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ANNUAL REPORT
ON THE
VETERINARY DEPARTMENT
FOR THE YEAR 1952-53

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FOREWORD

BY THE HON. K. O. MBADIWE,
Central Minister of Land and Natural Resources

The activities of the Central section of the Veterinary Department for the year 1952-53 are summarized in the following pages. The General Review of the activities of the Department is summarized by the Inspector-General in the first section and this is followed by more detailed reports on research work, the progress made at the Veterinary School at Vom and on the work of Hides and Skins improvement.

Veterinary research work is of great importance to the whole economy of Nigeria as only through research can the answers to many pressing problems affecting livestock of all kinds be found. As the Inspector-General points out, the animal value of the livestock trade in Nigeria is not generally appreciated and on a conservative estimate it must be over £20,000,000 per annum. If new methods can be found for combatting the diseases which still account for a considerable mortality amongst the animal population, the value of this trade will be greatly increased.

Generally, the animal health position was good during the year with the exception of poultry disease, which was high. Research work into diseases affecting poultry is to be intensified. Some progress is reported in the campaign to bring Bovine Pleuro-pneumonia under control in Northern Areas. Other diseases of cattle were kept under control by vaccination, which continues on a considerable scale. No less than 4,728,917 doses of vaccine were issued, and of these doses over 250,000 doses were distributed outside Nigeria in other parts of West Africa and the Sudan.

It is also satisfactory to note that the Staff position improved considerably and that by the end of the period under review there were only a very few vacancies for Senior Staff and that it had been possible to fill all vacant senior posts.

The report is a story of hard work and it gives me pleasure, in this foreword, to express my appreciation of the work of the officers concerned.

Lagos, April 1954.

Annual Report of the Veterinary Department for the year 1952-53

PART II

The internal organization of the Department remained unchanged. This report therefore deals mainly with those activities which are the responsibility of the Central Government.

FINANCE

2. The total financial provision for Veterinary Services was £385,788, made up as follows :—

	£	£
(1) Nigeria : (a) Central	76,850	
(b) Northern Region	78,530	
(c) Western Region	18,120	
(d) Eastern Region	18,720	
		192,220
(2) Native Authorities	..	106,791
(3) Central Development and Welfare	..	86,777

The breakdown of expenditure under the Central Nigerian and Central Development Heads is shown in Schedule IX.

3. The total allocation shows an increase of £46,107 compared with last year and it is of interest to record where the increases occur.

	£	£
(1) Nigeria : (a) Central	1,240	
(b) Northern Region	21,138	
(c) Western Region	4,600	
(d) Eastern Region	8,050	
(2) Native Authorities	41,636	
		76,664
(3) Central Development and Welfare	..	30,557
		£46,107

STAFF

4. *Senior Service*.—The position is now most satisfactory, and the Department has been fortunate in being able to fill the vacancies of Director of Veterinary Services, Northern Region, Assistant Director of Laboratory Services and Principal Hides Improvement Officer. There are good prospects of filling the remaining outstanding vacancies.

5. *Junior Service*.—Again considerable improvement can be reported although it has not been possible to find suitable candidates for some important vacancies.

6. *Scholarships*.—Two scholars returned on successful completion of their courses of instruction, and are now being considered for promotion to the Senior Service. Five new scholars were granted, two for candidates taking the full veterinary course at London University, two for courses in leather technology, and one a course in poultry management.

LIVESTOCK POPULATION

7. Annual comparative figures for several years do not disclose any marked variation in the number of Livestock and the figures given in Schedule I of this report are no exception to this general rule. From many points of view it is desirable that more accurate figures of the

livestock population of Nigeria should be available, but progress with census work has been very slow, and is likely to continue so. Some valuable information however has been obtained about the actual composition of representative herd of cattle.

LIVESTOCK DISEASES

8. No major epidemics occurred in any Region, and although losses of poultry in some areas were very high the general health position has been satisfactory.

9. Rinderpest, although still prevalent in the Northern Region, only causes a high mortality in those provinces overlapping the middle belt where the numbers involved are not high.

Only three outbreaks were reported in the Western Region, causing a total loss of eighty animals, and two outbreaks were confirmed in the Eastern Region. These were confined to trade cattle.

10. No really satisfactory progress can be reported in the control of Bovine Pleuro-pneumonia in endemic areas. Fortunately the spread of this disease to other areas is restricted and plans are now in hand to tackle the problem in Bornu, Kano and Bauchi by mass inoculation, quarantine and slaughter. The difficulties of implementation are considerable.

11. Close on 80,000 bovines and over 1,000 equines were treated for trypanosomiasis in the Northern Region but drug therapy is not a satisfactory approach elsewhere. Interesting field experiments in collaboration with the staff of the West African Institute for Trypanosomiasis Research have been carried out with antrycide Pro-salt in the Shendam and Kontagora Settlement Schemes and in the Gitata area of Benue Province. The results are promising and seem to indicate that cattle can in fact be adequately protected in some areas with this drug, provided the work is under efficient control.

12. Bacterial diseases have in general been kept under reasonable control and serious outbreaks have occurred only where advice regarding annual vaccination has been disregarded.

The incidence of tuberculosis in the Eastern Region is causing concern and many cases are recorded in slaughter cattle in the Western Region.

13. The position with regard to rabies remains unchanged. The American *Lederle* vaccine has been used to a limited extent only.

14. Almost 150,000 animals were treated for helminthiasis in the Northern Region, 100,000 in the Eastern Region, and 20,000 in the Western Region. Direct and indirect losses from parasitism are considerable.

15. Year after year disease takes a very heavy toll of poultry in each Region, and in some areas poultry keeping is reported to have become impossible without vaccination. Poultry contributes in no small measure to the diet of the population, and it is unfortunate that in the past staff shortage has precluded greater attention being paid to this problem. A Veterinary Research Officer who arrived to take up appointment half way through the year has been posted for this work but the task ahead of him is immense and fraught with difficulty.

16. Unfortunately it must be recorded that it has not been possible to give adequate attention to the investigation and control of goat and sheep diseases. The large number of these animals justifies whole time investigation of their disease problems by one or two research workers. This has not been possible but a limited amount of useful preliminary work has been accomplished on sheep and goat diseases at the livestock investigation centres, and at the Laboratory.

17. Actual treatment of disease conditions is not a major aspect of our work in Nigeria but it is nevertheless important, and the cases receiving attention at various clinics are shown on Schedule V.

LIVESTOCK INDUSTRIES

18. The prices of slaughter stock of all classes have remained high and reached their peak at festival times. Top grade prices up to £30 have been paid in Kano and up to £40 at Ibadan and Lagos. Over 2,000 tons of dried meat entered Ibadan, mainly from Nguru, and the prices paid were equivalent to those for fresh meat, the average for the latter being 2s per lb (beef and mutton) and 1s-9d for pork.

19. The slaughter figures compared with those for last year are shown in Schedule II. The increases for all classes are considerable, and those for the Western Region are particularly worthy of note, the consumption of sheep and goat meat being double, and pork eight times that of the previous year.

20. The annual value of the livestock trade in Nigeria is not generally appreciated. Exact figures are not available but based on existing returns and taking a below average price figure, a very conservative estimate is £15,000,000. This does not take into consideration "local" sales which are not recorded and affect in particular the slaughter figures for goats and sheep. For example, it is known that over 4,000,000 goat skins were exported, which is four times the slaughter return. No figures are available for poultry. The annual value of the livestock trade must be over £20,000,000.

21. The humane slaughter of horses in the Eastern Region by trained men continues to progress. Assistance has been given by the United Kingdom animal welfare societies in arranging for a free issue of humane killers.

