widespread throughout the country and is a common occurrence on almost every farm, albeit poorly reported. Infection were mostly caused by *Moraxella* spa, as well as *Chlamydia psittaci*. The imported Moraxella vaccine seemed to have given fairly good protection.

In Transvaal Region 40 outbreaks were reported with 354 cattle affected. Some farmers believe that blesbuck play a role in the spread of the condition.

In Northern and Eastern Transvaal Region 205 cattle, 20 sheep and 30 goats were reportedly affected. Subconjunctival antibiotic treatment gave the best results.

Twenty-five percent of 40 calves and 29% of 700 sheep were affected in 3 outbreaks in the Highveld Region. In the OFS Region 24 outbreaks, involving 139 cattle and 40 sheep were reported.

Eight cattle and 2 185 sheep and goats were affected in 13 recorded outbreaks in Eastern Cape and Karoo Region, where infection in various herds varied from 11% to 97%. In Western Cape Region 55 outbreaks were recorded in the Malmesbury district and in George area infections ranged from 0,5% to 10%.

The condition occurred widespread in the self-governing states, but only one outbreaks was reported in Lebowa, affecting 182 sheep and 53 goats and 14 outbreaks in KwaNdebele with 28 cases reported.

**CONTAGIOUS PUSTULAR DERMATITIS**

Economic losses, resulting from infection with this virus, could be effectively curtailed in many outbreaks making use of prepared vaccines.

The following cases were reported from all regions:

Transvaal Region 418 sheep and 70 goats affected in 5 outbreaks, Northern and Eastern Transvaal Region at least 876 goats and 312 sheep affected in more than 13 outbreaks, Highveld Region five outbreaks affecting 1 168 sheep, OFS Region 14 outbreaks with 651 sheep and goats affected, Natal Region 2 sheep affected in 2 outbreaks, Eastern Cape and Karoo Region 103 outbreaks where the incidence varied from 2% to 21%, with 918 sheep and goats affected and 10 dead and Western Cape Region 5 outbreaks with 275 sheep and goats affected.

Autogenous / ...
Autogenous vaccine was prepared for use in outbreaks and 906 doses were prepared in Highveld Region, 38 264 doses in Eastern Cape and Karoo Region and 1 375 in Western Cape Region.

One outbreak in which 3 goats were affected, was diagnosed in KwaNdebele.

**MUCOSAL DISEASE**

Abortions as a result of mucosal disease were reported in 3 cows in the Eastern Cape and Karoo Region and in a number of cattle in the Eastern Transvaal and Natal Regions. Fifteen lambs died and 150 cases of Shaker lambs in Van Rooy sheep as well as 6 deaths in calves were encountered in the Eastern Cape and Karoo Region. Eight cattle died in the Northern and Eastern Transvaal Region and six outbreaks with 16 cattle affected and 2 dead were reported in the Transvaal Region.

**INFECTIOUS BOVINE RHINOTRACHEITIS**

No less than 257 bulls out of 340 contracted IBR at the Irene Production Centre of the Animal and Dairy Science Research Institute, showing a loss of weight as the most important symptom.

At the Jan Smuts quarantine station 3/3 cattle developed the disease.

In the OFS Region 2 feedlot cattle died, 150 showed respiratory distress and 30 animals had to be treated for IBR. Four animals developed symptoms in the Transvaal Region, one in Natal and one in Eastern Cape and Karoo Region, whilst the infection was reported to be prevalent in the Eastern Transvaal Region.

**EPIZOOTIC BOVINE LEUCOSIS**

No positive animals were identified. Five cattle were tested in the Transvaal Region with negative results.

**LUMPY SKIN DISEASE**

All reported cases were caused by the Allerton type virus.

The following outbreaks were reported:

Transvaal Region 2 outbreaks affecting 6 animals, Northern and Eastern Transvaal Region four outbreaks affecting 9 cattle, a single case in the Highveld Region, two outbreaks affecting 11 cattle in Natal and one outbreak affecting 4 cattle in Western Cape Region.
Officials of the Directorate of Veterinary Services assisted in vaccinating 825 cattle.

Two cases were reported in Lebowa where 1,619 cattle were inoculated, five suspected outbreaks with 12 cattle affected in KwaNdebele and one suspected outbreak was reported in KaNgwane.

**HERPES VIRUS**

In 17 outbreaks in the Eastern Cape and Karoo Region, 17 horses were affected and a mare aborted.

**NEOPLASMATA**

Squamous cell carcinoma in Angora goats and sheep was the most common form of neoplasma diagnosed and in Northern and Eastern Transvaal Region one Angora (vulva), Highveld Region one sheep, OFS Region 3 sheep and 2 cattle, Eastern Cape and Karoo Region 16 Angora (ears and perineum) one cow (eye) died.

Other neoplasmata were: 1 sheep with leucosis and 1 bovine with mesothelioma (growths resembling tuberculous grapes) in Eastern Cape and Karoo Region, 1 sheep with adenocarcinoma in Highveld Region, 37 calves and 1 sheep with papillomatosis in OFS Region, 8 Angora with melanocarcinoma and 4 calves with papillomatosis in Eastern Cape and Karoo Region, and 72 calves on 13 farms with papillomatosis as well as lymphosarcoma in 4 sheep flocks in Western Cape Region. In one flock of the latter, the incidence could be reduced from 40% to 0.4% by means of regular “Bovine leucoses immunodiffusion” tests.

**BORDER DISEASE**

Two suspected outbreaks, causing the death of 5 lambs were reported in the OFS Region.

**MAEDI-VISNA DISEASE**

At the quarantine station Jan Smuts, three sheep were tested with negative results.

**VIRUS DISEASES OF DOGS**

Parvo virus infection remained a serious problem of young pups throughout the country and mortality was high in unvaccinated animals especially where the cardiac form was manifested.
FUNGAL DISEASES

RINGWORM

The condition is found all over the country, but is seldom brought to the attention of State Veterinarians.

The following cases were reported:

Transvaal Region: a total of 9 outbreaks with 88 cattle involved, 3 of which were in imported cattle from the USA, Northern and Eastern Transvaal Region: 3 outbreaks with one horse, one dog and 212 cattle, OFS Region: 67 cases in cattle, 1 horse and 7 sheep, Natal Region: one outbreak involving 15 calves, Eastern Cape and Karoo Region: 26 outbreaks involving 137 cattle, 86 sheep, 7 dogs and 2 cats and 8 outbreaks in calves.

Ringworm is reported to occur commonly in the self-governing states, but no figures were available.

LUMPYWOOL

The disease is seldom reported.

In the Transvaal Region: 2 outbreaks were reported affecting at least 5 sheep, some with facial lesions. Three outbreaks were reported in Highveld Region, with 57 cases. In OFS Region: 5 outbreaks, involving 182 sheep were reported. Eight outbreaks, affecting 416 sheep and 22 Angoras were reported in Eastern Cape and Karoo Region and in the Western Cape Region: 13 outbreaks were recorded where 6% of these herds were affected.

STEPTOTHRICOSIS (Senkobo)

The condition was only diagnosed in Northern and Eastern Transvaal Region where 52 out of 260 cattle were affected. Two animals died after rapidly losing conditions and dehydration.

ASPERGILLOSIS

Aspergillus flavus was isolated from the stomach content and lungs of a bovine that died in the Northern and Eastern Transvaal Region and from a bovine fetus in the Highveld Region.
Aspergillus fumigatus was isolated from a swab taken from a mare in the High Region.

At the quarantine station Jan Smuts, 5 outbreaks occurred with 34 mortalities in parrots. A total of 17 A fumigatus isolations were made of avian specimens in the Natal Region, one of which was from a captive flamingo where the fungal growth was easily discernable to the naked eye and a distinct powdery layer on the surface of the airsacs and lungs.

In the Western Cape Region 3 outbreaks were recorded with 17 cases. It is now possible to forecast elevated mortality in 10 day old chickens when A fumigatus can be isolated from fluff samples obtained from incubators during weekly hatchery monitoring. Fifteen chickens died of aspergillosis in the Highveld Region.

INFERTILITY AND VENERIAL DISEASES

Infertility and poor calf and lamb crops were encountered in all regions but was not always caused by diseases, as drought conditions, amongst others, attributed to a low plane of nutrition leading to fertility problems.

In the Transvaal Region 42 herds with a total of 1 316 cattle were examined for pregnancy. It was established that the percentage pregnant cows and heifers varied between 10% and 83%, with an average of 44%. The low pregnancy rate (10%) in one herd was caused by Vibriosis. 46 Bulls were tested for fertility and 9 were infertile and culled.

Persistent drought conditions in the Northern and Eastern Transvaal Region were responsible for fairly low regional calving percentages. A total of 124 herds with 17 568 cattle were examined for pregnancy and the rate varied from 36% to 98%, with an average of 70%. The herd with the highest rate was exceptionally well managed, whereas the herd with the poor pregnancy rate (36%) was due to malnutrition. A total of 531 bulls from 40 herds were tested for fertility and 72 culled for various reasons.

Of the 1 493 cows that were pregnant tested in the Highveld Region, 1 114 (75%) were pregnant. Thirty-four bulls were tested for breeding purposes and one was culled for abnormal spermatozoa. Out of 100 aborted bovine fetuses examined, 21 were positive for the presence of Brucella abortus organisms.

The percentage pregnant of 1 936 cows examined in the OFS Region, varied from 47% to 90% with the average of 63%. 29 Bulls were tested for fertility of which 2 were infertile and culled.
In Natal 7 herds with 1 880 animals were examined for pregnancy. The pregnancy rate varied from 60% to 88%.

Calving / …

- 45 -

Calving rates in the Eastern Cape and Karoo Region were reported to be satisfactory, with the breaking of the serious 4 year drought.

In the Western Cape Region 248 herds with 14 360 cows were examined for pregnancy. The pregnancy rate varied from 60% to 86%, with an average of 73%. A total of 845 vaginal swabs, as well as 49 aborted fetuses and 56 placentas were examined in the region.

The determination of fertility and diseases of the genital tract in rams gained considerable importance and veld ram projects where rams are tested under natural veld conditions, were initiated and well under way. Three projects, one for Dorper rams and one for Merino rams in the OFS Region and one in Eastern Cape and Karoo Region with 160 rams involved are currently underway.

A total of 15 591 rams in the OFS, Eastern Cape and Karoo and Western Cape Regions were examined by means of palpation and semen smears and 460 (3,0%) had lesions, 467 (3,0%) were positive for *Brucellosis ovis* infection, 680 (4,4%) were positive for *Actinobacillus seminis* infection, 2 336 (15,0%) had neutrophiles in the semen, 394 (2,5%) had Dag defect, 26 had other bacterial infections and from 113 no semen could be collected.

Apart from those rams tested, another 1 178 rams from various regions were clinically examined (without semen collection) and 69 were culled, mainly due to testicular lesions. Another 33 rams were tested for fertility and certified fertile in the Western Cape Region.

A total of 9 900 ewes from 23 flocks were tested for pregnancy in the Western Cape Region. Pregnancy rates varied from 74% to 100%, with an average of 88%. A perinatal mortality of up to 20% is still regarded as “acceptable” in some farming units.

