AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

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BATCH #16

1. SUBJECT CLASSIFICATION

A. PRIMARY
Serials

Y-AL00-5200-0000

B. SECONDARY
Agriculture--Animal production--Ruminants

2. TITLE AND SUBTITLE
Annual report: July 1972-June 1973

3. AUTHOR(S)
(101) Tex.A&M Univ.

4. DOCUMENT DATE	5. NUMBER OF PAGES	6. ARC NUMBER
1973	26p.	ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS
Tex.A&M

8. SUPPLEMENTARY NOTES *(Sponsoring Organization, Publishers, Availability)*
(Administrative summary primarily)

9. ABSTRACT

10. CONTROL NUMBER
PN-RAA- 794

11. PRICE OF DOCUMENT

12. DESCRIPTORS
Animal husbandry
Livestock

13. PROJECT NUMBER

14. CONTRACT NUMBER
CSD-3675 211(d)

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

211(d) Annual Report
June 1973

Title: "Expanding Competence in the Design & Execution of Livestock Development Programs in the Tropics, Emphasizing Ruminant Livestock Production Systems Through Improved Breeding & Disease Control" AID/csd-3675

Grantee: Institute of Tropical Veterinary Medicine
College of Veterinary Medicine
Texas A&M University

Director: Fred D. Maurer

A. Statistical Summary:

Period of Grant: 1 July 1972 - 30 June 1977
Amount of Grant: $500,000.00, of which $250,000.00 is to the College of Veterinary Medicine

Expenditures: For current report year 1972-1973, $8,697.00; accumulated expenditures 1972-1973, $8,697.00; anticipated next year, $67,314.00.

B. Narrative Summary:

Five one day information exchange seminars and planning meetings have been held in the U.S., attended by consortium representatives and AID advisors.

Following the selection of Guyana as a potential site for a team study and preliminary contact with livestock authorities of Guyana, South America, a consortium-AID personnel visit was made to Guyana.

In Guyana, the consortium conducted a 6 day symposium and visits were made to cattle production operations in five representative regions of the country. A detailed report of the livestock disease situation as observed in Guyana is provided in the body of this report. In brief, they appear to have the major bovine diseases encountered in this hemisphere with a very small and grossly inadequate national and private veterinary service. Livestock disease control is especially handicapped by the lack of a veterinary diagnostic laboratory in the country. Clinical diagnosis and some submissions to diagnostic laboratories in other countries indicate widespread and serious disease problems.

Proposals were submitted in January to the Guyana government and a reply was finally received in late May from Dr. P.A. Reid, the Minister of of National Development and Agriculture, outlining conditions to be met before 211d work can proceed in Guyana. We at Texas A&M hope that most of the conditions can be met and the work proceed there; from a cooperating country's point of view, the conditions are generally reasonable and can be expected from any other country.

Apart from the above efforts to develop a team capability through experience with Guyanese livestock problems, we in animal health have been developing a course on exotic animal diseases and for which we are preparing extensive training aids in the form of 35mm slides with commentaries and lecture notes backed up by the accumulation of a reference library on Tropical Veterinary Medicine. Loan study sets are also being prepared.

We have five graduate students in the field of Tropical Veterinary Medicine specializing in the microbiology, pathology and parasitology of livestock disease control in the tropics.

Likewise, in keeping with the grant objectives, we have a visiting Professor, Dr. R.J. Rogers, a veterinarian from Australia, who has a long background of experience in cattle diseases. He will be working with our staff at Texas A&M for a four month period.

We have provided training for foreign students from Guyana, Nigeria and Colombia.

C. Detailed Report

I. General Background & Purpose of the Grant.

While there are internationally political reasons for strengthening allied nations for reasons of security, there is also a need to help LDC's attain levels of economic stability and independence to where they can engage the products of their resources in world trade to the advantage of all nations.

With the world's population exceeding its food supply by some 2% per year, food has become one of the most critical resources. While this trend has been slowed by the so called 'green revolution', the increase in grain production must be looked upon as one of several necessary steps toward satisfying man's future food requirements. To neglect the problem now because of this advance will be to risk the spread of hunger to whole nations with the consequent loss of social, economic and political stability fostering aggression. If widespread starvation is to be prevented, all potential food resources must be developed.

The essentially worldwide shift of rural populations to the cities is requiring even more production for the markets than the growth of population would otherwise demand. The mere expansion of a subsistence agriculture is

no longer sufficiently productive. Farmers and ranchers must provide a surplus beyond their own needs if the cities are to be supplied and if farmers and ranchers are to obtain the capital required to utilize the technology essential to significantly increase production.

The United States is one of only ten countries with a significant surplus of food. Those ten countries contain only 15% of the world's population. It is apparent that they will not long be able to make up the world's shortage. Since we cannot long provide the food, we must be able to hlep the people of the underdeveloped countries to increase their own food production.