22. The export figure for hides and skins are given in Schedule III and are self-explanatory.

LIVESTOCK IMPROVEMENT

GENERAL

23. The responsibilities of the Central Government in this important sphere are limited by policy to investigational work at the five regional centres. The Regional reports give details of the work in progress. In the past the development of the centres has been retarded by the relatively small capital grant originally available and shortage of staff. With more staff and money available, however, the rate of progress has increased. There are two aspects of Livestock improvement in Nigeria, first, that of improving the productivity of the animal by selection and culling, and secondly, improving the environment in which the animals live. Investigations have therefore been directed towards ascertaining how the level of nutrition can be improved during the dry season and how far diseases limit productivity.

24. Castration of scrub animals is part of the livestock improvement policy, and the animals treated in this way are shown in Schedule IV.

25. Brief details of work carried out at the five Livestock Improvement Centres are given below :—

(a) *Yakiri*.—As regards breeding, two approaches are being followed simultaneously. They are the selection and culling of pure bred Adamawa cattle, and the interbreeding of Montbelliard—Adamawa crosses plus selection within the new type. The quarter bred Montbelliard is hardy and does well in the Bamenda environment, showing a weight for age advantage at all ages. It is not yet certain whether this hybrid type can be stabilized.

Pasture improvement based on Kikuyu and other grasses continues. Stock proof fencing, including dry stone walls has been greatly extended, and improved water distribution has made closer stocking possible.

(b) *Ado Ekiti*.—Progress has been made with the establishment of a herd of Dwarf Short-horn (Muturu) which now numbers forty-seven. The object is to study factors accounting for dwarfing and the possibility of increased productivity in this environment with particular reference to the effects of disease. An attempt has been made to establish a suitable flock of local sheep for similar purposes.

Pasture improvement work continues in co-operation with the Agricultural Department.

(c) *Birnin Kebbi*.—All attempts to obtain a sufficient number of the Sokoto Gudale have failed and investigational work has thus been delayed. However, three small flocks of Ouda, Bellame and Muris sheep have been maintained. Control of ecto and endo parasites has led to improvement and an experiment on the effect of hair clipping has yielded interesting results. There are sixty-two goats in the Red Sokoto herd and it is now known that parasites are responsible for a heavy mortality in kids. Control measures are being investigated.

(d) *Katsina*.—Investigation of management problems of the Red Longhorn (Rahaji) in this zone continues with emphasis on pasture improvement.

(e) *Biu*.—This centre will be developed in future on a reduced scale with emphasis on pasture improvement work and diseases of sheep and goats.

RESEARCH

26. The laboratory report is given separately. The establishment of research workers was filled for the first time. Accommodation is now the main problem, and the approved building programme has been delayed. Work being carried out is shown in the various Schedules.

27. Much valuable work has been done on diagnostic tests for Bovine Pleuro-pneumonia. Bacterial vaccines have been improved and much progress has been made in the parasitology section.

28. Many important and serious problems have been encountered in the breeding and management of poultry, and these are being actively investigated.

29. Thirteen cross Friesian-Zebu calves were born following artificial insemination. Twelve of these have been reared. Careful statistics are being kept of birth, weight, body measurements and weight increases in comparison with Zebu calves of similar age. The work continues.

EDUCATION

30. The School report is also given separately. The number of students in training has been maintained and the output of trained men has been most satisfactory.

CONCLUSION

31. An attempt has been made to record the outstanding features of the work carried out in the Regions, but reference must be made to the Regional reports for details.

32. Again I must report an excellent spirit of co-operation at all levels throughout the Department, and I wish to record my appreciation of the splendid work accomplished.

R. S. MARSHALL,
Inspector-General of Animal Health Services

PART III

VETERINARY RESEARCH LABORATORY

I have the honour to submit the following report for the period April 1952 to March 1953.

GENERAL

1. The work of the Laboratory throughout the year has been along the lines established over previous years and has consisted of:

- (a) Vaccine production
- (b) Research
- (c) Diagnostic service

The availability of adequate numbers of stock of various kinds for the production of bacteriological media, experiments and the testing of vaccines is of the utmost importance and efforts have been directed towards the building up of laboratory flocks and herds and small animal units. In this connection, negotiations have been carried forward for the declaration of a quarantine area contiguous with the Veterinary Station, comprising approximately 2,000 acres and called the Kaffo Quarantine. A new small animal house was built and funds have been requested for further buildings which are very necessary to keep pace with the increasing volume of work and production. The present accommodation is very restricted, considering the variety and quantity of vaccines produced.

VIRUS SECTION

2. *Rinderpest*.—(a) *Caprinised Virus (D.G.V.)* 900 goats in 14 batches were used in the production of this vaccine. 690 (76.7 per cent) of these reacted favourably and the vaccine produced totalled 1,650,000 doses.

(b) *Lapinised Virus (L.R.V.)* 170 rabbits in 8 batches were used in vaccine production 136 (80 per cent) reacted favourably and the vaccine produced totalled 86,000 doses.

(c) *Research*.—Experiments were carried out on the production and use of an inactivated tissue vaccine emulsified in an inert oil. The first attempts failed to produce a vaccine which showed any marked superiority over the old standard spleen tissue vaccine and further work was held in abeyance owing to the lack of accommodation for animals infected with wild virus.

Efforts were made to find a suitable *in vitro* diagnostic test. Various lines were explored including the haemagglutination test, sensitisation of cells and electrophoresis. The major difficulty experienced was in the production of virus free from other proteins. Efforts will be concentrated on this aspect of the problem in future work.

3. *Fowl Pox*.—Production of the pigeon strain of vaccine was continued and 22,600 doses were prepared. Plans are being laid for the production, in the future, of an egg-adapted strain.

4. *Newcastle Disease*.—Although the presence of this disease has been suspected for some time in Nigeria, no laboratory confirmation was available until January 1953, when the disease was confirmed in Benue Province and in Ibadan. The virus was isolated from a virulent outbreak at the latter place. This and two mild strains were maintained by passage on embryo-nating eggs. Experiments were initiated to explore the prospects of vaccine preparation and encouraging results have been obtained. Many haemagglutination tests and haemagglutination inhibition tests were carried out and a standard diagnostic procedure developed.

In collaboration with the Head of the Department of Agriculture, University College, Ibadan, Dr D. Hill, a correlation of the disease, as seen in outbreaks in the field, with laboratory findings, was carried out.

5. *Contagious Bovine Pluero-pneumonia*.—Vaccine production was maintained by cultivation of the organism on serum broth. Some 600,000 doses of vaccine were produced.

6. Work on this disease has been mainly on its serology, and the complement-fixation and slide-agglutination tests have been compared both as diagnostic methods and as indicating the serological response to vaccination. The whole blood slide agglutination test, using a stained antigen, has given very promising results as a diagnostic agent for use in the field, and a paper on the subject by Messrs Newing and Field has been prepared. The test appears to be quite specific, the only complication being that vaccinated animals may remain positive for at least nine weeks and probably much longer. They are usually negative to the ordinary complement fixation test by the sixth week, even after an increased dose.

In general, the slide agglutination test is the more delicate of the two, but as each is for a different type of antibody, the results may not necessarily coincide. One case was observed where a serum had a high complement fixation titre for two weeks before agglutinins started to appear.

7. Studies on the serological response of rabbits to the pleuro-pneumonia organism have shown that a high titre to the complement fixation test rapidly follows the subcutaneous injection of fresh exudates from cattle (a useful diagnostic method with post mortem material which is too contaminated for culture or dark-ground examination, and when serum is not available for testing). No response is produced by reconstituted dried exudates, even though fully viable and able to produce fatal reactions in susceptible cattle. It was recorded in the previous report from this laboratory that immune cattle inoculated with virulent material showed no serological reaction. This was based on observations with dried exudates. The work has now been repeated on a group of immune cattle, and these have been shown to behave in the same way as the naturally insusceptible rabbit, *i.e.*, no antibody formation in response to dried material, but rapid response to fresh exudates.

8. In a large experiment to test the efficacy of the present laboratory vaccine strain of pleuro-pneumonia, the serological reactions to various doses of this and an alternative strain were carefully compared. With the laboratory vaccine it was observed that the more marked the serological reaction to the vaccine, the stronger was the immunity when challenged.