Abortions due to various causes, other than infective agents, e.g. ketosis, acidosis, habitual and post-vaccination were reported in sheep and Angora goats in the Eastern Cape and Karoo Region. *Enterobacter agglomerans* was isolated from an aborted equine fetus.

A total of 627 swabs from the genital tract of mares was examined and 132 (21%) found to be positive for various pathogenic organisms, of which *E. coli* and *Streptococcus zooepidemicus* were the most prevalent.
In the self-governing states pregnancy tests were done on 7 herds with 95 animals, but the pregnancy rate is not known. In KwaZulu the generally low calving percentage is attributed to poor breeding management and poor nutrition.

**VIRBIOSIS**

The disease was diagnosed in all regions except the Western Cape Region. There was an increase in the incidence from 1,2% for the previous year to 2,0%.

Of the 4 319 sheath washings of examined bulls, 88 (2,0%) on 25 farms were positive. The infection rate varied from 0,4% in Natal Region where the biggest amount of bulls was tested (1 523) in Transvaal Region. In a herd infected with Vibriosis in the Transvaal Region, only 10% of cows were in calf.

A total of 2 749 animals was vaccinated with the assistance of officials of this Directorate.

Forty four bulls were tested for Vibriosis in KwaZulu with negative results. In Lebowa 96 cattle were vaccinated against Vibriosis.

**TRICHOMONIASIS**

Cases of Trichomoniasis were diagnosed in all regions except the Western Cape Region. The incidence remained constant at 5,0% (5,2%).

Of the 7 147 sheath washings of bulls which were examined 354 (5,0%) from 134 farms were positive, the incidence per region varying from 1,2% in Eastern Cape and Karoo Region to 24% in Transvaal Region. Mainly Bonsmara herds were infected in the Western Transvaal area, where calving percentage was 35% in a specific herd and many heifers of a 60 heifer-herd aborted or did not conceive after a borrowed infected bull was used during mating.

Good results were obtained when using skimmed milk as a transport medium for Trichomonas testing. Treatment of infected bulls remains hazardous and only one bull in Highveld Region was reported to have been successfully treated.

Eighty five bulls were tested in KwaZulu and nine found to be positive for Trichomoniasis.

**CHLAMYDIOSIS**
Chlamydiosis, which specifically manifested itself in causing abortions as well as meningo-encephalitis, pneumonia, poly-arthritis, lymphoid hyperplasia of the small intestine, stillbirths and retained afterbirths, were reported in all regions.

The Transvaal Region reported one unconfirmed outbreak where 1 out of 5 calves died. In a single outbreak in the Northern and Eastern Transvaal two full term calves born alive died within 48 hours and Chlamydia organisms were isolated from bain specimens. In the Highveld Region two sheep aborted as a result of Chlamydia.

In the OFS Region 26 outbreaks occurred in sheep and goats resulting in the death of 32 sheep, 211 abortions and 9 still births in sheep, 410 abortions in Angoras and in five outbreaks where seven calves died due to encephalitis.

One outbreak in sheep involved in abortions, was reported in Natal.

In the Eastern Cape and Karoo Region 21 outbreaks were reported, with 6 outbreaks of abortion in sheep and cattle, 12 outbreaks of neonatal deaths in goats, sheep and calves and 3 outbreaks of meningitis in goats.

Six outbreaks with 182 abortions in 1 900 ewes, were reported in Western Cape Region.

**ACTINOBACILLUS SEMINIS**

The incidence in the main sheep farming areas was found to be 4,4%. Ten out of 53 rams tested in the Transvaal Region had epididymitis and had to be culled. In the Northern and Eastern Transvaal Region twelve rams were tested for *A seminis* with negative results.

Out of the semen or epididymus of 13 rams in the Highveld Region Actinobacillus *actinomyctem comitans* organisms were isolated and another two were culled as a result of *A seminis* infection.

In the OFS Region 91 rams (1,5%) had the infection out of 6 058 tested on 277 farms.

Out of a total of 4 697 rams tested in the Eastern Cape and Karoo Region 305 (6,5%) were infected with *A seminis*.

59% Or 284 rams out of 4 836 tested in the Western Cape Region yielded a positive diagnosis for the disease.

**BRUCELLA OVIS**
Infections of rams with this organism is rather common at 3,0% in the main sheep farming areas of the country, albeit a lower incidence than *A. seminis*, despite the availability of the Rev 1 vaccine.

Of the 6 058 rams which were tested in the OFS Region, 269 (4,4%) showed *Brucella ovis* infection. In the Eastern Cape and Karoo Region 102 (2,2%) of the 4697 rams tested had the infection and 2,0% or 96 of 4 836 tested rams in the Western Cape Region were infected. In the Northern and Eastern Transvaal Region 12 rams were tested with negative results.

**INFECTIOUS BALANO POSTHITIS / VULVITIS (Peestersiekte)**

The condition was reported in the OFS, Eastern Cape and Karoo and Western Cape Regions only, affecting mostly Dorper sheep.

Thirty one outbreaks, involving 142 rams were reported in the OFS Region. A new drug will be evaluated in field trials in the coming year.

In three outbreaks in the Eastern Cape and Karoo Region 80% of rams were affected, and in another 3 outbreaks 70 ewes and 12 rams showed the infection, which responded well to antibiotic treatment.

Although more widespread than reported, 3 outbreaks which involved 611 ewes and 29 rams out of 4 581 sheep examined, were recorded in the Western Cape Region.

**Q FEVER**

The economic importance of *Coxiella burnetti* infection in particular goats, was again emphasized. The Northern and Eastern Transvaal Region reported that at least 12 outbreaks of abortions in goats, cattle and sheep were caused by this organism. An abortion rate of 50% was experienced in a goat herd where *C. burnetti* could be found in 12 lochia smears and one fetus. Two placenta smears from Brahman cows were positive and five bovine herds, experiencing unexplained abortions, from 20 herds bled with 425 serum samples taken, had positive titres. Another 3 ewes, after 19 had aborted and 8 cows were found to be positive.

Nine outbreaks, with 75 abortions in sheep and one in a goat were reported in the Highveld Region.

The organism was isolated from 1 of 17 aborted fetuses in the OFS Region and six boergoats in the Eastern Cape and Karoo Region were reported to have been affected by it.
DISEASES OF CALVES

WHITE SCOURS

Cases of white scour in calves are seldom brought to the attention of State Veterinarians. It has however, occurred in most regions.

One outbreak, where 12 calves died and 78 more cases on various farms were reported in Transvaal Region, eight outbreaks, with 302 affected and 10 dead in Northern/…

PARATYPHOID

This disease is seldom reported.

A total of 35 calves died in the Transvaal Region, four calves died and seven showed severe diarrhoea in 2 outbreaks in the Northern and Eastern Transvaal Region, three outbreaks with 4 deaths were reported in the Highveld Region, one calf died in OFS Region, one calf died in OFS Region, 54 cases were encountered in 21 outbreaks in Natal, two outbreaks occurred in Eastern Cape and Karoo Region, with 4 affected and 2 deaths and in Western Cape and Karoo Region 5 outbreaks were recorded with 18 deaths in calves.

Twenty three cases were reported in Lebowa, where 499 calves were vaccinated and in KwaNdebele two cases were treated and 2 vaccinated.

CALF DIPHTHERIA

This is a rare disease nowadays.

Two calves died in Transaal Region, 5 died in Northern and Eastern Transvaal Region and four were affected in Western Cape Region.
SWEATING SICKNESS

Sweating sickness is common throughout the country and the occurrence of its vector, the bont-legged tick, was enhanced by drought conditions, mainly the Western Transvaal areas. However, few outbreaks were reported by farmers.

In Transvaal Region at least 8 outbreaks with 11 calves affected were reported, as well as an outbreak in boergoats in which 4 developed severe clinical signs.

In the Highveld Region 6 cases were reported, 34 in OFS Region and 50 in Natal.

In Lebowa 23 cases were reported and four in KwaNdebele.

DISEASES OF POULTRY

There were no widespread outbreaks of major poultry diseases as vaccination programmes in general appear to provide sufficient protection against the major virus diseases. However, the role of maternal antibody and its effect on early vaccination of chicks with live vaccines was thought to influence its response to fixed vaccination programmes and had therefore been investigated in the Natal Region.

The Poultry Diagnostic Section of the Directorate and veterinarians employed by the poultry industry, mainly dealt with poultry diseases.

BACILLARY WHITE DIARRHOEA AND FOWL TYPHOID

One outbreak killing 200 as well as affecting 10 out of 400 chickens in 5 out of 10 houses was reported in Eastern Cape and Karoo Region and 2 small outbreaks with 5 cases, were reported in Natal Region. Two suspicious outbreaks occurred in OFS Region, killing at least 7 fowls. At the quarantine station Jan Smuts 225 gallinaceous birds were tested with negative results.

*Salmonella typhimurium* infection was encountered in 7 outbreaks at the quarantine station Jan Smuts with 256/1 616 parrots and parakeets dying of the condition.

At the quarantine station Jan Smuts 30% of mortalities in 75% of all consignments of birds that arrive at the station, die due to hepatitis caused by *Salmonella* spp.

Seven cases were reported in Lebowa.

FOWL CHOLERA

No cases were encountered.
INFECTIOUS BRONCHITIS

The disease was mostly controlled by vaccination. Complaints were received from farmers that “foreign” strains might be responsible for an increase in incidence, because existing vaccines seemingly gave limited protection. Investigations into the matter is to continue.

In Transvaal Region one outbreak with 100 out of 200 hens were affected and in Northern and Eastern Transvaal Region 20 birds died in one outbreak.

Four outbreaks were diagnosed by the Poultry Diagnostic Section.

INFECTIOUS LARYNGO TRACHEITIS

A single outbreak in the Highveld Region cause the acute death of 200 out of 712 six month old laying hens and sera tested positively for Infectious Laryngo Tracheitis. In the OFS Region 100 chickens died as a result of this condition in another outbreak.

INFECTIOUS CORYZA

Only one outbreak was diagnosed by the Poultry Diagnostic Section. Twelve outbreaks, during which 181 poultry died, were recorded in Highveld Region. In two outbreaks in the Eastern Cape and Karoo Region 50/100 poultry developed symptoms and 2/6 chickens died; in the OFS Region 3 suspicious outbreaks killed 110 chickens and in Western Cape Region it remained a problem in multi-aged layer birds.

In one outbreak in KwaNdebele 15 fowls died of this disease and the remaining 5 slaughtered by the owner.

CHRONIC RESPIRATORY DISEASE

This disease remains a problem throughout the country, albeit poorly reported. In laying flocks birds fail to peak or to maintain production curves. The disease is difficult to eradicate from multi-age, continuous replacement operation. Present approaches involve pullet vaccination in addition to long term medication of layers.