The most acute food shortage at home and abroad is for protein foods, especially those of animal origin. Of the world's dietary protein about 70% is derived from plants and 30% from animals. Both are needed and there is considerable interdependence in their production. While it is possible to obtain all of the essential protein from plant sources, this is often difficult to accomplish in a given area. To do so requires the right variety of plant proteins, enough knowledge of nutrition to select them, enough technology and capital to process them into edible products for both infants and adults, and the incentive to eat them in adequate amounts. There are many places where these conditions are not met and where there is severe and frequently fatal malnutrition for lack of animal protein. The inclusion of minimal amounts of animal protein makes it possible for a wide variety of plant foods to complete an adequate diet. There are also geographic and economic factors which make it more practical and efficient to produce both plant and animal foods. Only 8% of the world's land area is suitable for crops and only about 2% is considered ideal, while some 65% is only suitable for grazing. Some 75% of the world's people live in underdeveloped countries where they are largely dependent upon animals for transport, agricultural power and fertilizer as well as for vital protein. For millions of these people, animals also provide a way of life with great additional dependence upon animals for clothing, fuel and shelter.

It is for the above reasons that AID has provided support for this 211d program which will improve the competency of four U.S. universities to assist livestock production in the tropics.

The Institute of Tropical Veterinary Medicine at Texas A&M will increase its knowledge and capabilities in the field of tropical diseases with specific emphasis on conditions which contribute to low levels of production. Emphasis will be on utilizing these competencies on livestock production in the tropical LDC's.

II. Objectives of the Grant

1. The broad objective of the consortium is to strengthen capabilities through an integrated multidisciplinary approach to:

a) identify opportunities for significant ruminant livestock production.
b) analyze constraints to such development.
c) design programs to overcome constraints and exploit opportunities for developing the ruminant livestock industry.

Specifically, for the Institute of Tropical Veterinary Medicine, at Texas A&M, the objectives are to increase knowledge and capabilitites toward the improved control of those diseases which handicap livestock production in the tropics; thereby to improve the capacity to assist AID and tropical countries in the design, organization, and planning of animal disease control programs best suited to tropical conditions, and incidental there, to improve the research teaching, adult education and capabilities of the institution in relation to current AID programs in Colombia and Texas.

2. Review of objectives; Although approved for 1 July 1972, no 211d funds were received until 3 January 1973. There has been a four month delay in the response from Guyana following our visit and proposal to work there.

The reply from Guyana requires that substantial service be rendered to Guyana in the form of training opportunities for their personnel plus diagnostic and consultive services which were not offered in the AID inspired proposal submitted to them. There are not sufficient funds in the 211d budget for Texas A&M to meet their requirements, particularly in relation to providing a diagnostic service, so that some compromise will be required.

We have ordered equipment and made plans for about 2 months of work in Guyana this summer providing compromises are reached and the work there can proceed. Delay of reaching a working agreement with Guyana beyond 1 July will require a deferment to May 1974. It is likely, however, that some additional support from AID Washington, or AID mission in Guyana, may be necessary to meet their requirements.

The delays with Guyana have caused us to place emphasis upon the other objectives, including the development of a library of information on exotic animal diseases, the preparation of training aids, mainly in the form of 35mm color slides of major diseases. Some of these have been made up into study sets with commentaries explaining each slide so they can either be used in giving lectures or for individual students to study. Extra sets are made available for loan. A course in exotic animal diseases is being developed which covers major disease burdens for livestock production in the tropics.

Weekly seminars are held within the Institute of Tropical Veterinary Medicine, in which both our current tropical disease research and 211d work and training materials are discussed.

III. Accomplishments

A. Information Exchange:

There have been six information exchange seminars and planning meetings of the consortium members including one in Guyana.

In addition, we hold weekly seminars jointly with AID-Colombia and AID 211d personnel within the Institute of Tropical Veterinary Medicine which includes 4 graduate students and 4 faculty members, a visiting professor of the program plus visiting veterinary college faculty.

The visit to Guyana in January 1973 was made by Dr. Kenneth Kuttler and the writer, Dr. Fred D. Maurer. Enroute to Guyana we stopped to review the potential for possible 211d work in the Dominican Republic and were much encouraged by the interest of Technical AID & Dominican personnel and the availability of animal production and animal disease information there. On the bases of available information, it would have been much easier for the consortium team to prepare a comprehensive report on livestokc production potentials in the Dominican Republic rather then Guyana. The major problem, which presumably prevented eventual 211d work in the Dominican Republic, was the fact that the AID mission was due to phase out their livestock support program this month.

We also stopped for two days in Trinidad, primarily to visit with Dr. H.E. Williams, Head of the Department of Livestock Science, University of the West Indies, St. Augustine, who has had many years of veterinary experience in Guyana. From him we were enabled to get an objective view of animal health problems and veterinary services that was not possible in Guyana.

