

SECOND MEETING OF DIRECTORS OF ANIMAL HEALTH

"RESANTILLAS II"

IICA - ANTILLES ZONE

IICA



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1982

INTER-AMERICAN INSTITUTE FOR COOPERATION ON AGRICULTURE

P.O. BOX 10-1089, GEORGETOWN, GUYANA,

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SECOND MEETING OF DIRECTORS OF ANIMAL HEALTH

"RESANTILLAS II"

IICA - ANTILLES ZONE

Hotel Christopher
Bourdon - Port-au-Prince
Haiti

22-25 November, 1982

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TABLE OF CONTENTS

AGENDA	ii
Final Report	1
Resolutions	15
Welcome Address - Dr. Jaime Munoz-Reyes Acting Director of IICA, Haiti	23
Feature Address - Agronome Remilot H. Leveille Minister of Agriculture - Haiti	25
IICA Report - Animal Health RESANTILLAS II Dr. Franz Alexander	28
Presentation on Bluetongue Studies in the Caribbean Dr. Paul Gibbs	38
Country Report - Haiti - Dr. Jolivert Toussainte	54
Barbados - Dr. Trevor King	59
Dominica - Dr. Wellsworth Christian	62
Grenada - Dr. K.S. Manyam	66
Guyana - Dr. Lennox Applewhaite	70
Jamaica - Dr. Clifford Grey	74
St. Lucia - Dr. Keith Scotland	82
Suriname - Dr. Robert Lieuw-A-Joe	89
Trinidad & Tobago - Dr. Ernest Caesar	90
List of Participants	97



A G E N D AMonday - 22 November, 1982

- 8.30 - 9.00 - Registration - Election of Officers
- 9.00 - 9.30 - Opening Ceremony
- Opening remarks - Chairman
 - Welcome - Director of IICA in Haiti
 - Main Address - Minister of Agriculture, Haiti
- 9.30 - 10.00 - Coffee
- 10.00 - 10.05 - Approval of agenda
- 10.05 - 11.00 - IICA - Animal Health Report - Area Specialist
"Bluetongue" Research - Dr. Paul Gibbs
- 11.00 - 12.00 - Country Reports - Animal Health Projects and
Recommendations
(Barbados, Dominica, Grenada, Guyana)
- 12.00 - 13.00 - Lunch
- 13.00 - 14.30 - Country Reports (Cont'd)
(Haiti, Jamaica, St. Lucia, Suriname)
- 14.30 - 15.00 - Coffee
- 15.00 - 16.30 - Discussions
- Subjects proposed - Animal Health Activities and
Projects

Tuesday - 23 November, 1982

Project for the Eradication of African Swine Fever and
Development of the Swine Industry in Haiti

- 8.30 - 9.15 - Project Direction
 - Administration - Organization, Personnel, Purchase
- 9.15 - 9.45 - ASF in Haiti - Audio visual presentations
- 9.45 - 10.15 - Training and information (Dr. Dugas, Mary Sebrechts, Dr. Bernard)
- 10.15 - 10.30 - Coffee
- 10.30 - 11.15 - Operations Division (Drs. Joseph and Meilleur)
- 11.15 - 12.00 - Laboratory (Drs. Millien, Hamdy and Bernard)
- 12.00 - 13.00 - Lunch - IICA's Director in Haiti
- 13.00 - 13.45 - Technical Services (Drs. Toussainte & Clark)
- 13.45 - 14.30 - Project Direction - Summary
Coordinating Committee Meetings
Problems - Retrospection
- 14.30 - - Visit PEPPADEP Headquarters
 - Motor Pool
 - Laboratory
 - HAMPCO
 - Quarantine

Return Hotel Christopher

Wednesday - 24 November, 1982

Field Visit

7.00 - Depart - Port-au-Prince
Protective Clothing - Rubber or Plastic Boots
Visit sites of operations - PEPPADEP

Return Hotel Christopher

Thursday - 25 November, 1982

8.00 - 9.00 - Preliminary Report - Resolutions
9.00 - 10.00 - Discussion - ASF Project
10.00 - 10.30 - Final Report
Closing Ceremony
Depart Haiti

SECOND MEETING OF DIRECTORS OF ANIMAL HEALTH

ANTILLES ZONE

"RESANTILLAS II"

Port-au-Prince - Haiti - 22-25 November, 1982

FINAL REPORT

Monday, 22 November

Election of Officers

8.30 a.m. The proceedings were opened by Dr. F. Alexander of IICA. Elections were held with Haiti's Dr. Fred Calixte being elected as Chairman and Dr. Clifford Grey of Jamaica as Vice-Chairman. Dr. W. Christian was elected as Rapporteur and Dr. Scotland of St. Lucia as Vice-Rapporteur.

Introduced to the group was Dr. Paul Gibbs of the University of Florida present due to his involvement with the Bluetongue survey.

All the invited member countries were present with the exception of Dr. King of Barbados and Dr. Manyam of Grenada who had not yet arrived.

Opening Ceremony

9.00 a.m. The Chairman, Dr. Fred Calixte, welcomed delegates and introduced the Hon. Minister of Agriculture.

The Acting Director in Haiti then gave his welcome address in which he welcomed delegates to the Second Meeting of Directors of Animal Health - RESANTILLAS II.

He then went on to describe IICA's involvement in the African Swine Fever Eradication campaign in Haiti. He mentioned that due to the social and economic consequence of this disease, emphasis was placed on Eradication. A programme was also being worked upon for recompensation of the farmers. It was his hope that time will be given in this meeting to the solving of the problems brought up and for formulation of joint programmes.

The Chairman then gave the floor to the Minister of Agriculture to deliver the main address, and to declare RESANTILLAS II officially open.

In his address, on behalf of the Government of Haiti he welcomed the delegates. He also made mention of the essential nature of Animal Health to safeguard against protein losses and, in the 17th Congress of FAO, protein deficiency was found to be especially high in our Antilles Zone.

Mention was also made to the topics that would be discussed such as the Eradication of African Swine Fever and farmer recompensation.

He also hoped that delegates would see the sacrifices being made by the Haitian Government in the African Swine Fever Eradication Campaign, and understand the hindrances to the programme.

In view of the powers bestowed on him he then declared RESANTILLAS II open.

Dr. Alexander then thanked the Minister of Agriculture and invited the IICA Director in Haiti to present to the Minister a small memento of RESANTILLAS II, which was done.

Coffee break was then taken.

After the break, Dr. Calixte then opened the floor to discussion of the Agenda and to make amendments as seen fit.

Dr. Caesar of Trinidad then suggested a change in the times of delivery of certain animal reports. The motion was seconded by Dr. Scotland and subsequently adopted.

IICA area specialist Dr. Alexander then presented his Animal Health Report.

Special welcome was given to Drs. Christian and Scotland, representatives of new IICA member countries. He also mentioned that he was heartened by the unexpected arrival of the Trinidad participant at the meeting.

He then proceeded to give a very comprehensive Animal Health report.

The Chairman, Dr. Calixte, then commended him on his report and commented on the screwworm report to which IICA was awaiting reply.

There was a small controversy on the report of Rawlins with Dr. Grey asking if Dr. Rawlins had special permission to publish his report.

Dr. Alexander responded by saying that Dr. Rawlins work was done through IICA. He also mentioned the presence of a map in the report to which Suriname had responded and he wanted Trinidad and Tobago and Guyana to give their approval.

Dr. Caesar of Trinidad said that though he had not officially replied to the Rawlin's report, Trinidad was in the process of commencing the pre-feasibility study.

Dr. Applewhaite of Guyana said that he would indicate to Dr. Pat McKenzie his willingness to let Dr. Rawlin's work be published; and that they had already identified sentinel animals.

Dr. Grey then mentioned his need for getting simple incubators for hatching the screwworm eggs especially since the smell generated would be unacceptable in bacteriology laboratories.

Dr. Alexander then said he wanted to know the number of incubators required. He also gave suggestions on how to handle the sentinel animal problems and that of daily egg collection.

Dr. Caesar of Trinidad said that they had anticipated the egg collection problem from the sentinel animals and as a result, care had been taken to locate them in areas where normally the animals are attended to as well, such as on Government farms and projects.

On being asked to elaborate on the incubator request, Dr. Grey mentioned that he would like to have them at the veterinary offices rather than at the sites of the sentinel animals. He required about four.

Dr. Paul Gibbs then gave a comprehensive report on the Bluetongue survey with the aid of slides. This came after a discussion between Drs. Alexander and Applewhaite on slight anomalies in figures concerning the number of samples sent in by Guyana for the Bluetongue survey.

Dr. Gibbs mentioned that the Bluetongue survey had two parts:

- . Project 1 : a Serological Survey, and
- . Project 2 : a Sentinel Herd System

Mention was also made of the Potential Beneficiaries of the Continued Bluetongue survey in the Caribbean.

A lot of discussion arose from Dr. Gibbs presentation.

Dr. Applewhaite wanted to know what were the prospects for improvement of trade, now that the results of the Bluetongue survey were known. He also wanted to know why so many animals were positive serologically yet there was absence of clinical signs of the disease. Dr. Gibbs gave a scientific explanation.

Dr. Grey wanted to know whether a pilot project could be drawn up to isolate the Bluetongue virus. However, Dr. Gibbs said that the cost-benefit analysis may not justify this, especially as there were no laboratory facilities for virus isolation in the region. Dr. Grey then brought to the attention of Dr. Gibbs the fact that Jamaica had the capacity for virus isolation but no manpower.

The Chairman, Dr. Calixte then mentioned that after African Swine Fever Eradication, Haiti would be looking into the importation of goats. However serological studies showed that antibody levels to Bluetongue was the highest in goats. Therefore he wanted advice. Dr. Gibbs obliged.

Dr. Alexander then gave comments on issues arising from the project. He also brought up the experience of Trinidad and Tobago in exporting buffaloes to the US. Dr. Alexander also mentioned the need to complete and return the questionnaire on Bluetongue.

Discussions were then suspended due to lunch break.

The session resumed at 1.45 p.m.

Dr. Calixte introduced Dr. Toussainte of Haiti who gave a detailed country report. He mentioned that apart from African Swine Fever, the diseases that posed the greatest problems in Haiti were Rabies and Anthrax.

Anthrax occurred particularly in animals in the southern region of the country and bovines were chiefly affected. The human population was equally involved.

Dr. Toussainte disclosed that control methods consisted of annual prophylactic vaccinations. Organisations such as PAHO and FAO had provided vaccines.

Rabies occurred among cats and dogs.

Rabies cases were frequently encountered in Port-au-Prince but the Central Plateau was that portion of the country where the disease mainly existed. Mongoose and stray dogs have been identified as being the vectors of the disease and their movement into the Dominican Republic could not be controlled. One case of human death had been registered during the year. The greatest problem was the inexistence of a capable method to exercise control. Like Anthrax, annual vaccination was encouraged as the system of control for rabies. Haiti estimated a population of 70,000 - 75,000 dogs and Dr. Toussainte underlined the difficulty associated with getting all of them vaccinated. Vaccine was obtained from the Dominican Republic, Canada and the United States chiefly. The type of vaccine used was produced after virus neutralisation. He hoped, with the help of a motivation campaign to undertake vaccination in the country parts.

Discussions ensued.

Dr. Applewhaite enquired about the incidence of Anthrax in the pig population and of rabies in cattle.

Dr. Toussainte replied in the negative.

Dr. Scotland wanted to know the number of dogs that had been vaccinated but Dr. Toussainte was not able to give this information.

Dr. Grey asked if attempts had been made to establish obligatory vaccination.

Dr. Alexander wanted to know the origin of the vaccines used.

Dr. Caesar desired to know the duration of effect of the vaccine from the Dominican Republic. He was interested also in the effect of Rabies and Anthrax on the human population and did not understand why a similar request to that being made to IICA had not been addressed to PAHO since the disease constituted two major zoonoses.

Dr. Scotland asked about the level of education of the farmers.

The Chairman, Dr. Calixte explained why the vaccination was conducted annually and how the attitude of farmers made effective vaccination against Anthrax difficult.

Dr. Grey was invited to make his report.

There were actually 8 programmes in Jamaica.

1. Programme for the Eradication of Bovine Brucellosis and Tuberculosis
2. Programme for the preventive vaccination against Blackleg and Erysipelas.
3. Screwworm Project
4. Programme for Ova transfer to improve existing breeds
5. Programme of the Research and Development Division on Twinning

6. Programme of Bovine Fertility
7. Programme for Tick and Haemo-Parasite Control
8. Programme for Study on Bluetongue
9. Programme for Study of Leptospirosis
10. Programme for Delivery of Veterinary Services
11. Programme for Emergency Disease Surveillance

He furnished detailed explanations on each of these programmes and spoke on Staff especially for the laboratory services and on a comprehensive programme for animal health.

After the discussion was declared open, Drs. Applewhaite and Alexander made some recommendations.

The report of St. Lucia was presented by Dr. Scotland who gave a detailed description of the animal industry of his country, of the organisation of the veterinary services of the island, of the diseases which had been explored, such as Tuberculosis, Brucellosis, Leptospirosis, Bluetongue, Heart-water and Dermatophilosis which he explained in detail, the significance of Liver Fluke and Kidney worms.

He described the limited amenities for the veterinary services of St. Lucia, their proposals and future projects.

After Dr. Scotland's presentation for St. Lucia and the commentaries that followed, Dr. Applewhaite from Guyana gave his report.

Dr. Applewhaite gave a brief history of the veterinary diagnostic laboratory which was the hub of all their projects. Laboratory construction had begun two years ago. The laboratory would be completely functional in 1983. The construction was financed by UNDP, CIDA and the Government of Guyana. At the moment work was carried out in temporary facilities.

Dr. Applewhaite defined the technical staff for the laboratory. The new projects for the year 1982 were the following:

1. A Survey of Bovine Tuberculosis
2. A Survey of Bluetongue Disease in Cattle, Sheep and Goats
3. Incidence studies of Screwworm infestation in Guyana

The discussions were short. Dr. Alexander explained how Dr. Gibbs and the University of Florida had become involved as participants in the Bluetongue survey.

Dr. Lieuw-A-Joe from Suriname gave his report.

He explained the changes undertaken recently in the Organisation of the Veterinary Services. In reality the Veterinary Services covered both Animal Health and Production.

The organisation and the strategy for development were the biggest problems of their system.

Dr. Applewhaite requested clarification concerning the person that Dr. Lieuw-A-Joe suggested might become Chief of the Laboratory. Dr. Alexander assured him that the request made by Suriname to IICA was actively under consideration.

Dr. Caesar from Trinidad and Tobago presented his report. Dr. Caesar decided to limit himself to a specific programme, namely "The Poultry Surveillance Programme".

Dr. Caesar gave a history of the development of the Poultry unit in the Division of Veterinary Services. He cited the functions of this unit.

1. Surveillance of imported eggs and baby chicks
2. Hatcheries surveillance
3. Broiler farm surveillance
4. Layer farm surveillance
5. Breeder flock surveillance

These points were developed.

Dr. Caesar defined the requirements of the Unit as follows:

1. Scientific training of personnel.
2. Assistance in the identification of a reference laboratory and aid in the typing of Salmonella organisms.
3. A source of antigens and other laboratory reagents. This assistance had been partially obtained.

Dr. Caesar made mention of the Regional Veterinary School and solicited IICA's collaboration in order to seek the opinion of the Government's concern. Cabinet had also approved an emergency plan for the entire country.

In the course of the debate, Dr. Applewhaite enquired about the methods used by the veterinarians who collaborate with the other personnel responsible for some aspects of quarantine. Dr. Grey from Jamaica was equally interested in the arrangement.

On the subject of the Veterinary School, Dr. Alexander stated that the signatures of the Ministers of Agriculture of CARICOM in support were still valid.

