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The evaluator rated this project in the top 10% of similar projects with which he is familiar. The veterinary curriculum should be modified to maximize relevancy. Teaching time in the following subjects should be increased: animal husbandry, preventive veterinary medicine, epidemiology, sociology, agricultural economics, statistics, and grassland farming. There is a need for a closer liaison between the veterinary academic community and off-campus animal agriculture professionals. This could best be achieved by selecting a veterinary faculty liaison officer. The development of closer academic ties with the Department of Veterinary Science at the University of Ibadan is recommended. Such things as student and faculty exchange programs, meetings between administrative staffs in veterinary education and intrafaculty seminars are suggested. The evaluator supports continuation of the project and adherence to the programmed Phase III building project to expand veterinary physical plant facilities and supply equipment. There is a need to strengthen national coordination of animal production and health activities. Duplication and repetition of production research is evident in some projects. Exchange of information, research protocol and results between sister projects and dissemination of research results to the national livestock production sector should be improved.

To insure the maximum value of the evaluation as a Mission-useful process, supporting USAID planning and decision making, the guidelines for this project evaluation were followed which are outlined in USAID Publication M.C. 1026.1, Supplement 1 and Some Practical Concepts to Assist Project Evaluation. Agreement with the evaluation personnel of the USAID Mission, Lagos produced a logical framework for design and evaluation of this project.

The report discusses the principal fields related to institutional building projects in veterinary education in Nigeria. The evaluation process of this project in cross-cultural intervention in education is based upon progress in these related sectors. A relativity factor also influenced this evaluation. A comparative analysis was made of this project in relation to 23 similar projects in veterinary education in other developing countries.

Based on the results of this evaluation, Project 817 was given a high performance rating. The report also includes conclusions and recommendations related to various problem sectors of the project.

This report could not have been completed without the assistance of many people.

This evaluation resulted from an intensive and well planned work schedule prepared by the USAID Mission staff in Nigeria and the Kansas State University contract faculty at Ahmadu Bello University. Special recognition is extended to the USAID Mission staff, KSU contract personnel, Ahmadu Bello University faculty and administrators, and Nigerian government officials for their outstanding assistance in preparing this report. Logistic support and co-operative assistance was the best this consultant has ever received on a foreign assignment.

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I would like to express my deepest gratitude to Messrs. James M. Anderson and George S. Eason. Without their excellent assistance and willingness to work long hours, this evaluation could not have been completed in this time period. The contributions of Messrs. James M. Anderson and F. E. Gilbert and Drs. Embert Coles and J. Woodhull to this report easily warrant these men co-authorship.

Finally, my thanks to my secretary, Miss Joan Lilleodden, who typed and helped edit, proofread, and prepare the final report.

Respectfully yours



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HLS/jl
Enclosure



EVALUATION OF PROJECT 817

USAID Contract for Agriculture Assistance to
Ahmadu Bello University, Project No. 620-11-110-817
The Faculty of Veterinary Medicine
and
Kansas State University
USAID Contract No. AID/afr 707

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SUMMARY 1.0.0

Evaluation of Project 817 USAID/Kansas State University (KSU)/Ahmadu Bello University (ABU) Contract in Veterinary Education

This consultantship was twofold in purpose. The report presents a project evaluation and related mission-useful information to support USAID planning and decision making. Relevant conclusions and recommendations are presented to improve project operation, planning, and effectiveness.

Based upon the findings of this evaluation, Project 817 was given a high performance rating. The author has had close professional association with 23 institutional building projects in veterinary education in developing countries. The performance of Project 817 was rated in the top 10% of these programs similar in nature to Project 817--cross-cultural intervention in education.

The report discusses the methodology for this evaluation process. A description of the evaluation data retrieval and processing system is presented. In addition to a review of current publications, knowledgeable on-campus and off-campus sources of expertise in Nigerian animal agriculture were interviewed. This information helped to describe the goal and objectives of the project. The Project Goal, the broader objective to which the project contributes, was defined--to improve Nigerian health conditions by reducing animal health and production problems constraining livestock productivity. The Project Purpose, is to strengthen Nigerian capacity to deal with animal health and production and animal-related public health problems.

To insure clarity in objectivity and establish a communication media between the evaluators and project staff, a study format was designed. This Logical Framework for Design and Evaluation included evaluation criteria for the projects goal, purpose, outputs, and inputs.

A section of the report includes a listing of general observations relevant to the implementation of technical and financial aid development projects. Attention is directed to the political, diplomatic, and assistance dimensions of aid projects. Emphasis is given to the value of adherence to the prescribed operational and diplomatic protocol of Nigerian governmental agencies and international African regional organizations.

The comparatively high level of economic support by the Nigerian government to education is accounted in detail.

A growing concern demonstrated by Nigerians about the steady per capita decrease of animal and crop agricultural products was evident. It is also suggested that liaison be strengthened between USAID staff and Nigerian counterpart staff.

The report includes the author's summary of the five major changes in the concepts of education brought about by educational research during the past two decades.

A synthesis of opinions of experienced animal production and health professionals in Nigeria contributed to a listing of qualifications for veterinarians in this region. This consensus indicated these desirable qualities should include a broad multidisciplinary educational background.

Methodologies for projecting demand for veterinarians are complex and not totally satisfactory. This report, in dealing with the supply/demand phenomena for Nigerian veterinarians, utilized a combination of systems:

- a ratio of employment opportunities to veterinarians.
- an economic cluster defining the value of the livestock industry per veterinarian.
- on-going livestock production programs per veterinarian.
- expanding employment opportunities per veterinarian.
- animal health service demands in Nigeria.
- current existing vacancies for veterinarians.
- assumption of meat hygiene, and inspector services by the veterinary profession.

The relevancy and integration aspects of the project are improving. International veterinary standards are discussed related to these aspects. Suggested course syllabi and curriculum modifications giving more emphasis to animal production-related courses served to increase the degree of relevancy. The departmental organization of the Faculty of Veterinary Medicine reflects most of the needs of veterinary education in Nigeria. Special acknowledgement is given to the efficiency of the academic administrative system at ABU. Research and service functions of the FVM are important contributions to the teaching/learning process. There is a strong demand from practicing off-campus veterinarians for continuing education programs and autotutorial courses.

The existing physical plant facilities are adequate for the enrollment of approximately 130 students. The expanded building program outlined in the third phase of this ten year project will permit an eventual student body enrollment of between 230-240 veterinary students. This planned building program is equally important to the staff development program. It will permit the research thesis of participant trainees leading to a Ph.D. degree to be done at ABU.

The planned level of staff development is realistic to the over-all development program.

Long term financial capability of the Nigerian government to support ABU and the Faculty of Veterinary Medicine appears most encouraging. Veterinary student/year costs at ABU compare favorably with other costs estimates for veterinary education.

Although political difficulties which erupted in 1966 interfered to a degree with project implementation and operation, the progress of the project toward projected targets is favorable.

CONCLUSIONS AND RECOMMENDATIONS 2.0.0

2.0.0 Some of the following conclusions and recommendations have been noted by the ABU/KSU Veterinary Faculty. One, veterinary curriculum modification to maximize relevancy, is currently being implemented. Repetitive listing in this report is to re-emphasize their importance.

2.1.0 Discussions at all levels of the practicing Nigerian animal production and health manpower structure focused attention to a critical need for a closer liaison between the veterinary academic community and these off-campus animal agriculture professionals. (It is noteworthy to point out that this need to improve relationships between academic communities and the off-campus citizenry is surfacing in most universities throughout the world).

2.1.1 The maximum weight of the joint ABU/KSU veterinary faculty's concentrated resources to affect this improvement in communications could best be achieved by a carefully selected veterinary faculty liaison officer. Past experience strongly indicates that this service, at least for the present, should be conducted on a personal, informal basis. It is believed that institutionalization of these proposed service activities would complicate their operation and decrease effectiveness.

The activities of this liaison officer should include:

- 2.1.2 - an informal co-ordination and exchange of information related to on-going animal production and health services in Nigeria.
- 2.1.3 - dialogue with the members of the National Agricultural Research Council.
- 2.1.4 - Frequent contact and exchange of information with the international bilateral and multi-lateral aid organizations and development lending institutions supporting animal agriculture projects in Nigeria.
- 2.1.5 - to serve as a sensing or monitoring media to convey the feelings and trends of the off-campus veterinary community to the academic staff and student body related to relevancy and curriculum changes, aptitude and motivation of the veterinary graduates from ABU, and the current national emphasis in the animal disease control programs and associated problems.

- 2.1.6 - to co-ordinate and assist in the planning of professional seminars and meetings of interest to off-campus veterinarians.
- 2.1.7 - to retrieve suggestions to the veterinary faculty for continuing education and autotutorial courses of interest to the off-campus animal production and health professionals and subprofessionals. Current requests from off-campus veterinarians indicated a strong interest in continuing education and autotutorial courses in poultry pathology, swine diseases, equine medicine and surgery, herd health management, and meat hygiene and inspection.
- 2.1.8 - to co-operate with other national and foreign colleges of veterinary medicine and veterinary research centers in a co-ordinated exchange program of faculty, students, publications, and other activities of mutual interest.
- 2.1.9 - to organize more efficiently and assist in the implementation of the current veterinary student externship program of the Faculty of Veterinary Medicine at ABU with Federal and State animal production and health officials and other preceptors.
- 2.1.10 - to co-ordinate faculty diagnostic services with State and Federal veterinary officials and private sector veterinarians.
- 2.1.11 - to assist in the upgrading of the current animal disease data retrieval and processing system to facilitate a more accurate knowledge of the animal disease situation in Nigeria.

2.2.0 Not uncommon to projects of this nature, the installation, maintenance, and repair of faculty equipment has proven to be a problem sector. Valuable teaching/learning student time has, in many cases, been sacrificed when faculty members have, through necessity, assumed these installation, maintenance, and repair responsibilities.

2.2.1 Past experience with veterinary education projects in developing countries indicates it would be academically and economically most beneficial to employ a United Kingdom trained laboratory technician to assume these equipment servicing responsibilities. An alternate course of action would be to train a Nigerian in the United Kingdom to undertake these basic services which are necessary for the successful operation of a college of veterinary medicine.

2.3.0 A general concern was demonstrated by off-campus practicing veterinarians regarding the qualifications and motivation of veterinary graduates and the relevancy of the teaching/learning program at ABU. It is believed that the source of this concern is due, in part, to a lack of communication between the veterinary academic community and off-campus veterinary personnel rather than a performance evaluation of young veterinary graduates. A consensus amongst these practicing veterinarians indicated desirable qualities for a Nigerian veterinarian should include a broad multidisciplinary background. His professional role in the livestock industry of this country will require knowledge of animal husbandry and science, epidemiology of animal disease control on a herd health basis, pasture and forage utilization and development, sociology, and economics.

2.3.1 The veterinary faculty at ABU is currently studying proposals for a change in the present curriculum. Reference is made to the publications "A Curriculum Concept Proposal" by the ABU Ad Hoc Curriculum Advisory Committee and "The Curriculum Relevance in the Faculty of Veterinary Medicine, ABU" by Professor I. E. Mustafa. (see 10/ and 11/)

2.3.2 This evaluation strongly supports these proposals to increase the percentage of total teaching time in the following subjects: animal husbandry, preventive veterinary medicine, epidemiology, sociology, agricultural economics, statistics, and a practical course in grassland farming (the utilization of pasture and forage for the production of animal products). Increases in total teaching contact hours in these subjects will necessitate a corresponding decrease in teaching time in other courses. It is recommended that consideration be given to reducing student contact hours in anatomy, physiology, pathology, pharmacology, food hygiene and meat inspection, and veterinary surgery and obstetrics. The final decision modifying the current veterinary curriculum at ABU rests with the Nigerian academic administrators at that University.

2.4.0 It is most opportune and highly recommendable to begin to instill in the veterinary faculty and student body at ABU an international concept. It is most likely that this academic institution could become an international teaching and research center for tropical veterinary medicine.

2.4.1 This possibility could materialize within the foreseeable future. International animal agriculture teams have recently conducted feasibility studies of the proposal to create two international livestock production research centers in Africa. One of these proposed centers will be for animal health research. East Africa (Kenya) has been considered as a site for this center. The other center will

be for animal production research. The ABU Shika Livestock Research Center has been investigated as a likely site for this research complex. It is understood, if these international research centers do become a reality, that similar financial support arrangements for funding the four international agriculture research institutions will be considered. The International Institute for Tropical Agricultural Research, one of the four international institutes, is located at Ibadan, Nigeria.

2.5.0 There is evidence which assures the continuation of the Department of Veterinary Science at the University of Ibadan as a functioning academic body. Plans for expanding the physical plant facilities and increasing this faculty are underway. This Department of Veterinary Science currently qualifies approximately 25 veterinary graduates per year. As is the case of veterinary graduates from ABU, it is the prerogative of the National Veterinary Council to grant Nigerian veterinary licenses to these graduates.

2.5.1 The development of closer academic ties with this sister collegiate institute in veterinary education is recommended. Student and faculty exchange programs would be mutually beneficial. Periodic meetings between the administrative staffs in veterinary education from both universities would be most constructive. Intrafaculty seminars on subjects of mutual interest would enhance the educational programs of both universities.

2.6.0 Strong endorsement is given to the continuation of the initial ten-year program of Project 817--USAID Contract for Agriculture Assistance to ABU, The Faculty of Veterinary Medicine, and Kansas State University, Contract No. AID/afr 707. This co-operative program in veterinary education is scheduled to a phase out period during 1978-1980. The effective date of contract implementation was 1 July 1970.

2.6.1 Furthermore, this endorsement supports adherence to the programmed Phase III building project to expand veterinary physical plant facilities and supply equipment at ABU. To facilitate this Phase III building program, it is further recommended that the proposed USAID development loan be made available to the Nigerian government under loan terms and amortization schedule to be feasible with an institutional building project in education.

2.6.2 Please refer to section No. 8.2.0, page 41 and No. 6.15.2, page 31 of this report for a more detailed discussion of this subject.

2.7.0 Throughout this evaluation mission, attention was continually directed by Nigerians to the over-all shortage of technical manpower. Programs to improve educational systems

and the teaching/learning process represent one approach to increasing human resources in technology.

2.7.1 Underemployment--employment situations which do not insure the maximum productive use of a professional's skills and ability--represents a brain drainage factor from a nation's human resource potential. Varying degrees of underemployment are evident within the work force of developing and developed countries.

2.7.2 Incidental to the primary objective of this evaluation, however relevant to the formation of technical manpower, the processing of evaluation data indicated an underemployment situation in the Nigerian veterinary profession.

2.7.3 The degree of productive employment of a professional's skills and knowledge depends upon a variety of factors. Full employment of a professional, in this case a veterinarian, in the job of his training insures maximum economic return rates from his education. Employment terms of reference, logistic support, job incentives, and the opportunity to productively deal with animal agriculture problems are some of the factors influencing the utilization of veterinarians in Nigeria. It was noted that younger veterinarians felt the need for employment positions which maximized their productivity to the national livestock production community.

2.7.4 This underemployment situation of animal production and health expertise in Federal and State services and research institutions supports a recommendation for priority action to developing attitudes and policy to insure maximum returns for the employment of veterinary personnel. Although difficult to estimate, it is believed that improved terms of reference for the employment of veterinary manpower should increase the productivity of animal health services by at least 40%.

2.8.0 There is a need to strengthen national coordination of animal production and health activities. The numerous livestock production projects encountered throughout Nigeria are functioning, to a very large degree, on an individual project basis. Duplication and repetition of production research is evident in some projects. Exchange of information, research protocol and results between sister projects is minimal. Dissemination of research results to the national livestock production sector is sporadic. International liaison with animal production research centers outside of Nigeria leaves much to be desired.

2.8.1 Furthermore, an opportunity exists in most of these research projects to more constructively employ

veterinarians. Numerous examples were evident where animal disease situations distorted production research results.

2.8.2 It is suggested that the recently created National Agricultural Research Council review the on-going livestock production research programs in Nigeria. National policy statements should be forthcoming from this Council to co-ordinate and direct research in Nigerian animal agriculture. Priority emphasis should be given to useful animal production research involving programs which are economically feasible and production oriented to Nigerian conditions.

2.9.0 If current developments in the USAID foreign aid profile and policy should dictate a premature phase out date for Project 817, it is recommended that the Vice-Chancellor and Provost of ABU, related Nigerian government officials, and the KSU contract representatives be kept advised of these possible sequence of events. These briefings will be helpful in affording sufficient lead time for the consideration of other courses of action to enable the continuation of this institutional building project.

2.10.0 Considerable thought and investigation is currently being directed to the appropriate criteria for the selection of students for enrollment in veterinary education. This study of admission requirements for veterinary students is receiving world-wide attention in academic institutions.

2.10.1 During these formative years of the Faculty of Veterinary Medicine at ABU, it is suggested that a well defined criteria be established for the selection of veterinary students. This selection criteria will furnish valuable data in the future relevant to the type of background and preveterinary educational experience most suitable for a productive veterinary professional under Nigerian conditions.

2.11.0 The last decade has produced an increasing amount of information about the architectural design and construction of veterinary educational physical plant facilities. Priority attention has been given to student individualism, the self-learning process, and active participation in the teaching/learning program. The main thrust from this investigation is the maintenance of flexibility in physical plant facilities. Small classrooms are recommended rather than large lecture halls. Moveable walls and fixtures to best accommodate the peer teaching concept are advised. Instruction rooms with multipurpose facilities for equipment and teaching aids are desirable. Centrally located communal service blocks are proposed to best utilize available space. Therefore, during the Phase III building program, strong endorsement is given to insuring maximum adaptability of the physical plant facilities to future teaching/learning requirements and any corresponding modifications.

2.12.0 A report of the Joint Committee of the National Association of State Universities and Land Grant Colleges and the Agency for International Development "The Institutional Development Agreement--A New Operational Framework for AID and the Universities," January 1970, presents a study and recommendations to increase the efficiency of USAID/University contracts. During this evaluation mission, attention was directed to a number of proposals which should contribute to the productivity of this joint program. Please see Appendix No. I for a review of these proposals. To increase the effectiveness of this ABU/KSU/USAID contract in veterinary education, it is suggested that consideration be given to the proposed changes in the current administrative and operational protocol of this project.

2.13.0 Data processing and corresponding calculations during the evaluation indicate an estimated need for veterinary manpower by 1980 in Nigeria and English-speaking Western Africa of some 1,000 to 1,200 professionals. A continuation of support to the Faculty of Veterinary Medicine at ABU is recommended to assist in filling this projected demand for veterinarians. Please see Quantitative Needs for Veterinarians in Nigeria, No. 6.0.0, pages 26-37.

EVALUATION PROCESS METHODOLOGY 3.0.0

3.1.0 During the past five years more consideration and thought has been given to the evaluation process of institutions of higher learning. Many factors, events, issues, and situations are stimulating interest in the concept of measuring progress at universities, their academic departments and colleges.

3.1.1 A leveling off and probable decrease in future off-campus funding supplied in the past by research grants, service contracts, legislative budgets, and private sector financing, complicated by inflationary trends are factors increasing per student educational costs. This situation has led to economic reappraisal and evaluation of the goals and purposes of the academia.

3.1.2 Revolutionary shifts in social mores and cultural behavior patterns amongst faculty and students are influencing the traditional structure of universities throughout the world. Indeed, it is becoming increasingly difficult to define, to the satisfaction of all participating groups, the university's role in world society.

3.1.3 This on-campus turbulence, accompanied by a growing distrust and suspicion of academia by off-campus citizens, has placed university administrators in an awkward and often thankless position. Administrative protocol and procedure to harmoniously wed the broad spectrum of interests of the numerous academic sectors within the university is becoming increasingly difficult and, in some cases, an impossible task.

This sequence of events, in most universities, has logically led to research in the methodology of evaluation of educational institutions. The results of this investigation, however, have not, as yet, produced a well defined methodology acceptable in all quarters for the measurement of academic institutions. The complexity of dealing with rapidly changing teaching/learning patterns contributes to the novelty of this investigation.