9. A locally isolated virulent strain of pleuro-pneumonia organism has been grown in developing hens' eggs for six passages. A sample of the Kabete avianised pleuro-pneumonia vaccine was received from the Director of Veterinary Services, Kenya, and is being tested on a batch of cattle under Nigerian conditions. It has also been inoculated into eggs.

10. Isolation of strains of pleuro-pneumonia organism on solid media was continued, and at the end of the year six strains were being preserved.

11. Routine examinations of the sera of Laboratory and Farm cattle have been made frequently by means of the complement fixation test.

BACTERIOLOGY SECTION

GENERAL

12. The work of this section was concerned with the maintenance of vaccine strains and the production of vaccines, their improvement and testing; bacteriological diagnoses and some serological testing.

The number of subcultures made (excluding work on pure cultures) was 1,109 and 437 animal inoculations were carried out.

The vaccines produced by the section were as follows:—

Anthrax	..	..	..	..	..	..	..	427,350 doses
Blackquarter	..	..	..	..	..	..	..	1,656,500 doses
Haemorrhagic septicaemia	..	..	..	..	..	..	..	142,100 doses
Fowl Typhoid	..	..	..	..	..	..	..	91,050 doses
Fowl Cholera	..	..	..	..	..	..	..	94,600 doses

13. *Anthrax*.—The anthrax vaccine strain 34F2 was checked and found satisfactory for horses and pigs as well as goats, sheep and cattle.

It is hoped eventually to replace our present "Tunis" strain by this 34F2. Either vaccine can be given subcutaneously and the local and thermal reactions following the use of this vaccine were shown to be almost entirely due to the saponin fraction. Vaccine with a reduced saponin content was produced for W.A. Shorthorns in the Eastern Region as these react severely to the normal vaccine. The tests on this vaccine were carried out on guinea pigs.

14. *Blackleg and Associated Diseases*.—Vaccine production continued to increase and the quantities involved are getting beyond the capacity of the present methods in use. Fortunately the new dialysing technique promises to reduce the quantities of media involved and the equipment necessary was ordered.

15. Some attempts to prepare a solid vaccine by centrifuging an alum precipitated vaccine using a Lister Cream Separator were made but eventually abandoned as the quantities involved were too great for this machine.

16. *Pasteurella Group of Diseases*.—Strenuous efforts were made to obtain field strains of *Pasteurella bovisseptica*. The few available are avirulent and unsuitable for challenge purposes.

Work was initiated in the production of typing sera and it is hoped to be able to type the strains from the field by mouse protection tests or serological methods.

17. *Salmonella Group of Diseases*.—The fowl typhoid experiment reported in last year's Annual Report was completed. No further information resulted. It was demonstrated by whole blood agglutination tests that the fowl typhoid vaccine produces positive titres ten days after inoculation. This test, is, in fact, our only check on the efficacy of the vaccine as normal challenge experiments are not possible with the organism.

18. *Glanders*.—Mallein has been issued for diagnostic purposes to several Veterinary Officers in the Northern Region but no report of positive reactors has been received.

19. *Erysipelas in pigs*.—The organism *Erysipelothrix rhusiopathiae* could not be isolated from material submitted from a suspected outbreak at Bauchi. On two separate occasions, *Cl. septicum* (probably a contaminant) was isolated from infected animals. The disease was later ascribed to a dietary deficiency.

20. *Other Diseases*.—An outbreak of Heartwater on the Laboratory Farm at Vom was confirmed by demonstration of the *Rickettsia* in brain squash preparations.

In addition, preliminary investigations were made on sera from an outbreak of abortion in mares at Sokoto and Katsina and on abortion in goats at Birnin Kebbi.

In the Sokoto mares, *Salmonella abortus equi* was not implicated and in the goats, a test using six *Salmonella* antigens failed to suggest that the abortions were due to Salmonellosis. Vibrionic abortion in the goats was suspected.

Brucella abortus Vaccine.—1,300 doses of dried vaccine were produced.

21. *Pathology*.—The majority of the work of this section was associated with routine diagnosis. However, investigations were made into the structure of colonies of pleuro-pneumonia organism on solid media and also into the histological changes taking place in chicken embryonic membranes infected with this organism.

22. *Parasitology*.—A Veterinary Parasitologist was appointed during the year and on his arrival at the end of August, the Parasitology Section was re-established as a separate unit. The section became responsible for the examination of parasitological material submitted from the field, the systematic identification of parasites of veterinary importance occurring in Nigeria, the investigation of parasite problems affecting the livestock industry and for experimental work directed towards formulating control measures suitable to the country.

23. In November, the section was fortunate in obtaining the services of Mr R. A. O. Shonekan, on his return from the United Kingdom where he has spent four years studying parasitology technology.

24. The first practical work of the section was concerned with an outbreak of coccidiosis at the Egg Production Unit. This outbreak was investigated very thoroughly.

Morphological examination of unsporulated oocysts, histo-pathology and sporulation tests indicated that *Eimeria necatrix*, *E. maxima* and *E. acervuline* were implicated.

25. Control measures were instituted. These consisted of the following :—

The older growing stock and adult birds were removed from the earth runs and confined to concrete-floored houses. Sanitation was improved by providing more hygienic water and feed utensils and each house was thoroughly cleaned and disinfected with washing soda and ammonia every forty-eight hours for approximately two months.

Extra vitamin B. was fed in the ration and in addition all replacement stock entering the permanent houses were put on to a medicated mash containing 0.022 per cent nitrofurazone for seven days every month as a preventive.

By the end of September, these control measures had been put into operation throughout the unit and in November, a noticeable improvement took place. This is best shown in the following table which shows the mortality rate during the months under consideration.

MONTHLY DEATH RATES FROM COCCIDIOSIS : EXPERIENCE AT THE EGG PRODUCTION UNIT

August	September	October	November	December	January	February	March
Per cent 6.3	Per cent 6.6	Per cent 5.5	Per cent 1.2	Per cent Nil	Per cent Nil	Per cent Nil	Per cent —

26. By the end of March, all groups of replacement stock in the permanent houses either failed to show or showed only occasional oocysts in the droppings. In very young chicks caecal coccidiosis disappeared following the institution of brooding on clean ground.

The groups of heavily infected laying hens continued in some cases to harbour heavy infestations but in spite of this, losses practically ceased and egg production, though impaired, was maintained.

27. An experiment was carried out to determine the value of nitrofurazone against intestinal coccidiosis in fowls. It was found that in an established infection the drug given at the rate of 0.022 per cent for six days followed by 0.011 per cent for seven days was of little therapeutic value. When used against very recently acquired infections, the drug fed at the rate of 0.022 per cent for ten days proved to be very effective in controlling the disease.

28. *Fascioliasis*.—In order to provide a simple, rapid test for the detection of *Fasciola* infestations at post mortem examination for survey purposes, a technique involving examination bile received attention. The technique finally chosen required only collection of bile, washing and sedimentation, and examination of the sediment microscopically for the presence of eggs. The technique has been tested out on forty-two yearling cattle.

In twenty-six (62 per cent) *Fasciola* eggs were detected in the bile, in five (12 per cent) *Dicrocoelium* eggs were found.

29. Search has been made for the snail vectors of *Fasciola gigantica* in the Plateau and Bornu Provinces and the following species have been found : *Lymnaea natalensis*, *Planorbis pfeiffer* and *Physopsis africana*.

Live specimens of these snails were transferred to the Laboratory and cercariae omitted by *L. natalensis* were shown by infection of rabbits, to be those of *F. gigantica*, *L. natalensis* was therefore incriminated as a vector of this fluke. Furcocercous, Xiphidiocercous and other distome cercariae were recovered from many of the snails collected.

