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END OF TOUR REPORT

Name: Wayne E. Baillie  
Job Title: Associate Professor of Pathology  
Country of Assignment: Nigeria  
Contract Employer: Kansas State University  
Project Activity: Faculty of Veterinary Medicine  
Project 625-11-660-514  
Tour of Duty Began: July 2, 1970  
Tour of Duty Ended: July 7, 1972

Administrative Responsibility.

Administrative responsibility at the departmental level was assumed by me only on occasions when it was necessary for the Department Head to be away from the University. At the sub-departmental level I was charged with complete responsibility for the functioning of the Diagnostic Microbiology Laboratory and with teaching of Microbiology. In addition, since the departure of Dr. D.I. Saror in January, 1972, I have had responsibility for functioning of the Clinical Pathology Laboratory.

Teaching Assignments

During the academic years 1970-71 and 1971-72, I had complete responsibility for teaching microbiology to the second year students in Veterinary Medicine. This involved three separate courses of one term each; (1st term General Bacteriology - 3 hours lecture + 4 hours laboratory/week; 2nd term Pathogenic Bacteriology - 3 hours lecture + 4 hours laboratory/week; 3rd term Pathogenic Virology and Immunology - 4 hours lecture + 2 hours laboratory/week.) During the academic year 1970-71 there were 21 students in the class (laboratory space was sufficient for this number) and actual time in class was 70 hours first term, 70 hours 2nd term, and 60 hours 3rd term. However, the class during the academic year 1971-72 numbered 27, which was too great for the amount of laboratory space available for effective teaching in this area. Consequently, the class was split in half for Laboratory sessions which increased the classroom time to 110 hours first term, 110 hours second term and 90 hours third term. If one were to assume an optimum of 2 hours in preparation for each hour of classroom time, 1/2 - 3/4 of actual working hours (on a 40 hour/week basis) were involved in preparation and teaching.

A senior technician from the Federal Veterinary Research Laboratory at Vom, Nigeria was sent to my Laboratory for a two week training course on the conduction of the Fluorescent Antibody test for the diagnosis of rabies.

Development of Teaching Aids and Lecture Outlines

Considering my involvement in diagnostic microbiology (to be discussed later) during my tour, microorganisms encountered in Northern Nigeria are for the most part much the same as encountered in the United States or in other parts of the world. However, since there is a dearth of knowledge concerning a complete list of microorganisms present in West Africa, a familiarity with all microorganisms associated with animals must be available to the student. Consequently, lectures and laboratory materials (while not developed into a new course outline) covered all such organisms, with special emphasis on the etiologic agents of infectious diseases of consequence in Nigeria.

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Rabies is a serious problem in Nigeria, and a series of color transparencies have been prepared on the laboratory diagnosis of rabies. This project was completed by myself in association with Drs. H. John Barnes and Wilfred Pimentel. It is anticipated that this set will be available for formal lecture work and as a self-teaching aid for students.

In conjunction with routine diagnostic microbiologic examinations, slide sets and specimens have been prepared for student laboratory use on disease conditions of both common and rare occurrences in Nigeria.

#### Counterparts

My Nigerian counterpart, Dr. P.B. Addo, left Nigeria for participant training at Kansas State University in August 1971. During the academic year which he was here, he assisted in teaching the laboratory sections and took an active interest in diagnostic microbiology. Under my supervision he developed into what I would consider to be a competent diagnostic bacteriologist. Further experience in this area should qualify him to assume a supervisory role in this area.

I have had 3-4 junior staff personnel under my supervision. These individuals, while having only the WASC, have been found to be sufficiently competent, with instruction, to complete many of the routine tasks of running a laboratory. It must be assumed, although these junior staff comprehend the English language, that in giving complicated instructions a language barrier may exist, and special care must be exercised to insure that directions are understood and followed. The junior staff have been encouraged to further their education by means of courses offered during their off-duty hours which will eventually bring them to the ordinary or advanced Science or Medical Laboratory technologist level.

#### Service Work

During my tour I have had essentially complete responsibility for the Diagnostic Microbiology Laboratory. Trained bacteriology technicians have not been available, and essentially all of the routine work was done personally. Specimens were received from various sources; (1) the Department of Surgery and Medicine, (2) University Student and Faculty Health Service, (3) Faculty of Medicine A.B.U. Teaching Hospital and (4) various Veterinary offices throughout the Northern States. During the two years a total of 2580 separate specimens were processed with an origin distribution as follows: Bovine - 128; Canine - 68; Equine - 110; Human - 151; Ovine - 34; Porcine - 11; Poultry (chicken) - 128; Poultry (miscellaneous) - 14; Feline - 2; Miscellaneous species - 42; and water samples - 1871.