3.1.4 A review of various methodologies for evaluating universities was undertaken as background reference material for this report. (see 5/, 6/, 8/, 10/, 11/, 25/, 26/, 29/, 30/, 31/, 33/, 45/, 46/, 47/, 48/, 49/, 54/, 55/, 60/, and 61/) A synthesis of many of the ideas from this information was incorporated in the methodology utilized during this evaluation assignment.

3.2.0 In beginning this consultantship, the College of Veterinary Medicine, Kansas State University, Manhattan, Kansas was visited. Faculty members and Nigerian participant training

students associated with the ABU/KSU/USAID contract at this college were interviewed.

3.2.1 The briefings in Washington included meetings with personnel from:

- the USAID African Bureau
- the USAID African Contract's Office
- the USAID Participant Training Office
- the Nigerian Embassy

3.2.2 En route to Nigeria, officials of the Animal Production and Health Division of the Food and Agriculture Organization of the United Nations, Rome, Italy were interviewed. These meetings were with:

- the Director, Animal Production and Health Division
- the Assistant to the Director, Animal Production and Health Division
- the Chief, Animal Health Branch, Animal Production and Health Division
- the Chief, Veterinary Education, Animal Production and Health Division
- FAO/IBRD Experts, Capital Investment Division

3.2.3 In Addis Ababa, Ethiopia representatives of:

- the Organization of African Unity
- the Joint Campaign Against Rinderpest

were contacted.

Please see Appendix No. 2, Itinerary.

3.3.0 Of initial importance and before visiting ABU, a consensus was obtained from productively employed, experienced public and private sector veterinarians in Nigeria and West Africa. These interviews defined, amongst other subjects, the desirable professional qualifications for graduates from the Faculty of Veterinary Medicine, ABU. Some 37 qualified specialists were contacted. These sources of information represented more than 39⁴ man/years of expertise and experience in animal agriculture and health in this country and region.

These interviews contributed information about:

- 3.3.1 - a list of desirable qualifications for Nigerian veterinary graduates. Please see No. 5.0.0, pages 24-25.
- 3.3.2 - the present and future role of the animal production and health professional in Nigerian and West African livestock production.
- 3.3.3 - the future potential contributions of animal agriculture to the social and economic development in Nigeria.
- 3.3.4 - the quantitative demand for veterinarians in Nigeria and West Africa.
- 3.3.5 - suggestions to improve relevancy and integration of the teaching/learning process in veterinary education at ABU.
- 3.3.6 - estimates of the numbers of qualified students interested in an animal health and production education at university level.
- 3.3.7 - the supply and demand for subprofessionals (veterinary superintendents and livestock assistants) in livestock production.
- 3.3.8 - the relationship of the veterinarian and sub-professional in Nigeria.
- 3.3.9 The opinions of these experienced professional regarding these subjects were surprisingly similar in nature.
- 3.4.0 Evaluation procedure at Ahmadu Bello University.
- 3.4.1 Subsequent to the collection of this data, the Faculty of Veterinary Medicine, ABU was visited:
- 3.4.2 - each departmental staff, within the college, was interviewed.
- 3.4.3 - two lectures developed to produce information about the on-going teaching/learning process were presented to the 4th and 5th year student classes.
- 3.4.4 - meetings were held with the KSU contract teaching staff, the Nigerian teaching faculty, and in joint sessions with both groups.
- 3.4.5 - consultations with the Dean of the Veterinary Faculty, Provost of the College of Agriculture

and Veterinary Medicine, and the Vice-Chancellor of ABU served to define academic administrative procedures.

3.4.6 A list of eighteen 1971 graduates from the ABU Faculty of Veterinary Medicine was obtained with corresponding addresses. As many as possible of these recent graduates were interviewed about their professional careers. Please see Appendix No. 3.

3.4.7 Special study sessions were conducted with the Veterinary Faculty Curriculum Review Committee. Recommendations to improve the relevancy of the current syllabus were evaluated. (see 10/ and 11/)

3.4.8 Field trips to the ABU Shika Agricultural Experiment Station, Meats Processing Laboratory, and the College of Agriculture and surrounding areas were undertaken. The relevance of the animal agriculture research programs was reviewed related to Nigerian livestock production problems.

3.4.9 The staff of the Netherlands Directorate for International Technical Assistance (DITA), Department of Parasitology and Entomology, Faculty of Veterinary Medicine was interviewed. This project in parasitology and entomology represents bilateral technical assistance between the Netherland government and ABU. (see 52/ and 53/)

3.4.10 Numerous informal discussions were held with individual KSU, DITA, and ABU faculty members related to their teaching program.

3.5.0 During this data retrieval phase of the evaluation, refinements were discussed and adapted for the evaluation process. Continuity and mission objective clarity were maximized by adopting the current USAID guidelines for project evaluation. (see 29/, 30/, and 31/)

3.5.1 A Logical Framework for Design and Evaluation of Project 817 was outlined.

Within this logical framework the Project Goal:

3.5.2 - to improve Nigerian health conditions by reducing animal health and production problems constraining livestock productivity-- was defined.

The Project Purpose:

3.5.3 - to strengthen Nigerian capacity to deal with animal health, production, and animal-related public health problems supported the project goal.

Project Outputs were included under the heading of:

- 3.5.4 - a faculty of veterinary medicine serving as a center for the study of veterinary science in Nigeria. These outputs encompassed academic activities under the following categories:
- 3.5.4.1 - graduates - trained to efficiently combat animal disease and public health problems in Nigeria and meeting ABU standards.
 - 3.5.4.2 - permanent staff - meeting ABU standards; responsive to changing Nigerian needs and scientific developments.
 - 3.5.4.3 - study programs - meeting Nigerian needs.
 - 3.5.4.5 - research programs - supporting the teaching program; addressing Nigerian animal health and production problems; co-ordinating with other related research programs and coincidence with the policy of the National Agricultural Research Council.
 - 3.5.4.6 - service functions - incorporating:
 - consultant services to bring information and diagnostic services to local, state, and national government institutions and private sector interests.
 - continuing and autotutorial educational programs.
 - 3.5.4.7 - physical facilities and equipment:
 - necessary for the research, teaching, and service functions of the Faculty of Veterinary Medicine.
 - 3.5.4.8 - the Project Output sector of the framework was defined in more detail by measurements for the Magnitude of Outputs and Assumptions for Providing Outputs.

Project Inputs included the major headings of:

3.5.5 - staff, participant trainees, and physical facilities and equipment.

3.5.5.1 - the input sector was qualified by Implementation Targets Planned - FY 1972-80; Implementation Targets Achieved, and Assumptions for Providing Inputs.

3.5.6 Appropriate Objectively Verifiable Indicators (Measures of Goal Achievement), Means of Verification and Important Assumptions were designated to the Project Goal and Project Purpose of the logical framework.

3.5.7 In retrospect, the advantages in using the Logical Framework for Design and Evaluation of this Project proved sounder and more useful than originally envisioned. In general terms, the logical framework, as a format for this study, contributed to this evaluation by:

3.5.7.1 - maintaining a clarity in objectivity for the evaluation.

3.5.7.2 - presenting basic terms of reference for the evaluation which helped establish a communication media between the evaluators and the staff of the USAID Evaluation Division and the other participants in the evaluation. This media's contributions to understanding is especially useful in the evaluation process of institutional building projects in education. Quite often, without this well defined structure, the evaluation of human resource building educational projects becomes nebulous in design and objectivity.

More specifically, the logical framework assisted by:

3.5.7.3 - providing an operational framework for improved communications which sponsored a learning process for counterpart personnel participating in the evaluation.

3.5.7.4 - establishing a yardstick for future measurement of the project's progress against well defined quantities.

- 3.5.7.5 - facilitating a mechanism for a meaningful and rapid data retrieval and processing system for the evaluation.
- 3.5.7.6 - maximizing continuity in the overview evaluation of USAID projects.
- 3.5.7.7 - providing a process for the accumulation of mission useful information for a candid reassessment of plans and alternatives. Reference is made to the preliminary evaluation report presented to the USAID Mission, Lagos and corresponding meetings with the Nigerian USAID Mission staff, 18 November 1971.

3.6.0 For a more detailed description of the Logical Framework for Design and Evaluation of Project 817, please see Appendix No. 4.

GENERAL OBSERVATIONS 4.0.0

4.1.0 During the past two decades the author has had close professional association with 23 institutional building projects in veterinary education in developing countries. These projects represented an international or a cross-cultural intervention in education. Approximately 62% of these projects represent long-term educational programs sponsored by multilateral technical and financial aid organizations (United Nations Development Program). The remaining 38% were shorter-term programs originating from bilateral aid agreements. All of these programs were quite similar in nature to the ABU/KSU/USAID contract in veterinary education.

4.2.0 These experiences in international interventions in education tend to have political and diplomatic dimensions, as well as assistance dimensions. The amounts of money, the number of persons going each way, the supplies of equipment or commodities, and things of this nature may be governed by political commitments of the recipient country and diplomatic commitments of the donor country. Most of the projects in the past have represented a "package" technical assistance or institutional transfer. This assistance policy may well have been based on a political or diplomatic rationale, often quite independent from the strategy of intervention. (see 47/ and 48/)

4.3.0 Within recent years there has been a re-evaluation of this strategy in cross-cultural intervention in education. The efficacy of the traditional transfer strategy of technical assistance and institutional building has been studied and found by many education specialists to be questionable. An alternate strategy has been proposed to investigate the merits of existing educational systems in developing cultures. Subsequent intervention in institutional building is programmed to encompass a modification of indigenous educational systems rather than a radical shift to programs which, in their support, have proven successful in other cultural environments. Some institutional building projects in education in developing countries now represent, in varying degrees, a program strategy including both of these approaches. (see 47/) The ABU/KSU project policy is currently shifting toward this new strategy.

4.4.0 Irregardless, however, of the strategy of intervention in educational institution building, there invariably are situations which influence the outcome of these development projects. These issues, situations, and sequence of events are usually general in nature. Often they are the results of national political policies of the developing country and the donor aid organization. Unfortunately, to a lesser degree they represent the findings of project

definition study missions. They are, however, most important to the overview of project evaluation of institutional building in education in developing cultures.

4.4.1 The following general observations are of noteworthy relevancy to this report. Furthermore, they should prove helpful in supporting USAID Mission planning and decision making in Nigeria. Most of these situations relate to institutional building in education and animal agriculture in Nigeria and West Africa. They do, nevertheless, in a broader concept, represent a reference source important to foreign aid and social and economic development in that country and region.

4.5.0 On numerous occasions, the policy making procedure related to Nigerian national and West African regional development planning was straightforwardly defined by African policy makers and program implementors. In brief, assurance was given that recommendations, suggestions, observations, and proposals originating from expatriate sources would be reviewed and considered by African leaders. The final policy decisions, however, would be made by Nigerians or in matters of a regional nature, West Africans. These decisions would, in most cases, be based upon internal and external political, social, and economic factors as evaluated by African nationals. In some incidences these decisions might not coincide with the recommendations from expatriate donor aid organizations.

4.6.0 It is of mutual importance to the participants of technical and financial aid programs to constructively influence national and regional policy decisions. One avenue of approach to insure this productive input is to adhere to the prescribed operational and diplomatic protocol of Nigerian government ministries, institutions, organizations, advisory counsels, and committees. It is of equal importance at the regional level to maintain close liaison and observe the operational and diplomatic procedures of international organizations (Organization of African Unity) functioning in Nigeria and the West African region. Nigerian and West African policy makers expressed a concern of being by-passed on occasion by multilateral and bilateral aid organizations in the decision making process for social and economic development projects in their countries and region.

4.7.0 Attention is focused to the comparatively high level of economic support the Nigerian government is budgeting for education. According to the Nigerian Four Year Plan document, ₦ 138,893 millions will be invested in education by the federal and state governments during 1970-1974. Total projected investment, private as well as public, will be ₦ 1,596,0 million. Planned investment in education is a little less than 9% of this figure. Programmed investment in education is almost 18% of the ₦ 780 million in planned government investment for this period.* This data represents

*Current rate of exchange one Nigerian ₦ = US \$2.80

planning targets defined by the Nigerian government. (see 55/) The expanding economic buffer currently being created by petroleum exports is a factor which may insure that these targets will be realized. Moreover, national budgeting for education at these levels is considered to be high when compared to other developed and developing nations. (see 56/ and 58/) These planned targets serve as indicators to support the high priority of education defined by the Nigerian government.

4.7.1 In the field of capital assistance an approximate total of over U.S. \$200 million of loans and grants, committed by various donors since the mid-1960s, is still undisbursed. A number of general development loans in education represent approximately 11% of this total figure. The main sources of the development loans are the IBRD, USAID, United Kingdom, and Canada. (see 32/)

4.7.2 In technical co-operation a total of about U.S. \$44 million appears to have been committed by bilateral donors, mainly over the two-year period 1970 through 1971. To this must be added the assistance from the U.N. family amounting to approximately U.S. \$15 million and covering various periods up to 4 years ahead. Of the total commitments both bilateral and multilateral the education sector clearly received the major share (approx. U.S. \$20 million) with a number of institution-building projects as well as assistance for a large number of individual teachers and the award of well over 1,000 fellowships for training abroad. By volume of funds committed (approx. U.S. \$14 million), agriculture comes second with some institutional-building projects and a major irrigation scheme, while the provision of individual experts is the major feature of assistance to the sector. The main sources of technical assistance are U.S.A., U.K., members of the U.N. family, Canada, the Netherlands, the Ford Foundation, and the Federal Republic of Germany. (see 32/)

4.8.0 Schultz and Bowman have proposed that investment in human resources through education has greater return rates than other forms of capital investments. Shoup and associates estimated that in Venezuela, another developing country blessed with a petroleum economy, the incremental return to investment in primary schooling is between 82 - 130% per annum. (see 56/) The profitability of investment in education is relatively highest in human resource contributions to social and economic development. (see 56/, 58/, and 45/)

4.9.0 A consensus indicated there is no current national budgetary problem for the financing of educational institutions and state and federal animal agriculture service organizations. Discussions at all levels of the animal production and health community stressed a critical national deficit of trained competent manpower resources.

4.10.0 Senior Nigerian officials at academic and animal agriculture administrative levels indicated this human resource shortage in technical personnel to be critical. A synthesis of opinions of this sector of national administrators suggested a de-emphasis in Nigerianization of their staffs. Conversely, the direct hire and contracting of expatriate expertise appeared to be a most acceptable policy to insure competence. Approximately 60% of the faculty at ABU is composed of expatriate academic staff members.

4.11.0 Nigerians are demonstrating a growing concern about the steady per capita decrease of animal and crop agricultural products. In per capita terms Nigerian agricultural production demonstrated a sharp decrease from 97 to 91 and the same in food production from 97 to 91 during calendar year 1970. (see 7/ and 34/)

4.12.0 There is an obvious need to strengthen liaison and understanding of the USAID policy and commitments between USAID staff and Nigerian counterpart officials. The customary constraints of the U.S. foreign aid program should be discussed openly with Nigerian counterpart staff to insure a better understanding of this bilateral aid mechanism. Correspondingly, Nigerian counterpart obligations to USAID programs should be defined in a more precise manner. The programmed phases of a proposed 10 year contract of the nature of Project 817 should be outlined in a manner to prevent misunderstandings as the project develops. The current United Nations Development Program's format for Special Fund projects is considered to be a most useful document in defining these terms of reference and operational procedures.

4.13.0 A review of the results from education research during the past two decades indicates five major changes in the concepts of the teaching/learning process:

- a) It is possible to teach more at younger ages than ever thought possible.
- b) The more time devoted to the teaching/learning process, the more a student learns. Therefore, student time is the most valuable component of the academic experience.
- c) Coleman's inquiries at John Hopkins University and other investigators strongly support the thesis that education is not culturally irrelevant. Educational systems do differ from one subculture to another.
- d) The highest rates of return to investments in education comes from teaching adults.

- e) Investment in human resources through education has greater return rates to economic growth and social development than other forms of capital investment.

QUALIFICATIONS FOR ANIMAL PRODUCTION AND HEALTH VETERINARIANS
IN NIGERIA AND WEST AFRICA 5.0.0

5.1.0 Animal production and health professionals experienced in combating livestock production problems in Nigeria and Western Africa were interviewed to define their opinions related to qualifications for veterinarians practicing in this area. These interviews represented approximately 394 man/years of expertise and experience in this country and region.

5.2.0 The following professional qualities were given priority importance to increasing livestock productivity, controlling animal diseases and zoonoses, academic veterinary instruction, veterinary public health, and animal production and health administration:

- 5.2.1 - a broad multidisciplinary animal science/veterinary medicine educational experience.
- 5.2.2 - a knowledge and understanding of preventive veterinary medicine and epidemiology related to herd health and the control of animal diseases in comparatively large animal populations managed under rather adverse conditions.
- 5.2.3 - a sound veterinary competence in animal disease diagnoses accompanied with a working knowledge of data retrieval and processing for the prompt and accurate reporting of animal disease situations.
- 5.2.4 - a knowledge of the numerous and varied details involved in planning and implementing animal disease control programs within the working conditions of the region.
- 5.2.5 - an aptitude to communicate with livestock owners and producers.
- 5.2.6 - a sound concept of animal productivity and its role to the over-all welfare and economy of Nigeria, Western Africa, and the world.
- 5.2.7 - an expertise in animal production and health research sufficient to design useful research programs geared to increasing economically feasible livestock productivity.
- 5.2.8 - a concept of the economics of animal health.

- 5.2.9 - an appreciation of the multidisciplinary team approach, i.e. animal husbandry, pasture/forage management, agricultural economics, sociology, nutrition, plant sciences, food processing and hygiene-- to animal production and health problems of the region.
- 5.2.10 - a regional and international concept of animal disease control with the ability to co-ordinate multinational animal health programs.
- 5.2.11 - a capacity to constructively supervise subprofessional animal production and health personnel (livestock assistants, veterinary superintendents, and laboratory technicians).

QUANTITATIVE NEEDS FOR VETERINARIANS 6.0.0

6.1.0 There have been a number of exercises in demand projections for professionals in the health science fields during the past two decades. These studies have been conducted in different societies throughout the world. (see 6/, 7/, 33/, 37/, 40/, 61/, 62/, and 63/)

6.1.1 With few exceptions, the supply and demand phenomena for veterinarians as members of the health sciences profession center around discussions which do not clearly define the methodology for these manpower demand projections.

6.1.2 A review of research related to the quantitative needs for veterinarians reveals various systems and combinations of systems which have been used for these studies. In some discussions a "seat of the pants" projection has been presented for certain regions and countries. These self-styled supply/demand predictions apparently result from a weighted consideration of a number of factors which normally influence this human resource demand.

6.1.3 It seems realistic to assume that no entirely satisfactory method has yet evolved to project, with a meaningful degree of accuracy, the quantitative needs for competent veterinarians nor, more specifically, for personnel having an educational experience in veterinary medicine. The complexity and novelty of supply and demand in developing countries' manpower intelligence is compounded by numerous variables and issues. Many of these factors are unpredictable and difficult to clearly define.

6.1.4 A brief discussion of the systems which have been utilized in past studies is appropriate for this report. (see 6/, 7/, 33/, 37/, 40/, 61/, 62/, and 63/) Some of the variables influencing the accuracy of these survey systems are noted. They help to demonstrate the complexity of human resource studies.

6.2.0 Many investigators have preferred to define the demand for veterinarians in a comparison ratio of one veterinarian to X number of animal units. (see 33/, 62/, and 63/) Thereafter, it is proposed that a sufficient quantity of veterinarians have been supplied to a region or country when the veterinarian/animal unit ratio reaches 1/16,000, or 1/30,000, or 1/60,000 etc.

6.2.1 However, a number of variables influence this thesis:

6.2.2 - it is often difficult or impossible in most developing societies to obtain an accurate census of animals or veterinarians.