Dr. Caesar was asked when the courses would commence. He replied in 1982.

Dr. King from Barbados arrived and stated that already there were too many veterinarians in the region and that Barbados would be obliged to export them.

Dr. Alexander disagreed and elaborated on the need for project development.

6.00 p.m. The session would reconvene on Tuesday at 8.00 a.m. when it was hoped that the country reports of Dominica and Grenada would be taken.

The session reconvened on Tuesday, November 23rd.

In Dominica's report by Dr. W. Christian, a brief background was given on the country; the organization of its veterinary services; the diseases prevalent, and the on-going animal health projects in which a brief description was given of the Hog Cholera Eradication Project which was in the final stages of the Repopulation phase.

He also mentioned how Economic Stringency had seriously limited the veterinary services of the country and as a result IICA's assistance was being sought in drawing up projects for external funding.

He also pledged Dominica's support for all the IICA sponsored Animal Health projects undertaken in the area.

In subsequent discussion the representative of Guyana wanted to know about the possible projects the Veterinary Services of Dominica would like to get involved with in the future, to which Dr. Christian gave a reply.

Dr. King, representative of Barbados was then called upon to give his country report.

In his report Dr. King spoke about the organization of veterinary services in his country. He mentioned the difficulties which arose of having the Director of Public Health within the Ministry of Health.

Mention was also made about the Meat Inspection arrangement existent; Quarantine Service; Diseases prevalent especially Bluetongue which was discussed at greater length than the others.

Following this report Dr. Alexander made the suggestion that a sub-committee on Bluetongue be formed to consult with Dr. Gibbs with a view with coming up with a proposal on Bluetongue. The committee was to consist of Dr. King of Barbados as Chairman, Dr. Grey of Jamaica, Dr. Caesar of Trinidad and Tobago, Dr. Applewhaite of Guyana. The committee was expected to present a report by November 25, 1982.

Country report was then given by Dr, Manyam of Grenada.

In this report he discussed the Livestock Industry of Grenada in which he listed its objectives; the organization of the veterinary services of Grenada and the disease problems. Among the disease problems, mention was made of the internal parasite survey and the deworming programme embarked upon. The rabies problem was also emphasized.

Mention was also made of the difficulty encountered in obtaining Jamaica Hope Semen. He also made a number of proposals which he wished IICA to give consideration.

After this last presentation, Dr. Alexander gave a summary on the reports and organized various committees to make recommendations on Vet facilities, Tick Control Programmes, Rabies and Anthrax control in Haiti, Grenada and Guyana and to draw up resolutions.

Due to the number of presentations to be covered no coffee break was taken.

The Chairman invited the staff of PEPPADEP to make their presentations.

The Project Director gave a summary of the history and development of the project for the Eradication of African Swine Fever and the Development of the Swine Industry in Haiti.

As per agenda, an Audiovisual Presentation of ASF in Haiti was given with commentary by Dr. Joseph. Then an explanation on Training and Information by Ms. Sebrechts.

Field operations were described by Drs. Joseph and Meilleur. The Laboratory organization by Drs. Millien, Hamdy and Bernard.

Luncheon was then taken.

In the post-luncheon period an exposé on the Technical Services was made by Drs. Toussainte and Clark.

The Project Directors then summarized their duties. Then Dr. Calixte also reported on Coordinated Committee Meetings and Problems Hindsight. In between the presentations Dr. Calixte also made some in depth statements.

At about 3.30 p.m. the discussions were terminated so that the group could depart to visit areas such as PEPPADEP Headquarters, Motor Pool, Laboratory. HAMPCO Ltd., Quarantine Station.

Wednesday, 24 November

7.00 a.m. Field visits were undertaken on Wednesday, November 24. Protective clothing was supplied at PEPPADEP headquarters and transport to operations headquarters in the Artibonite Valley at Duvallons. Two slaughter sites were visited near Duvallons and at Grande Saline.

Thursday, 25 November

The meeting reconvened.

The Project Staff Directors elaborated on the project and discussed various points raised by delegates. Dr. Gibbs asked the question "If you were to do it all again, what changes might be incorporated, seeing that there was now the benefit of some hindsight". The Project Directors and Operations Directors replied with frankness and candour. Changes there would be but appreciably minor in relation to the concept of the entire project.

The identified problems had been associated with lack of infrastructure and the small number of veterinarians in the country. Personnel had to be hired and trained at all levels, technically and in such things as management of funds. Problems associated with types of vehicles, delays in appointing project personnel, administration norms were included. Overall, the Chairman agreed it was not an easy task but there would be few changes as a result of project experience. The value of Coordinating Committee meetings

was endorsed. The Chairman emphasized the sacrifice of the people of Haiti and reiterated on the impact of the project in the country.

They themselves were not beyond the problems and personal pressures caused by the project but promised dedication to duty with clear consciences to achieve the desired success.

RESOLUTIONS:

Dr. Scotland of St. Lucia led the delegates' proposal for Resolution No. 1 thanking the Government of Haiti for their kind hospitality especially the efforts taken to acquaint delegates with the problems associated with African Swine Fever in Haiti, pledging their support and offering best wishes for the future.

The following resolutions were also proposed and adopted. These were:

Resolution on credentials for approval at future RESANTILLAS and REDISA meetings. Read by Dr. Robert Lieuw-A-Joe, Suriname.

Resolution on Rabies and Anthrax - Read by Dr. Fred Calixte.

Resolution on Tick Control or Eradication Projects. Read by Dr. Ernest Caesar, Trinidad and Tobago.

Resolution on future proposals for Bluetongue. Read by Dr. Trevor King, Barbados.

Resolution on Improved Delivery of Veterinary Services. Read by Dr. Robert Lieuw-A-Joe, Suriname.

Resolution to thank IICA, University of Florida, USDA, Pirbright and participating countries for the successful completion of the serological survey of Bluetongue in the Caribbean. Read by Dr. Trevor King, Barbados.

The delegate of Suriname proposed that subject to his Government's approval RESANTILLAS III be held in his country in 1984. This was unanimously acclaimed.

Dr. Lieuw-A-Joe brought to the attention of the meeting that the outline for Project Identification promised at RESANTILLAS I had not been provided.

He was assured by Dr. Alexander that efforts had been made and hopefully these would be successful in the near future.

CLOSING CEREMONY

The Acting IICA Director, Dr. Jaime Munoz-Reyes thanked the delegates for their participation and resolutions in the hope that IICA's Animal Health Programme would be able to assist their countries. He acknowledged the total participation and collaboration of the Department of Agriculture and thanked the Government of Haiti through the Chairman and Director of Veterinary Services as well as Project Director for PEPPADEP. He thanked PEPPADEP Staff and all who contributed for the success of the meeting.

Dr. Alexander endorsed the Director's words and on behalf of the delegates thanked the Government of Haiti for the mementos which had been presented to them.

Dr. Grey on behalf of the delegates thanked Dr. Alexander for his unstinting efforts to assure the success of the meeting.

The Chairman thanked IICA, not only for support and responsibilities of the Project in Haiti but IICA's Animal Health Programme through Dr. Frank Mulhern who had made it possible, assisted by Dr. Alexander.

He thanked Dr. Gibbs for his input at the meeting and the role he played in the serological survey for Bluetongue and other activities.

He personally thanked the delegates for sharing valuable information about their countries' animal health. He was glad to show the conditions and progress of the African Swine Fever Project in Haiti being aware of the benefits which would be derived and thanked them for their understanding and support.

RESOLUTION 1GOVERNMENT OF HAITI

Considering:

- the excellent hospitality offered to visiting delegates present here at RESANTILLAS II, by the Government and people of Haiti.
- the efforts taken to acquaint delegates with the problems associated with African Swine Fever in Haiti and considering the significance of this disease to all delegates present here.
- the excellent effort being made by the Government and people of Haiti to eradicate African Swine Fever from Haiti.
- The very enlightening presentations made to delegates by members of PEPPADEP.

The delegates present here move a unanimous vote of thanks to the Government and people of Haiti and in particular PEPPADEP and further resolve that we all here offer our wholehearted support for a successful eradication project and best wishes for the future.

RESOLUTIONS 2

CREDENTIALS AT MEETINGS

Considering:

- that we as Directors of Animal Health at the RESANTILLAS and REDISA meetings represent our countries,
- that we in order to have the right to vote and sign on behalf of our Governments at these meetings,

Request from the IICA to ensure for future RESANTILLAS and REDISA meetings that representatives will submit their credentials for approval at these meetings.

RESOLUTION 3

RABIES AND ANTHRAX

Considering:

- that Rabies and Anthrax prevail in several countries of the Caribbean Region,
- the importance of those diseases in Animal Production,
- that those diseases represent major zoonoses.

Request:

- IICA's collaboration with the other organizations in order to provide the necessary support to activities related to the control of Rabies and Anthrax.

RESOLUTION 4

TICK AND TICK BORNE DISEASES

Whereas:

- tick and tick borne diseases occur in all countries in the region, and
- the ravages of tick and tick borne diseases rank very high among diseases of greatest economic importance in these countries resulting in significant losses in the production of meat, meat products, milk and milk products, which losses these countries can ill afford,

Be it resolved that:

- the IICA gives assistance to countries in the region in developing projects for the control or eradication of ticks and tick borne disease in the region.

RESOLUTION 5

BLUETONGUE DISEASE

Considering:

- that the serological survey of Bluetongue in the Antilles Zone and neighbouring Caribbean Countries has been successfully completed and shown a high prevalence of infection in cattle, sheep and goats throughout the region, and
- that it is necessary to serotype the positive sera from the survey, and
- recognising that it is necessary to establish sentinel herds towards the identification of the virus types involved in the infection, and
- that it is vital to ascertain the economic impact of Bluetongue virus infection in the region, and

Taking cognizance of the fact:

- that livestock development organisations have expressed concern over the Bluetongue situation, and

Having regard for the fact:

- that the full export potential of livestock in the region cannot be realised because of the presence of Bluetongue

Recognising:

- that any work done on establishing the nature of the infection or disease is not only regional but of hemispheric importance.

BLUETONGUE (Cont'd)

Be it resolved that:

- IICA gives its assistance in the execution of further work towards:
 - identifying the causal agents of the infection
 - identifying the vectors of these agents
 - elucidating the nature of the disease
 - establishing economic effects the disease has on the region with respect to international trade; and
 - establishing the capability of Bluetongue virus isolation in the region.

RESOLUTION 6

VETERINARY INFRASTRUCTURE AND DELIVERY OF
VETERINARY SERVICES

Considering:

- that an effective Veterinary Service with a good infrastructure and laboratory capability is needed to protect countries from the invasion of the major diseases and to control those that exist,

The Directors of Animal Health at RESANTILLAS II

Resolve:

- to request from IICA to evaluate the existing systems and establish the delivery of Veterinary Services in countries of the area.

RESOLUTION 7

BLUETONGUE

Recognising:

- the successful completion of the serological survey of Bluetongue infection in the Antilles and neighbouring countries,

The Directors of Animal Health at RESANTILLAS II

Resolve:

- to thank IICA, the University of Florida, USDA, Pirbright Laboratory of the United Kingdom and the participating countries for their involvement and cooperation in bringing about this success.

WELCOME ADDRESS - Dr. Jaime Munoz-Reyes, Acting Director of IICA - Haiti

Thank you, Mr. Chairman.

Excellency, Mr. Minister of Agriculture, National Resources and Rural Development, Mr. Director for Animal Health and President of this meeting, Mr. Director of Animal Health for the Antilles Zone, representative from International Organizations, Dear Colleagues, Ladies and Gentlemen. I have the greatest honour on behalf of the Director-General of the Inter-American Institute for Cooperation on Agriculture, Dr. Francisco Murillo Andrade, and on my own behalf as representative of the Director of IICA in Haiti, to wish you a welcome to this grand country as participants at this meeting, RESANTILLAS II.

You all know that the animal production problem was a big pre-occupation for all the national governments as well as all the international organizations that by their financial and technical cooperation tried to diminish the impact of this problem.

IICA has prepared for this purpose a programme on Animal Health that is being applied in Latin America as well as in Caribbean Countries. In the case of Haiti the Inter-American Institute for Cooperation on Agriculture has set up jointly with the financial support of the governments of the United States of America, Canada and Mexico, a project for the Eradication of African Swine Fever and Development of the Swine Industry. African Swine Fever was a dreadful disease for the swine in this country and a big factor in the diminution of the animal population and the economy of the peasantry. The joint effort from IICA and the Government of Haiti for the elimination of this disease has a great impact on the social and economic factors thereby having a big influence on the life of this country.

We are conscious of this situation and that is why we have agreed to eliminate this disease, which is very harmful to the swine livestock and we have ensured that we will be working on the development for livestock repopulation. This project will be put to the IDB for a loan.

During this meeting you will be made aware of the development of this project - "PEPPADEP".

We know that in each country of the Caribbean, there are different problems of animal health. To a certain extent it is a pre-occupation to the Governments and the technicians and I am sure that the time will be given to the agenda for this meeting will be devoted to look for solutions to these problems as well as to obtain the support of the countries not only for exchange of their experience but also for the definition of a joint programme for Animal Health Development in the Antilles.

Once more, Mr. delegates, I am taking the opportunity to thank you for your participation at this meeting and I am very sure that the results you will have will lead to the profit and development of the Livestock Industry in your countries.

FEATURE ADDRESS - Minister for Agriculture - Agronome Remilot H. Leveille

On behalf of the Department of Agriculture, Natural Resources and Rural Development and on my own behalf, I have the honourable privilege this morning of wishing the most cordial welcome to you, the participants of the Second Animal Health Directors Meeting of the Antilles Zone. The Haitian people enjoy welcoming you and hope to contribute, through their hospitality, to the fruitfulness of your deliberations and resolutions which, for the well-being of the peoples of this region, you will have undertaken during your stay in this country, so well-known for its past and present struggles. Bound by history, and exposed to the same destiny, the Caribbean peoples must overcome their apparent differences and seek to enrich their similarities and common interests in gatherings like the one this morning. In the present circumstances, I see no option more valuable for us than putting elbows and shoulders together, tete a tete, in concentration, giving and taking.

I will not reiterate the importance of this meeting coordinated by IICA; besides the informed specialists, you know better than I do, the danger represented by the pathogenic micro-organisms; their great mobility and permeability of our frontiers to their action. In fact, the exigencies of contemporary life, which intensify exchanges between peoples, the continuity of atmospheric space expose us to all kinds of zoonoses and epizootics, at the same time the interior of states are barricaded with regulations and restrictions of all sorts. Apart from nutritional and physical disorders, it is indisputable that the infectious maladies propagated by physical as well as biological vectors, merit the conjoined attention of those politically and technically responsible for states all over the globe. The health of nations depend upon this will of cooperation, upon the perception of the inevitable solidarity of men in the face of malady.

In what concerns us more specifically at this meeting, Animal Health appears as an essential factor for the wealth of peoples. It conditions the growth of the economy and the productivity of man. I leave you the task of referring to the eloquence of figures in your discussions to touch on the

situation of husbandry and protein nutrition in the zone. If I may be permitted to reveal the facts, disease takes away a considerable number of animal products from the Caribbean population, that protein consumption per capita of this zone is on the average among the lowest in the world. It is doubtless this reality which made FAO include Animal Production as one of the main themes of the 17th Regional Latin American Conference. On that occasion the diagnosis of the situation of the Caribbean and Latin American Region was presented. Production losses are estimated to be between 30 and 40% in the whole region. The monetary costs advanced for the control and eradication of the PPA (African Swine Fever) attain several million dollars. It has been emphasised that internal parasites cause more losses in animal production than any other disease. It has been brought out also that the conditions of under-development in Caribbean countries favour the spread of numerous diseases and the weakness of their animal industry.

