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ATLAS OF GOAT ANATOMY. PART IV. INTERNAL ORGANS

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Edgewood Arsenal
Aberdeen Proving Ground, Maryland

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20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

The Angora goat (*Capra hircus*) has been the main experimental animal used by the Biophysics Division of the Biomedical Laboratory for many years. Knowledge of goat anatomy is important during both the planning and experimental stages of projects. Because no readily usable information on goat anatomy is available, a series of reports on the subject is being prepared. The first in the series described the skeletal anatomy; the second described the cross-section anatomy; the third described the muscles on superficial and deep dissection of the head, neck, and pectoral and pelvic limbs. This report concerns the internal organs and describes the structures of each organ.

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PREFACE

The work described in this report was authorized under Task 1T061101A91A15, In-House Laboratory Independent Research; Atlas of the Goat. This work was started in July 1973 and completed in July 1974.

In conducting the research described in this report, the investigator adhered to the "Guide for the Care and Use of Laboratory Animals," as promulgated by the Committee on the Revision of the Guide for Laboratory Animal Facilities and Care of the Institute of Laboratory Animal Resources–National Research Council.

Acknowledgments

The author wishes to acknowledge the technical assistance of John J. Holter, Joseph B. Scott, and Garnet E. Affleck, Jr., Biophysics Division, who prepared the photographs.

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ATLAS OF GOAT ANATOMY

PART IV: INTERNAL ORGANS

I. INTRODUCTION.

The Angora goat (*Capra hircus*) has been the main experimental animal used by the Biophysics Division of the Biomedical Laboratory for many years. Knowledge of goat anatomy is important during both the planning and experimental stages of projects. Because no readily usable information on goat anatomy is available, a series of reports on the subject is being prepared. The first in the series[1] described the skeletal anatomy; the second[2] described the cross-sectional anatomy; and the third[3] described the muscles on superficial and deep dissection of the head, neck, and pectoral and pelvic limbs.

This report concerns the internal organs and describes the structures of each organ.

II. MATERIALS AND METHODS.

Eight castrated Angora goats were used. Each goat was euthanized with phenobarbital sodium. The goats were of average size, weighing 40 to 50 kg. Deep dissection was done on four goats showing the right and left lateral side with the internal organs intact (figures 1 through 4). Another goat was dissected to show the ventral view of the abdominal viscera (figure 5) and the ventral view of the lungs (figures 6 and 7). Three goats were dissected to obtain the internal organs. The organs were either drawn or photographed and labeled accordingly. The drawings are placed with some of the photographs with a centimeter scale showing the exact size of the organ.

A total of 14 drawings and 28 photographs was made while the dissection of the organs was taking place. The organs dissected were the brain, tongue, lungs, heart, liver, kidneys, adrenal, spleen, pancreas, and the stomach (figures 1 through 31).

The drawing of the digestive system in the domestic goat shows the passageway through the system of the four stomachs (abomasum, reticulum, omasum, and rumen) (figure 29).

The anatomy books of Sisson and Grossman[4] and Mav[5] and the excellent book by Miller et al.[6] were used as references during the preparation of this atlas.

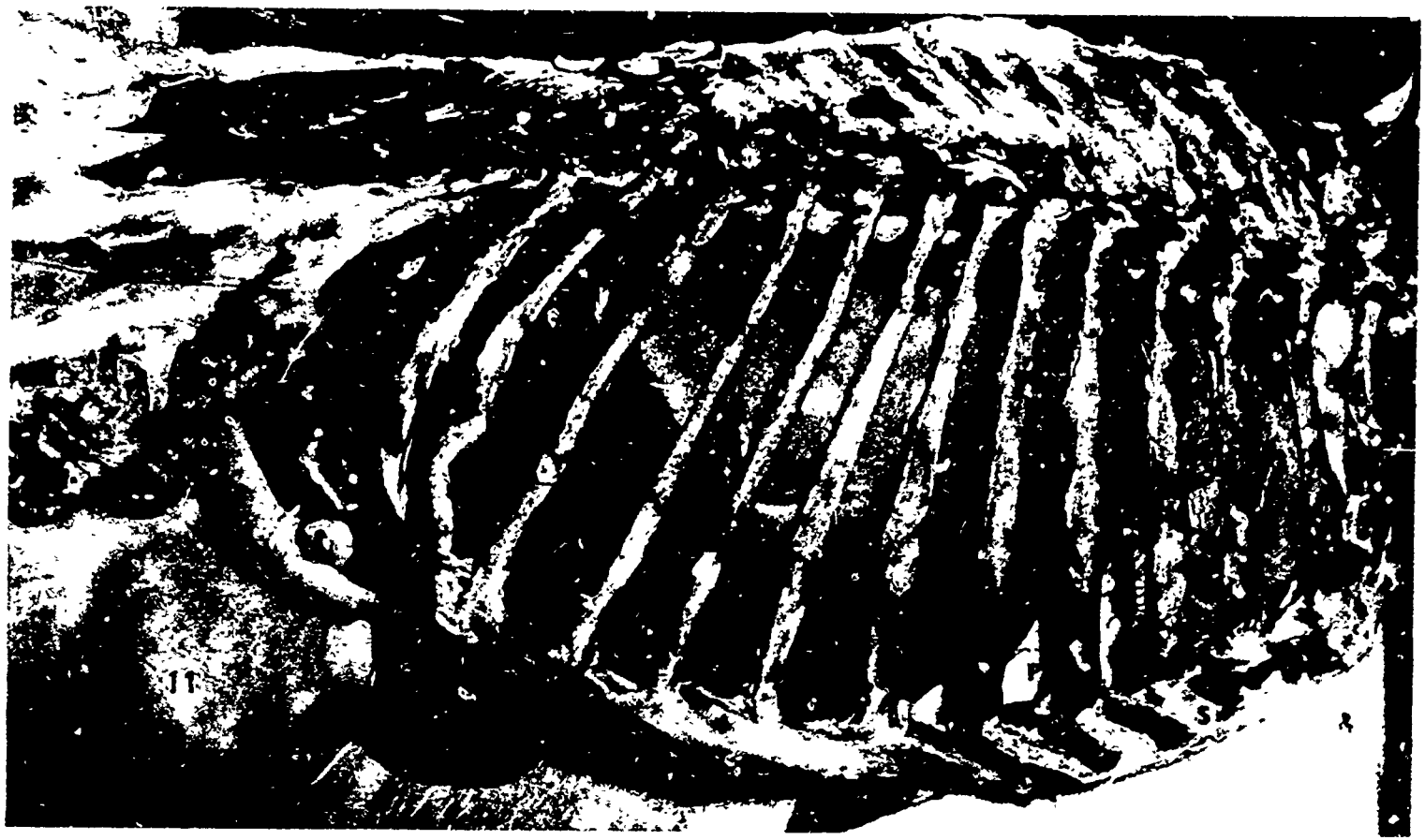


Figure 1. Deep Dissection of Right Side of Goat with Diaphragm Removed (Ribs Retained for Landmarks)

1, First rib; 2, apical lobe of right lung; 3, cardiac lobe of right lung; 4, diaphragmatic lobe of right lung; 5, reticulum; 6, ventral lobe of liver; 7, dorsal lobe of liver; 8, right kidney; 9, gallbladder; 10, omasum; 11, rumen; 12, abomasum; D, diaphragm; L, right lung; P, pericardium; S, sternum; Si, small intestine; X, xiphoid cartilage.

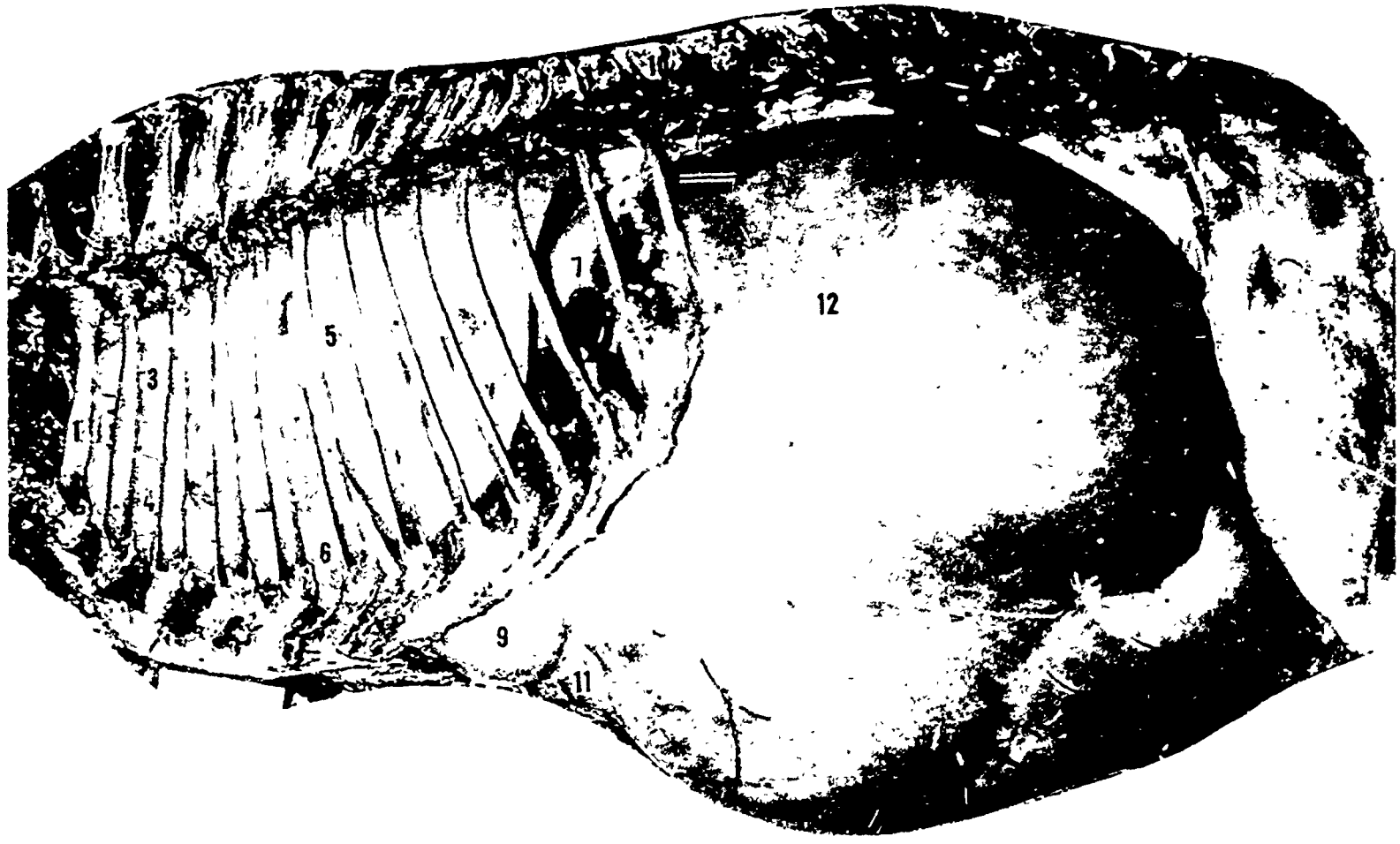


Figure 2. Deep Dissection of Left Side of Goat with Diaphragm *in Situ*

1, First rib; 2, first thoracic vertebra; 3, apical lobe of left lung; 4, apical lobe of right lung; 5, diaphragmatic lobe of left lung; 6, cardiac lobe of left lung; 7, diaphragm; 8, portion of spleen; 9, reticulum; 10, first lumbar vertebra; 11, omasum; 12, dorsal sac of rumen.

