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PROJECT APPRAISAL REPORT (PAR)

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5. PROJECT TITLE
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a. NAME	b. CONTRACT, PASA OR VOL. AG. NO.
Kansas State University	AID/afr 707

I. NEW ACTIONS PROPOSED AND REQUESTED AS A RESULT OF THIS EVALUATION

A. ACTION (X)			B. LIST OF ACTIONS	C. PROPOSED ACTION COMPLETION DATE
USAID	AID/W	HOST		
			The attached report substitutes for as regular PAR covering the period from March 1970 to February 1972.	

D. RE-PLANNING REQUIRED REVISED OR NEW: <input type="checkbox"/> PROP <input type="checkbox"/> PIP <input type="checkbox"/> PRO AG <input type="checkbox"/> PIO/T <input type="checkbox"/> PIO/C <input type="checkbox"/> PIO/P	E. DATE OF MISSION REVIEW April 12, 1972
PROJECT MANAGER: TYPED NAME, SIGNED INITIALS AND DATE James H. Woodhull 7-5-72	MISSION DIRECTOR: TYPED NAME, SIGNED INITIALS AND DATE William R. Ford 7-5-72

Stoddard, H.L.; James Woodhull; Frederick E. Gilbert; and others

An Evaluation of the USAID-Assisted Project #620-11-110-817,
Agricultural Assistance to Ahmadu Bello University-Faculty of
Veterinary Medicine

April 13, 1972

19 pages

3 appendices

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An Evaluation of the USAID - Assisted
Project #620-11-110-817, Agricultural Assistance
To Ahmadu Bello University - Faculty of Veterinary Medicine

PRM/EVAL
USAID/Lagos
April 13, 1972

A.I.D.
Reference Center
Room 1656 NS

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I. Introduction:

Having been asked by the Government of Nigeria to assist in the development of Faculties of Agriculture and of Veterinary Medicine for the new Ahmadu Bello University, in 1962 the United States Agency for International Development financed a feasibility and planning study for such an effort. Since 1964, USAID-financed teams of advisors from Kansas State University (KSU) have been helping to implement the program set forth in the 1962 study. In 1969 KSU also began assisting in the development of three non-degree agricultural schools administered by Ahmadu Bello University.

USAID regulations provide for periodic evaluations of technical assistance projects. USAID conducted evaluations of the Faculty of Agriculture and non-degree schools activities during the Spring of 1971. The present report stems from an evaluation of the Faculty of Veterinary Medicine began in September and completed in November 1971.

The evaluation investigated the suitability to Nigerian needs of the present and planned programs of the Faculty of Veterinary Medicine. It also attempted to gauge the progress achieved thus far in developing the Faculty and the amounts and kinds of assistance required to bring it to the point where the present relatively expensive institution-to-institution form of technical assistance can be replaced by other types without disrupting the Faculty's continuous evolution toward full maturity.

The evaluation was carried out in three stages. During the first stage, the USAID Nigeria members of the evaluation team held discussions with members of the Faculty of Veterinary Medicine to develop a conceptual blueprint of the form the Faculty's development might take as it progresses toward fully meeting Nigeria's reasonable needs for trained veterinary manpower and, within the resources required for its training function, helping to build Nigeria's capacity to deal effectively and efficiently with animal health, animal production and animal-related human health problems. The second stage was the actual field investigation involving interviews with key members of the veterinary and animal husbandry working communities in Lagos, Western, Kwara, Benue Plateau, North Central and Kano States. A number of key institutions were visited including: the Department of Veterinary Science, University of Ibadan; Federal Department of Veterinary Research, Vom; the Fashola Livestock Station; the Mokwa Ranch; the Federal Livestock and Meat Authority; the Nigerian Institute for Trypanosomiasis Research and, of course, the Faculty of Veterinary Medicine, Ahmadu Bello University. The team spent over a week at ABU. Finally, the reporting stage has continued intermittently through the period from late November to present. After review of the report of the veterinary consultant to the evaluation (for his Conclusions and Recommendations, See Appendix A), the USAID evaluation team has prepared the present short report.

The evaluation team consisted of the following members of the USAID Lagos staff: Dr. James Woodhull, Agricultural Education Advisor and Project Manager; Mr. James M. Anderson, International Development Intern; and Mr. Frederick E. Gilbert, Program Evaluation Officer. Dr. H. L. Stoddard, Professor of International Programs of the University of Minnesota, served as consultant to the evaluation.

Thanks is owing to the many busy members of the Nigerian veterinary and animal husbandry professionals who aided the investigative phase of the evaluation with their knowledge and insights. Special thanks is owing to Professor Dafaala, Provost of Agriculture and Veterinary Medicine, ABU; Professor Embert Coles, Dean of the Faculty of Veterinary Medicine, ABU and Chief of Party of the KSU field team; and to the other professional staff of the Faculty for their indispensable cooperation with the evaluation.

II. Conclusions and Recommendations:

A. Supply and Demand for DVM's:

Though it is difficult to say for certain what the supply-demand situation will be regarding DVM's in the 1980's, it does appear that the presently projected rates at which DVM's graduate from the two schools could possibly lead to an over-supply of DVM's by the 1980's. The concerned public authorities should be prepared to respond to such a situation. The most obvious solution would be to consolidate the Ibadan and ABU veterinary training programs into a single reduced scale operation. In this connection it also seems highly desirable that ABU continue to offer places in the Faculty of Veterinary Medicine to students from other English-speaking African countries and to a representative cross-section of Nigerians.

B. Phasing-out Institutional Technical Assistance:

The evaluation feels that the most reasonable date for the USAID/KSU phase-out is at the end of FY 1977. With proper planning it is felt that by this date the programs of the Faculty can be sufficiently developed to sustain the drive toward maturity.

C. Curriculum Revision:

Discussions with key members of the veterinary working community indicated a favorable attitude toward the performance of ABU veterinary graduates, but also supported the direction of the Faculty committee's proposals that increased classroom time be devoted to public health and animal husbandry and that courses be offered in vertebrate and mammalian zoology, applied botany, sociology, agricultural economics, statistics and animal ecology. On the basis of his discussions in the field, the consultant specifically recommended increased training in preventive medicine, epidemiology and grassland farming. These changes will increase the relevancy of the study program to the veterinary graduates' future working conditions and supports their implementation.

