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Visual Aids and Their Application To the Teaching of Veterinary Medicine

R. S. Getty, D.V.M., M.S., Ph.D.

Within the past two decades, the scope of veterinary anatomy instruction has been broadened to include not only the detailed study of the horse, but also that of each of the domesticated animals as well. However, the over-all trend throughout the country has been to decrease the allotted time for dissection. This has resulted in a wide discrepancy between the vast amount of material that each student is expected to master and the time which is allotted him to accomplish this feat. Today, we are attempting to teach the anatomy of more than half a dozen animals in less time than was formerly allotted to the horse alone.

Faced with similar educational problems, the armed forces, industry, and educators in other fields (including human medicine) have met this challenge by instituting various visual and audio-visual methods of presentation. Critical tests have substantiated the fact that audio-visual materials enable one to: (1) learn more; (2) remember longer; (3) save time; (4) impart uniform information; (5) increase the student’s interest; (6) and maintain a better morale or attitude. With these thoughts in mind, the Department of Veterinary Anatomy embarked upon a definite audio-visual long-term program several years ago. Fortunately, we have had the complete cooperation of the administration as evidenced by the surrounding visual aids.

The Vu-graph Projector

The Department of Veterinary Anatomy daily uses the several audio-visual aids. The Vu-graph is a special type of projector which will project slides of all types, including strip film. Some advantages of this machine are: (1) The illuminating system is such that one can leave the lights on in the room and still obtain satisfactory projection. (2) The operator can face his audience while presenting

This material was abstracted from a report given by Dr. Getty, head of the Department of Anatomy, Iowa State College, to the Faculty of the Division of Veterinary Medicine. Part I, entitled ‘Recent Developments in Veterinary Anatomy at Iowa State College’, was published in XVI:3 (1953-54).
his material. (3) The instructor can draw or write on a cellophane roll and in turn have the image of what he is writing or drawing projected on the screen. We have found it advantageous to prepare detailed drawings beforehand. These drawings can be projected or they can be used to serve as negatives for the positive printing of pictures and graphs which we then pass out to the students during the lecture. Thus, they have a permanent, accurate record of the drawing which saves considerable time for them as well as the instructor. In the past, the instructor would often have to spend hours throughout the quarter drawing on the blackboard. The student in turn would of necessity have to spend hours copying the drawing from the blackboard. Thus, it is mutually beneficial to both staff and student to use the Vu-graph whenever possible. One can start out with a simple black and white outline and, by a series of overlays, build up a detailed picture in color. This method is very useful when presenting material on the nervous system as well as in discussing the embryological development of the various systems and organs. The large 10 x 10 aperture is very useful for viewing radiographs.

Color Pictures

For the past several years the anatomy department has taken 2 x 2 color pictures representative of dissected areas in our various domestic animals. We must have about 350 such pictures now on file. We feel that by showing the students what a certain area should look like when it is properly dissected, it will speed up the student's dissection time and help him to evaluate critically his own dissection and knowledge of the area in question.

3-D

Recently, a 3-D camera has been purchased. A series of 3-D slides has been taken in color depicting the systematic dissection of the dog starting with the skin and gradually reflecting the musculature revealing the deeper structures. The stereo effect permits the student to appreciate the depth and deeper relationships which are not evident on flat pictures. It is planned to have a complete series of 3-D lantern slides of all our domestic animals. These slides are used both before the area is dissected as a preview and later as a review.

A few years ago we were able to improve our embalming formula enabling us to preserve our dissected specimens indefinitely. Certain significant anatomical areas are dissected in detail. The blood vessels, nerves and lymphatics are painted and then sprayed with shellac or liquid plastic. We like to call these dissections our "dry specimens", which in my opinion, have several advantages over the moist museum specimens. Our museum specimens, which are now arranged according to systems, are frequently used by the staff and students.