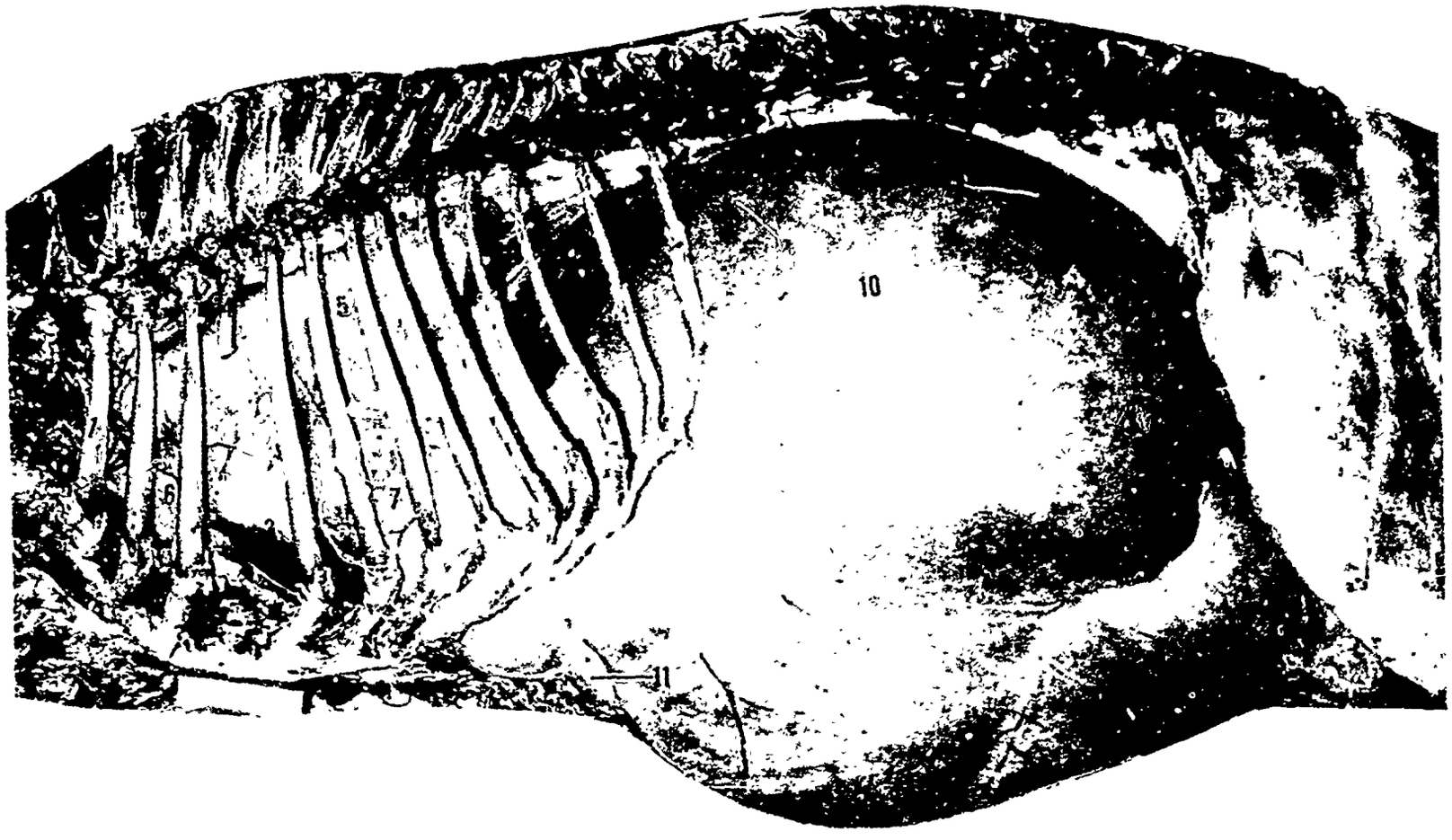


Figure 3. Deep Dissection of Left Side of Goat with Diaphragm and Fourth Rib Removed

1, First rib; 2, first thoracic vertebra; 3, heart; 4, fourth rib (cut); 5, left lung; 6, apical lobe of right lung; 7, reticulum; 8, spleen; 9, first lumbar vertebra; 10, dorsal sac of rumen; 11, omasum.

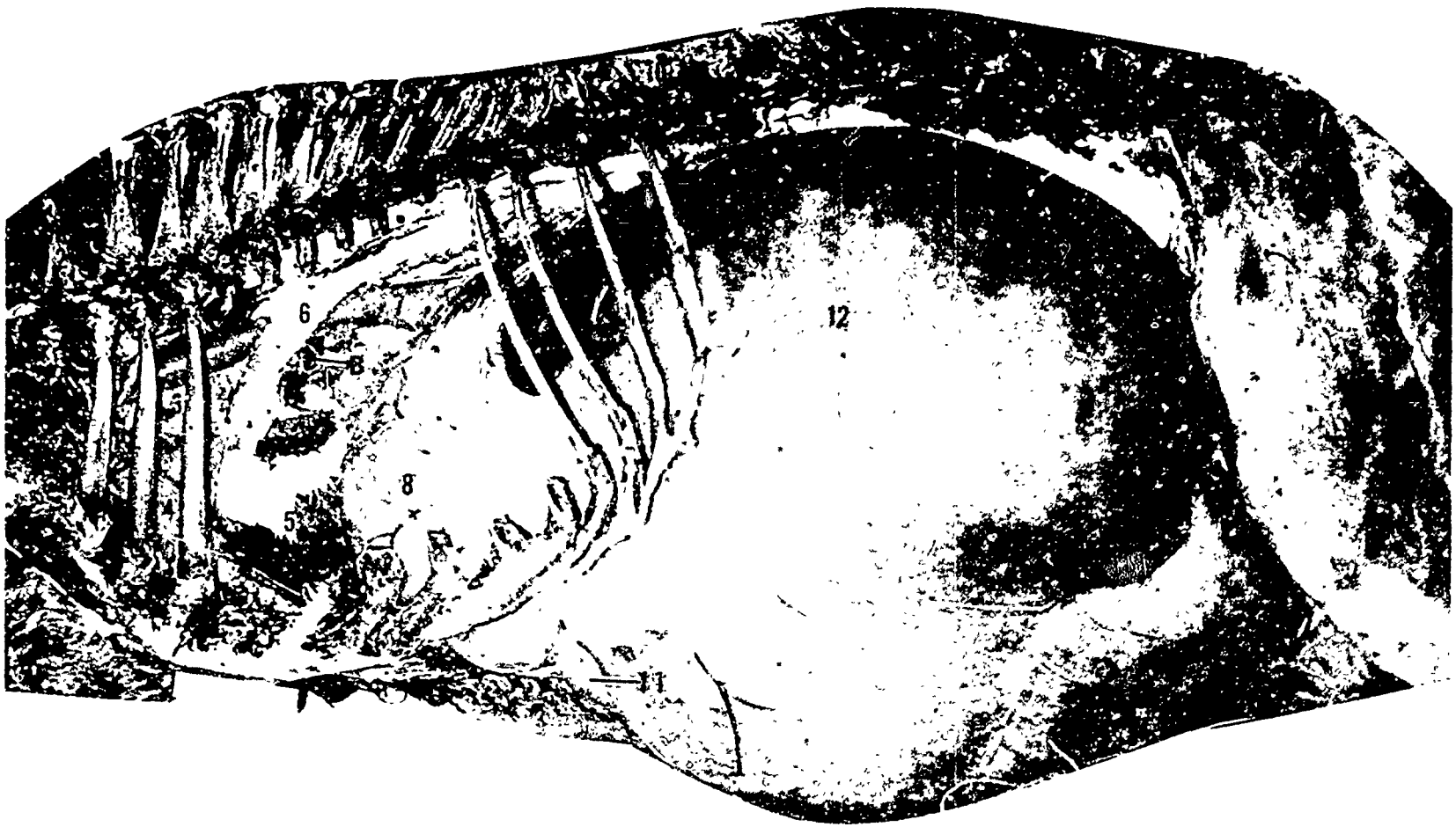


Figure 4. Deep Dissection of Left Side of Goat with Left Lung and Left Diaphragm Removed (Fourth Through Ninth Ribs Removed)

1, First rib; 2, first thoracic vertebra; 3, thymus; 4, apical lobe of right lung; 5, heart; 6, aorta; 7, esophagus; 8, reticulum; 9, spleen; 10, first lumbar vertebra; 11, omasum; 12, dorsal sac of rumen; B, bronchus.

Figure 5. Ventral View of Abdominal Viscera of Goat with Omentum Removed

1, Reticulum; 2, abomasum; 3, rumen; 4, omasum; 5, 7, and 8, colon; 6, small intestine; C, caecum; D, diaphragm; L, liver; S, sternum; V, ventral sac of rumen.

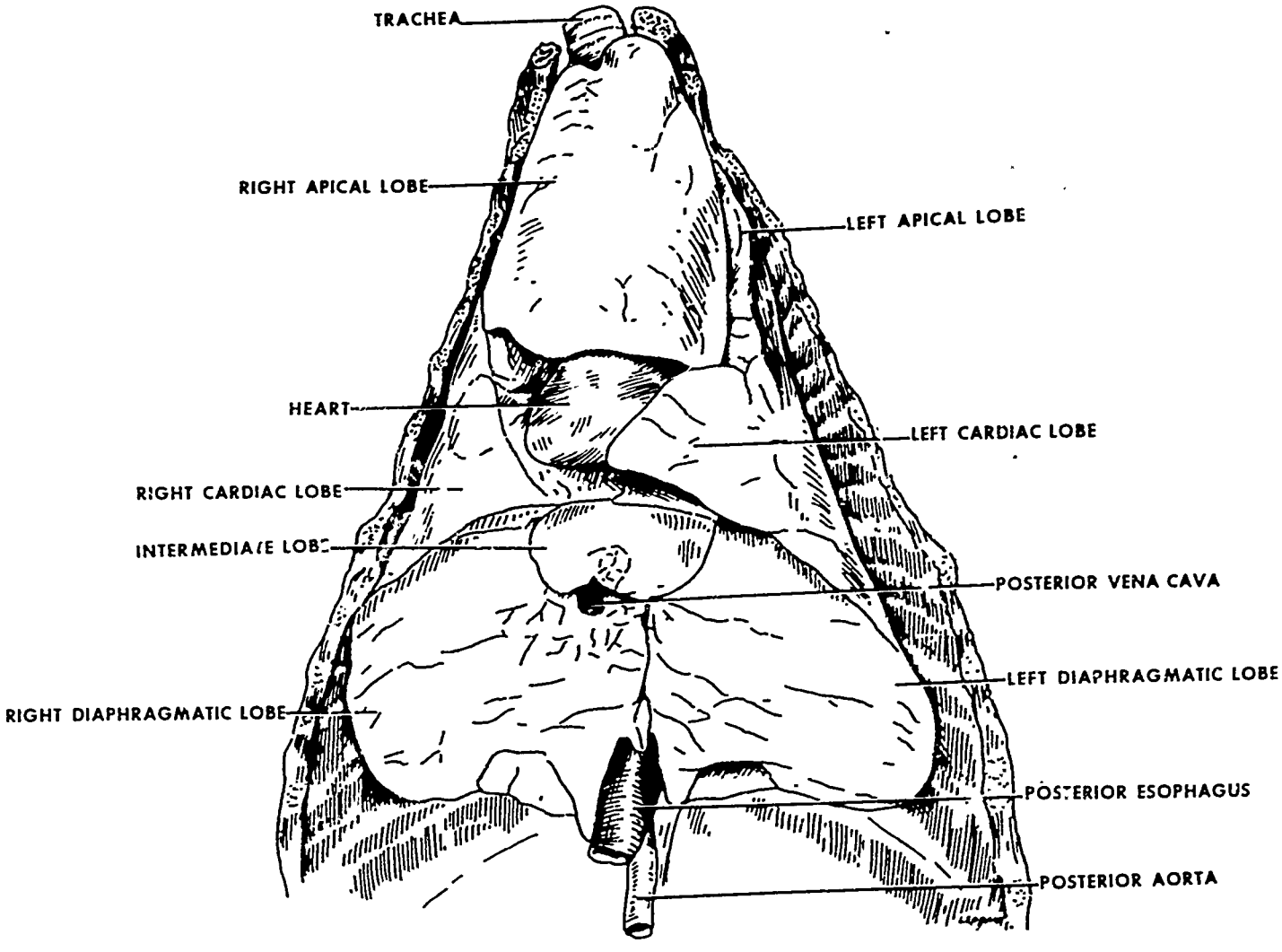


Figure 6. Ventral View of Lungs of Goat with Sternum Removed

Figure 7. Ventral View of Lungs of Goat with Sternum Removed

1, Trachea; 2, right apical lobe; 3, heart; 4, right cardiac lobe; 5, left cardiac lobe; 6, left diaphragmatic lobe; 7, right diaphragmatic lobe; 8, posterior esophagus; 9, aorta.