- 6.2.3 - the conversion ratios of animal populations to animal units vary with investigators.
 - 6.2.4 - the accessibility of animal units to the veterinarian and his services varies within countries, districts, and regions.
 - 6.2.5 - the degree of logistic support for the dissemination of veterinary services differs.
 - 6.2.6 - the economic value of animal units fluctuates. This value is seldom considered in this calculation. Livestock values have been shown to relate directly to the demand for veterinary services.
 - 6.2.7 - animal unit concentration per owner/farm unit and animal unit migration patterns further influence the accessibility factor.
 - 6.2.8 - animal unit owner sensitivity to the benefits of veterinary services has a wide range of difference.
 - 6.2.9 - the number and competence of subprofessions to assist the veterinarian in servicing animal units affects the veterinarian/animal unit ratio.
 - 6.2.10 - the fluctuating index of animal disease epizootics, their economic and political importance, and the intensity of campaigns to control these diseases affects this ratio system.
- 6.3.0 The number of employment opportunities available to graduating veterinarians and the socio-economic prestige of these jobs have been used as an indicator of demand.

Certain variables influence this indicator:

- 6.3.1 - traditional political and social factors contributing to the productive employment of veterinarians. Underemployment of veterinarians and other health science professionals is not uncommon. These situations place veterinarians in positions which do not offer opportunities to productively apply the tools of his profession at maximum efficiency.
- 6.3.2 - productive employment of veterinarians has been shown to generate in a rapid succession the demand for more veterinary services to animal agriculture.

- 6.3.3 - employment opportunities for young veterinarians tend, especially in developing countries, to be comparatively limited in scope. Quite often international and regional demand signals for veterinarians do not arrive at the diploma granting level.
- 6.3.4 - often employment barriers are erected by older veterinarians which distorts the number of employment opportunities to younger professionals.
- 6.3.5 - fluctuating political trends in the nationalization of professional labor forces affect the number and type of job opportunities.

6.4.0 An economic cluster comprised of the national annual cash income from the sale of livestock; the gross value of the livestock industry per veterinarian; and the related value of animal agriculture to the Gross Domestic Product of a country represents one side of the supply/demand coin.

The value of these criteria is often limited by:

- 6.4.1 - the creditability and availability, especially in developing countries, of economic data at this level of sophistication.
- 6.4.2 - a controlled national marketing system, usually under political influence, often unrealistically distorts the in-country values of livestock and livestock products.
- 6.4.3 - there are no cost/benefit studies at this time which define a methodology, acceptable to economists and animal health specialists, to determine the economic benefits of animal health services to livestock productivity. The economic value of herd health managerial programs and animal disease control campaigns has yet to be clearly calculated as an economic component of the animal agriculture package.
- 6.4.4 - quite often in developing economies, rates of return in animal agriculture and land appreciation are comparatively low to other short-term investment opportunities. This situation decreases capital investment in some livestock industries.
- 6.4.5 - religious customs, tribal traditions, and social taboos influence, in many regions of the world,

the marketing structure of animals and animal products. These factors have a corresponding effect upon the value of the livestock industry.

6.5.0 The ratio of animal farm units per veterinarian has been considered by some investigators in this supply/demand situation.

6.5.1 Many of the limitations to this approach have been listed under 6.2.0, page 26, 6.3.0, page 27, and 6.4.0, page 28.

6.6.0 The demand for admission to colleges of veterinary medicine has been thought by some education specialists to represent a quantitative need for veterinarians.

However, this assumption is altered by:

6.6.1 - a lack of creditable evidence that veterinary medicine is the priority professional choice of the student applicant.

6.6.2 - other behavioral motivations, i.e. parental, social, economic, political pressures--stimulating interest in a veterinary education other than animal agriculture and related veterinary medical fields.

6.7.0 National and international policies and issues stimulate programs to increase annual food production of animal origin in developing nations to levels of more developed societies, i.e. 5% per year. These policies and corresponding programs directly affect the projected demand for animal health services.

Unpredictable situations influence this demand criterion:

6.7.1 - a breakdown in continuity for priority planning for increasing livestock productivity.

6.7.2 - an unforeseen shortage in the required levels of development funds and technical manpower for national policy implementation.

6.7.3 - political changes resulting in a shift in national priority development planning from animal agriculture.

6.7.4 - disillusionment in animal industry productivity related to scarcity of natural resources and other inputs required for increasing production levels.

6.8.0 A few studies deal with a clairvoyance built upon past sequences of events in other societies. Predictions are attempted by defining a future demand for veterinarians based upon expanding employment opportunities in biomedical and other related fields, i.e. marine biology, laboratory animal medicine, aerospace medicine, specialized fields of military medicine, game management and harvest, and livestock economics.

Easily recognizable difficulties limit this approach:

- 6.8.1 - the perplexity of prognosing technical and scientific advancement with any time phase accuracy.
- 6.8.2 - the unpredictability of quantitative numbers of veterinarians with sufficient knowledge and flexibility to readily adapt to other employment fields.

6.9.0 Furthermore, the supply/demand phenomena is altered by even more complexing factors of a general nature:

- 6.9.1 - political, regional, and nationalist motivations to establish colleges of veterinary medicine irregardless of their need.
- 6.9.2 - the man/years of productive professional life for veterinarians which varies in different areas of the world.
- 6.9.3 - the differences in the average age of veterinarians entering professional life.
- 6.9.4 - a tendency for some state and federal animal health administrators to distort the demand picture by increasing staff to influence their future promotions, i.e. empire building.
- 6.9.5 - the ratio, dictated by national employment customs and policy, of total veterinary staff to productively employed veterinary staff.

6.10.0 Projecting demands for veterinarians is a many faceted and difficult problem in manpower intelligence. Combinations, however, of the above systems can assist in predicting trends. This report gives emphasis to a combination of systems numbers 6.3.0, 6.4.0, 6.7.0, 6.8.0, 6.12.0, 6.13.0, and 6.19.0 in projecting demand for veterinarians in Nigeria and Western Africa.

6.11.0 It is equally difficult today to point to any one country with a surplus of productively employed veterinarians. The few countries which may have been close to reaching a

surplus in veterinary manpower have experienced a spin-out absorption of these professional to other countries, regions, and international organizations in need of this expertise.

6.12.0 The broad spectrum and high incidence of animal production and health problems in Nigeria and, for that matter, animal agricultural problems of the dry and humid tropical regions throughout developing areas of the world indicate a serious understaffing of competent personnel to deal with this situation.

6.13.0 Information related to the demand for veterinarians was collected in Western, Kwara, Benue Plateau, and North Central States. This data included a combined request from animal production and health administrative officials of this region for at least 162 veterinarians to fill existing vacancies. This request should be weighed by the empire building syndrome and skepticism that logistic support and resources exist to productively absorb an immediate input of this number of veterinary personnel.

6.14.0 A concensus among animal health professionals contacted during this study indicated Nigerian animal production and health problems could well employ a veterinary working community of approximately 600 professionals. However, present employment patterns suggest an under-employment situation in veterinary manpower. If this employment situation is not remedied, it seems reasonable to project a need for veterinary manpower by 1980 in Nigeria and English-speaking Western Africa of some 1,000 to 1,200 professionals. This number of veterinarians should insure a productive veterinary community competent of dealing with the animal disease problems of the region.

6.15.0 Reference is made to Chart No. 1 "Projected Increase of D.V.M. Position Holders in Nigeria." (see 59/) The following qualifications and assumptions are noted relevant to this chart:

- 6.15.1 - that the ABU/KSU/USAID contract will continue as programmed to a phase out period in 1978-1980.
- 6.15.2 - that the proposed USAID institutional development loan (Phase III) will be approved and disbursed to finance the building of required physical plant facilities.
- 6.15.3 - that these physical plant facilities will be ready for utilization by 1974-1976 on a "turn-key" basis.
- 6.15.4 - that the 10% attrition rate calculated for losses to the Nigerian veterinary community

Projected Increase of D.V.M. Position Holders in Nigeria

	70/71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
A. Projected Graduates ABU	-	24	20	25	26	26	27	45	45	45	45	45	45	45	45
B. Projected Graduates University Ibadan	-	5	10	25	25	25	25	25	25	25	25	25	25	25	25
C. Total Graduates	-	29	30	50	51	51	52	70	70	70	70	70	70	70	70
D. Annual Entrants to Nigerian D.V.M. Positions (assume 10% attrition) ^{1/}	-	26	27	45	46	46	47	63	63	63	63	63	63	63	63
E. Cumulative Growth of Post '71 Position Holders	-	26	53	98	144	190	237	300	363	426	489	552	615	678	741
F. Present Group of D.V.M. Position Holders (declining at 7%) ^{2/}	189	176	163	150	137	124	111	98	85	72	59	46	33	20	7
G. Total D.V.M. Position Holders	189	202	216	248	281	314	348	398	448	498	548	598	648	698	748

^{1/} Assuming 10% loss to Nigerian veterinary Profession.

^{2/} Includes 103 expatriates. It is assumed that these expatriates and their Nigerian colleagues have an average working life of 15 years.

is perhaps conservative. An attrition rate of 15% might be more realistic.

- 6.15.5 - that in the light of present knowledge, there are approximately 189 veterinarians in Nigeria. Of this total figure, approximately 86 are Nigerian nationals and 103 expatriate professionals. If Nigerianization of the national animal production and health services is a pursuit of priority importance, the replacement of these expatriate veterinarians by Nigerians may cause their removal of a rate higher than the projected 7% per year.
- 6.15.6 - that this projection encompasses the probable supply of veterinarians in the national livestock industry, the state and federal animal production and health services, the academic community, and the research centers of Nigeria.
- 6.15.7 - that the projection, however, does not include the probable supply of veterinarians to international and regional animal health projects. It is understood a proposal is being studied by international foundations to site an international research center for tropical livestock production at the Shika Agricultural Experiment Station near Zaria, Northern Nigeria. The proposal includes the location of research substations throughout the region of Western Africa. If this research possibility in tropical livestock production materializes within the immediate future, there will be a notable increase in the demand for competent tropical animal health personnel.

6.17.0 The countries of English-speaking West Africa are considered to be Gambia, Ghana, Nigeria, and Sierra Leone. Studies and reports have been made relevant to the demand for veterinarians and veterinary education for Nigeria and Western Africa.

6.17.1 Mr. P. J. Gormely, PRM/ECON USAID Mission to Nigeria, has summarized five recent reports on Nigerian need for veterinarians and veterinary training:

- 6.17.2 - FAO, Agricultural Development in Nigeria - 1966
The FAO study mentions the estimate of the FAO/WHO Expert Panel on Veterinary Education that, as a guide for developing countries,

there should be at least one veterinarian per 30,000 livestock units. On this basis, the FAO estimated that Nigeria "required" 389 veterinarians. (p.221).

The FAO study also mentions that the "FAO Veterinary Education Mission to Nigeria at the end of 1963 stated 150-200 professional veterinarians were required now and in the immediate future." (p.323). The study goes on to mention the veterinary medicine programs at Ahmadu Bello and Ibadan and estimates that "some 45-55 graduate veterinarians would become available from about 1971/72 onwards. It is stressed that no further facilities for veterinary education at this level are required in Nigeria for many years." (p.323).

6.17.3 - J. B. Polding, Veterinary Education for Africa - 1967

Polding discusses requirements for veterinarians in the various parts of Africa. Regarding Nigeria, he points out that "future cadres have been estimated by visiting experts as between 160 and 200 men and by one local education as 300." (p.25).

He mentions that "since one good school (admission 50; wastage 25%) could turn out 38 graduates a year, it could build a total cadre of more than 300 men in 10 years...." Such a school "could maintain a cadre of more than 500 men indefinitely...." (p.26). He goes on to say that "It thus seems unrealistic to build more than one school until it has been shown that development is indeed underway and until the demand for graduates is threatening to outstrip the supply. A cadre of 500 would represent a stock unit ratio of 1/16,000--an overgenerous figure for this kind of territory and, indeed, the whole West African region could be easily served by this one faculty." (p.26).

6.17.4 - Consortium For the Study of Nigerian Rural Development, 1968-1969

James S. Long, "Analysis of the Needs and Resources for University Education in Agriculture in Nigeria," CSNRD -28 (December, 1968) discusses veterinary requirements in Nigeria. Long presents "high" and "low" estimates and suggests that by 1985 Nigeria will annually absorb 20 to 36 first-degree veterinarians. (p.36).

Long estimates that in 1966-1968 Nigeria had the "physical capacity" to produce 55 veterinary graduates per year--30 at Ibadan and 25 at ABU. He mentions the plans to expand ABU's capacity to 40 per year and shows, therefore, that by 1985 Nigeria will have the physical capacity to produce 70 per year--30 at Ibadan and 40 at ABU. (p.44).

Comparing the capacity to produce veterinarians in 1985 with the requirement in 1985, Long concludes that "the planned capacity of the veterinary faculty at ABU would be sufficient to supply the entire country's demand for D.V.M.s" (p.46).

Long recommends that veterinary support be limited to ABU and that plans to expand ABU veterinary faculty to produce 40 D.V.M.s annually be implemented if clinical programs are consolidated into the facility at ABU and if requirements for veterinarians approach the high estimates (36 per year) mentioned above. (p.47).

CSNRD -33, the final report of the Consortium, repeated Long's conclusion that "the anticipated output of D.V.M.s from Ahmadu Bello University (ABU) exceeds the employment forecasts for veterinarians in Nigeria." (p.113).

6.17.5 - Dr. E. Coles, Nigerian Requirements for Veterinarians - 1971

Coles' short paper mentions the FAO Report on Veterinary Education which recommended, on the basis of one veterinarian per 50,000 head of cattle, that 150-200 veterinarians were needed. He mentions the later FAO-WHO report which suggested "a more realistic" ratio of veterinarians to livestock of one to 30,000 and which concluded that a minimum requirement was 250-300 veterinarians in the then Northern Region.

Coles reports that the Nigerian Veterinary Council Meeting (July 2, 1970) suggested that the above estimates were low and that "the anticipated need would be 450-500 qualified veterinarians by 1980. This projection was expressed as an opinion of the Council and was not considered a firm recommendation based on documented projection." Coles concludes his discussion of requirements by saying "If we

consider the 1970 estimate of the Nigerian Veterinary Council to be exaggerated by 20% (90-100), it remains that 370-430 qualified Nigerian veterinarians will be needed by 1980."

6.17.6 - Dr. H. L. Stoddard, Draft Consultant's Report on the Evaluation of Project 817-- Faculty of Veterinary Medicine, ABU - November 17, 1971

Stoddard states that "a concensus among professionals contacted during this consultative study indicated that an estimated total for the veterinary working community in all of Nigeria should be approximately 600 professionals." (p.2). The year to which this number refers is not mentioned.

Stoddard mentions the requirements estimates reported by Polding. Stoddard is of the opinion that the estimates are too low. He concludes by saying "it seems reasonable to project a need for veterinary manpower by 1980 which should productively employ, within the English-speaking West African region, some 1,000 to 1,200 professionals." (pp.4-5).

Stoddard's estimates appear to be higher than the others cited above. If three-quarters of his 1980 estimate is allocated to Nigeria, some 750 to 900 veterinarians would be needed. This is substantially in excess of the Nigerian Veterinary Council Meeting's "opinion" (cited by Coles) that 450-500 would be needed in 1980.

6.18.0 When consideration is given to the discussion of veterinary manpower intelligence methodology in this report, the underemployment syndrome, and Nigerian expectations to increase livestock productivity, these quoted demand estimates in this reports are, in the consultant's opinion, conservative. If, in fact there is hope that the stagnate cattle industry of this region can increase productivity at an annual rate of more than 2%, an increased number of competent, productively employed, animal production and health cadre at professional and subprofessional level will be needed.

6.19.0 The current proposal to transfer the public health responsibility of meat hygiene and inspection services from human medical units to the Nigerian veterinary service will also reflect upon future demands for veterinary personnel.

6.20.0 There are, at this time, five diploma schools within Nigeria for subprofessional animal production and

health officers. Estimates suggest that these subprofessional diploma schools, training livestock assistants and veterinary superintendents, are keeping pace with the demand for this level of personnel much better than the colleges of veterinary medicine are for the demand for veterinarians.

6.21.0 Veterinary manpower is, at this time, being supplied by the Faculties of Veterinary Medicine at Ahmadu Bello University and Ibadan University. The current political situation in Sudan will no doubt supply some veterinary expertise from that country to Nigeria and the English-speaking Western African region.

6.22.0 Gormely's calculations confirm that an annual output of 60 veterinarians with a 15 man/year working life will in 15 years maintain an equilibrium in a veterinary community of 900 professionals. Please see Appendix No. 5 for further details.

RELEVANCY AND INTEGRATION 7.0.0

7.1.0 The responsibility of the Faculty of Veterinary Medicine at ABU is to constructively participate in the establishment and continuance of a teaching/learning program in veterinary medicine best suited to Nigerian conditions. This educational experience should include basic core courses in animal production practices and medicine. More specifically, this educational program should prepare veterinary students to most productively serve Nigerian animal agriculture and public health needs.

7.2.0 The role of veterinary faculty members as teachers includes the conventional spectrum of duties:

- 7.2.1 - to act as a media for the transmission and evaluation of information.
- 7.2.2 - to serve as a motivating force to the student body.
- 7.2.3 - to, through personal actions, be models to influence student professional development.
- 7.2.4 - to act as a reference source.
- 7.2.5 - to assist in curriculum planning and presentation by summarizing, synthesizing, conceptualizing course material and teaching methods.
- 7.2.6 - to serve as a counselor in the guidance of a student's professional career.
- 7.2.7 - to constructively communicate with students.
- 7.2.8 - to develop practical animal handling skills of the student.

7.3.0 Differences in climate conditions, social and religious customs, traditions, languages, husbandry practices, and disease entities require a degree of curriculum specialization relevant to the area and region of veterinary graduate employment. However, experience has demonstrated that a sound basic veterinary program, competently taught, will satisfactorily prepare a student in the fundamentals of animal disease control. Further specialization in regional characteristics can adapt the well trained veterinarian to assume the task of combating animal production and health problems in any region of the world.

7.4.0 This project is responding positively to the public health and animal production and health needs of Nigeria

and Western Africa. Common to progressive colleges, the course syllabus and curriculum are constantly monitored for relevancy. Coinciding with this evaluation, the current veterinary curriculum was being studied. (see 10/ and 11/) These studies give special emphasis to relevancy to Nigerian conditions. Course syllabus modifications are in the planning and implementation stages.

7.4.1 These studies supplied the reference information for Recommendation No. 2.3.0, page 7 pertaining to curriculum modifications. Special attention was focused in wedding the "Qualifications for Animal Production and Health Veterinarians in Nigeria and Western Africa" No. 5.0.0, pages 24-25 to a relevant and meaningful teaching/learning program, Recommendation No. 2.3.0, page 7.

7.5.0 These curriculum studies often made reference to international veterinary education standards for faculties of veterinary medicine. These standards have been defined by the Food and Agriculture Organization of the United Nations Expert Committee on Veterinary Education. The perimeters of these guidelines are intentionally broad in scope permitting flexibility in curriculum development within individual colleges of veterinary medicine. This is as it should be. Understandably, the framework of the teaching/learning process will change in subject matter material and core course presentation with the different colleges. Specialization emphasis usually account for these differences. Emphasis in small or large animal medicine, herd health vs. individual animal care concepts, basic and applied research programs, percentages of rural and suburban students, changing trends and progress in the over-all animal agriculture situation represent factors which dictate the needs for modifying the teaching/learning programs in colleges of veterinary medicine. When viewed in this flexible perspective, these international standards serve as useful criteria for assisting in developing a meaningful veterinary educational program.

7.6.0 The departmental organization at the Faculty of Veterinary Medicine at this time reflects most of the academic needs of veterinary education in Nigeria.