D. Research:

The evaluation supports the plans to increase the ABU veterinary research program to the point that it occupies about $\frac{1}{3}$ of the time of a staff about twice the present

size. The outline research program plan appears well conceived and should be approved as the official blueprint for the accelerated development of the Faculty's research program. As the program develops, the Faculty should consider giving more emphasis to inter-disciplinary research into human social and cultural aspects of animal health and production problems.

E. Continuing Education:

The evaluation found that working veterinarians felt a need for continuing education to help them keep up to date on developments in their field. The Faculty's plans to develop such a program should go forward as increased staff permit.

F. Maintenance of Facilities and Equipment:

The University should carefully review the magnitude of the maintenance and repair workload likely to develop after the installation of the equipment component of the Phase III expansion scheme, and determine whether existing staff recruitment and training plans will fully meet the projected need. It appears that additional staff and increased training will be required.

G. Increasing Effectiveness in the Veterinary Environment:

A member of the Faculty staff should be designated as a Faculty - Community Liaison Officer who would serve as a focal point within the Faculty and be charged with the responsibility of maintaining a dialogue with the veterinary working community. This would also help the Faculty to acquaint students in secondary schools with the opportunities for careers in Veterinary Medicine. Doing so would help to increase the proportion of the students in the Faculty who have genuine and pre-existing vocational interests in the animal health and livestock development area.

H. Development of African Texts & References in Animal Health & Production:

The members of the relevant education and research communities should consider whether enough information is now becoming available to permit the preparation of African or West African textbooks and reference works in some of the more important areas of the veterinary and animal husbandry curriculums. If so, it would be desirable to begin to address some of the special problems of financing and organizing such work where the potential market is relatively small and linguistically divided and the required information is probably somewhat scattered and thin.

I. Vacation Assignments for ABU Veterinary Students:

The opportunity to gain field experience during vacation periods is of unsubstitutable benefit to the students. For the most part reactions from students,

employers and Faculty staff to the present program have been enthusiastic. However, there appears to be a need for improved planning, surveillance and coordination of the program. While up to now the opportunity for such assignments has been available only to a limited number of students, it should become a goal of the Faculty to avail the experience to all students during major vacation periods.

III. Development of Faculty Programs in relation to Nigerian Animal Health Requirements:

A. Approach and Criteria:

The evaluation examined Faculty of Veterinary Medicine programs primarily to determine whether they appeared to be developing in the right direction and toward an appropriate scale of operation. The evaluation also focussed on the general efficiency of resource use.

The criteria for judging appropriateness of direction and scale should be found in the basic facts concerning the nature and magnitude of Nigeria's and West Africa's livestock development possibilities and problems. What appear to be some of the more salient features of the animal health livestock development landscape are set forth below:

The table beneath shows the populations of the various categories of livestock estimated by FAO to have inhabited Nigeria in 1963:

Table I Animal Populations in Nigeria, 1963

Species	Total Nigeria	Former Region			
		Northern	Eastern	Western	Midwestern
		(000)			
Horses	431	431	-	-	-
Donkeys	2,085	2,085	-	-	-
Camels	17	17	-	-	-
Cattle	10,859	10,256	434	85	84
Goats	21,205	14,317	4,684	1,434	770
Sheep	7,235	4,448	1,752	675	360
Pigs	680	118	161	341	60
Poultry	66,040	41,716	14,264	7,560	2,500

Food and Agriculture Organization of the United Nations, Agricultural Development in Nigeria, 1965 - 1980 (Rome, 1966), p.216

With the possible exception of poultry and swine, the husbandry techniques applied to the management of these animal populations are overwhelmingly traditional — that

is to say that the animals are largely left to forage for what they can find for themselves. Preventive health services have only recently begun to be used effectively against a few highly contagious diseases.

In general the annual off-take from these populations is much lower, with the animals harvested being older and lighter, than is normal in developed countries.^{1/} There is evidence that the cattle population has decreased since 1963 due to contraction of suitable grazing land resulting from the rapid increase of human population and past over-grazing.

According to CSNRD Report No.33, "Among the most serious deterrents to livestock improvement and productivity in West Africa are: (1) the ever-present disastrous disease losses and (2) the socio-economic structure which governs, by custom, tradition and market forces, the daily lives of the nomadic herding peoples who inhabit the area. Finding solutions for livestock disease problems and acceptable adaptations for the nomadic peoples are tasks of gigantic proportions."^{2/} Prima-Facie evidence strongly suggests that the basic problems affecting livestock production are generally the same within the major ecological belts stretching across West Africa.

There is at present very little scientific information about the health and other biological factors presently constraining livestock production in Nigeria and West Africa. This means that a great deal of very basic research must be done before the root problems and their solutions can be identified. The resulting information, as it becomes available, must be incorporated into teaching materials for the benefit of students and otherwise disseminated to graduates working in the field.

Though the livestock industry will probably continue to benefit from health services, such as inoculation campaigns, which can be carried directly to the field by government workers, it seems likely that the removal of constraints on livestock productivity will also depend significantly on the adoption of improved methods by the thousands of small operators who own, transport, process and market Nigeria's livestock. The number of animals benefitted will be a function of livestock operators' perceptions, influenced by extension workers' advice and also by government incentives and coercion, concerning the utility of the new technology to himself.

Footnotes: 1/ Consortium for the Study of Nigerian Rural Development (CSNRD), Strategies and Recommendations for Nigerian Rural Development 1969/85, Report No.33, July 1969, p.25.

2/ Op. Cit., p. 25.

Before much can be accomplished in the area of designing truly needful programs and "selling" them to the livestock community, a good deal must be known about the technology employed in the various components of the livestock industry. It is especially important to learn why present practices are followed. Unfortunately, just as with the basic health and biological factors, there is very little organized, empirically proven knowledge in this area.

It seems clear that there is a real need for strong interdisciplinary influence on research, policy making and program planning related to animal health and livestock development. In research it is necessary to get good information on the non-biological as well as the biological factors affecting the livestock industry. In the policy and program spheres there is the need to insure that proposed innovations are economically, socially, politically, administratively, and culturally, as well as biologically, feasible.

