ANNUAL REPORT OF THE DIVISION OF VETERINARY SERVICES

DEPARTMENT OF AGRICULTURAL TECHNICAL SERVICES

1977-1978

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Three outbreaks of *foot-and-mouth* disease were mentioned in the previous report. There have since been three further outbreaks in the proclaimed control area adjacent to the Kruger National Park, viz. in the Giyani and Mhala (Gazankulu) and Bolobedu (Lebowa) districts. The SAT 11 strain of the virus was responsible for these outbreaks as well. Officers from this Division went to these areas to help deal with the outbreaks. The necessary control measures, which included both the re-inoculation of susceptible animals on affected farms and in threatened areas and intensified control over the movements of cloven-hoofed animals and their products, were applied in every case. The administration of vaccine failed to produce the desired results, however, so that the campaign was hampered and prolonged. The cause of this failure, which is contrary to past experience, is being investigated.

All infection has been wiped out and at the end of the year under review there were no active cases of foot-and-mouth among stock.

There was another increase in the number of cases of *rabies* in Natal; the number of cases among domestic cats was especially disquieting.

Fewer problems with *corridor disease* were experienced this year than in the previous year, one outbreak only having been reported.

For the first time since the scheme for the eradication of *bovine tuberculosis* was introduced in 1969, more than a million tuberculin tests were carried out; to be specific, the figure was 1000 160. The 88 trained members of the stock inspectorate staff made valuable contributions to this effort. Since the diagnostic herd testing scheme was started on 28 October 1977 officers of the Division have tested 537 herds, comprising 55 612 animals. The number of tuberculosis-free certificates issued to tuberculosis-free herds in accordance with the accreditation scheme, namely 3 843, is 39.5 percent more than last year.

A total of 700 herds (61 306 animals) have already been integrated into the voluntary accreditation scheme for brucellosis, which was introduced on 12 November 1976. The first brucellosis-free certificate was accordingly issued to a herd during the year under review. A diagnostic scheme was introduced on 1 July 1977, and tests on 2087 herds, comprising 110 554 animals, have been carried out so far.

Outbreaks of *lumpy skin disease* increased tremendously during the year under review, especially in the Transvaal and Natal Regions.

The incidence of *sheep scab* increased. There were 321 outbreaks in 82 magisterial districts, many of which had become infected with this disease for the first time in years. In the course of the campaign to control the disease 1 130 360 head of small stock, 154 501 of them in Black states, were dipped under official supervision on infected and contract farms. A country-wide, organised dipping programme will have to be started if the disease is to be controlled. Negotiations with Organised Agricultural and other interested bodies are already under way, in view of the fact that the sheep farmer will have to assume the greatest responsibility in this regard.
A single outbreak of *African swine fever* occurred during the year. This was effectively and speedily dealt with and prevented from spreading. There was an increase in the number of cases of *Johne's disease*. Six cases (three in the Highveld Region and three in the Natal Region) were confirmed among imported stock and/or the progeny of imported stock. The infected animals were slaughtered (one died of the disease) and the relevant farms are being kept under close observation for any possible further complications.

Twenty-two outbreaks of *bovine malignant catarrh* ("snotsiekte") occurred during the year under review; 43 animals succumbed in comparison with six in the previous year. In all but two cases there had been contact with blue wildebeest.

*Pulmonary adenomatosis* ("jaagsiekte") is increasing among sheep; 14 cases were reported. The first case of "jaagsiekte" from the Lydenburg State veterinary area was reported.

The regional veterinary laboratory at Stellenbosch succeeded in proving that the fungus *Stachybotrus atra* (isolated from mouldy sheep pellets) was responsible for poisoning in sheep. It is the first time that this fungus has caused poisoning in the Republic.

The *laboratory services* rendered by the Division were expanded during the year under review; the number of tests or investigations carried out was 31.2 percent higher than the previous year. A new veterinary laboratory - at Potchefstroom - became operative during the year.

Three officers from the Division of Veterinary Services were seconded to Bophuthatswana after independence to assist with the expansion of the veterinary service in that country.

**VETERINARY RESEARCH**

*Miscellaneous research projects*

Officers of the Division of Veterinary Services continued with research work on various projects.

The A 1 and Reproduction Section of the Division was jointly responsible for an experiment concerning reproduction in certain Afrikaner pedigree herds; a total of 1 657 rectal examinations were carried out on cows in the course of 8 herd investigations during this period. This Section is also engaged in a multi-disciplinary investigation into the causes of poor financial returns from fresh milk production. The reproduction problems of the 19 herds participating in the investigation are the responsibility of the Section, and 17 of these herds were visited once or twice or even more frequently during the year in this regard.

The Section of Poultry Diagnostic and Extension Services devoted considerable attention to a condition, which affects mainly broilers, and is at present known as "dikkop". The disease attacks the respiratory system, especially during winter and is characterised by extreme swelling of the face. Initially the swelling is due to a clear subcutaneous oedema, which at a later stage gives rise to thick yellow
suppurations. Airsac infection, a not infrequent complication, contributes to mortality. It would seem that the condition is an infectious one, but so far attempts at isolating the causative organism(s) have not been successful. Serological investigations point to a possible influenza or infectious bronchitis virus involvement.

Considerable attention was paid to a respiratory disease among turkeys. When about 14 days old, poults develop severe rhinitis and sinusitis. Morbidity is very high and mortality up to 20 per cent. Here again, an infectious organism seems to be involved, since the condition could be transmitted by the injection of sinus material into susceptible poults. Further research is being done in this regard.

The regional veterinary laboratory at Stellenbosch is continuing its investigations into the cause and prevention of the pathological condition known as "redgut" or "draaiderm". Whereas this disease used to be encountered only in the Swellendam State veterinary area, the condition has now been found in other parts of the Western Cape Region as well. In the Swellendam State veterinary area 12 000 sheep on 17 farms were immunised with a trial vaccine of Clostridium perfringens type A, manufactured by the Veterinary Research Institute. Preliminary results are not encouraging.

The survey on lung lesions in pigs is proceeding at the above laboratory; 20.55% of the 13 634 pig carcasses examined exhibited lesions. The laboratory has demonstrated that Mycoplasma pneumoniae undoubtedly occurs in the Republic, and M. hyopneumoniae, M. hyorhinus and M. hyosynoviae, among others, have been isolated, from lesions.

The regional veterinary laboratory at Middelburg (Cape) has proved that enzootic icterus is due to chronic copper poisoning and is focusing its attention on the possible source, prevention and treatment of the condition.

Investigations into the cause of "swelsiekte" in Angoras are proceeding, but are being hampered by the small number of cases presented for examination.

Experiments are still being conducted in conjunction with the Veterinary Research Institute in an attempt to solve the problem of "geeldikkop". The role played by fungi in the aetiology of the condition is being studied more closely at present.

The chemical composition of bladderstones and gravel in the urethra of rams is being determined, in cooperation with the CSIR, in an attempt to establish the cause and to introduce possible preventive measures.

The regional veterinary laboratory at Allerton, working in conjunction with the Durban City Council, has piloted a scheme to reduce the incidence of mastitis in dairy herds or eradicate the disease if possible. Regular visits to farms and bacteriological monitoring of milk specimens indicate that the condition is already under control in a large number of herds.

Research is still proceeding at the veterinary laboratory at Queenstown; the liver damage caused by seneciosis is established by means of blood tests. Preliminary results seem promising.
Research on game and diseases of game

Research is continuing in the Kruger National Park. A buffalo cow and two pregnant impala ewes were artificially infected during the year with the *Brucella* strain, which had been isolated from a buffalo. All three animals aborted and it was possible to isolate the organism from the three aborted foetuses.

However, the major portion of the work done at the veterinary laboratory at Skukuza concerned *foot-and-mouth* disease. The vaccine, which produced disappointing results in cattle, was injected into buffalo and impala, which developed "satisfactory" serological titres.

Buffalo in the Ad do National Park were clinically examined for foot-and-mouth disease and throat scrapings for the isolation of the virus, together with blood samples for the determination of antibodies, were taken from them. The results, which were negative in all cases, make these the only known, free-living African buffalo, which show no evidence of having had any previous contact with the foot-and-mouth virus. Buffalo in Natal have not been tested so far.

Artificial infection with foot-and-mouth was successfully induced in a young blue wildebeest, which had grown up in the animal holdings at Skukuza. Blue wildebeest of the same age, caught in the veld, could not be infected, however. Serological tests to establish the reason for this are under way.

A giraffe was injected with live foot-and-mouth virus to determine whether the animal would develop clinical lesions and whether it would transmit the disease to two other giraffe in the same camp. In both cases the results were positive. Throat scrapings and serum specimens from 13 giraffe in the Park, however, showed no evidence of either the virus or antibodies.

*Sarcoptic* mange was responsible for mortality among blue wildebeest in the Satara-Orpen-Nwanedzi complex. The condition was also found among giraffe, impala and lions in the same area. No cases were observed among buffalo during the year under review.

*Actinomycosis* was again encountered in a number of impala in the southern parts of the Kruger National Park.

A hyena was experimentally infected with *Trichinella spiralis* and treated with mebcndazole (2 g/day for 7 days). After 3½ months, when the animal was killed, it was still infected. *Trichinella* cysts were fed to mice and caused infection. Trichinosis could not be transmitted experimentally to 21 monkeys, a Cape hunting dog, a leopard and a python.

Two giraffe were infected with *papillomatosis* at Satara.

Internal parasites encountered either during meat inspections or at autopsies are listed below:

- *Pneumostrongylus spp.* (lungworm) in the lungs of impala,
- *Slilesia hepatica* in the livers of impala,
- *Linguatula spp.* and *Sarcocystis spp.* in the carcases of buffalo,
- *Fasciola spp.* in the livers of hippopotami,
Grammocephalus calthratus in the lungs of elephants and bladderworm injection in the carcases of impala and buffalo.

**VACCINES AND ANIMAL REMEDIES**

The following vaccines were produced by State veterinarians, veterinary laboratories and/or regional veterinary laboratories:

- **Heartwater**  8915 doses
- **Autogenous wart**  9 380 millilitres
- **Contagious pustular dermatitis (orf)**  8 870 millilitres

The regional veterinary laboratory at Stellenbosch manufactured 270 ml of leptospirosis antigen, and 3 300 ml of Brucella antigen, 80 ml of antisera and 164 ml of complement were prepared at Middelburg (Cape), for own use.

No vaccine was confiscated and destroyed by officials of the Division of Veterinary Services, where the expiry date of the vaccine had been reached or the manufacturers’ directions for storage had not been complied with.

**CONTROL OF ANIMAL DISEASES**

A. **NOTIFIABLE DISEASES**

(i) **Foot-and-mouth disease**

In addition to the three outbreaks of foot-and-mouth disease mentioned in last year’s report, there were three further outbreaks this year, also caused by the SAT 11 strain of the virus.

At Barberton, the farms Steyn (13 July 1977), Grootdraai (18 July 1977) and Verdwaal (31 August 1977), in addition to Elsjan and Albert, became infected.

In the White River district (the area) a further 10 dipping tank areas, apart from the three mentioned in the previous report, became infected, the last being Lundi where the outbreak occurred on 28 October 1977.

In Letaba, the farms Schiettocht B (12 July 1977) and Muhale (2 August 1977) became infected in addition to Schiettocht (25 July 1977) and Genoeg (29 June 1977).

In Gazankulu (Giyani district) infection was confirmed in the Sabulani dipping tank area on 4 August 1977. Infection was encountered in a further 23 dipping tank areas. Kanaan was the last dipping tank area to become infected, and the outbreak occurred on 12 October 1977.
In the Bolobedu district in Lebowa infection was confirmed on 11 October 1977 at the Dumen A dipping tank area. Subsequently, infection was also confirmed at Dumen B on 13 October 1977 and at Sekoto on 19 October 1977.

Infection on the farm Calcutta, in the District of Mhala in Gazankulu, was confirmed on 28 February 1978.

Infection among impala in the Lower Sabie section of the Kruger National Park was confirmed only in October 1977. The SAT 11 strain of the virus was involved here as well. Clinical cases were still being encountered in the Kruger National Park towards the end of the year under review.

