

NLS 577 Section 45 (Vet med)

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## Table of Contents

	<u>Peru</u>	<u>Page</u>
A. General		1
B. Environmental factors affecting health		2
1. Topography and climate		2
2. Socio-economic pattern		2
3. Animal and plant life		3
a. Animal		3
(2) Flies		3
(5) Ticks and mites		3
(7) Mollusks		3
(8) Worms		3
4. Nutrition		3
c. Food sanitation, storage and technology		3
C. Diseases		4
2. Diseases of animals		4
a. Prevalent animal diseases		4
(1) Rabies		4
(2) Anaplasmosis		4
(3) Foot-and-mouth disease		5
(4) High altitude (brisket) disease		5
(5) Brucellosis		5
(6) Tuberculosis		5
(7) Streptococcus pyogenes infection of Alpacas		6
b. Other important animal diseases		6
D. Veterinary organization and administration		6
1. Civilian		6
a. Organization		6
b. Legal controls		8
(1) Licensure		8
(2) Quarantine		8
(3) Inspection		8
c. Professional veterinary organization		9
d. Veterinary research		9
f. Emergency veterinary services		9
2. Military		9
E. Veterinary manpower		9 50X1

[Redacted]

50X1

	<u>Page</u>
<b>F. Veterinary facilities</b>	<b>11</b>
<b>G. Veterinary supplies and materials</b>	<b>11</b>
<b>H. Reference data</b>	<b>12</b>
<b>I. Comments on principal sources</b>	<b>12</b>
<b>1. Evaluation</b>	<b>12</b>
<b>2. List of sources (in order of importance)</b>	<b>12</b>

**Figure 1: Organization of the Veterinary Services in Peru - 1961.**

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## NIS 88 - Section 15

Peru

## A. General

Peru's deficiencies in animal production create serious human nutritional problems as well as imposing a heavy economic burden through the forced import of livestock and livestock products. With a rapidly expanding human population, increasing difficulties can be anticipated unless animal losses from disease can be reduced and livestock production markedly increased.

Peru's difficulties in efficient livestock production and its complex animal disease problems stem from an inadequate and inefficient veterinary service, varied and difficult terrain, as well as a lack of fodder and supplemental feed.

The Indian population in the Andean and Upper Amazon areas is largely illiterate and not disposed to accepting government assistance in healthful management of its herds and flocks. Furthermore, transportation and communication in these areas are primitive and slow.

Although facilities for diagnosing and handling animal diseases are expanding, the problem of staffing such units with qualified veterinarians or technicians remains a serious obstacle.

Most of Peru's currently available arable pasture land is overstocked and future increases in animal production are dependent on the opening and development of new grazing areas in the eastern slopes of the Andes or in the tropical Amazon Basin. Progress in such areas, always slow, depends on a joint approach, including efficient disease and parasite control and livestock management.

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Peru's budget allotments for animal disease control and veterinary public health programs, although supplemented by funds from the Servicio Cooperativo Inter-Americano Produccion de Alimentos, as well as by technical assistance provided by specialized agencies of the United Nations, are inadequate to carry out the necessary programs. Future progress is dependent on the availability of supplemental funds through the international development loan schemes now in planning stages.

To gain maximum benefit from the livestock development programs and the animal processing installations now underway a great deal of improvement in animal health and sanitary processing and distribution of animal products is essential. 1/ 2/ 8/ 10/ 13/ 16/ 23/ 28/ 34/ 41/ 42/

#### B. Environmental factors affecting health

1. Topography and climate -- Peru's extremely varied climatic and topographical character, ranging from coastal desert, wooded alluvial valleys of the mountain slopes, the alta-plano (high mountain plains - 8,000 to 12,000 feet), to the tropical Amazon basin area east of the Andes, create a greater diversity of animal health and production problem than exists in almost any other Latin American country. High temperatures in the coastal and Amazon areas creates heat tolerance and parasitic problems. Livestock in the mountain slope areas are plagued by liver fluke and lung-worm infestation. The Andean highlands, with scant pastures, fail to provide nutritional requirements and the extreme altitude results in respiratory disorders and a circulatory disease in cattle. Furthermore, all but the narrow coastal areas are comparatively inaccessible for regular veterinary services. 1/ 2/ 4/ 16/ 23/ 26/

2. Socio-economic pattern -- The predominantly illiterate Indian population in Peru's highland areas fails to seek assistance in control of animal diseases and are

CONFIDENTIAL

-2-

CONFIDENTIAL

unable to recognize the public health significance of many serious animal diseases and parasitic conditions. Primitive conditions in remote villages and mountain camps makes carrying out regular animal health work extremely unattractive to Peruvian veterinarians.

1/ 4/ 16/ 23/

### 3. Animal and plant life

a. Animal -- Numerous animal parasites cause serious livestock losses and some are major public health problems.

(2) Flies -- Hypoderma spp. are serious irritating pests, particularly of cattle, and the migrating larvae cause extensive hide damage.

(5) Ticks and mites -- Sarcoptes scabiei and Psoroptes ovis, mange mites, are common in some regions in sheep causing considerable wool loss.

Boophilus microplus is the main vector of piroplasmosis and anaplasmosis.

Boophilus decoloratus has also been identified.

(7) Mollusks -- Limnaea truncatula is the intermediate host of fasciolae.

(8) Worms -- Fasciola hepatica is the common liver fluke of sheep and goats.

Dictyocaulus filaria and Dictyocaulus viviparus cause verminous pneumonia in sheep and goats and in cattle, respectively.

Echinococcus granulosus is common in canines with a concurrent high rate of hydatid cysts in domestic animals and man.

1/ 2/ 4/ 8/ 23/ 24/ 27/

### 4. Nutrition

c. Food sanitation, storage and technology -- Adequate refrigerated storage facilities and transport equipment are still not sufficient for the growing demands for sanitary and preservative handling of livestock products. However, beginning in 1960, two modern cold storage and slaughterhouses, each capable of handling

CONFIDENTIAL

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50,000 cattle per year, were established in southern Peru. Most of the meat produced is marketed in Lima. Lima itself also has modern slaughter and storage facilities, but the latter, particularly, is deficient for the metropolitan requirements.

Interest in planning new slaughter facilities and in improving existing ones throughout the provinces is reported. To date more than 20 such plants have received assistance from international technical assistance missions. Despite these relatively recent developments, the marketing and distribution of meat and milk is still unhygienic in many areas. (See III-b for sanitary regulations.) <sup>2/1/8/16/28/31/</sup>

### C. Diseases

2. Diseases of animals -- Peru's animal disease problems are manifold, partly as a result of the extreme geographical variety of conditions under which its livestock is raised and partly as a result of the inaccessibility of many parts of the country.

#### a. Prevalent animal diseases

(1) Babesiosis -- Babesiosis (piroplasmosis) is probably the most serious animal disease in Peru. While little differentiation of the various babesiae has been accomplished in Peru, B. bigemina is the most significant. The disease accounts for large losses in imported animals and their progeny and produces serious debility in indigenous stock. It is definitely a major limiting factor in the development of a livestock industry in tick infested areas such as the eastern slope of the Andes. Very little regular, supervised work has been done to control ticks, the vector of the disease, and the exposure of relatively insusceptible young animals to produce immunity is haphazard or neglected.

(2) Anaplasmosis -- Probably less serious, but nevertheless of great economic importance, is anaplasmosis. This disease, transmitted by several biting

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insects, including the ubiquitous ticks, as well as through careless animal inoculation where the disease is introduced via contaminated hypodermic needles or other means. Rapid development of the cattle industry is hindered to a significant extent by the extreme susceptibility of imported European-type cattle to this disease as well as to piroplasmosis.

(3) Foot-and-mouth disease -- According to recent reports, three virus types of foot-and-mouth disease have been reported in Peru. Multiplicity of types always complicates control since it is necessary to use a polyvalent vaccine which produces a more limited immunity than monovalent or bivalent types. Serious losses in production occur in dairy cattle, and in high altitude areas foot-and-mouth disease is some times complicated by brisquet disease.

(4) High altitude (brisquet) disease -- A circulatory condition known as high altitude disease (brisquet disease in North America) causes extensive losses among cattle grazed at high altitudes (7500 - 10,000 feet). Sheep and horses are less frequently affected. Animals suffer dyspnea, weakness and cardiac hypertrophy, eventually succumbing to cardiac insufficiency. The most prominent and striking symptom is an edematous swelling in the sternal region.