The question of where the veterinarians role begins and ends in relation to those of other degree-level professionals is very complicated and cannot be encompassed within the scope of this evaluation. It is quite certain, however, that the special complexities facing the West African veterinarian dictate that he integrate into his own professional competence the basic principles of a variety of other relevant disciplines. Therefore, the veterinarian's education, in addition to providing adequate knowledge of the necessary scientific and medical core subjects, should give him the wider training he needs to function as an expert in West African tropical veterinary medicine. The challenge for West African veterinary education is to produce competent scientists who can recognize and deal effectively with the interplay of biological, economic, social, cultural and environmental factors associated with animal health constraints on livestock development.

III-B. Meeting Nigeria's DVM Manpower Requirements:

1. Projected Supply of DVM's:

Veterinarians are currently being trained at Ahmadu Bello University and the University of Ibadan. There have been some indications that other universities might seek funding for veterinary schools, but the likelihood of such plans coming to fruition seems fairly remote. According to present plans, the annual production of DVM's will reach 45 from ABU by 1978 and 25 from Ibadan by 1974. Table II of the following page indicates how, according to present plans, the flow of graduates from these two institutions is likely to affect the total supply of veterinarians in the country.

Table II employs two alternative assumptions regarding the average length of working life for Nigerian veterinarians in their specialized field. The alternatives chosen are 15 years and 20 years. These imply annual attrition rates of seven and

five per cent respectively. In addition to allowing for the occasional premature death, the attrition rate is also intended to take into account those who leave Nigeria for international careers, those who become administrators with responsibilities extending beyond animal health and production and those who move into other fields in the public sector or in private industry. Both assumptions may seem unduly pessimistic at first blush, but neither is necessarily so. The twenty year assumption would have the average veterinarian continuing in his field until he is almost 45 years old. Considering that the age of eligibility for retirement from Government service is 45 (mandatory at 55), the twenty year assumption would seem to make only modest provision for those who leave the field earlier for whatever reasons. Approaching it this way, the 15 year assumption appears possibly the more realistic of the two. Present indications are that veterinarians will be almost the only university trained specialists in the animal health and production area for many years into the future. It seems highly likely, therefore, that they will be in considerable demand outside their specialized field.

Two other assumptions reflected in Table II should also be noted. The present number of veterinarians is estimated to be 133. Of these, some 60 are expatriates. It is assumed that the expatriate DVM's attrition rate is the same as that of their Nigerian colleagues. If it is slower, then the total population of DVM's will increase more slowly than we have projected. The other assumption is that ten per cent of the graduates of Nigerian veterinary programs do not enter Nigerian veterinary positions. This provides for students who come from other African countries and return home after graduation plus the odd Nigerian who fails to enter veterinary employment for one reason or another. This assumption is probably somewhat conservative.

Table II shows that the flow of graduates from ABU and Ibadan will push the population of veterinarians in Nigeria from 133 to 561 by 1985, assuming an approximate 15 year average working life. Under the 20 year working life assumption, the number of veterinarians reaches 631 by 1985. Under either assumption, the supply of veterinarians continues to increase well beyond the year 2000 before stabilizing at 900 and 1260 respectively for the 15 and 20 year working life assumptions.

2. Estimating the Future Need for DVM's:

A number of investigations have attempted to determine how many veterinarians are needed in Nigeria. Apart from the light they shed on Nigeria's need for DVM's, they also serve to illustrate, when taken together, the difficulty of projecting future requirements for a very specialized kind of manpower.

a. FAO Report:

The 1965 FAO report on Agricultural Development in Nigeria, 1965-1980 referred to the Report of the second FAO/WHO International Meeting on Veterinary Education, which advocated that, "as a guide for developing countries there should be at least one

Table II: Project Supply of Veterinarians 1971 - 1985

	<u>70/71</u>	<u>72</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>	<u>82</u>	<u>83</u>	<u>84</u>	<u>85</u>
Projected Graduates ^{1/} Ahmadu Bello University	-	24	20	25	26	26	27	45	45	45	45	45	45	45	45
Projected Graduates ^{2/} University of Ibadan	-	5	10	25	25	25	25	25	25	25	25	25	25	25	25
Total Graduates	-	29	30	50	51	51	52	70	70	70	70	70	70	70	70
Annual New Nigerian Veterinary Position Seekers ^{3/}		26	27	45		46	46	47	63	63	63	63	63	63	63

Supply of Nigerian Veterinarians:

5% annual attrition rate, 20 year working life	133	152	171	207	243	277	310	358	403	446	487	526	563	598	631
7% annual attrition rate, approx. 15 year working life	133	150	167	200	232	262	291	337	374	411	445	477	507	535	561

1/ ABU Faculty of Veterinary Medicine Project Work Plan - FY'72

2/ Discussions at University of Ibadan, Department of Veterinary Science in November 1971

3/ Assume that 10 per cent of graduates do not enter Nigerian veterinary jobs. This includes provision for graduates from other African countries who return home.

veterinarian to every 30,000 livestock units, with a minimum of 10 auxiliaries to each professional officer."^{3/} On this basis, the FAO study calculated that Nigeria needs 384 veterinarians, of whom 333 are required for the North alone. The implication is that this many DVM's were needed in 1965, but the report does not project the future requirement. To have done so on this basis would have been rather difficult in that it would be necessary both to project the number of livestock units by 1985 and determine the appropriate ratio of DVM's to livestock units at that stage of Nigeria's development. The ratio increases with development as indicated by the fact that most of the richer countries now enjoy a ratio of one veterinarian to every 3,000 to 5,000 livestock units.^{4/} Apparently the key difference explaining the divergence between the actual ratios of rich countries and that recommended for poorer ones is that veterinarians in private practice are overwhelmingly preponderant in the former while state practice, research and teaching are the main pursuits of veterinarians in the latter.