In the Highveld Region 26 outbreaks involving \textit{M gallisepticum}, with 59 deaths and 345 sera positively tested, were reported. In 13 more outbreaks in the same region, \textit{M synoviae} was responsible for 456 positive cases. In the Transvaal Region one outbreak was reported where 12/115 pheasants at the Jan Smuts quarantine station succumbed to the disease. Twelve gallinaceous birds in 250 tested at the quarantine station Jan Smuts reacted positively to \textit{Mycoplasma} spp. In the Western
Cape Region lower egg production and increased secondary bacterial infections were due to primary *M gallisepticum* infection in parent stock.

Four outbreaks in which *M gallisepticum* and two in which *M synoviae* were involved, were diagnosed by the Poultry Diagnostic Section.

**FOWL POX**

Due to good rains in certain regions, vectors were more prevalent and more outbreaks occurred, albeit not reported.

In the Transvaal Region one outbreak with 20 hens affected, in the Eastern Cape and Karoo Region 5 outbreaks with 8 fowls and 5 turkeys affected and 23 dead, in the Highveld Region a single outbreak with 50 affected, in OFS Region 1 outbreak with 6 turkeys dead and one affected and in Eastern Cape and Karoo Region one outbreak with 4 chickens dead, were reported.

Nine outbreaks of this disease were diagnosed by the Poultry Diagnostic Section.

In Lebowa 777 fowls were vaccinated.

**INFECTIOUS BURSITIS** (Gumboro Disease)

One outbreak occurred in broilers in Transvaal Region and a single case was reported in the Highveld Region. Several outbreaks in the Western Cape Region in 3 - 6 week old chicks revealed that parent stock had not been vaccinated at commencement of lay.

**EPIDEMIC TREMOR**

No cases were diagnosed.

**MAREK’S DISEASE**

Most cases were reported in the Western Cape Region, where 1 580 fowls died in nine outbreaks in which mortality varied from 1,4% to 7%. In the Highveld Region, 51 outbreaks with 210 cases were reported and in the OFS Region 16 outbreaks caused the death of 316 chickens and 6 turkeys. Isolated cases were diagnosed in Natal and 5 pullets died on a small holding in the Transvaal Region.
Several outbreaks, involving 350 chickens were investigated by the Poultry Diagnostic Section.

**LYMPHOID LEUCOSIS**

Two cases were diagnosed in Northern and Eastern Transvaal Region and two outbreaks with 16 cases reported in Highveld Region.

**COLIBACILLOSIS**

The poultry Diagnostic Section diagnosed 242 cases where *E. coli* was the cause of septicaemia.

In / …

- 53 -

In the Transvaal Region 23 fowls died as a result of colibacillosis and three outbreaks occurred at the quarantine station at Jan Smuts where 40/192 Senegal parrots imported from Togo, 1/1 parakeet imported from Indonesia and 3/5 African Grey Parrots imported from Togo, died of the disease.
A poultry farmer in the Northern and Eastern Transvaal Region had problems with \textit{E coli} septicaemia which did not respond to treatment with tetracyclines. An antiobiogram revealed that the organism was highly resistant to tetracyclines.

In the Highveld Region a single parrot died, in the OFS Region 5 fowls died in one outbreak, in Eastern Cape and Karoo Region one cock died and in Natal it was reported to be one of the most important diseases in broilers.

\textbf{ASCITES}

Fourteen outbreaks were reported in Northern and Eastern Transvaal Region, where 1 410 birds died (in one instance 11\% mortality in a 12 000 bird unit), 13 outbreaks with 41 cases in Highveld Region, 18 deaths in hens in OFS Region and two cases in Eastern Cape and Karoo Region. The incidence of the disease in Natal is said to be higher in winter than during summer and occur both at sea level and higher altitudes.

\textbf{EGG DROP SYNDROME (VIRUS 127)}

After the confirmation of its presence in SA last year only two outbreaks of the disease were reported. One outbreak was diagnosed from one laying farm in Natal and another was reported in Eastern Cape and Karoo Region where 11/60 samples tested positive and birds in 4/6 houses were affected.

At the quarantine station Jan Smuts 225 gallinaceous birds were tested with 13 positive.

\textbf{GIZZARD EROSION}

This condition appears to be well controlled by feed companies. However, several outbreaks were investigated in which owners bought fish meal directly and mixed their own food, or where fishmeal was not tested before being used in rations by manufacturers.

In the Eastern Cape and Karoo Region one outbreak caused the death of 320/4 500 chickens and 20\% were underweight and in the Highveld Region two outbreaks in which 28 chickens died were reported.

One case in pheasant, two in quail and 32 cases in chickens were diagnosed at the Poultry Diagnostic Services Section.
**COCCIDIOSIS**

Thirty-one outbreaks, with 96 recorded deaths, were reported in Natal Region. These outbreaks occurred from August to March and all flocks were on recognised coccidiostat medication at the time of outbreaks. *E. tenella* was involved in 75% of outbreaks. It is speculated that the very wet summer produced ideal conditions for rapid coccidial maturation, as outbreaks occurred in open to semi-open housing types and not in controlled environment housing.

At the Poultry Quarantine Station at Irene, 4/1 600 birds died and 9 other deaths occurred in the Transvaal Region. Three outbreaks were recorded in northern and Eastern Transvaal Region, nine outbreaks with 54 fowls and one pigeon dead in highveld Region, one outbreak with one death in OFS Region and 1 outbreak with 20/2 600 deaths in Eastern Cape and Karoo Region.

Nineteen outbreaks were investigated by the Poultry Diagnostic Section.

In KwaNdebele two outbreaks occurred with 4 fowls affected.

**TRICHOMONIASIS**

Altogether five outbreaks, from three regions, killing 23 pigeons were reported. The condition was also diagnosed at the Poultry Diagnostic Section in 3 pigeons and one finch.

**PARAMYXOVIRUS**

It was probably one of the worst years for the racing pigeon industry as heave losses occurred due to paramyxovirus infection. The condition improved during the last part of the year, as wide spread vaccination was done. Many more outbreaks occurred than were reported.

Outbreaks reported were:

Two in Transvaal Region with 2 pigeons dead as well as 23 finches dead in two outbreaks at the quarantine station Jan Smuts, five outbreaks in Highveld Region and three outbreaks in Eastern Cape and Karoo Region with at least 200 pigeons affected.

At / ...

At the Poultry Diagnostic Section thirteen racing pigeons showing nervous symptoms and / or watery diarrhoea were examined and virus isolated from their organs.
AVIAN INFLUENZA

This diseases does not occur in SA, but an outbreak occurred at the quarantine station Jan Smuts in 28 pheasants imported from the Netherlands. Twelve succumbed to the disease, from which an avian influenza virus was isolated. The rest of the group was subsequently destroyed.

INFECTIOUS OPHTHALMIA

At the quarantine station at Jan Smuts, 10 outbreaks occurred involving 1 740 parrots and parakeets. A total of 465 birds died due to the fact that they could not see the feed.

SPIROCHAETOSIS

In Eastern Cape and Karoo Region 12 turkeys and ducks died and in the Transvaal Region 2 cases were diagnosed.

PSEUDOMONAS AERUGINOSA

Two outbreaks at which 3/130 parrots and parakeets died, occurred at the quarantine station Jan Smuts.

VISCERAL GOUT

This condition was seen in broilers in the Northern and Eastern Transvaal Region which received by mistake a ration with a much higher protein level than that which they were used to.

BOTULISM

In the Northern and Eastern Transvaal Region 53 turkeys died of botulism.

OMPHALITIS / …

OMPHALITIS (MUSHY CHICK DISEASE)
Five chickens died in the Highveld Region and the condition was regularly seen in Natal Region. At the Poultry Diagnostic Section 63 chickens, 46 quail, nineteen ducklings and 1 swan examined.

DEFICIENCIES

Two outbreaks of Vitamin E deficiency as well as encephalomalacia in homing pigeons, were diagnosed in Northern and Eastern Transvaal Region and 15/50 were clinically affected in the Transvaal Region. In the Eastern Cape and Karoo Region 10 pheasants suffered from a thiamine deficiency and 24% of turkeys were affected by Magnesium and pantothenic acid deficiency.

PARASITES

Heavy tropical fowl mite infestation was a common cause of layers failing to hold production targets during the summer months in the Natal Region. In the Eastern Cape and Karoo Region 16/50 free range fowls died of severe ascarid infestation.

DISEASES OF OSTRICHES

Approximately 6 000 chicks were recorded to have died on 7 breeding farms in the Oudtshoorn district in the Western Cape Region. Many more deaths due to a chronic lack of basic hygienic incubation, housing, nutritional and mangemental practices occur annually, but are not recorded.

A major problem in the artificial rearing of ostriches in the Western Cape Region is a lack of sufficiently balanced food. However, no figures are available.

In the Eastern Cape and Karoo Region 295 ostrich chicks died in 16 instances of malnutrition and 10 of respiratory infection and in the Northern and Eastern Transvaal 8 chicks died of impaction.

DISEASES OF PIGS

Pig health is largely handled by Meat Board Veterinarians.

VIBRIONIC DYSENTERY

This disease is reported to be present on almost every pig farm in the Natal Region, where it is controlled by the addition of specific remedies to the ration.
Eight pigs died, 65 were successfully treated following an outbreak and another case was reported in the Northern and Eastern Transvaal Region.

**COLIBACILLOSIS**

This syndrome is found to a certain degree in all piggeries but is controlled by vaccination and medication added to the ration.

Sporadic outbreaks were reported in Transvaal Region, cases of tendovaginitis and arthritis caused by *E. coli* seen in Northern and Eastern Transvaal Region, 3 outbreaks with 7 deaths in Highveld Region, one case in Eastern Cape and Karoo Region and 5 outbreaks with 9 animals affected in Western Cape Region.

**RESPIRATORY SYNDROMES**

Mortality due to this syndrome was investigated in 4 piggeries in the Northern and Eastern Transvaal Region, where it is probably one of the most common causes of mortality in young pigs after weaning.

**LEPTOSPIROSIS**

As a result of a Leptospirosis flare-up in 2 piggeries in the Western Cape Region, and at the boar testing centre at Elsenburg, monitoring was carried out at these focal points. 2 500 Tests were done with negative results.

Meat inspectors at Maitland and Spekenam abattoirs in the same region were tested for Leptospirosis and 6/44 found to be positive. Five kidneys from pigs slaughtered at Maitland abattoir were positive for *L. pomona*.

Two boars introduced from the Cape to the Barberton Prison in the Eastern Transvaal were found to be positive for Leptospirosis. Both boars were vaccinated and treated.

Two out of 1 800 pigs tested in the OFS Region showed a positive serological titre.

**MANGE**

Only one outbreak with one case was reported in the Transvaal Region, two outbreaks with 5 cases in the Northern and Eastern Transvaal Region and two outbreaks with 30 cases in the Western Cape Region.
GREASY PIG DISEASE

Five outbreaks were reported, two involving 12 piglets in Northern and Eastern Transvaal Region and another, involving 3 pigs in Natal Region.

MMA COMPLEX (METRITIS / MASTITIS / AGALACTIA COMPLEX)

Metritis was the primary symptom in a sow suffering from the disease in the Transvaal Region.