(5) Brucellosis -- The incidence of brucellosis in cattle is increasing in Peru, particularly in the dairy regions in the irrigated river valleys of the coastal area where the incidence varies from 10 to 25 percent in different herds. No official regulatory program for its control exists and the disease is a serious human health threat in the areas where raw milk or milk products are consumed.

(6) Tuberculosis -- Bovine tuberculosis is common among dairy herds. In one area of investigation involving over a thousand animals, 19.6 percent of the animals showed positive reaction to the intradermal test. While it has been estimated that

CONFIDENTIAL

between 25 and 50 percent of human tuberculosis cases are of bovine origin, a comprehensive survey to identify strains has not been attempted. Likewise, no significant information is available on the relative degree of pulmonary or intestinal bovine infection in humans.

(7) *Streptococcus pyogenes* infection of Alpacas -- An unusual disease, characterized by high temperature and the formation of multiple abscesses throughout the body, is fairly common amongst the valuable Alpacas of the highlands. Streptococcus pyogenes is generally isolated from the abscesses and, according to at least one researcher, is considered the causative agent. Losses from this disease are estimated as 17.4 percent of the total mortality among these animals.

b. Other important animal diseases -- Other important diseases among cattle and sheep are anthrax, gastro-intestinal parasitism and lungworm infestation. Sheep are also affected by enterotoxemia, mange and bacillary dysentery. Rabies is prevalent among canines and infection in domestic farm animals is not uncommon. During the period 1958 through 1960 there was a significant increase in rabies reported in animals from 297 to 553. Leptospirosis has been identified in a number of domestic animals as well as in

1/ 2/ 4/ 8/ 27/ 29/ 32/ 42/  
rats.

#### D. Veterinary organization and administration

##### 1. Civilian

a. Organization -- Veterinary organization in Peru is relatively complex for a country its size. While the basic national veterinary system is the responsibility of the Ministry of Agriculture, separate units operate within the Ministry of Public Health and Social Assistance, as well as in the Servicio Cooperativo Inter-Americano de Produccion de Alimentos (SCIPA). The latter is presently being integrated in the Ministry of Agriculture as the Servicio de Investigacion y Promocion Agricola (SIPA). Although veterinary functions within (SIPA) are being expanded to

Figure 1

CONFIDENTIAL

-6-



CONFIDENTIAL

include investigation, research and extension, the Ministry through its Division of Livestock and the various subsections retains responsibility for biological production, regulatory services, inspection and quarantine services, and certain animal health field programs. The Ministry of Public Health and Social Assistance has set standards for meat, milk and other food inspection, but the actual inspection is performed by veterinarians in municipal veterinary service and the Ministry of Agriculture. The Ministry of Public Health and Social Assistance also has responsibility for investigation and control of certain zoonotic diseases, while other diseases such as bovine tuberculosis and brucellosis are the responsibility of the Ministry of Agriculture.

Two separate institutions, the National Institute of Animal Biology (Instituto Nacional Biologico Animal), Lima (12 - 038 - 77-03W), and the National Foot-and-Mouth Disease Institute (Instituto Nacional Antioftosa), Lima, are concerned with disease diagnosis and biological production. These institutes will undoubtedly retain semi-autonomous status and remain administratively the responsibility of the Director General of Livestock within the Ministry of Agriculture.

At regional level both the Ministry of Agriculture and the newly formed SIPA maintain veterinary services through agricultural field offices.

The University of San Marcos Veterinary Faculty, Monterrico, Lima, in addition to its veterinary educational responsibilities is engaged in animal disease research and investigation on a national scale.

According to recommendations contained in a joint report on Agricultural Development of Peru by the Food and Agriculture Organization of the United Nations and the International Bank for Reconstruction and Development, the entire activities falling under jurisdiction of the newly formed SIPA will be subject to review and recommendation

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of a National Advisory Council associated with the Ministry of Agriculture.

The funds for operating the various veterinary programs in Peru are derived from many different sources, including United States matching funds for SIPA and contributions of international agencies and philanthropic organizations. Furthermore, financing overlapping activities in the fields of animal husbandry and breeding schemes are not sharply defined and hence it is impossible to provide a realistic estimate of expenditures for veterinary activities. <sup>2/ 1/ 8/ 10/ 16/ 30/ 31/ 41/ 42/</sup>

b. Legal controls

(1) Licensure -- A degree Medico Veterinario from the Faculty of Veterinary Medicine, San Marcos University, Lima, Peru, is required for licensure to practice or for veterinary employment in Peru. In special circumstances graduate veterinarians of foreign institutions are also licensed. <sup>2/ 42/</sup>

(2) Quarantine -- A host of legislative decrees, regulations or laws govern the import and internal distribution of animals or products of animal origin, including sea food. The principal law governing inspection of internally produced food products is Law No. 8124 (1935), providing authority to the Ministry of Public Health and Social Assistance to inspect foodstuffs of animal origin. <sup>2/ 8/ 42/</sup>

(3) Inspection -- Veterinary inspection of meat products and milk have improved considerably in recent years with the improvement and development of new processing facilities. Veterinarians employed by the Ministries of Agriculture and Public Health and Social Assistance, as well as those employed by municipalities, are engaged in active food inspection. The Ministry of Agriculture also conducts inspection service for fish and fish products in the Lima area. Processing and distribution of meat and milk in rural areas is largely unsupervised. <sup>2/ 8/ 42/</sup>

CONFIDENTIAL

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c. Professional veterinary organization -- Virtually all of Peru's veterinarians are members of the Peruvian Veterinary Medical Association (Asociacion de Medicos Veterinarios del Peru), which seeks to protect the interest of the profession and improve veterinary standards within the country.<sup>2/</sup>

d. Veterinary research -- Veterinary scientific activities termed research in Peru are, in fact, more in the nature of disease and parasite investigations. The recent development of the new veterinary school with completely modern facilities, coupled with strong financial and technical assistance of international organizations, such as the Pan American Health Organization and the United Nations Food and Agriculture Organization, provides a basis for current advances in veterinary technology and research. Emphasis is being placed on studies of animal behavior related to high altitudes and to expanded veterinary public health investigations.<sup>1/ 2/ h/ 10/ h2/</sup>

f. Emergency veterinary services -- No organized emergency veterinary medical services have been established.

2. Military -- The Peruvian army includes a veterinary service (Servicio Veterinario) composed of about twenty personnel under the direction of a Major who is a veterinarian. The service is chiefly concerned in food inspection and procurement for the armed forces. Some research in food hygiene is undertaken at the Veterinary Faculty of the University of San Marcos under direction of the veterinary military commanding officer who is also a member of the Faculty.<sup>2/</sup>

B. Veterinary manpower -- Peru has a total of 370 qualified veterinarians. Distribution is shown below.

-9-

CONFIDENTIAL

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Veterinarians in Peru<sup>1</sup>

State Services	
Field services	90
Public health services	10
Laboratory and research services	20
Total	<u>120</u>
Private practice or other activities	
Private practice	130 <sup>2</sup>
Laboratory or research work	120 <sup>3</sup>
Total	<u>250</u>
Teaching	
Full-time teaching	13
Part-time teaching	22
Total	<u>35</u>

1. The discrepancy in total numbers of veterinarians shown in the chart with the total registered is a result of dual activity of a part of the profession. For instance, military veterinarians (not listed), including the Corps Commandante, hold other positions.
2. About 50 private practitioners are engaged in part-time state or municipal services.
3. Most veterinarians included in this category are employed in or operate private veterinary pharmaceutical plants and veterinary biological or pharmaceutical agencies.

The approximate ratio of veterinarians to livestock is 1:62,700 or to bovines 1:9,000 compares favorably with that of most other Latin American countries, but is far out of line with that of North American countries where the approximate ratios are one veterinarian to each 9,000 head of livestock or one to each 5,000 head of bovines.