In spite of the precariousness relative to its means, the Republic of Haiti has also pleaded for strict and efficient international cooperation in the field of Animal Health. Severely struck by African Swine Fever and confronted by many other development constraints of its animal industry, it actually lives with, under the auspices of IICA, an experience so enriched in international cooperation with generous neighbours such as the United States of North America and the United States of Mexico.

I believe that through the review of general animal health problems, it is fortunate that you will have the opportunity of sharing with our technicians the analysis and fruits of our delicate experience as a proud and sovereign people, with limited human and financial resources, but determined to succeed in the eradication of the African Swine Fever and subsequent rebirth of the swine industry and at the same time, to prevent or control, on the other fronts, other plagues which threaten our animal resources.....

On the occasion of your visits to the field, you will have, I am sure the opportunity of measuring the sacrifices which the government and people of Haiti have consented to in order to optimise the value of the cooperation received.

You will appreciate the relative weakness of our infrastructure engaged in the task, the determination and commitment of our officers to compensate for it; and you will discover also, I hope, the moral and intellectual poverty of those who refuse to understand us or cannot.....

From the depths of my heart, I wish that from your observations and deliberations, concrete resolutions will emanate, which will significantly affect the mechanisation of regional cooperation for a better promotion of the animal production and industry in the Antilles Region.

And it is in this spirit, which, by virtue of the powers conferred upon me, I officially declare open this Second Animal Health Directors Meeting of the Antilles Zone.

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First let me take the opportunity to welcome everyone to the Second Reunion of Directors of Animal Health of the Antilles Zone - RESANTILLAS II.

A special welcome is extended to two new participating members - Dominica (Dr. Christian) and St. Lucia (Dr. Scotland) and those new faces, persons who have been selected to represent their countries at this forum for the first time. I was saddened to learn on Tuesday of last week that Trinidad and Tobago would not participate. I am heartened that he overcome his obstacles and is present with us.

I wish to stress the glorious opportunity we have to be able to discuss our problems and adopt resolutions to plan our national and regional animal health activities towards development of animal health projects for the benefit of all. Your full participation and inputs are sought without reservation.

This meeting has been arranged at this time for you to take the opportunity to appreciate the activities, progress and problems with the Campaign for the Eradication of African Swine Fever and the Development of the Swine Industry in Haiti. Hopefully and because of this project, you may never have to mount a similar project in your country; but I think you will agree with what is clearly epitomized here, the tremendous benefit and example to the hemisphere and world should this African Swine Fever Project in Haiti be successfully executed. To date there is every indication that "Success" is not a matter of wishful thinking.

We are privileged to have as Chairman of our meeting, the Director of PEPPADEP. We congratulate him on the Project's achievement and pray for his continued wisdom, courage and resoluteness of purpose. We wish for him and all Haiti, no less for ourselves, a totally successful Project.

The Directors of Animal Health have endorsed IICA's support of this Project as top priority for the region. This is a National Project of Haiti which is being fully supported by the donor countries of the United States of America, Canada and Mexico. It is being coordinated by IICA under the personal supervision of the Director of IICA's Animal Health Programme, Dr. Frank Mulhern.

Regrettably at this time, the Director General has called a meeting of the Directors of IICA in San José, Costa Rica and he has been forced to cancel his participation at this meeting. He hopes, however, to meet you all in Jamaica at the Caribbean Veterinary Congress. The timing of this meeting, we hope, will also facilitate your attendance there.

The African Swine Fever Project is the first to be developed under IICA's Animal Health Programme. Hopefully it will not only be an example of the Institute's commitment to Animal Health but it will also afford you the scope for development of national and multinational projects that you deem worthwhile for your countries.

The African Swine Fever Project will be presented tomorrow as part of Haiti's report. The Directors of various divisions of the Project have kindly consented to contribute fully to this meeting with presentations. Visits have also been arranged for us to see the main headquarters, the motor pool, laboratory and quarantine facility. On Wednesday we will be taken to see operations in the field.

RESANTILLAS I was held in April - May 1981 at the Ministry of Agriculture, Food and Consumer Affairs, Barbados. The final report of that meeting was circulated. Copies have been presented to you at this meeting.

REDISA III was later held in August in Buenos Aires, Argentina. Recommendations and resolutions were received and ratified at that meeting.

That meeting coincided with the election of IICA's new Director General and was followed by the commencement in 1982 of the new policies.

Activities were reduced to a minimum during the first three months of the year. Visits have been completed however, to all member countries from December 1981 in Suriname to Grenada and Trinidad and Tobago early in 1982. An attempt has been made to establish a working sub-committee for Animal Health in each Member Country. This will achieve an efficient mechanism to implement decisions as well as to provide continuity and evaluate progress. Later on during this year, Dominica and St. Lucia were also visited. Visits in association with activities have been undertaken to Haiti, Jamaica and Barbados.

Early in 1982, a diagnosis of the animal health situation in countries of the zone was prepared. Technical inputs were received from documents and reports from each country. An assessment of the status of the response to each nation's mandate by the Animal Health Services has been made. This basic groundwork was submitted for mutual agreement. Modification of each country's position is to be encouraged from time to time and can provide the justification for development of activities and projects which is our task.

The Animal Health Project for the Antilles Zone has undertaken three activities. These are:

1. Animal Disease Reporting and Information System.
2. Collaboration in the promotion of activities and planning of projects of importance in Animal Health.
3. Manpower Development and Inter-institutional Cooperation.

1. Animal Disease Reporting and Information System

A project outline has been prepared and has gained the initial support of the Ministries of Agriculture through CARICOM. CARICOM, at the present time, is seeking funds for a feasibility study to establish an Animal Disease Reporting System. This envisages a diagnosis of the information system of each member country and the implementation of its recommended needs for disease

surveillance and epidemiology based on its animal health status and diagnostic capability. Hopefully this would also reflect the veterinary infra-structure required for each country and provide the necessary information and surveillance of the diseases of interest to that country.

This System would also involve the establishment of a Regional Centre in CARICOM or IICA to obtain periodic reports and disseminate information to the countries of the zone, at the same time dovetailing with information systems of CIDIA, CAREC, OIE and other regional or international institutions.

As most of you are aware, we have prepared monthly reporting formats for each country. The IICA offices have been requested to obtain these from you for dispatch to Guyana. I have undertaken to collate this information and prepare quarterly feedback reports to you.

In 1981, two quarterly reports were completed and the remaining two for that year sent out in early 1982. For this year one quarterly report has been circulated only. I am still awaiting monthly reports from all countries save Grenada and on this occasion, Haiti. Dominica and St. Lucia have not been included to date and they are hereby invited to participate.

I must appeal to all of you to see to it that commitments are met if this system is to develop. I think it is a useful exercise and quarterly reports have so far included general animal health information and articles which would otherwise have not been published. It is gratifying to learn that the veterinarians in Trinidad and Tobago were reported to have been stimulated to produce a new reporting format for their country following in depth studies of their information system. Since IICA's reports it is gratifying that PAHO/CAREC has produced a Zoonosis Newsletter. Guyana's Veterinary Laboratory also began a monthly report. This has been followed by quarterly newsletters from the Guyana Veterinary Association. The Jamaica Veterinary Association has also succeeded in producing a newsletter and promises another for its Congress edition.

2. Collaboration in the Promotion of Activities and Planning of Projects of Importance in Animal Health

- a. The African Swine Fever Project Agreement was signed in July 1981. Assistance and collaboration in the development of the project has been provided. All five Coordinating Committee Meetings held on a quarterly basis, have been attended in the role of IICA's Representative and Alternate Chairman.
- b. BLUETONGUE: Following your resolution at RESANTILLAS I and its endorsement at REDISA III, agreement was obtained from the Government of Barbados to conduct a Regional Serological Survey for Bluetongue antibody and to undertake Sentinel Studies on Seroconversion and possible Vectors. These activities have been conducted with the support and collaboration of Drs. Paul Gibbs and Ellis Greiner of the Department of Veterinary Medicine, University of Florida, Gainesville, U.S.A. The following results have been obtained to date in regard to the serological survey for Bluetongue in the Caribbean Region. (TABLE 1.) These results reflect your support and that of other participating Caribbean Countries, Antigua, St. Kitts-Nevis. Dominica was inadvertently omitted at the start of the survey but has now been invited to participate. Information was made available from St. Vincent, Puerto Rico and the U.S. Virgin Islands. The progress of the survey has been due to the efforts of Dr. Trevor King and the Veterinary Services of Barbados. In particular, the work of their laboratory staff must be commended. None of this may well have ensued without the commitment and collaboration of the University of Florida.

Through Dr. Gibbs' effort, 250 samples will be sent to Pirbright, England for serotyping. Hopefully this will disclose the serotypes prevalent in each participating country. Results are expected in December.

We need to know something about the economic impact of Bluetongue in the Caribbean and the status of the disease as a clinical entity. We need to know how you review the disease in relation to importation and its effect upon exportation of ruminants. Together, the University of Florida and IICA, we have prepared a questionnaire which can help. Please study it, provide the answers and return it to the Guyana Office as soon as possible. I would be grateful if I could receive them before December 17.

We hope to receive your deliberations at this meeting concerning the future actions which should be taken.

SCREWORM: At REDISA II, the Directors of Animal Health recommended that we explore the possibility of developing Pilot Projects in regard to Screwworm. Guyana, Jamaica, Trinidad and Tobago were interested. IICA arranged for three participants to join IICA's northern zone for training in Mexico in 1981. They went through a course for control and eradication methods for screwworm. On their return they wrote profiles for control or eradication in each country.

Suriname subsequently indicated their wish to be included in screwworm control. Consultants were sought through Dr. Hugh Graham but none could be provided in 1981. Dr. Sam Rawlins, Entomologist, from Mission Texas and now working at the Department of Microbiology in Jamaica began preliminary studies and training in that country. He was engaged to undertake a pre-feasibility study in Trinidad and Tobago, Suriname and Guyana in June and July 1982.

His report and recommendations have been submitted to the respective Governments. IICA awaits response. He has also prepared an article "Screwworm Myiasis in Southern Caribbean Countries and Recommendations for its Management and Control". He wishes to publish this. IICA has no objection. Each participating country is requested to give its approval.

HEARTWATER: A joint IICA/USDA/PAHO mission out of Barbados was undertaken in June/July, 1982 to survey Heartwater disease in the Eastern Caribbean Countries of Antigua, St. Kitts/Nevis, Dominica, St. Lucia and St. Vincent. PAHO contributed by using their good office to seek permission for the mission which was successful largely because of the excellent cooperation of the Veterinary Services and Ministries of Agriculture of these countries.

The team consisted of Dr. Lonnie King - Epidemiologist, APHIS, Dr. Dave Wilson - Emergency Programmes and Dr. John Edwards - Pathologist, PIADC. I coordinated the mission.

Dr. Lonnie King has prepared his report. I hope it has been circulated to all participating countries. USDA hopes to have a Mission Report presented at the Caribbean Veterinary Congress, Jamaica.

On each island visited, blood samples were taken from ruminants. These were used for inoculation and serological tests at PIADC. Tick specimens were also collected and hand carried for investigation. To date, Heartwater disease is not known to exist on these islands.

Amblyomma variegatum was found throughout Antigua and Nevis, parts of St. Kitts and a well demarcated area in St. Lucia. This species was not found in Dominica or St. Vincent. It has not been reported in Barbados.

The opportunity was taken to show a film on Heartwater, make slide presentations of the clinical disease and its pathology and create publicity and awareness of the threat of the disease. Technicians were trained in tick identification and preparation of specimens for diagnosis of Heartwater.

Alarmingly, wherever *Amblyomma variegatum* was found severe conditions of Streptothricosis existed. This disease is now considered to be a serious threat to livestock production in the islands where it is found. I recommend most strongly that the presence of *Amblyomma variegatum* be made a NOTIFIABLE CONDITION in those countries where it does not exist. Efforts have to be made to control or eliminate this tick where it does exist.

TICK CONTROL: At the request of the Ministry of Agriculture, Jamaica, efforts were initiated to develop a project for improving Tick Control methods in Jamaica. During September 1982, together with Alberto Salinas from IICA's Project Development Division, Dr. C.L. Grey and personnel of the Ministry of Agriculture, a Project Profile was submitted to the Government for consideration. The necessary funding is being sought for the feasibility study as the response from the Government is awaited. A request for assistance in project development for the "Delivery of Veterinary Services" in Grenada is acknowledged. This envisages facilities for laboratory, administration, quarantine and clinical

centres. Blue prints for laboratory construction are being researched and awaited. A Project Profile has not yet been completed.

A request from Suriname has also been received for assistance in connection with the organizational development of their Livestock Production and Animal Health Sector. A Livestock Production Specialist has taken office in Guyana and has been informed. The matter is under consideration.

Guyana recently diagnosed Campylobacteriosis at Ebini Livestock Farm. 2000 doses of vaccine was provided by IICA to facilitate control.

Mist nets and Vampirocid to control bats were also supplied and have been in use. Brucella Antigen was also provided for the PAHO/Guyana Brucellosis Survey recently concluded.

3. Manpower Development and Inter-Institutional Cooperation

Following your recommendations at REDISA II the First Regional Laboratory Equipment Maintenance Workshop was held in Jamaica in May, 1981. This was reported at REDISA III. The conferences of Jonathan Richmond on Laboratory Safety have been published. (IICA Jamaica Miscellaneous Publication 354 Series ISSN 0534 5391).

Following recommendations from that Workshop, two other workshops have been held in Guyana and Jamaica, August/September and October, 1982 respectively. The instruments covered were microscopes, pH meters, balances and spectrophotometers. Thomas Phillips, Product Specialist from Perkin Elmer, Puerto Rico, provided expertise at both workshops on Atomic Absorption Spectrophotometers. In Jamaica John Robbins, National Institutes of Health, Maryland, U.S.A. contributed to teaching on microscopes. National Resource Personnel were used in both countries. In Guyana 53 participants were provided with certificates including laboratory technicians from Grenada and Suriname. In Jamaica 43 certificates were provided and there were also 38 observers. A report on the workshops is presented. It is suggested that similar workshops be held in Barbados and Trinidad and Tobago next year. The response and evaluations have been most gratifying.

The Second Regional Seminar for Veterinarians of the English-speaking Caribbean took place at REPAHA, Guyana on August 16-20 and was jointly sponsored by IICA and PAHO. The theme was Administration, Epidemiology and Economics. The seminar was delivered by Dr. Pedro Acha (Adviser to the Director General of IICA), Dr. Thomas Stein (Minnesota), Dr. Felix Rosenberg (PANAFTOSA Centre) and Dr. Donald Blenden (Missouri). Certificates were presented to the participants. A report of the meeting is presented.

At REPAHA's request, lectures and practicals on Physiology of Reproduction are given to 2nd year students. In 1981, two sets of lectures were completed and in November of this year, another set was completed for 25 students.

Following RESANTILLAS II, a paper "The Impact of IICA on Animal Health" has been requested in support of the first joint Caribbean and Canadian Veterinary Medical Association Congress to be held in Jamaica from November 29 to December 4.

Plum Island Animal Disease Centre agreed to send each Director of Animal Health, containers, labels and permits for shipping specimens for emergency diagnosis. These should now have been received. A Directory of Directors of Animal Health was also produced as requested to facilitate contact between countries should the need arise.

Dialogue ensued between PIADC, NVDL, Ames and other reference laboratories in respect of Biologicals. Literature is available and has been circulated. It would appear that when certain reagents, antigens or biologicals prove difficult to obtain, personal contacts and specific assistance may have to be provided.