*Actinobacillus equili* was incriminated in cases of metritis in sows in the Northern and Eastern Transvaal Region and in the OFS Region 2 outbreaks caused the death of 1 sow and 10 piglets and affected two more sows.

SUSPECTED ASPERGILLUS ORCHRACEUS TOXICITY

Investigations by State Veterinarians and the VRI Onderstepoort into the suspected poisoning of pigs by toxins in feed sweepings, bought on contract from a milling company in the Delmas district in the Transvaal Region to fatten piglets for 3 months before slaughter, are still underway.

Seventy out of 300 pigs died over a period of 2 weeks and a further 12 were affected. Signs of anorexia and severe emaciation were seen for 3 days before death; one sow aborted as well.

Sweepings contain toxins called Orchratoxin and Citrinin, which affect poultry, turkeys and pigs, but not ruminants. In humans a condition known as Balkan nephropathy develops.

Four pigs were autopsied, showing a dark haematuria and multifocal spots on oedematous kidneys. The histopathology indicated a nephrotoxin.

VALVULAR ENDOCARDITIS

*Streptococcus equisimilis* was isolated from organs of a weaner pig that died in the Northern and Eastern Transvaal Region. A number of pigs died, showing endocarditis and infarcts in the kidneys.

Mulberry heart disease caused the death of a sow in OFS Region; *Streptococcus suis* caused the death of one pig in Western Cape Region and *Treponema hyodysenteriae* affected 2 pigs in Western Cape Region and one in the Highveld Region.
**OEDEMA DISEASE**

This condition caused the death of 16 pigs in 3 outbreaks which occurred in the Natal Region.

**DISEASES OF FISH**

**INFECTIOUS PANCREATIC NECROSIS OF TROUT**

Antibodies were found in fish from a trout farm in the Paarl district in the Western Cape Region. Infection was introduced by fish eggs imported from USA. Control measures have been instituted to eliminate the disease on that farm.

**ICHTHYOPTHIRUS** *(White spot)*

An outbreak was diagnosed in aquarium fish at Jonkershoek in the Western Cape Region. Treatment with 10 ppm formalin and 1 ppm malachite green in clean tanks was most successful.

**ENTERIC RED MOUTH**

Thousands of trout have been lost in the Lydenburg district in Northern and Eastern Transvaal Region due to ERM infection which is caused by *Yersinia ruckeri* infection.

**BACTERIAL GILL DISEASE**

In Belfast district in the Northern and Eastern Transvaal approximately 4 000 trout fingerlings and in Lydenburg district 3 000 died from this disease, which is caused by *Myxobacteria spp.*

**STREPTOCOCCUS D**

This Streptococcus infection in trout is a serious problem in the Northern and Eastern Transvaal Region and on one farm in the Lydenburg district 20 000 ongrowing trout were lost.

**COTTON WOOL DISEASE**

A large number of ornamental goldfish died in the Soutpansberg district in the Northern and Eastern Transvaal Region. The mortality was caused by infection with *Flexibacter columnaris*.

DEFICIENCY / ...
DEFICIENCY AND NUTRITIONAL DISEASES

Good rainfall was experienced in most of the regions, with resultant better grazing. The condition of livestock on the whole was fairly good, as a result of reduction in numbers of stock brought about by previous droughts. This still exists in the Western Transvaal and the west coast region.

During uncontrolled veldfires in the Transvaal Region 5 cattle, 270 sheep and one horse were burnt to death and 7 100 hectare of grazing destroyed.

Mulnutrition and hypoproteinaemia caused the death of 6 boergoatkids, 104 sheep and 19 cattle in the Eastern Transvaal Region and 12 sheep in the Highveld Region.

In 21 outbreaks of cachexia and malnutrition in the Eastern Cape and Karoo Region 74 goats, 420 sheep and 1 cow died. Ten Angora kids died of starvation due to agalactia of the does. 300 Wethers on low pH soil (veld which had been burnt) suffered loss of wool. Insufficient through space resulted in competition with poor growth in 26 Angoras and 9 deaths in the same region.

Poor management resulted in the starvation to death of 95/750 lambs in the Western Cape Region and 200/560 lambs on one farm in the Transvaal Region. Too high levels of chicken manure in cattle feeding resulted in liver impairment and 2 died in the Eastern Cape and Karoo Region.

Through exposure to cold and adverse weather conditions, 92 Angora kids died in the Eastern Cape and Karoo Region and high mortalities in spring lambs were experienced during a sudden cold spell in October in the Northern and Eastern Transvaal Region.

Sand impaction as a result of extremely dry conditions in the Western Cape Region caused the death of 422 lambs in 5 districts and 6 horses on 6 farms. Dry gallsickness was reported in two outbreaks in the OFS Region, affecting 7 cattle. In the same region 74 sheep died due to water deprivation.

Cases of hypocalcaemia were reported in all regions. In the Transvaal Region 20 cows and 70 sheep contracted the condition, killing another 34 sheep and one cow, in the Northern and Eastern Transvaal Region one cow died, in the Highveld Region 2 cows were treated, in the OFS Region 11 outbreaks with 13 cattle and 39 sheep were affected, of which 24 died, in Eastern Cape and Karoo Region 12 outbreaks and a ram showing overstrained flexortendons due to a calcium deficiency and in the Western Cape Region 29 outbreaks in cattle affecting 108 cows and causing the death of 24 as well as 52 outbreaks in sheep with 310 sheep affected and 34 deaths, were reported. On four farms in the Natal Region calcium deficiencies were found.

*Aphosphorosus* / …
Aphosphorosus was diagnosed in the Transvaal Region on three farms where 15 cattle showed signs of lameness and in the OFS Region 22 cases in 8 outbreaks were reported.

A Vitamin E/Selenium deficiency caused 1 lamb to die of White muscle disease in the Transvaal Region, one lamb died in the Highveld Region, eight outbreaks in the OFS Region caused the death of 174 sheep on intensive pastures, 5 lambs and 1 Angora kid died and 30 lambs were affected in the Eastern Cape and Karoo Region where selenium deficiency also caused decreased growth and mortalities from 30% to 50% in a lambcrop. This deficiency is common in the Western Cape and on one farm in the Natal Region.

Cobalt deficiency in conjunction with selenium deficiency occurred in two sheepflocks and one cattle herd and caused the death of 1 zebra in the Western Cape Region.

A Vitamin A deficiency was reported in a flock of 500 sheep in the OFS Region and apparently caused blindness in 5 calves in Highveld Region.

There was an increase in the number of cases of pregnancy toxaemia as a result of the drought in the Western Cape Region, where 17 outbreaks affected 15 sheep and caused the death of 223 ewes. In the Highveld Region four sheep died and 3 recovered after treatment, in the OFS Region, in 6 outbreaks involving 41 cases, 15 ewes died and 4 aborted and in the Western Cape Region 76 farms were affected with 141 sheep showing symptoms as well as 344 deaths.

Many cases of acidosis occurred, mainly due to grain overfeeding or grazing on harvested maize or wheat lands. Sixteen cattle and 47 sheep died of this condition in the Transvaal Region, one goat, 4 sheep and 3 cows died and 23 cattle had to be treated for acidosis in the Northern and Eastern Transvaal Region, 30 sheep and 10 cattle died in Highveld Region, 9 cattle, 82 sheep and 1 Angora died in 29 outbreaks in the OFS Region, 3 cattle, 141 Angoras and 51 sheep died and 32 sheep and 34 Angoras were affected in 12 outbreaks in the Eastern Cape and Karoo Region and in 35 flocks of sheep 264 were sick and 116 died and in 3 herds of cattle 3 animals were sick in the Western Cape Region. Grain overeating caused laminitis in a horse in Transvaal Region as well as in 5 sheep on 3 farms in Eastern Cape and Karoo Region. Abomasal ulcers caused the death of 3 sheep in feedlots in the OFS Region.

In the Transvaal Region 3 cattle developed ketosis, in the Highveld Region 3 sheep died, in the OFS Region 6 outbreaks were reported where 70 sheep died and 10 goats were treated for this condition and in the Eastern Cape and Karoo Region two outbreaks caused the death of 10 Angoras and 30 suffered from chronic ketosis. Subclinical ketosis caused abortion in 160 Angora does in the same region.

Urolithiasis / …
Urolithiasis in rams and wethers was observed in almost all regions, where animals were fed on high concentrate diets with a high phosphorous content. Four wethers and 2 rams died in Transvaal Region, 4 rams in Northern and Eastern Transvaal Region, six sheep in Highveld Region, 13 cases in OFS Region, 1 bovine, 4 wethers, 4 rams and 2 Angoras died in Eastern Cape and Karoo Region.

Cerebro cortical necrosis, caused by a thiamine deficiency was reported in the Transvaal Region affecting 30 bulls and killing 7 at the Irene Bull Performance Testing Centre, in the OFS Region in 7 outbreaks causing the death of 10 cattle and in 5 sheep and affecting 7 more, in Eastern Cape and Karoo Region one bovine died and in Western Cape Region 5 farms were affected involving sheep and goats.

Bloat caused the death of 99 cattle and 26 sheep and 21 cattle and 3 sheep could be effectively treated.

A magnesium deficiency affected 16 sheep and killed 2 in 6 outbreaks in the OFS Region and was identified on several farms in the Eastern Cape and Karoo Region. A drop in milk production was experienced when a dairy ration was changed to a ration deficient in protein as well as in magnesium and copper in the Highveld Region.

Copper deficiency was ascribed as the most important mineral deficiency in the Western Cape Region and was reported on 7 farms in Natal Region.

Investigation into the possible role of zinc in the pathogenesis of Bolo disease was undertaken in the Stutterheim district in the Eastern Cape and Karoo Region, and owners were advised to supplement it.

Iron deficiency caused the death of 2 lambs in the Transvaal Region; an excess flourine content in drinking water in the Transvaal Region caused chronic laminitis in 7 cattle and 8 cattle were affected by a chlorine deficiency in the same region.

Two Angoras died and 12 were affected by Swelling disease in the Eastern Cape and Karoo Region.

In the self-governing states there were many cases of malnutrition seen as overgrazing continued and veld became progressively more denuded. Cattle are in extremely poor condition when coming out of winter, which hampers inoculation programmes (e.g. against foot-and-mouth disease in KwaNgwane).

POISONING

MINERAL POISONING

Various components were responsible for stock losses, either given accidentally, deliberately or farmers were negligent in the handling of these poisons.
Arsenical poisoning was responsible for the death of 17 cattle (by disintegrating drums on a rubbish dump) and six weaners (by arsenic solution at the saw mills) in the Northern and Eastern Transvaal Region, 12 Angoras and 14 cattle in the OFS Region, 10 cattle in Natal and 7 cattle (by MSMA used in combatting jointed cactus) in the Eastern Cape and Karoo Region. A sheep carcass, preserved with arsenic is still hanging in a bush in the Middelburg district (CP) - for 40 years now.

**Lead** poisoning caused the death of one calf in the Transvaal Region, one bovine each in Highveld and Natal Regions, and 5 cattle after eating an old car battery in Eastern Cape and Karoo Region, where kidney levels were 199 p p m.