All the outbreaks in stock farming areas, with the exception of Bolobedu, were in the foot-and-mouth control area bordering on the Kruger National Park. Bolobedu, however, adjoins Giyani. Only cattle were affected. The control measures, which were described in the previous report, were applied in all these outbreaks except at Calcutta. Vaccination, however, failed to produce the desired results and, notwithstanding repeated inoculations, the infection flared up several times. The reason is still being sought. In view of the ineffectiveness of vaccination, artificial virusing of the animals at Calcutta was decided on - in other words, they were artificially infected so that the disease could burn itself out. This measure had the desired result and there was no further spread of the disease.

In all these instances the infection was successfully eradicated and the campaigns wound up on the following dates: 31 October 1977 at Barberton, 18 January 1978 at Letaba, 28 February 1 1978 at Gazankulu (Giyani) and Lebowa and 31 May 1978 at White River and Gazankulu (Mhala). Normal control measures have since been applied.

During these campaigns a total of 563 877 cattle and 97 059 head of small stock were inoculated against foot-and-mouth disease. A total of 76 local officers and 97 officers from other parts of the country were used during the campaigns and 1 206 temporary labourers were employed.

In the Black states, the Department was responsible only for paying the salaries of its officers, all other expenses being met by the various Governments. The Department’s outlay amounted to R761 724.

During these campaigns, the control measures included the destruction of animals whenever they strayed into or out of the infected areas or were illegally taken either into or out of such areas. No compensation was paid to the owners of these animals. In the White areas, 47 cattle, 1 sheep, 35 goats and 17 pigs, valued at R4 709, and in the Black states, 36 cattle, 3 sheep and 36 goats, with a total value of R3 881, were destroyed in this way.

The routine control measures for protecting stock farming areas against foot-and-mouth disease were once again in force at the end of the year under review. Since a reserve supply of vaccine was still available, 88 991 cattle were inoculated as a preventive measure during April 1978 with either a bivalent inactivated SA I I and SA f II vaccine or a trivalent
inactivated SAT 1, SA h 11 and SAT III vaccine. In view of the results obtained from immunisation during outbreaks of the disease, serious consideration will be given to the advisability of continuing with the annual preventive inoculation of cattle in the foot-and-mouth control area bordering on the Kruger National Park during the coming year.

The regular inspection of cattle by officers of the Division of Veterinary Services in the areas adjoining the Kruger National Park and the Botswana, Rhodesia and Mozambique borders is continuing. Stock fences and gameproof fences are patrolled and maintained on the borders with these countries, and on the western, southern and northern borders of the Kruger National Park. The control of the portion of the fence between Botswana and Bophuthatswana was transferred to the latter country on 1 December 1977.

In the course of patrol work along the fences, 548 cattle, 29 goats and 2 sheep which had either been brought in illegally or had strayed in were bound. 111 of the animals, which were valued at a total of R5 798, except 487 cattle, which were returned to Botswana, were either slaughtered or destroyed, no compensation being paid to the owners.

(ii) Rabies

Of the 747 specimens submitted to the Veterinary Research Institute by the Division of Veterinary Services and the Black states, 185 (24.8 per cent) were positive for rabies. In the previous year 200 cases (22.9 per cent) were positive.

The incidence of the disease among the various animal species was:

<table>
<thead>
<tr>
<th>Species</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow mongooses</td>
<td>65</td>
</tr>
<tr>
<td>Cattle</td>
<td>46</td>
</tr>
<tr>
<td>Dogs</td>
<td>34</td>
</tr>
<tr>
<td>Species of wild cats</td>
<td>13</td>
</tr>
<tr>
<td>Domestic cats</td>
<td>8</td>
</tr>
<tr>
<td>Jackals</td>
<td>6</td>
</tr>
<tr>
<td>Shunks</td>
<td>4</td>
</tr>
<tr>
<td>Sheep</td>
<td>4</td>
</tr>
<tr>
<td>Horses</td>
<td>2</td>
</tr>
<tr>
<td>Goats</td>
<td>1</td>
</tr>
<tr>
<td>Humans</td>
<td>1</td>
</tr>
<tr>
<td>Mountain hares</td>
<td>1</td>
</tr>
</tbody>
</table>

Rabies is spreading southwards in Natal and the increase in the number of cases among domestic cats there is alarming. The same trend has been noted in KwaZulu and the single human case occurred there.

The rabies unit of the Division which had been giving assistance in Venda and Gazankulu was disbanded during the year because it was not being properly utilised.
Phostoxin tablets for exterminating mongooses were again supplied by the Division to arms where outbreaks had occurred. A total of 7 925 tablets were used to deal with 556 colonies and 1 116 individual holes in the Highveld Region of the Division.

As in the past, dogs in the proclaimed rabies areas of Natal and parts of the Northern and Eastern Transvaal were immunised against the disease, as well as dogs and cats within a radius of 15 to 25 kilometres of confirmed cases. In all 68 511 dogs and 4 856 cats in the White areas were immunised by officers of the Division of Veterinary Services, and 61 406 dogs and 1618 cats were immunised in the Black states.

(iii) Anthrax

Three outbreaks of anthrax, which were responsible for the deaths of 3 cattle and 3 horses, occurred in the Republic during the year under review. In one of the outbreaks, in the Kimberley district, various species of game, mostly red hartebeest, succumbed to the disease.

In all 419 786 5 cattle and 9 967 head of small stock were immunised either by or under the supervision of officers of the Division of Veterinary Services as a preventive measure during outbreaks of the disease in the White areas. In the Black states 1 594 310 cattle were immunised as a preventive measure by officers of the various veterinary services. A few cases of the disease among impala were confirmed in the Pafuri area of the Kruger National Park.

(iv) East Coast fever and related diseases

East Coast fever (*Theileria parva*)

No cases have occurred in the Republic since 1954.

In Venda, Gazankulu and KwaZulu, where control measures against East Coast fever are still in force, 132 347 bovine spleen smears were examined.

*Corridor disease* (*T. lawrencei*)

One outbreak of the disease occurred in the Louis Trichardt State veterinary area, in the course of which 25 cattle died after a buffalo had grazed among the herd. The buffalo and seven others, which were subsequently shot, had presumably strayed from the Kruger National Park.

Restrictions on the movements of stock, an intensive dipping programme and the administration if antibiotics constitute the control measures applied.

There were again no cases in Natal or KwaZulu.

*Benign bovine theileriosis* (*T. mutans*)
In all, 30 cases (24 in Venda, 5 in kwaZulu and 1 in the Louis Trichardt State veterinary area) were diagnosed during the year.

(v) **Tuberculosis**

(Figures for the previous year are given in brackets).

During the year under review 3 843 (2 754) certificates were issued to tuberculosis-free herds, and 5 207 (4 830) herds participated in the bovine tuberculosis eradication scheme.

A total of 3 159 (4 390) positive reactors were slaughtered during the financial year which ended on 31 March 1978. The owners of these cattle received R611 782 (8899 885) by way of compensation.

Carcases not condemned for human consumption were sold for R367 381 (R512 810) and the moneys paid into Miscellaneous Revenue.

In terms of the scheme, R347 526 (R315 867) was paid to contracted private veterinarians for services rendered on behalf of the state. A further sum of R28 912 (R28 426) for INH (isoniazid), ear tags and costs not covered by revenue from the slaughtering of positive reactors, brought the total outlay on the scheme to R988 221 (R1 244 179).

Since the scheme was initiated on 14 May 1969, 748 (629) previously infected herds have qualified for tuberculosis-free certificates. An additional 11 severely infected herds have been treated with INH, bringing the total up to 69 since the scheme was started. A summary of the tests carried out during the year is given in the table below.

The percentage of reactors, with the exception of tests on accredited herds, was 1,20 (1,77) % positive and 0,62 (1,02) % suspected. A further twenty-four members of the stock inspectorate staff were trained to carry out tuberculin tests.

A diagnostic herd testing scheme, in which exclusive use is made of officers to carry out the two prescribed tests on herds, was started during the year under review. 537 herds (55612 animals) have already been tested in this way.) The 88 trained members of the stock inspectorate staff have played an important part in the progress achieved with the bovine tuberculosis eradication schemes.

In Lebowa 41 cattle were tested with tuberculin and not a single animal reacted to the test.

Cases of suspected tuberculosis in pigs are regularly encountered at abattoirs in the Transvaal Region.

Only one case of tuberculosis in poultry was reported; it occurred in the Kimberley State veterinary area.
Bovine brucellosis (*Brucella abortus*)

In accordance with the bovine brucellosis eradication scheme 600 509 (76/77 619 782) heifers over the age of three months but still under the age of 11 months were inoculated with Strain 19 vaccine in White areas either by or under the supervision of officers of the Division of Veterinary Services. The corresponding number of inoculations in the Black states was 80 841.

In cases where infection was confirmed and written permission given by the State Veterinarian for the inoculation of females over the age of 11 months, 9 188 (76/77 1 514) females were vaccinated in White areas by or under the supervision of officers.

Since the voluntary accreditation scheme for bovine brucellosis was launched on 12 November 1976, 706 (76/77 51) herds, comprising a total of 61 306 animals, have joined it. Of these, 2 074 cattle (3.4 %) and 275 (39 %) herds were found positive after laboratory tests. The first brucellosis-free certificate was issued to a herd in the Highveld Region of the Division in June 1978.

<table>
<thead>
<tr>
<th>Test</th>
<th>No. of herd tests</th>
<th>No. of tuberculin tests</th>
<th>Reactions Positive</th>
<th>Suspected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accreditation</td>
<td>5309(4997)</td>
<td>762 101 (683 176)</td>
<td>- (-)</td>
<td>674( 808)</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>720 ( 391)</td>
<td>51448 (15474)</td>
<td>- (-)</td>
<td>62 ( 49)</td>
</tr>
<tr>
<td>Import 17 ( 34)</td>
<td>440( 255)</td>
<td>- (-)</td>
<td>- (-)</td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>86 ( 97)</td>
<td>2405 ( 5226)</td>
<td>- (-)</td>
<td>2 ( 1)</td>
</tr>
<tr>
<td>INH</td>
<td>77 ( 105)</td>
<td>18 507 (21287)</td>
<td>248( 366)</td>
<td>194 ( 174)</td>
</tr>
<tr>
<td>Infected</td>
<td>756 ( 789)</td>
<td>165 159 (171 978)</td>
<td>2621 (3 479)</td>
<td>533 (1 127)</td>
</tr>
<tr>
<td>Total</td>
<td>6965(6413)</td>
<td>1 000 160 (897 3%)</td>
<td>2869 (3845)</td>
<td>1465 (2189)</td>
</tr>
</tbody>
</table>

The diagnostic scheme launched on 1 July 1977 has made good progress. A total of 110354 animals from 2087 herds were tested; 866 herds (41.5%) and 7 287 animals (6.6%) were positive.

The latter percentage is probably a good reflection of the national incidence of brucellosis in cattle. In every case, infected animals were branded with a "C" on the right side of the neck. The following tests for bovine brucellosis were carried out in terms of these schemes at the Veterinary Research Institute, regional veterinary laboratories and State veterinary offices:
### Serological tests

<table>
<thead>
<tr>
<th>Tests</th>
<th>No. of tests</th>
<th>Results Positive</th>
<th>Suspected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rose-Bengal</td>
<td>131 702</td>
<td>13 086 (9.94%)</td>
<td>-</td>
</tr>
<tr>
<td>Complement fixation</td>
<td>13 739</td>
<td>4 669 (33.98%)</td>
<td>397 (0.29%)</td>
</tr>
<tr>
<td>Tube agglutination</td>
<td>58 930</td>
<td>(9.12%)</td>
<td>2 590 (4.4 %)</td>
</tr>
</tbody>
</table>

### Milk tests

<table>
<thead>
<tr>
<th>Type of test</th>
<th>No. of tests</th>
<th>No. positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk ring test</td>
<td>515</td>
<td>31</td>
</tr>
<tr>
<td>Isolation</td>
<td>92</td>
<td>4</td>
</tr>
<tr>
<td>Biological</td>
<td>31</td>
<td>2</td>
</tr>
</tbody>
</table>

*Brucella abortus* was isolated from 75 (15.37%) of the 488 aborted cattle fetuses examined.

(vii) **Trypanosomiasis**

*Brucella abortus* was isolated from 75 (15.37%) of the 488 aborted cattle fetuses examined.

#### Nagana

No cases of nagana were diagnosed in the Republic. Cases of trypanosomiasis in both humans and animals, were, however, encountered in Caprivi.