ANTIBODY PREVALENCE TO BLUETONGUE VIRUS:

(as assessed by AGAR-GEL IMMUNO-DIFFUSION TEST in Ruminants in the Caribbean Region)

COUNTRY	SPECIES		
	SHEEP	GOATS	CATTLE
ANTIGUA	69% (147) (212)	100% (18) (18)	82% (161) (196)
BARBADOS [#]	* 57% (321) (567)	85% (94) (110)	60% (108) (179)
Exotic	39% (16) (41)		59% (114) ^{##} (192)
GRENADA	84% (97) (115)	82% (42) (51)	87% (33) (38)
GUYANA	50% (194) (387)	40% (104) (255)	56% (404) (719)
JAMAICA	77% (77) (100)	82% (392) (479)	71% (354) (496)
ST. KITTS	71% (169) (239)	66% (104) (158)	74% (58) (78)
ST. LUCIA	98% (54) (55)	83% (15) (18)	74% (92) (124)
SURINAME	83% (66) (79)	92% (62) (67)	72% (311) (431)
TRINIDAD & TOBAGO	88% (84) (96)	92% (375) (408)	71% (400) (560)
PUERTO RICO & VIRGIN ISLAND			** 79% (213) (268)
ST. CROIX			*** 80% (35) (44)
ST. VINCENT & GRENADINES	- (SEROTYPES 1,2,4,14 and 15) + (# SEROTYPES 1,2,5,6,7 and 10) (USA - SEROTYPES 10,11, 13 and 17)		

* Metcalf, H.E. (1979). Investigations on the Epidemiology of Bluetongue in Barbados Blackbelly Sheep. USDA/PAHO/Barbados. (Sera collected 1979).

** Metcalf, H.E., Pearson, J.E. and Klingsporn, A.L. (1981) Bluetongue in cattle - a serological survey of slaughter cattle in the USA. Amer. J. Vet. Res. 42, pp 1057-1061. (Sera collected 1978-79)

*** Gibbs, E.P.J. Unpublished data 1982. (Sera collected 1982)

+ Taylor, W.P. and Sellers, R.F. Unpublished data 1982. (Sera collected 1981)

Sera collected 1982.

Dr. Paul Gibbs - Presentation on Bluetongue Studies in the Caribbean

RESANTILLAS II

Ladies and Gentlemen, you very kindly invited me to address the first meeting of RESANTILLAS I which was held in Barbados and now you have very kindly invited me to the second meeting; for that I am very grateful indeed.

The original meeting resulted in fact in the resolution of Bluetongue and this is presented in the report document.

I would like to point out to you that in the project we are considering that there would be a serum survey and this would be followed by in-depth studies to be able to study the epidemiology of the infection in the region.

What we proposed subsequently was that the programme should be divided into two projects - first, essentially one of a serological nature to determine the prevalence of infection and the second would in fact address the problems of virus isolation. Now let me state that what I am talking to you about today is principally the first project which relates to serology. In regards the second project you will be presented with some data but this is very much of a preliminary nature. Relative to finance I should mention that funding for phases I and II of Project I have been identified but when it comes to Project II in relation to virus isolation there is no funding identified for it at this time. Therefore what we might do today apart from reviewing where we are today would be to determine where in fact the future programme should go to.

Now, Dr. Alexander in his report covered the project in its essentials and I thought that I would introduce to you today some of the other complimentary studies that are in fact going on in the region so that we can see essentially where the IICA programme fits in and secondly to perhaps highlight a few recent developments that have occurred within the Bluetongue

field in recent years, in fact since we had our last meeting and I thought that perhaps one of the best ways of doing this would in fact be to give you a slide presentation. So I'll pull down the screen and I'll show you some slides.

Well, some of you were not in fact at the first meeting so it therefore might be appropriate to very quickly review to you the reason why we are concerned about Bluetongue in the region.

Lets talk about the clinical disease which is essentially characterised by oedema and haemorrhage and clinical disease is most noticable in sheep and there have been very well recognised epidemics in various parts of the world principally in the more temperate rather than in the tropical areas.

The famous epidemic of '57, '58 in Spain and Portugal has been one of the major areas of concern and this has influenced international attitudes towards this disease particularly in certain countries like Australia that have very large populations of sheep.

The disease is also characterized by lameness (in this particular slide) you can see that we have coronitis affecting the feet here. Another feature of Bluetongue disease that makes it particularly important to the sheep industry is that we have a prolonged convalescence. The Haemorrhage leads to muscle damage. You can get such problems as Torticollis, Scoliosis etc. There is another feature peculiar to sheep, at least to "wool" sheep that is of great economic importance and that is the virus affects the growth of the wool and we end up by having wool-shear and this means that the fleece is of reduced value. In cattle the disease is less well characterised. It can be mistaken for Foot and Mouth Disease, but generally cattle do not develop severe disease and when it does occur the morbidity within a herd is usually appreciably less than it is with sheep; in fact only 5% of the herd maybe infected, whereas in sheep 50-60% maybe infected and mortality might equally rise to 50% in sheep. In cattle mortality is usually 1% or even less than that. Perhaps one of the major concerns and this is how I am leading into the problems within the Caribbean is that the virus of Bluetongue has been

associated with foetal abnormalities; (In this particular slide) you can see that we have ankylosis and the virus not only crosses the placenta, it is also present in the semen of bulls. How often this occurs we are somewhat still uncertain about, but certainly relative to international trade this is of concern.

Few features of the epidemiology that I think I need to point out to you before discussing matters further.

The first is the distribution of Bluetongue and related viruses, which are classified within the ORBIVIRUS GENUS - This slide was prepared you can see from this that many areas of the world, are in fact infected with Bluetongue virus, in fact there is a band of infection around the world. (Dr. Gibbs then reviewed the results of the prevalence survey in the Caribbean area).

Guyana has one interesting feature and this is where you can see that generally the prevalence of infection is somewhat lower than that of the other countries. At this stage I can offer no explanation for that. It might be postulated that infection has been introduced to Guyana somewhat more recently than other areas. Certainly from data available to me, from studies in Colombia and Costa Rica there, there is evidence of infection suggesting that not only Guyana and Suriname, but other countries within South America are also infected with this virus.

What we have seen is that essentially the Rupununi, and please correct me if I am wrong here, but the Rupununi with the exception of three cattle sera and one goat serum is essentially free of infection. The animals involved here are 10, 11 and 12 years old and I suppose we must look into the possibility that they were moved into that region from perhaps the Coastal Region (though Pat McKenzie tells me that is not so and this is from one of your publications by the way).

As regards Phase II, the detection of type specific antibody, fairly early on in the life of the programme, an opportunity was available for some sera to be sent to Pirbright. These were looked at and quite an interesting picture evolved.

I am not going to discuss it in detail but it is presented here within the progress report and the interpretation of that is something you need to study in detail. Because of our concern over the different types within the region and how this is likely to influence any policy of control, what we have proposed and IICA has now pursued, is that sera be sent from Barbados to Pirbright for testing and infact these sera should literally today be on their way to Pirbright. The testing has been arranged, its based on 250 sera - so we are even at the end of that we are going to get an indication of the types that are present. Essentially, trying to identify what types of virus are within an area has many limitations, if one only relies upon using sera. There are degrees of serological overlap especially when one has multiple infections and for this reason one needs to adopt a different approach to get a more definitive answer, and the first is that one uses sera that have a monotypic serum antibody conversion; in other words associated with sentinel herds. Animals that are negative moving to sero-positive. The other approach, and by far the more preferable approach, is to move towards attempting to isolate viruses because this is the most definitive way of doing it. For this reason, we have proposed and this is something that we need to discuss whether we have to develop this type of approach, this is why we have developed a type of sentinel herd system.

A sentinel group essentially represents twenty animals, there are different ways of setting this up, but they are bled monthly from 3 months to 15 months and then the blood is examined for both viruses and antibody and they are studied in association with the vectors that are present in the area. In this case we are talking about Culicoides; and we have had in Florida, sentinel herds operating from the last two years at four sites. We have established herds a year ago in Puerto Rico and following the visit to Barbados of Dr. Greiner in November 1981, two flocks were set up in Barbados.

He also visited Trinidad and Tobago at that time and one cattle herd was selected in Trinidad and one sheep flock in Tobago. The Barbados studies have been running for a year now. The Trinidad and Tobago studies for about four months. In Florida we are monitoring for viruses as well as sero-conversion. Within Puerto Rico, Barbados, Trinidad and Tobago we are at this stage only looking at sero-conversion. I should point out that in the Caribbean, to my knowledge there are no facilities, perhaps with the exception of Haiti, there are no facilities for routine isolation of viruses and this has presented a fairly major problem in getting this programme underway. There are no facilities for isolating viruses in domestic animals in Puerto Rico either. This, just for your interest, is the location of one of the sentinel flocks in Barbados and this is Aripo in Trinidad. As regards the Arthropod vectors, once again, this study is, at this stage, directed towards identification of the vectors and in fact in nearly all sentinel herds one of these traps is being run, a simple New Jersey type of trap, it has a fan on it and as you can see by the photograph it is located near the cattle or sheep as the case may be and the sample is deposited into a kilner or a jar that is attached to the trap. This is run on a weekly basis. To give you some idea of the number of Culicoides that we have caught in these traps, the first time that it was run in Trinidad, 40,000 Culicoides were caught in one night. It means that there is a lot of work in identifying these. The picture in Barbados in this one slide up to illustrate it, we do have data for Puerto Rico and St. Croix etc, is that the number of Culicoides associated with cattle in the Caribbean are relatively few. In Florida, we have over 50 species. Here we are identifying some six and of those relative to numbers and feeding habits we have *C. pusillus*, *C. insignis* and *C. jamaicensis* as possible vectors of Bluetongue. In North America, extending into Mexico but not extending into the tip of Florida, we have *C. varii pennis*. This is the known vector in North America. However, this species of Culicoides does not exist within the Caribbean nor in South America. Whatever is transmitting Bluetongue in this region apparently it is not *Culicoides varii pennis*. At this stage it remains unknown. *C. insignis* is present throughout the Caribbean and *C. pusillus* also and these species also extend into Florida but not into other parts of North America.

As regards virus isolation and types, I have already mentioned that we are not pursuing this within the Caribbean and obviously if one is going to adopt such an approach this is going to be expensive because it means setting up a laboratory and it means bringing in someone with virus expertise. But however, we do need more information for better informed policy. So in conclusion, we have determined that Bluetongue virus infections commonly occur both in Florida and the Caribbean region, that to date we have not identified clinical disease within the area, the caveat being that the Cameroons have experienced severe clinical disease in indigenous sheep this year, maybe just a new type being introduced, so you have to be aware that clinical disease may occur, and thirdly, we do not recognise the vector of Bluetongue disease virus within the area, it is not going to be *C. varii pennis* it is another species and on the basis of preliminary evidence from Pirbright, hopefully this will be substantiated fairly soon, the serotype of Bluetongue virus in the Caribbean may well differ from those in North America.

So, a few years ago, we were rather concerned that perhaps in the Caribbean we had a tiger by the tail. We may well not have a tiger by the tail relative to Bluetongue, but we may well have more akin to a Tomcat. Nevertheless, I would remind you that tomcats can impart to you quite a nasty scratch or bite at times and so we should be aware of it. Tomcats can be veterinary problems as well as lions can.

That roughly summarises where the programme is and you will see within the report which I have given to you, that some of the projected studies on international Trade which are on page 12 talk about an economic survey which you have got which is something that you might like to address and enclosed with that, a new veterinary services memorandum which has come out from APHIS, USDA outlining the attitude, at least within North America towards Bluetongue which is becoming a lot more flexible. We need to study that document and interpret that document.

Clarification on Project Proposals

Well first of all you are going to get a lot more basic data on Bluetongue, and I think you can see some of the advantages of doing that. The second feature is that we are effectively setting up a sera bank virtually by these studies and if we go to a more elaborate sentinel herd study within the Caribbean then we are going to have this Herd System to study other agents and I am not just talking about viruses here, other diseases on a long term basis. The sera that are collected from these herds are stockpiled and are available for other studies. The indirect benefits of this and I should mention that this is really a paraphrase of a report that Dr. Alexander has prepared, is that there is participation in a required project and I think that this has many advantages and relative to virology, I have pointed out that there are no virus laboratories within the country and by working on virology one introduces improved expertise in the area. The direct and indirect advantages to Governments in the Region - we have a recommended policy that might come out of this work relative to the movement of animals and products and indirectly, and this is very important too that we have the expansion of the small ruminant development in the region, and I think that the small ruminant is now being recognised as a very important component of rural development.

Applewhaite - Now that the problems are known within the Caribbean - what are Guyana the prospects for improved trade.

Gibbs - The first comment that I would make is that the indication USA that we have of prevalence at the moment indicates that Bluetongue is a common infection. At the start of this survey we considered that it may well be so, but we did not have any comprehensive evidence that this was the cause. At this stage we are awaiting some idea of the different types within the Caribbean and as I have explained to you, we shall be getting some indication of this from work being conducted at Pirbright. However, at the end of that, if the types of virus are let us say different from North America, then this might well create some concern but nevertheless having shown in this document relative to the

importation of cattle into the United States, it does appear that animals will still be permitted entry into North America. Relative to Central America, I can't honestly question, you do appreciate that I am within a University, I am not within a Government structure and each Government determines its own policy. What I would say is that work being conducted by Dr. Ewell from the University of Wisconsin indicating that Bluetongue is prevalent within say Costa Rica, Colombia and there well maybe other countries in Central America that are similarly infected, only by acquisition of such information are we going to move towards the recognition that the whole region is infected and therefore a more informed policy will develop. I don't think that one can wave a magic wand and immediately on the basis of this survey expect everyone to be taking cattle, sheep and goats from other countries relative to Bluetongue and there are other diseases that come into import licenses that have to be granted.

Applewhaite - In view of the fairly high prevalence of the disease in the
Guyana Caribbean, and there is little documentation of the clinical disease itself is there any correlation between the two and why is it that we haven't seen it? Is it because we haven't looked for it?

Gibbs - I always get asked this question and I really don't know the
USA answer. No one knows the answer. Why many of the strains, I am avoiding using the word type here, do not apparently cause disease. The theory that we have had for many years is that animals rarely transfer to active immunity from passive immunity, therefore they are protected and logic has been put forward that since many of the introduced breeds of sheep, particularly quoting Africa as an example, in which severe clinical disease occurred on importation that this was the reason. However, in the Caribbean

imported breeds of sheep do not show, as I understand it, clinical Bluetongue. At least that's the case for Barbados and it may well be that many of the strains of Bluetongue within the Caribbean do not have the capacity to cause disease and in the review that I left with RESANTILLAS I, I pointed out in there, that because of the structure of Bluetongue virus which has ten double-stranded RNA genome segments it is conceivable that many of the viruses that we are meeting, although they may be typed serologically as Type 4, and Type 4 definitely in different parts of the world can cause disease, the Type 4 viruses present within the Caribbean do not have the genome segment that in fact causes pathogenicity. What we are introducing here, perhaps is the concept of genetic recombination within groups of viruses and because of the structure of the RNA genome, this is possible. Only by studying viruses as opposed to antibody can we get towards some answer to this problem. But if we had viruses available to us and we could put them into animals experimentally, then some measure of whether these viruses are capable of causing disease could, in fact, develop.

Grey
Jamaica

- Bearing in mind, Dr. Gibbs, the recent Canadian experience wherein I think in the Fraser Valley, they had evidence of considerable virus activity from serum samples examined and the fact that they spent a lot of time and money trying to isolate a virus and they never did, wouldn't it be wise if some attempt were made to ascertain if we have a similar situation in the Caribbean and whether some pilot project shouldn't be done trying to isolate virus even at this early stage.