Peru completed construction of a new Veterinary Faculty, San Marcos University, in 1960, and the rate of matriculation will gradually increase. However, it will be several years before sufficient qualified veterinarians are available to significantly expand services to the livestock industry. The quality of veterinary education and training in Peru is considered well above that in most other Latin American countries, and several international agencies and foreign philanthropic organizations are actively supporting the veterinary faculty in order to stimulate improved veterinary educational standards throughout the area. 1/ 2/ 8/ 10/ 42/

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**F. Veterinary facilities**

In addition to the modern and adequate veterinary research, clinical and diagnostic facilities of the new Veterinary Faculty, several other veterinary laboratories and diagnostic institutions perform useful functions in Peru.

The National Animal Biology Institute, Camillo Carrillo 404, Lima, produces the major part of Peru's animal biological requirements. Over a period of years it has installed considerable modern, medium volume production equipment and has expanded its diagnostic facilities.

The National Foot-and-Mouth Disease Institute, Barranco, Lima, is a small modern unit, designed solely for foot-and-mouth disease vaccine production and virus typing. It is capable of producing all of Peru's foot-and-mouth disease requirements, even for an intensive vaccination program. In past years, it has seldom operated continuously or at maximum capacity since regular or extensive field vaccination programs have not been conducted.

In addition to these basic veterinary facilities, the Agricultural Experiment Station and the regional extension service offices have facilities and equipment for routine diagnostic work.

Several commercial veterinary concerns, including some foreign firms, have established veterinary pharmaceutical plants in Lima.

Mobile veterinary units in rural areas are being developed but many areas of the country are still without regular organized veterinary service facilities. 1/2/4/8/10/16/42/

**G. Veterinary supplies and materials**

Peru is capable of producing essentially all biologicals required in the country, but still must import antibiotics and raw materials for veterinary pharmaceuticals.

-11-

CONFIDENTIAL

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The plants now in operation are fulfilling the present needs of the existing veterinary programs and production can be expanded if larger scale animal health programs are adopted. 1/ 2/ 4/ 10/ 16/ 22/

H. Reference data -- Not included in this report.

I. Comments on principal sources

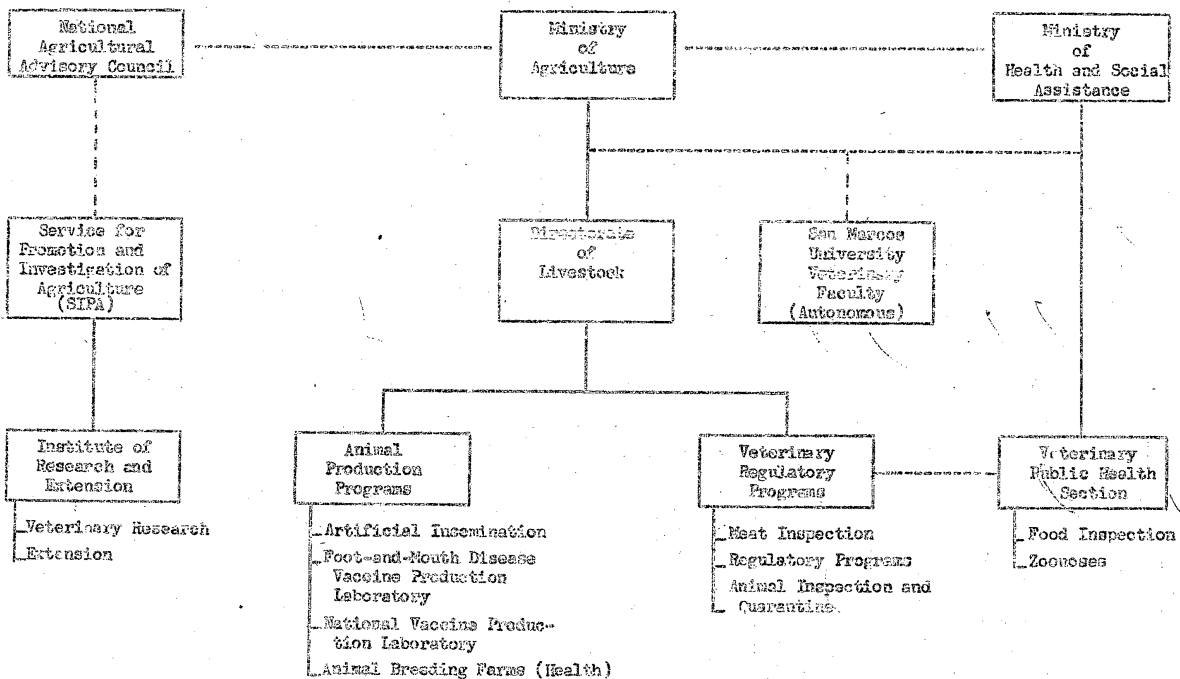
1. Evaluation -- General material on the incidence of animal diseases and the activities of veterinary services is quite adequate. Detailed information on disease incidence rates, and specific duties and functions of veterinary units is lacking simply because adequate investigations are lacking and the discipline over services is lax. The information on veterinary legal aspects are confused by the conglomeration of legislation that has been enacted without reference to or repeal of previous regulations and decrees. References to veterinary manpower and education, as well as to veterinary material and facilities are quite adequate.

2. List of sources (in order of importance)

- (1) Veterinaria y Zootecnia (Magazine of Veterinary Science and Animal Husbandry). Various issues. Lima. Publicaciones Agropecuarias, S.A. 1959-1960. (Unclassified)
- (2) United Nations, Food and Agriculture Organization. Report of the International Meeting on Veterinary Education. Held in London 25 to 30 April 1960. Rome. April 1960. (Unclassified)
- (3) The Agricultural Development of Peru. Washington, D. C. Food and Agriculture Organization of the United Nations/International Bank for Reconstruction and Development. August 1959. (Unclassified)
- (4) United Nations, Food and Agriculture Organization/Office of International Epizootics. FAO/OIE Animal Health Yearbook 1960. Rome. 1961. (Unclassified)
- (5) Ramos, S., Dr. Teodoro. "Aspects Zosanitaires du Perou," (Zoo-sanitary Aspects in Peru). Bulletin de L'Office International des Epizooties (Bulletin of the Office of International Epizootics). vol. LVI. Paris. May 1961. (Unclassified)

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Figure 1: Organization of the Veterinary Services in Peru - 1961.



Sources: 1, 2, 4, 6, 10, 16, 18.

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NIS 94, Sec 45-  
50X1  
US Dept of Agric

Table of Contents

Brazil

Page

A. General	1
B. Environmental factors	1
1. Topography and climate	1
2. Socio-economic pattern	2
4. Nutrition	2
c. Food sanitation	2
C. Diseases	3
2. Diseases of animals	3
(1) Foot-and-Mouth disease	3
(2) Hog cholera	3
(3) Brucellosis	4
(4) Anthrax	4
(5) Anaplasmosis and piroplasmosis	4
(6) Equine encephalomyelitis	4
(7) Newcastle disease	4
(8) Parasites	5
(9) Other diseases	5
D. Veterinary organization and administration	5
1. Civilian	5
a. Organization	5
b. Legal controls	7
(1) Licensure	7
(2) Quarantine	7
(3) Inspection	8
c. Professional veterinary organizations	8
d. Veterinary research	8
2. Military veterinary organization	9
E. Veterinary manpower	9
a. Distribution	9
b. Training	10
F. Veterinary medical facilities	10



50X1

	<u>Page</u>
G. Veterinary supplies and material	11
H. Reference data	12
I. Comments on principal sources	12
1. Evaluation	12
2. List of sources (in order of importance)	12

Figure 1: Location of Agriculture and Veterinary Colleges in Brazil.

Master Bibliography



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## A. General

Brazil has a larger livestock population than any other Latin American country. Despite this numerical superiority, the output of livestock products is less than that of Argentina because of less effective animal disease control, poorer livestock management and indiscriminate breeding practices. Lack of<sup>a</sup> sufficient number of qualified veterinarians, poorly organized veterinary services and a failure to establish or enforce control regulations are contributing factors to severe livestock losses from disease and parasitism. Efforts toward effective animal disease control have been generally confined to the herds of a few progressive cattle raisers in the southern Brazilian states. Adequate sanitary supervision of livestock products is carried out only in the export slaughterhouses (frigorificos) and a few of the major municipal abattoirs. A substantial volume of meat is processed under completely unsanitary conditions and loss through spoilage is high.