As in the past, the Division of Veterinary Services conducted a spraying campaign against the tsetse fly on behalf of the Caprivi Government Services from June 1977 to September 1977.

Because of the constant menace of renewed incursions of tsetse flies from Botswana and Angola, it is not possible to eradicate the disease completely in Caprivi, but the spraying campaign at least helps to stabilise the position.

As in the past, an area of about 800 km² was sprayed by teams on foot with a 3.1 percent water emulsion of dieldrin. The customary rise in the cost of the insecticide, transport and labour meant that the campaign this year cost R45 280, as compared with R38 585 the previous year.

No joint spraying was done in neighbouring countries, nor did the Interterritorial Committee for Tsetse Fly Control meet.

The organisation and control of spraying campaigns in the Caprivi will in future be the responsibility of the South West African authorities.

#### Dourine

Of the 1486 samples tested by the Veterinary Research Institute and the regional veterinary laboratory at Windhoek 57 (3.84%) were positive.
Positive stallions were either castrated or slaughtered and mares sterilised or slaughtered. No compensation was paid to the owners since the tests were carried out at their request.

(viii) **Lumpy skin disease**

Outbreaks (348) occurred in all the veterinary regions in the Republic except the Eastern Cape and Karoo Region. The outbreaks were particularly severe in the Transvaal and Natal Regions, mainly because farmers neglected to carry out preventive inoculation.

Officers of the Division immunised 290,611 animals against the disease during the year. The corresponding figure for Gazankulu and Venda is 34,243 animals.

(ix) **Sheep scab**

The number of outbreaks increased from 309 in 1976/77 to 320 in the year under review. Outbreaks occurred in 82 magisterial districts and gave rise to increasing concern. Negotiations with organised agricultural and other interested bodies will be continued during the coming year in an attempt to reach a decision regarding the obligatory dipping of all sheep.

Outbreaks occurred in every region of the Division as well as in Lebowa, kwaZulu and the Ciskei. In the Black states alone there were 22 outbreaks of the disease in 5 magisterial districts.

The magisterial districts in which infection was confirmed, together with the number of outbreaks in each are as follows: Boshoff 26, Bulfontein 19, Kenhardt 18, Philippolis 17, Jacobsdal 13, Petrusburg 12, Harrismith 10, Gordonia 8, Dundee 8, Nqutu 8, Queenstown 8, Carnarvon 7, Estcourt 6, Pietersburg 6, Winburg 6, Wesselsbron 5, Madadeni 5, Herbert 5, Vryheid 5, Namaqualand 4, Brandfort 4, Jagersfontein 4, Kuruman 4, Hoopstad 4, Lichtenburg 4, Middelburg (Tvl) 4, Hewu 4, Koffiefontein 4, Nkandla 3, Witbank 3, Heidelberg 3, Lindley 3, Heilbron 3, Trompsburg 3, Indwe 3, Calvinia 3, King William's Town 2, De Aar 2, Britstown 2, Aliwal North 2, Bloemfontein 2, Clocolan 2, Dewetsdo 2, Rouxville 2, Kimberley 2, Warrenton 2, Postmasburg 2, Belfast 2, Ficksburg 2, Koppies 2, Kroonstad 2, Reitz 2, Balfour 2, prings 2, Bronkhorstspruit 2, Delmas 2, Pretoria 2, Nebo 2, Bethlehem 2, Benoni 1, Alberton 1, mersfoort 1, Frankfort 1, Virginia 1, Ventersdorp 1, Ventersburg 1, Potchefstroom 1, Parys 1, Odendaalsrus 1, Klerksdorp 1, Hennenman 1, Fouriesburg 1, Christiana 1, Zastron 1, Fauresmith 1, Excelsior 1, Wodehouse 1, Prieska 1, Hopetown 1, Komga 1, Maimesbury 1 and Ceres 1.

As in the past, speculators and stock sales were largely responsible for spreading the disease.
Altogether 1 130 360 head of small stock, 154 501 in black states, on infected and contact farms were dipped with a registered dipping fluid at least twice at intervals of eight to 10 days under official supervision.

(x) **Mange**

Mange among cattle occurred in all the regions except in the Eastern Cape and Karoo Regions, Northern and Eastern Transvaal, where only a few cases were diagnosed. In the latter region it also caused problems in the high-lying areas.

Mange among pigs frequently occurred in the Natal, Northern and Eastern Transvaal Regions, and in Venda and Gazankulu. In the Western Cape Region the incidence of the disease is on the increase because of the problems with the efficacy of dipping fluids. In the Transvaal Region the disease frequently occurs in the Pretoria and Rustenburg state veterinarians areas. A few cases were reported in the Highveld and Eastern Cape and Karoo Region.

Altogether 6 cases of mange among goats occurred in the districts of Msinga and Vulindlela in Natal and as a control measure 13 331 goats were dipped against the disease.

In the Transvaal Region only one outbreak of mange among sheep occurred, and altogether 343 sheep were dipped.

(xi) **Swine fever**

European swine fever does not occur in the Republic of South Africa.

There was only one outbreak of African swine fever in the swine fever control area of the Rustenburg state veterinarian area. All four pigs died and there were no cases of euthanasia and no compensation. The pens were thoroughly disinfected and movement to and from the infected farm was suspended.

In the swine fever control area the same control measures as in the past still apply. In the White areas there were 538 approved pigs farms with 45 280 pigs. In the Black states the respective figures are 12 and 599.

(xii) **Erysipelas**

Altogether 42 (reported) outbreaks of the disease occurred in all the regions of the Division, except in the Eastern Cape and Karoo Region. The highest incidence was reported in the Western Cape (17 outbreaks) and Natal Region (16 outbreaks). Apart from familiar clinical signs *Erysipelothrix rhusiopathia* also caused abortions in the Kroonstad state veterinarian area.
Outbreaks can be controlled effectively by treatment with antibiotics and improved hygiene and management. Preventive vaccination is effective.

(xiii) **Epizootic lymphangitis**

One case of the disease was confirmed by the Veterinary Research Institute – a horse in the Potgietersrus district.

The horse was euthanised, thorough disinfection was carried out and movement to and from the farm of origin was controlled. No further cases occurred.

(xiv) **Johne’s disease**

Six cases of the disease were confirmed during the year under review. Five head of cattle were euthanised and compensation to the amount of R2 700 was paid to the farmers. A sixth animal later died of the disease. Once again the cases occurred in imported cattle and/or their progeny.

The farms where the disease occurred as well as other farms where it had been found previously were placed under surveillance for further developments.

(xv) **Contagious laryngotracheitis**

One outbreak was confirmed in the Western Cape Region among young pullets which were not immunised according to prescriptions.

(xvi) **Rinderpest**

Does not occurred in the Republic of South Africa.

(xvii) **Newcastle disease**

A few outbreaks of the disease occurred from all over the country, except the Western Cape and Eastern Cape and Karoo Regions, mostly where farmers did not follow the recommended vaccine programme.

The diseases frequently occurs in the Black states. In Lebowa the vaccination of chickens is compulsory and officers vaccinated 154 879 head of poultry. In Venda 170 170 doses of vaccines were sold to farmers, while officers vaccinated 7 733 head of poultry in QwaQwa.

(xviii) **Bacillary white diarrhoea and fowl typhoid**

During the year under review four outbreaks of the disease were reported, one in the Western Cape Region and the remainder in the Highveld Region.
In the Western Cape a reoccurrence was the result of all carriers of the disease not being slaughtered during the previous outbreak. Infected poultry was slaughtered by the owners and in order to control the outbreaks regular tests were done and management and hygiene improved.

Only one outbreak of fowl typhoid was reported in the Natal Region. The control measures mentioned also had the desired effect in this case.

(xix) Fowls cholera

No cases were reported.

(xx) Psittacosis

Two cases of psittacosis occurred in the Pretoria district. Movements to and from the holdings were controlled and the birds on the premises concerned treated. The treatment of all imported birds is still a routine practice at the Jan Smuts quarantine station.

(xxi) Scrapie

No cases were reported.

(xxii) Equine infectious anaemia

No cases have been reported in the Republic since 1955.

(xxiii) Glanders

No cases have been reported in the Republic since 1945.

(xxiv) Contagious bovine pleuropneumonia

No occurrence of the disease in the Republic since 1924.

B. NON-NOTIFIABLE DISEASES

(i) Bacterial diseases

Mastitis

As in previous years, Staphylococcus aureus was the organism most commonly isolated from the milk of cows with mastitis. A trial vaccine, manufactured by the Veterinary Research Institute, was recently tested in Natal, with promising results. Other organisms which have played a causative role in mastitis are Corvnebacterium spp., Escherichia coli, Pseudorionas aeruginosa, Staph. Epidermidis and Streptococcus spp. fewer cases than before were caused by Pasteurella spp.
In the bushveld areas of the country the bites of Ambivomma and Hvalomma ticks again created problems. The fact that hygienic practices in most dairies in the Western Cape Region during the wet winters were below standard favoured the increase of the disease there. Besides isolating the causative organisms and offering advice on their control, officers of the regional veterinary laboratory at Stellenbosch are providing an extension service in order to improve management and hygiene in dairies.

Cases of blue udder occurred among sheep and goats in the Western Cape, Highveld, OFS and Eastern Cape and Karoo Regions of the Division. In the latter Region Pasturella haemolytica was the commonest causative organism isolated from sheep. Staph. aureus was the commonest pathogen in goats, together with Pasteurella haemolwica. Both Staph. aureus and Pasteurella spp. played a part in the Highveld Region.

**Enterotoxaemia (pulpy kidney)**

Sporadic cases of pulpy kidney occurred in every Region, but chiefly where sheep had not been regularly or timeously immunised and the vaccine had not been administered or handled in the prescribed way. In the Western Cape Region, problems were experienced with the immunity induced by the oil-based vaccine and mortality from pulpy kidney occurred in inoculated sheep.

In the Ciskei officers immunised 192,820 sheep against the disease.

**Black quarter**

Sporadic cases of the disease were reported from the Western Cape Region where the disease occurred for the first time in the Malmesbury district, among cattle, and the Natal, OFS and Highveld Regions. In the Transvaal and Northern and Eastern Transvaal Regions it was rife among cattle, but in the Eastern Cape and Karoo Region sheep were mostly affected. In the latter Region only a few cases caused by Clostridium chauvoeii were reported, but cases caused by Clostridium septicum and/or Clostridium oedematiens increased.

Cases of puerperal black quarter in sheep and goats, caused by Cl. septicum, occurred in the Louis Trichardt State veterinary area. In the Eastern Cape and Karoo and Free State Regions, Cl. oedematiens was involved in some cases of the disease, and in the Transvaal and Highveld Regions Cl. septicum was the cause of black quarter in an increasing number of cases.

Regular, precise use of the available vaccines is an effective preventive measure.

In Venda, Gazankulu and Lebowa the inoculation of cattle between the ages of 3 months and 3 years with the black quarter vaccine is obligatory,
and 235 574 animals were immunised by officers during the year. In the Ciskei and kwaZulu officers immunised 213 359 cattle for farmers on a voluntary basis.

**Botulism**

A few cases of botulism occurred during the year. In the Transvaal Region there were 5 outbreaks, during which 75 cattle died in feedlots in which chicken manure had formed part of the ration.

No cases were reported in Natal, in contrast to the position last year. The only reported case among cattle in the Eastern Cape and Karoo Region occurred in the Queenstown State veterinary area. Eight animals died after they had been fed chopped Lucerne which contained a tortoise shell.

Several cases of botulism among sheep were encountered in the Eastern Cape and Karoo Region and in the Calvinia State veterinary area. Mortalities ceased after the sheep had been immunised with the Onderstepoort botulism vaccine. Problems were experienced with botulism in Venda, north of the Soutpansberg, and officers immunised 4575 cattle against the disease.

**Corynebacteriosis**

As in the past, the disease was widespread, especially among sheep, throughout the Republic. Tick bites, wounds caused by grass seeds and shearing wounds which become contaminated with *Corynebacterium* spp. often give rise to abscesses. Brain abscesses ("bosluiskop") caused mortalities among goats in the East London and Barberton State veterinary areas.

If the available vaccines were correctly used and hygienic practices and management in general improved, the disease could be effectively controlled.