The ratio method of, estimating veterinary manpower requirements leaves much to be desired unless there is some basis for determining the ratio (somewhere above the minimum and below the maximum) that fits the situation of the country in question at some point in the future. While it is clear that high ratios are associated with high productivity livestock industries, this observation is of little use unless there is some indicator which variable should lead the other and by how much. Without the data to support analysis along the above lines, it would seem that the chief utility of such ratios is to suggest maxima and minima that apply roughly across international borders.

b. Polding Report:

Dr. J.B. Polding discussed Nigeria's need for DVM's in his 1967 report entitled Veterinary Education for Africa. He noted that visiting experts estimates of "future cadres" range between 160 and 300. Dr. Polding seems most inclined to accept the higher estimate in that he takes pains to indicate that a single school, admitting 50 and graduating 38 annually, "could build a total cadre of more than 300 men in 10 years, or, by running duplicate classes even in five (mean service life taken as 15 years)." He then suggests that such a school could then go on to maintain a stock of 500 veterinarians, but then adds that this "would represent a stock unit ratio of 1/16,000 - an over-generous figure for this kind of territory..."^{5/} As in the case of the FAO estimate, Polding fails to indicate whether and how Nigeria's need for DVM's might change with the passage of time. To the extent he employs the livestock unit ratio method, he creates some confusion in that he shows Nigeria as having 4,845,000 livestock units on p.16 while his remark that 500 DVM's would create a ratio of one veterinarian to 16,000 livestock units implies 8,000,000 livestock units for Nigeria. The FAO report shows Nigeria as having 11,510,000 livestock units.

Footnotes:

^{3/} FAO, Agricultural Development in Nigeria, 1965-1980, 1965, p.221.

^{4/} Report of Second FAO/WHO International meeting on Veterinary Education - 1965, p.9.

^{5/} Polding, Dr. J.B., Veterinary Education for Africa, 1967 pp. 25-26.

c. Long Report:

Dr. James S. Long estimated Nigeria's need for DVM's in 1985 in his study entitled Analysis of the Needs and Resources for University Education in Agriculture in Nigeria which formed report number 28 of the series prepared by the Consortium for the Study of Nigerian Rural Development (CSNRD). Dr. Long projected the growth of agricultural positions to 1985 using two alternative rates: a continuation of the 8 per cent recorded during the 1960's and a slightly reduced 6 per cent. This suggested that agricultural positions would number either 3,000 or 2,000 in 1985. Rather than the 1960's ratio of veterinarians to total agricultural scientists of 12 per cent, he assumed that veterinarians would comprise 10 per cent of the 1985 population of agriculture position holders. Thus total positions for veterinarians range between a high of 300 and a low of 200. He estimates that the job market will annually absorb 12 per cent of the high figure or 10 per cent of the low one. This suggests an annual requirement for Nigerian DVM's ranging between 36 and 20.6/ No doubt based on Dr. Long's work, the CSNRD general report (No.33) notes that the "anticipated output of DVM's from Ahmadu Bello University exceeds the employment forecasts for veterinarians in Nigeria." It goes on to observe that the "development of more than one full-fledged school of veterinary medicine in Nigeria is not justified" and recommends that "Nigeria continue inviting other West African countries to send veterinary students to ABU."7/

The main problem with Dr. Long's approach is that he provides no analysis of how well Nigeria was served by veterinary cadre of the 1960's. Therefore one is left to wonder how adequate the projected continuation of the past trend will be in relation to the needs and opportunities of the future. While his methodology does have the advantage of attempting to project active or funded demand, this becomes a dubious virtue considering the implications of Nigeria's rapidly expanding public financial resource base.

d. Stoddard Consultancy:

The consultant to this evaluation, Dr. H.L. Stoddard, also conducted an informal survey of Nigeria's future need for DVM's. He found a consensus among the professionals he talked to that Nigeria needs about 600 working degree level veterinarians. He also felt that it would be reasonable to project a need for some 1200 veterinarians by 1980 for all of English-speaking West Africa (excluding Liberia).

Footnotes:

6/ Long, Dr. James S., Analysis of the Needs and Resources for University Education in Agriculture in Nigeria, CSNRD (Consortium for the Study of Nigerian Agriculture Report) Report No.28, 1968 pp. 36-41.

7/ Consortium for the Study of Nigerian Rural Development (CSNRD), Strategies and Recommendations for Nigerian Rural Development 1969/1985, CSNRD-33, 1969, p.113.

Dr. Stoddard felt that most of the earlier projections were somewhat conservative. In support of this judgement he noted that: a) poor data on manpower, employment and livestock populations make accurate calculations difficult; b) productive employment of veterinarians tends, through a demonstration effect, to generate more demand for veterinary services, and c) that stepped up production of animal health and production cadre will be needed if "there is hope that the productivity of the livestock industry can be accelerated.^{8/}

e. Summary:

The table below summarizes the estimates of Nigeria's need for DVM's discussed above:

Table III: Summary of Projections of the need for DVM's in Nigeria

<u>Source</u>	<u>Need</u>	<u>Date</u>	<u>Comments</u>
FAO	384	Undated	Applied 1/30,000 DVM/Livestock Unit Ratio
Polding	200-300	Undated	"Consensus" plus Ratio method
Long	200-300 20-36	1985 Annually	Extrapolations of alternative rates of growth of positions for agriculturalists based on trends of 1960's
Stoddard	600	1980	Informal survey plus perusal of earlier estimates

3. Implications:

Despite the fact that each used different methods, the results obtained by the three researchers whose estimates predate this evaluation are remarkably close together, Dr. Polding and Dr. Long arrived at the same conclusion while the FAO estimate is 28% higher. Thus it would be necessary to say that the pre-1971 consensus among visiting experts who have published their findings suggests a range of between 250 and 384 DVM's needed in the country.

Footnote:

^{8/} Stoddard, Dr. H.L., Evaluation Report - Project 817 Veterinary Education Ahmadu Bello University, 1972, pp. 26-37.

Which is closer to the 1980-85 need, the pre-1971 consensus or the Stoddard estimate? As far as the 1980's are concerned, it seems likely that the findings of the earlier surveys are somewhat conservative. There are already some 133 veterinarians in the country and some 169 vacant existing or planned positions requiring DVM's were verbally reported to Dr. Stoddard during his travels through only five states. These estimates have to be shaded, but they do suggest that Nigeria might readily absorb 300 veterinarians under present conditions.

A larger requirement would probably have to be based on intensified government efforts to stimulate dynamic growth in the livestock industry followed by an expansion of veterinarians in private practice. Of course, the expansion of public revenues and the real possibility of a "Green Revolution-style" break-through in grains production are factors which could lead to such an increased demand for DVM's. The magnitude of these two factors' potential effect on the need for DVM's is difficult to predict at this point in time.