The government recognizes the lack of attention to animal disease control and food sanitation, and has recently sought the assistance of international organizations to recommend progressive veterinary programs and to advise on improvement in veterinary educational standards. 1/ 2/ 3/ 4/ 6/ 16/

## B. Environmental factors

1. Topography and climate -- The expansion of the livestock industry in areas other than the coastal plain and the southern zone is restricted by the high incidence of

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diseases and parasites in the humid tropical climate of the Amazon Basin and the drought areas in the north. Inaccessibility to markets also tends to confine production to areas nearer population density. 4/ 12/ 31/

2. Socio-economic pattern -- With the exception of a relatively few wealthy large landowners, livestock raisers know little about the possibilities for animal disease prevention or control. The government has not conducted significant extension programs in this field and veterinary services have not penetrated into the remote livestock producing areas.

The low income level of the major portion of the population and prevailing high production costs limits the consumption of livestock products, particularly that of reasonably high quality fresh meat and milk. Particularly in rural areas lack of refrigeration and adequate transport has resulted in the widespread use of the sun dried beef called "charque," generally produced under extremely unsanitary conditions from low quality animals. 3/ 4/ 12/ 31/

#### 4. Nutrition

c. Food sanitation -- Facilities and supervision for sanitary meat processing were maintained at about 21 export slaughterhouses (frigorificos) and a few municipal slaughterhouses in the larger urban areas in 1957. Most rural slaughterhouses and nearly all of the 70 "charquesades" (dried meat plants) in Brazil do not maintain reasonable standards of hygienic production. Some improvement has recently been achieved through enforced reconstruction of buildings and equipment. Except in a few retail markets catering to high class trade, there is little attempt to handle meat in a sanitary manner. 12/ 17/ 32/

CONFIDENTIAL

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## G. Diseases

2. Diseases of animals -- Both the number of animal diseases and, in most cases, their incidence, in Brazil is as high or higher than in other Latin American countries. The majority of livestock producers are either unaware of modern disease and parasite control procedures or will not undertake measures to improve conditions for their animals. The veterinary services are generally ineffective. Regulations to eradicate or eliminate the spread of diseases have either not been enacted at all or the ones that have been enacted have not been enforced. These factors are major causes for Brazil's failure to achieve production necessary to maintain normal consumption rates for its increasing population and to take full advantage of a profitable export market. 3/ 4/ 5/ 10/ 11/ 12/ 13/ 14/

(1) Foot-and-Mouth disease -- Foot-and-mouth disease is endemic over all the major livestock producing areas of Brazil. Three types (O-A-C) occur regularly and mixed infections with these immunological separate types have been reported in some outbreaks. Two government laboratories prepare over 5 million doses of vaccine each year but this is insufficient for effective control. The lack of susceptible animals for growing virus for vaccines has largely been overcome by recent introduction of the tissue culture technique now in use in Europe. Foot-and-mouth disease is particularly serious in its debilitating effect on cattle. A large share of government or state funds allocated for animal disease control are expended on the programs intended to control foot-and-mouth disease, particularly in dairy herds. 10/ 11/ 12/ 13/

(2) Hog cholera -- Hog cholera results in serious losses annually in Brazil. Vaccination, using the Crystal Violet-type vaccine, has reduced infection in some areas, and the more effective attenuated virus vaccines are gradually being introduced. 10/ 12/

CONFIDENTIAL

(3) Brucellosis -- A few regional investigative surveys for bovine brucellosis reveal incidence as high as 15 percent. The State of Sao Paulo is the only area that has attempted a serious eradication program, and the original plan of eliminating reactors has given way to a less effective vaccination plan because of the inability to finance an indemnification for slaughtered reactors. State and Federal veterinarians cannot agree on a coordinated control procedure and there is little hope that this disease can be brought under effective control. 5/ 10/ 12/

(4) Anthrax -- Anthrax occurs sporadically in most areas of Brazil. Progressive cattle raisers vaccinate regularly, and the Federal or State governments attempt to provide veterinary service to the less developed areas when outbreaks occur. 10/ 21/ 22/

(5) Anaplasmosis and piroplasmiasis -- Both of these protozoan blood diseases are serious among imported cattle other than zebu types. Dairy cattle are generally treated regularly to eliminate ticks, which are the vectors, and drugs to combat the infection are available. 10/ 12/ 23/

(6) Equine encephalomyelitis -- Equine encephalomyelitis, principally affecting horses, occurs frequently, particularly in the Northern zone. It is highly virulent and considered of considerable importance because humans are occasionally affected. Vaccination is carried out when outbreaks occur, but well-planned preventive programs are not undertaken. 10/ 29/

(7) Newcastle disease -- Recent advances in an expanding poultry industry have stimulated considerable concern over the effects of Newcastle disease. Concentrated poultry production, installations are endangered unless regular effective vaccination is carried out. The government laboratories are currently producing sufficient quantities of vaccines for industrial poultry production but the lack of application

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of vaccine in the small farm flocks results in serious losses. <sup>10/ 25/ 30/</sup>

(8) Parasites -- Both internal and external parasitism affect Brazilian livestock so extensively that a classification according to relative significance is impossible. An external parasite of major importance is Dermatoba hominus; the larval stage causes debility through irritation in its migratory movement in the animal and seriously reduces the value of hides through the effect of its emergence through the skin. Ticks, beside being vectors of animal diseases, are responsible for irritation that reduces animal growth and development efficiency. They are also responsible for causing serious hide damage. Psoroptic and other types of mange in sheep are common and cause loss in meat and wool production. The more progressive farmers conduct spraying or dipping programs to reduce infestation, but the rational use and rotation of insecticides is not well developed in most areas.

Internal parasites are as important a source of livestock losses as external parasites and some, such as Echinococcus, Cysticercus, and Trichinella, are responsible for human infestation. In a recent survey among sheep, it was estimated that parasitic infestation resulted in at least 40 percent loss in the wool yield alone. The Brazilian livestock industry has not established mass treatment procedures for parasite control except in a few areas. <sup>3/</sup>

(9) Other diseases -- Other important diseases are calfhood enteritis, pasteurilosis and blackleg in cattle; strangles, tetanus and mange in horses; and foot rot, mastitis and deficiency diseases among sheep. <sup>10/ 12/ 21/</sup>

#### D. Veterinary organization and administration

##### 1. Civilian

a. Organization -- Two departments, the National Animal Production and the

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National Veterinary Education and Research Departments, directed by the Ministry of Agriculture, are responsible for the Federal veterinary services in Brazil. The National Animal Production Department, headed by a director general, is made up of five divisions: (1) Development of Animal Production, responsible for breeding and animal husbandry; (2) Hunting and Fishing, charged with wildlife conservation; (3) Inspection of Products of Animal Origin, chiefly concerned with inspection of export products; (4) Field Services, intended to control epidemic diseases and conduct investigations; and (5) Institute of Animal Biology, which produces biologics not normally produced by commercial concerns and conducts a limited amount of research and disease diagnosis.

The Department of Veterinary Education and Research, also headed by a director general, is responsible for the national veterinary, animal husbandry, and technical education. This Department establishes uniform standards for veterinary education in all Brazilian veterinary schools and conducts research in conjunction with the divisions and laboratories of the Department of Animal Production. <sup>1/ 3/ 6/ 10/</sup>

Various states have veterinary services organized in much the same manner as those of the Federal government. Some of the less developed states rely entirely on the Federal Services. Cooperation between State and Federal services has not been well established, and this has resulted in inefficient disease control planning and occasionally the development of conflicting policies. <sup>4/ 5/ 6/</sup>

A few major municipalities provide veterinary services chiefly concerned with meat and milk sanitation. <sup>6/</sup>

Almost every section of Federal and State services consistently fail to obtain adequate funds to effectively carry out the scheduled veterinary programs. Recent inflationary trends curtail still further the money available for necessary projects. <sup>1/3/4/5/</sup>

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In a vast unexploited area, comprising the drainage basin of the Amazon, recommendations for organizing a veterinary service under the Superintendency for the Plan of Economic Development of the Amazon (Superintendencia do Plano de Valorizacao Economica Amazonia - SPVEA), are being considered. This service, under a Chief Veterinarian, would be comprised of six sections: (1) veterinary diagnosis and vaccine laboratories, (2) veterinary field services, (3) artificial insemination service, (4) personnel instruction service, (5) food inspection service, (6) veterinary police service.