During the period 14-20 January 1973, Dr. Kuttler and I participated in a joint seminar presented by our consortium team and Guyanese veterinarians and livestock people. Also, during this period, we made visits to the following agricultural stations and livestock production areas:

Kuru-Kururu Coop. College
Central Agricultural Station
Bel Air Dairies
Kabawer Ranch
Sbini Livestock Station, Kibilibiri
Rupununi District
Abbatior and Agricultural Station
Matthews Ridge Station

A detailed report of our observations relative to the animal disease situation in Guyana is attached as appendix no. 1.

The most difficult aspect of an animal disease incidence and distribution survey in Guyana is the lack of an animal disease diagnostic laboratory. While clinical evidence is presumptive, an accurate survey is not possible for many diseases without the backup of a competent diagnostic laboratory. We have been told that they are soon to build a laboratory facility and that it will be equiped with funds from FAO.(which will also provide training opportunities for a staff) but this is still in the future.

We anticipate that Dr. Tom Craig, of our staff, will spend about 6 weeks there in July and August 1973, or preferably May-August 1974. He will take the essential equipment and antigens to enable him to diagnose anaplasmosis, babesiosis and trypanosomiasis, which are the three diseases they specifically asked us to help with in Dr. Reid's letter of 16 May 1973, see appendix no. 2. Dr. Craig will also make a limited survey of cattle parasites, but further laboratory diagnosis will require more of a laboratory capability and support

than our 211d grant can provide at this time. If, by next year, Guyana obtains some diagnostic facilities, we could then consider rendering some further assistance toward the training of their personnel and a more comprehensive disease survey, if AID Washington concurs.

B. Tropical Disease Library:

Although the Veterinary College library contains some 7,134 reference books and texts on veterinary subjects and active files are maintained on some 14,566 bound copies of 459 different medical journals, we felt the need for a special library on tropical veterinary medicine, readily accessible to our staff and students. Consequently, we have accumulated the following to date: 33 reference books, 29 reports, 497 reprints of technical papers, and 8 theses and dissertations. The reprint file includes copies of 73 papers, prepared by the faculty and graduate fellows in our program.

C. Training Aids Prepared:

Rinderpest

Four sets of 40 kodachrome slides with commentaries on the gross and microscopic pathology of rinderpest are ready for use and loan. A master set of 76 kodachrome slides with commentaries on the gross and microscopic pathology of rinderpest has been made, and 3 duplicate sets for use and loan are in preparation. A training lecture has been prepared to accompany the larger slide set.

African Horsesickness

Four sets of 40 kodachrome slides with commentaries on the gross and microscopic pathology and clinical features are ready for use or loan. A master set of 110 kodachrome slides of the gross and microscopic pathology and clinical features has been made and 3 duplicate set are in preparation. A training lecture has been prepared to accompany the larger slide set.

African Swine Fever

Three sets, 62 kodachrome slides with commentaries, on the clinical gross and microscopic pathology are ready for use. A training lecture has been prepared to accompany the slide set.

Other Diseases:

Blue Tongue

One basic set of 29 kodachrome slides with commentaries of blue tongue in sheep from which additional sets will be prepared. Three sets of 39 kodachrome slides of blue tongue in deer with commentaries are available.

Kodachrome slides have been made and accumulated on several other exotic diseases which can form the basis for study sets, some provide adequate coverage, others will require additions.

On a recent trip to Senegal (at no expense to our AID program), I was able to take pictures of streptothricosis cases which will materially contribute to the coverage of that disease.

We have also accumulated comprehensive collections of histologic slides and blood smears for local use for the training of the staff and students.

The interrelation of our AID Colombia program and 211d facilitates the accumulation of much more training material than 211d along can provide. This is especially helpful in obtaining training materials on anaplasmosis, babesiosis, and trypanosomiasis with which we are currently working. This augmentation also involves the considerably voluntary use of Institute and College personnel on behalf of the 211d program without cost to 211d.

We have purchased a console unit for use in the projection of color slides which greatly facilitates the study of slides and commentaries by individual students.

D. Training:

During the period January to May 1973, a veterinary medical technician, Miss Juliet Jagarnauth, from the laboratory of Dr. Peter Fernandes, Principle Veterinary Officer of Guyana, underwent a period of training here at the College of Veterinary Medicine. She spent roughly 1/3 of her time in the Department of Veterinary Microbiology, 1/3 in our Tropical Veterinary Medicine laboratories, under Dr. Kuttler, and 1/3 in the diagnostic laboratory. In view of the importance of Leptospirosis in Guyana, we then arranged for her to spend two weeks in the WHO world reference center laboratory for Leptospirosis at Walter Reed Army Medical Center in Washington, D.C.

This training will be a valuable asset to both Miss Jagarnauth and to Guyana, where her talents are seriously needed. We are hopeful that arrangements can be made for her to work with Dr. Craig when he visits there to their mutual advantage.