7.7.0 Common to all specialized faculties of the health science field, an administrative structure enhancing prompt procedures with well defined protocols and chains of command is of uppermost importance. An efficient administrative system maximizes faculty man hours of contact teaching with the student body. Furthermore, it supports increases in time for research programs. The administrative system at ABU and the Faculty of Veterinary Medicine follows a straightforwardly define chain of command from Vice-Chancellor, Provost, Dean, Department Chairmen, and faculty. Special compliments are in order for the efficiency of this administrative system at ABU.

7.8.0 During this consultant's visit at ABU, there was no evidence to indicate a problem sector in co-operation between the Faculty of Veterinary Medicine and other academic disciplines at this University. On-going co-operative programs and multidisciplinary meetings are evident between the Faculty of Veterinary Medicine, the Agricultural Science Departments, and the School of Medicine and other academic disciplines related to veterinary medicine. The efforts of the Provost of Agriculture and Veterinary Medicine and the Dean of Veterinary Medicine are instrumental in encouraging this co-operation and co-ordination.

7.9.0 The teaching load in the Faculty of Biological Sciences has increased to the degree where it may be necessary within the immediate future for the Faculty of Veterinary Medicine to present the preveterinary basic science curriculum.

7.10.0 The research and service functions of the Faculty of Veterinary Medicine are covered in this report in paragraph nos. 11.9.0 and 12.0.0, pages 48 - 49 and Appendix No. 6. It is, however, appropriate to define in more detail the role of academic research in the teaching/learning process related to relevancy and integration. It is extremely difficult to separate research and service functions from the educational program of a College of Veterinary Medicine. The overlap in these fields plays an important role in preparing competent veterinary graduates. Research and service activities contribute to the learning process of students by their direct and indirect association with these programs. These programs in veterinary medicine at ABU are developing at a rate common to newly founded colleges of veterinary medicine. Please see Appendix No. 6 (ABU Research Program).

7.11.0 A strong off-campus demand was encountered from practicing veterinarians for continuing education programs, short courses, and autotutorial courses to upgrade the competence of this veterinary community. The preparation of specialized instructional courses of this nature is demanding upon faculty time. Nevertheless, it is an important function of a progressive college of veterinary medicine. Moreover, these courses, once prepared, play a valuable role in the self-learning program among students. Current trends in educational theory and practice are placing a much stronger emphasis on the value of these courses and programs. (see 45/) Please see paragraph No. 12.2.0, page 49.

7.12.0 The diagnostic services operated by the Faculty of Veterinary Medicine are most justifiable. Not only do these facilities provide a badly needed service for the animal production industry in this region of Nigeria, they contribute to a sound educational framework by serving as a backstopping service for clinical medicine and a teaching value in diagnostic veterinary medicine.

EQUIPMENT AND PHYSICAL PLANT FACILITIES 8.0.0

8.1.0 The existing buildings, laboratories, and equipment are adequate with the present teaching schedule for the enrollment of approximately 130 students.

8.2.0 The expanded building program outlined in the third phase of this ten year institutional building project will permit an eventual student body of between 230-240 veterinary students. This Phase III program is scheduled for completion during fiscal year 1975. Past experience with building programs of this nature in developing countries suggest a likely delay of 1 - 2 years before the date of occupancy.

8.3.0 An observation was made that total student enrollment in veterinary medicine could be increased by duplication of course presentation and laboratory practical periods. It should be noted, however, that a number of veterinary courses are currently being duplicated in the present schedule to enable the present enrollment of approximately 130 students. It is unrealistic at this time to propose a further extension to the academic workday. Physical plant facilities are inadequate to accommodate this change in the teaching/learning schedule. The Administrative Committee of ABU agrees with the impracticality of this change in the traditional teaching pattern.

8.4.0 The installation, maintenance, and repair of laboratory and scientific equipment is a serious problem demanding valuable faculty time. This problem is not uncommon to projects of this nature in developing countries. The employment of a laboratory technician with United Kingdom training has proven a most successful solution to this problem in other veterinary education projects in developing countries. Long-range consideration might be given to training a Nigerian counterpart in the U.K. These U.K. trained laboratory technicians are most competent in installing, maintaining, and repairing all types of biomedical scientific equipment. Their services enable more constructive use of faculty time and insure remarkable economic saving in equipment. Please see Recommendation No. 2.2.0, page 6.

STAFF 9.0.0

9.1.0 The planned level of staff development is realistic to the over-all development program of the Faculty of Veterinary Medicine and Nigerian conditions. It coincides with ABU standards for faculty members. Reference is made to Permanent Staff Development No. 11.6.0, page 47.

9.2.0 The possibility that this College of Veterinary Medicine will, in the future, become an international academic institution in tropical veterinary medicine adds support to the current participant training program for future staff. Please see Recommendation No. 2.4.0, page 7.

9.3.0 The staff training program is appropriate in scope and areas of specialization. Some minor alterations will be required to coincide with the curriculum changes for relevancy, Recommendation No. 2.3.0, page 7. A cursory examination of this program might suggest it to be behind in schedule. Consideration, however, should be given to the distracting events associated with a civil war during the implementation phases of this project. There are no feasible modifications of the present staff training program to enable it to be compressed to a shorter time span.

9.4.0 The merits of the participant training program of this contract progressively coincide with development of the animal health sector of livestock agriculture in Nigeria and reflects the academic goals of ABU. This program specifies the course work for ABU faculty, as candidates for a Ph.D. degree, be completed in universities in the U.S.A. This postgraduate program for course work is presently planned along the guidelines of a Master's degree, Plan B program. This approach enables the Nigerian faculty member to receive a Master's degree from a university in the U.S.A. Subsequently, the student returns to ABU for dissertation and research thesis leading to a Ph.D. degree from ABU. This postgraduate program has several advantages. Of primary importance, it insures relevancy of the Ph.D. research project to Nigerian problems. Furthermore, conducting these research programs at ABU will have a meaningful contribution to the educational programs and prestige of that university. Failure to successfully complete the Phase III expanded building program would seriously limit research facilities, equipment, and the arena for research supervision by competent post-graduate advisors. The corresponding development of faculty staff would be gravely hindered.

9.4.1 The scope of the total veterinary research program at ABU equally depends upon the successful completion of the Phase III building project. This spectrum of productive veterinary research will be critically narrowed without these planned physical plant facilities and equipment.

9.5.0 The responsibility for graduate training of staff members is programmed to be eventually assumed by ABU. The timing for this shift in responsibility should coincide with the programmed phase-out date of the contract, 1978-1980. It is likely that other bilateral and multilateral aid agencies in Nigeria will assist at this time in faculty development programs at ABU. By following the schedule of the contract to the planned phase-out period, the Administrative Committee of ABU and the Vice-Chancellor will have ample advance notice to budget and plan for the full assumption of this responsibility.

FINANCE 10.0.0

10.1.0 The long term financial capability of the Nigerian government to support ABU and, more specifically, the facilities and programs of the Faculty of Veterinary Medicine appear most encouraging. Please see General Observation No. 4.7.0 and 4.9.0, pages 20-21. Interviews with the Vice-Chancellor and Provost of the Agricultural College and Veterinary Medicine confirmed there should be no budgetary constraints on the part of ABU in financing the counterpart obligations of Project 817 to its termination date.

10.2.0 The calculation of educational costs is a developing field in economics. In the past different methodologies have been used. There are many problems involved with the data retrieval and economic processing for costs in education. (see 56/ and 58/)

10.2.1 A number of national organizations in the U.S.A. are currently collecting data relevant to the costs of education of health profession personnel as well as information on the costs of educating other college graduates. In computing the costs of a program in liberal arts, some investigators believe the cost of the program should be related to the number of actual graduates as the only fair method of determining costs. Others propose different methods including student credit hours or the number of enrolled students. (see 60/)

10.2.2 This problem is further complicated by the fact that some universities do not include administrative costs, costs for maintenance of buildings and grounds, nor costs of capital expenditures for equipment and physical plant facilities.

10.2.3 The U.S. Department of Health, Education, and Welfare, National Institutes of Health, is currently, through its Bureau of Health Professions Education, conducting studies of the costs of educating health professionals. The Association of American Medical Colleges, under contract to the National Institutes of Health, is presently gathering basic data for calculating the educational costs for a number of the health professions. More recently, the National Institutes of Health have initiated negotiations with the American Veterinary Medical Association and the Association of American Veterinary Medical Colleges to conduct a study to retrieve data on the costs of veterinary medical education in the U.S.A. Hopefully, these studies will be completed within the next two or three years. (see 60/)

10.3.0 This approach to standardizing the methodology to evaluate costs for a veterinary education will produce

more reliable studies than those performed in the past by individual universities. The results of these past studies by U.S.A. universities indicate the per annum costs for educating a veterinary student to vary from U.S. \$5,000 - U.S. \$12,000.

10.4.0 In considering the broad differences in methodology for cost analyses of veterinary education, the estimations calculated at ABU for veterinary student/year costs ranging from \$13,176 in 1971 to \$10,713 in 1980 fall within costs perimeters of U.S. veterinary colleges. Please see Appendix No. 9.

ACTUAL AND PROJECTED PROGRESS TOWARD PROJECT TARGETS 11.0.0-12.2.0

11.1.0 This sector of this report was developed and written in co-operation with Messrs. J. M. Anderson and F. E. Gilbert, Program Evaluation; and Dr. J. Woodhull, Agriculture and Contract Officer of the USAID Mission to Nigeria. This portion of the evaluation was presented by Mr. J. M. Anderson at the final briefing meeting with USAID and KSU personnel in Lagos, 18 November 1971. It represented a part of the preliminary evaluation report presented to the USAID Mission to Nigeria on that date. The text of this portion of this report has not been changed from the preliminary report.

The following discussion attempts to identify where the project stands in relation to the achievement of the key targets.

11.2.0 Projected Student Enrollment

70/71	71/72	73/74	75/76	77/78	79/80
49	73	118	170	242	332

11.2.1 Adherence to the above projection of student enrollment is dependent essentially on the availability of two factors, adequate numbers of applicants and the facilities and staff to train them.

11.3.0 This academic year the Faculty received 75 applications from qualified secondary school graduates of whom 20 were accepted for admission (an additional 10 transferred from the Basic Science Course at ABU). Nineteen of the 30 new students are from the six northern states which the university was created to serve. If pressure mounts to have a larger percentage of the student body from these states, the newly founded School of Basic Studies at ABU should be able to provide the qualified applicants. Moreover, this School of Basic Studies will make the Faculty of Veterinary Medicine accessible to a higher percentage of students with rural backgrounds.

11.4.0 Phase III buildings will facilitate doubling of present capacity from 27 graduates/year to approximately 50. Housing space for these additional students will be available in a new 900 unit dormitory for which construction tenders have recently been let.

11.5.0 Available information supports the KSU assertion that all of the graduates are presently employed (more or less productively) in positions requiring veterinary training. State and Federal Governments are by far the largest

employers of graduates, absorbing approximately 90%, while the rest have opted to either continue their education for advanced degrees in veterinary medicine leading to academic and research positions or take positions in private industry and livestock production. This balance between government service, education and industry, which could effect the thrust of the study program, is not likely to change substantially in the future.

11.6.0 Permanent staff is considered to be the Nigerians and ABU-financed expatriates employed directly by ABU in academic staff positions. The projections shown below indicate the rate of permanent staff development that will result from implementation of the present participant training schedule.

	Academic Years					
	<u>70/71</u>	<u>71/72</u>	<u>73/74</u>	<u>75/76</u>	<u>77/78</u>	<u>79/80</u>
Required Permanent Staff	18	18	30	37	38	40
Available Permanent Staff	14	14	20	25	35	40
Leadership Coverage <u>1/</u>	1	1	1	2	10	13
Returned Participant Trainees <u>2/</u>	0	1	6	15	21	22

- (1) Leadership coverage is defined as permanent staff occupying Head/Ag Head and/or Prof/Reader positions. See Appendix 7 and 7a.
- (2) See Appendix 7 for a Department-by-Department breakdown of returned participants.

11.7.0 The political difficulties which erupted in 1966 interfered with the selection of graduates for participant training and eventual permanent staff positions. The program has been accelerated since the return to normalcy. As of January 1972, there will be ten participants out of Nigeria in graduate programs. It is planned that returned participants will research and write their doctoral dissertations at ABU.

11.8.0 The study program at the Faculty is in full operation. It is a blend of lectures and readings with laboratory, research, and practical field experiences. Its main purpose is to produce graduates who are able to cope effectively with regional, national, and international animal agricultural problems. Feedback from key members of the veterinary working community indicate that, while recent graduates' training has certainly been acceptable, their effectiveness could be improved by changing study emphasis more to public health, preventive medicine, and animal production.

11.8.1 There have been some efforts to affect this change in emphasis and to strengthen the study program especially as it concerns relevancy to Nigerian conditions. These problems were the topics of two reports submitted by the Faculty staff last spring. It is intended that their recommendations along with those of the evaluation's consultant will form the basis of structural revisions which will be presented to the Senate for approval.

11.8.2 While one could say that the study program as it is today is well developed, its future suitability and effectiveness can only be assured by developing the Faculty's permanent staff to the point that they will be able to continue adapting it to changing conditions of the Nigerian veterinary environment. Course content, emphasis, and method of presentation will be the key factors at the disposal of an alert, enthusiastic, and well trained staff.

11.9.0 The Faculty's research program at this point in time is not fully developed. However, a Faculty research co-ordination committee has been established. While some quality individual research projects are underway, lack of adequate facilities, heavy teaching loads for a limited number of faculty, logistic support, and funding are all factors limiting the immediate implementation of a full-fledged program. Such a program would be dependent largely upon the installation of the Phase III buildings and equipment and upon the return of a substantial number of participants from their training abroad.

11.9.1 The average staff time devoted to a fully developed research program will range between 20% and 40% of departmental staff time while only an estimated average of 5% is presently allotted. It will serve a dual role. Not only will it be programmed to solve problems in productivity and the utilization of natural and human resources, it will also play an equally important role in the teaching/learning process.

11.9.2 A National Agricultural Research Council has been recently founded to establish guidelines and co-ordination for all Nigerian crop and animal agriculture. The ABU veterinary faculty is represented on this Council and all major research, including projects with other disciplines on problems of common concern, will be co-ordinated through this body.

12.0.0 Services provided by the Faculty are intended to serve three basic purposes:

- to enrich the teaching/learning program.
- to provide animal production and health services to the private sector animal industry, research

institutions, including veterinary biologic and drug production units.

- to fulfill a continuing education need for the veterinary working community.

12.1.0 The first two functions, largely interrelated, are in operation and relatively well developed. The facilities of the Faculty of Veterinary Medicine have been put at the disposal of chief veterinary officers for any supplemental diagnostic work they need. A visitation program for disease identification and treatment services several surrounding villages. In addition, the Faculty, in co-ordination with the National Veterinary Research Institute at Vom, operates a rabies diagnostic service. These are just a few examples of the services now offered by the College.

12.2.0 The third projected service, continuing education programs, is in an embryonic stage. Presently, several courses are taught in diploma program at other institutions but the real thrust of the program, to provide the practicing off-campus veterinary community with badly needed refresher courses, is being planned but is not yet underway. Implementation of these plans will require increased availability of staff.

BIBLIOGRAPHY AND REFERENCES

1. The Nigerian Beef Industry - by Donald S. Ferguson
New York State College of Agriculture
A Statutory College of the State University at
Cornell University, Ithaca, New York
Ford Foundation Grant 1967
2. "Nigerian Veterinary College a Reality," Journal of the American VMA, Vol. 153, No. 9, pages 1225-1230,
Dr. G.K.L. Underbjerg
3. "A Pictorial Report of Livestock Development in Nigeria,"
May 1966 Communications Media Support Office USAID/
Nigeria 1966
4. "Developing the Livestock Potential of Nigeria," Ahmadu
Bello University Public Lecture, Dr. Glenn H. Beck,
26 October 1970
5. "University Teaching and Research in Agriculture and in
Veterinary Medicine," Ahmadu Bello University,
Zaria, October 1965
6. "Reports of Committee on Education and Human Resource
Development," Nigeria, Education and World Affairs
7. "Agricultural Development in Nigeria 1964 1980," FAO of
the UN, Rome, January 1965
8. Ford Foundation Report 1971, "Nigeria Education:
University Development - Comments on the University
Situation 1971," page 27
9. Project Work Plan, FY 1972/July 1, 1971- June 30, 1972
and Semi-Annual Report Project 625-11-660-514,
Faculty of Veterinary Medicine, January 1, 1971-
June 30, 1971
10. "A Curriculum Concept Proposal, Faculty of Veterinary
Medicine, ABU, Zaria," by Ad Hoc Curriculum Advisory
Committee, Drs. A.N. Ena, Schillhorn Van Veen,
I. Alhaji, P.B. Addo, M.Y. Attah
11. "The Curriculum Relevance in the Faculty of Veterinary
Medicine, ABU to International Academic Standards
and to the Nigerian National Interests," by Prof. I.E.
Mustafa, June 1971

12. Project Agreement, "Faculty of Agriculture and Faculty of Veterinary Medicine," ABU, 5 May 1967
13. Project Agreement, "Ag. Assistance to ABU, Faculty of Veterinary Medicine," 16 April 1971
14. ABU Student Veterinarian, 1971
15. Graduate Studies in Tropical Veterinary Science, James Cook University of North Queensland
16. Shika Agricultural Research Station, Biennial Report 1969-71, Institute for Agricultural Research, ABU, P.M.B. 1044, Zaria, Nigeria 1971
17. Research Program, Vom Institute
18. Agenda for Livestock & Veterinary Conference, 30 August - 1 September 1971, ABU, Zaria
19. Catalogue of Serials and Reports, 1970 Veterinary Research Institute, Vom
20. List of Articles Published by the Staff of Federal Department of Veterinary Research, Vom
21. Netherlands Directorate for International Technical Assistance, Final Report on the Development of Veterinary Parasitology and Entomology, Faculty of Veterinary Medicine, ABU 1965-1970
22. List of Scientific Publications, Department of Veterinary Parasitology and Entomology, ABU, 1965-1971
23. Progress Report No. 23, July - September 1971, Netherlands Directorate for Technical Assistance, Department of Parasitology and Entomology
24. The Veterinary Surgeons Decree 1969 of Nigeria
25. Prospectus, 1971-72, Faculty of Agriculture, Forestry, and Veterinary Science, University of Ibadan
26. Postgraduate Prospectus, 1971-72, Faculty of Agriculture, Forestry, and Veterinary Science, Research Projects and Publications 1971-72

27. Non-Capital Preliminary Project Paper Livestock Development, Nigeria, 13 August 1970
28. Nigeria, a guide to understanding
29. Evaluation Handbook, MC. 1026.1, Supplement II USAID
30. Special Practical Concepts to assist Project Evaluation, Practical Concepts, Inc., Washington, D.C.
31. Evaluation Guidelines for Project Assistance, MC. 1026.1 Supplement I
32. Annual Report on Development Assistance: 1970 by Resident Representative of the United Nations Development Programme in Nigeria, March 1971
33. Veterinary Education for Africa, J.B. Polding, June 1967
34. Indexes of Agricultural Development, Less Developed Countries, 1970, May 1971, Foreign Economic Development Service, USDA
35. Project Work Plan - FY 1971, "Semi-Annual Report 1 January 1970 - 30 June 1970, USAID/KSU Contract," Faculties of Agriculture and Veterinary Medicine, ABU University
36. ABU, Extensions to Faculties of Veterinary Medicine and Agriculture, Nostrand Horner and Associates, Architects, Box 136, Farmingdale, New York
37. Requirements Analysis, "University Teaching and Research in Agriculture and in Veterinary Medicine," ABU, Zaria, Northern Nigeria, October 1965
38. Agricultural Development in Nigeria, 1965 - 1980, FAO of the United Nations, Rome
39. Summary of Equipment to be Provided, ABU/KSU/USAID Contract Veterinary Education
40. Nigerian Requirements for Veterinarians, Dr. E. Coles, January 1971