30. Snail culturing was commenced in the laboratory so that work could be continued on fascioliasis and already, parasite-free, laboratory reared generations of *Lymnaea natalensis*, *Planorbis* spp. and *Physopsis africana* have been established. Artificial infection will provide a steady supply of *Fasciola* cercariae and test are now in progress to determine the longevity of *Fasciola* cercariae under dry season conditions. It seems likely that climatic conditions, occurring in most parts of Northern Nigeria, are such, that a fairly well defined "flake season" exists. These tests and others that are planned should give much needed information on the local epizootiology, which is required before strategic systems of medication can be formulated.

31. *Helminth Surveys*.—In order to obtain basic information on some of the nematode problems a start was made on surveys of cattle, sheep and goat herds. Worm egg counts on faecal samples were made, worm burdens were estimated, where post mortem material became available, and as many identifications as possible of helminth parasites were carried out.

32. A preliminary analysis of one survey of 144 cattle consisting of, twenty-eight adults, eighty-three yearlings (six to eighteen months approximately) and thirty-three calves of three weeks to six months of age, showed the following distribution.

These animals were all from the Plateau and were made up of individuals from the Vom Stock Farm, the Laboratory herd and two local Fulani herds.

Faeces were collected during the dry season and egg counts were made by the McMaster Method.

FINDINGS OF WORM EGG COUNTS CARRIED OUT ON 144 BOVINES

	<i>Bunostomum</i> Eggs	<i>Strongloid</i> Eggs other than <i>Bunostomum</i>	<i>Ascaris</i> Eggs	<i>Strongloides</i> Eggs	<i>Trichuris</i> Eggs	<i>Coccidia</i> Oocyst
No. Positive	35	109	9	2	5	50
Percentage Positive	24	70	6	—	33	35
Average No. of Eggs per gm. in Positive Cases.	475	518	3,833	100	460	Not counted.
Range in Egg counts in Positive Cases.	50 to 8,700	50 to 8,600	50 to 18,400	—	50 to 1,600	—

33. Post mortem examinations and differential counts showed that *Haemonchus contortus*, *Trichostrongylus axei* *Cooperia Punctata*, *C. pectniata* and *Bunostomum phlebotomum* were the strongyle helminths most commonly encountered in cattle in the Vom area. *Oesophagostomum radiatum* was recovered from most cases in small numbers but the incidence of nodules in the colon observed so far has not been high.

Although *Bunostomum* eggs were found in only 35 per cent of the faeces samples in the survey, adult worms were recovered from all animals examined post mortem. It appears to be one of the most pathogenic helminths of cattle encountered so far in the Vom area.

34. *Identifications*.—Large numbers of parasites have been identified since the re-establishment of the section. They consist of specimens submitted from the various Regions and of parasites collected at Vom.

35. *Chemistry*.—Routine toxicological diagnosis and analytical work were carried out but no programme of chemical research was undertaken as the Biochemist was on leave for several months and during the remainder of the year was engaged on the problem of production of an antigen for pleuro-pneumonia serological tests.

36. *Egg Production Unit*.—At the beginning of the year, the stock comprised, 633 hens and 200 cocks, a total of 833 birds. At the end of the year the numbers were made up as follows :—

276 hens, 36 cocks, 372 growers, 160 chickens : a total of 844.

The change in composition of the flock was brought about chiefly by an outbreak of coccidiosis and the culling and sale of unproductive stock together with the incubation of eggs from selected pens of birds.

37. *Disposal of Stock*.—A total of 932 birds were sold, consisting of 217 cocks, 295 hens and 420 growers.

38. *Mortality*.—During the year 839 birds died, as follows—49 cocks, 315 hens, 297 growers and 178 chicks.

The major cause of death was coccidiosis. Resistance to coccidiosis was lowered by severe anaemia caused by infestations of the round worm *Ascaridia galli* and of the tropical mite *Liponyssus bursa*.

The heavy toll of deaths was reduced after October by the feeding of mash medicated with Nitrofurazone powder. The dry season reduced the survivals of oocysts.

The Parasitologist advised treatment of all poultry with carbon tetrachloride against *Ascaridia galli*. The dosing of each hen with 1 c.c. by stomach tube was found to be safe and very effective. It was found necessary to repeat treatment in old stock after five months.

Many deaths were due to visceral lymphomatosis and fowl paralysis. Some hens showed symptoms typical of fowl paralysis, others showed atypical paralysis with death within twenty-four hours. During October, it was found that about 20 per cent of the stock suffered from "pearly eye" an invasion of the iris by lymphocytes.

39. *Trap Nesting*.—This was introduced in February and March 1953, so that now adequate records are kept of each hen's production for purposes of selective breeding and progeny testing.

40. *Disposal of Eggs*.—The main function of the Egg Production Unit is the production of fertile eggs for the use of the Laboratory in experimental work on Newcastle disease, bovine pleuro-pneumonia, rinderpest, and other diseases, and for the Medical Laboratory, Yaba, for the production of yellow fever and small pox vaccines. Demand for eggs for these purposes fluctuates and fortunately there is an outlet for the sale of surplus and infertile eggs through the bacon factory or commercial retail firms. 3,600 eggs were sent to Yaba, 2,371 to the Laboratory, 5,444 were used for hatching and the remainder sold.

41. *The Laboratory Stock Farm*.—The farm continued to serve the purposes of producing experimental animals for the Laboratory, affording facilities for the training of students in the Vom Veterinary School and for artificial insemination work with imported semen.

The first season of a programme of artificial insemination was carried through using semen flown out from England and produced by bulls of the Milk Marketing Board, Cattle Breeding Centre, Little Horwood. The first consignment arrived in April and subsequently semen was received thrice weekly until October. The object of this experiment was to observe the behaviour of half bred Fulani cattle on the Plateau as a closed urban dairy herd.

42. On arrival the semen was immediately examined and only a very small minority of all the consignments had deteriorated noticeably. This deterioration was undoubtedly due to delays in handling during transit. The technique employed to inseminate the farm cattle was the same as is now standard in the United Kingdom. The most difficult obstacle appeared to be the detection of oestrus in our cattle, as this was often fleeting and silent.

43. The first cross bred calves were born at the end of December. There was a marked contrast between these and the pure Fulani calves. The coat texture was thicker and they showed a longer, wider and deeper body and better bone development. After October, breeding by one of the stock bulls was resumed but it was stopped at the end of the year in order that as many cows and heifers as possible could be held over for the second season's programme of artificial insemination.

44. The milk yield for the complete year was 12,132 gallons with an overall butter fat of 6.3 per cent. The total number of calves born during the year was 106.

45. *Cattle*.—The health of the herd was generally good throughout the year, the only disease of note being heartwater (two cases), suspected haemorrhagic septicaemia (one case) and some pneumonia and enteritis of calves.

46. *Sheep*.—A flock of cross-bred Ilorin-pagan sheep was maintained. When slaughtered, these cross breeds produced a very good carcase of mutton, but mortality among the lambs was high.

47. *Pigs*.—The herd of large white pigs was maintained.

The total number of pigs sent to Vom Bacon Factory throughout the year amounted to sixty-eight, baconers and porkers. These pigs have continued to do exceptionally well and there are some fine animals amongst the herd. A high standard of health was maintained.

48. *Pastures*.—The Livestock Investigation Centre, over 800 acres in all, possesses 200 odd acres of fenced paddocks, and except those laid aside for hay, these were closely grazed during the rainy season.

During the early rains the majority of the fields were harrowed and disced. The hand pulling of weeds and scrub was not very successful as much of the root was left in the ground.

There is no trace of the Lucerne sown during 1951, so it must be presumed that though it had a good start it was crowded out by other grasses. The small plot of Kikuyu grass was well established and showed good growth and resistance to drought.

49. *Biological Products*.—A high level of production was maintained and a total of 4,728,917 doses of vaccines were issued. The distribution of these vaccines is shown in Schedule VI.

50. *Visitors*.—Ninety-three visitors were shown round the Laboratory, Stock Farm and Egg Production Unit.