We have a Nigerian veterinarian, Dr. Ojo Yusuf Aliu, here as a graduate student under separate AID sponsorship, who is working closely with our staff and doing his research in the tropical disease laboratory. Dr. Aliu will return to his faculty position in the Veterinary College at Amido Bello in Zaria, Northern Nigeria, upon completion of his study here.

Dr. Herbert Schoonover, a veterinarian doing graduate work in animal nutrition at the University of Florida, and a member of our 211d consortium team there, is scheduled to spend a month in our laboratory here studying hemoprotozoal diseases. This is in compliance with our plan to exchange consortium members for mutual advantage.

We also have with us for a 4 month period, an exchange Professor, R.J. Rogers, an Australian veterinarian with long experience in hemoprotozoal diseases. He is working in the laboratory with our staff and exchanging information with them to mutual advantage.

Expenditures Allocated to Accomplishments

For 1 July 1972 - 30 June 1973

Information exchange, including travel to Guyana	$2,764.00
Library	147.00
Publications	33.14
Training Aids	
Teaching	236.50
Supplies	367.00
Equipment	461.50
Graduate Assistanships	3,050.00

IV. Impact of Grant Supported Activities in Developing Institutional Capabilities:

This 211d grant has provided the opportunity for us to work up, into useful form, much of the potentially valuable training material accumulated in connection with our AID Colombia contract. By having a man available to do the work of developing a reference library and help in the preparation of study sets is a great help to the research staff who generate much of the basic material but lack time from their research to put it in the most useful form for training purposes. The combination of a 211d program with a close closely related research contract has considerable advantage in this respect over either alone. Without the related research, the costs of accumulating information and materials for the 211d program would far exceed current 211d funding.

The increase availability of training aids and references has made possible the course in foreign animal diseases which in turn will be of major help in the training of students and staff.

The involvement of the staff in the preparation of training materials is a useful training exercise in itself for those of us involved.

These training materials will not only contribute to the knowledge of Texas A&M personnel and students, but will be utilized in consortium seminars for the benefit of the whole consortium.

The availability of this reference and training material which can be utilized by staff and students will save much time for the senior staff in being able to hand a student a package of material to study rather than spend hours answering questions and having to assemble pictures and reference material from their personal libraries and elsewhere. We have purchased a console for a carousel projector such that with slides, commentaries and a reprint, a student can study the material at his own pace without taking so much of the research man's time.

If the Guyana work materializes, we will utilize that opportunity to obtain case photograph, parasites, and histologic slides of disease conditions there. Only by collecting such material from various parts of the world can we become competent in disease problems unique to those regions which are very inadequately covered, if at all, in U.S. text books.

Spinoffs from our combined AID-Colombia contract and the 211d is and will be considerable. We in Texas were far better enabled to deal with the Venezuelan Equine Encephalomyelitis invasion of Texas in 1971 because of our knowledge of the disease in Colombia and elsewhere in South America, made possible through our AID experience there. Even more directly, our experience there with anaplasmosis facilitates work with the disease in Texas. Recently there has been a serious invasion of over 29 Texas counties by a tick, Boophilus microplus, which is a potent vector of bovine babesiosis and of equine piroplasmosis. State and federal authorities have called heavily upon our staff for consultation and research work to help get prepared to meet the threat by evaluating drugs and control proceedures; we have also gotten state and commercial funds to help with this work. Work which materially increases what we already wanted to do under the AID contract. While at this point, much of this is more related to the AID contract than to the 211d contract. The opportunity 211d provides to make the most of this opportunity for training and training materials is most helpful.

V. Utilization of Institutional Resources in Development of LDC's:

(This reply refers only to the College of Veterinary Medicine; the Animal Science Component will list their's separately.)

The preliminary survey of animal diseases in Guyana is attached as appendix no. 1.

In May 1973, Dr. G. Adams, of our AID-Colombia project, and Dr. S. McConnell of Veterinary Microbiology, spent 10 days in Panama at AID request to participate in an animal disease workshop where they contributed to the diagnosis and control of bat rabies and trypanosomiasis.

During the past two years, I have been on a U.S. National Academy of Science committee to determine agricultural research priorities in Africa. This work will result in a report to AID and the LDC's, which should help direct funding to areas of greatest need for increasing both livestock and crops production.

We have had a number of Colombian veterinarians do graduate work here with members of our tropical disease staff serving on their graduate committees and assisting in their training in a cooperative effort with college departments.

Dr. John Bishop, who received his Ph. D. here through our Tropical Disease Program and the Department of Veterinary Microbiology, is now working for the University of Florida on a World Bank-Rockefeller Foundation funded project in Quito, Equador, as beef cattle production

The current and past 5 years of research being conducted by members of our Tropical Disease staff in Colombia and here on anaplasmosis, babesiosis, vector control and therapy, all contribute to improved control of those diseases in the LDC's. This work has provided nearly 50 published technical reports, many of which are available in Spanish; 7 theses, annual reports and numerous presentations at technical meetings, all of which have communicated steps toward improved disease control in the U.S. and the LDC's.