41. "Short Visitation to Faculty of Veterinary Medicine, ABU," Zaria, Nigeria, Dr. W.R. Pritchard, Dean, School of Veterinary Medicine, University of California, Davis
42. Training at Certificate and Diploma Level in Animal Health and Husbandry, Mando Road Livestock Training Center, ABU, PMB 2005, Kaduna, Nigeria
43. Organization and Functions of the Nigerian Federal Livestock Department
44. "Subsistence Herding in Uganda," by Rada & Neville Dyson, Hudson
45. Mastery Learning, Theory & Practice, Edited by James H. Block, October 1970, Holt, Rinehart & Winston, Inc.
46. Ceres, Special Edition on Education, FAO Review, Vol. 4, No. 3, May - June 1971
47. "Explore & Discover, An Alternative Strategy of International Intervention in Education," by Geo. H. Axinn and William J. Kieffer, 9 November 1971
48. "An Assessment of Efforts to Expand Agricultural Education and Research Capabilities in Less Developed Countries," by Geo. H. Axinn, Paper presented to the Annual Meeting of the Association of U.S. University Directors of International Agricultural Programs, Washington, D.C., 17 June 1971
49. Data Systems Branch, Division of Manpower Intelligence, Public Health Service, National Institutes of Health, U.S. Department of Health, Education, and Welfare
50. "A Primer on the Economics of the Veterinary Profession and the Implications for Minnesota," by Patrick D. Meagher, 1971
51. International Targets for Development by Richard Symonds, Editor
52. Progress Report No. 23, July - September 1971, Netherlands Directorate for International Technical Assistance, Department of Parasitology and Entomology, Faculty of Veterinary Medicine, Ahmadu Bello University, Zaria

53. List of Scientific Publications from the Department of Veterinary Parasitology and Entomology, ABU, Zaria during the period 1965-71
54. Intercultural Education, Vol. 2, No. 3, International Council for Educational Development Overleaf, pages 3, 5, 7, 15
55. The Nigerian Four Year Plan Document
56. The Economic Value of Education by Theodore W. Schultz, Columbia University Press, New York 1963
57. The Economics of Health by Professor Herbert Klarman, University Press, New York
58. "The New Economics of Education," International Journal of Educational Sciences, 1 (1966), pages 29-46
59. Chart No. 1, "Projected Increases of D.V.M. Position Holders in Nigeria," produced by co-operative efforts of Dr. J. Woodhull, Messrs. Jim Anderson, F.E. Gilbert and author
60. Discussions with Associate Dean R.K. Anderson after his sabbatical to investigate developments in educational techniques, theory and practice and the economics of education
61. James S. Long, "Analysis of the Needs and Resources for University Education in Agriculture in Nigeria," Consortium for the Study of Nigerian Rural Development, 1968-1969
62. "The Number of Veterinarians in Relation to the Domestic Animal Population," by S. Schonherr and H. Meyer, The Blue Book for the Veterinary Profession, Hoechst 1971, pages 1-14
63. "Nigeria's Need for Veterinarians and Veterinary Training, An. Analysis", Patrick J. Gormely, PRM/ECON, USAID Mission to Nigeria, 1971

64. The Institutional Development Agreement, "A New Operational Framework for AID and the Universities," by the Joint Committee of the National Association of State Universities and Land Grant Colleges and the Agency for International Development, January 1970
65. Trends - Executive Development and Cross Cultural Transition, "A Proposal for Multinational Corporation," by Mr. William B. Shaw and Dr. Joseph V. Miccio, Vol. 4, No. 2, September 1971
66. Trends - Understanding Cultive Guidelines and Techniques for Training, by Dr. James F. Downs, Vol. 3, No. 2

APPENDIX 1

Administrative Problem Sectors Decreasing the Efficiency
in the Operation of the ABU/KSU/USAID Contract in
Veterinary Education

During this evaluation mission, attention was directed to a number of administrative problems which were thought to decrease the operational efficiency of this project. No specific recommendations are presented for each problem sector. A general recommendation, however, suggests a meeting between the Chief of Party of the KSU contract team and USAID Mission personnel to discuss and improve this administrative protocol. The report of the Joint Committee of the National Association of State Universities and Land-Grant Colleges and the Agency for International Development, "The Institutional Development Agreement--A New Operational Framework for AID and the Universities," January, 1970 presents a study and recommendations to increase the efficiency of USAID/University contracts. (see 64/) This document should prove useful in helping to establish guidelines for a more productive administrative framework for Project 817.

The KSU contract personnel noted the following specific problem areas in administration:

- rigidity in planning for participant training programs.
- a lack of KSU contract personnel autonomy in:
 - a) obtaining Nigerian visas
 - b) designation of the Chief of Party for the project
 - c) decisions for medical services and care of contract personnel
 - d) obtaining country clearance for contract personnel
 - e) commodity and equipment ordering procedure
 - f) entertainment allowances for the KSU Chief of Party

Delays were noted in USAID Mission processing of contract-related documents due to the apparent necessity for a number of the USAID staff to sign these documents indicating approval. If this related mission personnel should be away from their desks during this sign-off procedure, these documents could be delayed in processing.

Specific examples of these delays were noted:

- final mission ProAg approval.
- requests for copies of USAID Manual Orders and Regulations.

- death messages.

Concern was expressed about the occasional short notice for review of contract-related documents given to KSU contract personnel and ABU administrators.

A suggestion was made regarding frequency of contract reporting. Rather than monthly manpower reports, the proposal was made to present these reports every six months. This reporting procedure would enable more constructive use of the contract personnel's time in teaching and institutional building.

Unannounced or short notices for visits of USAID Lagos personnel to the ABU project site disrupts academic schedules. Whenever possible, it is suggested that these visits be announced as far in advance as possible.

USAID rigidity in interpretation of a two-years tour of duty on post warrants discussion.

There are 13 USAID vehicles assigned to the ABU/KSU project. Of these vehicles, the unit with the lowest mileage registers 52,000 miles, the unit with the highest mileage registers 85,000 miles (11 November 1971). Dependable transportation is indispensable to the teaching of veterinary medicine. Field and ambulatory clinic trips are a most important activity of the practical courses in clinical veterinary medicine. A solution should be investigated to supply more serviceable vehicles to this project.

APPENDIX 2ITINERARY

Nigerian ABU/KSU/USAID Consultanship

October 11, Monday

LV: Twin Cities 14:40
AR: Kansas City 17:00
LV: Kansas City 17:45
AR: Manhattan 18:45

Evening meeting with Drs. Lee Railsback, Olson, and other KSU faculty associated with KSU/ABU Contract.

October 12, Tuesday

Kansas State University, College of Veterinary Medicine. Meetings with Drs. Railsback, Jay Humburg, Olson, Glenn H. Beck, Dean Trotter, and other faculty and Nigerian graduate students associated with the KSU/ABU contract.

October 13, Wednesday

Meetings with above mentioned faculty and Nigerian graduate students.

LV: Manhattan 15:30
AR: Kansas City 16:15
LV: Kansas City 18:00
AR: Washington 21:30

October 14, Thursday

Washington - Briefing Department of State, African Contract's Office, Participant Training Office.

October 15, Friday

Washington - Per diem not charged to Consultanship Contract No. AID/afr-813. Per diem charged to VN-63 Contract. Budget negotiation with Vietnam Contract Office, Washington.

October 16, Saturday

Washington - Briefing conference with IBRD Livestock Division and Educational Division personnel related to IBRD development lending in Nigeria (Stoops, Franssen, Gerring, Ballantine, Chisholm).

Delay in departure from Washington due to delay in obtaining Nigerian visa.

October 17, Sunday

Briefing with Mr. Carl VanHaeften, Central African Bureau, USAID

October 18, Monday

Briefing with personnel Central African Bureau USAID.
Obtained Nigerian visa.
Finalized flight itinerary to Nigeria.

October 19, Tuesday

Arrangements for ABU/KSU participant trainees to undertake postgraduate work at the College of Veterinary Medicine, University of Minnesota.
Final briefing USAID/Africa Bureau

LV: Dullas Airport 19:45

October 20, Wednesday

AR: London Heathrow Airport 07:00
LV: London Heathrow Airport 09:45
AR: Rome Fumachinio Airport 12:00

1300-2000 - Briefing meetings with the Food & Agriculture Organization personnel, Animal Production & Health Division - Drs. H.A. Jasiorowski, W. Ross Cockrill, Reg Griffiths; International Veterinary Education - Dr. Emil Knudsen; FAO/IBRD Economic Investment Division - Drs. Peter Brumby, John Hancock, Bob Temple.

LV: Rome 22:30

October 21, Thursday

AR: Addis Ababa 07:30

Briefing meetings with Drs. Iain Macfarlane (Director of Joint Campaign against Rinderpest, some 20 years professional experience in Northern Nigeria), Donald DeTray, USAID Animal Health Officer.

October 22, Friday

Courtesy/Briefing Visit - Organization of African Unity - Addis Ababa.

Contacts at OAU -

Mr. Alhaji Haruna bin Musa (Nigeria)

Assistant Secretary General, Administration

Mr. J.D. Buliro (Kenya)

Assistant Secretary General - Scientific and Cultural Division/OAU

Mr. O. Okello, Chief of General Services and Logistic Support - OAU

Mr. A. O. Odelola (Nigerian Executive Secretary - OAU/STRC)

October 23, Saturday

Briefing meetings with Ministry of Agriculture Animal Health Personnel.

Contacts -

Dr. Assafawoldegiorgis

Director General of Veterinary Services

Dr. Ayale Yashewalul

Vice Minister of Animal Health & Production

(Harvard Development Economics Course)

Final briefing USAID/OAU animal health and regional economic personnel.

Contacts -

Drs. Iain Macfarlane & Donald DeTray

Dr. Peter K. Daniells, Attache for Regional Economic Affairs, American Embassy, Addis Ababa

LV: Addis Ababa 12:00

AR: Lagos 16:00

Check in Hotel Ikoyi - Briefing dinner, George Eason/
H. Kugler/J. Woodhull

October 24, Sunday

Meetings Jim Woodhull/George Eason/H. Kugler
Dinner: George Eason

October 25, Monday

0700 Breakfast - H. Kugler
0800-1030 Meetings Jim Anderson/Fritz Gilbert/George Eason/Jim Woodhull
1130 Meeting Mr. A.O. Odelola OAU/STRC, Ex. Sec.
1300 Meetings Evaluation - Fritz Gilbert/Jim Anderson - document accumulation - all afternoon. Begin revision on evaluation Matrix
Dinner - George Eason

October 26, Tuesday

0830 Meeting - H. Kugler
1030 Meeting - Hummon/Faust - Evaluation & Loan Officer - Robert Berg
1200 Meeting Dr. Alhaji Bakar Shiab, CVO, Nigeria
1400 Working session PRM/AGR/&Prm/CD discuss
a) logical framework, b) issues outline, c) itinerary & other related matters.

October 27, Wednesday

0800 Documents review - Jim Anderson - Jim Woodhull
1400 LV: Lagos
1600 AR: Ibadan - Henry Vann Blake - USAID Livestock Advisor

October 28, Thursday

0800 Henry Van Blake - Slaughter Slab
0900 Dr. Ndep, CVO, WS-MANR
1030 Dean T. Ajibola Taylor - Faculty of Agriculture and Veterinary Science
1100 Prof. D.A. Oyenuga - Head, Animal Science
1400 Dept. of Veterinary Science - Dr. Desmond Hill

October 29, Friday

0730 Chief S.A. Adeniyi, PAO Livestock, WS-MANR
 also private poultry producers
 1030 Ibadan Dairy
 1300 Depart Ibadan
 1430 Fashola Livestock Station - Mr. A.A. Balgun
 1600 Private Farms and Livestock Units
 1830 Depart for Oshogbo
 1930 AR: Oshogbo Resthouse

October 30, Saturday

0700 LV: Oshogbo Resthouse
 1000 CV.O, Kwara State - (out on tour) Ilorin
 Mr. J.E. Fatozin - Assistant Veterinary Officer
 Mr. Yahaya Alabi - Assistant Veterinary Officer
 Mr. Alhaji Adama A. Ajanah - Assistant Animal
 Husbandry Officer
 1100 Ilorin Poultry Unit
 1200 Lunch at Unity Hotel
 1300 Depart to Mokwa Livestock Station (Dr. Hubl out)
 1900 Continue to Tangi
 2100 Tangi Resthouse

October 31, Sunday

0800 LV: Tangi
 0900 Mokwa Livestock Station - Breakfast - Dr. Hubl -
 Visit Mokwa Station/Slaughter House
 1300 Depart Mokwa
 2100 AR: Hotel Hamdala - Kaduna

November 1, Monday

0730 US Council Wilson, Kaduna
 0800 Mr. Arthur J. Hannah - USAID Livestock Advisor
 0930 Dr. Alhaji Hamisukano - Federal Livestock & Meats
 Authority
 1100 Dr. Bello Kofar Naissu - Federal Livestock Division
 (Dr. Dennis Walker on leave)
 1230 Nigerian Institute for Trypanosomiasis Research
 1400 Lunch Mr. Arthur Hannah

November 2, Tuesday

0800 Mando Road Livestock Training Center
Dr. Harold Hall, Director & Staff
1200 Dr. Gero Stumpflender, FAO, Veterinary Public
Health, Mando Road
1545 Depart by WT-682 for Jos
1625 Arrive Jos check into Hilltop Rest House
1800 Briefing dinner USAID contract personnel - Jos

November 3, Wednesday

0800 Briefing meeting with Dr. Musa Goni, Director of
Federal Veterinary Research, Vom Institute and
also President of the Nigerian Veterinary Council.
1000 Tour of Federal Veterinary Research Institution
and review of the current research with Dr. K. A. O.
Sansi, Assistant Director, Vom.
1600 Return to Jos

November 4, Thursday

0800 Visit the Soil Conservation Vocational School, Jos.
1200 Depart by vehicle to Zaria
1645 Arrive Zaria
1800 Briefing dinner Dr. Embert Coles, Chief of Party,
ABU/KSU/USAID Veterinary Education Contract.

November 5, Friday

0730-1000 Discussions with Dr. Embert Coles, and members
of the ABU/KSU veterinary faculty and staff.
1015-1430 Veterinary Parasitology Department review of
teaching program and other related subjects -
Professor Leefland, Drs. T. J. Schillhorn
van Veen, van Vegten, Ilemobade, Bello, Sannusi.
1500 Further discussions - Dr. Embert Coles & staff.
1930 Briefing dinner - Dr. Bailie.

November 6, Saturday

- 0700-1030 Discussion with Anatomy Department staff - Prof. Hart, Drs. Reddy and Lamorde.
- 1030-1100 Briefing regarding ABU staffing and academic policy - Vice-Chancellor Audu.
- 1100-1430 Discussions with Pathology Department staff - Profs. Adams & Mustafa, Drs. Bailie, Barnes, Bida, and Saror.
- 1930 Briefing dinner Team Leader, Dr. Embert Coles, and ABU/KSU staff.

November 7, Sunday

- 0700 Revision of USAID format for ABU/KSU contract evaluation. Report writing. Mr. James Anderson, Dr. James Woodhull.
- 1800 Briefing dinner - Dr. Warzella's with majority of U.S. expatriate personnel assigned to Zaria area.

November 8, Monday

- 0700-1015 Continued discussions - Department of Veterinary Pathology staff.
- 1015-1200 Discussions with Provost Dafaalla accompanied by Drs. Coles, Woodhull, and Mr. Anderson.
- 1200-1300 Lecture "Preventive Veterinary Medicine and Epidemiology in Developing Countries" to veterinary medicine class.
- 1300-1600 Discussions with staff of the Department of Veterinary Surgery and Medicine - Prof. Preston, Drs. Pimentel, Osori, Ayivor, A. Kerejola.
- 1900 Briefing dinner Prof. Preston and Nigerian staff, Department of Surgery and Medicine.

November 9, Tuesday

- 0700-0900 Continued discussions - Department of Surgery and Medicine staff.
- 0930-1030 Visit Meats Processing Lab., Drs. Ben Schuman and Koch - accompanied Dr. Woodhull and Mr. Anderson.
- 1100-1500 Visit Department of Animal Science and tour Shika Livestock Experimental Farm, Dr. Koch & staff.

November 9, Tuesday - continued

- 1600-1830 Review findings and changes in evaluation format - Woodhull/Anderson/Gilbert/Vestrich/Kugler.
- 1930 Briefing dinner - Dr. Pimentel and Nigerian staff - Drs. Osori, Ayivor, and Akerejola.

November 10, Wednesday

- 0700-0930 Discussions with the Department of Veterinary Physiology staff, Prof. Weinman, Drs. Harkness, Aliu, Attah.
- 0930-1030 Special meeting with Dr. Saror, proposed graduate student, University of Minnesota, Department of Veterinary Pathology.
- 1500-1700 Review of findings with KSU/ABU/USAID staff including Kugler/Vestrich/Patrick/Anderson/Woodhull. Meeting chaired by Provost Dafaalla.
- 1930 Briefing dinner - Livestock Production, Mr. Sam Logan - USAID Livestock Specialist - ABU & Shika Experimental Farm.

November 11, Thursday

- 0900-1000 Special meeting Drs. Ilemobade and Schillhorn related to participant training program, Oklahoma State University.
- 1015-1200 Continued tour Shika Livestock Experiment Farm - Kugler/Vestrich/Patrick/Koch/Schuman.
- 1230-1500 Special meeting with Dr. Bida and Nigerian veterinary faculty regarding Phase III ABU on-campus research program for postgraduate thesis.
- 1600-1700 Special meeting with Prof. Adams - related to the spectrum of bilateral and multilateral educational aid projects in Nigeria.
- 1945 Briefing dinner - Dr. Hart and Department of Anatomy, Nigerian faculty.

November 12, Friday

- 0700-0930 Discussion with Dr. Coles, Woodhull, and Mr. Anderson related to recommendations of evaluation report.
- 0930-1330 Lecture - Senior class in veterinary medicine - "Future of the Veterinary Profession in Nigeria and West Africa."
- 1400 Briefing lunch - agricultural education - Mr. Don Guinns.
- 1600-1900 Report writing and review of findings - Woodhull/Anderson/Gilbert.
- 1930 Briefing dinner - Prof. Mustafa.

November 13, Saturday

- 0700-0930 Meeting with Dr. Coles & staff regarding evaluation, recommendation, and postgraduate research program at ABU dependent upon Phase III ABU/KSU contract.
- 1000-1230 Lecture - Senior Class veterinary medicine - "The Control of Animal Diseases in Large Animal Populations Managed Under Developing Country Conditions."
- 1400-1830 Report Writing.
- 1930 Briefing dinner - Mr. Sam Logan and majority of Nigerian USAID staff in livestock production.

November 14, Sunday

- 0730 Depart from Zaria.
- 0830 Arrive Kaduna
- 0830-0930 Meeting with Agriculture extensionist, Mr. Smith.
- 1000 Depart Kaduna.
- 1230 Arrive Lagos.
- 1400-1800 Report Writing.
- 1930 Briefing dinner - Woodhull & USAID staff.

November 15, Monday

- 0700-1800 Report writing & typing, USAID Mission, Lagos.

November 16, Tuesday

0700-1800 Report writing & typing, USAID Mission, Lagos.

November 17, Wednesday

0700-1800 Report writing & typing, USAID Mission, Lagos.

November 18, Thursday

0700-1200 Report typing and distribution - A/DIR, AD/P,
PRM/OS, PRM/CD & AGR.

1400-1600 Evaluation review - Dr. Embert Coles,
A/DIR, AD/P, PRM/OS, PRM/CD & AGR.

November 19, Friday

0700-1800 Post-mortem of review with evaluation team -
Anderson/Gilbert/Woodhull/Eason/Patrick.

November 20, Saturday

0700-1400 Packing & shipping documentation to USAID
African Bureau, Washington.

1600-2000 Dinner Kugler/Vestrich/Berg.

November 21, Sunday

0140 Depart Lagos.

0600 Arrive London Gatwick Airport.

November 22, Monday

Visit British Overseas Development Association - Dr. A.
L. C. Thorne, Ex. Director, Veterinary Research Institute,
Vom, Nigeria.