Influential cattle producers and various cattlemen's associations exert a powerful influence on the veterinary services of Brazil, and their actions frequently adversely affect the operation of necessary disease control programs. Pressure from these sources has led to the abandonment of such programs as regional brucellosis control, the dangerous relaxation of animal import and quarantine requirements, and the failure to control the movement of livestock from infected premises.

b. Legal controls

(1) Licensure -- Veterinary graduates receiving the degree of "Veterinario," signed by the college director and the secretary of the college and registered by the Superintendency of Agricultural and Veterinary Instruction (Superintendencia do Ensino Agricola e Veterinario - SEAV), are legally qualified for government or private employment.

(2) Quarantine -- The Ministry of Agriculture requires health certification for animals and some animal products being imported, plus notification of arrival twenty-four hours prior to entry. Regulations are amended according to the discretion of the Ministry. An international quarantine station on the island of Fernando de Noronha,

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for export and import of animals in the area, has been proposed, and delegates to Inter-American Meetings on Livestock Production have recommended studies on the advisability and feasibility of such an installation. Brazil has made use of this station in quarantining imported animals for national distribution but there have been frequent breaches of Brazilian regulations regarding importation and quarantine. Quarantine of diseased premises within the country has been imposed, but in most cases these measures have not been effectively implemented. 12/ 13/ 23/ 30/

(3) Inspection -- Effective meat inspection is carried out only in export slaughterhouses and a few major municipal abattoirs. 12/32/

c. Professional veterinary organizations

The Brazilian Society of Veterinary Medicine (The Sociedade Brasileira de Medicina Veterinaria) represents the profession at the national level and publishes a quarterly bulletin. The major livestock producing states have active veterinary associations, the Sao Paulo Society of Veterinary Medicine (Sociedade Paulista de Medicina Veterinaria) / <sup>being</sup> the most notable. Brazilian veterinarians are active participants in the Pan American Veterinary Congress. 10/ 21/ 32/

d. Veterinary research

Veterinary research in Brazil has reached a comparatively high quality level among Latin American countries despite deficiencies in educational standards, an inadequate number of research facilities, and the lack of a regular appropriation of sufficient funds. This anomaly is a tribute to the individual researchers who have by personal effort risen above the adverse circumstances that afflict the profession.

Research in animal virus tissue culture propagation and serological studies compare favorably with research of other countries. Toxicology of certain plants has received considerable research attention and systematic identification of parasites

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has not been ignored. Unfortunately, the application of research toward improved livestock production has not been achieved because of ineffective veterinary organization and economic conditions which have stifled the development of field programs. 1/ 3/ 4/ 6/ 11/ 12/ 21/

## 2. Military veterinary organization

The Remount and Veterinary Service (Servicos de Remonta e Veterinaria) of the Ministry of War, directed by a Brigadier General, has become considerably more important than similar services in other Latin American countries, because the Brazilian armed forces maintain a number of livestock farms to supply animal food products for its troops. Duties of the veterinary service include food inspection, animal care and disease prevention, and equine breeding for mounted and transport service. Several Brazilian officers have attended the armed forces veterinary food inspection schools in the United States. 10/

### E. Veterinary manpower

a. Distribution -- At least 85 percent of the approximately 1500 veterinarians in Brazil are employed in the Federal or State government services and institutions. Most of the remainder are engaged by biological firms or other private industries interested in livestock production. Private practice is negligible. The ratio of veterinarians to livestock units (1:50,000) is clearly far below reasonable standards for effective animal care and disease prevention. This lack of attention to animal health is further complicated by an inequitable distribution of veterinarians resulting in irregular or neglected veterinary service in remote and currently undeveloped livestock producing areas. The Brazilian government has not provided significant incentives for personnel to endure unfavorable living conditions in these remote areas; therefore, most veterinarians

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obtain employment in institutions or colleges in metropolitan areas. Efforts are being made to increase the selection of rural youths for admission to veterinary schools in hopes that they will return to their native locality after graduation. <sup>1/ 2/ 3/ 8/</sup>

b. Training -- Eight veterinary colleges are strategically located in seven of the most populated and culturally advanced states, with the majority situated in the currently important livestock producing areas. Although all of these Federal and State operated colleges are required to conform to the "minimum superior college standards" established in 1943, the interpretation of criteria for conformity, with the exception of curricula, varies considerably. Clearing differences exist in teacher-student ratios, clinical facilities, laboratory equipment, and operational budgets. In all but three schools, the veterinary student enrollment is far below the optimum number for economical veterinary education. The four-year curricula offered in Brazilian schools, in addition to overemphasis of theoretical aspects of subject matter, is too short to provide adequate veterinary education according to modern standards. Surveys and recommendations have been made to improve veterinary educational facilities, teaching techniques, and financial support; but response by Federal or State government has been slow. It will apparently be some time before veterinary educational institutions will be in a position to provide more adaptably trained personnel in sufficient numbers to improve significantly the animal health care and disease prevention. Opportunities for advanced training are few, and most veterinarians who receive such education are absorbed by veterinary colleges as teachers. <sup>1/ 2/ 3/ 8/ 9/</sup>



Fig. 1

#### F. Veterinary medical facilities

Few facilities to provide veterinary care or diagnostic services exist other than those of the educational institutions and the biological production laboratories.

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Veterinarians are forced to rely largely on clinical diagnosis in identifying diseases and parasitism in most areas. Recommendations by various survey groups to establish rural diagnostic centers and a modest water-borne mobile laboratory in the Amazon region have not resulted in positive action.

The most significant development in providing veterinary facilities in recent years was the establishment of the Panamerican Foot-and-Mouth Disease Center near Rio de Janeiro. This internationally supported institution has made useful contributions to the investigations of vesicular diseases and to the training of veterinarians, as well as serving as a pilot project for the preparation of more effective vaccines for the region. 3/ 4/ 10/ 11/ 12/

#### G. Veterinary supplies and material

Brazil produces essentially all of its required veterinary biological products and most of the necessary medicinal products. A part of the chemicals used in veterinary pharmaceuticals is imported for compounding within the country. The most significant current imports are insecticidal material from the United States, or from the United Kingdom and other European countries.

Both State and Federal departments of agriculture maintain a number of biological and pharmaceutical producing laboratories, and private companies manufacture or prepare veterinary products for commercial sales and government contracts. Many of the private concerns are small firms specializing in a limited number of products.

Outlets for veterinary products are numerous in the populated areas, but distribution outside these centers is slow and inefficient.

Strict regulations govern the registration and sale of foreign veterinary products but internal control is lax.

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The major part of veterinary products used are disease preventive preparations, because treatment of individual animals is uncommon in Brazil. 10/ 11/ 12/ 33/

#### H. Reference data

Figure 1: Location of Veterinary Schools.

#### I. Comments on principal sources

1. Evaluation -- The most useful information regarding Environmental factors (E1 and 2) was found in sources 4 and 6.

Sources 2 - 4 and 5 together formed the principal sources for numerating the Animal diseases (C2). Incidence of disease is reported only in general terms, because no extensive surveys have been accomplished.

Source 1 was reasonably complete in describing Veterinary organization (D), and the information was brought up to date by brief reference in a number of other sources.

The data relative to Manpower (E) and Veterinary facilities (F) was adequate in sources 1 - 2 and 8.

Veterinary supplies and materials (G) information was collected from a number of brief references in many source documents. The most important were sources 5 and 8. Source 8 is quite old, but the data is substantiated in material from numerous other sources.