VI. Other Resources for Grant-Related Activities:

The state of Texas, via the College, is providing the physical facilities, utilities, libraries and many items of equipment for the 211d and AID Colombia programs.

The College is providing one $8,000.00 technicians salary in the AID-Colombia project.

Likewise, the College provides my salary and secretarial support as the director of both 211d and AID-Colombia projects, which occupy roughly 1/4 of my time at no cost to AID.

The college and AID-Colombia experience are contributing to the current training of 4 young U.S. staff members, one of which spends 1/2 time on the 211d program. A graduate student in Tropical Veterinary Medicine has been supported for the past two years through funds available through the Department of Veterinary Parasitology, amounting to about $14,000.00.

Through current and past work in Tropical Veterinary Medicine, apart from 211d, we have accumulated considerable raw training material, which, with 211d assistance, we are being able to catalog and put into useable training sets of slides, commentaries, and reference material.

We have a medical photographic laboratory in the College which has provided excellent service to the 211d program in the duplication of slides at no cost to 211d beyond the film used.

Dr. Jack Gray and his staff in the University's International Program office has contributed materially to the operation of our two AID programs.

VII. Next Year's Plan of Work and Anticipated Expenditures:

If the program proceeds in Guyana, Dr. Thomas Craig will spend roughly 3 1/2 months there doing some diagnostic work and collecting information. This will entail air and land travel, per diem. and supply cost of roughly $3,300.00. If, as Guyana has requested, we provide salaries for a Guyanese technician and a veterinarian to work with Dr. Craig for 3 1/2 months, this will probably require $1,000.00 for the technician and $1,800.00 for the veterinarian, or, $2,800.00 plus their local travel of $600.00, or a total of roughly $3,400.00 for the 3 1/2 months of Guyanese salaries.

We propose to continue the development of our exotic animal disease library of references and training aids. We will utilize some basic reference material and photographs already collected for duplication and incorporation into study sets with commentaries. In many instances, we will need to do some traveling to either get original pictures of field cases or make copies from other foreign animal disease slide collections. One such collection is available at the Armed Forces Institute of Pathology in Washington, D.C. There is another good collection at the Tropical Disease Center in Edinburg, Scotland. We hope to have one man visit each of these places during the next year to obtain coverage of some disease conditions not available here. In addition, we will grasp opportunities during any foreign travel to obtain original or duplicate illustrations of needed foreign disease material. We will also be utilizing our training aids in the conduct of a course on foreign animal diseases and in the conduct of seminars. These training aids will also be made available in a projection console for study by individual students. It is estimated that the travel expenses incidental to obtaining illustrative material will be roughly $1,500.00.

As of 1 September 1973, we will have three veterinarians seeking their Ph.D.'s, funded from the 211d grant.

Dr. Thomas M. Craig, who has completed his M.S. degree in our program and had a year in Colombia, will be working 1/2 time on the 211d project and the remaining time on the research and classwork for his degree.

$7,500.00

Dr. Ken Thompson will be on 211d funds for the last four months of his work toward his Ph.D. Then, in January 1974, he will become a full-time staff member with the AID-Colombia project. Dr. Thompson has recently spent two years in Colombia with our AID-Colombia program.

$3,000.00

Dr. John Wyss will go on 211d funds as a graduate student following his return from Colombia where he has worked on our project for the past year.

$7,500.00

From AID-211d budget, 1973-1974 $18,000.00

Table I

Distribution of 211d Grant Funds and Contributions From Other Sources of Funding*

Review Period 1 July 1972 to 30 June 1973

(List all grant related activities)	211d Expenditures				Non 211d Funding Amount for '73-'74
	Period Under Review 1st YR	Cumulative Total	Projected Next Year	Projected to end of Grant	
e.g. Research	0	0	2,400.	5,000.	345,000. - AID-Colombia Program
Teaching	236.56			from supply & personnel	5,196. State grad. student
Libraries	147.00		253.	1,000.	5,000. tropical disease
Consultation	0				free consultation provided by staff of Trop. Vet. Med. & College of Vet. Med.
Publication	33.14				4,800. secretarial help
Other: Supplies	367.00		5,000.	17,500.	2,000.
Equipment for library & teaching	461.56		1,538.	5,000.	8,000. Photo equipment 20,000. Laboratory 150,000. State provided labs and animal facilities 16,000. personnel (estimate)

* These figures are your best estimates

Table II

(Actual & Projected)

Under Institutional Grant #AID/csd-211d 3675
Review Period 1 July 1972-30 June 1973