J. K. H. WILDE,

Assistant Director of Laboratory Services

PART IV

ANNUAL REPORT : VETERINARY SCHOOL, VOM

1ST APRIL, 1952 TO 31ST MARCH, 1953

I have the honour to submit the Annual Report for the period 1st April, 1952 to 31st March, 1953.

2. *Finance*.—The total authorised expenditure was £12,990 being £550 more than that authorised in the previous year. The revenue was £3,450 derived from the same sources as in former years.

3. *Staff*.—Details are shown in the nominal roll at the beginning of the Departmental Report.

For the first time the establishment of expatriate teachers for the School was complete.

Difficulty was experienced in obtaining a suitable African Master and as a temporary measure the post was filled by a former student of Ibadan University College until he proceeded for higher veterinary training to the United Kingdom.

The teaching staff has been generously assisted by Research Officers acting as part time teachers.

4. *Students*.—Twenty-eight were admitted for the preliminary course and sixteen of those qualified for technical training, of whom five had a standard of general education below Middle IV. They were joined by fifteen others whose general education was above Middle V standard and who were therefore exempt from the qualifying examination. Of the twenty-eight attending the preliminary course, twenty-two were from the Northern Region, five from the Western and one from the Eastern.

Intensive schooling of sub-standard entrants followed by rigorous selection allowed the acceptance of a large proportion of men with the right back-ground who would otherwise be lost to the Service.

With few exceptions however, these men never attain the basic technical standard of men with better general education but as junior workers in the field they usually equal them and may surpass them.

Twenty-five men passed out of the School to the Service during 1952.

The classes are composed as follows :—

Class	No. of Students	Source	
2nd Year	21	Northern Region	39
1st Year	31	Western Region	16
		Eastern Region	3
Preliminary	17	Gold Coast	9
		Sierra Leone and Gambia ..	2

5. *Field Training*.—The arrangement by which all students spend at least two months of the summer vacation in the field working under a Veterinary Officer was continued and proved to be most valuable.

The facilities for practical work at the School were adequate. Outbreaks of both pleuro-pneumonia and rinderpest within a few miles of the School afforded excellent opportunities for demonstration and instruction.

6. *Special Instruction*.—Among the subjects dealt with outside the ordinary curriculum were :—Nigerian Dairy Produce ; Grading ; Entraining and Transport of Livestock ; Bovine Sterility ; Hides and Skins Inspection.

The cinema was used both for teaching and entertainment. A liberal supply of films was received through the Public Relations Officer, Kaduna.

7. *Animal Clinic.*—More animals than in previous years were treated. The number of new cases was 702 and 4,055 daily treatments were given. These figures do not include cattle and other stock which were treated individually outside the clinic. Several thousand inoculations were done by the students.

8. *Transport.*—Road transport in former years was supplied when available from a departmental pool as required. The system was unsatisfactory as on many occasions the opportunity for practical instruction was lost because of the inability to take the students to the scene of operation. A motor truck has now been allotted to the School.

9. *Catering.*—The diet as described in the report for the year 1950-51 has remained relatively unchanged. The cost as governed by the years contract prices is 1s-10½d per day per man in the Mohammedan mess and 2s-0½d for others—a reduction of 2d per day per man.

Complaints about the messing have been few. The commonest complaint has been the lack of variety. The diet changes from day to day but is the same from week to week.

The average gain in weight during the first year of residence was 11 lbs per man. Only two men declined in weight.

10. *Recreation.*—Throughout a considerable part of the year, it was possible for an expatriate officer to organise games in such a way that Hausa speaking students voluntarily took a more active part. All students appreciate the facilities offered for riding and all are eager to learn to ride.

11. *Students Welfare.*—No real difficulty has been experienced throughout the year in keeping the students reasonably happy and contented.

A general meeting of staff and students is held each term at which any subject concerning student welfare is open for discussion. Each week the representatives meet the Principal for the same purpose. Every student has access to the Principal for attention to personal difficulties as they arise.

12. *Health.*—There has been relatively little sickness and no epidemics.

G. WILLIAMSON,
Principal, Veterinary School

PART V

HIDES AND SKINS

I have the honour to submit the following report for 1952-53.

2. In the first part of the year, world hide and skin markets were exceedingly dull and resulting prices low. However towards the end of the year market conditions improved and hide and skin prices tended to stabilise. Although hide and skin exports did not reach the same volume and value as in the previous year, after a period of complex and fluctuating prices the export returns can be viewed with satisfaction.

3. Comparative Nigerian Export returns for 1951-52 are shown in Schedule III. From these figures it will be seen that the demand for Nigerian hides and skins, especially goat skins remain good and the high reputation of these commodities should, with the return of more stable conditions, ensure a steadily increasing revenue for Nigeria.

4. The number of ordinary hides exported has decreased by 15 per cent and butchers hides have increased by 85 per cent—a satisfactory state of affairs.

5. The general quality of goat skins continues to be excellent.

6. The demand for sheep skins fluctuated and at one time prices paid for these materials were extremely low.

7. The use of Mobile Demonstration vans displaying the effects of good and bad flaying or preparation, is showing good results and much benefit should be gained by their continued use.

8. There is still a lack of trained instructors to give adequate coverage throughout the country. Indeed, there are many parts of Nigeria in which there are considerable numbers of goats and sheep, which if given a proper attention in regard to slaughter, flaying and preparation should prove to be a source of increased wealth.

C. J. SMITH,
Principal, Hides Improvement Officer

PART VI—STATISTICS

SCHEDULE I

LIVESTOCK POPULATION—NIGERIA 1952

Regions	Cattle	Sheep	Goats	Horses	Donkeys	Swine
Northern Region	3,364,247	1,855,682	4,473,917	162,378	639,369	37,449
Mandated Territory	296,883	218,342	315,750	15,675	31,283	—
Eastern Region	121,070	587,000	970,000	11	—	21,000
Mandated Territory	206,500	110,000	120,000	3,200	—	11,000
Western Region	78,755	165,000	320,000	741	—	21,000
Totals	4,067,455	2,936,024	6,199,667	182,005	670,652	90,449

SCHEDULE II

ABATTOIR RETURNS—NIGERIA 1951-52 TO 1952-53

	Cattle		Sheep		Goats		Pigs	
	1951-52	1952-53	1951-52	1952-53	1951-52	1952-53	1951-52	1952-53
Northern Region	358,471	402,963	265,108	568,078	878,472	1,011,777	1,754	2,283
Mandated Territory	—	—	—	—	—	—	—	—
Eastern Region	51,520	34,924	4,828	5,011	8,479	11,074	5,392	4,404
Mandated Territory	—	3,008	—	320	—	121	—	703
Western Region	101,070	147,825	7,361	15,822	2,172	4,476	2,303	18,451
Totals	511,061	588,720	277,297	589,231	889,123	1,027,448	9,449	25,841

SCHEDULE III

HIDES AND SKINS EXPORTED—1951 AND 1952

	Quantity in Tons		Declared Value		Average Price per lb	
	1951	1952	1951	1952	1951	1952
			£	£	£ s d	£ s d
HIDES :						
Untanned	8,966	6,065	3,619,158	1,572,893	0 3 7	0 2 4
Tanned	—	1	—	89	—	0 0 10
Total	8,966	6,066	3,619,158	1,572,982	—	—
SHEEP SKINS :						
Untanned	959	498	477,663	189,956	0 4 5	0 3 5
Tanned	9	5	7,544	4,085	0 7 10	0 7 4
Total	968	503	485,207	194,041	—	—
GOAT SKINS :						
Untanned	2,927	2,120	2,715,378	1,258,737	0 8 2	0 5 4
Tanned	171	99	185,128	88,873	0 9 8	0 8 0
Total	3,098	2,219	2,900,506	1,347,610	—	—

	1951	1952
Total Value of Exports	£7,004,871	£3,114,633
Total Tonnage of Hides and Skins	13,032	8,788