**Pasteurellosis**

This disease played a major part throughout the country. The number of cases in the Transvaal, Free State and Northern and Eastern Transvaal Regions dropped, except in goats north of the Soutpansberg. In the Western Cape Region the disease was responsible for retarded growth in calf rearing units and caused mortality which varied from 5 to 20 per cent. Elsewhere most of the problems were experienced among lambs.

In Lebowa pasteurellosis was responsible for mortality among pigs in the Moutse district.

**Tetanus (lockjaw)**

As in the past, a few cases of this disease occurred throughout the Republic. In every case reported the elastrator, which is used for
castrations or docking the tails of lambs, was involved. This technique is gradually being phased out in the Highveld Region where, among others, 8 bull calves died from lockjaw after the elastrator had been used for castration.

**Colibacillosis**

Sporadic cases of colibacillosis were reported in the Free State and Northern and Eastern Transvaal Regions. The disease was especially common among pigs in the Highveld, Transvaal and Western Cape Regions. Many calves developed the disease in the Stellenbosch, Malmesbury and Grahamstown State veterinary areas. The regional veterinary laboratory at Stellenbosch isolated various strains of *Escherichia coli* which had not been incorporated in the existing vaccine. Special vaccines had to be prepared in these instances. Calf rearing units in the Western Cape Region should face East and not North because of the climatic conditions in that area.

In KwaZulu the condition is fairly common among calves that are penned in wet, dirty kraals during the day.

**Leptospirosis**

Cases were reported only from the Highveld Region among cattle in the Potchefstroom district and the Western Cape Region (among pigs). In the latter Region a trial vaccine was tested in 6 piggeries and gave very promising results.

**Pseudomonas infection**

A few cases of green fleece staining caused by the organism were encountered by the regional veterinary laboratory at Middelburg (Cape).

**Actinobacillosis and actinomycosis**

A few cases of these diseases were diagnosed in the Natal (actinomycosis was diagnosed only in the Ixopo State veterinary area), Western Cape (in feedlots, among cattle from South-West Africa), Eastern Cape and Karoo, Northern and Eastern Transvaal (among cattle in the Louis Trichardt State veterinary area, actinomycosis among impala in the Kruger National Park) and Highveld Regions (in the Lichtenburg and Potchefstroom districts).

**Foot-rotund foot abscess**

Foot abscess was widespread, particularly among sheep, in the Natal Region. Similar problems with foot-rot among cattle were experienced during the winter in the Western Cape Region. The number of cases of foot abscess in the Eastern Cape and Karoo Region decreased with the drier conditions in those parts this year. There were sporadic cases in the Free State, Northern and Eastern Transvaal and Highveld Regions. In the Highveld Region the condition was widespread among sheep in the Marico district.
In Venda and Gazankulu foot-rot was common among cattle and foot abscess occurred among sheep and goats in kwaZulu.

**Strangles**

A few cases of the disease were diagnosed in the Vryheid and Ixopo State veterinary areas. Serious problems were experienced with the disease in the Ceres district, but a *Streptococcus equi* trial vaccine issued by the Veterinary Research Institute was the answer to the problem.

**Lamb dysentery**

Only a few cases were reported by the State veterinarian of Queenstown, or from the Free State Region.

**Listeriosis**

Two cases in sheep were confirmed during post mortems by the regional veterinary laboratory at Stellenbosch.

### ii) Protozoal diseases

**Babesiosis**

Redwater was prevalent in all the Regions except the Highveld Region, where problems were experienced only in the Marico, Potchefstroom and Klerksdorp districts. The disease was again the commonest cause of mortality in Natal. *Babesia bovis* was responsible for the majority of cases in the Transvaal Region and caused the death of 418 cattle in confirmed outbreaks of redwater in the Piet Retief State veterinary area. The disease plays a more important part in the Lydenburg and Barberton State veterinary area than in the other parts of the Northern and Eastern Transvaal Region. Babesiosis commonly occurs where cattle are brought into these parts from other parts of the country. Redwater has become established in the Karoo section of the Eastern Cape and Karoo Region.

In kwaZulu the number of cases of redwater dropped considerably as a result of more effective dipping of cattle. A few cases were confirmed in the Ritavi and Mhala districts of Gazankulu.

*Biliary fever* in dogs reached serious proportions, especially in the Free State, Western Cape and Northern and Eastern Transvaal Regions. Some cases of equine biliary were encountered in the Stellenbosch State veterinary area, and one case of 13ahesia flis infection was diagnosed in a cat at Messina.

**Anaplasmosis (gallsickness)**

A few cases of the disease were encountered in the Transvaal Region and kwaZulu. Anaplasmosis is the commonest disease of cattle in the
Highveld Region, and cases have even been reported in herds that had been immunised for a second time. Unless treatment is started immediately with high dosages of drugs, cattle succumb to the disease. Its incidence is higher in the Free State Region than that of redwater, and the disease is more important than redwater in the Louis Trichardt and Potgietersrus State veterinary areas. The disease has now become established in the Karoo section of the Eastern Cape and Karoo Region and is common in the Western Cape and Natal Regions.

**Besnoitiosis (elephant skin disease)**

The disease was widespread in the Transvaal and Northern and Eastern Transvaal Regions, since insufficient use was made by farmers of the available vaccine. A few cases occurred in the Marico district. In Lebowa, where the disease was prevalent in the Mokerong, Mapulaneng, Bochum and Moutse districts, 250 cattle were immunised by officers. Cases of the disease were also reported from the Giyani district of Gazankulu.

**Coccidiosis**

Cases of coccidiosis occurred among calves and lambs throughout the country, especially where the animals are maintained on cultivated pastures. The disease was rife among poultry in the Highveld, Free State and Eastern Cape and Karoo Regions, and serious problems were encountered among Angora goats in the Eastern Cape and Karoo Region.

(iii) **Virus diseases**

**Bluetongue**

There were again serious outbreaks of bluetongue in the Transvaal (Ermelo and Standerton State veterinary areas), Highveld (especially the Northern Fret State), Free State (widespread throughout) and the Eastern Cape and Karoo Regions.

The fact that the supplementary vaccine which contains additional strains of the virus was usually not administered was a contributory factor. Vaccine distributors often fail to provide pamphlets with the vaccine and many farmers were therefore unaware of the existence of such a vaccine.

There were a few uses of the disease in the Western Cape Region; in the Northern and Eastern Transvaal Region cases were reported only from the Lydenburg State veterinary area. Few problems were experienced with the disease in Natal, except in the Drakensberg, where it was frequently encountered. The disease used to be rare in this area.

In the Ciskei officers immunised 2(12490 sheep against the disease.

**African horsesickness**
Isolated cases of the disease occurred throughout the Republic except in the Petermaritzburg Mate veterinary area, where 1 381 cases were noted. In practically every case the horses had not been inoculated.

**Heartwater**

Heartwater took its usual toll in the areas where it is endemic. It caused higher mortality than any other cattle disease in the Rustenburg, Louis Trichardt and Potgietersrus State veterinary areas. The disease has now become established in the Mafeking district and in parts of the Natal Midlands. When cattle that were infected with bont ticks were moved to the Pctchefstroom district by a speculator the result was an outbreak of heartwater.

**Ephemeral fever (three-day stiff sickness)**

The disease reached epizootic proportions in the Western Cape Region. Deaths were fairly common, particularly among Jerseys, and there were several cases of abortion. The disease was very prevalent in the Free State and Eastern Cape and Karoo Regions, where it occurred in a severe form. The, production losses in both inoculated and uninoculated herds were enormous. Cases were sporadic in the rest of the country.

The available vaccine was subsequently withdrawn by the Veterinary Research Institute since it had failed to induce adequate immunity.

**Rift Valley fever and Wesselsbron disease**

A few cases of Rift Valley fever occurred in the Free State and Eastern Cape and Karoo Regions.

**Bovine malignant catarrh**

Twenty-two outbreaks of the disease, accounting for 43 deaths among cattle, occurred in the Transvaal (5 outbreaks), Free State (2 outbreaks), Natal (10 outbreaks) and Northern and Eastern Transvaal (5 outbreaks) Regions. In every case in which sheep were involved, except one in the Transvaal Region and one in the Free State Region, there had been contact with blue wildebeest.

**Pulmonary adenomatosis (jaagsieke)**

Fourteen outbreaks of pulmonary, adenomatosis (jaagsieke) were reported during the year. The disease was confirmed in the Lydenburg State veterinary area for the first time, while two outbreaks occurred in the Free State Region and two in the Ermelo State veterinary area. There were eight outbreaks of the disease in the Queenstown State veterinary area and one in the Namaqualand district. Further tests with a trial vaccine were carried out in the Lydenburg State veterinary area.

**Infectious ophthalmia**
The disease was widespread in the Rustenburg State veterinary area, as many as 30 per cent of the animals in one herd being affected, while cases were also reported from the Free State, Natal, Eastern Cape and Karoo and Western Cape (among sheep) Regions. The disease was also widespread in the Highveld Region and in some outbreaks treatment had to be given as often as three times a day before the situation could be brought under control. Sporadic cases occurred among sheep and cattle in the Northern and Eastern Transvaal Region and among cattle in Venda and Gazankulu.

**Contagious pustular dermatitis (vuilbek, orf)**

There were sporadic outbreaks in the Transvaal, Highveld, Free State, Western Cape and Northern and Eastern Transvaal Regions. In the Pietermaritzburg and Dundee State veterinary areas serious outbreaks occurred which accounted for considerable losses among lambs. The disease was fairly prevalent in the Eastern Cape and Karoo Region and caused problems among goats in kwaZulu.

**Mucosal disease**

No cases were reported.

**Infectious bovine rhinotracheitis**

In the Transvaal Region cases of the disease were again confirmed among bulls at the Irene bull testing station and in feedlots.

**Akabane virus**

The virus was isolated from cases in the Grahamstown State veterinary area and antibodies against this virus were discovered in serum from the Louis Trichardt State veterinary area.

**Feline infectious enteritis**

The only confirmed cases occurred in coastal areas and in the Grahamstown State veterinary area in the Eastern Cape and Karoo Region.

(iv) **Fungal diseases**

**Ringworm**

Sporadic cases of ringworm occurred in the Transvaal, Natal, Eastern Cape and Karoo and Western Cape Regions. In the latter two Regions the disease was diagnosed in all animal species. It was common among calves and Karakul rams in the Free State Region and a few cases were encountered in Venda and Gazankulu.

**Lumpy wool**
Outbreaks of lumpy wool were prevalent in the Western Cape Region, particularly in the Swellendam State veterinary area. A few cases were confirmed in the following Regions: Transvaal, mainly in the Piet Retief State veterinary area, Highveld (Kroonstad district), Free State, Natal and Western Cape.

**Streptothricosis (Senkobo)**

Single outbreaks were confirmed in the Noupoort and Queenstown districts.

**(v) Infertility and venereal diseases**

Infertility problems were reported from all the Regions of the Division of Veterinary Services. Malnutrition, poor management and venereal diseases all played a greater or lesser role and the result was a poor calf and lamb crop. Owing to good rains during 1976/77, the calving percentage rose from 43,5 % to 54,3 % in Venda, and from 46,7 % to 68,6 % in Gazankulu. The percentage in kwaZulu remained below 40%.

**Vibriosis**

The disease was again diagnosed in all the Regions. An examination of the sheath washings of 2 959 bulls showed that 129 (4,36 %) were positive for vibriosis, while *Campylobacter fetus* was isolated from 13 (2,7 %) of the 488 cattle fetuses examined.

If the available vaccine is correctly used the disease can be successfully controlled.

**Trichomoniasis**

Trichomoniasis was also diagnosed in all the Regions as a cause of reproduction problems; it also occurred in Venda. Sheath washings were examined by the Veterinary Research Institute, regional veterinary laboratories and veterinary laboratories and 80 out of the 2 959 (2,7 %) examined were positive for trichomoniasis. The State veterinarian at Louis Trichardt found that 10 (3,5 %) out of the 285 washings examined were positive.

*Trichomonas foetus* was isolated from a single bovine foetus out of the 488 examined.

The disease is a greater threat in Natal than vibriosis.

**Chlamydiosis**

Considerably fewer cases of abortions attributable to *Chlamydia psittaci* were reported this year, though cases still occur throughout the country. The organism was isolated from 28 (5,7 %) of the 488 bovine foetuses examined. In the Western Cape Region the disease was responsible for
15 % of all neonatal losses, and stunted growth, particularly among lambs, resulted in economic losses in all the Regions.