(Lines Items to Conform to Budget in Grant Document)	Expenditures to date '72-'73 Period Under Review	Cumulative Total 'same'	Projected Expenditures '73-'74 2	'74-'75 3	'75-'76 4	'76-'77 5	Total Budget
e.g. Salaries	1,638.		32,523.	32,000.	32,000.	33,339.	131,500.
Travel	2,764.		10,000.	10,000.	9,236.	8,000.	40,000.
Equipment	462.		1,538.	1,000.	1,000.	1,000.	5,000.
Other: Teaching	236.						
Libraries	147.		253.	200.	200.	200.	1,000.
Publications	33.						
Supplies	367.		5,000.	5,000.	4,000.	3,133.	17,500.
Graduate Assistant-ships	3,050.		18,000.	15,250.	9,000.	9,000.	55,000.
	8,697.00		67,314.00	64,150.00	55,436.00	54,872.00	250,000.00

APPENDIX

Livestock Diseases in Guyana

The following list of animal diseases, which have occurred or are now present in Guyana, is based upon interviews with the following veterinarians. The information they have provided is nearly all based upon clinical observations because Guyana has no diagnostic service and only rarely have specimens been sent outside of the country for laboratory diagnosis. Where other than clinical observation is involved will be indicated by disease.

Veterinarians interviewed include:

Dr. Peter Fernandes, Principal Veterinarian Officer; Dr. F. Mongul, Public Health Veterinarian; Dr. O. McKenzie, Livestock Project Division, Rupuruni; Dr. C. Haricharran, Livestock Project Division, Poultry; Dr. H. Fraser, Livestock rancher, Coventine; Dr. Sanford, Minister Veterinarian under Dr. Fernandes; Dr. Geol Smart, Minister Veterinarian, under Dr. Fernandes; Dr. Sam Rawlins, Minister Entomologist; Mr. Noel Holder, Division Ebini Livestock Station; Mr. J. Titson, Director, Ministry Livestock Project Division; Mr. Ben Carter, Chief Agriculture Officer under Deputy Prime Minister of National Development and Agriculture; Mr. Wilkins, Manager Kabawer Ranch, owned by Booker Ltd.; Dr. Ramudit, Ministry Veterinary of Lethem, Rupununi. Also, P.H. Inspector, packing house, Lethem; Dr. Holman E. Williams, Head Dept. of Livestock Science, University of the West Indies, St. Augustine, Trinidad. Dr. Williams was raised in Guyana, made numerous visits there and had reviewed Guyanese animal health reports from 1920 to 1940's.

The above gentlemen collectively listed the following diseases with the incidence distribution and severity as handicaps to livestock production as indicated with each disease. If not otherwise indicated, the diseases listed were primarily in the coastal lowlands which in general, because of moisture, insect vectors, and relative crowding, are more numerous than in the intermediate or Rupununi savannahs.

ANTHRAX

Sporadic outbreaks, occurred 12 times between 1920 and 1946 and a few times since in contaminated areas. They only vaccinate associated animals when cases occur. Incidence and relative importance is low.

BLACKLEG

Rare, very sporadic, only vaccinate when an outbreak occurs.

TETANUS

Uncommon, 1 outbreak in 1962.

TB

Based upon postmortem exams in abattoirs, cattle - 6%; swine - 6%; poultry - 1%; testing of few cattle show some heavily infected coastal areas. A cattle testing program for the coastal region is planned which will provide for slaughter and indemnity of infected cattle.

HEMOPROTOZOAL DISEASES

Anaplasmosis and babesiosis often referred to as Tick Fever without an accurate diagnosis of which it is, as such, was reported 3 times between 1920 and 1946 and then primarily in imported cattle. There are a few Boophilus ticks but dipping is sporadic. On one ranch cattle are dipped 4 times a year, and in the countries only dairy; once a month. It is suspected that one or both diseases occur in mild chronic form in most areas of the country.

MAL DE CADERAS, i.e., TRYPANOSOMIASIS, T. Equinum

Reported only in horses. Reported 3 times, 1920-1946. Believed primarily in Rupununi areas. Biting flies considered vectors.

RABIES

Some bat rabies especially in rural areas, primarily in cattle. Occasionally in dogs, cats and man.

Mineral Deficiencies:

Especially of phosphorus, is common but most severe in Rupununi area. This frequently leads to osteoporosis and broken legs unless supplemented. Also a problem in mid-savannah areas.

FOOT & MOUTH DISEASE

Outbreaks identified as from A&O types occurred in 1962 and 1969, believed introduced from Brazil in Rupununi area, 200-300 cases in 1969 outbreak. Control via vaccination of cattle in ring around the area of outbreak. Have used modified live-virus vaccine from Pan American Sanitary Bureau.

BRUCELLOSIS

Based upon a few card tests conducted in the coastal region the incidence in cattle there is believed to be high, so Dr. Mongul plans to do considerable more testing. Some plate agglutination tests have also been made; but there is no accurate knowledge of the distribution or incidence except that the few tests conducted indicate a high incidence.

BOVINE REPRODUCTIVE DISEASE

Following the use of artificial insemination from local bulls some trichomoniasis was seen Where they have shifted to imported semen the incidence has decreased. The reproductive rate is frequently low, i.e. 50% or less, but this is no doubt due to a variety of casues, including malnutrition. Infectious vaginitis has been reported.