November 23, Tuesday

Visit Animal Virus and Research Institute, Pirbright,
England - Dr. John B. Brooksby.

November 24, Wednesday

Visit Brooke Bond OXO Ltd., Mr. Patrick Vigors.

November 25, Thursday

Visit The Royal Veterinary College, Dr. Walter Plowright,
Ex. Director, Veterinary Research Institute, Vom, Nigeria.

November 26, Friday

Visit Centre for Tropical Veterinary Medicine, Easter
Bush, Roslin.

November 27, Saturday

Visit Dr. Peter Ellis, Veterinary Economist to
Organization of African Unity, Joint Campaign against
Rinderpest.

November 28, Sunday

2100 Depart Heathrow.

November 29, Monday

0900 Arrive Dullas.

November 30, Tuesday

Debriefing African Bureau.

December 1, Wednesday

Vietnam Contract.

December 2, Thursday

Vietnam Contract.

December 3, Friday

Meeting - Dr. John Hannah and USAID African Bureau.

December 4, Saturday

1200 Depart Washington.

1345 Arrive St. Paul/Minneapolis.

APPENDIX 3

CURRENT LIST OF 1971 GRADUATES AND EMPLOYMENT ADDRESSES

1. Oyewale Tomori) Virus Research Laboratory, University of Ibadan, Ibadan
2. Demola Fagbami)

3. Ayodele Akinyede) Federal Department of Veterinary Public and Animal Health
4. Dan Babalola)
5. Foluso Fasanmi) Kaduna

6. Adeleye Adido) Jos, Fed. Dept. of Veterinary Public and Animal Health
7. Abiodun Olufade) Sokoto, Fed. Dept. of Veterinary Public and Animal Health
8. Olu Akerejola) Ahmadu Bello University, Faculty of Veterinary Medicine
9. Tony Okon) Federal Department of Veterinary Research, Vom
10. John Bincan) State Ministry of Agriculture and Natural Resources,
Jos, Benue Plateau State (Veterinary Division)

11. Dan Osori)
12. Abdul Sannusi) Ahmadu Bello University, Faculty of Veterinary Medicine
13. Mike Ayivor)

14. Aderemi Anisulowo) Veterinary Clinic, Federal Palace Hotel, Lagos

15. Adetunji Sanyaolu) Lagos State Ministry of Agriculture and Natural Resources,
Veterinary Clinic Obalende, Lagos

16. Olusanya O.) c/o Dr. O. Tomori

17. E. Edewor) State Ministry of Agriculture and Natural Resources,
Veterinary Division, Benin, Mid-West State

18. Felix Mosimbale) Livestock Services, Training Center, Kaduna

APPENDIX 4

Project Design Summary
Logical Framework

The logical framework was developed on a long sheet of paper. The general sectors, (I) Narrative Summary, (II) Objectively Verifiable Indicators, (III) Means of Verification, and (IV) Important Assumptions were listed on a vertical manner. The specific grouping for each of these four sectors in the evaluation areas, Program Goal, Project Purpose, Outputs, and Inputs were listed horizontally under these general evaluation sectors. The format of this report requires the explanation of this Logical Framework to be presented in outline form. No doubt as more thought and review is given to this Logical Framework, there will be modifications for improvement.

- I. Narrative Summary - Project Goal - the broader objective to which this project contributes--to improve Nigerian health conditions by reducing animal health and production problems constraining livestock productivity.
- II. Objectively Verifiable Indicators - Measures of Goal Achievement -
 - A. Per head or per land unit increases in animal production.
 - B. Disease rate drops for zoonotic and other veterinary-related diseases.
 - C. Protein of animal origin availability increases.
 - D. Per capita increase of animal agriculture products.
- III. Means of Verification - Existing on-going surveys.
- IV. Important Assumptions - assumptions for achieving goal targets -
 - A. This goal is an identified priority of the Nigerian government.
 - B. Disease and animal malnutrition are important constraints to increasing production of animal protein.
 - C. Lack of animal health services effectively supplied by veterinarians is a major obstacle to reducing animal health and production problems.

- I. Narrative Summary - Project Purpose - to strengthen Nigerian capacity to deal with animal health and production and animal-related public health problems.
- II. Objectively Verifiable Indicators - conditions that will indicate purpose has been achieved.
End of project status (FY 1980):
- A. Of unknown requirement, 270 (90% of Nigerian veterinary graduates) employment positions in government, research, teaching, and industry filled by ABU veterinary graduates by 1980.
 - B. The costs for educating veterinarians compares favorably to his contributions to the Nigerian animal industry and human welfare.
 - C. Faculty of Veterinary Medicine's research results and consultancy recommendations are reflected in animal health, public health, and livestock policies and programs.
 - D. Capacity of the Faculty of Veterinary Medicine (FVM) to continue Nigerian needs and to adapt its programs to changing requirements without further USAID/KSU input:
 - 1) Curriculum and research content appropriate to Nigerian setting and under continuous review and revision.
 - 2) Working relationships which lead to institutionalized co-ordination between FVM and working animal health community to mesh programs with field manpower and research requirements and minimize duplication of veterinary activity.
 - 3) Adequate FVM development programs, including financial, staffing, equipment, enrollment, physical plant, and maintenance projections supported by ABU administration.
 - 4) Stable course of development assured in that permanent staff holds 100% of leadership positions.
 - 5) Multidisciplinary co-operation between FVM and other academic disciplines at ABU in research and teaching programs of common concern.
- III. Means of Verification -
- Condition A - follow-up survey and/or other feedback mechanisms.

Condition B - keeping abreast with developments in methodology for economic and social benefits of animal health services.

Condition C - analysis of these policies, programs, through time as reflected in Livestock Development Committee reports, State and Federal programs in animal health and livestock development, annual Livestock and Veterinary Conference.

Condition D-1

- a) Research and Curriculum Committees are meeting regularly and analysis of actions taken on their recommendation reveal their appropriateness.
- b) Annual review is held by the Nigerian Veterinary Council.

Condition D-2 the development of an animal health/production liaison service during 1972 that fosters the required interchange of information and ideas.

Condition D-3 the existence of such a program policy.

Condition D-4 the staffing pattern.

Condition D-5 the existence of co-ordinated programs.

IV. Assumptions for Achieving Purpose --

Condition A,B

- 1) Positions productively employ veterinary graduates.
- 2) The activities of the FVM are relevant to Nigerian conditions.
- 3) Projected 10% drop-out rate of Nigerian students before qualification is acceptable and realistic.
- 4) National and State support to veterinary education continues.
- 5) ABU has the financial capability to support FVM beyond Project phase out.

Condition C Demand for Veterinarians -

- 1) Nigerian requirement for veterinarians will absorb all or overwhelming majority of FVM graduates.

- 2) An additional capacity is required to train English-speaking African veterinarians.
- 3) The parallel growth of auxiliary personnel is adequate to efficiently support veterinarians produced.
- 4) Veterinary training, rather than a less advanced level of technical competency, is required to staff the projected positions for DVM's in Nigeria.

Condition D Adequate concensus and co-ordination exists among concerned policy makers regarding ABU/FVM role for the advancement of veterinary science.

- I. Narrative Summary - Outputs - a faculty of veterinary medicine serving as a center for the study of veterinary science in Nigeria.
 - A. Graduates - veterinary graduates to efficiently combat Nigerian animal production and health problems.
 - B. Permanent Staff
 - 1) meeting ABU standards; responsive to changing Nigerian needs and scientific developments.
 - 2) in addition to customary faculty posts, a faculty veterinarian who will maintain liaison with all animal production and health sectors with interests mutual to FVM.
 - C. Study Programs - meeting Nigerian needs.
 - D. Research Programs - supports teaching program; addresses Nigerian animal agriculture problems; co-ordinates with other research programs; coincides with policy of the National Agricultural Research Council.
 - E. Service Functions - incorporating:
 - 1) consultant services to bring information and diagnostic services to local, state, and national government institutions, and private sector.
 - 2) continuing education programs -
 - a) short courses and seminars
 - b) conferences
 - c) autotutorial courses
 - d) adult special, non-degree courses

F. Physical Plant Facilities and Equipment - necessary for the research, teaching, and service functions of the FVM.

II. Magnitude of Outputs -

Output A - 1) Undergraduate enrollment stabilizes at about 230 by 1978.

2) Approximately 333 graduates by 1980 of whom about 90% are Nigerian.

Output B.1 - Out of 44 required, 42 positions are filled by permanent staff by 1979/80, i.e. 1974-20/42; 1975-23/43; 1976-25/44; 1977-30/44; 1978-35/44; 1979-42/44.

B.2 - Services of liaison veterinarian include:

- a) off-campus visits to Chief Veterinary Officers, Officials of Federal Live-stock and Meats Authority, animal agriculture research stations and projects, to other faculties of veterinary medicine, and other animal health sectors.
- b) contacts with private sector veterinary interests.
- c) contacts with primary, secondary, and subprofessional educational institutes relevant to veterinary medicine as a career.
- d) co-ordination of continuing education, autotutorial, and student externship programs.
- e) contacts the National Agricultural Research Council.
- f) contact all other related sectors to insure FVM is aware of changing trends in demand for animal production and health services.

Output C.1 - FVM has 6 departments teaching courses and conducting research by 1972/1973.

Output C.2 - Following teaching materials and syllabi developed or significantly revised by 1978:

- a) autotutorial single concept material for self-study units for both basic and applied sciences to meet Nigerian needs by 1978/1979.
- b) student resource papers with application to Nigerian setting prepared for courses in:

- 1) Microbiology
 - 2) Pathology
 - 3) Infectious diseases of all animal species
 - 4) Parasitology with special emphasis on protozoology by 1975
- Output C.3 - Conversion in 1973/1974 to a five year professional course.
- Output C.4 - Clinical courses use local animals.
- Output C.5 - All veterinary students complete externship program acceptable to the Veterinary Council of Nigeria for training, i.e:
- a) livestock ranch
 - b) provisional and state veterinary clinics
 - c) universities
 - d) research labs
 - e) abattoirs, etc
- Output C.6 - Theses of staff members in training address local problems.
- Output D.1 - Co-ordinating Committee of Veterinary Medical Research appointed by 1972.
- Output D.2 - ABU approved research program developed in co-ordination with other interested bodies by 1974.
- Output D.3 - 20-40% faculty work load in research programs.
- Output E.1 - 5-10% of faculty work load devoted to service functions.
- a) Ad hoc mobile clinic.
 - b) 5 field trips annually major disease investigation.
 - c) Ad hoc diagnostic service.
 - d) 10 off-campus conferences/seminars.
- Output E.1.2. Co-ordination of service functions has been established by 1980.
- Output E.2 -
- a) 3-4 short courses annually conducted for professional veterinarians by 1975 with an expected enrollment of 100 individuals/year.
 - b) one conference/year.
- Output F - The Phase III building completed and equipped by 1974/1975.

III. Assumptions for Providing Outputs -

A study program oriented to Nigerian animal health problems and working conditions can meet international standards and also prepare students for graduate study.

A general DVM study program, without specializations, is most appropriate to Nigeria's needs during life of this project.

Graduates will remain in Nigeria or other African countries to practice.

The graduates can be absorbed into the Nigerian and/or other African economies.

FVM counterpart staff require level of training similar to that of American advisors.

The Phase III plan will provide for the needed expansion of the FVM and the graduation of 50[±] veterinarians per year.

To adequately train DVM's for employment in Nigeria requires training in Africa.

There is a useful role for an ABU animal health research program in addition to those under way at Vom and other institutions.

ABU animal health research should be centered in FVM rather than IAR.

Availability of sufficient numbers of qualified applicants for projected enrollment in FVM insured by proper dissemination of veterinarian career information to potential candidates.

AHMADU BELLO UNIVERSITY
FACULTY OF VETERINARY MEDICINE

<u>Inputs:</u>	<u>Implementation Tragets Planned -</u> <u>FY 1972-1980:*</u>					<u>Implementation Targets</u> <u>Achieved:</u>				
	<u>KSU</u>	<u>Other</u>	<u>ABU</u>	<u>Total</u>	<u>%</u>	<u>KSU</u>	<u>Other</u>	<u>ABU</u>	<u>Total</u>	<u>%</u>
I. <u>Staff</u>										
A. Administration.....	9	-	-	9	3	.3	-	-	.3	
B. Anatomy.....	4	-	39	43	13	10.2	-	9	19.2	
C. Pathology & P. H..... (P. Health to be depart- mentalized in 1972/73 session.)	13	-	36	49	15	14.2	-	12	26.2	
D. Public Health and Pre- ventive Medicine.....	5	3	27	35	11	-	-	-	-	
E. Parasitology.....	-	22	34	56	18	-	-	12		
F. Physiology.....	10	-	33	43	13	10.7	-	5	15.7	
G. Surgery and Medicine..	11	-	74	85	27	12.0	-	11	23.0	
Totals	52	25	243	320	100%	47.4	-	49	100	
II. <u>Participants</u>										
A. Anatomy.....	4**	-	-	4	9					
B. Pathology & Public Health..... (P. Health to be depart- mentalized in 1972/73.)	12	-	-	12	27					
C. Public Health & Pre- ventive Medicine.....	4	-	-	4	9					
D. Parasitology.....	6	2	-	8	18					
E. Physiology.....	6	-	-	6	14					
F. Surgery and Medicine..	10	-	-	10	23					
Totals	42	2	-	44	100%					

* The man-year is unit of measurement.

** Number of participants = my/2.

AHMADU BELLO UNIVERSITY
FACULTY OF VETERINARY MEDICINE
PROJECTED USAID INPUTS

FISCAL YEAR	TOTAL	PERSONNEL AND SUPPORT COST	PARTICIPANTS	PHASE III INPUT **
FY 71-72	523,000	467,000	56,000	
FY 73	580,090*	495,000	85,090	
FY 74	453,270	399,000	54,270	
FY 75	416,280	360,000	56,280	<u>PLANT</u> 2,916,000
FY 76	336,180	300,000	36,180	
FY 77	205,080	189,000	16,080	<u>EQUIPMENT</u> 1,222,000
FY 78	136,020	132,000	4,020	
TOTAL	2,647,520	2,342,000	305,520	<u>TOTAL</u> 4,138,000

**Loan to FXG

*Increase over Budget Submission is due to the assumption of full support costs by the contractor.

NOVEMBER 1971

Performance Analysis

Evaluation for Period: 1974-1975 to 1974-1975

III. INPUT - PARTICIPANT TRAINING

Training Program: U.S. Third Country

A. FUNDING

1. Cumulative Obligations Through Prior Fiscal Year
\$

2. Estimated Budget, Current Fiscal Year
\$

3. Estimated Additional Budget to Completion, After Current Fiscal Year
\$

B. IMPORTANT OUTPUTS DEPENDENT SUBSTANTIALLY ON THIS TRAINING

Increased responsibility in various leadership positions

C. ACTUAL PERFORMANCE DURING THE PERIOD AS COMPARED TO PLANS

D. IMPORTANCE FOR ACHIEVING PROJECT PURPOSE

C. ACTUAL PERFORMANCE DURING THE PERIOD AS COMPARED TO PLANS							D. IMPORTANCE FOR ACHIEVING PROJECT PURPOSE					
Unsatisfactory		Satisfactory			Outstanding		Low	Medium			High	
1	2	3	4	5	6	7	1	2	3	4	(5)	
E. PERFORMANCE FACTOR RATING FACTORS							Actual Impact			Check if Important		
							Negative	As Planned	Superior			
PREDEPARTURE												
1. English Language Ability (U.S. Training)							✓					
2. Host Country Funding										✓		✓
3. Orientation									✓			
4. Participant Availability									✓			✓
5. Trainee Selection										✓		✓
POST-TRAINING												
1. Relevance of Training to Project										✓		✓
2. Recognition of Degree Equivalency							✓					
3. Appropriate Facilities and Equipment for Returned Trainees										✓		✓
4. Employment Appropriate to Project										✓		✓
5. Supervisor Receptiveness										✓		✓

F. ACTION REQUIRED: What action(s) should be taken to make the participant element more effective?

... to be taken to make the participant element more effective?

Performance Analysis

Evaluation for Period: _____ to _____

IV. ACTION AGENT - COOPERATING COUNTRY

A. IMPORTANT OUTPUTS DEPENDENT PREDOMINANTLY ON THE HOST GOVERNMENT

Student quotas permit training of 230 graduates by 1978 ~~and reach an annual output of 50 DVMs per year.~~ and reach an annual output of 50 DVMs per year.

B. ACTUAL PERFORMANCE DURING THE PERIOD AS COMPARED TO PLANS						C. IMPORTANCE FOR ACHIEVING PROJECT PURPOSE									
Unsatisfactory		Satisfactory			Outstanding		Low	Medium		High					
1	2	3	4	5	6	7	1	2	3	4	5				
D. PERFORMANCE FACTOR RATING						E. ACTION REQUIRED: What action(s) should be taken to improve the performance of the Cooperating Country?					Actual Impact				
											Not Applicable	Negative	As Planned	Superior	Check if Important
FACTORS PERSONNEL						FACTORS OTHER FACTORS									
1. Competence/Continuity of Project Leadership						1. Cooperation within Host Government									
2. Ability to Implement Project Plans						2. Host Government Cooperation with Non-Government Organizations									
3. Use of Project-Trained Manpower						3. Availability of Reliable Data Statistics									
4. Technical Skills of Project Personnel						4. Adequacy of Project Funding									
5. Planning and Management Skills						5. Legislative Changes Relevant to Project									
6. Technical Man-years Available						6. Adequacy of Project-Related Organization									
7. Continuity of Staff						7. Physical Resource Inputs									
8. Willingness to Work in Rural Areas						8. Maintenance of Facilities and Equipment									
9. Adequacy of Pay and Allowances						9. Political Conditions Specific to Project									
10. Counterpart Acceptance of and Association with Project Purpose						10. Resolution of Bureaucratic Problems									
11. Management of Commodities						11. Receptiveness to Change									
						12. Actual Dissemination of Project Benefits									
						13. Intent Capacity to sustain and/or Expand Project Impact After U.S. Inputs are Terminated									

Performance Analysis

Evaluation for Period: _____ to _____

V. ACTION AGENT - OTHER DONOR
(Use a separate sheet for each Donor)

Donor Organization: DTA

A. IMPORTANT OUTPUTS DEPENDENT SUBSTANTIALLY ON THIS DONOR

Department of the Biology Parasitology and Entomology

B. ACTUAL PERFORMANCE DURING THE PERIOD AS COMPARED TO PLANS							C. IMPORTANCE FOR ACHIEVING PROJECT PURPOSE				
Unsatisfactory		Satisfactory			Outstanding		Low	Medium			High
1	2	3	4	(5)	6	7	1	2	3	4	(5)
D. PERFORMANCE FACTOR RATING FACTORS						Not Applicable	Actual Impact			Check if Important	
							Negative	As Planned	Superior		
1. Recognition of Objectives Shared with A.I.D.								✓		✓	
2. Agreement on Strategy and Plans								✓		✓	
3. Coordination on Implementation								✓		✓	
4. Contribution to Project Staffing								✓		✓	
5. Contribution to Project Funding									✓	✓	
6. Adherence to Schedule								✓		✓	
7. Planning and Management								✓		✓	
8. ...							✓			✓	

E. ACTION REQUIRED. What action(s) should be taken to improve the performance of this Action Agent?

Performance Analysis

Evaluation
for Period: _____ to _____

VI. ACTION AGENT - A.I.D./W

A. IMPORTANT OUTPUTS DEPENDENT SUBSTANTIALLY ON A.I.D./W

*Phase III, Physical Facilities and Commodities.
Provision of technical service for education*

B. ACTUAL PERFORMANCE DURING THE PERIOD AS COMPARED TO PLANS							C. IMPORTANCE FOR ACHIEVING PROJECT PURPOSE.				
Unsatisfactory		Satisfactory			Outstanding		Low	Medium		High	
1	2	3	4	5	6	7	1	2	3	4	5
D. PERFORMANCE FACTOR RATING FACTORS							Actual Impact			Check if Im- portant	
							Not Appli- cable	Negative	As Planned		Superior
1. Provision of Personnel											
2. Provision of Commodities											
3. Provision of Adequate A.I.D./W Technical Backstopping									✓		✓
4. Contract Negotiation								✓			✓

E. ACTION REQUIRED: What Mission action(s) should be taken to stimulate improved A.I.D./W performance?

APPENDIX 5DRAFT - DISCUSSION PAPERNigeria's "Need" for Veterinarians
and Veterinary Training

A rather substantial amount of work has been done on the subject of Nigeria's "need" for veterinarians and veterinary training. Part I very briefly summarizes five recent reports which I have seen. Part II illustrates the relationship between three variables: the annual production of D.V.M.s, the average working life of a D.V.M., and the total stock of D.V.M.s. Part III compares the estimates of requirements with the capacity of the existing veterinary training facilities. Part IV raises some questions. The sole purpose of this exercise is to facilitate our discussions of these issues.