**Actinobacillus seminis**

The regional veterinary laboratory at Middelburg (Cape) examined 5 111-serum samples from sheep and 190 from goats in the Western Cape, Eastern Cape and Karoo, Free State and Transvaal Regions. In the Western Cape Region alone, 4 024 rams were tested for infection with the organism and of these 188 (4,7%) were positive, and 23 (11,3%) of the 203 samples examined were positive in the Highveld Region. Every year, therefore, a considerable number of farmers lose lambs as a result of the use of infected rams. As many as 20170 of the marketable rams of some breeders are infected.

**Brucella ovis**

Of the 9 209 samples submitted for examination in the Western Cape and Eastern Cape and Karoo Regions, 626 (6,8 %) were positive for *Brucella ovis*. Ninety-two (9,9%) of the 927 samples examined at Middelburg (Cape) from the Upington State veterinary area were positive for Rovis. Farmers are not making sufficient use of the available Rev. I vaccine which gives excellent results.

**Infectious epididymitis/vaginitis ("epivag")**

This condition was encountered in cattle in the Transvaal (Ermelo State veterinary area), Free State (endemic in the Vryburg State veterinary area) and Western Cape Regions.

**(vi) Diseases of calves**

**Whine scours**

Infection with *Escherichia coli* caused sporadic cases of white scours in the Transvaal, Northern and Eastern Transvaal and Eastern Cape and Karoo Regions. The disease was especially prevalent in the Vryburg State veterinary area and in calf rearing units in the Stellenbosch and Malmesbury State veterinary areas. The disease was also a general problem in Natal and kwaZulu.

Various strains of E.coli, not included in the present vaccine, were isolated in the Western Cape Region. These strains were used for the manufacture of special vaccines, which have been used with good results.

Poor hygiene and management were a causative factor in all the Regions during outbreaks of the disease. The necessary attention to these aspects and the correct use of the vaccine have produced good results.

**Paratyphoid**
Sporadic cases of this disease occurred in all the Regions except in the Natal (where there were even cases in the Bushveld areas) and Western Cape Regions, where it was prevalent.

In the Western Cape Region this disease was the most important disease of calves after white scours. *Salmonella dublin* and *S. typhimurium* were the commonest causative organisms. Cases among 2-b - day-old calves occurred frequently and this complicated the prevention of the disease.

**Calf diphtheria**

A few cases of the disease were diagnosed in the Free State Region and the Potchefstroom district.

**Sweating sickness**

Fewer cases of sweating sickness were encountered this year in the Transvaal and Natal Regions than in the previous year. Sporadic cases were reported from the Highveld, Free State and Northern and Eastern Transvaal Regions, as well as from Venda and Gazankulu. The disease was also prevalent in the Kroonstad, Vryburg and Kuruman State veterinary areas.

**Entero viruses**

The Veterinary Research Institute isolated Rota and Corona viruses from calves in the Western Cape Region.

**(Vii) Diseases of poultry**

The volume of work of the Poultry Diagnostic and Extension Services Section of the Division of Veterinary Services at Onderstepoort decreased during the year under review, partly owing to the present economic climate, which has resulted in the take-over of a considerable number of the smaller concerns by the larger companies with their own primary diagnostic services. The Section is, however, still being used for more sophisticated techniques.

With the intensification in the poultry industry, respiratory diseases have become increasingly important.

**Infectious bronchitis**

A few outbreaks among broilers were reported from the Western Cape and Natal Regions.

A respiratory disease known as "dikkop", to which broilers are particularly susceptible, is causing some concern in the poultry industry. It occurs mainly during winter; the symptoms are a swollen face, subcutaneous oedema and eventually yellow pus in the subcutaneous
tissues of the head. The cause of the disease is still unknown, but an influenza virus or even a strain of the infectious bronchitis virus is regarded as a possible cause, and the Section for Poultry Diagnostic and Extension Services is investigating the condition.

**Infectious coryza**

A few cases of the disease were confirmed in the Highveld Region and in the Queenstown and Port Elizabeth State veterinary areas. There was only one confirmed outbreak in Natal. The available vaccine provides excellent protection if it is used in the prescribed manner.

**Chronic respiratory disease (mycoplasmosis)**

The disease was widespread throughout the Republic, occurring mostly on the smaller farms. Ninety-eight cases of *Mycoplasma gallisepticum* infection and 47 cases of *Mycoplasma synoviae* infection were confirmed in the Western Cape Region. Of the 6,982 serological tests carried out in this Region, 604 (8.65%) were positive for *M. gallisepticum* and 587 (8.41%) for *M. synoviae*.

The Poultry Diagnostic and Extension Services Section at Onderstepoort noted an increase in the number of *M. synoviae* isolations. This organism was involved, *inter alia*, in cases where egg production dropped and air sac infections occurred.

**Fowl pox**

Sporadic outbreaks of fowl pox were confirmed in the Natal and Free State Regions. Several outbreaks occurred in the Port Elizabeth State veterinary area and one outbreak each in the Namaqualand and Malmesbury districts.

**Infectious bursitis (Gumboro)**

One outbreak was diagnosed in the Highveld Region and one in the Natal Region. The disease was widespread in the Western Cape Region but losses were small.

**Epidemic tremor**

No cases were reported.

**Marek's disease**

A considerable number of cases were observed by the Poultry Diagnostic and Extension Services Section during the year. A few cases were diagnosed in the Natal, Highveld and Western Cape Regions.

**Lymphoid leukemia complex**

Cases were diagnosed at the Glen Agricultural College, among others.
Trichomoniasis

A few cases were encountered among racing pigeons in the Port Elizabeth State veterinary area.

(viii) Diseases of pigs

Vibronic dysentery

The Stellenbosch regional veterinary laboratory confirmed 11 cases of the disease. Treatment with antibiotics and improved management practices were successful in controlling the outbreaks.

Respiratory disease syndrome

The regional veterinary laboratory at Stellenbosch confirmed the presence of mycoplasma pneumonia in South Africa. In addition to *Mycoplasma hyopneumoniae*, *M. hyorhinis* and *M. hyosynoviae*, unidentifiable *Mycoplasma* spp. were isolated from cases. The six outbreaks investigated during the year under review were speedily brought under control by the addition of antibiotics to the rations and by correcting housing faults.

Spirochaetosis

A single outbreak, involving 15 pigs, was confirmed in the Barberton State veterinary area.

C. DEFICIENCY AND NUTRITIONAL CONDITIONS

(i) Mineral poisoning

Fewer problems due to malnutrition were encountered than usual, since sufficient good grazing was available after adequate rains.

*Phosphate deficiency* was common in cattle during the winter months in the Highveld, especially in the sandy northern areas, in the sandy area of Malmesbury and the coastal areas of the Eastern Cape and Karoo Region.

Bladder stones caused problems among rams in the Middelburg and Queenstown State veterinary areas, where the phosphate content of the rations was too high.

Seasonal copper deficiencies occur in Natal. Swayback exacted its normal toll in the Malmesbury and Swellendam state veterinary areas, while cases were also reported from the Grahamstown and Port Elizabeth state veterinary areas. In the Bethlehem state veterinary area copper deficiency also occurred among cattle and sheep while one case was confirmed in the Ermelo state veterinary area.
A magnesium deficiency again occurred in the free State Region and in the Bethlehem state veterinary area on heavily fertilised green pastures. In Natal deficiencies are experienced on the natural grazing in the Vryheid and Dundee state veterinary areas. Dosing with magnesium sulphate increased the calving percentage from 50 to 95. The condition caused problems among Jerseys at the Elsenburg College of Agriculture. Cattle on natural grazing were also affected, especially in the Queenstown state veterinary area. Magnesium deficiencies in cattle were also identified at Alldays in the Louis Trichardt state veterinary area.

Manganese deficiencies were also recorded in the districts of Montagu, Musina (Tshipise area) and Bethlehem and caused problems on a farm in the Ermelo state veterinary area.

In Natal it was established that an iodine deficiency played a role in the central areas of Natal and in the Drakensberg. Cattle in the Pietersburg state veterinary areas showed typical symptoms of an iodine deficiency. Currently the regional veterinary laboratory at Allerton is capable of undertaking iodine determinations at a rate of up to 100 samples a day. The SABS in Pretoria is the only other laboratory undertaking these kind of determinations.

Problems with cobalt deficiencies were only reported from the Port Elizabeth state veterinary area.

Zinc deficiencies occurred in the districts of Montagu and Swellendam. Zinc values in the districts of Musina (Tshipise area) were above normal.

An iron deficiency among cattle in Alldays was rectified by means of licks, while these values were higher than normal in the Tshipise area.

A vitamin A deficiency resulted in blindness among goats in the Western Cape Region. After treatment with fish oil the problem was solved. Abortions among Boer goats in the Eastern Cape and Karoo Region were caused amongst others by a vitamin A deficiency and ceased dramatically after the vitamin was supplied.

A few cases of vitamin E deficiency among chickens were diagnosed in the Highveld and Free State Region as well as in the Louis Trichardt state veterinary area. All the cases could be ascribed to faulty storage of vitamin E, leading to oxydisation. Diamond skin disease (vitamin E-selenium deficiency) was found among rams in the Marico district and caused no further problems after treatment. A few cases of this disease was reported among calves in the Pretoria state veterinary area.

Single cases of milk fever occurred in the Free State Region, Middelburg state veterinary area and the Western Cape Region (where sheep was kept on volunteer grain and later relocated).

On a farm in the Malmesbury district 120 young rams kept on cultivated pastures, developed socalled “krombeen”.
Several cases of “domsiekte” were reported in the western Cape Region as well as in the following state veterinary areas: Middelburg, Queenstown, Upington and Bloemfontein.

A few cases of acidosis occurred in the Free State and Natal Regions (after feeding of pineapple cobs).

A few cases of ketosis were only reported from the Queenstown state veterinary area.

(ii) Poisoning

Mineral poisoning

Negligence or the coincidental toxin intake were once again mainly responsible for mineral poisoning throughout the country.

A few cases of arsenic poisoning were confirmed in the Free State, Northern and Eastern Transvaal, Eastern Cape, Karoo and Western Cape Region. In the Western Cape 45 sheep died in the Caledon district after erroneous mixing of a lick.

Chlorinated hydrocarbons caused mortalities among cattle in the Highveld, Northern and Eastern Transvaal (15 head of cattle died in the Soutpansberg district), Free State and Natal. In most cases plant pesticides were wrongly used for dipping.

Organophosphate plant pesticides caused the deaths of four head of cattle in the Highveld Region after being mistaken for a dipping fluid. Dieldrin was responsible for 20 mortalities among cows in the Heilbron district. Dieldrin poisoning also occurred in the Bethlehem state veterinary area. Altogether five horses out of 10 died in one case where dieldrin landed in the rations. In the Western Cape Region lambs, suckling from ewes still wet after being dipped, died. In the Molteno district two mortalities among cattle could be ascribed to toxaphene poisoning.

Pentachlorphenol caused the deaths of 48 pigs in the Transvaal Region.

Altogether 15 sheep died of salt poisoning in the Western Cape Region.

Nitrate poisoning did not exact such a high toll as in previous years. In the Free State Region water from boreholes with a high nitrate content, which frequently causes poisoning, only two cases were reported. Some cases also occurred in the Natal Region as well as in the Middelburg and Queenstown areas. Ammonium sulphate in rations caused the deaths of 13 head of cattle in the Transvaal Region.

Altogether 39 sheep died from sulphur poisoning in the Swellendam district because of too high sulphur content in licks.

Urea poisoning led to mortalities in all the regions. In the Western Cape Region 450 sheep died (on five farms) after the licks were drenched in an
unexpected rain-shower. In the Transvaal areas 110 chickens out of a total of 200 died after being fed urea.

**Lead** poisoning was confirmed among cattle in the Transvaal Region (10 pedigreed cows died in one instance) and in the Highveld and Natal Regions, as well as in Lebowa.

The incidence of *enzootic icterus* (chronic copper poisoning) was the subject of a survey in the Middelburg State veterinary area. A total of 1 118 sheep on 21 farms died from this condition and staff of the regional veterinary laboratory at Middelburg (Cape) devoted much time to an investigation of the prevention and control of *enzootic icterus*. Fifty sheep succumbed to this condition in a feedlot in the Laingsburg district.