LEPTOSPIROSIS

We reviewed a report of samples sent to the Pan American Zoonosas Center in Argentina. A very high percentage were positive and 15 strains were found including icterohemorrahgiae and canicola. From clinical observation the incidence is also believed high in other animals and people. They are sending 1000 samples from people and cattle to a Pan Am laboratory in Argentina for a better survey. Considering that the vast majority of the people use raw milk and that there is water in ditches near almost every home in the coastal regions, the chances for a very high incidence is good.

MAREK
Disease of poultry is believed prevalent but needs confirmation.

ERYSIPELAS
Is considered common in swine.

HOG CHOLERA
None ever reported in the country.

PARASITIC DISEASES
Considered common in the coastal areas but no real study has been made.

LUNG WORMS
Found in beef cattle especially in the east coastal regions as on Booker Ranch; causes many fatalities in the rainy season and were considered their greatest disease problem there.

Some of the pneumonias encountered in cattle are undoubtedly caused by lungworm infestations.

KIDNEY WORMS
Observed in swine.

HEMONCHOSIS
Occurs in sheep at Matthews Ridge.

COCCIDIOSIS
Has caused some losses, especially in calves. Liver flukes are rarely seen by meat inspectors even though this seems inconsistent with the presence of many snails and the moist environment. They do have some liver abscesses of unknown origin.

PASTEURELLOSIS
Suspected in cattle.

SCREW WORM
Infection of wounds is common in rural areas and is one of the reasons they don't castrate beef cattle.

Plant posioning occurs in the Rupununi area but the plants have not been identified.

VENEZUELAN & EASTERN EQUINE ENCEPHALOMYELITIS
Has occurred in a few horses near the borders with Venezuela but none in the past few years. Apparently, the many vast open areas prevent spread and it has not occurred in the coastal regions.

Places Visited:

The diseases mentioned most prominently at the following places visited were as follows:
(In general, these places were remarkably free of major disease problems due to their real isolation from other animals and no imports.)

RUPUNUNI AREA

Dr. Ramudit, with Ministry, at Lethem packing house, vaccinates with modified live virus vaccine to prevent prevalent bat rabies in the area. F&M at border with Brazil; plant poisoning, plant unknown; ticks in certain areas and especially on horses, only chronic subclinical tick fever is present; some screw worm infections, some blackleg, osteoporosis common.

EBINI LIVESTOCK STATION

(Dr. Schoonover and Noel Holder)

Predators take some 4% of calves, rabies rarely, since bats not prevalent right there; annual loss from diseases and unknown is 3-4%; Brucellosis believed absent; minor internal parasites; few ticks, dipping 3 times a year, undetermined whether tick fever is present; Leptospirosis believed high but the evidence is questionable; loss is 7-10% of calves born, before weaning, from all causes.

MATHEWS RIDGE

(Dr. Peter Fernandes)

Rabies occurs if they don't vaccinate because of numerous bats. Pink Eye has been diagnosed; tick fever only in imports, but presumed chronic; some foot rot in cattle and sheep; Hemonchoses in sheep especially when in same pasture with cattle; screw worm common, therefore difficult to dehorn or castrate; calf crop is 65% though shown 80% pregnant. They don't vaccinate for anything except rabies. Fungus infection in calves has improved with O'delyen from Germany.

KABAWER RANCH

(Mr Wilkins, Booker Ltd.)

Lung worms seasonally most serious problem since this ranch is in the coastal zone. Rustling is the greatest problem; the loss is from 200 to 500 calves and steers per year out of a herd of 3,500. They have no vaccination programs, no clinical tick fever, few ticks.

SUMMARY

We were impressed by the relative freedom of serious disease in the rural areas. This can best be attributed to the strict isolation of the cattle herds in those areas from other livestock. These rural cattle areas are frequently isolated by several hundred miles of cattle-free jungle from any other cattle with very few imports of selected breeding stock or semen, as a result, they are out of contact with infection. Further, those on unimproved pastures range so widely that there is no significant build up of ticks or internal parasites.

It is an entirely different situation in the very wet coastal zone but there is apparently only 1 large beef herd in that area and it is quite isolated from other cattle except for some interchange with the one big dairy, Bel-Air Dairies, which is also owned by the same company, Booker, Ltd.

The great unknown regarding cattle disease is the very large collective number of family milk cows kept in backyards and along drainage ditches in the coastal regions. With one or two cattle per family and very few veterinarians the health status of those animals is essentially unknown. The environment appears excellent for parasites and leptospirosis. We had no opportunity for any close examination

of the family cattle.

The need for a diagnostic laboratory is basic to an accurate survey of cattle disease in Guyana.

Fred D. Maurer & K.L. Kuttler

MINISTRY OF NATIONAL DEVELOPMENT AND AGRICULTURE
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P.O. Box 1001,
Georgetown,
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16th May, 1973.