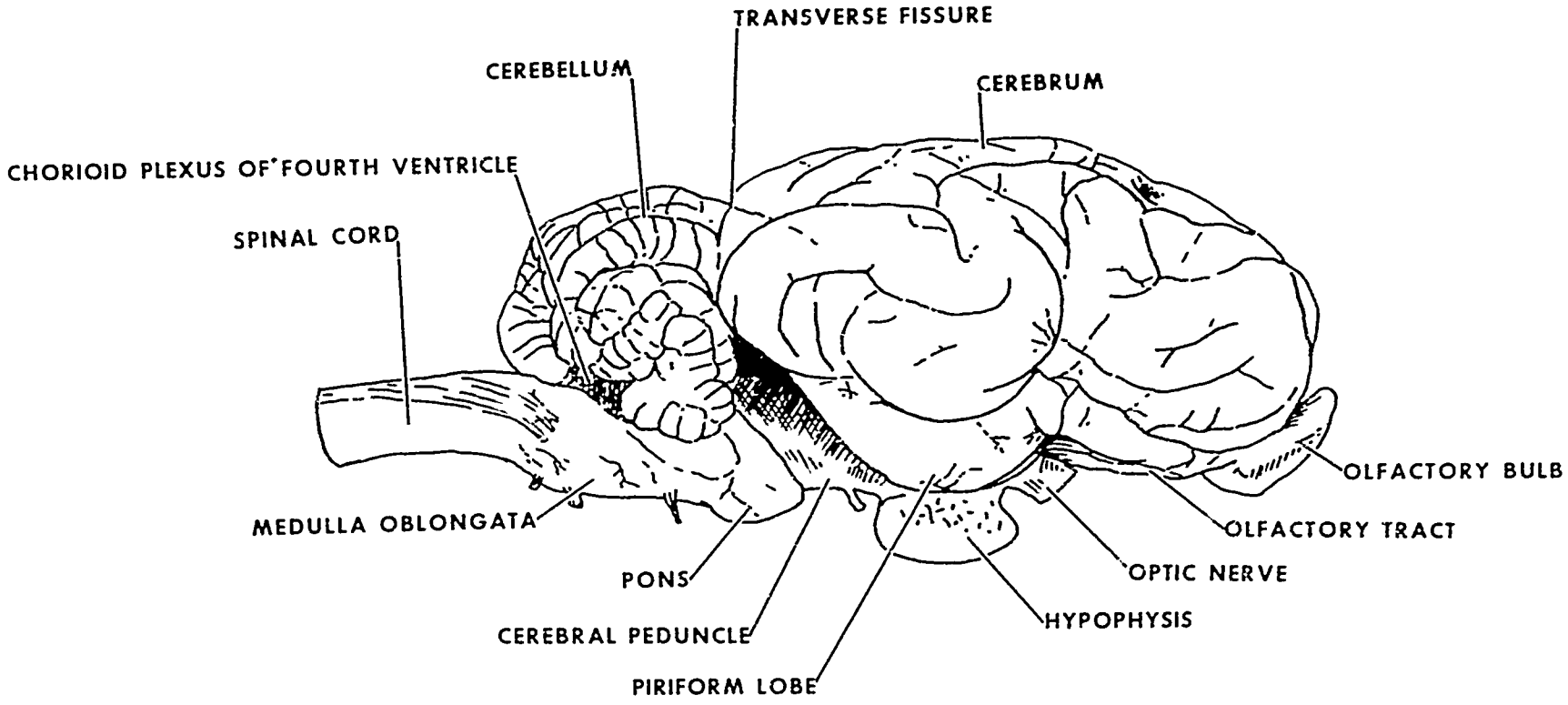


Figure 8. Right View of Goat Brain

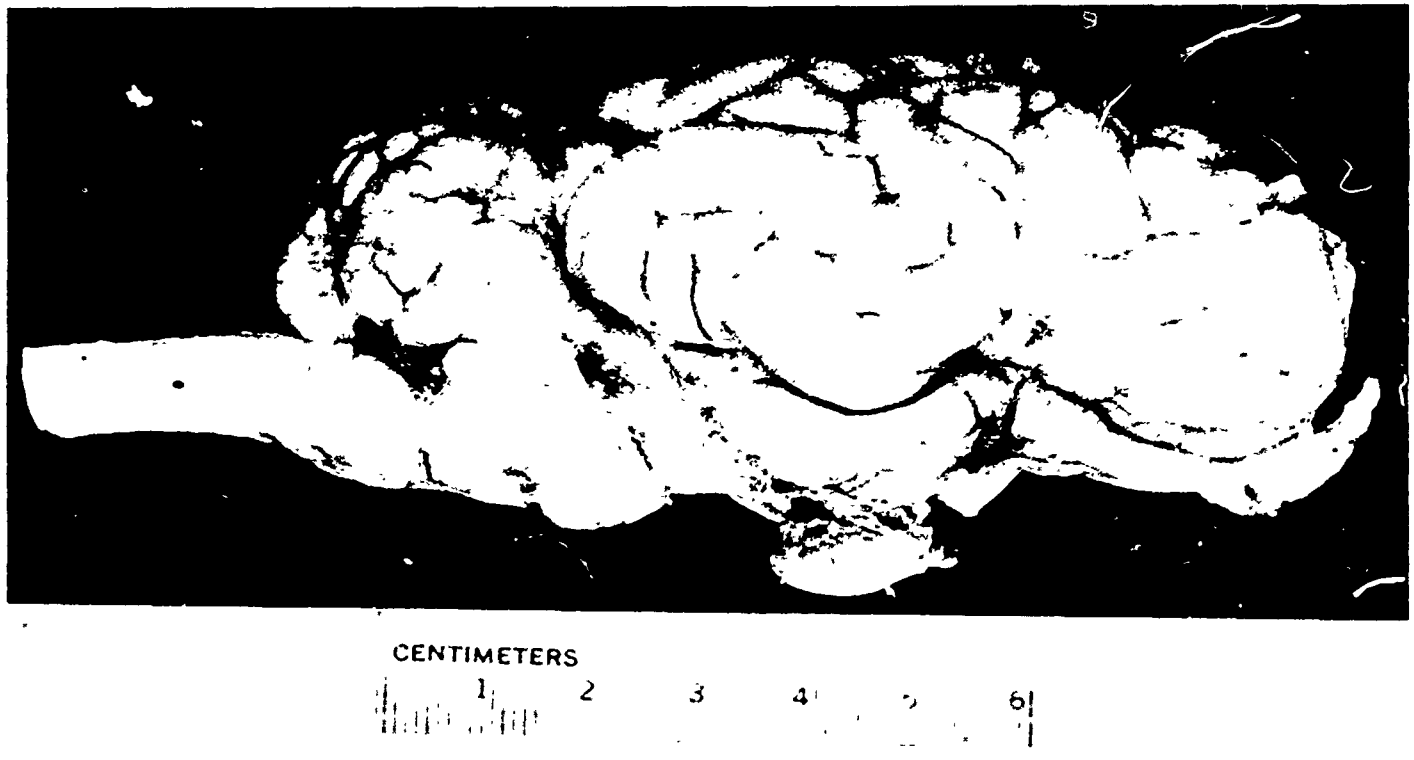


Figure 9. Right View of Goat Brain

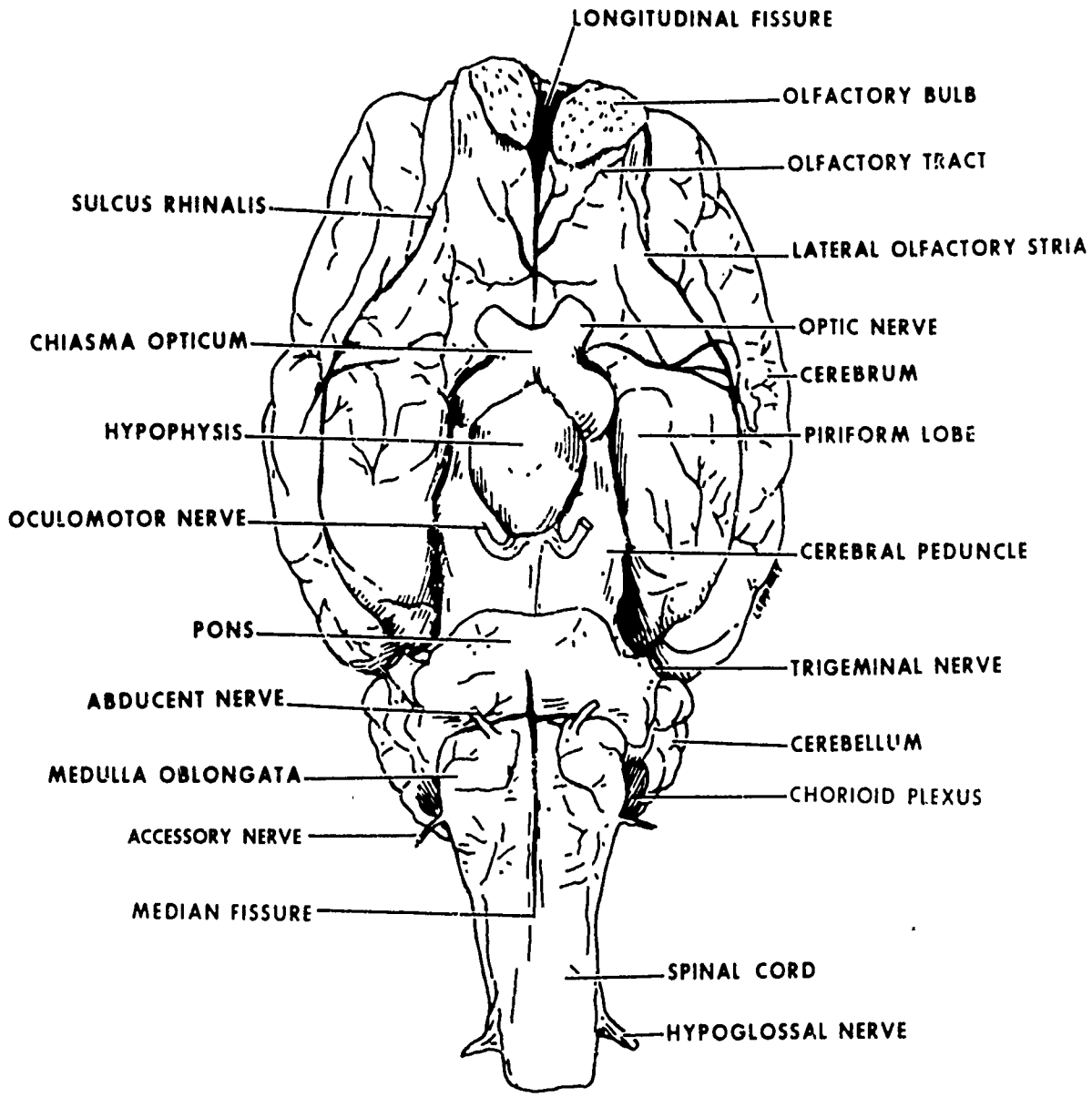


Figure 10. Base of Goat Brain

Figure 11. Base of Goat Brain

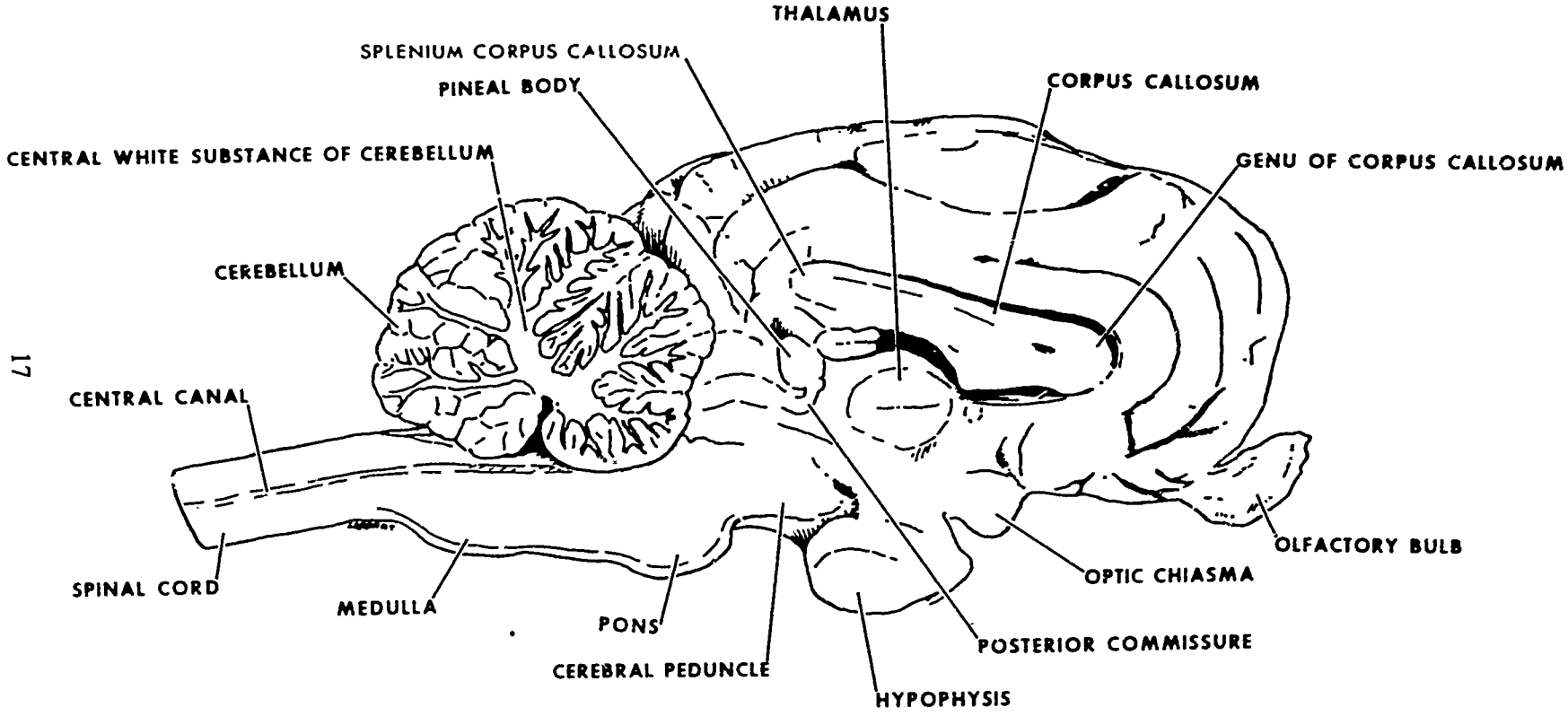


Figure 12. Median Section of Goat Brain

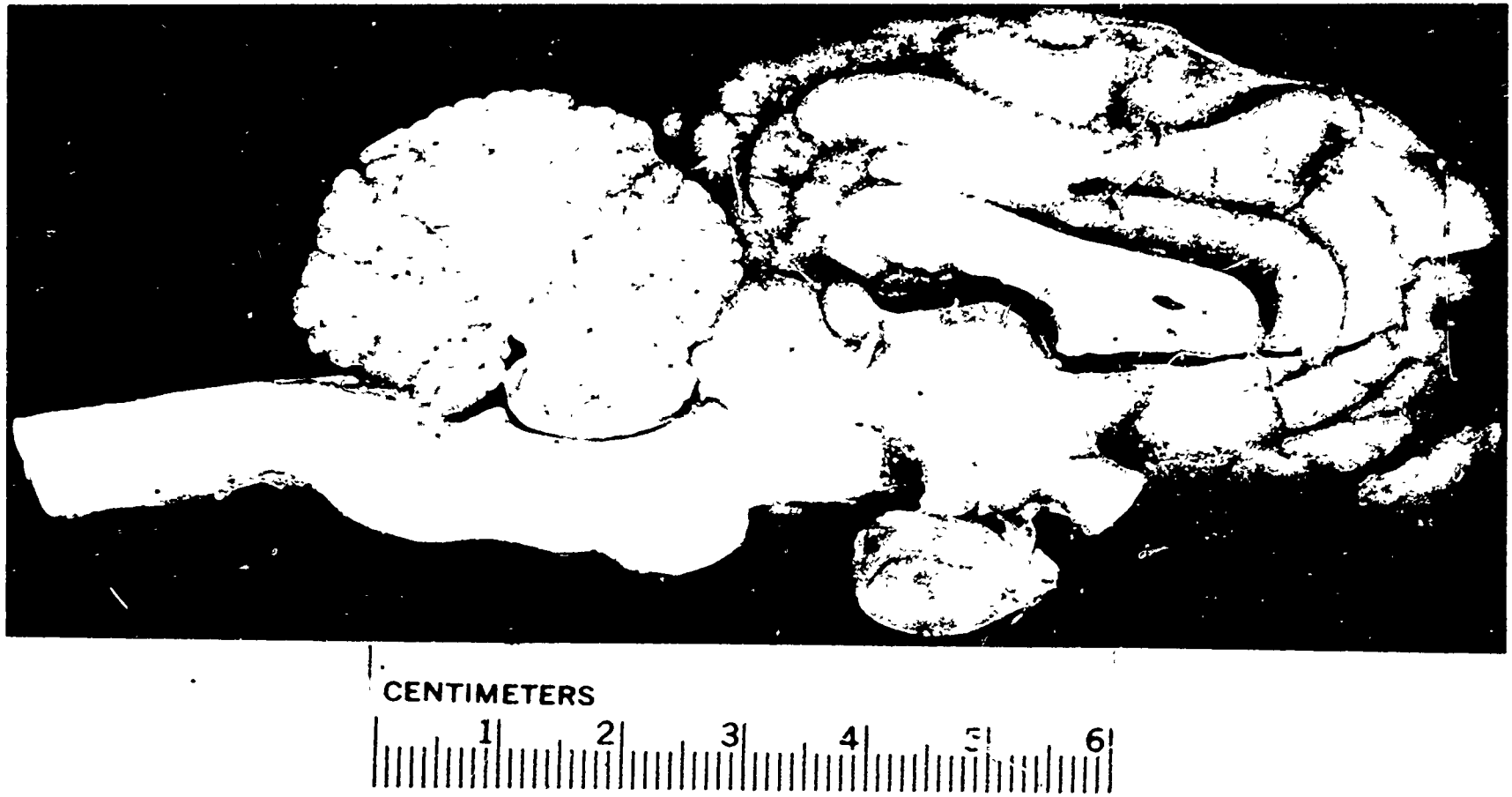