Thus it is difficult to say for certain what the supply-demand situation will be regarding DVM's in the 1980's, but it does appear highly important that the concerned public authorities be prepared to respond appropriately should the production of DVM's from two schools begin to threaten an oversupply. Should this occur, the most obvious solution would be to consolidate the Ibadan and ABU veterinary training programs into a single reduced-scale operation. It also seems highly desirable that ABU continue to offer places in the Faculty of Veterinary Medicine to students from other English speaking African countries and to a representative cross-section of Nigerians.

C. Study Program:

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. During the past year the members of the teaching staff of the Faculty have given considerable thought to possible changes in curriculum intended to improve students' preparation for coping with West African animal health problems. This concern is the topic of two reports submitted by members of the Faculty staff in the Spring of 1971. An Ad Hoc Curriculum Advisory Committee recommended that classroom time devoted to public health and animal husbandry be increased and that new courses in zoology, applied botany, sociology, agricultural economics, statistics and animal ecology be added to the curriculum. This group recommended some decrease of contact hours in anatomy and pathology. A second report prepared by an individual staff member generally endorsed the direction of the changes proposed by the Ad Hoc Committee.

Discussions held with key members of the veterinary working community by the consultant to this evaluation, though generally reflecting favorably on the performance of ABU veterinary graduates, indicated that their effectiveness could be enhanced through increased training in practical aspects of animal husbandry,

preventive medicine, epidemiology and grass land farming, agricultural economics and statistics. The USAID consultant indicated that these changes could be accommodated by decreasing teaching time in anatomy, physiology, pathology, pharmacology, food hygiene, meat inspection, surgery, and obstetrics.

Though there are clearly some discrepancies between the curriculum changes recommended within the Faculty and those indicated by the consultant's discussions in the field, there is clearly a strong consensus in favor of strengthening the teaching program's relevancy to the practical problems graduates will face in the field. It is understood that the proposed changes recommended within the Faculty together with the findings of the USAID consultant will feed into the development of a Faculty proposal on curriculum changes which will be submitted to the senate for approval.

The evaluation also encountered concern that the present curriculum conveys insufficient information relating specifically to West African conditions. This is largely due to the scarcity of the requisite information. The ABU Faculty members are partially compensating for the lack of textbooks and reference materials on West Africa by preparing informal, mimeographed student resource papers. Members of the relevant education and research communities should consider whether enough information is now becoming available to permit the preparation of African or West African textbooks and reference works in some of the more important areas of the veterinary and animal husbandry curriculums. If so, it would be desirable to begin soon to address some of the special problems of financing and organizing such work where the potential market is relatively small and linguistically divided and the required information is probably somewhat scattered and thin.

The Faculty of Veterinary Medicine's research and service programs, though each is useful in its own right, are also intended to develop into important adjuncts of the study program. As such, it will afford students practical experience in dealing with animal health and production problems in the field.

The amount of practical training provided veterinary students is presently limited by the fact that the Faculty's research and service programs are not yet fully developed. However, it is evident that the Faculty makes good use of the limited opportunities these programs now offer for giving students practical experience. Also each student spends several vacation periods in the field on a variety of work assignments. While the students seem to appreciate such opportunities to gain field experience, several voiced feelings that they had been given such menial work to do that their assignments taught them little except humility. There appears to be a need for improved planning, surveillance and coordination of students' vacation work assignments.

D. Research:

The development of the research program of the Faculty of Veterinary Medicine up to now, has been left to evolve rather informally while available staff, facilities and funds have necessarily been allocated primarily to teaching. At present occupying only an estimated 5 per cent of professional staff time, the Faculty's research consists mostly of the individual projects of Faculty members plus a parasitology project operated with the cooperation of a three member team from the Netherlands Directorate of International Technical Assistance (DITA).

Research can play an important role in leavening and augmenting curriculum content. It also provides an essential medium for the early training and continuous development of professional staff. In addition to the above considerations which normally determine the role of research in a training institution, the need to define practical policies and programs for developing West Africa's livestock resources argues strongly for attaching special priority to veterinary research at ABU.

It is the intent of the Faculty and University administrations that the veterinary research program should gradually increase to occupy about $\frac{2}{3}$ of the time of a staff of about the twice the present size. The research program can only develop significantly beyond its present dimensions as the Faculty's physical facilities are augmented and as young professional staff return from completing their post-graduate course work overseas. Present plans call for staff embarked on Ph.D. programs to prepare their dissertations at ABU on topics of local importance as well as academic interest.

Members of the Faculty have prepared an outline research program plan suggesting social utility criteria to guide research decisions, indicating priority areas for investigation and proposing that a permanent position be established within the Faculty for a Coordinator of Veterinary Medical Research. The recommendations contained in this document (See Appendix C) seemed appropriately reflective of practical concerns and the evaluation team recommends that it receive every consideration for adoption as the official blueprint for the development of the Faculty's research program. As the ABU veterinary research program develops and more is learned concerning the basic biological factors influencing animal health and production problems, the Faculty of Veterinary Medicine should consider the possible utility of interdisciplinary research into human social and cultural aspects of these problems. In line with the consultant's recommendation, the Faculty may also wish to explore opportunities for cooperating in research into health factors in animal production.

A National Agricultural Research Council has recently been founded in Nigeria to establish guidelines and coordination for all Nigerian crop and animal agricultural research. The ABU Faculty of Veterinary Medicine is represented on this Council.

Developments now in train may result in the establishment of a regional Livestock Production Research Institute in Zaria. This would afford valuable opportunities for the ABU veterinary research program to link up with, support and benefit from research undertakings of potential benefit to the West African region.

E. Faculty Services Program:

Presently the Faculty provides a variety of animal health services which serve to enrich the practical content of the study program as well as benefitting the private livestock industry and augmenting the animal health efforts of governmental bodies. The Faculty provides supplemental or back up diagnostic services to State animal health services at the request of their Chief Veterinary Officers. Closer to the main campus, a visitation program treats livestock disease problems at the village level. The Faculty also operates a rabies diagnostic service in coordination with the Federal Department of Veterinary Research at Vom. The consultant found that the diagnostic services provided by the Faculty were justified in that they meet real needs of the industry as well as aiding in teaching students. The Faculty plans to expand the scope of its diagnostic services.

