

# Animal Pathology

## *Diagnostic Laboratories Important Service Facility For Arizona's Livestock And Poultry Industries*

**W. J. Pistor**

The Animal Pathology Diagnostic laboratories have measurably increased services which are available to Arizona farmers and ranchers. The departmental staff consists of three veterinarians, two bacteriologists, one parasitologist, a serologist and a biochemist. This group forms a well balanced diagnostic team which is capable of dealing with any animal disease problem presented to the laboratory.

Considerable scientific equipment is needed by the staff so that each member may better carry out his particular job in the diagnostic pattern. For example, several types of microscopes are needed and each one is designed for a specific type of examination, such as a darkfield microscope which enables technicians to detect spirochetes in living preparations or fresh unstained tissues. This is a rapid and accurate adjunct to diagnosis in outbreaks of disease such as leptospirosis, which is encountered in our state.

A fluorescent antibody microscope which enables diagnosticians to make rapid decisions by the detection of fluorescein labeled substances in infected tissues. This type of examination can speed up and increase accuracy for the detection of numerous infective agents.

In addition to these, there are available dissecting microscopes for the examination and identification of external parasites and other larger specimens, a phase

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Dr. Pistor is head of the Department of Animal Pathology.

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contract microscope for better observation of the ova of internal parasites.

### **Machines Aid Rapid Diagnosis**

Other equipment that is constantly used in diagnostic procedures includes an automatic tissue processing machine which greatly accelerates the long and tedious task of preparing sections of diseased tissue for examination by a pathologist, an electrophoresis apparatus to detect abnormal variations in the blood serum proteins, a Warburg apparatus for the study of respiration or gaseous exchanges in both normal and abnormal tissues.

In addition to many of the more spectacular procedures just mentioned there are numerous other less complicated but extremely valuable routine examinations which are performed daily and in great numbers. One of these is the egg count on fecal material taken from animals suspected of harboring internal parasites. A measured amount of the fecal sample is processed in a highly standardized manner so that total and relative numbers of parasite ova can be determined. Treat-

ment or recommendations are made on the basis of these results.

Another routine type of examination is bacterial culture in which very minute amounts of infected tissue are aseptically transferred to artificial media and incubated. Bacterial colonies that grow in these cultures are then picked off and identified. When disease producing organisms are found they are tested against a wide variety of antibiotics to determine which drug might be the most effective treatment.

### **Variety of Blood Tests**

Many routine serological blood tests are done each year. Included among these are agglutination testing for detection of Brucellosis in cattle, agglutination tests for the control of salmonella infections in turkeys and capillary tube agglutination tests for the detection of animals having leptospirosis.

Each specimen or group of specimens that is submitted to the laboratory is subjected to a complete examination from antemortem or postmortem on through numerous specific follow-up tests such as those described. This is done to insure a better selection of control methods or treatment in the eventual elimination of a disease problem.

### **Carefully Kept Records**

Each accession is carefully described and recorded on a punch type analysis card and is categorized according to animal species, breed, age and so forth. A complete history of conditions which existed up to the development of the problem are entered on the card. In addition to this, results of all laboratory tests performed are recorded on the card.

Finally, all these scientific facts are considered by one of the veterinarians who, after due consideration, makes or confirms his diagnosis and reports these facts to the owner and his veterinarian with recommendations for treatment or any other corrective measure which might be indicated.

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plant breeders in developing, testing and release of adapted crop varieties.

### **Newer, Better Varieties**

Nearly all of the varieties now grown in Arizona have come about through this crop improvement program. Moapa alfalfa, Harlan barley and Gila safflower are recent additions to this list. Close cooperation of agronomists and plant breeders with farmers who realized the value of pure, high quality seed of adapted

varieties led to the organization of the Arizona Crop Improvement Association nearly 30 years ago. The progressive farmers of Arizona now insist on A. C. I. A. certified planting seed.

To help meet the needs of an increasingly technical and highly competitive agriculture in Arizona, the Agronomy staff has grown to 14 professional staff members plus five technical assistants. Each agronomist is a specialist in his particular field of research on farm crop production and improvement. Their research programs are in progress at seven of the Experiment Station's branch stations and

cooperating farmers' fields as well as on the University of Arizona campus.

### **Wide Range of Research**

Besides production and improvement of alfalfa, Bermuda grass, cotton, corn, forage seeds, oilseed crops and small grains, the present agronomy research program includes weed control, crop physiology and water use efficiency of forage crops. This work is in close cooperation with the specialists in plant breeding, disease and pest control, soils and United States Department of Agriculture collaborators.