**Strychnine** poisoning again caused the death of dogs throughout the Republic.

**(ii) Plant poisoning**

According to reports from all the Regions and Black states, the plants listed below were responsible for stock deaths. In the Western Cape Region, where there was a serious drought during the second half of the year under review, more cases of plant poisoning were experienced than in the rest of the Republic.

*Homeria* and *Moraea spp.* (tulp) in all seven Regions; *Urginea* and *Ornithoglossum spp.* (slangkop) in the Free State, Highveld, Natal and Western Cape Regions; *Senecio spp.* (sprinkaanbos) in the Western Cape, Natal (particularly in the Ixopo State veterinary area) and the Eastern Cape and Karoo Regions (of particular importance in the Queenstown State veterinary area); *Pachystigma, Pavetia* and *Fadogia spp.* (gousiekte) in the Northern and Eastern Transvaal (Potgietersrus State veterinary area), Transvaal and Highveld (Marico and Viljoenskroon districts) Regions; *Lantana samara* in the Natal, Transvaal (Rustenburg State veterinary area) and the Northern and Eastern Transvaal Regions (30 sheep and 20 cattle died in the Pietersburg State veterinary area); *Dichapetalum cymosum* (gitblaar) in the Transvaal, Northern and Eastern Transvaal (Potgietersrus State veterinary area) and Highveld Regions (Marico district); *Datura spp. in the Western Cape and Natal Regions; Geigeria spp. in the Free State* (on the increase in the western parts of the Region) and Highveld Regions; *Crotolaria* spp. (duinebos, rattle bush); *Cestrum laevigatum* (inkberry), *Indigofera tryptantha* (caused stiff-sickness symptoms among cattle in the Ventersdorp district, but non-toxic in the dry form) and *Raphanus raphanistrum* (wild mustard) (among sheep in the Potchefstroom district) in the Highveld Region; *Matricaria spp.* (staggers), *Ricinus communis* (castor oil) in the Natal Region; *Ornithogalum spp. in the Transvaal Region* (17 cattle died in the Rustenburg State Veterinary area); *Chrysocoma tenuifolia* (kaalsiekte, bitter Karoo) and *Lasiospermum spp.* (ganskweek) in the Eastern Cape and Karoo Region; *Amaranthus* spp. (ganskweek), *Amaranthus* spp. (ganskweek), *Cynanchum spp.* (klimop, bobbejaantou), *Sarcostemma viminale* (climbing milkweed), *Melianthus major* (honey flower), *Galaenica africana*
(waterpens), *Kalanchoe* *spp.*, *Echium capensis* (blue weed) and *Atisoma capensis* in the Western Cape Region.

The only cases of "geeldikkop" were a few in the Eastern Cape and Karoo Region. Cases of "dikkop" without jaundice occurred in the Highveld and Western Cape Regions.

Plants containing *prussic acid* caused deaths in all the Regions except the Transvaal, Western Cape and Natal Regions.

(iii) **Toxins**

The incidence of *Diplodia maydis* poisoning was high in the Potchefstroom district, where more than 300 cattle were affected by the condition.

Cases of *facial eczema* were confirmed in the Eastern Cape and Karoo Region.

A SA Mutton Merino stud farmer suffered major losses among his flock in the Malmesbury district. The regional veterinary laboratory at Stellenbosch isolated the fungus *Stachvbotrus atra* from the sheep pellets and demonstrated that a toxin formed by the fungus was responsible for the condition. Affected sheep showed high temperatures, epistaxis and mild diarrhoea. A lowered haematocrit, white cell and blood platelet count were also experienced later. Blood transfusions combined with antibiotic therapy effected a recovery in 15 affected sheep.

E. **INTERNAL PARASITES**

Serious problems with internal parasites were reported only from the Highveld Region, where they occurred mainly in sheep.

*Haemonchus* *spp.* (wireworm) was the parasite which caused most problems in the Transvaal Region (with the exception of the Rustenburg and Johannesburg State veterinary areas), the Highveld Region (together with nodular worm), the Free State Region where there was evidence that the parasite had begun to develop a resistance (similar to the resistance reported from the South-Eastern Transvaal the previous year) to certain remedies and the Natal Region (together with nodular worm), as well as in Venda and Gazankulu. In the Northern and Eastern Transvaal Region the parasite was only of importance in sheep.

*Oesophagostomum* *spp.* (nodular worm), together with wireworm as mentioned above, was the most important internal parasite in the Highveld and Natal Regions, as in 1976/77. Problems were also experienced with the species in the Free State and Northern and Eastern Transvaal Regions (among sheep).

*Trichostrongylus* *spp.* (bankrupt worm) was responsible for losses in the Free State and Eastern Cape and Karoo Regions.

The brown stomach worm *Ostertagia* *spp.* accounted for losses in the Eastern Cape and Karoo, Western Cape and Natal Regions.
The long-necked bankrupt worm *Nematodirus* spp. was a major problem in the Western Cape and Eastern Cape and Karoo Regions.

*Trichuris* ovis (whipworm) occurred only in the Free State Region.

Lungworm *Muellerius capillaris* was a problem only in the Natal Region and in the Queenstown State veterinary area.

Fasciola spp. (liver fluke) was fairly prevalent in the Transvaal, Natal and Highveld Regions (especially among sheep in the Potchefstroom, Lichtenburg and Bethlehem State veterinary areas). In the Northern and Eastern Transvaal Region this parasite caused problems in all the State veterinary areas except Pietersburg and Barberton. Infestations were also confirmed in the Free State Region and the Queenstown State veterinary area.

At the Durban abattoir 17.8% of the bovine livers and 3.6% of the sheep livers were condemned for human consumption on account of liver fluke infestation. At Rustenburg 54% of the livers were similarly condemned.

During the year under review, unlike the previous year, conical fluke *Paramphistoma* spp. was a problem only in the Highveld (mainly in the Lichtenburg, Kroonstad and Bethlehem State veterinary areas), Free State and Natal Regions.

*Tapeworm* infestation in both calves and lambs was very prevalent in kwaZulu and the Natal Region. Calves were severely infested in the Marico district, and several cases of tapeworm infestation were confirmed in the Free State, Western Cape and Eastern Cape and Karoo Regions.

*Stilesia hepatica* (liver tapeworm) accounted for the condemnation of 26% of all livers in the Transvaal Region, while 19% of the sheep livers in Natal were condemned at the Durban abattoir. This infestation was prevalent in all the Regions except the Western Cape Region.

*Oestrus ovis* (nasal worm) infestation occurred in the Highveld (where it was widespread) and Western Cape Regions.

*Coenurus cerebralis* gave rise to problems in the Western Cape and Eastern Cape and Karoo Regions.

Carcasses are still frequently condemned because of *measles* infestation. Four per cent of beef carcases and 0.5 % of pork carcases were condemned in the ‘Transvaal Region. The figure for beef carcases in the Free State Region was 2 % and that for the Northern and Eastern Transvaal Region 4 %.

The incidence of *Parafilaria bovicola* infestation is on the increase in the northern parts of the Free State, the Bushveld areas of the Transvaal and the Marico district of the Highveld Regions. The parasite is commonly found in northern Natal, as well as in kwaZulu.
F. EXTERNAL PARASITES

As in the previous year, ticks took a heavy toll through diseases transmitted by them, abscesses and tick toxicosis. The tick problem has diminished in kwaZulu, because the recommended dipping programme was more conscientiously adhered to than in the previous year.

*Boophilus* spp. (blue tick) was very active in the Highveld, Free State and Natal Regions.

*Rhipicephalus appendiculatus* (brown ear tick) created severe problems in the wetter parts of the Northern and Eastern Transvaal Region, as well as, in the Transvaal and Highveld Regions. The parasite was particularly troublesome in Venda and Gazankulu.

*R. evertsi* (redlegged tick) was very prevalent in the Natal and Free State Regions. Immature stages in the ears of nearly all animals cause retarded growth as a result of otitis externa and ophthalmia.

*Hyalomma* spp. (bontlegged tick) was also a problem in the Free State (especially in the Kuruman and Vryburg districts), Natal and Highveld Regions.

*Amblyomma* spp. (bont tick) became established on one farm at Jan Kempdorp, but was apparently not infected with heartwater. This species was very active in Natal.

Paralysis caused by *Ixodes rubicundus* (Karoo paralysis tick) was a problem in the Western Cape (even calves affected) and Eastern Cape and Karoo Regions (springbuck also affected), as well as in the Southern Free State and the Randiesveld of the Free State Region.

Sheep lice, particularly *Damalinia ovis*, were very prevalent in all the Regions (except the Natal and Northern and Eastern Transvaal Regions) and were particularly active in the Calvinia State veterinary area.

In kwaZulu cattle lice were a problem, particularly in the winter; these parasites were also widely encountered in the Highveld Region. Farmers failed to control the parasites efficiently. Cattle lice also proved troublesome in the Free State Region during the winter.

Keds *Melophagus ovinus* were very prevalent in the Highveld Region (but not in the Kroonstad State veterinary area) and the Eastern Cape and Karoo Region (also encountered in springbuck).

The incidence of *Psorergates ovis* (Australian itch mite) is on the increase in the Western Cape Region and the parasite is also common in the Eastern Cape and Karoo Region and kwaZulu.
Goat ear mange caused by a *Psoroptes* spp. was fairly prevalent in the Western Cape Region and has spread from the Namaqualand district to neighbouring districts.

*Blowfly* strike became prevalent in the Ixopo State veterinary area as a result of good rains, and cases of the infestations also occurred in the Eastern Cape and Karoo Region. In the Western Cape Region infestation was general and in the Riversdale district it has been determined that blowflies had become resistant to practically all the available pesticides.

*Mosquitoes* were not as troublesome as during the past few years. Midge followed the same pattern as mosquitoes. Dogs in Lebowa are commonly infected with *Demodex canis*.

Living *Hypoderma bovis* larvae were found in an imported cow, during a follow-up inspection, despite the fact that the animal had been treated twice against possible infestation while kept at a quarantine station. Subsequent treatment was effective, but this case underlines the importance of follow-up inspections of imported cattle.

G. **ARTIFICIAL INSEMINATION**

Two private AI Centres, one at Standerton and the other at Ogies, were approved and registered during the year.

The testing of bulls at the AI centres in Natal and the Western Cape was carried out at the regional veterinary laboratories at Allerton (Natal) and Stellenbosch (Western Cape). All other AI bulls were tested, as in the past, by the Section for AI and Reproduction of the Division of Veterinary Services, in conjunction with the Veterinary Research Institute. The final recommendation on the registration or re-registration of AI bulls rests with the Section after all the results of the tests have been analysed. During the year under review 215 bulls were tested for this purpose.

One of the bulls reacted positively to tests for *Campylobacter fetus* and was therefore not registered as an AI bull. Testing revealed sperm abnormalities in excess of 20 per cent in 6 bulls. The semen of two of these animals had improved to such an extent by the end of the year under review that they were registered but the others were not registered.

At present, there are 43 AI bulls for which progeny testing has been completed. Thirty-one of these are dairy breed bulls.

'The total number of doses of semen sold by AI centres during 1977 was 529 874 (644222 in 1976). Of these, 378 088 doses were from dairy breed bulls and 151 786 from other bulls. AI centres collected 79 695 doses of semen from 232 private bulls on behalf of their owners.
A total of 17,015 doses of bull semen and 72 doses of pig semen were imported during the year under review.

H. STOCK INSPECTION SERVICES

The shortage of stock inspectors is increasing and 117 (17.9%) of the 655 posts for stock inspectors were vacant at the end of the year under review. Seventy new appointments were made during the year, but there were 91 resignations during the same period. There is virtually no core of experienced stock inspectors left and the younger men come and go, chiefly because of inadequate salaries. Heavier and heavier demands are being made on the stock inspectorate staff as the schemes for the eradication of bovine tuberculosis and brucellosis progress. The situation is undoubtedly a cause for concern.

I. ANIMAL HEALTH EXTENSION SERVICE

The volume and effectiveness of extension services rendered to farmers by officers of the Division of Veterinary Services are continuing to increase. In addition to the Division's contribution to the training of prospective farmers at agricultural colleges and the compilation of leaflets and so forth, the following extension tasks are undertaken:

Farmers' days are arranged and addressed, articles are published in local papers and agricultural journals, farmers' unions and study groups are addressed, radio talks are compiled, short courses on stock diseases (prevention and control) are offered, and programmes for vaccination and dosing are drawn up.