The Faculty is planning to develop a program of continuing education for veterinarians who feel the need to be brought up to date regarding new developments in their field. This program can be instituted only gradually as the professional staff of the Faculty expands. The evaluation team encountered a considerable demand for such a program among the veterinary working community. The consultant to the evaluation suggested that the program make use of autotutorial as well as conventional short courses. He noted that autotutorial courses can also play an important role in the training of undergraduate students.

F. Facilities:

The existing buildings consist of three permanent structures, one of which is an open hanger temporarily modified for office, classroom and laboratory use. The facilities adequately serve the demands of the programs at their present level of development. They are inadequate, however, for the activities of the fully developed institution. The new buildings will: (1) Facilitate the expansion of present capacity from 27 graduates/year to approximately 45 (Classrooms, teaching laboratories, holding pens, etc. presently are not adequate for a program of these dimensions); (2) Provide laboratory research space needs to support a fully developed research program (see above); (3) Provide the ABU/FVM with a diagnostic laboratory which constitutes a critical part of the expanded service program.

Noting suggestions that it might be feasible to increase total student enrollment by more intensive use of existing facilities, the consultant found it unrealistic at this time to propose a further extension to the academic workday.

Assuming that a loan agreement can be signed by July 1972, it is now projected that the Phase III expansion of facilities can be completed by the end of 1974. Since projects of this type have a way of encountering unexpected obstacles, it seems desirable to bear in mind for planning purposes that it could be delayed by up to two years.

The University is alive to the need to make provision for the proper maintenance and repair of laboratory and scientific equipment. It is their responsibility to carefully review the magnitude of the maintenance and repair workload likely to develop after the installation of the equipment component of the Phase III expansion scheme, and determine whether existing staff recruitment and training plans will fully meet the projected need.

G. Community Liaison:

It became very apparent during the course of the evaluation that the veterinary working community depends heavily on educational institutions, not only to train new cadres, but also to pass on improved technical information and to provide leadership in project policy and planning. Virtually all public figures contacted held definite opinions concerning the role the Faculty should play in the veterinary community and how Faculty programs should be structured and managed. The concensus was that the Faculty was operating too much in isolation and was not sufficiently knowledgeable about, nor responsive to, the problems of the working community. Regardless of their merit, these concerns argue strongly for creation of an active community liaison program.

The consultant recommended the immediate appointment of a Faculty Liaison Officer. His main duties would include the creation of a dialogue between the Faculty of Veterinary Medicine and other schools concerned with veterinary education, members of the practicing veterinary community and other animal health and production researchers. The dialogue would help convey to the ABU campus feedback useful for program planning purposes. Likewise, useful information would be passed back to the field in the form of research results, continuing education course schedules, etc.

An effective community relations program could also help to reach students with real vocational interests in the areas of animal health and production and draw them into veterinary medicine. A large proportion of the Faculty's present students did not enter veterinary medicine as their first choice of a career. Most such students would come from rural, Northern backgrounds and have previous knowledge of basic animal husbandry techniques. A program designed to acquaint secondary school students with the opportunities for careers in veterinary medicine would promise to be a useful component of an active liaison program. The ABU Faculty of Agriculture with Senate permission presently sends members of its teaching staff to Northern secondary schools to discuss careers in agriculture with potentially interested students.

Many individuals interviewed during this evaluation voiced concern over what they considered to be a serious lack of coordination among the various animal health and livestock development programs operating in the country. The Faculty of Veterinary Medicine has as great a stake in improving the situation as any organization and should provide leadership in efforts to improve the present coordination machinery and promote better use of it for: a) minimizing duplication of effort in training at all levels, in research and in services; b) coordinating the training of DVM's with the training of auxiliary personnel and the expansion of livestock programs and infrastructure; and c) proposing common goals and priorities for veterinary activities in Nigeria in the interests of developing a rational country-wide pattern of resource utilization.

H. Financing:

All indications are that Ahmadu Bello University will continue to be able to provide adequate recurring budgetary support to the Faculty of Veterinary Medicine.

The Faculty's recurring costs per student per year, net of expanding research and services costs, of training DVM's is projected to decrease from about £471 in 1971/72 to £383 in 1979/80. These cost estimates do not take into account the Faculty's share of the central overhead expenses of the University nor the cost of lodging and board for the students. The consultant to this evaluation felt that they were generally within acceptable ranges of veterinary per student education costs incurred in other rich and poor countries.

IV. Progress toward viability

A. Viability vs Maturity as a Criterion:

A central concern of the evaluation exercise was to determine the additional input necessary to bring the Faculty of Veterinary Medicine to a state of development such that it would be capable of sustaining an independent drive toward maturity. Recognizing that full institutional maturity is an unrealistic goal within the time horizon of the USAID/KSU project, it seems desirable to employ a more modest criterion. For this purpose the concept of viability has been selected to denote the capacity of an institution to continue to progress toward institutional maturity as the scale of outside assistance phases down and out.

For the Faculty of Veterinary Medicine, institutional viability appears to depend on three primary factors:

1. Adequate numbers of appropriately trained permanent staff qualified to fill required working level and leadership positions.

2. Teaching, research and service programs in operation and developing along appropriate lines as regards scope, content and direction.
3. Adequate logistical and financial support.

When the above three conditions have existed simultaneously for one or two years and the concerned Nigerian staff have been fully involved in each of the programs, it seems likely that the Faculty will be able to continue developing to full maturity without technical assistance of an institutional nature. Of course, it would be unrealistic to expect that viability will be attained simultaneously in all parts of the Faculty. Obviously the rate at which the various departments and programs develop will vary. The problem, then, is one of trying to identify a point in the continuum of the Faculty's development where relatively expensive institutional assistance can give way to specialized staff support.

B. Appraisal:

The first of the viability indicators, development of staff, is the most important for the eventual success of the project.

Though staff numerical strength is easily measured, staff competence is a qualitative factor that is difficult to define let alone measure. Where this factor comes into play regarding feasible rates of Nigerianization, the evaluation has relied on the professional judgement of the Faculty of Veterinary Medicine leadership. The projections shown below indicate the rate of permanent staff development likely to result from implementation of the present participant training schedule.