SCHEDULE IV
FIELD INOCULATIONS AND TREATMENTS—NIGERIA, 1952-1953
(INCLUSIVE OF TRADE CATTLE)

Regions	Rinder- pest	Pleuro- Pneumo- nia	Black- quarter	Haemor- rhagic Septi- caemia	Anthrax	Caprine Pleuro- Pneumo- nia	Diseases of Poultry				Helmin- thiasis	Trypa- nosomi- asis	Castrations		
	D.G.V.	P.P.V.	B.Q.V.	H.S.V.	A.S.V.	Vaccine	Cholera	Pox	Typhoid	New- castle	Phenothi- azine Wire Worm Mixture	Antri- cide Tartar Emetic	Cattle	Sheep	Goats
Northern Region	D.G.V. & W.G.V. 1,081,835	214,334	841,045	70,314	838,328	6,042	6,691	3,490	12,037	422	148,910	78,486	52,012	4,413	27,058
Eastern Region	D.G.V. L.V.R. & A.R.V. 20	—	302,517	791	75	2,472	29,875	675	29,835	14,153	99,624	831	7,057	866	628
Western Region	L.R.V. 8,090	647	2,481	4,190	2,627	—	16,065	8,274	16,364	5,480	20,402	382	164	20	53
Totals		214,981	1,146,043	75,295	841,030	8,514	52,631	12,439	58,236	20,055	268,936	79,699	59,233	5,299	27,739

SCHEDULE V
TREATMENTS AT VETERINARY CLINICS—NIGERIA, 1952-1953

Provinces	Horses	Cattle	Sheep	Donkeys	Camels	Goats	Dogs	Cats	Fowls	Pigs	Parrots	Monkeys	Misc.
Northern Region ..	19,574	191,505	53,161	42,615	644	90,263	860	159	3,380	244	—	—	—
Eastern Region ..	2,876	5,806	2,379	701	—	2,252	2,402	123	6,190	440	—	—	4
Western Region ..	2,706	2,288	604	—	—	357	3,726	872	160	1,353	—	8	86
Total ..	25,156	199,599	56,144	43,316	644	92,872	6,988	1,154	9,730	2,037	—	8	90

SCHEDULE VI

BIOLOGICAL PRODUCTS FOR THE YEAR 1ST APRIL, 1952 TO 31ST MARCH, 1953

<i>Provinces</i>	<i>Contagious Bovine P.P.V.</i>	<i>Contagious Caprine P.P.V.</i>	<i>Dried Goat Virus</i>	<i>Black- quarter Vaccine</i>	<i>Anthrax Spore Vaccine</i>	<i>Haemor- rhagic Septi- caemia Vaccine</i>	<i>Fowl Typhoid Vaccine</i>	<i>Fowl Cholera Vaccine</i>	<i>Fowl Pox Vaccine</i>	<i>Lapi- nised Rinder- pest Vaccine</i>	<i>Contagious Abortion Vaccine S.19</i>	<i>New- castle Vaccine</i>	<i>Total Doses Issued</i>
NORTHERN REGION:													
Adamawa ..	7,300	—	55,500	174,000	54,600	31,000	—	—	—	1,100	—	—	323,500
Bauchi ..	49,685	—	125,000	123,000	34,000	100	400	400	300	—	—	—	332,885
Bornu ..	152,660	1,650	194,250	92,900	143,100	1,300	650	650	400	50	152	100	587,862
Benue ..	1,500	—	32,000	15,000	6,000	7,000	5,150	5,150	2,200	—	—	2,400	76,400
Ilorin ..	2,150	1,000	2,500	17,100	3,000	—	100	100	100	18,500	20	100	44,670
Kano ..	55,500	2,150	400,000	198,000	35,500	—	300	300	200	—	52	—	692,002
Katsina ..	1,150	1,560	158,000	193,500	21,000	2,000	100	100	400	—	—	100	377,910
Kabba ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Niger ..	3,200	5,000	77,000	72,700	6,000	6,000	10,000	10,000	3,800	—	—	2,300	196,000
Plateau ..	50,925	—	142,150	189,300	13,350	52,250	4,700	4,250	6,400	50	130	1,900	465,405
Sokoto ..	43,900	—	199,250	304,000	63,300	1,200	450	450	400	—	—	200	613,150
Zaria ..	8,950	—	130,500	69,000	16,900	26,400	3,050	3,050	2,500	400	348	1,100	262,198
Total, Northern..	376,920	11,360	1,516,150	1,448,500	396,750	127,250	24,900	24,450	16,700	20,100	702	8,200	3,971,982
EASTERN REGION :													
Bamenda ..	—	—	—	168,000	—	2,000	4,000	4,000	—	—	72	—	178,072
Onitsha ..	—	9,650	1,250	—	4,500	2,750	7,900	7,900	300	1,200	264	9,000	44,714
Owerri ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Ogoja ..	—	—	—	22,100	2,200	300	21,250	25,250	2,000	—	—	—	73,100
Total, Eastern ..	—	9,650	1,250	190,100	6,700	5,050	33,150	37,150	2,300	1,200	336	9,000	295,886

SCHEDULE VI—continued

BIOLOGICAL PRODUCTS FOR THE YEAR 1ST APRIL, 1952 TO 31ST MARCH, 1953

<i>Provinces</i>	<i>Contagious Bovine P.P.V.</i>	<i>Contagious Caprine P.P.V.</i>	<i>Dried Goat Virus</i>	<i>Black- quarter Vaccine</i>	<i>Anthrax Spore Vaccine</i>	<i>Haemor- rhagic Septi- caemia Vaccine</i>	<i>Fowl Typhoid Vaccine</i>	<i>Fowl Cholera Vaccine</i>	<i>Fowl Pox Vaccine</i>	<i>Lapi- nised Rinder- pest Vaccine</i>	<i>Contagious Abortion Vaccine S.19</i>	<i>New- castle Vaccine</i>	<i>Total Doses Issued</i>
WESTERN REGION:													
Abeokuta ..	—	—	—	—	—	—	—	—	—	—	—	—	—
Benin	—	—	—	300	300	500	3,000	3,000	—	—	—	—	7,100
Colony	—	—	—	—	—	—	1,200	1,200	500	—	—	—	2,900
Ibadan	2,700	100	125	8,500	10,000	5,800	19,000	19,000	15,000	14,350	12	6,000	100,587
Oyo	900	—	—	1,900	1,900	2,000	3,800	3,800	1,600	5,050	112	—	21,062
Ondo	500	—	—	600	600	500	1,000	1,000	400	—	—	—	4,600
Warri	—	—	—	—	—	—	—	—	—	—	—	—	—
Total, Western ..	4,100	100	125	11,300	12,800	8,800	28,000	28,000	17,500	19,400	124	6,000	136,249
EXTRA TERRITORIAL													
Accra Gold Coast	112,750	—	125	—	4,600	—	—	—	5,000	8,700	—	—	131,175
French Territory	—	—	3,375	—	—	—	—	—	—	100	—	—	3,475
Gambia	100	—	—	5,600	—	—	—	—	—	—	—	—	5,700
Khartoum ..	—	—	100,000	1,000	—	—	—	—	—	—	—	—	101,000
Sierra Leone ..	—	—	—	—	7,000	1,000	5,000	5,000	—	8,000	—	—	26,000
Total Extra Territorial ..	112,850	—	103,500	6,600	11,600	1,000	5,000	5,000	5,000	16,800	—	—	267,350
Issued for work ..	34,900	50	—	—	—	—	—	—	—	—	—	—	34,950
Total	34,900	50	—	—	—	—	—	—	—	—	—	—	34,950

Grand Total = 4,706,417.