Figure 13. Median Section of Goat Brain

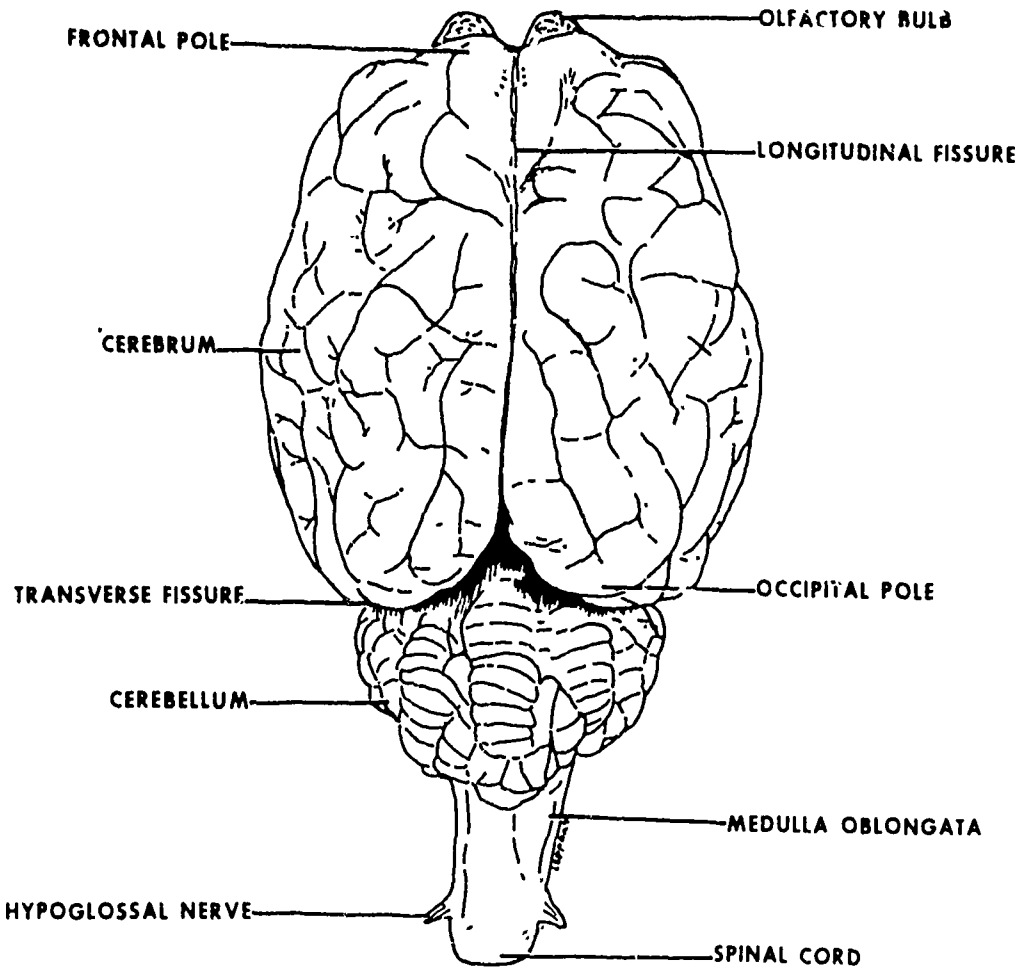


Figure 14. Dorsal View of Goat Brain

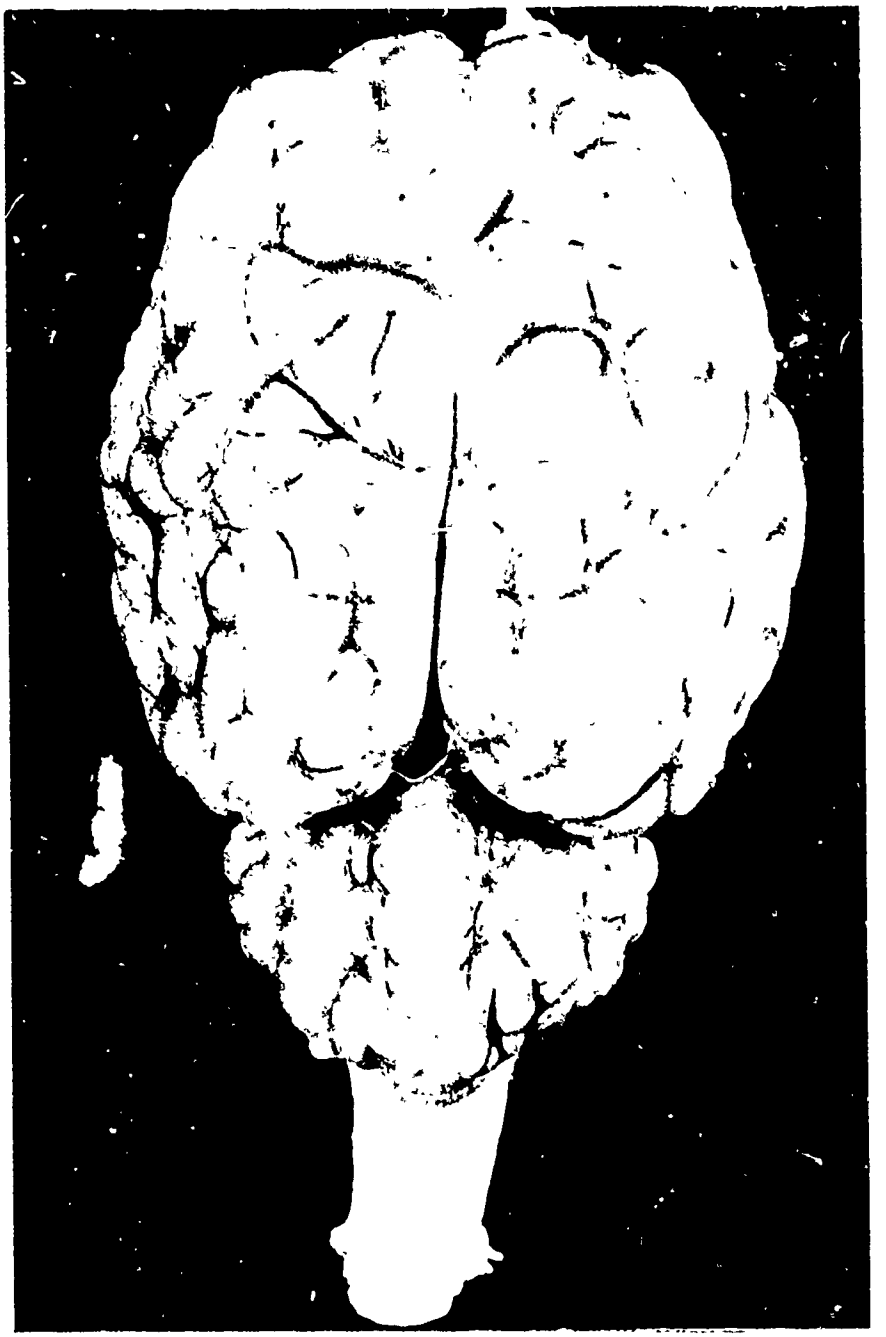


Figure 15. Dorsal View of Goat Brain

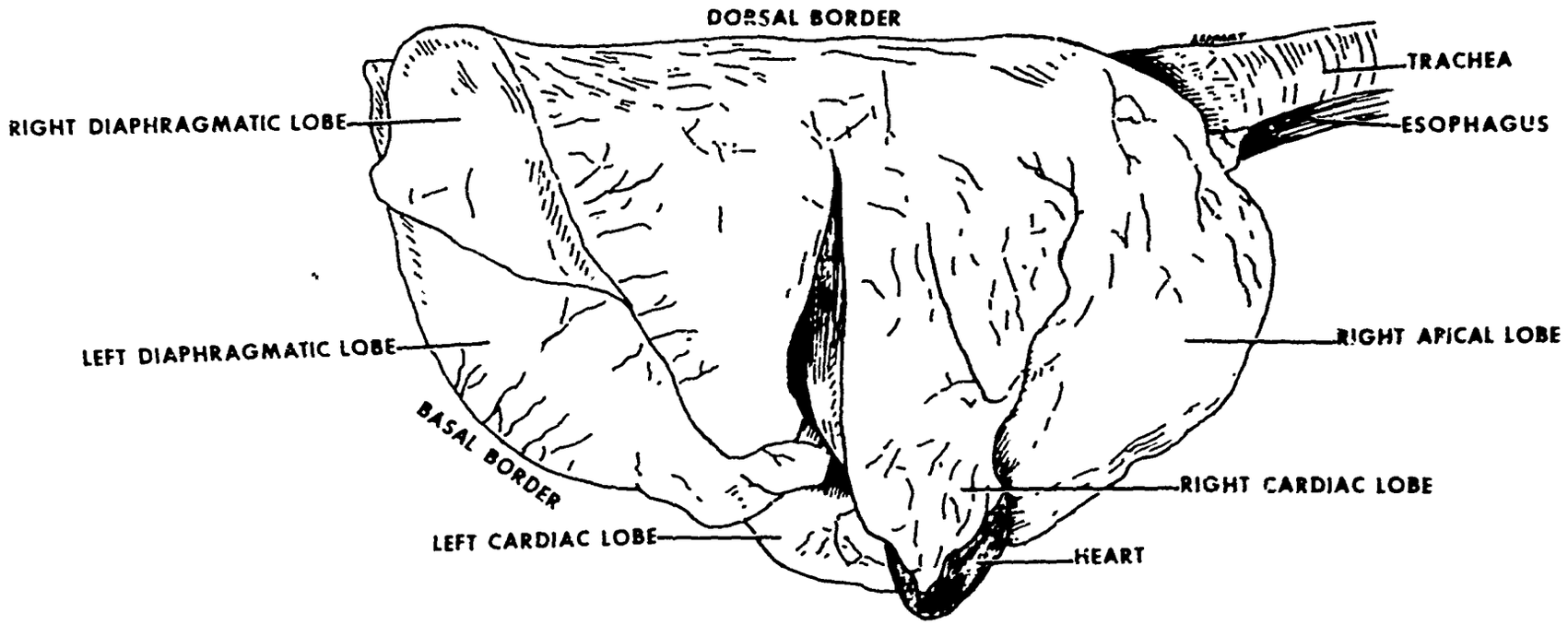


Figure 16. Costal Surface of Right Lung of Goat

Figure 17. Costal Surface of Right Lung of Goat

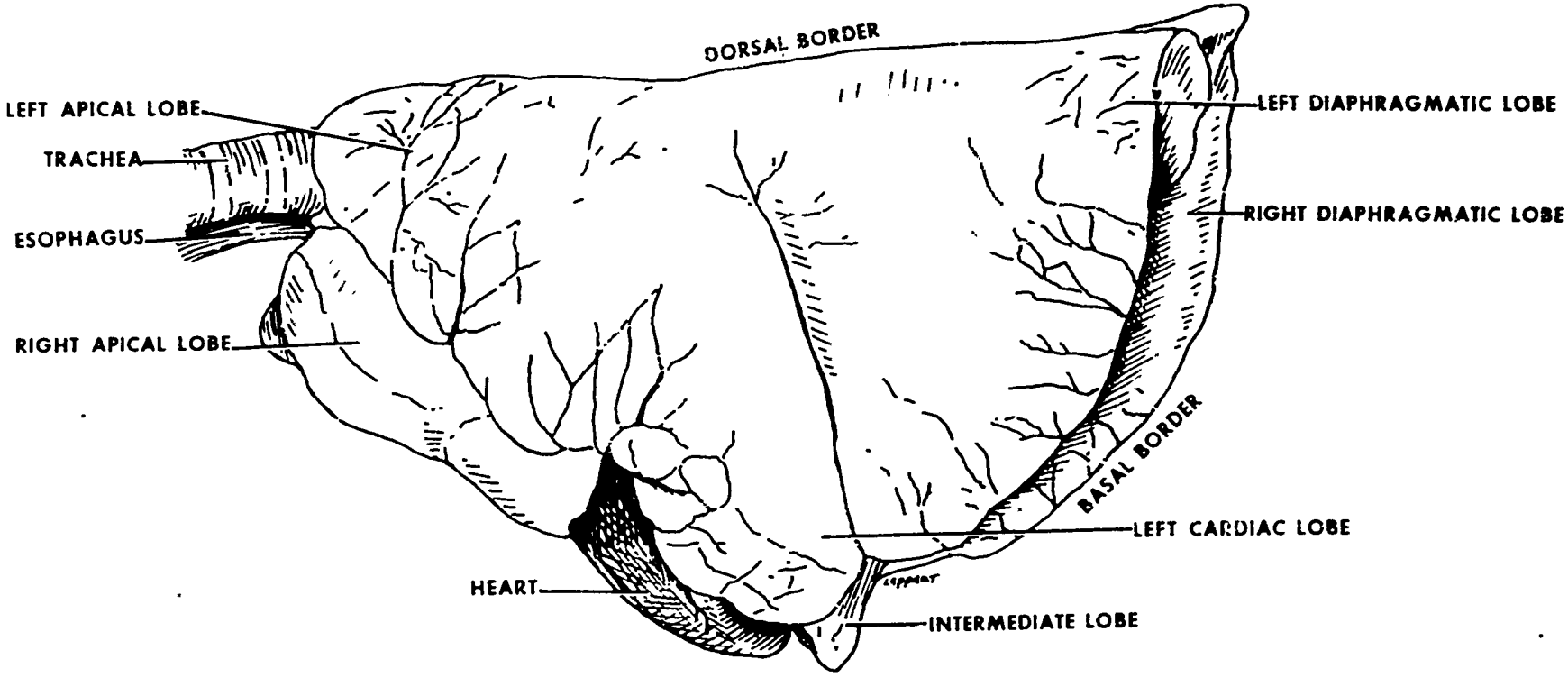