Gibbs
USA

- Bluetongue virus is not an easy virus to isolate. In the absence of clinical disease the cost/benefit analysis of simply wading in looking at animals here, there and everywhere is probably not justified. The approach that we have adopted over the last year of establishing sentinel herds and initially studying them for

sero-conversion will give us some indication of when viruses are most active. Having established that time we can then maximise the chances of isolating viruses more easily. Does that really answer your question Dr. Grey.

Grey
Jamaica

- I think it does! I was looking for a short cut but there doesn't seem to be any short cut to this business at all! I certainly agree that using sentinel animals will maximise the time or indicate when the appropriate search would be best for virus isolation.

Gibbs
USA

- Can I just comment further! One of the major problems which has been identified by IICA, and I have already referred to it, is that within the region, and please correct me gentlemen if you think I am inaccurate here, there are no facilities for virus isolation. I have mentioned Haiti being the exception at this stage and this means that we have not been able to do virus isolation work at this time. Further more in the absence of major clinical problems within the Caribbean there is reluctance of many people within say, Plum Island, Pirbright etc., to get involved in extensive attempts in virus isolation, simply because it is expensive. We have looked at the feasibility of establishing virus isolation facilities, let us say in Barbados, and certainly within the Government Analyst Laboratory in Barbados, there are facilities that could be upgraded to handle virus isolation work.

Grey
Jamaica

- We certainly have the facilities for virus isolation. What we do not have is the manpower at the present time.

Gibbs
USA

- I take your point. Please accept my apologies if it was interpreted that way?

Applewhaite - How is the virus transmitted? Does it multiply in the vector?
Guyana

Gibbs
USA

- Yes. Bluetongue virus is an Arbovirus which means that, almost by definition that virus replicates both in its vertebrate host as well as in the arthropod. In this case we are talking obviously about Culicoides.

The virus replicates not only within the cells of the gut but more importantly it replicates within the salivary glands. When the insect feeds, the saliva contains virus which is inoculated into the host.

Calixte
Haiti

- Is the method of transmission biological or mechanical?

Gibbs
USA

- This is biological because the virus replicates within the vector.

Calixte
Haiti

- With the eradication of African Swine Fever, the people of Haiti are interested in importing Caprines. The serological analysis is showing that the Caprines have infection. If the animals do not show a high percentage of clinical manifestation, serologically these species, present a high percentage of contamination, what could be the recommendation that you could give us on this question.

Gibbs
USA

- That question, Mr. Chairman, that this meeting might like to discuss. The position would appear that the high prevalence of infection to Bluetongue within the Caribbean and in view of the many trade practises that already exist within many of the countries, that perhaps most of the countries within the Caribbean are infected with many of the types. But till we complete Phase II which is literally underway at this moment, to give a precise answer to that is rather difficult.

Calixte
Haiti

- Outside of the serological evidence is there any other sign that could show the existence of the disease?

Gibbs
USA

- Apart from serology? Are you saying that we are looking for something outside of serology and clinical disease?

- Calixte Haiti - After the eradication of African Swine Fever, the people of Haiti will wish to import Caprines. Is there any other way to identify the disease in the Caprines?
- Gibbs USA - Within the Caribbean to my knowledge there have been no confirmation of clinical cases of Bluetongue in goats. Am I correct Gentlemen to say that.
- All - Correct.
- Gibbs USA - Do you have in Haiti serological evidence of Bluetongue on the island or any clinical evidence?
- Calixte Haiti - Up to now we do not have any evidence.
- Gibbs USA - What has been your policy of importation of goats lets say over the last 20 years? Have you imported goats from other countries?
- Calixte Haiti - Yes, we import goats mainly from Jamaica! As substitution animals in support of African Swine Fever and to improve the indigenous race that we have in Haiti - is there some more precise external symptoms in Caprines?
- Gibbs USA - There are no external signs because that represents clinical disease that can be used to identify these animals, but perhaps someone else might wish to comment on the merits of importing animals from within the Caribbean.
- Alexander Guyana - Mr. Chairman, wisely or unwisely we decided to try and show that the prevalence of Bluetongue in the Caribbean was widespread that it would not matter since we do not have clinical evidence of the disease. However, as Dr. Gibbs has been reminding us, this perhaps is too naive an approach.

One thing surprises me in relation to the Canadian experience that Dr. Grey mentioned, I did not know that they had tried to isolate the virus and failed. When we take the Australian experience they found the virus in the midge and translated it to the animals afterwards. One of the things that came out of it, I believe is that when they introduced the virus into susceptible animals a mild pyrexia and some transient illness developed of little or no concern, but nevertheless there was some transient illness. One of the things we had hoped would emerge out of this project would be to try and stress closer examination of flocks of sheep and ruminants in the Caribbean, concerning conditions that hitherto have been undiagnosed, conditions that hitherto have gone with no concern, probably hidden under group diagnoses such as footrot, lameness in sheep, abortion in cattle, could in fact be more closely looked at to see if there was any significance.

Another point I would like to bring out, the experience in Trinidad and Tobago in exporting buffaloes to the United States. To the best of my knowledge from Dr. Moe's letter, 90% of 100 buffalo sent to the States were serologically positive. At increased expense the US undertook attempts to isolate virus from the blood which they failed to do and upon this basis they accepted the animals.

Fine, but what I am getting at, is what are we to do? In respect of whether we want animals like what Dr. Calixte is interested in now at the moment, he is not particularly interested in Bluetongue in just saying that, that goat has Bluetongue. I think that what he wants to know is where is he to get his substitute animals to support his African Swine Fever Project. This is exactly the type of question that we are trying to answer. Is he to go to virus isolation in an import policy so that the animals are coming from areas known to be serologically positive

but virus free or serologically negative and virus free. This is exactly the reason for the whole project here to determine that policy for import and export as it applied to the region and I think that as Dr. Gibbs has said and also Dr. Grey, who I see is waiting to come in, is exactly what is being posed to us at this meeting. To determine what this policy should be and if we go towards determining a policy what steps should we take to make sure that that policy is correct?

Grey
Jamaica

- I would like just to add a little bit to this. From the information we have so far the importance of Bluetongue is greater to the region from the point of view of exports and imports. So far we have not been able to say that there is definite evidence of clinical disease here and therefore whatever value it has in getting more information on this must be from the point of view of potential exports, whether within the region or outside of the region. In this respect, the more work we do and the more answers we have, can assure importing countries that the disease does not pose any great threat and in that respect I think that we should proceed with the sentinel work, to find out at probably what time it would be best to attempt virus isolation even on a limited scale and certainly that the modification in the US rules really stem from studies conducted around because the more information they have the more they can liberalise their policies. Therefore it would be to our advantage to continue to work to find out as much as we can about the type or strain of virus (depending on which one Dr. Gibbs thinks is correct?) which is present and to attempt virus isolation and at least if we can come up with the failure of the Canadians and with the US at least in respect to the buffaloes, then at least countries like US will have a more meaningful and generous attitude towards our imports into that country.

Gibbs
USA

- Since we last met, about a year and a half ago, it is gradually been emerging and I think that we should pay credit largely to a lot of the Australian work that cattle are not necessarily the reservoirs of infection, are not persistently infected as perhaps we were thinking two or three years ago - certainly our work in Florida has indicated that though we are seeing infection in our sentinel herd we cannot isolate virus other than in the initial phase (I cannot call it acute phase as we do not get clinical disease) so the Canadian experience is further support of that. When the virus swept up in the O'canagan Valley, you are talking about 1974, I presume, Dr. Grey, the virus was introduced and probably was active within the vector population which was transmitting it to cattle at that time and these cattle subsequently even if they were immune were not persistently infected with virus which might explain why no virus was isolated and it would appear that the epidemiology of Bluetongue is very closely related to the vector and if one looks at North America, one can see that as one goes further north, so the prevalence of infection diminishes. I am now going to introduce to you a further confusing feature, that is, not only must we consider species of *Culicoides* but we must not necessarily look at the phenotype of that vector but we must be studying the genotype because *Culicoides variipennis* taken from Florida is a very highly efficient vector and likewise the *C. variipennis* populations from Texas are also highly efficient. But *C. variipennis* does exist in New York State. If you take the species from New York State, you will find that they are very inefficient vectors. So a study of vectors is integral in understanding the problem of Bluetongue.

This may contribute to the reason why we do not see disease further north in North America than we do. It means that we can possibly develop a system of quarantine before release of such animals and finally I would like to commend Dr. Grey's approach in this area

We must not ignore the potential within the Caribbean of transmission of germplasm through the use of embryo transfers etc. Now this may not address the problem that Dr. Calixte is experiencing at the moment. I presume it is one of large number of goats he would like to bring in into the country. Obviously in this context we need to have something rather than just simple quarantine to in fact meet the problem. Perhaps Dr. Calixte might like to comment on that aspect.

Calixte
Haiti

I like the explanation given by Dr. Grey and yourself - they are sufficient for me and I think your considerations are based on sincerity. The extension of disease may be a problem for all countries in the globe. Thanks for your information.

Alexander
Guyana

I would like to stress once again the importance of this questionnaire which forms part of the recommendations with our consultants in Florida concerning how and if we proceed what is important. We have to get some idea in order naturally to justify any further action or to emphasize the importance of trying to determine this policy for our region. So I would be very grateful and I think Dr. Gibbs as well, if you can take this sheet very seriously. I know it might involve going back into your records in your respective countries but, if you could delegate someone to do this and to get back as much information as possible to us. Even if you cannot reply fully, please give as much information as you possibly can. It would also be important to emphasize to all veterinarians to see if there is clinical evidence of disease in their countries and now that Barbados has obtained some diagnostic expertise and other countries wish to develop this expertise in their laboratories, if they get the antigen and they have the personnel, then it might mean that a closer look might be made for the clinical disease in your countries.

COUNTRY REPORTHAITI

Dr. Jolivert Toussainte

This report covers mainly the epidemiological situation in the country for the first part of the year 1982. Statistics are very deficient because of the lack of qualified personnel limiting regular follow-up on-centres of infection. Besides, the laboratory is functional only for African Swine Fever and parasitology analysis.

Poultry:

Many mortality cases have been observed among local and imported chickens. These cases were attributed to New Castle disease that has been raging in the country for some time, mostly localised in Plaine des Cayes, Plaine du Cul-de-Sac, Plaine du Nord, Port de Paix. Plaine des Gonaives, Vallee de l'Artibonite and Plateau Central.

The birds that also have been hit severely were the imported chickens distributed by the Agricultural Department for substitution especially to peasants in the North West. They were vaccinated before distribution but one must recognise that the adaptation to the milieu, lack of technics and food were also determining factors.

Various cases of Bronchitis were reported and following a vaccination campaign in the Vallee de l'Artibonite with a mixed live vaccine NCD/BI a real epidemic started. Limited to the region, its intensity diminished and currently it is endemic.

Sheep and Goats:

The small ruminant population was drastically diminished in regions such as Aquin, Hinche, La Gonave Island, Jean Rabel, Cabaret, Bassin-Bleu. A thorough study was conducted with the help of international professionals. Deaths were ascertained as due to heavy parasitism.

Bovines:

Massive tick infestations were believed responsible for several cases and the death of six bull calves, three oxen and five horses in the Plain of Cayes, Plain of Baconnois, Plain du Cul de Sac at Liancourt, Verrettes and in the vicinity of Hinche. Bovine piroplasmosis was identified in two cases.

At La Montagne and La Bresilienne, within the district of Jacmel, cases of human carbuncle and Anthrax were recorded. A bovine found dead in the pasture at La Montagne was skinned and sold to a butcher. Three days later many people from the locality developed sores with inflammation and adenomegalies. One of the butcher's children died rapidly. There were many cases at the hospital in Jacmel chiefly among children and antibiotic therapy had to be instituted for 15 - 20 days. At least one other child succumbed.

Bovines have also been found dead without apparent cause in other areas chiefly in the south around Cayes, Petit Goave and Jeremie. Primary and secondary foci of infection for Anthrax have been mapped. Port de Paix, Juanamette, Gonaives, Belladere had outbreaks three years ago.

A vaccination programme has been carried out chiefly from December to May in order to finish before June. PAHO and FAO have assisted with equipment and vaccines for prophylaxis.

Main species affected are bovines. Sheep and goats are known to be infected with a few cases in equines.

The problem of execution is complicated by the few number of veterinarians which does not permit all responsibilities to be undertaken. Veterinary nurses and agents are utilized. In some areas vaccinations are carried out twice yearly; on others and more normally, once per year. A problem is associated with peasant distrust so that all animals are not presented at centres for vaccination. This allows persistence of the disease and deaths to continue.

Carnivorous Domestic Animals:

There is a big problem in terms of rabies. In the Communes of Mombin Crochu, la Victoire and Pignon at the beginning of the year, dogs suspected of rabies were seen and driven out by the peasants. Two dogs were killed but samples were sent too late to the laboratory. One person was bitten and died from lack of care. A physician from the Department of Public Health observed that the symptoms were those of rabies. Canine rabies cases have occurred rather frequently for the past six years in regions along the border. There is a similar problem in the Dominican Republic and mongoose and stray dogs cannot be controlled. Rabies is also present in the Port-au-Prince area, Petionville and Kenscoffe; in Croix des Bouquet and in the Central Plateau.

Limited manpower in the veterinary services prevent adequate policies to be set up to control this disease. A surveillance programme to prevent transmission across the border with the Dominican Republic is arranged but the mongoose in particular presents great difficulty. Introduced to fight rats, they now destroy poultry also.

Vaccination is carried out regularly especially when veterinary agents report outbreaks. Dead virus vaccine is imported from the Dominican Republic, Canada and the USA. The use of dead virus vaccines is believed to reduce the critical effect of lack of refrigeration in most areas. There are about 70,000 - 75,000 dogs in the population. Stray dogs present a big problem as they are difficult to catch and about 75% of these are not vaccinated. There is little problem where owners can be located. There is need to cooperate with the Public Health Division in order to catch stray dogs. They can be kept for 4 - 5 days with calls to find owners, dogs can be used by students or given to people who will care them; or they can be killed. Two types of vaccination programmes exist. One, in the urban areas which is more satisfactory as the owners bring their dogs for prophylaxis. The other, in the rural area is very difficult as dogs are not kept on a leash and the owners are mainly unaccustomed to any particular interventions.

At the beginning of the rainy season, there was a renewed outbreak of haemorrhagic gastro-enteritis among dogs, probably canine parvovirus. Puppies and young dogs were hit the most. Pedigreed dogs as well as indigenous ones were killed by the disease. It will be difficult to control since in most cases the dead dogs are thrown into uncovered pits or in gullies. Sometimes they are buried not too deeply and the carcasses are subjected to the action of stream waters when it rains.

Swine:

Blood samples were taken all over the country from 4 August 1981, to 19 March 1982. This led to the production of an epidemiological map of the disease. The degree of positive samples for African Swine Fever varied as follows:

At the Frontier, Belle Anse, Fort Liberte, Hinche, 8,10,20% respectively. Areas with more difficult access, La Gonave, Jean Rabel, Dame Marie, Coteaux. Jeremie, Nippes, 5,8,9,10, 12, 30% respectively. Areas with easy access, Fondes des Negres, Petit Goave, Les Cayes, Port-au-Prince South, Port de Paix, Jacmel, Mirebalais, Cap Haitien, Port-au-Prince North, Gonaives, 12,14,18,24,25,28,30,32,48,50% respectively.

Concurrently, some studies were made on the presence of ticks of the Ornithodoros type. These ticks had been identified during an earlier study at Moriani, Jacmel, Gonaives and Camp Perrin. While conducting the tick survey blood samples were also taken on available live swine. Unfortunately these operations were stopped because of rain, the start of the slaughtering operations in the test zone which mobilized all personnel and material and the deterioration of one of the machines for collection. From April 19 to May 19 1982 the following results were obtained.