Farmers are given information and advice by State veterinarians and stock inspectorate staff on individual farming and veterinary problems, improved farming practices and the advantages to be gained by joining schemes, such as the bovine tuberculosis and brucellosis eradication schemes. Such information is imparted during visits to farms, office interviews, by telephone or by letter.

J. IMPORT AND EXPORT CONTROL

Import Control

As a precaution against the introduction of stock diseases from other countries, the Division has quarantine stations at Jan Smuts Airport, Durban, Cape Town and Walvis Bay.

<table>
<thead>
<tr>
<th>AI Training</th>
<th>Registerable inseminators</th>
<th>Owner inseminators</th>
<th>Labourers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Courses offered by</td>
<td>Courses</td>
<td>Candidates passed</td>
<td>Courses</td>
</tr>
<tr>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Animals of many different types were imported for slaughter or other purposes.

<table>
<thead>
<tr>
<th>From neighbouring territories</th>
<th>From overseas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>4 749</td>
</tr>
<tr>
<td>Horses</td>
<td>156</td>
</tr>
<tr>
<td>Sheep</td>
<td>785</td>
</tr>
<tr>
<td>Goats</td>
<td>405</td>
</tr>
<tr>
<td>Pigs</td>
<td>553</td>
</tr>
<tr>
<td>Dogs</td>
<td>411</td>
</tr>
<tr>
<td>Cats</td>
<td>291</td>
</tr>
<tr>
<td>Poultry</td>
<td>100</td>
</tr>
<tr>
<td>Birds</td>
<td>1 600</td>
</tr>
<tr>
<td>Game</td>
<td>515</td>
</tr>
<tr>
<td>Reptiles</td>
<td>74</td>
</tr>
<tr>
<td>Rodents</td>
<td>3</td>
</tr>
</tbody>
</table>

Three birds were brought in illegally at Jan Smuts Airport. The quarantine master of the Division impounded them and they were subsequently destroyed.

Numerous different products were imported in accordance with permits issued by the Division. Attempts were made to import the following products through Jan Smuts Airport without the necessary permits: 164 eggs, 16 kg of fresh meat, 387 kg of other foodstuffs, 3 untreated hides and one unprocessed trophy. These were all confiscated and burnt.

**Export control**

For export purposes, veterinary examinations were carried out and certificates issued by officers of the Division of Veterinary Services, in accordance with the requirements of importing countries, in respect of the following animals:
<table>
<thead>
<tr>
<th>territories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>39897</td>
</tr>
<tr>
<td>Equines</td>
<td>760</td>
</tr>
<tr>
<td>Sheep</td>
<td>121</td>
</tr>
<tr>
<td>Goats</td>
<td>32</td>
</tr>
<tr>
<td>Pig's</td>
<td>1 152</td>
</tr>
<tr>
<td>Dogs</td>
<td>1 060</td>
</tr>
<tr>
<td>Cats</td>
<td>174</td>
</tr>
<tr>
<td>Poultry</td>
<td>290 273</td>
</tr>
<tr>
<td>Birds</td>
<td>295</td>
</tr>
<tr>
<td>Rabbits</td>
<td>11</td>
</tr>
<tr>
<td>Game</td>
<td>1</td>
</tr>
<tr>
<td>Reptiles</td>
<td>-</td>
</tr>
<tr>
<td>Marine animal and birds</td>
<td>- 118</td>
</tr>
</tbody>
</table>

Certificates were also issued by officers of the Division for a large variety of products intended for export.

K. TRAINING

State veterinarians of the Division again gave lectures on veterinary science at all the agricultural colleges. A standardised set of lectures for the use of all the colleges was drawn up in the final form and made available in both official languages.

The in-service training of members of the stock inspectorate staff was continued. Because of the foot-and-mouth outbreaks and financial considerations, only one course for 29 officials was held during the year. Since September 1972 525 officers have been trained in this way. Both the Division and the farmers are reaping the benefits, since these officers are now able to provide a better standard of service.

The in-service training of members of the stock inspectorate staff in the performance of tuberculin tests in terms of the bovine tuberculosis eradication scheme was continued when 24 officers attended a course. The 88 trained officers play an important part in the growth of this Scheme.

L. LEGISLATION

During the year under review the following Government notices were published in accordance with the Animal Diseases and Parasites Act, 1956 (Act 13 of 1956):

Government notice R.1705 of 2 September 1977: Amendment of Regulations
Government notice 734 of 21 October 1977 - Amendment of ‘;;N. 484 of 12 July 1974
Government Notice R.2152 of 21 October
M. TECHNICAL RELATIONS WITH OTHER COUNTRIES

Liaison and co-operation with African countries

Visits were paid to the Head Office of the Division by scientists from Rhodesia, Botswana, Swaziland, Transkei and Bophuthatswana.

Liaison with overseas countries

Scientists from Spain, Oman, Israel, the United Kingdom, New Zealand and the USA paid official visits to the Head Office of the Division during the year.

The veterinary laboratory at Skukuza was visited by 12 overseas scientists and the regional veterinary laboratory at Stellenbosch received 11 visiting scientists. The visitors came from Australia, Canada, Holland, West Germany, the United Kingdom, Belgium, the USA, Spain, Italy, Switzerland and New Zealand.

N. CLINICAL SERVICES

State veterinarians continued to render veterinary services to all State-owned herds and flocks, and to provide clinical services for farmers whenever their official duties permitted, especially in areas where there were no private veterinary practitioners.

During the year State veterinarians received R23 960 for professional services and R 11 743 for traveling expenses. Vaccines to the value of R2 568 were sold by State veterinary offices. Fees for laboratory investigations amounted to R19 727 and those for services rendered at export abattoirs to R383336. Fees for keeping animals and birds in quarantine amounted to R40 978, and sundry revenue to R3 141.
<table>
<thead>
<tr>
<th>Region or Black state</th>
<th>Cattle</th>
<th>Sheep</th>
<th>Goats</th>
<th>Horses</th>
<th>Donkeys &amp; Mules</th>
<th>Pigs</th>
<th>Fowls</th>
<th>Dogs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Western Cape</strong></td>
<td>396 160</td>
<td>3 146 173</td>
<td>1 472 292</td>
<td>447 655</td>
<td>17 843</td>
<td>9 253</td>
<td>253 184</td>
<td>7 091 134</td>
</tr>
<tr>
<td><strong>Eastern Cape and Karoo</strong></td>
<td>993 646</td>
<td>7 375 412</td>
<td>1 527 979</td>
<td>1 336 360</td>
<td>29 792</td>
<td>9 789</td>
<td>79 712</td>
<td>2 670 344</td>
</tr>
<tr>
<td><strong>Transvaal</strong></td>
<td>2 235 862</td>
<td>2 572 837</td>
<td>274 030</td>
<td>85 938</td>
<td>37 318</td>
<td>7 732</td>
<td>256 332</td>
<td>8 744 614</td>
</tr>
<tr>
<td><strong>Natal</strong></td>
<td>1 543 476</td>
<td>984 347</td>
<td>101 628</td>
<td>136 345</td>
<td>26 636</td>
<td>4 008</td>
<td>150 107</td>
<td>3 689 027</td>
</tr>
<tr>
<td><strong>Free State</strong></td>
<td>1 763 705</td>
<td>2 960 516</td>
<td>5 003 035</td>
<td>501 353</td>
<td>41 388</td>
<td>12 333</td>
<td>100 840</td>
<td>1 052 232</td>
</tr>
<tr>
<td><strong>Highveld</strong></td>
<td>2 118 962</td>
<td>2 540 916</td>
<td>375 639</td>
<td>51 346</td>
<td>56 711</td>
<td>2 751</td>
<td>220 478</td>
<td>3 128 430</td>
</tr>
<tr>
<td><strong>Northern and Eastern Transvaal</strong></td>
<td>1 200 719</td>
<td>232 914</td>
<td>142 251</td>
<td>115 076</td>
<td>6 785</td>
<td>13 066</td>
<td>80 113</td>
<td>1 146 442</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>10 252 530</td>
<td>19 813 115</td>
<td>8 896 854</td>
<td>2 674 073</td>
<td>216 473</td>
<td>60 133</td>
<td>1 140 766</td>
<td>27 522 223</td>
</tr>
<tr>
<td><strong>Venda</strong></td>
<td>138 759</td>
<td>-</td>
<td>2 539</td>
<td>44 316</td>
<td>14</td>
<td>7 158</td>
<td>11 685</td>
<td>45 672</td>
</tr>
<tr>
<td><strong>Gazankulu</strong></td>
<td>162 897</td>
<td>-</td>
<td>3 208</td>
<td>61 301</td>
<td>5</td>
<td>5 655</td>
<td>12 489</td>
<td>171 274</td>
</tr>
<tr>
<td><strong>Lebowa</strong></td>
<td>489 028</td>
<td>246</td>
<td>86 386</td>
<td>387 969</td>
<td>180</td>
<td>29 097</td>
<td>24 865</td>
<td>352 241</td>
</tr>
<tr>
<td><strong>KwaZulu</strong></td>
<td>1 424 690</td>
<td>57 577</td>
<td>104 702</td>
<td>536 197</td>
<td>44 702</td>
<td>Not divided</td>
<td>29 829</td>
<td>962 883</td>
</tr>
<tr>
<td><strong>Qwaqwa</strong></td>
<td>13 158</td>
<td>Not divided</td>
<td>2 254</td>
<td>11 560</td>
<td>547</td>
<td>64</td>
<td>104</td>
<td>50 844</td>
</tr>
<tr>
<td><strong>Ciskei</strong></td>
<td>186 980</td>
<td>224 737</td>
<td>Not divided</td>
<td>190 104</td>
<td>5 707</td>
<td>591</td>
<td>15 662</td>
<td>144 785</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>2 415 114</td>
<td>282 560</td>
<td>199 089</td>
<td>1 231 447</td>
<td>51 155</td>
<td>42 565</td>
<td>94 634</td>
<td>1 727 699</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td>12 667 644</td>
<td>20 095 675</td>
<td>9 095 943</td>
<td>3 905 520</td>
<td>267 628</td>
<td>102 698</td>
<td>1 235 400</td>
<td>29 249 922</td>
</tr>
</tbody>
</table>
The Division received R367 381 for the carcases of animals slaughtered and approved for human consumption in accordance with the bovine tuberculosis eradication scheme. The grand total of revenue received by the Division of Veterinary Services amounted to 8852 835.

**DIAGNOSTIC SERVICES**

Apart from the diagnostic services rendered by the State veterinarians in their own areas, the Division has four regional veterinary laboratories,

<table>
<thead>
<tr>
<th>Region or Black state</th>
<th>White owners</th>
<th>Non-White owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western Cape</td>
<td>389 857</td>
<td>6 303</td>
</tr>
<tr>
<td>Eastern Cape and Karoo</td>
<td>950 242</td>
<td>43 404</td>
</tr>
<tr>
<td>Transvaal</td>
<td>2 052 262</td>
<td>183 600</td>
</tr>
<tr>
<td>Natal</td>
<td>1 265 322</td>
<td>278 154</td>
</tr>
<tr>
<td>Free State</td>
<td>1 734 968</td>
<td>28 737</td>
</tr>
<tr>
<td>Highveld</td>
<td>2 015 176</td>
<td>103 786</td>
</tr>
<tr>
<td>Northern and Eastern Transvaal</td>
<td>1102 251</td>
<td>98 468</td>
</tr>
<tr>
<td>Total</td>
<td>9 510 078</td>
<td>742 452</td>
</tr>
<tr>
<td>Venda</td>
<td>-</td>
<td>138 759</td>
</tr>
<tr>
<td>Gazankulu</td>
<td>-</td>
<td>162 897</td>
</tr>
<tr>
<td>Lebowa</td>
<td>398</td>
<td>488 630</td>
</tr>
<tr>
<td>KwaZulu</td>
<td>-</td>
<td>142 690</td>
</tr>
<tr>
<td>Qwaqwa</td>
<td>-</td>
<td>13 158</td>
</tr>
<tr>
<td>Ciskei</td>
<td>-</td>
<td>186 980</td>
</tr>
<tr>
<td>Total</td>
<td>398</td>
<td>2 415 114</td>
</tr>
<tr>
<td>Grand Total</td>
<td>9 510 476</td>
<td>3 157 566</td>
</tr>
</tbody>
</table>

at Alberton, Middelburg (Cape), Stellenbosch and Windhoek, as well as smaller veterinary laboratories at Grahamstown, Queenstown, Kroonstad and Potchefstroom. An additional laboratory at Skukuza enables the Division to keep its finger on the pulse of animal health in the Kruger National Park. Furthermore, the AI and Reproduction and Poultry Diagnostic and Extension Services Sections of the Division at Onderstepoort offer a more comprehensive service to cattle and poultry farmers.