Figure 18. Costal Surface of Left Lung of Goat

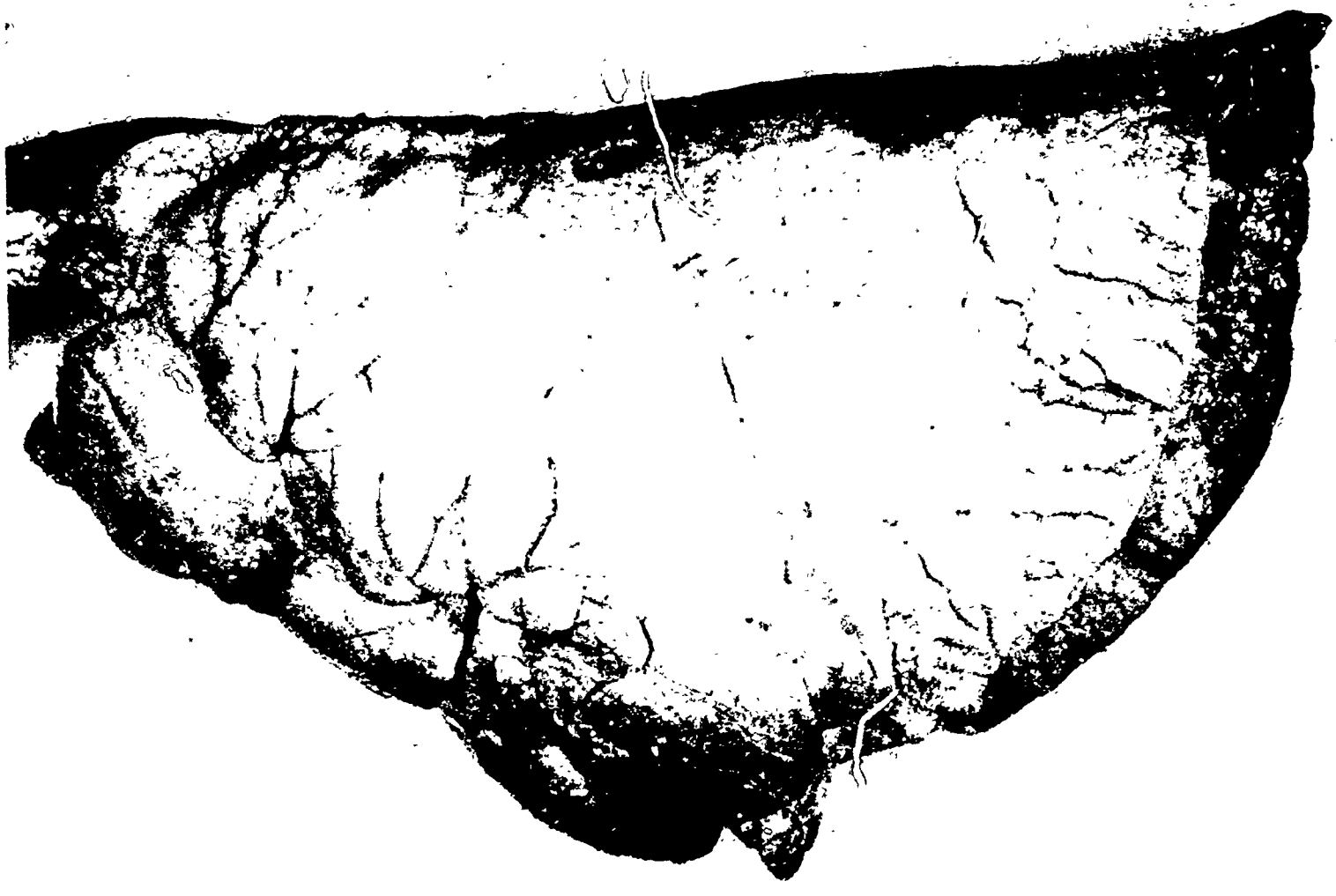


Figure 19. Costal Surface of Left Lung of Goat

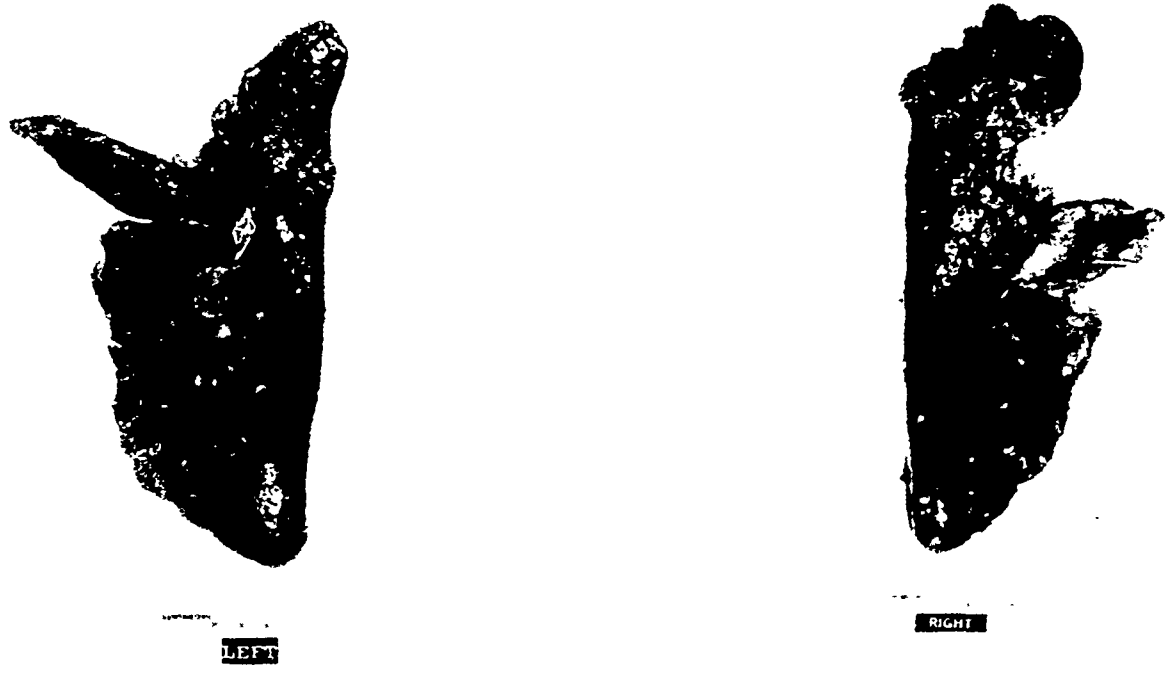


Figure 20. Left and Right View of Goat Lung

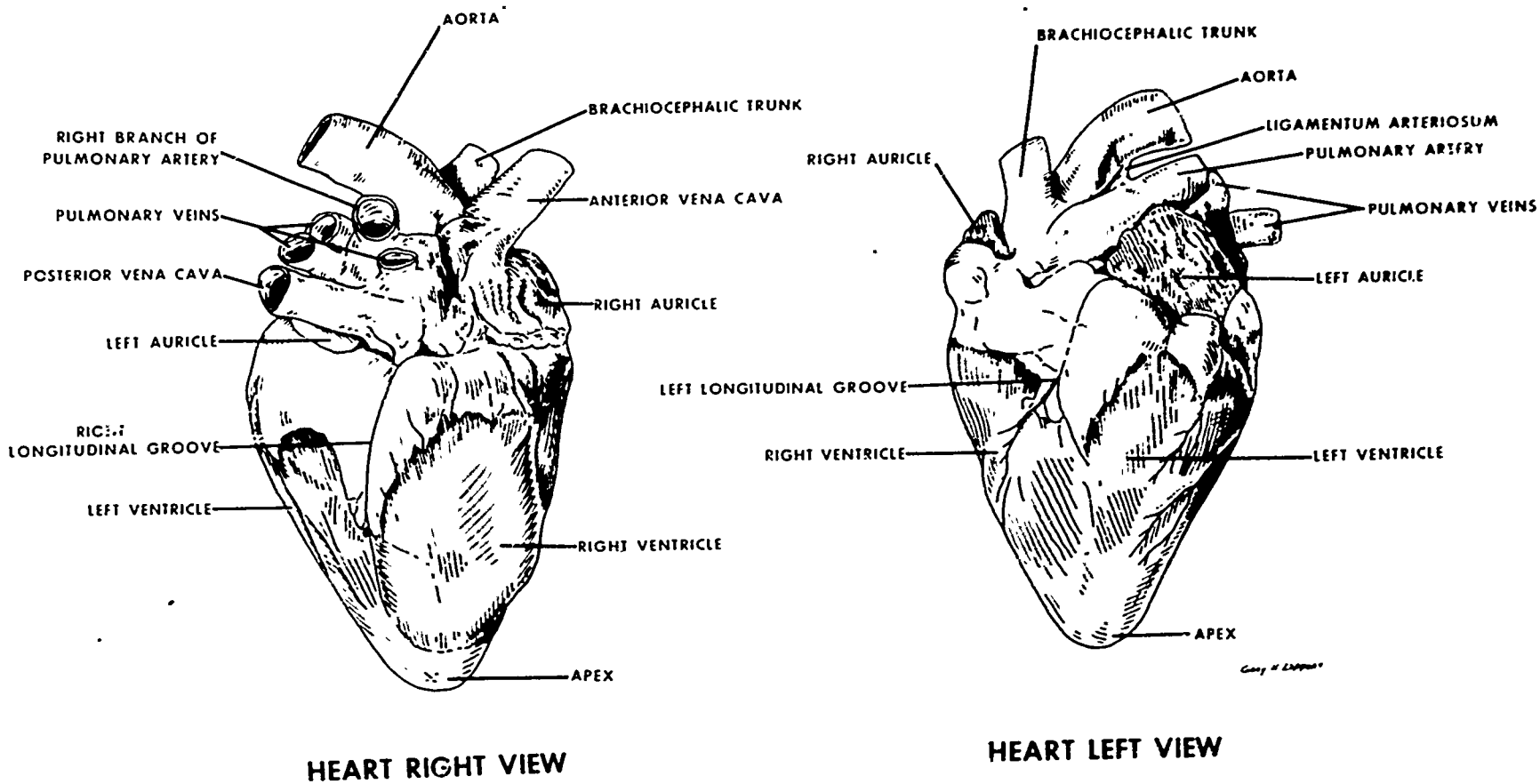


Figure 21. Right and Left View of Goat Heart

Figure 22. Right and Left View of Goat Heart

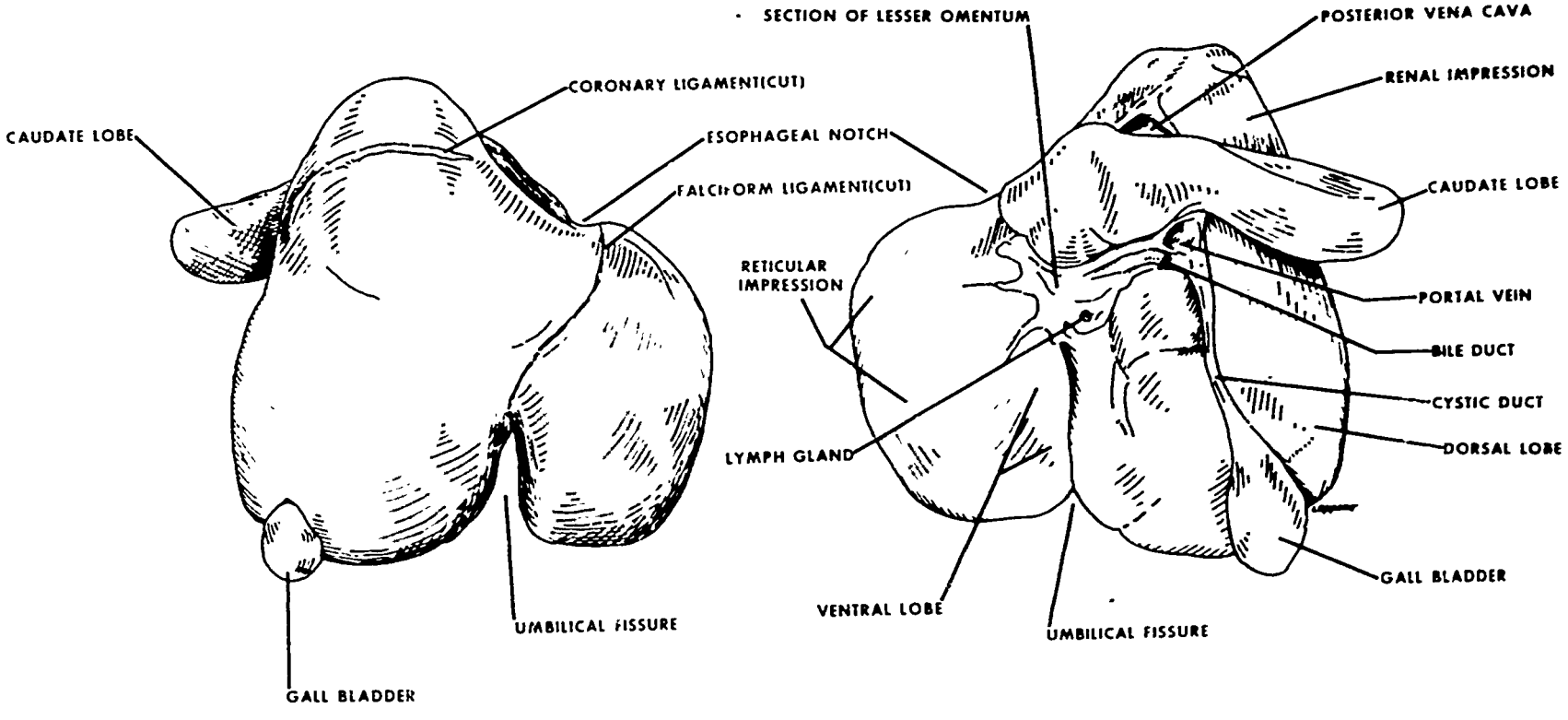