Samples 177, Positive samples 25, (14.2% Positive) Number of Ticks - 3
(Anse-A-Veau Region)

Studies made at Plum Island Animal Disease Centre - USA on the tick of the *Ornithodoros* type showed that these ticks did not carry any African Swine Fever virus. Experimental studies showed that these ticks were capable of transmitting the virus.

Studies made on the sera confirmed the presence of African Swine Fever and Aujeszky's disease over several parts of the territory. According to some information, Aujeszky's disease was introduced with the importation of swine by a foreign firm specializing in breeding.

Cases of death among swine continue to be reported in several areas of the country. Exact causes of death have not been determined as no samples have been undertaken for laboratory analysis since the peasants, in spite of our directives, have been getting rid of carcasses as fast as possible. These cases have been attributed to African Swine Fever but Hog Cholera may also be involved.

COUNTRY REPORT

BARBADOS

Dr. Trevor L. King

There are two veterinary officers and one veterinary pathologist in the Ministry of Agriculture and one Director of Veterinary Public Health Veterinarian in the Ministry of Health.

The creation of this post in the Ministry of Health has, in my opinion somewhat reduced the effectiveness of veterinary control over animal health, since it causes much bartering between the two Ministries particularly in the area of meat hygiene and meat inspection, since although this is a public health matter, export certification is required from the Veterinary Service of the Ministry of Agriculture.

Meat Inspection:

Ante and post mortem examination of animals in slaughter houses have since 1904 been under the Markets and Slaughterhouses Act administered by the Senior Superintendent of Markets who reports directly to the Permanent Secretary and does not pass through the Technical division of the Ministry. Hence much needed information is lost at post mortem and since we have been involved on a minor scale one (1) new disease in pigs, namely mycoplasma pneumonia, has been picked up. Only last week, at a meeting with the Permanent Secretary, we presented our case for having Meat Inspection under the Veterinary Service and it was agreed that the Act be amended in order for us to have legal backing to carry out this function.

Animal Quarantine:

As with all neighbouring territories, we lack the staff to carry out this function on our own and at the moment Animal Health is represented at the airport for only 4 hours per day. We must rely on the good cooperation from Plant Quarantine and Port Health both at the airport and sea ports to screen for meat and meat products entering without permits and required health

certificates. Landing of all animals is done by Vet officers. Holding facilities for small animals have been built at the airport and refrigeration is available for the holding of meat.

Specific Disease:

1. Salmonella has been isolated from poultry and from one case each of a cow and dog. Also two isolates from the local African Green Monkey. The isolates have been sent off for further identification.
2. Infectious Bursal Disease and Inclusion body Hepatitis, Aspergillosis, vitamin deficiencies have been diagnosed in poultry.
3. One case of gangrenous myositis has been recorded in a sheep. This is the first case in any class of livestock.
4. Anaplasmosis in cattle and to a lesser extent in sheep is a constant problem along with Babesia and we intend approaching IICA and CIDA for a programme to deal with Ticks and Tick-borne Diseases.
5. Sarcoptic Mange was found in two dogs and one case in a pig.
6. Bovine Leukosis. Approximately 26% of random samples are found to be positive but we have recorded one case in 1981 and none so far for 1982. We consider this not to be a major problem at present.
7. Brucellosis. This disease is monitored by random sampling of herds. The samplings of cattle at the slaughterhouse, export and of clinical abortions. This includes sheep and goats. There were no reactions found in 1981 or so far in 1982.
8. Endoparasites. This is a continuing problem in all species but is major where intensive systems of production occur for cattle and sheep. This is another area where we hope to approach agencies for assistance in investigating this problem in more detail.

9. T.B. An island wide survey was completed in October 1981. Retesting has commenced in June 1982 and two parishes have been completed to date.

10. Leptospirosis. This work has slowed down somewhat due to staff constraints and our occupation with pushing the Bluetongue Survey. However, it is interesting to note that more recent human isolates are of the same type as found in one of 15 isolates from dogs. There is an on-going MRC programme in Barbados.

11. IBR PI₃ BVD samples were sent to Pirbright, United Kingdom, for serological testing to confirm the presence of these diseases in the island.

12. Bluetongue. A regional serology survey has been completed, indicating a high prevalence of infection throughout all territories. Sentinel herds have been established. Midge fly species active on the island have been identified. Further work is necessary to confirm the serotypes identified.

COUNTRY REPORT

DOMINICA

Dr. W.M. Christian

BACKGROUND:

Agriculture is the mainstay of the economy of Dominica which consists of 305 square miles of ruggedly beautiful terrain. The main thrust has always been placed on the growing of crops for export with livestock rearing being looked upon as a subsidiary industry. This is an overlook however, which the administration realized needs urgent reviewal, since the greatest part of our food import bill - \$10 million in 1981 - lay in the importation of meat and meat products.

ORGANIZATION OF VETERINARY SERVICES:

Maintenance of Animal Health on the island is presently being executed by two veterinarians: Dr. A. Mithian - a UNDP volunteer, and Dr. W.M. Christian - local veterinary officer in charge. They are ably assisted by four REPAHA trained animal health assistants who have been allocated specific districts in which to carry out their duties.

Though it may be considered an unfavourable state of affairs, a good proportion of our time is utilized in trouble shooting - that is the provision of day to day emergency type service to farmers.

However, a certain amount of our energy is also expended by trying to impress on livestock farmers different aspects of preventative veterinary medicine. As a result a lot of extension work is being done on our routine farm visitation programmes where livestock farmers are advised on improvement of their husbandry and thereby reduce incidence of disease.

DISEASE STATUS:

Dominica is very fortunate in being free of all the notifiable diseases which plague various countries - being free of diseases such as Rabies, FMD, Anthrax, Brucellosis, Tuberculosis and most recently - Hog Cholera.

As a result, one can understand why maximum emphasis is being placed on the enforcement of regulations concerning the importation of livestock and livestock products.

Our main disease problems arise either directly or indirectly from parasite infestation - both external and internal coupled with inefficient husbandry practices. Consequently, great emphasis is being placed on this state of affairs by means of farmer education programmes and making readily available to farmers the necessary drugs and chemicals at subsidized prices.

Boophilus microplus is the only tick species identified as affecting our cattle and we presently face a problem with Hemoparasites *Anaplasma* and *Babesia*. To combat this the farmers have been advised to spray regularly and the main chemical being used presently is the Shell product-Supona - an organophosphate which has been found to have a relatively good residual effect.

ANIMAL HEALTH PROJECTS:

Presently this can be simply summarized by saying that the amount of animal health projects in Dominica are directly proportional to the number of notifiable diseases prevalent in the country - and as I mentioned earlier we don't have any. However I shall make brief mention of our Hog cholera eradication campaign - our most recent, completely Government of Dominica financed project which is close to the end of the final phase. With the disbursement of the last 20 pigs owed to farmers - in the second week of December 1982, the campaign shall be officially declared closed.

HOG CHOLERA ERADICATION IN DOMINICA:

For the benefit of those absent at the post graduate epidemiology course in Guyana in August 1982 where a more comprehensive report was presented, I present this summary. I received first hint of a disease outbreak when my curiosity was aroused by rumours of unusual slaughtering of pigs in the

northernmost part of the island in mid - November 1981. While investigating these rumours in the village involved a number of blood samples were taken from pigs, some which showed a distinct leucopenia on examination.

Laboratory confirmation was received two days later. Meanwhile a stand still order was already in force and the method of control already agreed upon between Government and the Veterinary Services. Therefore immediately upon receipt of the confirmatory diagnosis it was officially announced that the disease would be stamped out by embarking upon a slaughter policy. A well demarcated area was put under strict quarantine and this included the five affected villages, two disease free villages beyond in the Western direction and two in the Eastern.

In the North was the natural barrier of the sea and in the South - the mountains.

Practically all other veterinary services were suspended due to our occupation with slaughter and burial every day except Sundays. The last recorded clinical case and slaughter took place during the first week of January 1982.

We then entered the monitoring phase of the project taking random rectal temperatures of pigs in neighbouring villages and ensuring that infected areas remained pig-free.

In August 1982 the disease was declared eradicated, a claim that has been proven since by the fact that most of the previously infected villages have now been repopulated by pure-bred saddle-back pigs which to my knowledge up to November 20th. were in a perfect state of health. And, as I have already mentioned, the final phase of the project "Government's recompensation to farmers" is about to be completed.

However at this point in time, due to the Government's belt tightening techniques at a time when our laboratory facilities need upgrading; at a time when REPAHA graduates are returning home every year and there is no post on

the establishment under which they can be employed; at a time when the two veterinary vehicles at our disposal are on their last legs—spending more time inside the garage than out; at a time when there is no major livestock development projects on stream to justify extra expenditure on Government's part to protect its investment, the need for drawing up feasible disease investigation projects for outside funding is made manifest and is of top priority. As a representative of a member Government of IICA I am hereby solociting IICA's expertise in this regard.

It is in recognition of this insufficient disease investigation activity that my staff and I wholeheartedly supported and participated in the Heartwater fact finding Mission; and pledge our collaboration in the IICA sponsored Bluetongue Survey and other IICA disease investigation programme.

Grenada is basically an Agricultural oriented country. Livestock rearing, even though not on major industrial scale, is very popular and 70% of the population is involved with it. The current livestock population is as follows:

Cattle	-	6,000
Sheep	-	21,000
Goat	-	9,000
Pigs	-	31,000
Poultry	-	120,000

Grenada is about 120 sq. miles in area with 110,000 population. It is a fertile island with an average rainfall of about 50". 80% of the island is usually green round the year. These blessings from the nature, coupled with the enthusiasm of the public and incentives from the Government could help develop our present livestock population 4 to 5 fold level in future. The island is free from most of the notifiable diseases and every effort is being made to maintain the disease free status by implementing a strict restriction on free import of livestock and livestock products.

Peoples Revolutionary Government having recognized the importance of livestock development is making every effort to build up a viable livestock industry. The development of livestock is broadly based on the following objectives:

1. Development of technical manpower.
2. Maintaining an effective animal health coverage to the public.
3. Improving the laboratory diagnosis facilities and maintaining an effective disease surveillance system.
4. Up-grading the livestock with A.I, as well as distribution of improved rams, bucks and boars.

5. Development of livestock on industrial scale under public sector projects to meet the local meat demand and also to maintain a nucleus of breeding stock for up grading the local livestock.
6. To start livestock based industries like small scale meat packing plant to make pork and other meat products, to stimulate a demand for livestock production.

The Veterinary division at present has two veterinary officers and eight animal health assistants. Two of them have recently joined having completed a three year programme at Kenya.

Two individuals are taking a five year degree programme in Vet Medicine in Cuba. Two technicians are trained for the laboratory work. Two more individuals are undergoing AHA training in Guyana.

To assure an effective animal health coverage the AHA's are stationed in strategic areas, depending on the density of the livestock population. Their work is again coordinated with the visits of the Veterinary Officers. It is proposed to construct a permanent office facility, with residential accommodation in each area, so that the public will be in a position to get Veterinary aid in time. Every effort is being made to construct a permanent facility for the Veterinary diagnostic laboratory. Various international agencies are being approached for the funding of the above projects. IICA has also been authorised to seek the sources of funding for these projects, as well as cooperating in the development of an excellent animal production and health care system.

"A detailed survey of the internal parasites among livestock was done by the division. Having recognised internal parasites as the major problem a one year project of deworming livestock, especially small ruminants (three times in a year at four month interval) was done with the cooperation of CIDA, with the objectives of educating the farmers about the importance of a regular deworming schedule. This project had produced good results by increasing their awareness about this schedule. Grenada is free from liver

fluke infestation. There are sporadic cases of screwworm but every effort and precaution is being taken to limit the problem. A random sample survey of nearly 500 cattle, sheep and goat did not reveal the presence of either T.B. or Brucellosis. There is serological evidence of Leptospirosis.

One of the problems in Grenada is the Rabies, which is causing considerable losses among livestock, in addition to being a public health problem. All efforts are being made to control by regular vaccination programme and mongoose control programme by regular trapping. It is very surprising and interesting to note that nearly 70% of the sera tested were positive for Bluetongue. Eventhough no clinical cases are observed, special consideration has to be given to deal with the significance of the high percentage of the positive titres.

The government while interested in up grading the Bovine population is very much interested in Jamaica Red and Jamaica Hope Semen. But unfortunat this is found to be very costly. It will be nice if IICA can find a subsidisi agency so that this semen can be used for up grading programme in the entire East Caribbean. The government has recently started a livestock complex with a goal of achieving self-sufficiency in the meat products and breeding stock. Eventually it is proposed to raise about 1000 pigs at this centre to produce pork and pork products. Also about 500 Black belly sheep for meat as well as for breeding purpose will be raised at this centre.

While the government is making every effort to build up animal health and livestock sectors, the economic hardships and realities are painfully slowing the process of development. Eventhough the same realities are shared by all the international agencies including IICA, international agencies like IICA we feel should play more significant role especially in the smaller Caribbean islands like Leeward and Windward. The government of Grenada while appreciating the achievements of IICA in establishing an effective animal health reporting and information system, for organizing various meaningful and practical training programmes for the Veterinarians and AHA's, for the efforts and assistance in the survey of "Bluetongue disease", that a consideration is given to implement the following proposals in future.

1. IICA's involvement in the improvement of the Diagnostic facilities of the Veterinary diagnostic labs, by supplying the basic diagnostic material like sera, Antigens etc. Explore the possibilities of getting funding for the construction of a simple diagnostic lab in each of the islands.
2. Possibilities of providing two fellowships each of two weeks training in swine husbandry and sheep and goat management, in one of the regional well-established private or public farms.
3. Involvement in developing a regional livestock up-grading programme with stress on Bovine population. Exploring the possibilities of supplying Jamaica Red and Hope semen in the region for this up-grading programme.
4. Involvement of IICA's role in rabies control programme, especially exploring the possible ways of Biological control of mongoose population - if any.

Once again while appreciating and congratulating the activities and achievements of IICA on behalf of the Peoples Revolutionary Government of Grenada, I would like to express thanks for this opportunity.

COUNTRY REPORT

GUYANA

Dr. Lennox Applewhaite

Animal Health Projects:

The most significant activity in the area of animal health that occurred in Guyana over the past two years was the commencement of operation of the Veterinary Diagnostic Laboratory, a UNDP-CIDA-GOG project. Consultant staff, vehicles and expendable equipment were provided by UNDP through PAHO/WHO, the executing agency, while CIDA supplied the building (pre-fab) and the larger non-expendable equipment. The Government of Guyana contributed labour for erection of the building and staff - clerical, technical and professional. Construction of the Laboratory began in 1980 and although the building has been completed and most of the installations in place, it is not yet functional. Hopefully by the end of January 1983 the facility will be operational. Meanwhile work was carried out in temporary premises in the Ministry of Agriculture's compound since November 1980.

The local professional staff as prescribed in the Project Document consisted of a Veterinary Pathologist or Parasitologist as Director, a Veterinary Microbiologist, a Veterinary Clinical Pathologist and a Senior Laboratory Technician; consultant counterparts were to complement the local staff. However, the actual composition of the consultant staff during the past two years was a Pathologist (Team Leader), Veterinary Microbiologist, a Senior Laboratory Technician and latterly, a Veterinary Virologist. The local counterparts comprised a Veterinary Parasitologist (Director), a Clinical Pathologist, a Veterinary Microbiologist and recently, a Pathologist. No Senior Laboratory Technician was locally available. The sub-professional staff consisted of eight technicians during 1981 and much of 1982. This number was augmented by one during mid 1982.