DIAGNOSTIC SERVICE RETURN, 1952-53

Rabies	24	14	7	3
Anthrax	48	10	38	—
Blackquarter	19	17	2	—
Newcastle Disease	59	30	19	10 (H.I. Test)
Tuberculosis	23	15	18	—
Parasitism	224	40	184	—
Trypanosomiasis	23	23	—	—
Piroplasmosis	12	12	—	—
Brucellosis	355	19	269	67
Water samples	108	—	—	—
Biochemical Tests	38	—	—	—
Histopathology	124	—	—	—
Faecal counts	28	—	—	—
Dip Samples	21	—	—	—
Others	4	—	—	—

The Total Number of Specimens Examined	..	..	..	1,110
--	----	----	----	-------

The following post mortem examinations were carried out:—

Cattle	..	..	..	139
Sheep	..	..	..	28
Goats	..	..	..	165
Fowls	..	..	..	545
Horses	..	..	..	1
Pigs	..	..	..	6
Dogs	..	..	..	8
Cats	..	..	..	1

SCHEDULE VIII
LIVESTOCK REGISTER
VOM LIVESTOCK INVESTIGATION CENTRE
AT 31ST MARCH, 1953

<i>Cattle</i>					<i>Sheep</i>				
Cows in milk	..	..	..	69	Ewes	..	..	..	16
Dry Cows and in Calf	..	..	..	30	Ewe Lambs	..	..	..	5
Heifers in Calf	..	..	..	9	Ram Lambs	..	..	..	4
Heifers empty	..	..	..	40	Breeding Ram	..	..	..	1
Yearlings	..	..	..	17					
Stock Bulls	..	..	..	6	Total	..	..	..	26
Under one year	..	..	..	52					
Age above yearlings	..	..	..	16					
Total	..	..	..	239					
<i>Fowls</i>					<i>Pigs</i>				
Hens	..	..	..	276	Stock Boars	..	..	..	2
Cocks	..	..	..	36	Breeding Sows	..	..	..	8
Growers	..	..	..	372	Breeding Gilts	..	..	..	6
Chickens	..	..	..	160	Weaners to Bacon weight	..	..	..	6
					Other Weaners	..	..	..	46
					Suckling Pigs	..	..	..	13
Total	..	..	..	844	Total	..	..	..	81

SCHEDULE IX

FINANCIAL ACCOUNT

1ST APRIL, 1952 TO 31ST MARCH, 1953

HEAD 46 (EXPENDITURE)

					£	£
<i>A. (i) Headquarters and Administration :</i>						
Personal Emoluments	..	..	..	..	6,371	
Other Charges	..	..	..	..	7,378	
Special Expenditure	..	..	..	..	2,924	
						16,673
<i>(ii) Laboratory Services :</i>						
Personal Emoluments	..	..	..	..	15,949	
Other Charges	..	..	..	..	14,498	
Special Expenditure	..	..	..	..	7,933	
						38,380
<i>(iii) School Services :</i>						
Personal Emoluments	..	..	..	..	6,537	
Other Charges	..	..	..	..	4,938	
Special Expenditure	..	..	..	..	1,426	
						12,901
<i>(iv) Hides and Skins :</i>						
Personal Emoluments	..	..	..	..	873	
Other Charges	..	..	..	..	412	
Special Expenditure	..	..	..	..	—	
						1,285
<i>B. (i) Development and Welfare :</i>						
Personal Emoluments	..	..	..	..	1,820	
Other Charges	..	..	..	..	5,486	
Capital Expenditure	..	..	..	..	10,090	
Special Expenditure	..	..	..	..	2,924	
						20,320
<i>C. Summary of A :</i>						
Personal Emoluments	..	..	..	..	29,730	
Other Charges	..	..	..	..	27,226	
Special Expenditure	..	..	..	..	12,283	
						69,239
Grand Total Including 'B'	..	..	..	..		89,559
Total Revenue	..	..	..	..	5,104	

APPENDIX A.

SKETCH PLAN OF THE ORGANISATION OF THE VETERINARY DEPARTMENT.

PART II.

CENTRAL MINISTER OF NATURAL RESOURCES

PERMANENT SECRETARY TO MINISTRY

INSPECTOR GENERAL ANIMAL HEALTH SERVICES

VETERINARY SECRETARY

ASSISTANT DIRECTOR

LABORATORY SERVICES

ADMINISTRATIVE ASSISTANT
VETERINARY RESEARCH OFFICERS

TECHNICIANS

PRINCIPAL VETERINARY

SCHOOL

VETERINARY EDUCATION
OFFICERS

MASTER

PRINCIPAL HIDES

IMPROVEMENT OFFICER

REGIONAL MINISTERS OF NATURAL RESOURCES

PERMANENT SECRETARIES TO REGIONAL MINISTERS

NORTHERN REGION

DIRECTOR

DEPUTY DIRECTOR

WESTERN REGION

PRINCIPAL

VETERINARY OFFICER

EASTERN REGION

PRINCIPAL

VETERINARY OFFICER

PROVINCIAL VETERINARY OFFICERS

ASSISTANT VETERINARY OFFICERS

LIVESTOCK SUPERINTENDENTS

DEVELOPMENT OFFICERS

HIDES IMPROVEMENT OFFICERS

HIDES INSTRUCTORS

HIDES INSPECTORS

APPENDIX B NOMINAL ROLL—SENIOR SERVICE

PART III

VETERINARY DEPARTMENT: 31st MARCH, 1953
 NIGERIAN HEADQUARTERS

ADMINISTRATION

Inspector-General of Animal Health

Services	R. S. Marshall, M.R.C.V.S., D.V.S.M. Dip. Bact.
Veterinary Secretary	G. H. V. Blythe, F.C.C.S.
Principal Hides Improvement Officer ..	C. J. Smith
Works Superintendent	L. A. Allard

LABORATORY DIVISION

Assistant Director of Laboratory

Services	J. K. H. Wilde, M.Sc. (Vet. Sc.) B.Sc., A.R.C.S., M.R.C.V.S.
Administrative Assistant	W. Smith
Senior Veterinary Research Officer ..	R. M. Gambles, M.A. (Hons.), B.Sc., M.R.C.V.S.
Veterinary Research Officers	A. L. C. Thorne, M.R.C.V.S. E. P. Lindley, B.Sc., M.R.C.V.S.
Veterinary Officer	J. Armour, M.R.C.V.S.
Biochemist	A. C. Field, B.V.Sc., M.R.C.V.S.
Parasitologist	R. P. Lee, M.R.C.V.S.
Senior Laboratory Technician	R. C. Early
Laboratory Technician	L. A. Noble

EDUCATION DIVISION

Principal Veterinary School	G. Williamson, O.B.E., F.R.C.V.S.
Senior Veterinary Education Officer ..	Vacant
Veterinary Education Officers	Dr W. E. Pearson, B.V.Sc., B.Sc. K. Nixon, M.R.C.V.S., B.Sc. R. H. Johnson, M.R.C.V.S., B.Sc.

DEVELOPMENT STAFF (LABORATORY)

Veterinary Research Officers	Miss M. M. Sheahan, M.Sc., M.R.C.V.S. C. R. Newing, M.R.C.V.S.
Laboratory Technician	I. Macadam, M.R.C.V.S., B.V.Sc. Vacant

Northern Region

REGIONAL STAFF

Director of Veterinary Services	S. G. Wilson, Ph.D., B.Sc., M.R.C.V.S.
Assistant Director of Veterinary Services (Personal)	G. M. Gates, M.R.C.V.S.
Senior Veterinary Officers	R. Coulthard, M.R.C.V.S. D. A. W. Walker, M.R.C.V.S. D. E. Macgregor, B.Sc., M.R.C.V.S. A. S. M. McKinnon, M.R.C.V.S.
Veterinary Officers	D. Hill, M.R.C.V.S. A. H. A. Hamilton, M.R.C.V.S. K. J. R. MacLennan, M.R.C.V.S., B.Sc. G. Calderbank, M.R.C.V.S. J. R. Knowles, M.R.C.V.S. P. W. Swire, M.R.C.V.S. D. T. Graham, D.F.C., M.R.C.V.S. J. B. Maclean, M.R.C.V.S. R. G. Erskine, M.R.C.V.S. W. B. Sparrow, M.R.C.V.S.