I. Recent Reports

I have examined five analyses of the "need" for veterinarians in Nigeria. Some of the analyses touch also on veterinary training. The analyses are briefly summarized here.

1. FAO, Agricultural Development in Nigeria - 1966

The FAO study mentions the estimate of the FAO/WHO Expert Panel on Veterinary Education that, as a guide for developing countries, there should be at least one veterinarian per 30,000 livestock units. On this basis, the FAO estimated that Nigeria "required" 389 veterinarians. (p.221).

The FAO study also mentions that the "FAO Veterinary Education Mission to Nigeria at the end of 1963 stated 150-200 professional veterinarians were required now and in the immediate future." (p.323). The study goes on to mention the veterinary medicine programs at Ahmadu Bello and Ibadan and estimates that "some 45-55 graduate veterinarians would become available from about 1971/72 onwards. It is stressed that no further facilities for veterinary education at this level are required in Nigeria for many years." (p.323).

2. J. B. Polding, Veterinary Education for Africa - 1967

Polding discusses requirements for veterinarians in the various parts of Africa. Regarding Nigeria, he points out that "future cadres have been estimated by visiting experts as between 160 and 200 men and by one local education as 300." (p.25).

He mentions that "since one good school (admission 50; wastage 25%) could turn out 38 graduates a year, it could build a total cadre of more than 300 men in 10 years...." Such a school "could maintain a cadre of more than 500 men indefinitely...." (p.26). He goes on to say that "It thus seems unrealistic to build more than one school until it has been shown that development is indeed underway and until the demand for graduates is threatening to outstrip the supply. A cadre of 500 would represent a stock unit ratio of 1/16,000--an overgenerous figure for this kind of territory and, indeed, the whole West African region could be easily served by this one faculty." (p.26).

3. Consortium For the Study of Nigerian Rural Development, 1968-1969

James S. Long, "Analysis of the Needs and Resources for University Education in Agriculture in Nigeria," CSNRD -28 (December, 1968) discusses veterinary requirements in Nigeria. Long presents "high" and "low" estimates and suggests that by 1985 Nigeria will annually absorb 20 to 36 first-degree veterinarians. (p.36).

Long estimates that in 1966-68 Nigeria had the "physical capacity" to produce 55 veterinary graduates per year--30 at Ibadan and 25 at ABU. He mentions the plans to expand ABU's capacity to 40 per year and shows, therefore, that by 1985 Nigeria will have the physical capacity to produce 70 per year--30 at Ibadan and 40 at ABU. (p.44).

Comparing the capacity to produce veterinarians in 1985 with the requirement in 1985, Long concludes that "the planned capacity of the veterinary faculty at ABU would be sufficient to supply the entire country's demand for D.V.M.s" (p.46).

Long recommends that veterinary support be limited to ABU and that plans to expand ABU veterinary faculty to produce 40 D.V.M.s annually be implemented if clinical programs are consolidated into the facility at ABU and if requirements for veterinarians approach the high estimates (36 per year) mentioned above. (p.47).

CSNRD -33, the final report of the Consortium, repeated Long's conclusion that "the anticipated output of D.V.M.s from Ahmadu Bello University (ABU) exceeds the employment forecasts for veterinarians in Nigeria." (p.113).

4. Dr. E. Coles, Nigerian Requirements for Veterinarians - 1971

Coles' short paper mentions the FAO Report on Veterinary Education which recommended, on the basis of one veterinarian per 50,000 head of cattle, that 150-200 veterinarians were needed. He mentions the later FAO-WHO

report which suggested "a more realistic" ratio of veterinarians to livestock of one to 30,000 and which concluded that a minimum requirement was 250-300 veterinarians in the then Northern Region.

Coles reports that the Nigerian Veterinary Council Meeting (July 2, 1970) suggested that the above estimates were low and that "the anticipated need would be 450-500 qualified veterinarians by 1980. This projection was expressed as an opinion of the Council and was not considered a firm recommendation based on documented projection." Coles concludes his discussion of requirements by saying "If we consider the 1970 estimate of the Nigerian Veterinary Council to be exaggerated by 20% (90-100), it remains that 370-430 qualified Nigerian veterinarians will be needed by 1980."

5. Dr. H. L. Stoddard, Draft Consultant's Report on the Evaluation of Project 317--Faculty of Veterinary Medicine, ABU - November 17, 1971

Stoddard states that "a consensus among professionals contacted during this consultative study indicated that an estimated total for the veterinary working community in all of Nigeria should be approximately 600 professionals." (p.2). The year to which this number refers is not mentioned.

Stoddard mentions the requirements estimates reported by Polding. Stoddard is of the opinion that the estimates are too low. He concludes by saying "it seems reasonable to project a need for veterinary manpower by 1980 which should productively employ, within the English-speaking West African region, some 1,000 to 1,200 professionals." (pp.4-5).

Stoddard's estimates appear to be higher than the others cited above. If three-quarters of his 1980 estimate is allocated to Nigeria, some 750 to 900 veterinarians would be needed. This is substantially in excess of the Nigerian Veterinary Council Meeting's "opinion" (cited by Coles) that 450-500 would be needed in 1980.

II. Arithmetic of Veterinarian Production

There is a straightforward, simple relationship among the following three variables: (1) the number of annual entrants to the veterinary profession, (2) the average working life of a veterinarian, and (3) the total stock of veterinarians. It can be shown that the total stock of veterinarians equals the number of annual entrants to the veterinary profession times the average working life of a veterinarian. For example, if 20 persons enter the profession each year, and the average

working life is 15 years, then the equilibrium stock of veterinarians (reached after 15 years) is 300. Starting at year one there would be 20 veterinarians. During each succeeding year 20 more would be added. In year 15 there would be a total stock of veterinarians of 300. After year 15 there would be 20 entrants and 20 exits each year, thus keeping the total stock of veterinarians at 300.

The following table illustrates the relationship between these three variables.

The Annual Output of DVMS who Enter Profession	<u>The Equilibrium Stock of Veterinarians</u>	
	<u>Working Life 15 - years</u>	<u>Working Life 20 - years</u>
20	300	400
40	600	800
60	900	1200
80	1200	1600
100	1500	2000

This relationship is important because it links together estimates of the requirements for veterinarians and estimates of the requirements for veterinary training. For any assumed average working life, the estimated total required stock of veterinarians allows us to determine the required annual output of the veterinary training facilities. Conversely, knowing the annual output of training facilities allows us to determine the equilibrium stock of veterinarians.

The table above illustrates another possibility. An equilibrium stock of 1200 can be generated by an annual output of 80 D.V.M.s who work an average of 15 years, or by an annual output of 60 D.V.M.s who work an average of 20 years. A country might find it cheaper to provide incentives for existing veterinarians to practice longer than to increase its annual output of D.V.M.s.

III. Requirements and Existing Training Capacity

The brief survey of available material and the illustration of the relationship of veterinary requirements and training suggests the following comments:

Existing capacity to produce veterinarians at ABU and Ibadan will allow 45 entrants to the profession per year beginning in 1974. (See Stoddard, p. 21).^{*} With an assumed average working life of 15 years, the equilibrium stock of veterinarians that can be supported by existing capacity is 675. An average working life of 20 years would produce a stock of 900.

^{*}Reference to preliminary report to USAID Mission, Nigeria

It appears to me that existing capacity is probably sufficient to meet all estimates of requirements except those of Stoddard. (The Nigerian component of Stoddard's 1980 estimated requirements for English-speaking West Africa can "almost" be met from existing capacity, but after 1980).

The FAO study (1966) cited above, after reporting on a previous FAO Mission estimate of veterinary requirements in Nigeria, mentions the training program at ABU and Ibadan and their combined capacity to produce 45-55 D.V.M.s annually. Then it goes on to state that: "it is stressed that no further facilities for veterinary education at this level are required in Nigeria for many years." (It is not clear whether this is an FAO conclusion or a conclusion of another body which is simply being reported in the FAO study.)

Polding is quite explicit: one school producing 38 graduates a year is sufficient not only for Nigeria, but for the whole of West Africa.

CENRD's "high" estimate is that by 1985 Nigeria will absorb 36 first degree veterinarians each year. Existing capacity can produce 45 per year beginning in 1974.

Coles' estimate was for 370-430 Nigerian veterinarians by 1980. Existing capacity, producing 26 in 1972, 27 in 1973, and 45 thereafter, will result in 362 by 1980. When to this is added the 72 estimated to remain from the 1971 stock, the total available stock of veterinarians in Nigeria in 1980 is 440. Thus, existing capacity is capable of satisfying the estimate presented by Coles.

Stoddard's estimate of requirements appears to exceed those discussed above. He reports a consensus among professionals that the "total for the veterinary working community in all of Nigeria should be approximately 600 professionals." If this number refers to 1971, it exceeds the other estimates for that date which I have seen. Stoddard later says that "it seems reasonable to project a need for veterinary manpower by 1980 which should productively employ, within the English-speaking West Africa region, some 1,000 to 1,200 professionals." This number is in excess of other estimates for 1980. While the existing capacity at Ibadan and ABU is not sufficient to satisfy the "English-speaking West African" requirement, it would be close to satisfying the Nigerian component (if that component is three-quarters of the total), but not until after 1980. (Recall that the equilibrium stock of veterinarians from existing capacity is 675 if working life is 15 years and 900 if working life is 20 years.)

IV. Questions

1. Given the importance of knowing future requirements for veterinarians in order to make appropriate decisions concerning the expansion of training facilities, should the Mission make further attempts to refine estimates of future requirements?

2. The establishment of new veterinary training facilities at either (or both) Ife or Nsukka will influence the appropriateness of a decision to expand training facilities at ABU. Should the Mission attempt to determine the prospects for the establishment of new facilities at Ife or Nsukka?

APPENDIX 6

RESEARCH PROGRAM
FOR THE
FACULTY OF VETERINARY MEDICINE
AHMADU BELLO UNIVERSITY
1971 - 1978

Prepared by the
Kansas State University
Team as Part of the
1970/71 Work Plan for
the USAID Ahmadu Bello
Kansas State Contract.

I N T R O D U C T I O N

In the broadest aspects research in Veterinary Medicine involves the study of the biology of all animal species except man and utilization of resultant information for benefit of mankind. Therefore, the area encompassed by veterinary research is quite broad covering many animal species, being involved in the protection of human health, and by its close relationship to many different fields of agriculture.

It must be clearly understood that it is the nature of the activity, i.e. studies on animal diseases, disease processes, disease prevention and control, and animal biology that makes veterinary research significant, not the place where it is conducted, the type of training of the researcher nor the source of its financial support. Unless activities are planned in such a manner as to provide needed information that is relevant to existing problems, little of benefit will accrue.

Most Veterinary Medical Faculties throughout the world participate to a greater or lesser extent in some research activity depending upon teaching load of the staff, availability of research laboratories and animal facilities, and availability of financial support. The ultimate success or failure of a Faculty of Veterinary Medicine is not solely dependent on development of a strong research program but the quality of the total educational capacity of the Faculty is directly related to their involvement in meaningful programs of research.

The Faculty of Veterinary Medicine at Ahmadu Bello University presents a unique opportunity for development of a strong research program. With the University commitment to establishment and maintenance of the Faculty, as evidenced by the increase in staff numbers and financial support, a firm foundation for development of a research program has been established. The need now is to develop a plan for initiation and implementation of such a program.

VETERINARY RESEARCH NEEDS

Veterinary Research and National Goals

Allocation of the nation's resources for veterinary medical research should be based at least in part on benefits that might

accrue to the nation and its society as a result of the research. If Nigeria is through its support of Ahmadu Bello University going to increase its allocation of funds for expenditures on veterinary research, the decision to do so should be based upon a reasonable expectation that the results for benefit of society will justify the costs.

Several questions that must be answered are:

- (1) How does veterinary science and medicine serve the needs of the society of today?
- (2) What does it provide that cannot be done as well or better by another profession?
- (3) What benefits might reasonably be expected that will benefit the nation from a program in veterinary research?
- (4) How best can a research program in veterinary science and medicine be incorporated within the confines of the Faculty of Veterinary Medicine meet the needs of Nigeria and West Africa? These are key questions that must be answered before a meaningful research program can be developed. In the following sections attempts will be made to answer these questions.

Veterinary Science has the capability to make significant contributions toward the fulfillment of national goals. The basis of this capability rests with the competency of the science and the profession in comparative biology, comparative medicine, disease identification and control, and the delivery of this knowledge for the benefit of all animal species including man. In the discussion that follows the ways that veterinary science, and in particular the Faculty of Veterinary Medicine at Ahmadu Bello University, can or could be expected to contribute to the following needs of Nigerian society, will be explored.

A. Food Production

The production of abundant quantities of nutritious and wholesome food for the people of the nation at a reasonable cost.

B. The Public Health

Provision of and improvement of protection of the human population from disease.

Presently, veterinary science is, in Nigeria, only superficially involved in research programs to meet the needs outlined above. The following discussion sets forth guidelines for development of a research program and is not meant to be an exhaustive or complete discourse on specific projects to be undertaken.

A. Food Production

The history of man is recorded in his struggle to obtain sufficient food to maintain health and to sustain life. It is only with the development of modern technological agriculture that a significant proportion of a man's time can be directed to pursuits other than producing or gathering food. With the rapidly increasing population in Nigeria and increased demands for adequate quantities of nutritious food, a high priority must be given to improvement of the supply of animal protein.

One of the most important causes of malnutrition in Nigeria is consumption of foods of poor protein quality. Provision of adequate quantities of animal products is one of the most effective methods of improving nutrition. In Africa ruminants play an important role in the production of protein for human consumption. Ruminants are capable of converting forages that are largely unusable to man into a high quality useable protein. As a high percentage of the land mass of Nigeria is best suited to forage production, as contrasted to that useable for production of food directly consumed by man, it becomes obvious that an adequate supply of high quality protein for human consumption can be most readily provided by improving the capacity of the nation to increase and improve the number and quality of the ruminant population.

One of the serious limitations to food production from animal sources is the presence of animal diseases. Although knowledge is available that will permit control of some animal diseases prevalent in Nigeria, there is little, if any, information available with respect to the incidence or economic importance of a large number of the debilitating diseases that may be limiting factors in animal production. It should be the goal of veterinary research to identify these diseases and

to establish livestock health programs that will increase the efficiency of animal production. Animal production cannot be increased by disease control alone but must be closely correlated to other areas of animal production including genetics, nutrition, land management and marketing. Unless there is close co-operation among the scientists approaching the problems of animal production in Nigeria, research in a single phase of this immense problem might be fruitless. As the concern of this paper is with the development of a program of research for a Faculty of Veterinary Medicine, its chief emphasis will be on the role that the veterinarian may play in the research dealing with animal diseases and nutrition.

1. Disease Identification

There is a paucity of knowledge concerning incidence of livestock diseases in Nigeria. Because of this deficiency, control and eradication of diseases affecting animal production is difficult. In order to develop priorities for research on animal diseases the first step is to identify those entities that are of importance to the livestock industry. Once identified, an effort must be made to determine the economic significance of the problem and then to establish priorities for specific research projects. The initiation of a complete diagnostic service with the capability to identify disease processes, regardless of cause, is one of the first steps that must be taken in meeting these requirements. Thus initial efforts must be associated with development of these capabilities within the Faculty of Veterinary Medicine as well as at Federal and State laboratories. This goal cannot be fully achieved at Ahmadu Bello University until additional physical facilities are completed and equipped. However, initiation of the service can begin utilizing existing facilities and personnel.

2. Diseases of Importance

At this point in time a few specific animal diseases are recognized as problems of economic significance and projects will be initiated to develop additional knowledge with respect to the biology, ecology, prevention, control, treatment, and eradication. Not necessarily in order of priority but diseases that should be studied include:

(1) Streptothricosis. This is one of the most important diseases affecting cattle in all parts of Nigeria. A considerable amount of information is available concerning the biology of the causative agent but little is known regarding its mode of transmission, control, or prevention.

(2) Tuberculosis. The existence of this disease in Nigeria is a matter of record but its incidence in livestock is unknown. Few, if any, attempts have been made to study the causative agent, the relationship of the disease in animals to incidence in man, nor have any concerted efforts been made to control or eradicate it.

(3) Disease of Reproduction. The reproduction rate among Nigerian cattle is quite low yet little research has been done to identify the underlying causes. It has been estimated that the annual calving rate for indigenous cattle is between 50 and 55 per cent. Such a low rate of reproduction may be genetic, nutritional, or the result of disease. Attempts should be made to determine the incidence of diseases associated with reproductive problems and including studies on brucellosis, vibriosis, leptospirosis, and trichomoniasis, to name a few. In addition, efforts should be made to evaluate the role that nutrition might play as a factor in reproduction.

(4) Blood Protozoan Diseases. These diseases have long been recognized as a problem in Nigeria and continue to be of great economic importance. Research efforts in some areas have been extensive while in others only limited research programs have been mounted. The Faculty of Veterinary Medicine at ABU should continue to be interested in these diseases although efforts in this direction may be more in assessment of the biological characteristics of the causative agents than with surveys of incidence, control, and prevention of the diseases. This is an area in which the scientific knowledge of staff members may be directed more towards basic rather than applied research.

(5) Contagious Bovine Pleuropneumonia. Although generally under control, this entity appears at regular intervals, particularly along the northern and western borders of Nigeria. It is generally thought that the disease arises in livestock imported into Nigeria from neighboring countries but few efforts have been made to determine its possible incidence in indigenous livestock.

(6) Viral Diseases. Some of the viral diseases of livestock are recognized and control methods well established. However, the presence of others has been postulated not proven. Of particular significance are rinderpest-like diseases of ruminants. Efforts should be made to positively identify viral agents that produce a disease entity similar to rinderpest. This can be accomplished through the efforts of a completely equipped diagnostic service.

(7) Pneumonias of Ruminants. Undoubtedly, pneumonias present a serious problem in ruminants but little is known concerning causes, treatment, prevention, or control. Efforts should be made to determine the significance of viruses and bacteria as causative agents and research designed to evaluate methods of control and treatment.

(8) Diseases of Poultry. The poultry industry is rapidly increasing in importance throughout Nigeria and continual efforts must be made to identify problems and to learn adequate methods for prevention and treatment.

(9) Other Bacterial Diseases of Livestock. As with some diseases mentioned above, little is known about other bacterial diseases of livestock. Of particular importance, particularly from the Public Health point of view, are Salmonellosis, erysipelas, Pasteurellosis, etc. The importance of these bacterial diseases in animals must be determined.

(10) Parasitic Diseases. As parasites are undoubtedly of importance in livestock, the now existing research program supported by the Netherlands DITA program should be continued.

The above represents only a partial enumeration of the many problems that need attention which can be provided by a comprehensive research program in the Faculty of Veterinary Medicine.

(11) In Nigeria research is also needed on techniques of mass animal disease control. Most techniques currently utilized in other countries have been developed empirically during the process of disease eradication. One of the serious limiting factors in animal disease control in Nigeria is lack of an effective animal disease reporting and data processing system. Research on how to obtain better animal disease data and the effective use of such information is needed.