Despite the severe handicaps under which the Laboratory operated, and space was one of the most serious problems, we were able to implement a number

of animal health projects, some of which have been successfully completed. The projects for 1981 were:

1. Surveys of Bovine and Porcine Brucellosis and Leptospirosis.
2. A Study of Piglet Diarrhoea as a Cause of Neonatal Death.
3. A Study of Factors Contributing to Low Hatchability of Chickens
4. Identification of the Aetiologic Agent(s) of Equine Babesiosis.
5. A Study of the Pattern of Oviposition of Nematodes of Cattle and Sheep.

The project for 1982 were:

1. A Survey of Bovine Tuberculosis.
2. A Serological Survey of Bluetongue Disease in Cattle, Sheep and Goats.
3. In July a discussion was held with an IICA consultant into the possibility of carrying out incidence studies of screwworm infestation in Guyana with a view to control and/or eradication.
4. Continuation of laboratory work for the Brucellosis and Leptospirosis Survey.

Results - 1981 Projects:

- 1.1 Brucellosis Survey in Cattle and Pigs: The most important spin-off of this project was the creation of a Serum bank. Sera were collected from cattle and to a lesser extent pigs, throughout the country. The results to date of the survey are presented in Table 1.

TABLE 1: Serological Study of Bovine and Porcine Brucellosis - Guyana 1981.

BOVINE		PORCINE	
No. tested	No. positive (%)	No. tested	No. positive (%)
3,139	0 (0)	219	3 (1.3)

All sera were screened by the plate test with positive or doubtful samples being tested by the tube agglutination test. A smaller survey conducted in 1972 revealed a prevalence of Bovine Brucellosis of 0.5%.

- 1.2 Bovine Leptospirosis: This survey is on-going as sera is still being tested. Preliminary results are presented in Table 2.

TABLE 2: Serological Study of Bovine Leptospirosis - Guyana 1982.

No. Tested	No. Positive	(%)
1,144	632	55.2

Of the 632 positive reactions, 369 or 58.4% occurred against the serovars hardjo and wolfii of the Hebdomadis group. The microscopic agglutination test (MAT) was employed to screen sera against twelve leptospiral antigens with positive samples being titred out.

2. Piglet Diarrhoea as a Cause of Neonatal Deaths: Preliminary findings indicate that several aetiologic agents including bacteria, protozoa and nematodes are involved. This project is being documented.

3. Factors Contributing to Low Hatchability in Chickens: Hatcheries' fluff, weak newly-born chicks and unhatched eggs were studied. Indications are that mycotic and bacterial agents together with unsatisfactory environmental factors are responsible for low hatchability.

4. Aetiologic Agent(s) of Equine Babesiosis: A splenectomised horse was exposed to Anocentor andersoni ticks for nine months becoming fatally ill from equine babesiosis. The causative organism(s) has/have not been identified as yet and some difficulty is being posed by their apparent decomposition as post-mortem was conducted some 6 - 8 hours following death. Serology indicates that only Babesia equi exists in Guyana.

Results - 1982 Projects:

1. Survey of Bovine Tuberculosis: A total of 2,900 cattle were tested throughout Guyana except in the Essequibo (western coastal Guyana) and the Corentyne (eastern coastal Guyana). Results are contained in Table 3.

TABLE 3: Bovine Tuberculosis - Guyana 1982

Total tested*	No. Positive (%)	No. Negative (%)	No. Suspect (%)
2,909	225 (7.7)	2,616 (82.9)	68 (2.3)

*The caudal fold and comparative tests were employed here.

All of the positive cattle except one were detected in eastern coastal Guyana (Berbice).

2. Bluetongue Disease Survey: The validity of this survey was questioned by both local veterinarians and internationals because of the apparent absence of clinical disease in Guyana. However one of the raisons d'etre of the Veterinary Diagnostic Laboratory is to research diseases both unknown and suspected of occurring, in livestock in Guyana. For this reason alone, the survey was justified. Results are presented in Table 4.

TABLE 4: Serological Survey of Bluetongue Disease - Guyana 1982.

BOVINE			OVINE			CAPRINE		
No. Tested	No. Positive (%)		No. Tested	No. Positive (%)		No. Tested	No. Positive (%)	
723	406 (56.2)		393	198 (49.6)		252	101 (40.1)	

COUNTRY REPORT

JAMAICA

Dr. C.L. Grey

PROGRAMMES:

Nine in operation and another two at various stages of development.

1. TUBERCULOSIS BRUCELLOSIS ERADICATION:

This combined programme is in the final phase. The current reactor rate is approximately the same for both and now stands at 0.037%.

Reactors are consistently found in previous reactor herds. These herds were previously tested, met the criteria for release from quarantine and 1-2 years later, turned up with new reactors.

I would like to point out that the elimination of last loci of infection is not only difficult but expensive and difficult to achieve from the point of view of maintaining farmer and veterinary interest because a lot of tests have to be run while uncovering a very few cases.

Analysis of the situation has led to the following conclusions and need for action.

1. All reactor herds must be tested annually.
2. There is need to constantly monitor the records and ensure that follow-up tests are conducted to the required schedule.
3. There is need for a full-time programme coordinator to ensure that all the tests are conducted, trace backs pursued, quarantine officially imposed and released when appropriate records maintained to reflect the true status of the herds.
4. A concentrated effort must be made to complete test requirements for the island within the next six months.

2. PROTECTIVE VACCINATIONS:

Over the past two years, there has been a change of strategy in vaccination procedure for Blackleg and Erysipelas. Blackleg, in particular, is not only widespread but causes severe annual losses due to death of calves and adult cattle.

Annual vaccination campaigns used to be the order of the day, conducted on a parish basis. This meant that only about 1/3 of the calves of vaccination age were protected at the required time each year.

The new strategy involves devoting one day per week to vaccination. Each parish (which coincides with the veterinary administrative areas) is divided into divisions and the programme is carried out in a division each week, so that theoretically the parish is covered in 6-8 weeks, depending on size of the parish. The whole exercise is repeated for the year, taking one division each week.

Farmer response has been chequered and farmers still tend to bring their animals out for vaccination only after deaths begin to occur.

Publicity for the vaccination is provided through posters, the schools, churches and with the help of the area agricultural extension officers. Still there is need for greater education in order to effect an 80% coverage of animals of vaccination age.

3. SCREWWORM:

Studies have and are being conducted in determining the prevalence of the disease and to establish any seasonality which may be existent.

The data bank has assisted in the conduct of a survey through questionnaire directed at livestock farmers to determine that extent of infection experienced and the economic losses caused.

Plans are a-foot to set up six sentinel screwworm stations using sheep as the target animal and collecting incubating eggs deposited on scarified wounds and identifying the larvae as to whether they are true blow flies or not.

This work is preliminary to embarking on an eradication programme.

The assistance of IICA in both phases of this preliminary work is gratefully acknowledged.

4. OVA TRANSFER

Designed to bring rapid genetic improvement to cattle, this programme comes under the department of Research and Development, but will be executed by the Veterinary Division. Estimated to cost some \$750,000 U.S., the programme has been preselected and international funding is currently sought for it.

Two veterinarians have undergone training in the technique and another two are to do so early next year. The programme itself carried a heavy training component. While the entire veterinary staff will undergo training, it is expected that at least six officers will concentrate on the implementation of this technique.

It is expected that ova transfer will bring rapid genetic improvement to existing breeds, an increase in numbers of animals and provide excess for export, as well as increase the export of semen and permit the export of ova.

5. TWINNING:

Another programme of the Research and Development Division, this will be executed by the Veterinary Division. It involves the use of ova transfer. As the name implies, it is designed to determine those animals which successfully carry two off-springs to parturition at any given gestation. While it will increase the number of animals born, because of the occurrence of freemartins, it will not necessarily mean an increase in population.

6. BOVINE FERTILITY:

This programme was started with the assistance of CIDA in 1977 in order to:

- a) Increase the animal production through improvement in fertility.
- b) Improve the AI stud and semen handling facilities to bring them up to international standard.
- c) Improve the laboratory capability to diagnose venereal diseases of cattle.
- d) Provide a fertility examination service through the transfer of technology to local veterinarians.

Objectives a, b, c have been accomplished. Objectives (d) was not fully realized. The programme is on-going with emphasis on objective (d).

The programme established the presence of campylobacter infection in herds. There has been to date no Trichomonas infection.

A research project established the efficacy of vaccination in controlling and eliminating campylobacter infection in animals.

Vaccination of infected herds is a continuing feature of the programme.

7. TICK AND HEMO PARASITE CONTROL:

With the kind assistance of IICA, a project profile for a 5 year programme for tick and blood parasite control has been drawn up. Estimated to cost \$5.5 million U.S., the programme will:

1. establish a regular spraying programme for ticks,
2. surveillance of resistance to acaricides,

3. provide overseas training in the various aspects of tick control,
4. control blood parasite infections,
5. reduce economic losses due to tick and blood parasites,
6. benefit the shoe industry by reducing damage to hides.

The programme has been submitted for approval. If approved, IICA's help will be sought for funding and execution (see # 8,9,10, 11).

STAFF:

The Division continues to be under-staffed, despite serious efforts to provide scholarships for the training of veterinarians. It also faces the problem of retaining qualified staff.

Currently the number of veterinarians stands at 18. It is calculated that a team of 40 is needed to run the service. We have some 48-52 AHA's who assisted the veterinarians.

Consequently we have not been able to provide the theriogenology service.

The laboratory service is hard hit as the areas of specialization have not been manned and losses suffered through resignation, retirement or upward movement of staff have not been recovered by replacement.

It would seem that for years to come, we will be struggling to recruit train and retain staff.

LABORATORY SERVICE:

The Central Laboratory at Hope offers a restricted service in the areas of its capability mainly because the professional staff is not in place to make the inputs for full functions. It however gives adequate support to the Brucellosis eradication programme, offers full service in bacteriology, but only limited service in other areas like parasitology, pathology, poultry pathology, none in virology.

A regional laboratory has just been completed in the Western Region. This will provide routine service to that region, hampered for years by inadequate transport and communication services to effectively use the central laboratory. Occupancy will be effected, it is hoped, by January 1, 1983.

The Central Laboratory has developed full capability to conduct serological tests and culture for leptospira organisms. The Veterinary Division shares this capability with the Ministry of Health and provides the laboratory support for a comprehensive programme in County Cornwall where surveillance work was conducted on humans and other animals.

I must mention the Laboratory instrument workshop held in October, Emphasising microscopes, pH meters, balances and spectrophotometers.

COMPREHENSIVE PROGRAMME FOR ANIMAL HEALTH:

The Veterinary Division feels that animal health activities can produce quantifiable results under a system of programming.

Already a number of activities have been embarked on by resorting to projects.

Help is being sought from FAO to have assistance in outlining a comprehensive programme for all animal health activities, so that they may all be properly integrated.

8. BLUETONGUE:

Jamaica participated in the regional survey and had its quota of serum samples tested in Barbados. The results show a 77% in cattle, 82% in goats and 71% in sheep.

The question is where to go from this point. Should we determine the serotypes present, the species of Culicoides involved? Considering that although there is virus activity and no clinical infection, is there justification on economic grounds to get into further work and to what extent?

9. LEPTOSPIROSIS SURVEY:

Activities have not gone as planned. Blood samples from sentinel herds have not been submitted regularly for testing and the epidemiological work has not proceeded as planned. Histories have not been taken.

Needed is someone to direct activities under this programme in order to ensure that programme goals are met.

10. DELIVERY OF VETERINARY SERVICES:

To enable the Veterinary Division to effectively deliver services to livestock farmers, a programme costing \$1 million U.S. has been drawn up, approved by the G.O.J. and has been submitted to E.E.C. for funding. E.E.C. approval is expected by December 31, 1982 and implementation should get under way by March 1983.

The programme provides for:

1. the erection of eleven veterinary offices,
2. provision of office equipment,
3. veterinary supplies and equipment,
4. two-way communication, and
5. transport facilities.

11. EMERGENCY DISEASE SURVEILLANCE:

We have a NEADCOM interministerial committee consisting of all agencies of government and livestock interest groups and others who would be involved in case of outbreaks.

1. Surveillance at main air and seaports - proper garbage disposal.

2. Local Government authorities urged to protect dumps from animals and proper garbage disposal.
3. Emergency disease exercise - should be two times per annum - not observed.

COUNTRY REPORT

ST. LUCIA

Dr. Keith Scotland

Mr. Chairman, it gives me great pleasure to be present here today and to deliver on behalf of my Government, this report, which I hope will present to you a picture of the Animal Health situation currently existing on the island of St. Lucia.

HISTORY:

St. Lucia is an island of about 238 sq. miles with an estimated population of about 120,000 people.

Figures available to date list livestock figures as follows:

Cattle	-	12,000
Pigs	-	10,000
Sheep and Goats	-	8,000
Poultry	-	20 - 25,000

The system of farming is similar to that which prevails in many other Caribbean countries with approximately 60% of livestock being owned by small farmers who individually own from one to thirty animals. This system when seen in light of the mountainous terrain of the island presents a problem for the effective delivery of animal health services to all farmers concerned.

At the present time there are approximately ten farms with cattle numbers in excess of 50 animals including a government sponsored project and one private farm which contains in excess of three hundred head of cattle.

The average pig farms contain approximately 6-8 breeding sows, one or two boars, and varying numbers of weaners and growing pigs while poultry farms would contain on an average 300-400 laying or broiler chickens.

Traditionally, the veterinary service on the island has been geared mainly to provide the day to day emergency type services required by farmers, together with a limited amount of investigative and regulatory work. The service has usually been manned by a single veterinarian and a handful of assistants. In 1979 an additional veterinary officer joined the service and it is hoped that during 1983 - 1984 the number will be further increased by one.

With the setting up of REPAHA in Guyana, the shortage of trained veterinary manpower was augmented somewhat by the graduation of eight animal health assistants from its inception to the present time, two students are enrolled at REPAHA and are expected to graduate in 1983.

At the present time, St. Lucia appears to be free of many major animal disease problems. The island is free of Rabies, Brucella and Tuberculosis. Hog Cholera was last diagnosed during an outbreak in 1973. Import control for the prevention of introduction of exotic diseases appears to be working well, and present efforts are being contemplated to strengthen and improve regulations pertaining to animal diseases.

By far and large our energy is expended on the control and treatment of routine animal disease problems centred mainly around internal and external parasites and various bacterial conditions.

DISEASE SITUATION:

(a) Tuberculosis - Brucella

During 1979 - 1980 an island wide testing programme was conducted to determine the existence of Brucella and Tuberculosis in cattle on the island. During the programme about two thousand five hundred cattle were tested with negative results. Due to financial constraints the programme has not been repeated on a large scale, but sporadic testing continues and results to date indicate that these two disease conditions are not present in cattle.

(b) In 1980, 50 sera samples collected randomly from pigs, at the Castries abattoir were tested at Ames Iowa and resulted in the first identification of *Leptospira* in pigs on the island. Ten samples were positive and the following serotypes were identified:

L. pyogenes, *L. icterohaemorrhagiae*, *L. pomona*, *L. hardjo*.

The situation regarding Leptospirosis in other species was still unknown and in 1982, 10% of bovine blood samples sent for testing on Blue-tongue project were tested with a pooled antigen and resulted in a 90% positive reaction.

It has now become imperative that a proper project be started to determine the true significance of this disease to livestock and humans on the island. It is planned that during the upcoming year, assistance will be sought to carry out a joint programme with the Ministry of Health.

BLUETONGUE:

St. Lucia participated in the IICA sponsored Bluetongue project in 1982. Approximately 200 samples from cattle, sheep and goats were submitted for testing. Results indicated that an average of 80% of each species showed positive titres to this disease, but as yet clinical disease has not been diagnosed on the island. Since it is apparent that testing and compilation of the results have only just been completed, we look forward to participation in a discussion on the significance of the results and the next step in the programme.