**Organophosphorous** compounds were responsible for the death of 9 cattle and 4 dogs in the Transvaal Region, 9 cattle, 19 sheep, 8 dogs, 2 cats, 1 pig, 10 geese, 2 zebra, 6 jackal, 1 genet, 3 saddlebill storks and 2 crowned cranes in the Northern and Eastern Transvaal Region, 10 dogs and 28 guineafowl in Highveld Region, 26 sheep, 3 fowls and 3 dogs in the OFS Region, 3 cattle in Natal, 103 dogs, 12 Angoras and 9 guinea fowl in Eastern Cape and Karoo Region and 43 Angoras, 7 cattle, 2 dogs and 90 birds in the Western Cape Region.

**Urea** poisoning mainly resulting from faulty mixing of licks, caused the death of 40 gotas, 15 bovine (5 of which were stud Simmenthalers valued at R14 500,00) and 22 sheep in the Transvaal Region, 54 cattle and 53 sheep in Northern and Eastern Transvaal Region, 25 sheep and one Angora goat in Highveld Region, 31 sheep, 19 gemsbuck, and 1 wildebeest in OFS Region, 24 cattle, one sheep and 2 horses in Natal, 10 sheep and 16 cattle with another 30 cattle affected in Eastern Cape and Karoo Region and 30 sheep in Western Cape Region.

**Chlorinated hydrocarbons** caused the death of 3 calves in Transvaal Region, 6 dogs and 1 cat in Eastern Cape and Karoo Region, 9 cattle in Highveld Region and 2 pigs, 3 dogs and 6 cattle in Natal.

**Salt** poisoning was responsible for the death of 6 chickens and 1 sheep in the Highveld Region and 20 pigs in Eastern Cape and Karoo Region.

**Copper** poisoning caused the death of 4 sheep in Northern and Eastern Transvaal Region, 22 sheep in OFS Region, 2 sheep in Natal, 12 sheep in Eastern Cape and Karoo Region and 162 on 3 farms in Western Cape Region.

**Nitrate** poisoning caused the death of 25 cattle in Northern and Eastern Transvaal Region, 21 sheep in Eastern Cape and Karoo Region and 8 cattle in Western Cape Region.

Altogether 54 dogs died of **Strychnine** poisoning.

**Parathyon** killed 6 calves and affected 18 more in the Western Cape Region.
Amitraz killed a calf and six pigs died of Monocrotophos poisoning in the Western Cape Region. Three dogs were killed by Metaldehyde poisoning in Natal and Sulphur poisoning caused the death of 9 sheep in OFS Region.

By means of overdosing 3 cattle developed nervous symptoms and 10 sheep became blind and had to be slaughtered due to Closantel (Seponver and Flukiver) in the Transvaal Region and losses in 2 sheep flocks in Northern and Eastern Transvaal Region; 9 ostrich chicks died of Resorantel (Terenol) in Western Cape Region; one horse in the Transvaal Region went berserk but recovered 24 hours after treatment with Oxibendazole / dichlorvos (Equiminthe); a number of goat kids became blind of Rafoxanide (Ranide) in Northern and Eastern Transvaal Region; 15 boergoats developed ventral oedema (and 3 died) after dosing with Invermectin (Ivomec) in the OFS Region; one horse was affected in Natal and 1 Springbuck in Eastern Cape and Karoo Region died of Ionophores.

Heartfailure due to an unknown poison caused the death of 8 cattle in Highveld Region and 50 yellow billed ducks in the Eastern Cape and Karoo Region died of severe enteritis due to an unidentified poisonous agent.

PLANT POISONING

The following plants were responsible for stock losses as indicated in the different regions:

Transvaal

Dichapetalum cymosum (35 bovine, 1 sheep, 60 guinea fowl); Lantana camara (9 cattle); Pachystigma pygmaem (8 cattle); Solanum kwebense (2 cattle affected); Homeria and Moraea spp (31 cattle, 1 sheep); Soyabean (all cattle on one farm); Nerium oleander (1 bovine); Crotolaria spp (8 sheep) and plants containing prussic acid (2 cattle and 2 sheep as well as 25 cattle successfully treated).

Northern and Eastern Transvaal Region

Lantana camara (28 cattle, 6 goats); Dichpetulum cymosyum (146 cattle, 26 sheep); Pavetta harboiri and Pachystigma thannus (gousiekte) (3 cattle); Fadogia monticola (wilde dadel) (1 bovine, 1 sheep); Pteridium aquilinum (bvracken) (19 cattle); Urginea sanguinea (slangkop) (11 sheep) Senecia spp (5 cattle); Homeria and Moraea spp (Tulip) (27 cattle); Ornithoglossum spp (chinkerinchee) (22 cattle); Solanum kwebense (4 cattle); Tribulis terrestris (dubbeltjie) (18 sheep); plants containing prussic acid (9 cattle, 5 sheep).
Highveld Region

Lasiospermum bipinnatum (ganskweek) (10 sheep); Homeria and Moraea spp (tulip) (15 cattle and 8 successfully trated); Pachystigma pygmaeum (gousiekte) 52 sheep, 4 cattle; Senecio spp (ragwort) (1 sheep); Brassica spp (2 calves); Ornithoglossum (Cape Slangkop) (4 sheep); plants containing prussic acid (98 sheep), 1 goat, 1 bovine).

OFS Region

Amaranthus spp (8 cattle); Asclepia fructicosa (5 cattle); Blumea gariepina (1 sheep - experimental case); Cestrum spp (1 bovine); Dipcadi glaucum (82 sheep and 6 bovines recovered); Dipcadi spp (40 sheep, 3 cattle and 60 sheep, 4 cattle affected); Galenia africana (1 sheep); Homeria and Moraea spp (15 animals); Krimpsiekte (5 Angoras); onions (3 cattle and affected 12); Senecio spp (1 horse); Geigeria spp (46 sheep); Israeli grain sorghum and oats causing fascial eczema (5 sheep, one bovine and 4 bovine affected); Tribulus terrestris (240 sheep, 183 goats); plants causing Photosensitivity (27 sheep) and plants containing prussic acid (10 cattle, 399 sheep, 5 goats).

Natal Region

Lantana camara (43 bovine); Matricaria spp (36 bovine); Senecio spp (7 bovine, 29 ovine), and Homeria and Moraea spp (185 bovine).

Eastern Cape and Karoo Region

Senecio spp (7 sheep 13 cattle, 3 horses); Cestrum laevigatum (inkberry) (15 cattle); Lantana camara (3 cattle and 5 affected); Hertia pallens (Scholtz bossie) (50 sheep; Tribulus terrestris (48 sheep and goats); Solanum panduraeforme (86 Angoras); Pteridium aquilinum (braken fern) (2 calves); Rhigosium obovatum (granaatbos) (90 goats); Oat photosensitivity (16 goats and 60 animals affected); Cynanchum spp (1 cow); Thesium spp (gifbossie) (136 sheep and goats); kikuyu (3 cows and 19 affected); Gnida polycaphala (6 lambs); Moraea spathulata (10 bovine, 33 Angora goats); Cotyledon spp (krimpsiekte) (10 Angoras); Cardiac glycocodes (7 goats, 6 sheep); plants containing prussic acid (3 cattle, 152 sheep) and unidentified plants (4 Angora kids, showing alopecia and 32 Angoras showing hamorrhagic enteritis).
Western Cape Region

*Cotyledon* and *Kalanchoë* spp (krimpsiekte) (1 283 sheep, 4 ostriches and 750 sheep affected); *Tribulus terrestris* (6 sheep affected); *Cynanchum* spp (100 sheep / …

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sheep, 108 cattle); *Galenia africana* (120 sheep); *Moraea* spp (31 cattle and 35 affected); *Homeria* spp (11 sheep, 24 cattle); *Athanazia trivircata* (Klaas louw bos) (16 sheep); *Ornithogalum* spp (39 sheep and Angoras); *Asclepia fructicosa* (10 sheep); *Euphorbia maurentanica* (6 sheep), *Tylecodon wallichii* (kandelaarsbos) (5 cattle, 49 sheep, 26 Angora goats); *Sarcostemma* spp (5 cattle); *Quercus* spp (8 cattle); *Onmsinckia cylycina chater* (1 horse); *Chrysocoma* spp (56 Angoras); *Lantana camara* (8 cattle); *Urginea altissima* (19 sheep); *Melianteus comosus* (27 sheep); *Oxalates* (14 sheep); chocolate *barley* (3 sheep); plants containing *prussic acid* (141 sheep, 2 cattle) and *annual ryegrass* (5 sheep, 2 cattle).

**TOXINS**

*Diplodiosis* cased the death of 42 cattle in the Northern and Eastern Transvaal Region and one in Transvaal Region.

*Mycrocystis aeruginosa* caused the death of newborn kids in the Northern and Eastern Transvaal Region.

Four cattle died of *Aflatoxicosis* in the OFS Region, 10 calves in the Western Cape Region and 2 pigs in the Northern and Eastern Transvaal Region.

Red tick toxicosis killed 10 sheep in Natal Region.

*Snakebite* was responsible for the death of 3 bovine and 8 dogs in Natal Region and 3 cattle, 2 horses, one sheep and 5 dogs in the Eastern Cape and Karoo Region.

*Stellenbosch photosensitivity*, which is thought to be caused by a toxin affected 575 sheep and killed 5 in the Western Cape Region. Investigation continues.

**INTERNAL PARASITES**

Although good rains were encountered in certain regions, there was not apparent increase in the number of internal parasite associated problems. Certain parasites developed drug resistance to some anthelmintics, causing concern in a number of regions.

*Haemonchus* spp (wire worm) is the parasite which most commonly occurred and was always active in all the regions. It was reported in the Transvaal Region to be the most important parasite, with resistance to Benimidazole and Rafoxanide, in the Northern and Eastern Transvaal Region the highest incidence occurred during
March with high faecal egg counts encountered, and 54 sheep reported to have died, in the Highveld Region 9 sheep died in 7 outbreaks, in the OFS Region 69 sheep and 19 Angoras died in 13 outbreaks; in Natal it was reported to be one of the most important parasites, in Eastern Cape and Karoo Region 27 sheep and goats died where resistance to anthelmintics was becoming an increasing problem, and in the Western Cape Region 122 deaths were recorded with resistance becoming a serious problem.

Ostertagia spp (brown stomach worm) had a wide distribution in the Transvaal Region and reported to be very common in the Western Cape Region. In the Eastern Cape and Karoo Region it is the most important parasite with 114 sheep and 1 bovine dead and 10 cattle affected, as well as 34 sheep and goat deaths due to mixed infestation with Haemonchus spp.

Nematodirus spathiger (long necked bankrupt worm) is regarded as causing the most common round worm infestation throughout the year in the Eastern Cape and Karoo Region and in 7 flocks 3,361 sheep were severely affected.

Trichstriongylus spp (bankrupt worm) caused heavy infestation in the Transvaal Region with 10 sheep dead and 6 heavily infested, in the Eastern Cape and Karoo Region 12 sheep dead and occasional deaths in the Western Cape Region.