B. Public Health

As a part of its heritage, the veterinary profession is committed to protecting man from the approximately 150 animal diseases (zoonoses) that are naturally transmissible to man causing illness and death. Some of these diseases constitute the most dreaded risks to which mankind is exposed; for example, rabies, brucellosis, plague, schistosomiasis, and typhus. Not only are the classical zoonoses a threat to human health in Nigeria but they pose a world-wide problem. They are of particular importance in Nigeria where much of the population is in intimate contact with their livestock and where environmental sanitation is often primitive.

Clinically, the manifestations of some zoonoses differ in animals from those produced in man and only the qualified veterinarian is capable of recognizing them in animals. In others, infection in animals causes no clinical disease and only when contracted by man does the disease occur. Thus, through serological surveys such as those now being conducted by the virus research laboratory in Ibadan, the presence of these infectious agents can be determined. Protection of the human population from zoonoses requires close co-operation between the physician and the veterinarian as well as livestock owners and food processors. Co-operative research programs should be encouraged between the Faculty of Medicine and the Faculty of Veterinary Medicine at ABU.

Food-borne zoonoses probably are of importance in Nigeria but no data are available concerning these types of infection. Until such time that adequate inspection of abattoirs becomes established, food-borne infections from this source may continue to be a problem. A high priority should be given to determining the extent of contamination of meats and other animal products.

C. Basic Research

Although primary emphasis must be placed on the type of research programs outlined above, consideration must also be given to development of research of a less directly applied nature. Such research should not be undertaken as the major effort of the Faculty but must be included in the over-all plan.

Projects that might be developed are:

- (1) Physiology of indigenous livestock - Animals that have adapted for survival under the environmental

conditions present in West Africa may well have different physiological capabilities than those which live in a less harsh environment.

- (2) Pharmacology of toxic plants - The numbers and types of toxic plants consumed by herbivorous animals in Nigeria has not been determined. Therefore, a project to detect such plants, to identify the toxic principles and the pharmacological action of these chemicals might be feasible.
- (3) Comparative anatomy of Nigerian livestock - Basic to any understanding of an animal population is knowledge concerning morphology of the species. If adaptations in basic anatomy have occurred, they should be identified and related to function and physiology.
- (4) Identification of animal models of human disease - Many disease states that cannot be reproduced spontaneously occur in some animal species. These models are often more suitable for definitive studies than are human patients with the same condition. Over 250 such animal disease models have been identified in other countries of the world. Efforts should be made to identify any such models that may exist in Nigeria. Detection of such animal models and study of the disease should be developed as a co-operative effort between the Faculties of Veterinary and Human Medicine.

Research Administration

It is essential, in long-range planning of research, to give consideration to the administration of research activities. Throughout the world a variety of administrative schemes have been devised, all of which have their advantages and disadvantages.

At the Department and project level, the Department Head is the logical administrator to assume responsibility for research conducted in a given area. However, it will be necessary to have on the staff one individual whose responsibility it is to co-ordinate various research projects throughout the Faculty. In some institutions this management/co-ordinator role is assumed by the Dean of a Faculty. As the Dean of the Faculty

of Veterinary Medicine at Ahmadu Bello University is elected annually, it would be impractical for him to assume a role as co-ordinator of research. Such a position must be permanent in order to provide continuity. It is suggested, therefore, that plans be developed for creating a position of Co-ordinator of Veterinary Medical Research.

The duties of this position would be to provide over-all administrative support for research programs, not only within the Veterinary Medical Faculty, but also to direct development of co-operative research programs between this Faculty and other Faculties in the University. He should serve as Chairman of the Research Committee of the Faculty of Veterinary Medicine in addition to being a representative to other research committees in the University whose areas of interest are similar.

APPENDIX 7

NIGERIAN STAFFING PATTERN 1970-1980
FACULTY OF VETERINARY MEDICINE

	71/72		72/73		73/74		74/75		75/76		76/77		77/78		78/79		79/80	
	A	R	A	R	A	R	A	R	A	R	A	R	A	R	A	R	A	R
<u>Anatomy</u>																		
Head/Ag. Head.	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Prof./Reader	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1
Senior Lect./Lect.	3	4	2	4	3	5	4	5	4	5	4	4	4	4	4	4	4	4
KSU/AID	-	1	-	1	-	1	-	1	-	0	-	0	-	0	-	0	-	0
<u>Path. & Pub. Health</u>																		
Head/Ag. Head	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Prof./Reader	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
Senior Lect./Lect.	2	4	2	2	3	4	3	5	4	4	4	4	4	4	3	3	4	4
KSU/AID	-	3	-	3	-	2	-	1	-	1	-	1	-	1	-	1	-	0
<u>Pub. Health Pre-ventive Medicine</u>																		
	(To begin in 1972/1973 Session)																	
Head/Ag. Head	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Prof./Reader	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	1	1	1
Senior Lect./Lect.	0	0	1	1	1	1	2	3	2	2	2	2	2	2	3	3	3	3
KSU/AID	-	0	-	0	-	1	-	1	-	1	-	1	-	1	-	0	-	0
<u>FAO/UNDP</u>																		
	-	1	-	1		1	-	0	-	0	-	0	-	0	-	0	-	0
<u>Parasitology</u>																		
Head/Ag. Head	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Prof./Reader	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Senior Lect./Lect.	3	4	3	4	3	4	3	4	3	5	3	4	4	3	3	3	3	3
<u>DITA</u>																		
	-	3	-	3	-	3	-	3	-	2	-	2	-	2	-	2	-	2
<u>Physiology</u>																		
Head/Ag. Head	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1
Prof./Reader	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Senior Lect./Lect.	2	2	2	3	2	4	3	5	3	5	3	4	3	4	4	4	4	4
KSU/AID	-	2	-	2	-	2	-	1	-	1	-	1	-	1	-	0	-	0

	71/72		72/73		73/74		74/75		75/76		76/77		77/78		78/79		79/80		
	A	R	A	R	A	R	A	R	A	R	A	R	A	R	A	R	A	R	
<u>Surgery & Medicine</u>																			
Head/Ag. Head	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Prof./Reader	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	2	2	2	2
Senior Lect./Lect.	3	3	3	5	7	10	7	10	7	11	8	10	8	10	10	10	10	10	10
KSU/AID	-	2	-	2	-	2	-	2	-	1	-	1	-	1	-	0	-	0	0
Total																			
ABU	14	18	14	22	20	30	23	34	25	37	30	38	35	33	40	40	40	40	40
KSU/Other	-	12	-	12	-	12	-	9	-	6	-	6	-	6	-	3	-	2	2

A = Available

R = Required

Nigerian staff is defined as those individuals
on direct employment with Ahmadu Bello University.

APPENDIX 7a

ABU - Faculty of Veterinary Medicine
Returned Participant Teaching Experience Schedule
 (figures on man-years)

Department	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80
Anatomy									
1.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
2.....	0	0	0	1	2	3	4	5	6
Total Anatomy	0	0	.5	2.5	4.5	6.5	8.5	10.5	12.5
Pathology									
1.....	.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5
2.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
3.....	0	0	0	1	2	3	4	5	6
4.....	0	0	0	0	1	2	3	4	5
5.....	0	0	0	0	0	0	1	2	3
6.....	0	0	0	0	0	0	0	1	2
Total Pathology	.5	1.5	3	6	10	14	19	25	31
Public Health & Preventive Medicine									
1.....	0	1	2	3	4	5	6	7	8
2.....	0	0	0	0	0	1	2	3	4
Total PH & Preventive Medicine	0	1	2	3	4	6	8	10	12
Parasitology									
1.....	0	.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5
2.....	0	0	0	1	2	3	4	5	6
3.....	0	0	0	0	1	2	3	4	5
4.....	0	0	0	0	0	1	2	3	4
Total Parasitology	0	.5	1.5	3.5	6.5	10.5	14.5	18.5	22.5
Physiology									
1.....	0	0	0	1	2	3	4	5	6
2.....	0	0	0	0	1	2	3	4	5
3.....	0	0	0	0	0	1	2	3	4
Total Physiology	0	0	0	1	3	6	9	12	15

Department	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80
Surgery & Medicine									
1.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
2.....	0	0	0	1	2	3	4	5	6
3.....	0	0	0	0	1	2	3	4	5
4.....	0	0	0	0	0	1	2	3	4
5.....	0	0	0	0	0	0	1	2	3
Total Surgery & Medicine	0	0	.5	2.5	5.5	9.5	14.5	19.5	24.5
Total Man-years of Supervised Teaching - All Departments	.5	3	7.5	18.5	33.5	52.5	73.5	95.5	117.5
Total Number of Returned Participants	1	3	6	11	15	19	21	22	22

APPENDIX 7b

AHMADU BELLO UNIVERSITY
Faculty of Veterinary Medicine
Participant Training Costs

	<u>Number of Persons</u>	<u>Man Months</u>	<u>Dollar Cost</u>
FY 72	10	80	53,600
FY 73	14	127	85,090
FY 74	16	81	54,270
FY 75	10	84	56,280
FY 76	7	54	36,180
FY 77	3	24	16,080
FY 78	1	6	4,020
			<u>305,520</u>

NOTE: Method of calculation
 Man/Months x \$670/Mo.

APPENDIX 8SUGGESTED AGENDA
BRIEFING MEETING, PROJECT 817 EVALUATION

- (30 mins) I. Consultant's Findings:
1. Quantitative need for DVM's: now and by 1980.
 2. Relevancy of Faculty programs to Nigerian animal production and animal health problems:
 - a. Teaching program
 - b. Research program
 - c. Service functions
 3. Adequacy of present physical facilities and need for Phase III buildings and equipment.
 4. Appropriateness of Faculty's present staff development plans. Can they be compressed?
 5. Budgetary factors: How do present costs per student per year compare with those experienced in other veterinary training institutions in: a) U.S.A.? b) in tropical developing countries?
- (15 mins) II. Actual and Projected Progress toward Project Targets - Mr. Anderson and Mr. Woodhull.
- (45 mins) III. Implications of alternative termination dates for AID/KSU assistance:
1. Staff development.
 2. Development of Faculty Programs.
 3. Graduates.
 4. AID budgetary costs and presently planned inputs FY 1972-1978.

APPENDIX 9

PER VETERINARY STUDENT/YEAR COSTS AT ABU
PROJECTED BUDGET BY DEPARTMENTS FOR FACULTY OF VETERINARY MEDICINE
AHMADU BELLO UNIVERSITY: 1971/1972 - 1979/1980

A N A T O M Y

	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80
Sr. Staff	15,852	13,400	15,600	16,825	17,475	17,825	18,500	18,900	19,300
Other	1,950	2,150	2,365	2,625	2,890	3,180	3,500	3,850	4,235
Jr. Staff	2,811	2,961	3,111	3,271	3,431	3,602	3,782	3,932	4,021
Total	<u>20,613</u>	<u>18,511</u>	<u>21,076</u>	<u>22,721</u>	<u>23,796</u>	<u>24,607</u>	<u>25,782</u>	<u>26,682</u>	<u>27,556</u>

P A R A S I T O L O G Y

Sr. Staff	24,751	23,776	24,901	25,201	23,875	23,985	26,085	28,610	29,000
Other	2,875	3,162	3,462	3,787	4,162	4,560	5,010	5,500	6,050
Jr. Staff	2,535	2,660	2,790	2,930	3,070	3,220	3,380	3,560	3,735
Total	<u>30,161</u>	<u>29,598</u>	<u>31,153</u>	<u>31,918</u>	<u>31,107</u>	<u>31,765</u>	<u>34,475</u>	<u>37,670</u>	<u>38,785</u>

P A T H O L O G Y A N D P U B L I C H E A L T H

Sr. Staff	21,282	12,700	14,310	14,035	14,920	17,370	17,530	19,400	18,600
Other	3,650	3,500	3,800	4,150	4,450	4,975	5,425	5,970	6,545
Jr. Staff	3,894	3,150	3,300	3,480	3,720	3,900	4,180	4,370	4,580
Total	<u>28,826</u>	<u>19,350</u>	<u>21,410</u>	<u>21,665</u>	<u>23,090</u>	<u>26,245</u>	<u>27,135</u>	<u>29,740</u>	<u>29,725</u>

P U B L I C H E A L T H & P R E V E N T I V E M E D I C I N E

Sr. Staff	0	5,900	10,150	13,125	14,075	14,175	15,700	14,700	14,800
Other	0	2,340	2,800	3,070	3,300	3,600	3,980	4,380	4,750
Jr. Staff	0	1,700	1,820	1,910	2,000	2,100	2,310	2,420	2,540
Total		<u>9,940</u>	<u>14,770</u>	<u>18,105</u>	<u>19,375</u>	<u>19,875</u>	<u>21,990</u>	<u>21,500</u>	<u>22,100</u>

71/72 72/73 73/74 74/75 75/76 76/77 77/78 78/79 79/80

P H Y S I O L O G Y

Sr. Staff	12,534	13,575	14,600	14,250	14,400	15,825	19,175	17,900	18,150
Other	2,750	3,000	3,250	3,570	3,910	4,310	4,710	5,180	5,690
Jr. Staff	<u>1,932</u>	<u>2,060</u>	<u>2,160</u>	<u>2,380</u>	<u>2,500</u>	<u>2,625</u>	<u>2,755</u>	<u>2,885</u>	<u>3,025</u>
Total	17,216	18,635	20,010	20,200	20,820	22,760	26,640	25,965	26,865

S U R G E R Y & M E D I C I N E

Sr. Staff	20,133	20,150	24,975	25,200	26,900	27,825	32,175	34,450	35,010
Other	5,250	5,775	6,350	6,975	7,665	8,430	9,270	10,200	11,000
Jr. Staff	<u>3,229</u>	<u>3,390</u>	<u>3,440</u>	<u>3,560</u>	<u>3,735</u>	<u>3,920</u>	<u>4,100</u>	<u>4,310</u>	<u>4,500</u>
Total	28,612	29,315	34,765	35,735	38,300	40,175	45,545	48,960	50,510

D E A N ' S O F F I C E

Sr. Staff	2,126	2,200	2,275	2,350	2,425	2,500	2,575	2,650	2,725
Other	1,700	1,870	2,050	2,250	2,450	2,700	2,950	3,245	3,570
Jr. Staff	<u>3,285</u>	<u>3,445</u>	<u>3,615</u>	<u>3,795</u>	<u>3,985</u>	<u>4,080</u>	<u>4,250</u>	<u>4,400</u>	<u>4,600</u>
Total	7,111	7,515	7,940	8,395	8,770	9,280	9,775	10,295	10,895

Faculty Total: 132,539 132,864 151,124 158,739 165,258 174,707 191,342 200,812 206,436

Total expenditures 1971 - 1980 = £ 1,513,821 \$ 4,236,988

All Senior staff KSU/AID and DITA positions are included in the estimated expenditures at the salary now listed in the annual estimates. The salary for the Dean was not included in the expenditures although it does appear in the 1971/72 estimates.

Total other costs includes transport and travel, printing and stationery, equipment repairs, general expenses, consumable stores, and departmental library. A small amount (£1,900) is budgeted for research in FY 71/72. An approximate increase of 10% annually is projected in the above estimation. This, however, will be insufficient to insure a meaningful research program for the Faculty of Veterinary Medicine. Anticipated additional needs for research expenditures from external sources is projected as follows:

<u>71/72</u>	<u>72/73</u>	<u>73/74</u>	<u>74/75</u>	<u>75/76</u>	<u>76/77</u>	<u>77/78</u>	<u>78/79</u>	<u>79/80</u>
5,100	6,210	8,041	10,000	12,000	14,000	18,300	20,700	25,000

The above estimates are based on the anticipated expenditures for consumable supplies, equipment repair, and replacement, as well as new items of permanent equipment not purchased as a part of the Phase III building program. The above estimates do not, however, represent the total research expenditures as the Departments will utilize additional funds for staff salaries, consumable supplies, repair, and replacement of equipment utilized in both teaching and research plus the overhead and administrative expenditures.

Estimated cost per student per year

It is difficult to accurately estimate student costs of education in a Faculty that is also involved in research and service. In preparation of the estimate below it was assumed that each Department will, as it develops, increase emphasis on research and service. It would be impossible to ascribe a percentage of the estimated total Faculty expenditures to teaching. Consequently the following table was prepared in which each Department's expected percentage devoted to teaching was estimated yearly from 1971/72 through 1979/80.

Per cent teaching per Department per year 1971/72 - 1979/80
(100% less Research and Services)

	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80
Anatomy	90	90	80	80	75	75	65	65	65
Pathology	75	75	70	70	65	65	60	55	55
Public Health	-	65	65	65	60	60	55	50	50
Parasitology	10	10	10	10	10	10	10	10	10
Physiology	90	90	80	80	75	70	65	60	50
Surgery & Med.	80	80	75	75	70	65	65	60	60

Utilizing the above percentages, that portion of the projected budget required for teaching was estimated for each Department for every year. The total cost per year was then divided by the projected number of students to arrive at an estimate of student cost per year, which is presented in the following Table:

Estimated Cost/Student/Year 1971/72 through 1970/80
including KSU/AID and DITA Ascribed Salaries

Year	Cost ₦	Cost \$
71/72	637	1,785
72/73	616	1,727
73/74	552	1,545
74/75	512	1,435
75/76	456	1,279
76/77	429	1,201
77/78	408	1,142
78/79	394	1,105
79/80	384	1,076

If the student cost is calculated on the basis of Ahmadu Bello expenses exclusive of those funds now assigned by ABU to the KSU/AID and DITA personnel, the costs/student/year are as follows:

Estimated Cost/Student/Year excluding KSU/AID and DITA
Ascribed Salaries

Year	Cost ₦	Cost \$
71/72	4,706	13,176
72/73	4,404	12,331
73/74	4,127	11,556
74/75	3,640	10,192
75/76	4,054	11,351
76/77	3,836	10,741
77/78	3,629	10,161
78/79	3,813	10,676
79/80	3,826	10,713

Prepared by:
Dr. Embert H. Coles
Chief of Party, Kansas State University
Kansas State University Contract No. 817

APPENDIX 10

Summary of the Terms of Reference

Contract No. AID/afr 213

Evaluation of the Faculty of Veterinary Medicine
Ahmadu Bello University, Zaria, Northern Nigeria

The United States A.I.D. Mission to Nigeria (USAID) is conducting an evaluation of the project, which has been underway since 1962, to:

- 1) determine the continuing appropriateness of the goals given changing Nigerian environment and changing economic conditions;
- 2) to restructure the project if necessary,
 - a) with particular emphasis on the need for a production-oriented role of Veterinary Science,
 - b) on the basis of an up-dated assessment and definition of employment opportunities for veterinary doctors,
 - c) by relating the program and goals to the priorities and other goals of the four-year development plan,
 - d) by relating the program and goals to training of veterinarians elsewhere in West Africa and Nigeria,
 - e) by relating the program to longer-term financial capabilities of ABU;
- 3) to determine actions necessary to achieve revised program objectives to evaluate the performance of KSU.

The contractor will perform (but not be limited to) the following:

- 1) advise and assist in evaluation of the effectiveness of this project in meeting the animal health-related public health problems in Nigeria and West Africa.
- 2) advise on the relevancy to Nigerian conditions of the programs, curriculum, physical plant and equipment.
- 3) evaluation of the performance of the Kansas State University contract services in achieving the purposes and outputs of the project.

- 4) participation in conferences and evaluation review sessions including the preparation of the project evaluation report.
- 5) preparation of a summary statement in the form of a final report.
- 6) visit project sites and related travel.
- 7) contractor shall work directly in co-operation with:
 - a) The designated project manager of the Food and Agriculture Division of USAID/N.
 - b) (1) Federal Ministry of Economic Development and Reconstruction,
(2) Vice-Chancellor, Ahmadu Bello University.
 - c) Food and Agriculture Officer or his Designee, USAID/N.