Figure 23. Parietal and Visceral View of Goat Liver

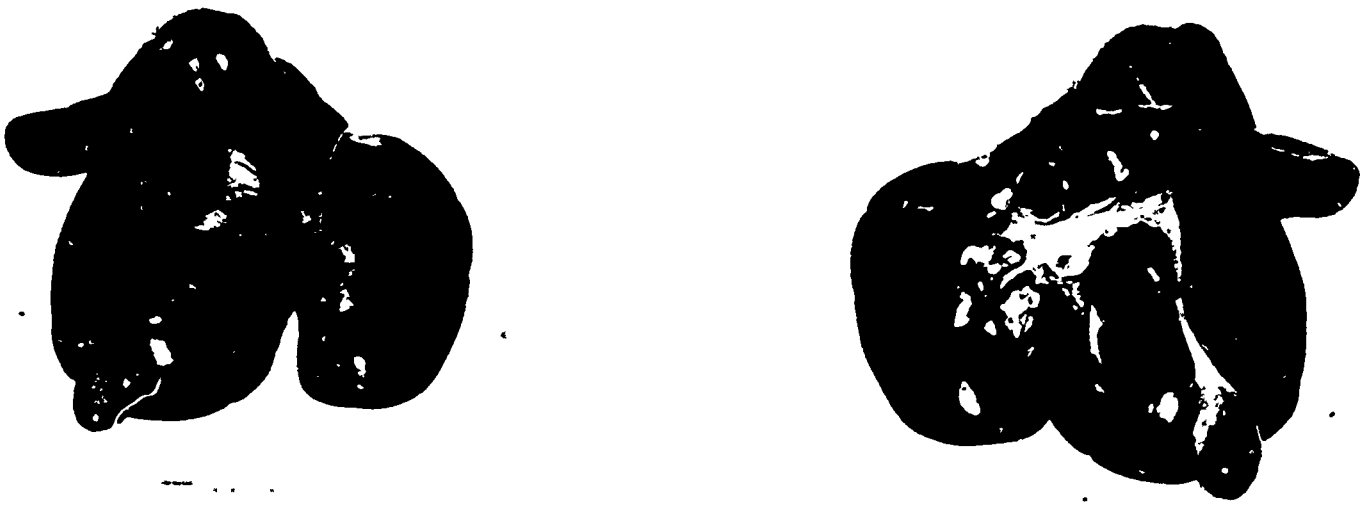


Figure 24. Parietal and Visceral View of Goat Liver

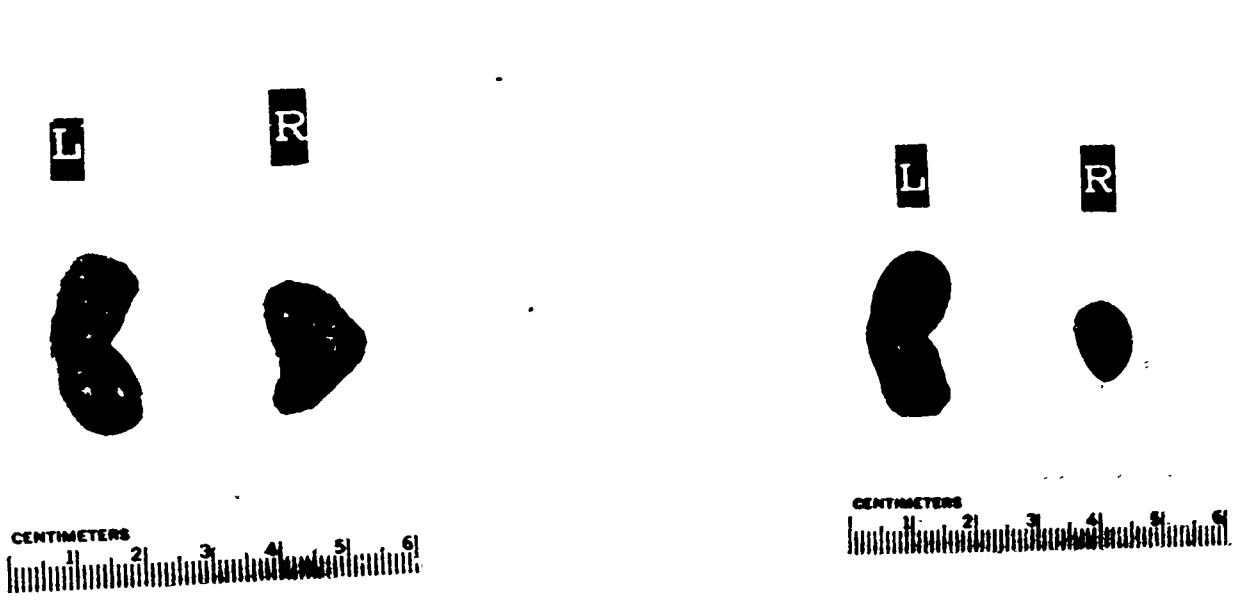


Figure 25. Left and Right View (Cut Surface) of Goat Adrenal

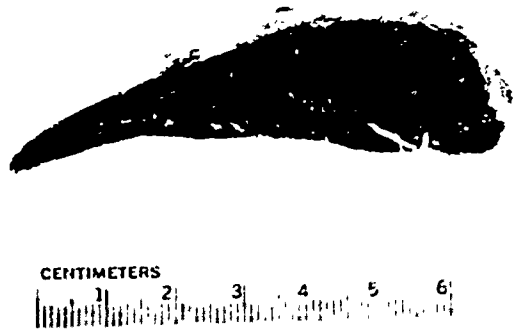


Figure 26. Lateral and Cut Surface of Goat Spleen