Oesophagostomum spp (nodular worm) was occasionally a problem in the Northern and Eastern Transvaal, OFS and Natal Regions, with a fair amount of intestines condemned at some abattoirs.

Trichuris ovis (whip worm) caused the death of 2 sheep in the Highveld Region and 51 sheep showed severe symptoms in 2 outbreaks in the OFS Region.

Ascaris suum eggs were seen in pig vaeces in the Transvaal Region.

Mixed roundworm infestations were common and in the Highveld Region and 9 sheep, 1 bovine and 6 chicks were reported dead.

Four cattle died of a Dictyocaulus viviparous pneumonia in the Eastern Cape and Karoo Region.

Fasciola spp (liver fluke) commonly occurred in all regions and was responsible for the death of 24 sheep in Northern and Eastern Transvaal Region and 53 sheep, cattle and goats in the Eastern Cape and Karoo Region as well as affecting 4 cattle in Highveld Region and 35 sheep in Eastern Cape and Karoo Region. Up to 10% of livers were condemned at certain abattoirs in the Northern and Eastern Transvaal Region.
**Paramphistomum** spp (conical fluke) commonly occurred in almost all regions, killing 23 sheep in Transvaal Region, 2 sheep and 1 bovine in Highveld Region, 47 sheep in OFS Region, 10 sheep in Eastern Cape and Karoo Region as well as 5 affected and were also recorded in cattle in the Western Cape Region.

Tapeworm / …

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Tapeworm infestation (**Moniezia** spp) occurred in all regions in calves and lambs and affected 972 sheep, 30 Angoras and 2 calves in OFS Region, 1 sheep and 3 chickens in Highveld Region and killed 220 lambs and kids in Eastern Cape and Karoo Region.

**Stilezia hepatica** is found in virtually all sheep livers.

**Measles (Cysticercosis)** is of great economic importance in all regions. In the Transvaal Region 84 pigs and 621 bovine carcases were either condemned or detained at the Witbank abattoir, and the incidence of measles in cattle at the abattoirs in this Region varied from 5,35% in cattle slaughtered at Rustenburg abattoir to 0,37% at the Koster abattoir. Pig measles was found in 0,87% carcases at the Koster abattoir to 0,07% at the Thabazimbi abattoir. In the Northern and Eastern Transvaal Region bovine carcases were condemned at abattoirs at a rate of 0,6% at Messina, 3,2% at Louis Trichardt, 6,6% at Pietersburg and 1,82% at Phalaborwa. There was, however, a marked reduction in the incidence at the latter two abattoirs. 0,3% Pig carcases were found to be infested at Louis Trichardt. In 259 consignments to abattoirs in the Highveld Region 526 pig carcases were condemned. A *Taenia saginata* segment was positively identified in human faeces at the veterinary laboratory Ermelo.

**Coenurus cerebralis** cysts causes the death of 27 sheep in the OFS Region, 12 sheep in Eastern Cape and Karoo Region and sporadic deaths in Western Cape Region.

**Cysticercus tenuicollis** cysts were found in 50-60% of goat carcases in the Northern and Eastern Transvaal Region.

The incidence of **Parafliaria bovicola** varied from 1% to 5% in Northern and Eastern Transvaal Region but has dropped, due probably to the use of pyrethroid dipping compounds. In two consignments from the Eastern Transvaal to the Klerksdorp abattoir in the Highveld Region, 10 carcases were affected. In the Transvaal Region 14 animals were affected at the Koster abattoir and two cases were diagnosed in the OFS Region.

**Oestrus ovis** is generally found in all regions and was also reported in 60 Angora goats in the Eastern Cape and Karoo Region.

**Cordophilus sagitta** infestation was diagnosed on several occasions at Nelspruit abattoir; two goats died of **Gedoelstria** infestation; a massive **Echinococcus**
granulosus infestation of the small intestine diagnosed in a lion in the Kruger National Park and lug worm infestation found in impala, all in the Eastern Transvaal Region.

EXTERNAL PARASITES

As a result of increased rain in certain areas, tick burdens increased considerably. Effective control was acquired by using synthetic pyrethroids, amongst others.

The bond tick (Amblyomma spp) was active in certain regions and its importance was reflected in the high incidence of heartwater.

The blue tick (Boophilus spp) was most prevalent in the main cattle areas.

Hyalomma spp (bont legged tick) was abundant in all regions and was an important predisposing cause of footrot and foot and scrotal abscessations in the main sheep farming areas and caused sweating sickness in other areas.

Rhipicephalus spp were causing problems in all regions. Two outbreaks of springlamb paralysis were reported in the Transvaal Region, affecting 18 sheep.

R appendiculatus (brown ear tick) has become a big problem in the Transvaal, Northern and Eastern Transvaal Region and Eastern Cape and Karoo Region.

R evertsi (red legged tick) caused paralysis in 2 flocks of sheep in Highveld Region and was also causing problems in Northern and Eastern Transvaal Region and Eastern Cape and Karoo Region.

R pravus was the cause of 4 outbreaks of paralysis in Angora goats, resulting in 44 deaths. It seems as if this tick is most active in summer months and occurs in the same habitat as Ixodes rubicundus.

Ixodes rubicundus (Karoo paralysis tick) was extremely active in the Eastern Cape and Karoo Region where 14 outbreaks of tick paralysis occurred, killing 25 sheep and affecting 3 - 5% of flocks; in the OFS Region, where 4 outbreaks were reported killing 8 sheep and 6 cattle and also affecting 18 cattle and 2 Angoras and in the Western Cape Region where 112 sheep were killed in 4 outbreaks, which necessitated dipping up to 4 times a year.

Otobius megnini (spinous ear tick) was found in the ear of a dog in the Transvaal Region.
Two farmers in the Albany district in the Eastern Cape and Karoo Region were reprimanded for moving tick infested cattle to the abattoir. Angora kids died in the same region due to anaemia caused by heavy tick burdens.

Sarcoptic mange (*Sarcoptes scabiei*) occurred fairly widespread in most of the regions and 38 cattle and 3 pigs were affected in 3 outbreaks in the Transvaal Region, wildebeest and cattle in the Northern and Eastern Transvaal Region, and 13 cattle on 3 farms in the Highveld Region.

**Damalinia / …**

*Damalinia ovis* (sheep lice) was responsible for two outbreaks in the Transvaal Region, with 4 300 sheep heavily infested, two outbreaks in Highveld Region, with 117 sheep infested, one outbreak heavily infesting sheep in the Eastern Cape and Karoo Region and sporadic outbreaks were reported in the Northern and Eastern Transvaal Region. *D. bovis* infested 30 calves in the Highveld Region, whereas severe infestation of *D. natalensis* and *Lipoptena parados* caused the death of two bushbuck in the Soutpansberg district in the Eastern Transvaal Region. Impala and warthogs in captivity were severely infested in the Kruger National Park.

Although only one outbreak of *Lignonathus africanus* which infested 52 Angoras in the Eastern Cape and Karoo Region was reported, many more outbreaks occurred.

*Haematopinus suis* infested 35/35 pigs on a small holding in the Transvaal Region.

*Echidnophaga gallinacea* (stick tight flea) was found on 3 bantams in the OFS Region.

Rock pigeons and doves introduced *Dermanyssus gallinae* to the office of the State Veterinarian at Bethlehem, which necessitated fumigation.

The ear mite of angora rabbits, *Cheyletiella parasitivorax* was seen in the Eastern Cape and Karoo Region.

*Miasis* was a problem in the Western Cape Region during summer months and various outbreaks were reported in the Transvaal Region. *Cordylobia anthropophaga* miasis was common in the Northern and Eastern Transvaal Region and the so-called face fly was very active in the Lowveld during January and February.

The Tumbu fly caused problems in dogs in the Western Transvaal areas.

Midges were a great nuisance during spring and summer months, aggravating eye problems in the Western Cape Region.

Investigations into *Simulium* control in the Eastern Cape and Karoo and the OFS Region continued in the Fish- and Orange rivers respectively.
ARTIFICIAL INSEMINATION

There is at present only one registered AI centre with 4 different branches viz at Irene in the Transvaal, Boland, Natal and Donkerhoek in the Free State, where registered bulls are kept. Only at Donkerhoek registered rams are being kept.

Recommendation regarding the registration and re-registration of bulls and rams rest with the Section for AI and Reproduction. The testing of these bulls and rams were carried out by officials of the regional veterinary laboratories, veterinary laboratories and the Section for AI and Reproduction.

A total of 533 bulls were tested for registration purposes, of which 111 were new registrations and 422 re-registrations. Of the tested bulls, 5,9% were positive for Enzootic Bovine Leucosis, 9,9% positive for Leptospirosis and 47,8% positive for contagious Bovine Rhinotracheitis.

The total doses of semen sold by the AI centres during the year under review amounted to 686 326, in comparison with 715 099 of the previous year. Dairy breeds contributed 582 939 doses with Frieslands topping the list at 477 090 doses and beef breeds 103 387, with Bonsmaras topping the list with 24 338 doses.

Semen from 574 privately owned bulls were collected by AI centres for use by owners. The doses obtained amounted to 92 670.

Of the 5 202 semen straws examined for contamination with bacterial growth, 616 or 11,8% of the straws were contaminated. The high incidence was due to the high rate of contamination of 14,9% found at Taurus Transvaal AI centre.

A total of 750 semen samples were evaluated by the AI and Reproduction centre.

Facilities for the collection and freezing of ram semen at Donkerhoek near Bloemfontein were in full use, although no rams were registered during the year.

The breed classification of bulls at the AI centres is as follows:

Aberdeen Angus 9, Ayrshire 20, Bonsmara 6, Brahman 2, Brown Swiss 4, Charolais 3, Dexter 4, Friesland 363, Guernsey 28, Herefore 6, Jersey 71, Nguni 2, Pinzgauer 1, Santa Getrudis 1, Shorthorn 3, Simmenthaler 4, South Devon 3, Sussex 1 and Teaser bulls 5.

There were 145 proven dairy bulls at Taurus and 18 proven beef bulls.

There are at present 6 embryo transfer centres in the Transvaal Region and one in the Highveld Region, where veterinarians are involved. Only eight cows are registered as donors, whereas many more are believed to be used as donors by private owners, which did not require registration.
### TABLE 4

**AI COURSES AND NUMBER OF SUCCESSFUL CANDIDATES**

<table>
<thead>
<tr>
<th>Courses presented by</th>
<th>Registered Inseminators</th>
<th>Owner Inseminators</th>
<th>Labourers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Courses</td>
<td>Successful candidates</td>
<td>Courses</td>
</tr>
<tr>
<td>AI and Reproduction Centre</td>
<td>3</td>
<td>35</td>
<td>-</td>
</tr>
<tr>
<td>SV Potchefstroom</td>
<td>1</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>SV Bloemfontein</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>SV Middelburg</td>
<td>1</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>SV Stellenbosch</td>
<td>1</td>
<td>16</td>
<td>-</td>
</tr>
<tr>
<td>Kromme Rhee (Coloured students)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Boskop Training Centre</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Taurus AI Co-op</td>
<td>-</td>
<td>-</td>
<td>108</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>85</td>
<td>117</td>
</tr>
</tbody>
</table>
During three courses at Potchefstroom and Harrismith, 24 farmers were trained to put AI into practice in sheep.