HEARTWATER DISEASE:

In July of 1982 we were visited by Dr. Jerry Alexander and a group from USDA reference Heartwater disease survey.

It was of some significance that although samples collected did not result in a positive diagnosis of Heartwater on the island, Dr. Alexander was

able to see first hand the problems associated with the *Amblyomma* tick on the island. This tick is very important as a vector for Heartwater disease. In addition we were able to establish a much needed channel of communication with USDA and its Plum Island disease centre. The visit offered the Ministry of Agriculture an opportunity to establish dialogue with IICA, since we have only just recently become a member.

DERMATOPHILUS:

St. Lucia is currently plagued with a serious problem of *Dermatophilus* in cattle, sheep and goats. This problem to date has been localised in one area of the island; on the north coast. This area has for the last fifteen years harboured the *Amblyomma variegatum* tick and this associated problem has significantly intensified over that period.

At the present time, it is estimated that about three thousand animals are at risk with a figure of about 40 - 50% showing clinical signs of the disease at any one time. The recent advent of the rainy season seems to have increased the problem and an intensive programme of thrice weekly treatment with antibiotics is now in progress. This programme is heavily subsidised by Government, but part of the cost is being met by the already financially hard pressed farmers. The disease condition has seriously affected animal production in this area and government is currently looking at possible solutions within the serious financial constraints which currently exist. Recently we have approached the OAS for some assistance in this regard and should our request meet with a favourable response it is hoped that a small project should commence in the new year.

It is hoped that in this project we will try to establish accurately the circumstances surrounding the disease problem in the area, and recommend methods for control of these problems, identify animals originating within the areas by use of special tags and institute a programme for control of animal movements within and outside of the affected areas. Finally, we will take

necessary measures to control the incidence of this condition. It is estimated that a livestock farmer within the area can expect a loss of about one or two animals per year valued at about \$1,000 to \$2,000 each.

LIVER FLUKE:

This is another serious problem encountered in certain areas of the island. At the present time, it is estimated that 24 to 36 lbs. of liver are condemned weekly from animals inspected at the Castries abattoir alone. This represents about 3 out of every 15 cows seen at this abattoir.

Very little work has been done in this regard but it is planned to institute a programme of checks at municipal abattoirs with a view to getting back to farms of origin of problem animals with the intention of recommending the necessary action to be taken to decrease the severity of this problem.

KIDNEY WORMS:

The incidence of Kidney Worms in pigs appear to be on the increase. Due to the high costs of housing and concentrate feed, a number of farmers are going into the husbandry practice of rearing pigs in the field. Housing here is kept to a minimum, and waste bananas are supplemented by concentrate feed.

This appears to have led to a simultaneous increase in the incidence of the problem and further investigation and work will be done in the future.

FACILITIES:

The veterinary services in St. Lucia are badly in need of proper laboratory and other physical facilities. Efforts were made earlier to seek assistance from CIDA for the provision of adequate facilities. Unfortunately, our request was not accepted at the time, though a small grant was provided to upgrade the existing facilities to provide for re-organisation of the existing floor space.

It must be realised that by 1983, the division should consist of three veterinarians, seven animal health assistants and one laboratory technician - the present facilities can adequately accommodate one veterinarian and two assistants. The laboratory and other working areas are inadequate, the location is not suitable and many essential facilities are non-existent. We are in urgent need of facilities to effectively carry out our planned programmes. We are currently trying to obtain assistance for the erection of new facilities on the premises of a government research station outside the capital.

It is important that something be done in the near future to provide the much needed facilities if it is not to lead to a frustration of our manpower and the farming community as a result.

PROTECTION AND FUTURE PLANS:

It is anticipated that during the financial year 1983 - 1984, government will spend approximately \$450,000 EC in veterinary services. This projected expenditure represents an almost 100% increase in the amount allocated for the current financial year and it is our wish that the returns on this investment will be well worth the money expended on it.

As alluded to earlier, it is planned to increase our veterinary manpower to three veterinarians in order to more adequately cover the island, provide services to farmers and improve our diagnostic and other services. In order to better utilise our AHA manpower, and to motivate these officers, we are planning to create two positions of senior animal health assistants.

A recent livestock project funded by the EDF in conjunction with the government of St. Lucia has now come on stream and it is hoped that ten or so satellite farms proposed in this project will become operational during the upcoming year. The veterinary backing needed for such a project is crucial since the entire project will contain well over six hundred dual purpose cattle thus providing much needed meat and milk for the island.

Our abattoir system is in bad need of re-organisation and we are currently awaiting the report from an FAO consultant on meat works, who visited St. Lucia in August 1982.

In the field of veterinary public health, St. Lucia is hoping to host the next meeting of the Intra-Caribbean Veterinary Public Health and it is hoped that with the availability of more veterinary manpower, the division will assume a bigger role in the area of veterinary public health.

Mr. Chairman, this in a nutshell is the situation with regard to veterinary services on the island of St. Lucia.

Our limited financial and other resources severely hamper the areas of work and possible involvement. We are indeed happy to have joined the ranks of IICA and hope that we will be able to make a valuable contribution not only to the present deliberations but to the organisation as a whole, and will in the process utilise effectively whatever resources, in the way of expertise or otherwise, that may be available to us.

IICA is no doubt aware that islands such as ours need all the assistance they can get in order to better utilise the scarce resources that may be available to them and I can assure you that whenever the need arises we will not hesitate to approach IICA in this regard.

We are all aware of the pressures and constraints placed on IICA for such assistance but I am convinced that with adequate cooperation on our part, we can maximize our limited resources.

COUNTRY REPORT

SURINAME

Dr. Robert Lieuw-A-Joe

In Suriname the organisation has been changed in the way that Animal Production is added to the Veterinary Services.

The main problems we recognise are those of organisation and manpower, therefore, a request was forwarded to IICA asking for the assistance of an organisational expert.

Once we have a sound organisation with good infrastructure we will continue with Animal Health Programmes.

The first field must be then, a survey of diseases we are dealing with, their geographical distribution and the economic role they play.

Suriname is free of most major animal diseases.

Concerning Brucellosis, we have imported it. Of the three infected farms, two will soon be declared free. On the third farm we will continue with slaughtering and vaccination procedures.

In our effort to implement animal health we are trying to group the farmers into organisations so that we can have counterparts we can discuss with. This is also why the veterinarians have formed the Suriname Veterinary Association from October 19 this year, and of which I have the honour to be the President.

The poultry industry where we have a high percentage of losses due to diseases and bad management will soon be tackled in cooperation with the farmers. We have just had two short time consultants through PAHO.

Hopefully, at the next meeting I will be able to inform you more about our Animal Health Programmes.

BACKGROUND:

As a result of problems associated with the production of broiler hatching eggs and procurement of the same from foreign sources, Cabinet appointed a committee to investigate and report on all aspects of breeder flock operation and the effects of integration in the Poultry Industry on small broiler producers. In its investment, the committee held discussions with and received written reports from representatives of all sub-sectors of the Industry. In addition, the committee held discussions with the Ministry of Agriculture, Lands and Food Production, the Ministry of Industry and Commerce, the Customs and Excise Department, B.W.I.A. and the Poultry Industry Control Committee (P.I.C.C.).

In reporting its findings and recommendations, the committee traced the phenomenal development of the Industry from the late forties to the present time. It pointed to the fact that development of the industry was entrusted to P.I.C.C. from 1973. However, the P.I.C.C. failed to fulfil its role in many respects. The committee regards this failure as one of the major constraints to development of a well regulated poultry industry.

Other constraints include inadequate monitoring of feed quality and of unsanitary practices in hatcheries, poor communication among persons and organizations involved in the importation of baby chicks and hatching eggs, inadequate services to facilitate prompt delivery of the commodities at the airport, and the absence of proper facilities for holding them prior to delivery, so that mortality of chicks and deterioration of the quality of hatching eggs will be minimized. As a result of action initially by this committee, steps have already been taken to eliminate or ameliorate some of the hardships experienced by importers of baby chicks and hatching eggs.

Hardships of a different nature have been experienced by small broiler farmers whose enterprises are not integrated with enterprises in other sub-sectors of the industry. Their investigation revealed that many independent full time small broiler farmers have been adversely affected by integration in the industry.

The other major category of broiler farmer is the contract broiler grower. These farmers have benefitted considerably from integration in the industry. They have guaranteed outlets for their broilers and receive a fixed subsidy per pound of bird delivered to the growing plant. Consequently, their income has a more stable basis than that of their independent counterparts. This act was an incentive which gives rise to a natural progression towards vertical integration in the Industry.

The direct financial assistance to contract broiler growers referred to above is one of many types of incentives given to operators in the Poultry Industry in general. Others are market protection through the tariff mechanism and duty free concessions. In addition, soft loans are made available to the Industry from the A.D.B.

All of the foregoing incentives for development have been provided by the Government of Trinidad and Tobago and may therefore be regarded as external to the industry in that they were not generated by the industry itself. However, in the view of the committee, there is much scope for the establishment of new internal stimuli for growth. They include development of industries related to the Poultry Industry and the exploitation of the CARICOM and Latin American markets for poultry and poultry products.

Another internal factor influencing the growth of the industry arises from the obvious need in the immediate future to establish in Trinidad and Tobago parental flocks from which commercial broiler breeder or multiplier stock could be derived. This must be the ultimate objective if Trinidad and Tobago is to have a Poultry Industry that is completely independent of outside sources for its supply of hatching eggs and then be insulated against the effects of shortages of this all important input.

Even more pressing at the moment than the need for parental flocks is the need for the re-establishment of breeder or multiplier flocks operating on a sound economic footing. This sub-sector flourished in the early 70's, producing 68% of the number of eggs hatched locally. However, it suffered a rapid decline to 34% in 1975 and plunged to only 4% in 1978. This was due to two factors introduced by the GOTT viz.

- i. Fixing the selling price of locally produced hatching eggs at an uneconomic level, while at the same time
- ii. Granting subsidies for hatching eggs which favoured the imported egg and discriminated against the locally produced egg despite the higher hatchability of the latter.

In the circumstances, local broiler hatching egg producers suffered considerable financial losses and were thus compelled to abandon their operations. This committee has been informed that breeder flock entrepreneurs would readily resume operation provided that they were given the assurance that profitability would be commensurate with the high costs and risks involved in the operation of an enterprise of this nature.

The costs and risks associated with breeder flock operation are higher than those associated with most other sub-sectors of the Industry because breeder flock operation is more complex than most other facets of poultry production. It is also more sensitive to the deleterious effects of the external environment such as those produced by disease conditions ambient temperature and humidity and nutritional deficiencies.

At the conclusion of their deliberations, the committee recommended inter alia that:

1. All hatcheries be frequently inspected.
2. Adequate staff and facilities be provided for the prompt diagnosis, treatment and control of poultry diseases particular attention being paid to the monitoring of breeder flock health.

3. The storage, age and method of administration of vaccines at hatcheries by the Animal Health Division of the Ministry of Agriculture, Lands and Food Production.

It is against this background that the Poultry unit of the Veterinary Services Division was established. The unit was charged with the responsibility of surveillance of the poultry industry and this includes:

1. Surveillance of imported eggs and baby chicks
2. Hatcheries surveillance
3. Broiler farm surveillance
4. Layer farm surveillance
5. Breeder flock surveillance

To date only two areas are being monitored viz hatcheries and broiler farms with nominal interest being paid to the surveillance for Salmonella in imported day old chicks.

Hatchery Surveillance:

This programme was originally initiated by the Veterinary Diagnostic Laboratory with the following objectives:

- i. To determine the level of contamination in hatcheries.
- ii. To evaluate how this relates to chick quality, and subsequent susceptibility to disease.

Level of Contamination in Hatcheries:

The programme commenced on 1/2/82 and continued until each of the 14 hatcheries operating in the country was visited at least once. At each hatchery the following procedures were carried out:

- a. Bacteriological plates were exposed in the various rooms i.e. hatcher room, setter room, vaccinating room, as well as in the hatchers and setters themselves.

- b. Samples of vaccine were plated.
- c. Setters and hatchers and their contents were swabbed.
- d. Samples of eggs from the hatchers and setters and baby chicks were brought back to the lab for culture.

Bacterial and mould counts were done from these samples to determine the level of contamination. Results of these tests have given an initial indication of the prevailing conditions in the hatcheries.

A preliminary analysis of these results indicate that the level of contamination in all hatcheries is relatively high and there is a definite need to institute better sanitation procedures. This is generally true of the more open areas of the hatcheries i.e. the hatcher, setter and vaccinating rooms.

The Hatchery Sanitation Programme is to be expanded and the frequency of visits to hatcheries increased. Additional staff and equipment are to be procured by the Veterinary Diagnostic Laboratory in order to expand their facilities for handling bacteriological samples from hatcheries. It is envisaged that four hatcheries per week are to be tested. This will ensure that each hatchery is visited at least once a month and level of sanitation will be more adequately monitored.

Advisory visits will be undertaken by the field staff of the Poultry unit, to inform hatchery operators on proper methods of cleaning, disinfection and fumigation of equipment.

Salmonella organisms have been isolated in three hatcheries. There is need for these salmonella organisms to be typed in order that their significance in public health and veterinary health be determined. Investigation into sanitation procedures used in hatcheries e.g. disinfecting and fumigating are yet incomplete.

Correlation of levels of contamination in hatcheries with chick quality.

A protocol for a programme to investigate this aspect of the Hatchery Sanitation programme is being prepared.

Reports from the Brown Farm surveillance indicate that high losses of chicks occur within two weeks of receiving them from hatcheries. In depth study is needed to determine any correlation between hatchery sanitation and the performance of chicks on farms.

Salmonella Surveillance - day old chicks

Currently chicks imported into the country are routinely tested for the presence of Salmonella. The chicks are usually for Breeder flocks and Layer flocks. Salmonella sp. are often found present in these birds. However, no meaningful study or follow-up of these birds can be done without typing of the Salmonella organisms found. The Laboratory is presently in search of a reference center for the typing of all Salmonella isolates.

Broiler Farm Surveillance:

This work is carried out by three (3) A.H.A. assigned to three areas of duty: i.e. St. George, St. Patrick/Victoria. During the period January - September 1982 a total of 1204 visits were made on 594 farms representing a total capacity of 8.7 million birds. Problems encountered on these farms include Gumboro, Mycoplasma, Encephalomalacia, Coryza, CRD, NDV, Necrotic dermatitis, Paralysis, Avian encephalo myelitis, Marek's, Aspergillosis and Pale bird syndrome. Most were subsequently confirmed by the laboratory. Appropriate advisory services were given to the respective farms. Five new REPAHA graduates will be immediately added to the poultry unit to increase the effectiveness and efficiency of the programme.

REQUIREMENTS:

1. The field staff attached to the unit is in need of training in poultry farm management and clinical diagnosis and control and poultry

disease. The incumbents were assigned to this unit with little if any experience in poultry, and their knowledge to date has been acquired through on-the-job experiences.

What is needed at this stage is a short course connecting some classroom exposure followed by a period of practical experience supervised by knowledgeable and competent professionals in the field. No such programme is now known to be in existence and it is our wish that the expertise of IICA could be brought to bear in the formulation of such a programme.

2. Our second request is for assistance in identifying a reference laboratory and aid in the typing of Salmonella organisms.
3. Our third requirement quite happily has already been partially taken care of, i.e. a source of antigens and other laboratory reagents. The lack of these reagents in the past exerted severe constraints on our already limited resources.

DARNDR/IICA - REUNION OF DIRECTORS OF ANIMAL HEALTH

RESANTILLAS II

22 - 25 NOVEMBER, 1982

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ИКА-СИБИРЬ

БИБЛИОТЕКА

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1