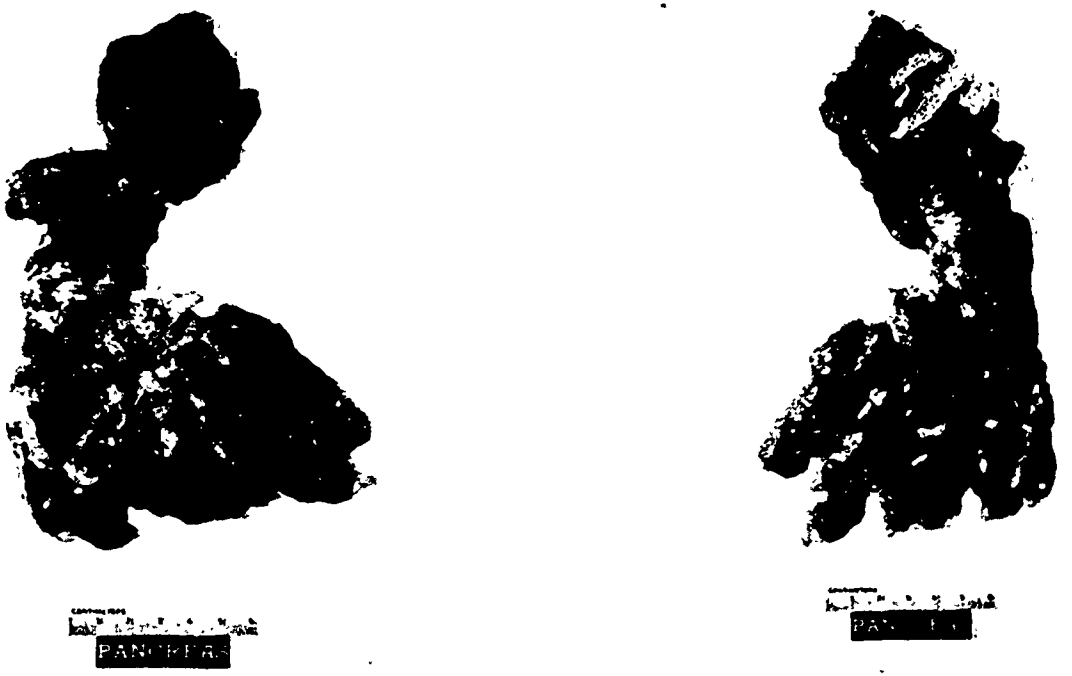


Figure 27. Visceral and Parietal View of Goat Pancreas

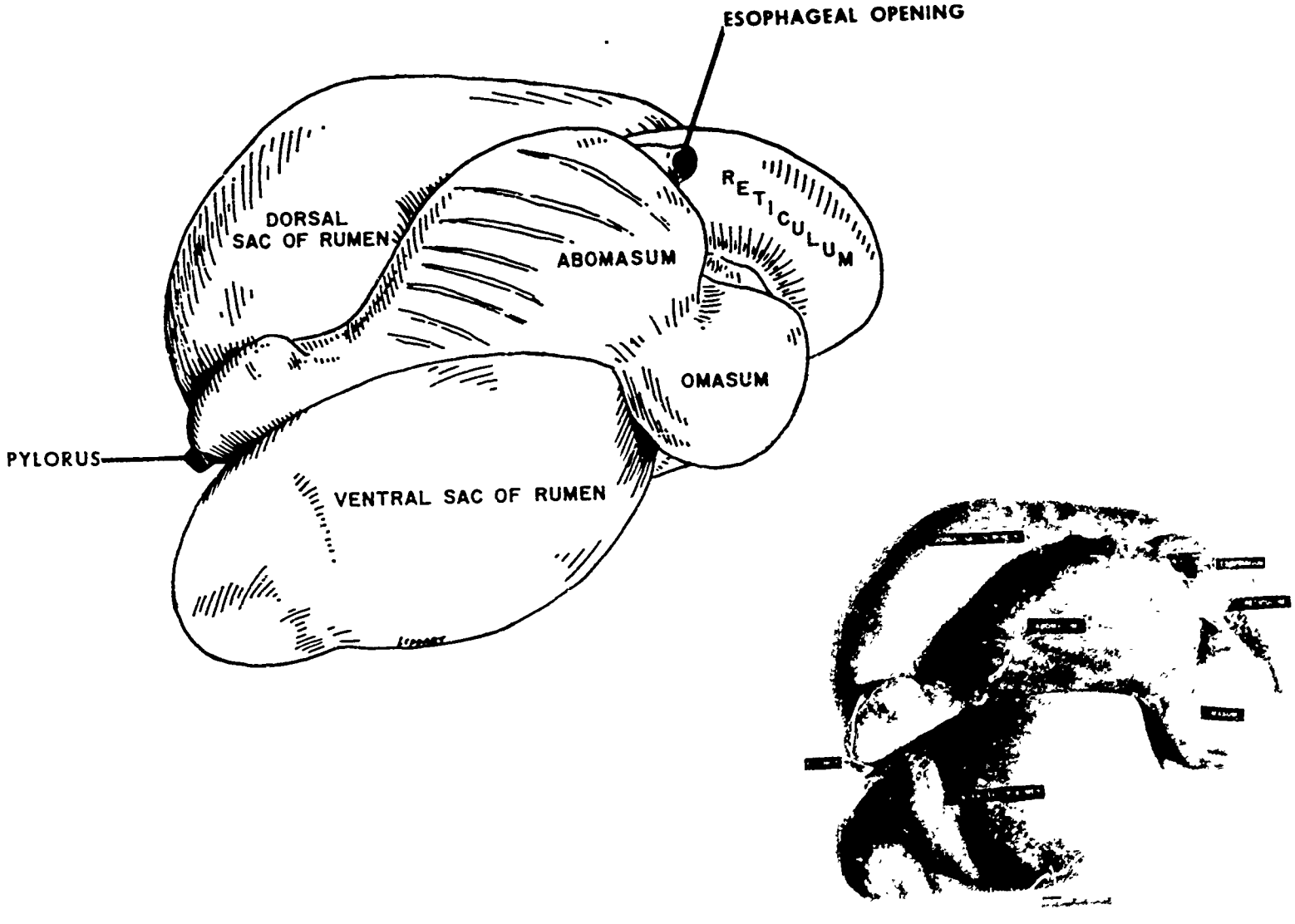
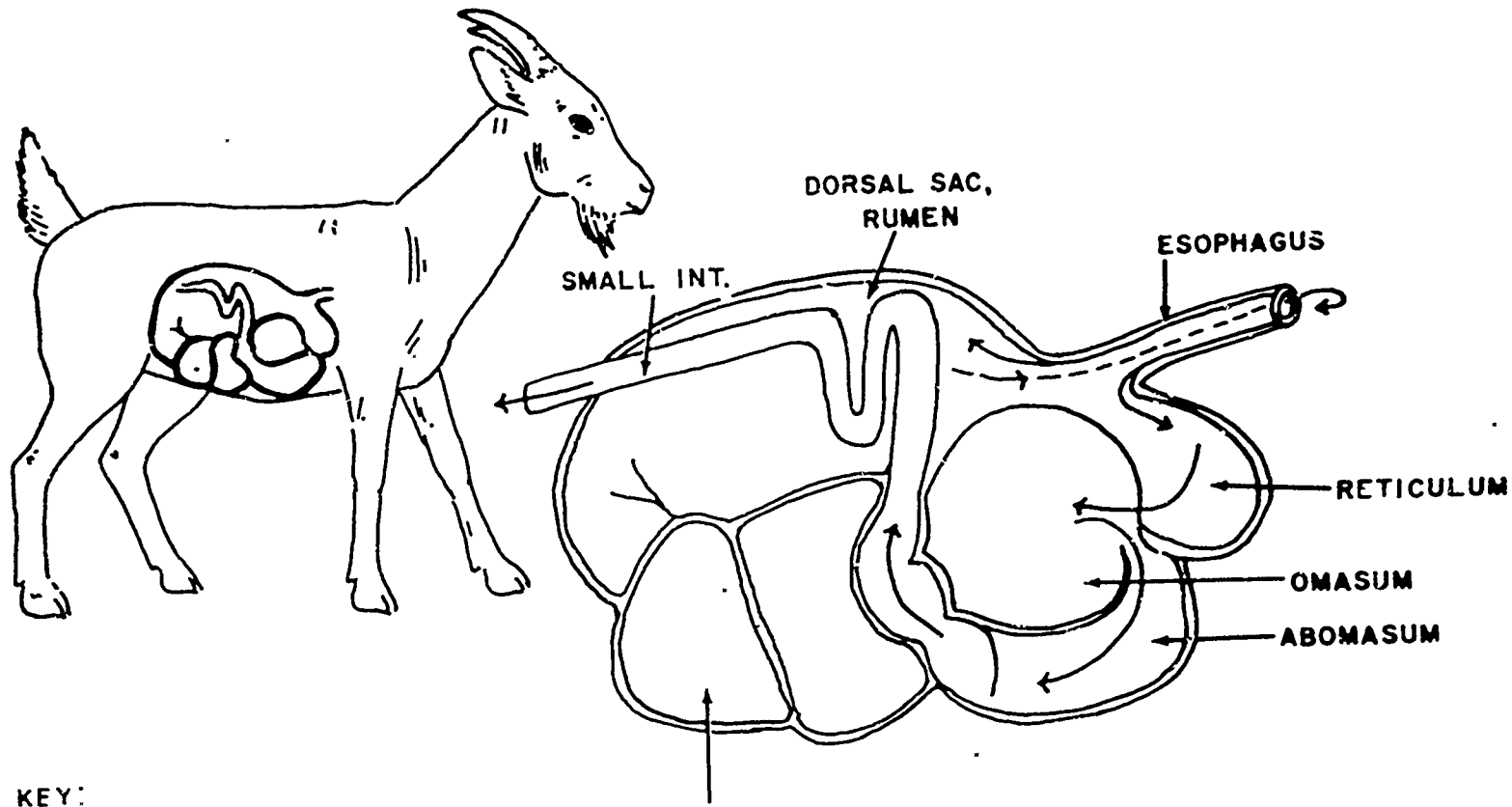


Figure 28. Right Lateral View of Goat Stomach



KEY:

ABOMASUM- CONVENTIONAL DIGESTION TAKES PLACE

RETICULUM AND RUMEN- ACT AS FERMENTING VATS

OMASUM- REMOVES EXCESS WATER

Figure 29. Digestive System in the Domestic Goat