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STOCK INSPECTION SERVICES

The new approach in inspection services with the abandonment of the scheduled block inspection system, brought about considerable change. Specific objectives of targets were identified in some regions, aiming at achievement by means of graph plotting. Initiative was expected from the inspectorate staff and in consequence a number of them rose to the challenge and performed well. Emphasis had been placed on the Tuberculosis and Brucellosis schemes and apart from constructive work satisfaction, a higher productivity was achieved. This new approach could, however, be problematic in predominantly sheep farming areas. However, routine inspection in the red-line areas were maintained.

With 28 resignations, 25 retirements, 12 abscondings and 3 deaths of inspectorate staff, versus 44 new appointments, a further reduction in the number of stock inspectors took place. At the end of the year under review, 78 stock inspector-posts were vacant.

ANIMAL HEALTH EXTENSION SERVICE

Information regarding the control of animal diseases remains one of the priorities of this Directorate. This is relayed to farmers on a continual basis by means of articles in popular agricultural magazines, radio talks, pamphlets, films, videos, by addressing farmers days, study groups, Agricultural Union meetings and by arranging short courses on animal health. No less than 166 of these different meetings were addressed by State Veterinarians in all the regions, on various topics.

Stock inspectors fulfil an important function in this regard, as they are regarded as the mediators to implement information. Therefore in-service training of the inspectorate staff is high on the priority list of duties of this Directorate.

Many individual queries relating to animal diseases had to be attended to either by telephone or in writing.
Lectures on animal health are given by State Veterinarians at the Agricultural Colleges in almost all regions.

**IMPORT AND EXPORT CONTROL**

**IMPORT CONTROL**

A large variety of animals are imported each year and to safeguard the livestock industry of the RSA against introduction of animal diseases, certain requirements are laid down for the importation of animals or animal products.

To ensure that requirements are met, imported animals are kept in quarantine stations at Jan Smuts airport, Cape Town, Durban and Walvis Bay harbours for specified periods, where they are subjected to further tests or treatment.

Two tanneries were approved in the Eastern Cape and Karoo Region.

The animals and animal products mentioned in Tables 5, 6 and 7 were imported during the year under review.

**TABLE 5:**

**ANIMALS AND INSECTS IMPORTED FROM NEIGHBOURING STATES**

<table>
<thead>
<tr>
<th>Animals</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
<th>Horses</th>
<th>Pigs</th>
<th>Dogs</th>
<th>Cats</th>
<th>Birds</th>
<th>Game</th>
<th>Croc Reptiles</th>
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<tbody>
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<td>4</td>
<td>2</td>
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<tr>
<td>Swa</td>
<td>9 190</td>
<td>18 145</td>
<td>4 332</td>
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<td>9</td>
<td>14</td>
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<td>Swaziland</td>
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<td>Malawi</td>
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<td>1</td>
<td>1</td>
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</table>
### TABLE 6

**TOTAL IMPORTS FROM NEIGHBOURING STATES AND OVERSEAS**

<table>
<thead>
<tr>
<th>Species of animal</th>
<th>From neighbouring states</th>
<th>From overseas</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>17 989</td>
<td>22</td>
<td>18 011</td>
</tr>
<tr>
<td>Sheep</td>
<td>18 759</td>
<td>42</td>
<td>18 801</td>
</tr>
<tr>
<td>Goats</td>
<td>4 575</td>
<td>-</td>
<td>4 575</td>
</tr>
<tr>
<td>Horses</td>
<td>45</td>
<td>160</td>
<td>205</td>
</tr>
<tr>
<td>Pigs</td>
<td>54</td>
<td>-</td>
<td>54</td>
</tr>
<tr>
<td>Dogs</td>
<td>142</td>
<td>564</td>
<td>706</td>
</tr>
<tr>
<td>Cats</td>
<td>81</td>
<td>315</td>
<td>396</td>
</tr>
<tr>
<td>Birds</td>
<td>726</td>
<td>39 314</td>
<td>40 040</td>
</tr>
<tr>
<td>Poultry</td>
<td>-</td>
<td>44 486</td>
<td>44 486</td>
</tr>
<tr>
<td>Game</td>
<td>1 342</td>
<td>27</td>
<td>1 369</td>
</tr>
<tr>
<td>Reptiles (crocodiles)</td>
<td>350</td>
<td>-</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>-----</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Mice</td>
<td>-</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Primates</td>
<td>-</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Tropical fish</td>
<td>-</td>
<td>1 570 702</td>
<td>1 570 702</td>
</tr>
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</table>

**TABLE 7 / ...**
### TABLE 7

#### ANIMAL PRODUCTS IMPORTED

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantities</th>
<th>Neighbouring State</th>
<th>Quantities from Overseas</th>
<th>Total quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bones (kg)</td>
<td>150 000</td>
<td>Botswana</td>
<td>-</td>
<td>198 750</td>
</tr>
<tr>
<td></td>
<td>48 750</td>
<td>Swaziland</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Carcasemeal (kg)</td>
<td>1 333 000</td>
<td>Botswana</td>
<td>-</td>
<td>1 381 750</td>
</tr>
<tr>
<td></td>
<td>48 750</td>
<td>Swaziland</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Abomasum</td>
<td>1 294</td>
<td>Botswana</td>
<td>-</td>
<td>1 294</td>
</tr>
<tr>
<td>Hair / Bristle (kg)</td>
<td>2 200</td>
<td>Botswana</td>
<td>5 360</td>
<td>7 560</td>
</tr>
<tr>
<td>Hides / Skins (kg)</td>
<td>203 646</td>
<td>Botswana</td>
<td>1 879 487</td>
<td>3 566 373</td>
</tr>
<tr>
<td></td>
<td>869 367</td>
<td>Zimbabwe</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>613 873</td>
<td>Swaziland</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mohair / Wool / Peltz</td>
<td>4 316</td>
<td>Botswana</td>
<td>1 541 459</td>
<td>1 545 775</td>
</tr>
<tr>
<td>Trophies</td>
<td>3 893</td>
<td>Botswana</td>
<td>44</td>
<td>5 075</td>
</tr>
<tr>
<td></td>
<td>1 138</td>
<td>Zimbabwe</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cheese / butter (kg)</td>
<td>4.5</td>
<td>Botswana</td>
<td>482 590</td>
<td>482 594.5</td>
</tr>
<tr>
<td>Vaccine</td>
<td>4 200</td>
<td>Botswana</td>
<td>71 871 200</td>
<td>71 875 400</td>
</tr>
<tr>
<td>Path Specimens</td>
<td>11</td>
<td>Botswana</td>
<td>3 678</td>
<td>42 832</td>
</tr>
<tr>
<td></td>
<td>39 143</td>
<td>Zimbabwe</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>775 ml</td>
<td>Mozambique</td>
<td>-</td>
<td>865 ml</td>
</tr>
<tr>
<td></td>
<td>90 ml</td>
<td>Lesotho</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Feathers (kg)</td>
<td>2.5</td>
<td>Botswana</td>
<td>23 064</td>
<td>23 066.5</td>
</tr>
<tr>
<td>Meat (kg)</td>
<td>7 638 891</td>
<td>Botswana</td>
<td>17 576 472</td>
<td>25 921 509</td>
</tr>
<tr>
<td></td>
<td>706 146</td>
<td>Swaziland</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Animal / Feed Suppl (kg)</td>
<td>-</td>
<td>-</td>
<td>1 610 285</td>
<td>1 610 285</td>
</tr>
<tr>
<td>Trout ova</td>
<td>-</td>
<td>-</td>
<td>1 700 000</td>
<td>1 700 000</td>
</tr>
<tr>
<td>Snake Skins (kg)</td>
<td>-</td>
<td>-</td>
<td>1 151</td>
<td>1 151</td>
</tr>
<tr>
<td>Semen (straws)</td>
<td>-</td>
<td>-</td>
<td>33 506</td>
<td>33 506</td>
</tr>
<tr>
<td>SPF Eggs (kg)</td>
<td>-</td>
<td>-</td>
<td>1 311 755</td>
<td>1 311 755</td>
</tr>
<tr>
<td>Jutebags (kg)</td>
<td>-</td>
<td>-</td>
<td>255 688</td>
<td>255 688</td>
</tr>
<tr>
<td>Oxgall (kg)</td>
<td>-</td>
<td>-</td>
<td>28 070</td>
<td>28 070</td>
</tr>
<tr>
<td>Casein / Whey / Milkpowder</td>
<td>-</td>
<td>-</td>
<td>1 605 501</td>
<td>1 605 501</td>
</tr>
</tbody>
</table>
The following animals or animal products which were brought into the country illegally were confiscated and were either destroyed or returned to the country of origin.

**From overseas**: 4 dogs (returned), 80 frogs (returned), 97,4 kg poultry and meats (destroyed) and 3 kg cheese (destroyed).

**From neighbouring countries**: 1 dog (returned), 1 cat (returned), 100 cattle (returned), 17 cattle (destroyed), 97 cattle (slaughtered of which 23 carcases rendered an income of R5 334,00), 16 sheep (destroyed), 31 goats (returned), 40 goats (destroyed with R3 095 compensation), 86 goats (destroyed without compensation), 2 horses (returned), 3 sheep carcases (destroyed) and 3,1 kg biltong (destroyed).

Forty two incidents of illegal introductions from Mozambique, involving approximately 650 head of cattle, took place. These animals could not be traced as they were being concealed by the local population.

Thieves from Zimbabwe stole 95 cattle, 259 donkeys and 38 goats from Venda farmers.

**EXPORT CONTROL**

Animals and animal products destined for export, were subjected to specified examination and tests in accordance with the requirements of the exporting country. A health certificate will be issued only after all requirements of the importing country have been met.