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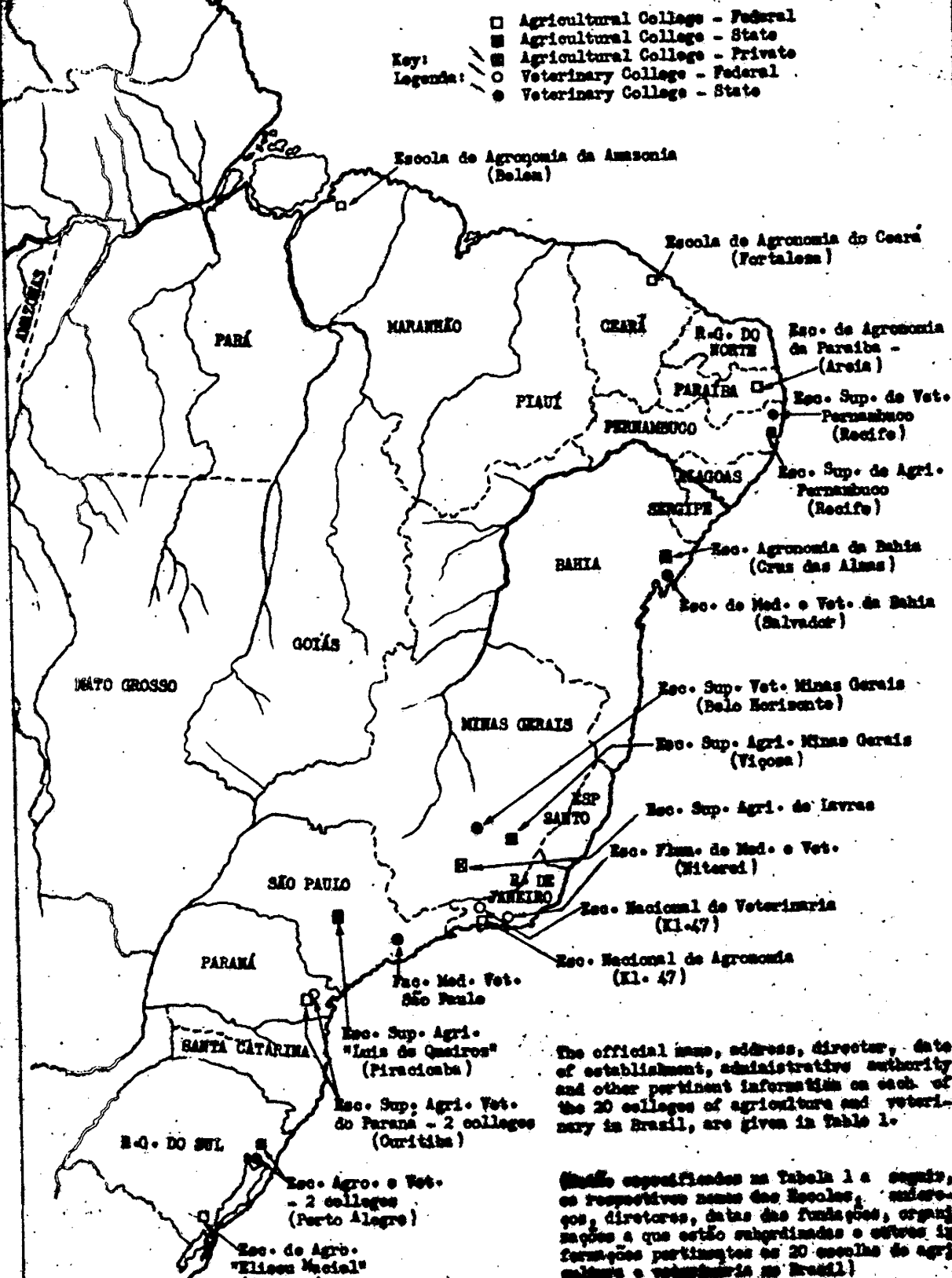
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Source 1/

Figure 1: Location of Agriculture and Veterinary Colleges in Brazil  
 Localização das Escolas de Agricultura e Veterinária no Brasil



The official name, address, director, date of establishment, administrative authority and other pertinent information on each of the 20 colleges of agriculture and veterinary in Brazil, are given in table 1.

(Os dados especificados na Tabela 1 a seguir, se respectivos nomes das Escolas, endereços, diretores, datas das fundações, organizações a que estão subordinadas e outras informações pertinentes as 20 escolas de agricultura e veterinária no Brasil.)



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Table of Contents

Philippines 115 99

	<u>Page</u>
A. General	1
B. Environmental factors affecting animal health	2
1. Topography and climate	2
2. Socio-economic pattern	2
4. Nutrition	2
a. Dietary level	2
b. Food supply and distribution	3
c. Food sanitation, storage and technology	3
C. Diseases	3
2. Diseases of animals	3
a. Prevalent animal diseases	4
(1) Hemorrhagic septicemia	4
(2) Diseases of young animals	5
(3) Anthrax	5
(4) Trypanosomiasis	5
(5) Rabies	6
(6) Hog cholera	6
(7) Newcastle disease	6
b. Other important diseases	6
D. Veterinary organization and administration	7
1. Civilian	7
a. Veterinary organization	7
b. Legal controls	9
(1) Licensure	9
(2) Quarantine	9
(3) Inspection	9
c. Professional veterinary organization	9
d. Veterinary research	9
f. Emergency veterinary services	10
2. Military veterinary organization	10
E. Veterinary manpower	10
F. Veterinary facilities	11
G. Veterinary supplies and materials	12



50X1

	<u>Page</u>
H. Reference data	12
I. Comments on principal sources	12
1. Evaluation	12
2. List of sources (in order of importance)	13

Figure 1: Organization of Veterinary Services, Philippines - 1959.

Master bibliography



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## A. General

Both animal disease control and veterinary public health measures in the Philippines, while improving somewhat in recent years, are inadequate to insure progressive development of animal production or the effective protection of the human population against zoonotic diseases.

Throughout the entire period of the existence of veterinary services in the Philippines, the modest advances and achievements have been largely the result of U. S. military or other governmental agencies technical, financial and materiel support. During the past decade, a trend on the part of Philippine officials to assume more active responsibility for conduct of veterinary programs has become apparent.

Neither veterinary personnel nor facilities are yet adequate to cope effectively with the extensive animal disease and veterinary public health problems over the widely dispersed Philippine archipelago.

The Philippine government has supported the principles of animal disease control by passing elaborate legislation designed to facilitate animal disease control but has failed to provide sufficient funds to carry out the legally established requirements.

Virtually all Philippine veterinary laboratories and educational institutions, and some food marketing installations, have been supported, to some degree, by U. S. donations or grants.

50X1

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Philippine veterinarians participate actively in regional veterinary meetings

and a considerable number have taken advantage of special or advanced training

1/ 9/ 10/ 25/ 26/  
abroad.

B. Environmental factors affecting animal health

1. Topography and climate -- The Philippines' humid tropical climate favors the propagation of animal diseases and parasitic infestations. However, the relative regional isolation provided by the island character of the area might be expected to contribute to confinement and step-by-step eradication or control of animal diseases. This obvious advantage is nullified by the lack of adequate qualified personnel to investigate animal diseases, supervise control measures or enforce existing regulations.

1/ 6/ 9/ 10/ 25/ 33/

2. Socio-economic pattern -- Response to Philippine veterinary authorities' efforts to improve animal health conditions varies from strong dependence on the part of more enlightened ranchers to mistrust and even outright opposition in the poorer primitive rural areas. Superstition and ignorance play an important part in the resistance to implementing modern disease control methods. Furthermore, the government has not made sufficient funds available to carry out more than token demonstration or extension animal health and sanitation techniques.

1/ 9/ 10/ 31/

4. Nutrition

a. Dietary level -- Caloric intake of animal protein by Filipinos is seriously low but animal production has changed little from immediate pre-World War II levels, despite substantial effort towards increased livestock breeding or improved animal husbandry methods. At the same time, population growth has been rapid, thus increasing requirements for livestock products.