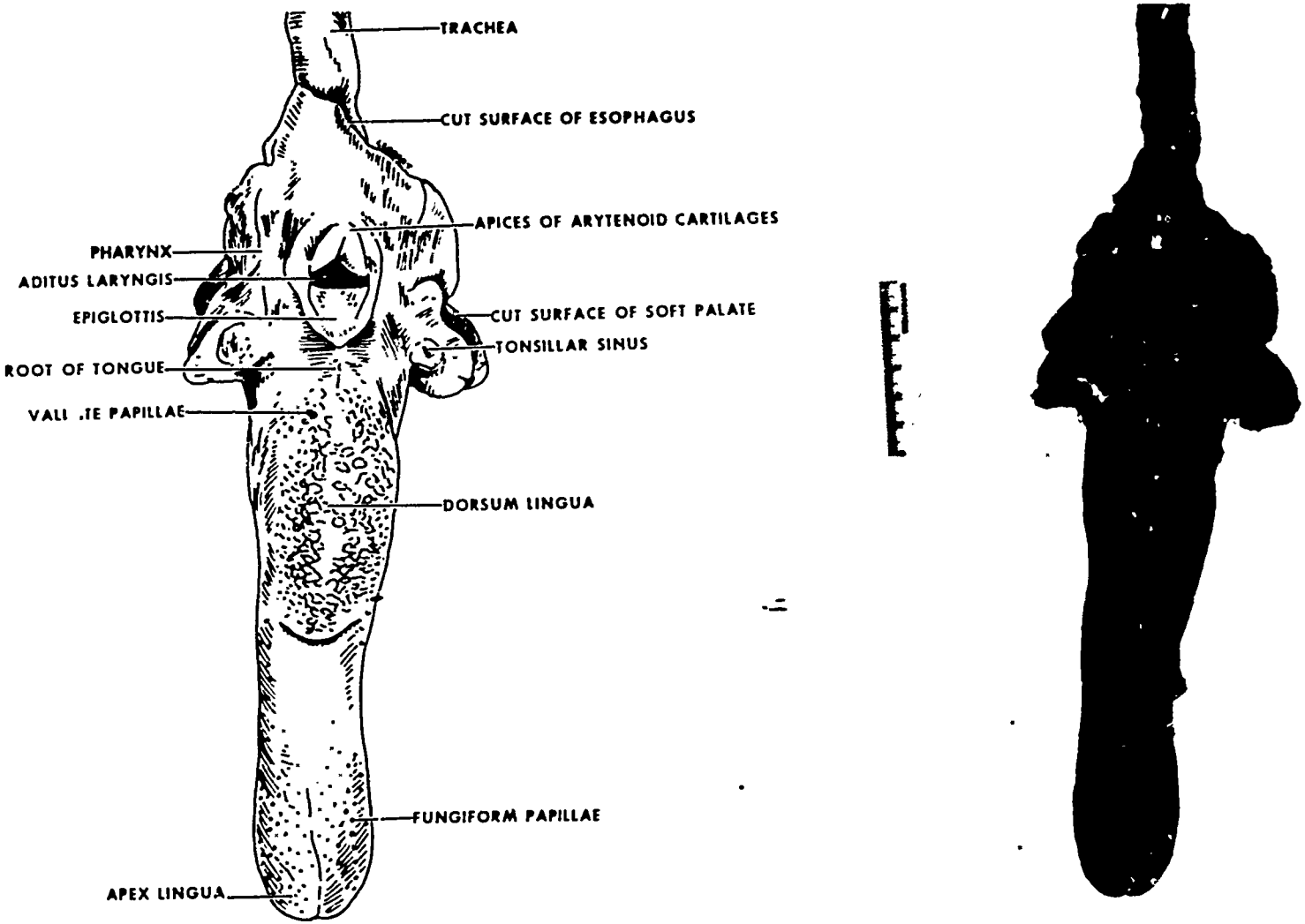
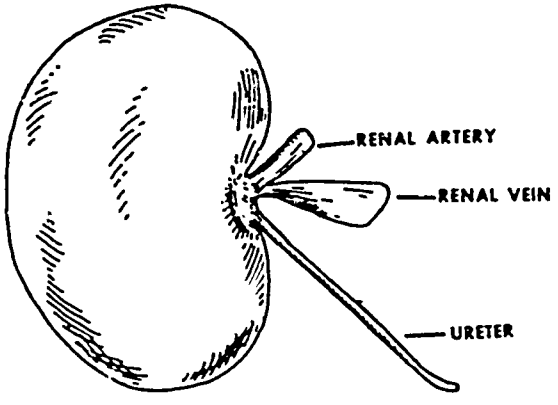
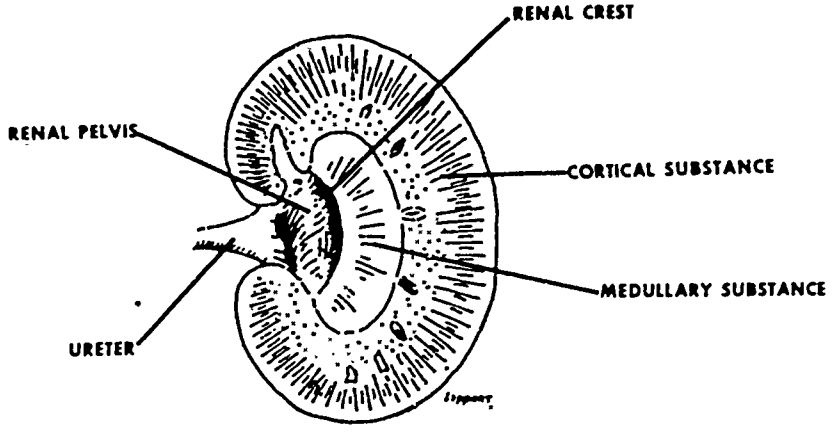


Figure 30. Dorsal View of Goat Tongue, Pharynx, Larynx, Etc.



VENTRAL VIEW



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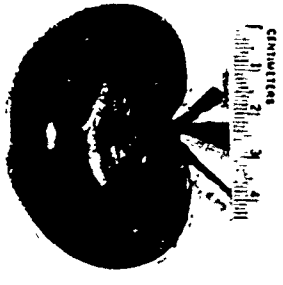

Figure 31. Right Kidney of Goat

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