The following animals mentioned in tables 8 and 9 were exported during the year under review.
## TABLE 8

### EXPORTS TO NEIGHBOURING STATES

<table>
<thead>
<tr>
<th></th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
<th>Horses</th>
<th>Pigs</th>
<th>Mules Donkeys</th>
<th>Dogs</th>
<th>Cats</th>
<th>Birds</th>
<th>Poultry</th>
<th>Game</th>
<th>Rats</th>
<th>Rabbits</th>
<th>Hamsters</th>
<th>Guinea Pigs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swaziland</td>
<td>28 667</td>
<td>2 174</td>
<td>-</td>
<td>6</td>
<td>1 101</td>
<td>12</td>
<td>135</td>
<td>16</td>
<td>117</td>
<td>74 100</td>
<td>46</td>
<td>12</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Transkei</td>
<td>24 865</td>
<td>64 881</td>
<td>8 548</td>
<td>1 1511</td>
<td>103</td>
<td>24</td>
<td>65</td>
<td>6</td>
<td>-</td>
<td>180 204</td>
<td>6</td>
<td>155</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Botswana</td>
<td>96</td>
<td>3</td>
<td>25</td>
<td>21</td>
<td>-</td>
<td>59</td>
<td>198</td>
<td>59</td>
<td>9</td>
<td>1 200</td>
<td>200</td>
<td>170</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Kenya</td>
<td>-</td>
<td>20</td>
<td>-</td>
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<tr>
<td>Mauritius</td>
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<tr>
<td>Zaire</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>9</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
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<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<tr>
<td>Zambia</td>
<td>4</td>
<td>52</td>
<td>52</td>
<td>6</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Zimbabwe</td>
<td>1</td>
<td>20</td>
<td>190</td>
<td>36</td>
<td>-</td>
<td>-</td>
<td>524</td>
<td>63</td>
<td>127</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Lesotho</td>
<td>101</td>
<td>228</td>
<td>599</td>
<td>15</td>
<td>-</td>
<td>-</td>
<td>17</td>
<td>6</td>
<td>-</td>
<td>1 500</td>
<td>7</td>
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<tr>
<td>Mozambique</td>
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<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>16</td>
<td>15 600</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>SWA</td>
<td>1 010</td>
<td>82 258</td>
<td>2 850</td>
<td>12</td>
<td>10 743</td>
<td>-</td>
<td>185</td>
<td>28</td>
<td>26</td>
<td>16 864</td>
<td>980</td>
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<td>Malawi</td>
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<td>-</td>
<td>-</td>
<td>17</td>
<td>7</td>
<td>-</td>
<td>75 650</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>KwaZulu</td>
<td>4</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Caprivi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bophuthatswana</td>
<td>1 523</td>
<td>5 783</td>
<td>126</td>
<td>5</td>
<td>60</td>
<td>4</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2 437</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>56 271</td>
<td>155 419</td>
<td>12 392</td>
<td>1 262</td>
<td>12 034</td>
<td>99</td>
<td>1 156</td>
<td>186</td>
<td>295</td>
<td>365 118</td>
<td>3 677</td>
<td>337</td>
<td>3</td>
<td>1</td>
<td>26</td>
</tr>
</tbody>
</table>

 vál: - 78 -
**TABLE 9**

**TOTAL NUMBER OF ANIMALS EXPORTED TO NEIGHBOURING STATES AND OVERSEAS COUNTRIES**

<table>
<thead>
<tr>
<th>Species of animal</th>
<th>To neighbouring countries</th>
<th>To overseas countries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>60 731</td>
<td>3 498</td>
<td>64 229</td>
</tr>
<tr>
<td>Sheep</td>
<td>168 206</td>
<td>-</td>
<td>168 206</td>
</tr>
<tr>
<td>Goats</td>
<td>13 838</td>
<td>-</td>
<td>13 838</td>
</tr>
<tr>
<td>Horses</td>
<td>1 262</td>
<td>57</td>
<td>1 319</td>
</tr>
<tr>
<td>Pigs</td>
<td>12 034</td>
<td>-</td>
<td>12 034</td>
</tr>
<tr>
<td>Mules / Donkeys</td>
<td>101</td>
<td>-</td>
<td>101</td>
</tr>
<tr>
<td>Dogs</td>
<td>1 157</td>
<td>1 773</td>
<td>2 930</td>
</tr>
<tr>
<td>Cats</td>
<td>186</td>
<td>563</td>
<td>749</td>
</tr>
<tr>
<td>Birds</td>
<td>295</td>
<td>39 492</td>
<td>39 787</td>
</tr>
<tr>
<td>Poultry</td>
<td>365 118</td>
<td>7</td>
<td>365 125</td>
</tr>
<tr>
<td>Game</td>
<td>3 677</td>
<td>98</td>
<td>3 775</td>
</tr>
<tr>
<td>Rats</td>
<td>337</td>
<td>-</td>
<td>337</td>
</tr>
<tr>
<td>Rabbits</td>
<td>3</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td>Hamsters</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Guinea pigs</td>
<td>26</td>
<td>-</td>
<td>26</td>
</tr>
<tr>
<td>Squirrel Monkey</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Certificates were also issued for a large variety of agricultural products.
TRAINING

State Veterinarians lecture on animal health at agricultural colleges where prospective farmers are trained.

In service training of inspectorate staff was continued and one stock inspectors course, attended by 23 officials, was held during the year under review. As tuberculin testing will in some areas be of top priority, 46 stock inspectors were trained to perform these tests at two courses, held at Pretoria and Ermelo.

Different courses or symposia were also attended by officials, viz: legal courses attended by 23 state veterinarians, orientation courses attended by 16 officials, courses in meat hygiene attended by 12 state veterinarians, courses on the use of computers attended by 6 officials, a first aid course attended by 2 officials, Mastitis symposia attended by 4 officials and a Heartwater symposium attended by 3 state veterinarians. Two officials attended a course in public administration and nine state veterinarians attended the SAVA congress.

Sixty-seven final year BVSc students received training by State veterinarians and examinations were written at the end of a two week training period.

Regular staff meetings held either by state veterinarians involving their stock inspectors, or regional directors involving state veterinarians and Stock Inspectors were held in all regions. The notes on the animal health course delivered at agricultural colleges, were made available to stock inspectors in the Western Cape Region for use as reference material.

Two state veterinarians received training at various laboratories during an overseas visit to Australia and New Zealand.

LEGISLATION


By Government Notice number R.266 of 13th February 1987 the disease Equine Influenza was added to the list of controlled diseases as published in table 2 of the Animal Disease Regulations published in Government Notice R.2026 of 26 September 1986.

For violating the Animal Diseases Act (1984), a few persons were prosecuted in the Transvaal Region, viz:

One / …
One person for illegally transporting 2 warthog and 1 steenbuck without a
permit in the Thabazimbi district: found guilty and fined R750 or 9 months
imprisonment;

Three persons for illegal slaughtering: two persons found guilty and warned;

Three persons for not reporting the presence of sheep scab in their sheep:
three persons found guilty and reprimanded.

In the Northern and Eastern Transvaal Region two parties were prosecuted for the
illegal movement of wildebeest in the Nelspruit district. A fine of R700,00 each was
imposed. In Potgietersrust district a farmer was fined R300,00 suspended for 5
years for falsifying a permit. Legal proceedings were instituted against 5 farmers in
the Ellisras district for neglecting to keep the border gates closed. Four farmers paid
admission of guilt fine of R50,00 each. One case is still pending.

TECHNICAL RELATIONS WITH OTHER COUNTRIES

LIAISON AND CO-OPERATION WITH AFRICAN COUNTRIES

Visits were paid to Head Office and regional offices of the Directorate by Scientists
or members of liaison committees of Swaziland, Lesotho, Venda, Ciskei and
Transkei, to discuss various aspects, but mainly border control. Likewise officials of
this Directorate visited Botswana, Zimbabwe, Swaziland, Lesotho, Lebowa,
Gazankulu, Bophuthatswana, Venda, Transkei and Ciskei.

The State Veterinarian at Skukuza attended a SARCCUS meeting in Malawi.
Scientists from Botswana attended the elephant cropping operations in the Kruger
National Park.

LIAISON WITH OVERSEESE COUNTRIES

Scientists of Singapore, France, Japan and the UK paid visits to the Skukuza SV
office in the Kruger National Park. The regional veterinary laboratory Middelburg
received visitors from the USA and had a visit from the SA Agricultural Councillor to
France.

Two veterinarians from the Eastern Cape and Karoo visited laboratories during a
visit to Australia and New Zealand.

The Director and two Assistant Directors paid official visits to France, Belgium, The
Netherlands, Germany, Austria and Switzerland, attending the OIE meeting, and
international laboratory symposium, a world congress on food as well as visitations
to various laboratories and institutes.
CLINICAL SERVICES

Fees collected for professional services rendered during the year under review amounted to R37 904,65 and R11 375,57 for travelling expenses. Vaccines to the value of R457,38 were sold by state veterinary offices.

Fees for laboratory tests amounted to R153 918,76 and for meat and game carcase inspection R999 823,71.

Quarantine fees amounted to R122 905,60 and sundry revenue to R26 920,87.

For carcases of animals slaughtered and approved for human consumption in accordance with the bovine tuberculosis eradication scheme, an amount of R351 473,34 was paid into Miscellaneous Revenue.

DIAGNOSTIC SERVICES

Diagnostic services were rendered by the Directorate of Veterinary Services by means of three Regional Veterinary Laboratories situated at Middelburg CP, Stellenbosch and Pietermaritzburg as well as smaller laboratories at Grahamstown, Queenstown, Kroonstad, Potchefstroom, Bloemfontein, Potgietersrus, Vryheid, Ermelo and Louis Trichardt. The Skukuza laboratory in the Kruger National Park keeps the Directorate informed of diseases in game which are transmissible to domestic animals.

The AI and Reproduction Section and the Poultry Diagnostic Section of the Directorate both stationed at Onderstepoort, offer a more comprehensive service to cattle and poultry farmers.

The various diagnostic services which were rendered are set out in Table 10.
### TABLE 10

**DIAGNOSTIC SERVICES**

#### Serology

<table>
<thead>
<tr>
<th>Test</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bovine Brucellosis</td>
<td>1,127,781</td>
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<tr>
<td>Rose Bengal Plate Test</td>
<td>179,143</td>
</tr>
<tr>
<td>Complement fixation test</td>
<td>12,198</td>
</tr>
<tr>
<td>Serum Agglutination test</td>
<td>19,906</td>
</tr>
<tr>
<td>Milk Ring test</td>
<td>22,847</td>
</tr>
<tr>
<td>Other Complement fixation tests</td>
<td>34,673</td>
</tr>
<tr>
<td>Other Agglutination tests</td>
<td>47,716</td>
</tr>
<tr>
<td>Serum Gel Immodiffusion test</td>
<td>16,841</td>
</tr>
<tr>
<td>Serum Virus Neutralisation</td>
<td>498</td>
</tr>
<tr>
<td>Serotyping of bacterial cultures</td>
<td>11,900</td>
</tr>
</tbody>
</table>

#### Diagnostic Smears

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Count</th>
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</thead>
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<td>Biological tests performed</td>
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<td>Histopathological sections made and examined</td>
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#### Reproduction

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<tr>
<th>Test</th>
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<td>Placentas examined</td>
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Faecal specimens examined

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<td>Identification - External Parasites</td>
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<td>Identification - Plants</td>
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<td>1 245 318</td>
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<td>771 752</td>
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<td>Owa Owa</td>
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<td>GRAND TOTAL</td>
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| CATTLE | GRAND TOTAL | - 10 143 108 |
| SHEEP  | GRAND TOTAL | - 26 050 003 |
### TABLE 12

**DISTRIBUTION OF CATTLE**

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<thead>
<tr>
<th>Area or National State</th>
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<td>KaNgwane</td>
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<td>KwaNdebele</td>
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<tr>
<td>KwaZulu</td>
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<td>Lebowa</td>
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<td>Qwa Qwa</td>
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<td><strong>TOTAL</strong></td>
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<td><strong>GRAND TOTAL</strong></td>
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