Microorganisms isolated and identified from the animal species were not unusual and had been previously described as producing disease syndromes. Sampling of the University water supply was begun as a service to the University community. Samples were collected from 21 different locations on University property and the Nigerian Civil Aviation Training Centre each week. Approximately 30% of the samples collected and examined were found to be contaminated with organisms of fecal origin and unfit for human consumption.

As has been noted, Rabies is a serious problem in Nigeria, and in instances in which humans have been bitten or exposed to suspected rabid animals a rapid diagnosis is necessary. In order to facilitate such diagnosis in this area, officials at the Federal Veterinary Research Laboratory at Vom designated my Laboratory as a branch to perform rabies diagnosis subject to

confirmation by the official laboratory at Vom. Examinations performed on each specimen were: Negri body by Soller's stained smears, Fluorescent antibody test and biologic test by mouse inoculation. It was my duty to initiate this new service. A total of 29 specimens were examined with a species distribution as follows: canine - 23; feline - 2; human - 2; equine - 1; and squirrel - 1. Of these 19 examinations confirmed the presence of rabies. Human exposure was involved in nearly 50% of the cases.

#### Research Initiated or Completed

The heavy teaching and service responsibilities have left little time for research. However, a minor survey was conducted to indicate the incidence of Brucellosis in the area. Approximately 500 blood samples were collected from local slaughter slabs, and 90 cream and milk samples were collected from Fulani milk maids. These samples were subjected to serological tests to detect the presence of Brucella abortus antibody. No positive samples were found in the milk or cream samples. A very few suspect or weakly positive serum samples were found, however, inability to follow up these results with samples from additional animals in the herd of origin makes the evidence inconclusive. It is my opinion, considering the type of cattle management in this region, that Brucellosis is not a serious problem. Further investigations into this area would appear justifiable.

While not under my jurisdiction, a research project was conducted in my laboratory by Dr. E.H. Coles and Mrs. Ellen Harkness. This project involved a thorough sampling of patients and facilities at Wusasa Hospital, Zaria for the presence of Staphylococcus aureus. All isolates were phage typed to determine the most prevalent strains and to possibly indicate some epidemiologic aspects of Staphylococcus transmission and causes in the area. A publication is in preparation.

#### Problems and Recommendations

During one of the reviews of this contract, there was open criticism of this Faculty for not having visited Veterinary officers throughout Nigeria. The criticism is justified, but is not entirely the fault of contract personnel. Problems in making this type of visitations lie in three major areas in my opinion.

(1) During the first 18 months of my tour, there was only one roadworthy vehicle available to both the Faculties of Veterinary Medicine and Agriculture in which such trips could be made. This vehicle was on the road making trips which at the time were deemed more essential. This problem has now been somewhat solved, however, there are still not enough vehicles available for technicians to perform in an efficient manner. It appears rather uneconomical to me to pay a technician in the region of \$20,000/year or more and then not let him function efficiently by depriving him of a vehicle valued at approximately  $\frac{1}{4}$  of his annual salary. I would recommend that contract personnel be allowed to determine their vehicle needs rather than people who are unaware of his exact requirements and duties.

(2) Teaching, administration and service responsibilities in a University are present every day. It is not possible for a person in such an environment to leave them at any whim to travel, however much he might like the idea. Teaching and service work must of necessity be done when it is scheduled or presented. Short periods of student vacations are available for such travel, but during one of those periods the technician is entitled to be on R&R. Consequently this teacher has during his tour very little time for such travel. I would recommend that an Extension Veterinarian be added to the contract with the sole responsibility of becoming acquainted with and disseminating

University information to Veterinary officers throughout Nigeria. In my opinion, there is no place in the world where such an individual could do more good.

(3) During the University session the longest break in which such travel could be done is from July to September, the wet season. As anyone who has traveled in Nigeria knows, this is the most difficult season in which to travel due to impassable or nearly impassable roads. This is another argument for an individual free from other responsibilities who could travel during more desirable periods.

In summary, Extension type work with Veterinary officers is very desirable, but has been made nearly impossible by these and possibly other factors.

Equipment purchased under this contract has been of American manufacture, and this has created some problems. While such equipment is for the most part of as high a quality as can be produced anywhere in the world, it is made to electrical tolerances present in the United States. Electricity in Nigeria is extremely variable with periods of very high and very low voltage. These variances have damaged many pieces of equipment. Most of this equipment could be repaired if provision were made for purchase of replacement parts under the contract. I have been told that it is the responsibility of the host government to maintain equipment. This is a difficult task in countries where their currency is not on the world market. Consequently many pieces of costly equipment stand unused for lack of a very inexpensive spare part.

Other minor problems arise from time to time, such as unreliability of public service utilities, but these for the most part can be coped with and will improve as technology becomes more advanced.