Veterinary Officers— <i>continued</i> ..	..	W. R. Horn, M.R.C.V.S. F. E. Trevitt, B.V.Sc. D. F. Laing, M.R.C.V.S. Four Vacancies
Assistant Veterinary Officer ..	..	Mallam Abu Mawashi, L.V.V.S. One Vacancy
Senior Livestock Superintendents ..	..	W. E. Hill One Vacancy
Livestock Superintendents ..	..	W. A. Shipwright A. G. Peters Two Vacancies
Hides Improvement Officer ..	..	A. F. W. Miller
Administrative Assistant ..	..	One Vacant
DEVELOPMENT STAFF		
Veterinary Officer ..	..	E. Krog*
Hides Improvement Officers ..	..	D. Best W. D. Mark
Development Officers (Veterinary) ..	..	H. Davies F. V. Charlesworth R. A. Plank D. H. L. Young C. E. M. Bodenham F. H. Bridge R. Coe P. D. T. Mungovan One Vacant
<i>Western Region</i>		
REGIONAL STAFF		
Principal Veterinary Officer ..	..	H. K. Littlewood, M.R.C.V.S. (Assistant Director of Veterinary Services personal)
Senior Veterinary Officer ..	..	Vacant
Veterinary Officers ..	..	A. G. Willder, M.R.C.V.S. G. D. Harris, M.R.C.V.S.
Assistant Veterinary Officer ..	..	W. O. Ndep, L.V.V.S.
Hides Improvement Officer ..	..	E. Longstaff
DEVELOPMENT STAFF		
Veterinary Officers ..	..	N. T. A. Grunnet W. Ferguson, M.R.C.V.S.
Development Officers (Veterinary) ..	..	F. W. I. Gash W. K. Heath One vacancy
<i>Eastern Region</i>		
REGIONAL STAFF		
Principal Veterinary Officer ..	..	J. McCulloch, M.R.C.V.S.
Veterinary Officers ..	..	A. D. Campbell, M.R.C.V.S. W. W. Kirkby, B.Sc., M.R.C.V.S. One vacancy
Assistant Veterinary Officer ..	..	T. A. Mbaeliachi, L.V.V.S.
DEVELOPMENT STAFF		
Veterinary Officers ..	..	One vacant
Hides Improvement Officer ..	..	J. H. Sparrow
Development Officers (Veterinary) ..	..	S. I. Paul One vacancy

L.V.V.S.—Licentiate of Vom Veterinary School.

*Danish Degree in Veterinary Science.

APPENDIX C

ESTABLISHMENT VETERINARY DEPARTMENT

<i>Senior Service</i>		<i>Junior Service</i>	
Inspector-General of Animal Health Services ..	1	Chief Clerks	2
Director of Veterinary Services	1	Assistant Chief Clerks	4
Principal Veterinary Officers	2	Senior Technical Assistants	2
Assistant Director of Laboratory Services ..	1	Senior Veterinary Assistants	2
Principal Veterinary School	1	Master	1
Senior Veterinary Officers	5	First Class Clerks	9
Senior Veterinary Research Officer	1	First Class Technical Assistants	2
Senior Veterinary Education Officer	1	First Class Veterinary Assistants	2
Veterinary Officers	27	Stenographer	1
Veterinary Education Officers	2	Library Assistant	1
Veterinary Research Officers	5	Second and Third Class Clerks	50
Biochemist	1	Second and Third Class Technical Assistants ..	14
Parasitologist	1	Second and Third Class Veterinary Assistants ..	54
Assistant Veterinary Officers	4	Senior Store Assistant, Grade II	1
Works Superintendent	1	Mechanicians	2
Senior Livestock Superintendents	2	Housemaster	1
Livestock Superintendents	4	Clerical Assistants	13
Senior Laboratory Technician	1	Stores Clerks	5
Laboratory Technicians	2	Hides and Skins Instructors	19
Principal Hides Improvement Officer	1	Craftsmen	13
Hides Improvement Officers	5	Artisans	3
Development Officers	14	Driver Mechanics	2
Veterinary Secretary	1	Motor Drivers	31
Administrative Assistants	2	Livestock Attendants, Grade I	4
Total	86	Livestock Attendants, Grade II	20
		Laboratory Attendants, Grade I	3
		Laboratory Attendants, Grade II	13
		Messengers	30
		Telephone Attendants	4
		Store Attendants	2
		Veterinary Inoculators, Grades I and II ..	26
		Microscopists	6
		Cooks, Stewards and Laundrymen	8
		Night Watchmen	5
		Total	355

PUBLICATIONS

The following is a list of some of the Government Publications which may be obtained (post free in Nigeria) from the Government Printing Department, Lagos. A complete list may be obtained gratis on application.

Money Orders and Postal Orders should be made payable to the Federal Government Printer, Lagos. Postage stamps are not accepted.

Forestry

British Empire Forestry Conference, 1947, 4s.

Geological Survey Bulletins

- No. 5—Tinfield of Nassarawa and Ilorin Provinces, *Raeburn*, 5s.
- No. 6—The Nigerian Coalfield (Section 1 Enugu Area), *Bain*, 5s.
- No. 9—The Southern Plateau Tinfields, *Falconer*; The Geology of Mama, Nassarawa, *Raeburn*; The Geology of Bauchi Town, *Bain*; 5s.
- No. 10—Eocene Fishes from Nigeria, *White*, 6s-3d.
- No. 17—Pegmatites of Central Nigeria by *R. Jacobson* and *J. Webb*, 10s-6d.
- No. 18—The Sedimentary Rocks of Sokoto Province (*Brynmor Jones*), 7s-6d.
- No. 19—The Geology of the Plateau Tinfields—Resurvey 1945-8 (*Dr Dixey*), 12s-6d.
- No. 20—The Geology of the Osi Area, Ilorin Province (*B. C. King* & *A. M. J. de Swardt*), 10s-6d.

Laws of Nigeria

- The Revised Laws of Nigeria, 1948, Limp Cloth Cover, £10-10s per set.
- Separate volumes are not sold.*
- Laws of Nigeria, 1953, Stiff Bound, 21s.

Legal

- Nigeria Law Reports, Vols. 2, 12, 19 and 20, 10s-6d each.
- West African Court of Appeal, Selected Judgments, Vols. 2, 7, 8 and 11, 10s each.

Medical

- Care and Treatment of Lunatics, 5s.
- Nutrition in the Colonial Empire—Part I, *McDonald*, 3s. Part II, *McDonald*, 2s-6d.

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- A Guide to Posts in the Permanent Establishment of the Senior Service of Nigeria. Price 3d per copy:—
- N.S.S. 1. General Conditions of Service.
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Companies Ordinance Forms 1 to 7 and Forms 1F to 7F, 1s each.

Customs Order-in-Council (Legal Notice No. 97), 6d.

Eastern Region Scholarship Scheme of 1952, 6d.

General Orders (Buckram Covers), £3.

Northern Region Provincial Annual Report, 1951, 9d.

Policy for Local Government and Co-operative Societies, S.P.4/1953, 6d.

Policy for Medical and Health Services, S.P.2/1953, 6d.

Policy for Public Works, S.P.8/1953, 6d.

Policy for Survey, S.P.5/1953, 6d.

Ten-Year Education Plan, 2s.

Public Records

Preservation and Administration of Historical Records and Establishment of Public Records Office in Nigeria, 9d.

Progress Report on Local Government in Northern Region, 1s-6d.

Report on the Highways of Nigeria, 9d.

Road Guide of Nigeria, 10s.

Speech and Address by His Honour to the Eastern House of Assembly, Feb. 1952, 1s.

Speech by His Honour the Lieutenant-Governor to the Eastern House of Assembly, Jan. 1953, 6d.

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