In addition to assisting State and private veterinarians, these laboratories play an increasingly important part in extension. This extension is mostly based on the latest local findings and is consequently acceptable to the local farmers. There is an increasing demand, at farmers' days, meetings etc. for lectures by officers from these laboratories.
There was an increase of 31.2 per cent in the diagnostic services rendered by the Division, as the following table shows:

<table>
<thead>
<tr>
<th>Service</th>
<th>1976/77</th>
<th>1977/78</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brucella Rose Bengal tests</td>
<td>58 766</td>
<td>131 702</td>
</tr>
<tr>
<td>Brucella complement fixation tests</td>
<td>8 397</td>
<td>13 737</td>
</tr>
<tr>
<td>Brucella tube agglutination tests</td>
<td>63 761</td>
<td>58 930</td>
</tr>
<tr>
<td>Brucella milk ring tests</td>
<td>-</td>
<td>1 523</td>
</tr>
<tr>
<td>Brucella rivanol tests</td>
<td>-</td>
<td>379</td>
</tr>
<tr>
<td>Brucella mercapto-ethanol tests</td>
<td>-</td>
<td>367</td>
</tr>
<tr>
<td>FA tests</td>
<td>1038</td>
<td>1 554</td>
</tr>
<tr>
<td>PPLO tests</td>
<td>17 153</td>
<td>24084</td>
</tr>
<tr>
<td>BWD tests</td>
<td>818</td>
<td>786</td>
</tr>
<tr>
<td>HI tests</td>
<td>8 371</td>
<td>8644</td>
</tr>
<tr>
<td>Gumboro serological tests</td>
<td>-</td>
<td>1 787</td>
</tr>
<tr>
<td>Adenovirus serological tests</td>
<td>-</td>
<td>877</td>
</tr>
<tr>
<td>Poultry Mycoplasma isolations</td>
<td>-</td>
<td>419</td>
</tr>
<tr>
<td>Bovine Mycoplasma isolations</td>
<td>-</td>
<td>157</td>
</tr>
<tr>
<td>Vibrios</td>
<td>1049</td>
<td>1 070</td>
</tr>
<tr>
<td>Trichomonias</td>
<td>493</td>
<td>1 396</td>
</tr>
<tr>
<td>Johne's disease</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Lcptospirosis</td>
<td>522</td>
<td>679</td>
</tr>
<tr>
<td>Actinobacillus semirris</td>
<td>47 271</td>
<td>33 448</td>
</tr>
<tr>
<td>Pasteurellosis</td>
<td>831</td>
<td>1 622</td>
</tr>
<tr>
<td>Chlamydiosis</td>
<td>669</td>
<td>425</td>
</tr>
<tr>
<td>Chlamydia isolations</td>
<td>1(0</td>
<td>436</td>
</tr>
<tr>
<td>Antibiograms</td>
<td>802</td>
<td>1 540</td>
</tr>
<tr>
<td>Serotyping of cultures</td>
<td>93</td>
<td>290</td>
</tr>
<tr>
<td>Skin scrapings</td>
<td>876</td>
<td>344</td>
</tr>
<tr>
<td>Faeces examinations</td>
<td>20 051</td>
<td>16 541</td>
</tr>
<tr>
<td>Larval cultures</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>Identification of internal parasites</td>
<td>737</td>
<td>1 245</td>
</tr>
<tr>
<td>Identification of external parasites</td>
<td>34</td>
<td>505</td>
</tr>
<tr>
<td>Identification of plants</td>
<td>-</td>
<td>75</td>
</tr>
<tr>
<td>Mastitis milk examinations</td>
<td>4 894</td>
<td>15 613</td>
</tr>
<tr>
<td>Semen</td>
<td>10 372</td>
<td>7 706</td>
</tr>
<tr>
<td>Sheath washings</td>
<td>1 156</td>
<td>1 600</td>
</tr>
<tr>
<td>Vaginal swabs</td>
<td>1 351</td>
<td>1 183</td>
</tr>
<tr>
<td>Placentas</td>
<td>-</td>
<td>89</td>
</tr>
<tr>
<td>Aborted foetuses</td>
<td>344</td>
<td>488</td>
</tr>
<tr>
<td>Haematology</td>
<td>1 722</td>
<td>2 685</td>
</tr>
<tr>
<td>Biochemical</td>
<td>48 022</td>
<td>40 915</td>
</tr>
<tr>
<td>Toxicology</td>
<td>490</td>
<td>1 547</td>
</tr>
<tr>
<td>Dipping samples tested</td>
<td>-</td>
<td>182</td>
</tr>
<tr>
<td>Protozoological</td>
<td>-</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>Before 1971</td>
<td>1971</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Bacteriological</td>
<td>15 855</td>
<td>16 108</td>
</tr>
<tr>
<td>Virological</td>
<td>2 955</td>
<td>5 652</td>
</tr>
<tr>
<td>Biological</td>
<td>2057</td>
<td>816</td>
</tr>
<tr>
<td>Histopathological</td>
<td>1310</td>
<td>2772</td>
</tr>
<tr>
<td>Abattoir by-products</td>
<td>18</td>
<td>1 014</td>
</tr>
<tr>
<td>Abattoir bacterial counts</td>
<td></td>
<td>19 176</td>
</tr>
<tr>
<td>Trichinella</td>
<td>34</td>
<td>310</td>
</tr>
<tr>
<td>Smears</td>
<td>22 549</td>
<td>21 930</td>
</tr>
<tr>
<td>Clinical examinations</td>
<td>33 625</td>
<td>20 159</td>
</tr>
<tr>
<td>Post mortem examinations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(poultry excluded)</td>
<td>4639</td>
<td>12 606</td>
</tr>
<tr>
<td>Post examinations</td>
<td>3 662</td>
<td>14 085</td>
</tr>
<tr>
<td>(poultry) mortem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poultry samples examined</td>
<td>3 968</td>
<td>21 649</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>390 877</strong></td>
<td><strong>512 773</strong></td>
</tr>
</tbody>
</table>

**MEAT HYGIENE**

**ADMINISTRATION**

**Abattoirs**

A total of 1 130 abattoirs in the Republic at present possess valid certificates of approval issued by the Division of Veterinary Services. Two hundred and fifty of these abattoirs are in the Black States. Red meat abattoirs number 850, and there are 266 poultry and 14 rabbit abattoirs.

Abattoirs are graded as follows:

- Grade A - 101 cattle units or more per day
- Grade B - 11-100 cattle units per day
- Grade C - up to 10 cattle units per day
- Grade D - two cattle units per day, with a maximum of 5 per week

(The above is applicable to red meat abattoirs)

- Grade E - poultry abattoirs - 50 fowls or more per week
- Grade K - rabbit abattoirs

Distribution of abattoirs with valid certificates of approval:

During the year the following 53 red meat abattoirs and 7 rabbit abattoirs were closed for various reasons and had their certificates for approval withdrawn:
No poultry abattoirs were closed during the year.

Certificates of approval were issued to 19 red meat abattoirs and 57 poultry abattoirs for the first time. The distribution was as follows:

<table>
<thead>
<tr>
<th>Region or Black state</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transvaal</td>
<td>11</td>
<td>12</td>
<td>37</td>
<td>28</td>
</tr>
<tr>
<td>Northern and Eastern Transvaal</td>
<td>2</td>
<td>10</td>
<td>28</td>
<td>45</td>
</tr>
<tr>
<td>Highveld</td>
<td>4</td>
<td>9</td>
<td>32</td>
<td>19</td>
</tr>
<tr>
<td>Free State</td>
<td>2</td>
<td>4</td>
<td>33</td>
<td>43</td>
</tr>
<tr>
<td>Natal</td>
<td>4</td>
<td>8</td>
<td>24</td>
<td>25</td>
</tr>
<tr>
<td>Eastern Cape and Karoo</td>
<td>2</td>
<td>9</td>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>Western Cape</td>
<td>3</td>
<td>10</td>
<td>63</td>
<td>54</td>
</tr>
<tr>
<td>KwaZulu</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>69</td>
</tr>
<tr>
<td>Lebowa</td>
<td>-</td>
<td>-</td>
<td>11</td>
<td>107</td>
</tr>
<tr>
<td>Venda</td>
<td>-</td>
<td>-</td>
<td>38</td>
<td>-</td>
</tr>
<tr>
<td>Gazankulu</td>
<td>-</td>
<td>-</td>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>28</td>
<td>62</td>
<td>268</td>
<td>492</td>
</tr>
</tbody>
</table>

In accordance with the provisions of section 20(1) of Act 87 of 1967, subsidies amounting to R324 553 were paid to 43 local authorities on the salaries of 156 meat inspectors in their employ. The payment of such subsidies was suspended on 1 April 1978 by ministerial direction.

**Sterilisation plants**
At present there are 85 registered sterilization plants in the Republic, 16 of which are new plants which were registered during the year.

These plants produce fish meal, carcase meal, blood meal, bone meal, fish oil and tallow and are inspected at least once a year by State veterinarians for the purposes of either registration or re-registration.

In addition, monthly sampling of products for bacterial inspection takes place at the abattoirs for which the Division provides meat inspection services.

Planning

In accordance with the provisions of Section 18 of Act 87 of 1967, the Division of Veterinary Services examined 259 sets of plans for the erection, improvement and extension of abattoirs and factories for comment and recommendations.

The distribution of the plans was as follows:

<table>
<thead>
<tr>
<th>Type of Abattoir</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red meat abattoirs</td>
<td>161</td>
</tr>
<tr>
<td>Poultry abattoirs</td>
<td>76</td>
</tr>
<tr>
<td>Rabbit abattoirs</td>
<td>7</td>
</tr>
<tr>
<td>Game abattoirs</td>
<td>9</td>
</tr>
<tr>
<td>By-product plants</td>
<td>6</td>
</tr>
</tbody>
</table>

Meat imports

South Africa is still importing low-grade industrial meat from Rhodesia and Botswana. The local shortage of this type of meat was less than during the previous year.

Meat exports

The following quantities of meat were exported during the year:

<table>
<thead>
<tr>
<th>Description</th>
<th>Overseas</th>
<th>Neighbouring countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frozen, refrigerated and canned red meat</td>
<td>207 922 tons</td>
<td>2 644 tons</td>
</tr>
<tr>
<td>Meat products</td>
<td>30 tons</td>
<td>1 ton</td>
</tr>
<tr>
<td>Poultry 6 164 tons</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Game</td>
<td>930 tons</td>
<td>-</td>
</tr>
</tbody>
</table>

Legislation

The following Government notice was published during the year under the *Animal Slaughter, Meat and Animal Products Hygiène Act, 1967* (Act 87 Of 1967):

*Government Notice 898 of 23 December 1977* - "Granting of exemptions to certain abattoir owners, operators or persons".
MEAT INSPECTION SERVICES

Departmental

The Division is responsible for meat inspection services at abattoirs belonging to or managed by the Abattoir Corporation, as well as at privately owned abattoirs approved as export establishments.

Under the control of the Division considerable progress has been made with raising the standard of hygiene at all abattoirs. Owners are encouraged to improve the standard of hygiene voluntarily. Legal action was taken only in cases where improvements that could have been effected through better management or at minimal cost had not been implemented. Where the cost of repairing structural defects would be very high, exemption is granted provided that the owner applies for it.

The number of abattoirs to which exemption was granted, in the various Regions, is as follows: Transvaal 10, Northern and Eastern Transvaal 4, Highveld 3, Free State 3, Natal 13, Eastern Cape and Karoo 10 and Western Cape 20.

In terms of a ministerial decision, exemption will in future be granted only in exceptional cases.