	<u>Academic Years</u>								
	<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>
Required Permanent Staff-----	19	21	30	34	38	38	38	40	41
Permanent Staff Available at ABU	10	9	15	24	35	35	37	40	41
Permanent Staff in Training	9	12	15	10	6	3	1	0	0
Returned Participant Trainees	1	3	10	14	20	20	22	22	22
Experienced Returned Participants (2-years teaching & research after US training)	0	0	1	2	5	11	18	21	22
Leadership Coverage-----	1	1	1	1	2	6	10	13	13

- (1) Permanent staff includes expatriates who receive Nigerian salaries only.
- (2) Participant trainees who have had two years' teaching experience after their return from overseas. See Appendix B.

- (3) Leadership coverage is defined as permanent staff eligible to occupy Head/Ag. Head and/or Prof/Reader positions.

It is virtually impossible to predict that a specified amount of counterpart contact and/or formal training will produce the desired level of practical professional competence. Nevertheless we have somewhat arbitrarily decided to consider that two years of supervised teaching and research following completion of post graduate course work will generally be sufficient preparation for the responsibilities of full membership of the Faculty professional staff. The rate at which permanent staff are projected to become eligible for leadership positions (i.e. Department Head/Acting Head and Professor/Reader) is based on informal and necessarily subjective though informed judgements concerning individuals' eligibility and professional readiness consistent with normal ABU standards. These projections are highly tentative in that the actual decisions regarding individual staff members' appointments to higher positions are made by University decision-making bodies who obviously could not participate in the preparation of the estimates.

Presently there are only one returned participant and another nine out on training out of a permanent staff of nineteen. As the above table shows, the local staffing picture of the Faculty begins to change rapidly beginning in 1973/74. By this time the number of returned participants will have risen to ten out of a total available staff of thirty. The number of returned participants grows rapidly until in 1975/76 they number twenty, just half of the forty-one total permanent staff members projected to become available in 1980. Also in 1976/77 the number of experienced returned participants will have reached eleven while the number of permanent staff eligible to assume leadership positions are likely to reach six, just less than half of the required total of thirteen. The additional four staff members likely to become eligible for leadership positions during 1977/78 will have worked in close association with the contract team during the two preceding years. Beyond 1976/77 the local staffing changes that occur are less significant and, it should be remembered, the likely accuracy of our estimates diminishes rapidly as we attempt to reach further into the future.

The second key indicator of institutional viability, the quality of Faculty programs and their degree of implementation, is slightly easier to measure. As mentioned in section III.C.1, teaching programs are relatively well developed even though some change in study emphasis is necessary. The research and services programs, however, are relatively undeveloped. It appears likely that plans for the development of these programs can be defined and approved by the University within the next year. Their implementation should gain momentum over the next two to three years as the Faculty's staff and facilities expand. Yet it would seem that neither program can be said to be fully launched on its planned course of development until the new Phase III facilities and equipment are coming into use.

The third indicator of institutional viability, the adequacy of the University's logistical and financial support of the Faculty, is the least problematic. There is little room for doubt of the ABU administration's commitment to providing full material support to the development of a high quality Faculty of Veterinary Medicine capable of turning out about 50 graduates per year. There is evidence, however, that plans for development of ABU student and staff housing facilities lag somewhat behind the projected expansion of total University student enrollment and staff strength. The slight discrepancy noted would be consistent with a planning assumption that the University wide student and staff strength will fall somewhat short of expectations. Such an assumption, though probably valid, causes no significant doubt on the feasibility of expanding the programs of the Faculty of Veterinary Medicine.

C. Implications:

The present form of institutional technical assistance contract under which the Kansas State University team is provided is extremely expensive and generally justified only in circumstances where the human, philosophical and other resources of one institution are to be employed in the development of another. Other less costly solutions become available in cases where the main problem is simply one of providing outside personnel until local professionals are available to fill required positions. The problem to be dealt with on the basis of the above evidence is that of discerning the point along the Faculty's path of development where the need for the relationship with the mature overseas institution diminishes to a level no longer justifying an institutional contract as the main vehicle of external assistance.

While the justification for maintaining a KSU contract presence at the Faculty of Veterinary Medicine begins to look doubtful in academic year 1975/76, several important considerations argue for its continuation through 1976/77. Where staff development is concerned, 1976/77 would culminate several years of close work with the six staff members likely to become eligible for leadership positions in that year and at least two years of collaboration with four or more other potential leaders. This is important in that such strength of Nigerian senior professional staff combined with the even larger group of younger professionals helps greatly to assure the continuation of steady progress along the present course of institutional development beyond KSU's phase out. The other important consideration is the degree of progress in launching the research and services programs on appropriate paths. The main problem in this area is to insure that the Phase III facilities and equipment are being well used and cared for. Assuming an end of 1974 completion date for Phase III, making 1976/77 the final year of the KSU contract would permit two and a half years of subsequent KSU assistance. Should the project be delayed by eighteen months, continuing a small KSU team through 1976/77 would insure at least one year of KSU presence after completion of Phase III.

The ABU administration together with the KSU contract team should seek means of developing a more viable state of affairs by 1976/77. It is possible that this could be accomplished through an acceleration of the participant training schedule together with some speed up in the movement of promising permanent staff members toward leadership positions.

CONSULTANT'S CONCLUSIONS AND RECOMMENDATIONS (Abridged)^{1/}

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.

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).

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:

- an informal co-ordination and exchange of information related to on-going animal production and health services in Nigeria.
- dialogue with the members of the National Agricultural Research Council.
- Frequent contact and exchange of information with the international bilateral and multilateral aid organizations and development lending institutions supporting animal agriculture projects in Nigeria.
- 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.

Evaluation of Project 817 - USAID Contract for Agricultural 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 - 27 December 1971, Hank L. Stoddard, DVM, DTVM.

- to co-ordinate and assist in the planning of professional seminars and meetings of interest to off-campus veterinarians.
- 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.
- 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.
- 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.
- to co-ordinate faculty diagnostic services with State and Federal veterinary officials and private sector veterinarians.
- 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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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.

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%.

There is a need to strengthen national co-ordination 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.

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.

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.

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.

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.

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.

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.

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. 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.

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.