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b. Food supply and distribution -- The Philippines is still far from self-sufficient in production of food of animal origin and is dependent, for current consumption to the extent of about one-third of the total, on imports. Animal disease control is an integral and continuing part of the Philippine government's plans, supported by U. S. assistance, for improving the availability and distribution of meat and animal products. Distribution and consumption is automatically limited by the government's firm bans on the slaughter of water buffalo and the high cost to the consumers of imported products. Considerable progress has been made in upgrading and accelerated breeding of the local animal population, but large areas of potentially valuable grazing land are inefficiently utilized or completely neglected. A serious attempt by the Philippine government and the International Cooperation Administration has been made to increase the milk production of the carabao by introduction and distribution of high quality Indian milking strain water buffalo. 9/ 10/ 25/ 31/ 32/

c. Food sanitation, storage and technology -- Modern sanitary slaughtering, storage and marketing facilities have been developed in major metropolitan areas. However, the chain of distribution and effective maintenance of installations and equipment is neglected. As in all Western Pacific countries, information on food borne infections is incomplete, but evidence indicates majority of such infections are due to contamination or spoilage of fish and fish products rather than of meat or milk. 1/ 9/ 27/

### C. Diseases

2. Diseases of animals -- Virtually every animal disease and infestation common in the Western Pacific and Southeast Asia area, with the exception of

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rinderpest, last eradicated in 1956, is widespread in the Philippines. Currently, the Philippine government has neither available technical manpower nor economic resources to effectively combat more than a small part of the existing disease conditions. Idealistic government disease control proposals have not been translated into action programs and the dedicated attitude of a small core of veterinary officials towards improvement of animal health services has not been instilled in the majority of veterinary personnel. Disease reporting in outlying areas is often delayed; consequently, diseases frequently spread over wide areas before preventive measures can be launched. 1/ 9/ 10/ 27/ 33/

a. Prevalent animal diseases

(1) Hemorrhagic septicemia -- With the exception of a few Asian areas where rinderpest has not yet been brought under control, hemorrhagic septicemia is considered the most economically serious animal disease in Southeast Asia. Since the eradication of a rinderpest outbreak in the Philippines in 1956, the importance of hemorrhagic septicemia is again paramount in importance. Past outbreaks have, at times, caused mortality approaching 100 percent. Since intensive vaccination and preventive measures were inaugurated in 1956 mortality has been considerably reduced. In the 1957/58 fiscal year thirty-five of the fifty-four Philippine provinces were infected and 625,000 animals were vaccinated with bacterins and autochthonous vaccines. The Philippine veterinary service is lagging behind many other Southeast Asian countries in research and development of newer type continuous aerated culture vaccines prepared from selected immunogenic Robert Type I pasteurilla strains. During the 1959 Food and Agriculture Organization Meeting on Hemorrhagic Septicemia, held in Manila, Philippine veterinary authorities recognized the

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importance of recent research on this disease, began production of the new type vaccine and initiated a program to isolate indigenous immunogenic strains of pasteurilla. 9/ 10/ 34/

(2) Diseases of young animals -- Since differentiation of disease losses among young animals is rarely carried out, these conditions have been designated as Diseases of Young Animals in the Philippines, as well as in most other countries of this area. No systematic studies have been carried out, but over a period of several years, mortality on Government stock farms and a few better managed private ranches, has varied from 19 percent to as high as 100 percent. The principal causes of loss are parasitic infestations, bacterial or bacterio-viral diarrheas and undescribed pneumonias. The government veterinary services are concentrating now on rather widespread application of sanitary measures and to a limited extent on antibiotic and chemo-therapeutic treatment as means of control. It is quite obvious that these conditions of young animals are among the most serious factors inhibiting the recovery in animal production. 1/ 2/ 10/

(3) Anthrax -- Anthrax is a continuing threat to the livestock industry. Fairly intensive vaccination in epidemic areas has reduced losses from this disease in recent years, but the disease will continue to be a major problem because of the organisms ability to survive in soil over a long period of time. 1/ 2/ 10/ 27/

(4) Trypanosomiasis -- Trypanosomiasis (Surra), a protozoan disease, is common throughout the Philippines. Cattle and water buffalo, in which the disease is quite mild, are the chief reservoirs of infection. Bloodsucking flies transmit the disease to equine which are highly susceptible, and mortality is high among horses in areas populated by cattle or buffalo. 9/ 10/ 19/ 20/

CONFIDENTIAL

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(5) Rabies -- Rabies is widespread in the Philippines. Thousands of dogs are infected and are reported as the source of an estimated 300 human cases occurring each year. Only about 50 cases in dogs are confirmed annually, indicating a serious lack of attention to this disease. Currently the U. S. military veterinary authorities are collaborating with the Philippine veterinary diagnostic laboratories, partly in an effort to stimulate interest in the organization of more effective control measures. Vaccination of dogs in infected areas is practiced but veterinary authorities admit only a small percentage are immunized because of shortage of vaccines. Both phenolized and avianized vaccines are used, but there is no satisfactory explanation for the inexcusable shortage in supply. Other control measures, including quarantine of suspected animals, are weak and ineffective. 1/ 9/ 26/ 27/ 33/

(6) Hog cholera -- Hog cholera continues to be the major disease retarding development of the swine industry. As many as half a million pigs are vaccinated annually, but the disease continues to take heavy toll among unvaccinated pigs and those not effectively immunized. 9/ 10/ 13/

(7) Newcastle disease -- Newcastle disease is the most widespread and destructive poultry disease in the Philippines. A local virus strain is used for production of an attenuated embryonized vaccine to protect non-infected or unexposed flocks. The Mukteswar (Indian) strain is used for vaccines in birds exposed to more virulent infections. 1/ 9/ 10/

b. Other important diseases -- Other diseases of Philippine livestock are foot-and-mouth disease, glanders, tetanus, fowl cholera, fowl pox, avian leukosis, and a host of serious parasitic infestations in all classes of animals. Brucellosis and tuberculosis are known to occur but investigations representing only insignificant

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numbers of animals have been attempted. Both diseases are probably more common than veterinary authorities calculate. Leptospirosis and salmonellosis have been reported in animals but there is little evidence of the extent of these infections or significance of animal infections in human health problems. 1/ 9/ 27/

#### D. Veterinary organization and administration

##### 1. Civilian

##### a. Veterinary organization -- Philippine national veterinary services

are directed by the Bureau of Animal Industry of the Ministry of Agriculture and Natural Resources. Responsibilities include veterinary research, regulatory and disease control measures, including meat and dairy farm inspection, poultry production and livestock production. Research activities are divided in six sections under the Research Administration: (1) Bacteriology and Virology, (2) Parasitology and Protozoology, (3) Physiology and Biochemistry, (4) Animal Genetics and Artificial Insemination, (5) Animal Nutrition, and (6) Animal Products Utilization. 2/ 33/



Fig. 1

The Bureau of Animal Industry participates in the public health programs by carrying out brucellosis and tuberculosis testing, rabies vaccination and meat inspection, as well as dairy farm inspection. Milk pasteurization is under direction of health authorities. While the national veterinary services are organized under strong central control and are provided with adequate legal support, shortage of well trained personnel, lack of transport facilities, and periodic failure by the government to provide operational funds, curtails the performance of routine tasks and severely restricts the quality of research and disease investigation activities. Field services, under the Regulatory and Disease Control Section, are seriously

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understaffed in outlying areas, and materiel support is often delayed or neglected. Research services, particularly those units concerned in preparation of veterinary supplies, are often unable to meet the requirements for field animal disease programs. Lax quarantine services are responsible for allowing at least two recent outbreaks of serious diseases and inter-island or inter-provincial regulatory measures have not been effective in preventing the dissemination of the serious indigenous diseases. Municipal meat and dairy inspection services, under direction of the Regulatory and Disease Control Section, are generally cursory, if performed at all, in about 350 of slightly over 1,800 cities and municipalities.

A large share of the Bureau's annual budget is dissipated in impractical livestock breeding schemes and inefficient artificial insemination programs.

Provincial Stock Farms, Breeding Stations and Regional Diagnostic and Treatment Centers have been established under direction of the Bureau of Animal Industry. These serve as distribution points for veterinary supplies and, in addition to performing routine diagnoses, forward specimens to the central laboratories in Manila for more detailed analyses as required.

Practically all of the approximate 300 veterinarians in the Philippines are employed by the Bureau of Animal Industry. Only few are engaged in activities commonly associated with public health, but a large number of veterinary assistants are trained for food inspection work under veterinary supervision.