Plastic-mounted Specimens

The Department of Veterinary Anatomy has recently mounted various anatomical specimens in transparent plastic. I personally believe that this is a virgin field which needs further expansion. We have modified to some extent the original procedure which Dr. Otto Kampmeier outlined for us while visiting his laboratory in Chicago. Brain specimens, as you know, are very fragile and the students frequently damage them during handling. Embedding nervous tissue in transparent plastic gives the student a permanent specimen which he can handle. If the blocks are scratched they can be buffed again. Of course, other tissues can be embedded in liquid plastic. Vinylite and latex corrosion specimens, imbedded in plastic, are useful means of visually demonstrating various areas and vascular beds.

Micro-projector

In histology, a B. & L. micro-projector has proven most helpful. By projecting slides taken directly from the student's slide box, we find that it enables him to orientate himself prior to going into the laboratory. Many routine questions can be answered in the lecture room by view-

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ing the slide together. This cuts down on the time frequently lost by both the student and instructor when different students ask the same questions over and over again in the laboratory.

**Sound Film**

Last, but far from least, the anatomy staff is keenly interested in the use and preparation of 16 mm. colored sound films. Three years ago, Dr. Herrick and I made two films on the “Functional Anatomy of the Reproductive Tract of the Cow.” We had two objectives in mind: (1) to make a film which would be useful for classroom teaching; (2) and to produce a useful film for extension work. We believe our goal was achieved, in part at least, for the film has since been sold throughout the world. We should be cognizant of the fact that production of 16 mm. colored sound film can prove to be expensive if optical sound and professional photographers are used. However, we now have a means of producing colored 16 mm. sound films much more reasonably. The new Bell & Howell magnetic sound projector enables one to soundstrip his own film, narrate it, erase it if mistakes are made and play it over again. In addition, one can soundstrip an old 16 mm. film at a cost of 2½ cents per foot, so the cost of production is now very nominal. The Bell & Howell magnetic sound projector can also be used for optical sound on any standard 16 mm. film. Dr. John Bowne and I have just recently completed two colored sound films, running time approximately 10 minutes each. These films *are entitled “Applied Anatomy as Related to Paralumbar Nerve Block in Cattle” and “Applied Anatomy as Related to Nerve Blocks for Anesthesia of the Horn and Eye of Cattle.”

It is the dream of the anatomy staff to be able to have a series of films illustrating various applied anatomical areas. We firmly believe that if a film is made for each of the systems, the freshman student should be able to better appreciate the area that he is dissecting and its relationship to the entire animal body. Thus, a film or two could be shown each week which would emphasize the area to be dissected that week, and summarize in a concise manner its relationship to the entire animal body. I am confident that the production of 15 to 20 films of this nature would be a big step toward reducing the frustration which is universally common to all freshmen students enrolled in the medical curriculum. We hope you will share our enthusiasm in the belief that the possibilities are unlimited with this new type of magnetic sound projection.

Reprints may be obtained by writing to:
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**Clinical Electrocardiograms of the Dog.** Pathological, metabolic, and organic changes which cause an alteration in the electrolyte levels in the serum will frequently result in the presentation of an abnormal electrocardiogram. The ions usually affected by these changes are potassium, sodium, and the chloride ions. These ions have as one of their functions the regulation of the heart beat and heart rate.

The heart is bathed in a solution of these ions and they play a part in the transmission of the waves of depolarization and repolarization to the electrodes of the electrocardiogram. Any change in their concentration may manifest itself by a corresponding change being recorded on the tracing.

In nephritis or nephrosis, and especially in uremia, the serum electrolyte balance is altered due to abnormal filtration by the glomeruli or impaired functions of the tubules. The electrocardiogram changes seen are usually produced by a potassemia. Potassium retention or a rise occurs along with an upset in the sodium and/or chloride levels in the serum during the course of nephritis, nephrosis, or uremia.

*These films were shown at the AVMA convention held at Seattle, Wash., August 23-26, 1954.*