APPENDIX B

AMU - Faculty of Veterinary Medicine
returned Participant Teaching Experience Schedule
(figures on man-years of experience at end of indicated school year)

Department	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80
Anatomy									
1.....	0	0	1	2	3	4	5	6	7
2.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
Total anatomy	0	0	1.5	3.5	5.5	7.5	9.5	11.5	13.5
Pathology									
1.....	1	2	3	4	5	6	7	8	9
2.....	0	0	1	2	3	4	5	6	7
3.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
4.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
5.....	0	0	0	.5	1.5	2.5	3.5	4.5	5.5
6.....	0	0	0	0	.5	1.5	2.5	3.5	4.5
Total pathology	1	2	5	9.5	15	21	27	33	39
Public Health & Preventive Medicine									
1.....	0	1	2	3	4	5	6	7	8
2.....	0	0	1	2	3	4	5	6	7
Total PH & Preventive Medicine	0	1	3	5	7	9	11	13	15
Parasitology									
1.....	0	.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5
2.....	0	0	0	0	1	2	3	4	5
3.....	0	0	0	0	1	2	3	4	5
4.....	0	0	0	0	.5	1.5	2.5	3.5	4.5
Total Parasitology	0	.5	1.5	2.5	6	10	14	18	22
Physiology									
1.....	0	0	.5	1.5	2.5	3.5	4.5	5.5	6.5
2.....	0	0	0	.5	1.5	2.5	3.5	4.5	5.5
3.....	0	0	0	0	.5	1.5	2.5	3.5	4.5
Total Physiology	0	0	.5	2	4.5	7.5	10.5	13.5	16.5

	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80
Surgery & Medicine									
1.....	0	0	0	.5	1.5	2.5	3.5	4.5	5.5
2.....	0	0	0	.5	1.5	2.5	3.5	4.5	5.5
3.....	0	0	0	0	1	2	3	4	5
4.....	0	0	0	0	0	0	1	2	3
5.....	0	0	0	0	0	0	1	2	3
Total Surgery & Medicine	0	0	0	1	4	7	12	17	22
Total Man-years of Supervised Teaching - All Depts.	1	3.5	11.5	23.5	42	62	84	106	128
Total Number of Returned Participants.	1	3	10	14	20	20	22	22	22

APPENDIX C

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

Submitted to USAID/Lagos by the
Kansas State University Contract team
as a section of their 1970/71 Work Plan.

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 mans 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 usable protein. As a high percentage of the land mass of Nigeria is best suited to forage production, as contrasted to that usable 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 neighbouring 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 rinder-pest-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

- (4) Identification of animal models of human disease - Many disease states that cannot be reproduced spontaneously occur in some animal species. Those 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 cooperative 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 overall 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.



OFFICIAL FILE

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21 June 1972

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PER

Dear Dr Ford

Evaluation of the USAID - Assisted Project 620-11-110-817.
Agricultural Assistance to Ahmadu Bello University -
Faculty of Veterinary Medicine

I apologise for the delay in sending my comments on the above evaluation report which was received on 15 May. There is no doubt that the team has done a good job and their conclusions and recommendations appear to me to be fair and reasonable. The only few comments I feel I ought to make are as follows;

- Perhaps for reasons that are quite understandable, they appear to have treated the Faculty of Veterinary Medicine in almost near total isolation from the rest of the responsibilities of the whole of the University to the community. Nearly all the recommendations made on general grounds with respect to this particular Faculty could quite equally apply to the other seven professional Faculties in the University, and where resources are not unlimited the University Administration has a responsibility to treat other such Faculties with as scrupulous impartiality as is humanly possible.
- With regard to admissions from other English speaking African countries and a representative cross section of Nigerians; in this University as a whole this has always been done with respect to all its offerings, and I have no doubt will continue to do so as its policy is firmly entrenched by the University Council. I believe one only needs to analyse the distribution of students, not only in the Faculty of Veterinary Medicine but in all the other Faculties of the University, to support, compared to what pertains in other Nigerian Universities.

3. With regard to the maintenance of facilities and equipment, the University Administration is well aware of its responsibility on this score and it may not be known to the Faculty of Veterinary Medicine that the University Administration has currently got plans to establish a central unit, particularly for expensive equipment (electronics). This will be a facility to serve the whole University and not any set sections and I am sure the Faculty of Veterinary Medicine will benefit from it just like any other Faculty in the University.

4. With respect to the Faculty community relationships, the University Administration will have to weigh any positive benefits of the appointment of a liaison officer versus the additional costs of running the University, because if such a person were to be provided for the Faculty of Veterinary Medicine one also would have to be provided for the other seven professional Faculties in the University. The veterinary faculty has so far taken the initiative of inviting the Chief Veterinary Officer of the six Northern States on to its Faculty Board, together with the Chairman of the Nigerian

Veterinary Council and engage in discussions all the time with the officers in the field, invites them to participate in the curriculum review as well as in the teaching programme of the Faculty, and I quite honestly do not see what more needs to be done.

5. With regards to advising secondary school leavers about opportunities in Veterinary Education, this is a matter that must be cleared with the University Senate. A few years ago various faculties of the University went to all the secondary schools, off their own bat, to solicit for students. The result was practically all the students were opting for the particular area which were able to sell their wares better than anybody else. The University Senate had to act to regulate this and presently the Faculty of Agriculture, in the Nation's interests, is the only Faculty allowed to sell its wares, as it were, to the schools.

6. Finally, the phasing out date of the Kansas State contract. My own view is that the earliest phasing out date should be the academic year 1977/78, because knowing the inevitable delays of building programmes, it is far too optimistic to expect that the phase three buildings will be completed by the end of 1974. My own opinion estimate is that they will be completed by the end of 1975 and inhabited during the 1976/77 session. Hence my own view that the earliest phase out date should be the end of the 1977/78 session. This is allowing one year of normal operations in the new facilities, ensuring that research is well on its feet particularly in view of the anticipated large numbers of Nigerian staff doing their Ph.D. research locally. I realise, however, that the ultimate decision on the phase out date lies with the authorities in Washington, and I have no doubt as long as the University Administration is advised in good time, as recommended by the evaluation team, we will be able to adjust to whatever decisions are arrived at in Washington.

With very kind regards.

Yours sincerely