Specific amounts of appropriated funds for veterinary services are not available. However, there has been a gradual increase in regular and special project funds in post-World War II years, and additional financial support has been made available through the United States Operation Mission, particularly for improved breeding programs. 1/ 9/ 27/ 33/

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## b. Legal controls

(1) Licensure -- A license obtained by passing the examination of the Board of Veterinary Examiners is required for veterinary employment or practice in the Philippines. Section 2749 of Legislative Act 3711 established this Board and explains its responsibilities. 9/ 10/

(2) Quarantine -- Administrative orders of the Bureau of Animal Industry, published from time to time under authority of Legislative Act 3711 of 1949, and amendments, set forth requirements for the import of animals and animal products into the Philippines. 9/ 10/ 22/

(3) Inspection -- Veterinary inspection of meat and meat food handling is defined in the Bureau of Animal Industry Administrative Order No. 9 of 1954, and applies to all installations concerned in processing or distribution of meat for human food. While the Order itself provides for acceptable inspection procedures, many of the slaughterhouses and markets are not supervised and many of those under official inspection are laxly serviced by inadequately trained personnel. An administrative order governing the preparation, sale, traffic, shipment and importation of animal biologics is in force. There is little evidence of regular investigation or serious control over such products. 9/ 10/ 33/

c. Professional veterinary organization -- The Philippine Veterinary Medical Association is incorporated as officially required by the Philippine government. The Association holds annual conventions, and through committees seeks to protect the interest of the profession and stimulate ethical conduct of its members. 9/ 10/

d. Veterinary research -- Veterinary research is conducted at the Veterinary College, University of the Philippines, Quezon City (14-38N - 121-00 E), and at the

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at the Bureau of Animal Industry laboratories, Pandacan, Manila (14-36N - 121-00E).

Research, devoted principally to the indigenous diseases and parasitic infestations, is generally superficial. Lack of well qualified veterinary research personnel and inadequate financial support restrict high quality research. <sup>9/ 10/ 11/ 20/ 26/</sup>

f. Emergency veterinary services -- Veterinary authorities participate in the plans of the National Civil Defense Administration. The experience of a devastated livestock population during World War II has made veterinary authorities aware of the need for organized emergency veterinary services to protect the 48,000,000 animals in event of future disasters. <sup>2/</sup>

2. Military veterinary organization -- The Army Veterinary Services of the Philippines is staffed by only six veterinarians. Responsibilities include food inspection, health care and limited training of army dogs and cavalry horses. Veterinary authorities recognize the inadequacy of this force, particularly if reactivation of the army reserves occurs. <sup>10/</sup>

#### E. Veterinary manpower

The Philippine veterinary force is qualitatively and quantitatively weak in relation to livestock population. Although the government assigns veterinarians to regional field posts, many communities and insular areas are without veterinary services. While more veterinarians are needed to provide reasonably adequate animal health care and veterinary public health requirements, it is doubtful if the government could absorb a significantly increased force in a short time. The logical immediate improvement in veterinary services needs to be directed towards providing facilities and material for the existing staff and stimulating incentive for more efficient work.

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In 1956, 267 graduate veterinarians were engaged in the following activities:

Government animal and public health services	113
Teaching	39
Private practice	10
Armed Forces	6
Other pursuits	69
Total	267

The Veterinary College of the University of the Philippines is the only veterinary educational institution in the country. A recently completed well designed physical plant, built with assistance of United States funds, is poorly maintained. Faculty members often pursue outside activities and student discipline is lax. Clinic and laboratory facilities are poorly utilized and research is mediocre. The College library is small, and there is a distinct neglect in acquisition of modern texts and current scientific periodicals. Little graduate work is attempted in the Philippines, but several faculty members and employees of the Bureau of Animal Industry have completed advanced training abroad. 9/ 10/ 11/ 29/ 30/ 33/

#### F. Veterinary facilities

In addition to the Bureau of Animal Industry laboratories at Pandacan, Manila, five Regional Diagnostic and Treatment Centers have been established in order to expedite diagnosis and improve animal treatment. These stations are located in San Fernando, La Union; Naga, Camarines Sur; Zamboango City; Iloilo City; Davao City. Eight stock farms, 25 breeding stations and 9 poultry stations throughout the Philippines also serve in some degree as veterinary centers. A major quarantine station is located near the Bureau of Animal Industry Laboratories in Pandacan, and three more, in Luzon, Visayas and Mindanao respectively, have been proposed.

One of the greatest obstacles in the effective utilization of the various government veterinary centers is the lack of transport facilities, particularly in the outlying areas. 9/ 10/

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G. Veterinary supplies and materials

The Bureau of Animal Industry laboratories and one private firm produce most of the veterinary biologicals used in the Philippines. The private firm, Araneta Institute of Agriculture, Manila, which also manufactures human biologicals, produces only a limited amount of avian diseases vaccines. The production of most biologicals by the Bureau laboratories is generally adequate for the limited doses applied in the field but periodic shortages do occur. An unexplained shortage of rabies vaccines occurs regularly. A few biologicals, such as hog cholera serum and foot-and-mouth disease vaccine, are procured abroad since the import cost is less than the cost for local production. Most pharmaceuticals, or at least the raw materials, are imported.

The bulk of veterinary medicaments and materials are distributed through the veterinary field services at fees established by Administrative Order No. 11 of the Bureau of Animal Industry. 1/ 9/ 10/ 16/ 31/

H. Reference data -- Not included in this report.

I. Comments on principal sources

1. Evaluation -- Adequate current source material was readily available for all sections of this report. The Philippine Journal of Animal Industry and the Silver Jubilee edition of the Bureau of Animal Industry provided basic data, supplemented and brought up to date by reports and papers presented at the Fourth Joint FAO/OIE Far East Meeting on Animal Health held in Manila, December 1959, and the Report on the First Regional Seminar on Veterinary Public Health held in Tokyo, April 1959. Gaps in the report on the statistical incidence of animal diseases are the result of the failure of the veterinary services to conduct significant disease investigations.

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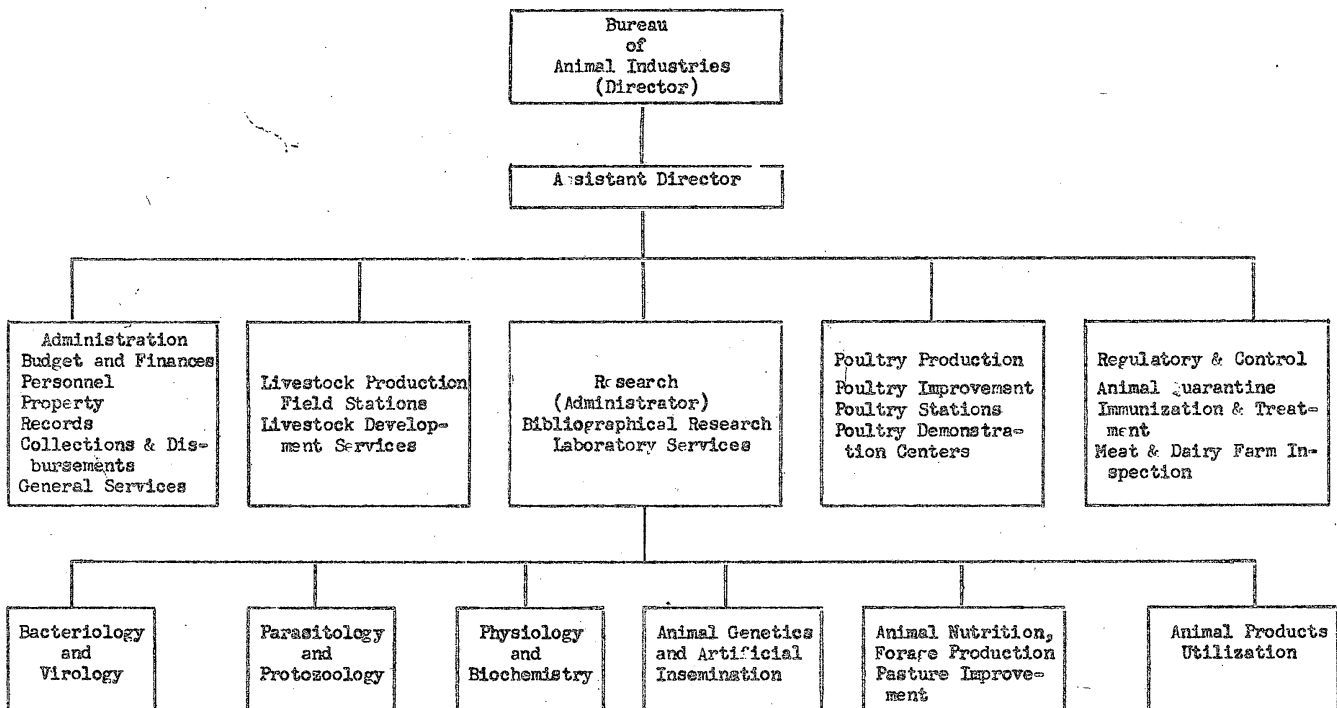
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Figure 1: Organization of Veterinary Services, Philippines - 1959.



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