Dr. Edward T. Braye,
School of Veterinary Medicine,
Department of Medicine,
Surgery and Clinics,
Tuskegee Institute,
Alabama, 36088,
United States of America.

Dear Dr. Braye,

This letter is in response to yours which indicated the areas of study to be initiated by the four members of the University Consortium. I will like to deal with this matter in two sections; firstly with the basic concept of all the proposals and secondly with the proposals of each consortium member.

A. General:

The proposals do not appear to be closely co-ordinated among members e.g. both Texas A & M (Animal Science) and Purdue propose the development of models for beef production for different ecological areas.

2. The proposals do not allow for enough participation by Guyanese personnel. Guyana will therefore not have the full benefits of this exercise as none of her sons would have acquired any expertise in these various areas of learning. Guyanese must be involved at this level.

This situation is worsened by the fact that there are no definite arrangements embodied in the proposals for training - internal or external - during the contract period.

3. The proposals generally call for the analysis of facts based on existing information (at best) and "educated guesses" from local personnel (at worst). The reliability of conclusions obtained from such analyses is doubtful especially when there is no provision in the proposals for testing any of the alternative theories that will be obtained.

4. As set out in the proposals, the consortium members will be paying their way during their visits to Guyana. However, to allow for smooth co-ordination of these visits the Ministry will need to

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to appoint a person to do this. It is expected that the consortium will pay for these services at a rate to be mutually agreed upon.

5. Reports of a meaningful nature are to be submitted every six months by the consortium to the Ministry of National Development and Agriculture unless a change has been mutually agreed upon.

6. Details of individual projects must be submitted for mutual agreement.

B. Individual Members:

1. Texas (A & M):

(a) The proposal to "assemble information on the incidence, distribution and those animal diseases which handicap cattle production etc." is acceptable. However, the means of gathering this information and the range of animal species to be included is not.

This information should be obtained from actual sample surveys to be done in Guyana. It is not seen how only discussion with local personnel will lead to the improvement of the Guyanese Livestock Industry which must be an ultimate goal of the project. The following diseases are suggested for inclusion in the survey: Babesiasis, Anaplasmosis, Trypanasomiasis. The range of animals must include dairy and beef cattle, sheep, goats and horses.

It is hoped that during this survey Guyanese technicians will be employed (the necessary financial arrangements should therefore be made) in both the collection of samples and diagnosis of the diseases.

(b) As mentioned previously the proposal for development of a model is apparently to be done by both Purdue and Texas A & M. This should be done only by one member.

(c) The concept of testing the feasibility of "stall feeding" the underweight 3-4 years old calves presently slaughtered at the Municipal Abattoir is good. The programme must however go beyond the stage of "developing a model." It should include the facilities to test the hypothesis especially in relation to the constraints such as disease problems that may be inherent in the system as are outlined in the proposals.

(d) Evaluation of breeds and breeding stock for cattle (beef and dairy), sheep and goats for the Rupununi, Coast and Matthew's Ridge must be of high priority

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in the programme.

2. Purdue:

It is proposed that the activities for Purdue should be as follows:-

(a) Descriptive Cost Studies: - Assemble information on the typical costs for land development and livestock production (beef and dairy cattle, sheep, goats) in the Rupununi, Ebini, Canje, Coastal and Matthews' Ridge areas.

(b) Location of Production:- With the results from (a) "micro" models should be developed so as to determine the most suitable regions for the various enterprises.

(c) Size of Enterprises:- Also arising out of the information gained from (a) "micro" models should be developed to determine the optimum economic size for each enterprise in each region.

(d) Overseas Markets:- Review the extent of the CARIFTA market for dairy and pork products.

3. Florida:

There are trained personnel in Guyana who can provide the information (as available at this time) as outlined by this member. This member should be involved in the evaluation of (a) Forage grasses for livestock production at Ebini, Rupununi and Matthews'Ridge. This should include studies on grass/legume associations. (b) Different management systems to allow the optimum production of these grasses in terms of liveweight gains of the animals.

4. Tuskegee Institute:-

The Tuskegee programme is generally acceptable and with the few modifications made should read as follows:-

1. THE EXTENSION SERVICE

A. Program topics as they relate to Current Operators, Young Adults and Youths.

(i) Extension Role in Livestock.

Programmes for various geographical areas as they relate to livestock.

(ii) Pasture and Forage Programmes.

(iii) Livestock Health Programmes.

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(iv) Management Programmes.

II. The Livestock Producers problems including those that may be of a sociological nature.

A. Evaluate reasoning behind Current Managerial Practices.

B. Determine what resources are at the producers disposal (i.e. land, credit etc.).

C. Evaluate Producers Goals.

III. Incentives.

IV. Evaluate the above topics to relay the producers' thought and problems to the proper agencies for assistance.

5. I hope that these suggestions meet with your approval and that we could work together for our mutual improvement.

Yours co-operatively,

P.A. Reid

P.A. Reid
Minister of National Development
and Agriculture.

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