CENTRE COUNTY HOSPITAL

BELLEFONTE, PA. 16823

DEPARTMENT OF PATHOLOGY
THOMAS J. MAGNANI, M.D.

AUTOPSY PATHOLOGY REPORT

NAME Aardsma, Betsy Ruth AGE 22 SEX F PATHOLOGY NUMBER A-69-41

HOSPITAL NUMBER None DR. None

DATE OF DEATH 11/28/69 TIME 5:50 p.m. REPORT DATE 12/11/69

DATE OF AUTOPSY 11/28/69 STARTED 11:00 p.m. FINISHED 4:00 a.m.

M S W D PERMISSION BY W. Robert Neff RELATIONSHIP Coroner of Centre County

RESTRICTIONS None PROSECTOR Thomas J. Magnani, M.D.

CLINICAL DIAGNOSIS Stab Wound of Chest

FINAL AUTOPSY DIAGNOSIS

PENETRATING WOUND OF LEFT CHEST INVOLVING:
- SKIN AND SUBCUTANEOUS TISSUES
- STERNUM
- THYMUS
- PLEURA
- PERICARDIUM
- PULMONARY ARTERY
- HEART

LEFT HEMOTHORAX 3000 ML.
CUTANEOUS CONTUSION, LEFT ANTERIOR CHEST
HEMOPERICARDIUM
ABRASION OF RIGHT EAR
ABRASION OF RIGHT MASTOID AREA
Tracheobronchial Aspiration of Gastric Content
Compression Atelectasis of Left Lung
Pulmonary Congestion and Edema
Accessory Spleen

Thomas J. Magnani M.D.
Thomas J. Magnani, M.D.
Pathologist

EXTERNAL EXAMINATION

Conclusion: STAB WOUND LEFT ANTERIOR CHEST
CONTUSION OF LEFT ANTERIOR CHEST
ABRASION OF RIGHT EAR
ABRASION OF RIGHT MASTOID AREA

The body is that of a well developed, well nourished, 22-year-old female that measures 68 inches from crown to heel and weighs approximately 125 pounds. She is fully clothed. The outer garment consists of a red dress without sleeves. This dress has wide lapels and each lapel has fresh blood stains on it. The right lapel, at a point 4 3/4 inches inferior to its superior margin, contains a transverse linear cut measuring 3/16 of an inch in length. This is surrounded by blood stains as described above. Beneath this garment there is a white turtle neck cotton sweater. This contains fresh blood stains across its anterior portion just beneath the turtle neck collar. Within these blood stains there is a linear cut measuring 1 inch. The defect created by this cut has an elliptical shape. Beneath the sweater there is a white full slip that contains blood stains particularly noticeable over the right antero-superior aspect. In the anterior mid-line of the slip, within the superior lace trim of the garment, there is a 1 inch linear cut. Beneath the slip is a brassiere which is blood stained. These stains are larger on the right side of this garment. There is no evidence of a cut within the brassiere. The remainder of the body is clothed with blue underpants and panty hose. All of these articles are intact. Both the underpants and panty hose are soaked with urine. She is also wearing a pair of light tan shoes which show no significant abnormalities.

The hair is reddish brown, the eyes are hazel, both pupils are round, equal and measures 1/8 of an inch in maximum diameter. There are contact lenses in place over both corneas. Half way along the outer margin of the right ear there is an ovoid superficial abrasion measuring 1/16 of an inch in maximum diameter. The surface of this contains a small amount of crusted blood. Slightly inferior and posterior to it, the skin overlying the right mastoid contains a similar small abrasion measuring 1/16 by 1/8 of an inch. The left ear is unremarkable as is the mouth and oral cavity. Overlying the glabella there is a 1/4 inch semi-lunar shaped gray depression which grossly has the appearance of a post-mortem pressure mark. The anterior thorax contains a skin wound which is 2 1/8 inches inferior to the level of the sternal notch and 53 inches superior to the level of the heels. This wound measures 3/4 of an inch by 1/4 of an inch and it is located 1/4 of an inch to the left of the mid-line. The wound approximates an elliptical shape, the only variation from a true ellipse being that the inferomedial apex of the wound is rounded in contrast to the superolateral apex which is sharply pointed. It lies within the second intercostal space, and is slanted slightly obliquely with the long axis of the wound being parallel to the intercostal space.

There is a trailing, slightly semi-lunar shaped, superficial incision measuring 3/4 of an inch in length which takes origin close to the superolateral apex of the main wound. This incision is not continuous with the main wound, there being a wound free interval of skin of 1/16 of an inch between it and the main wound. This trailing wound involves only the epidermis and corium and its direction is generally parallel to the long axis of the main wound (see figure 1). The main wound edges are sharply delineated, and the intero-medial margin of the wound is slightly contused. The superior and inferior wound edges are not perpendicular to the skin surface. The superior edge is "over-cut" in that there is exposed dermis which forms the immediate wound margin. The inferior edge is "under-cut" in that the wound margin is formed completely by epidermis (see figure 5). Within the depths of the wound there is fat, muscle and clotted blood. Careful inspection of the wound edges with a hand lens shows no evidence of foreign material within the margins of the wound or within the visible deeper tissues. No significant microscopic abnormalities are noted in the sections taken of the skin wound. The microscopic examination of this confirms the gross findings. There remains an additional significant abnormality on the skin surface. This consists of an ovoid area of contusion. This measures 1½ inches in maximum diameter and it is located 1½ inches to the left of the mid-line beginning at the superior margin of the left third rib and extending inferiorly to the superior margin of the left fourth rib. It overlies the medial portion of the left breast (see figure 1). This contusion is purple and inspection of it with a hand lens shows that it is composed of multiple tiny petechial hemorrhages. In the central portion of the area the petechiae become larger. Sections of the contused skin show intense capillary congestion and dilitation with small areas of peri-capillary hemorrhage into the dermis. No significant confluent areas of hemorrhage are seen microscopically.

The right breast is unremarkable and the left is contused as described above. The extremities show no significant abnormality and careful inspection of the entire body shows no additional contusions, lacerations, incisions, other types of wounds or other evidence of trauma. The abdomen is unremarkable as are the external genitalia and anus.

Upon removing the sternum and costal cartilages the left pleural space is visualized. It is almost completely filled by 3000 ml of fresh liquid and clotted blood. After removing the sternum and anterior mediastinal contents the tract of the wound is further delineated. The wound traverses the subcutaneous tissue and muscle and enters the anterior sternal surface three inches inferior to the sternal notch. The wound in the sternum completely traverses the bone at the level of the third rib. The sternal wound measures 7/8 of an inch in length and its long axis roughly parallels the long axis of the skin wound as described above. The infero-medial limit of the sternal wound is 5/8 of an inch to the left of the mid-line of the sternum (see figure 2). The wound forms an angle of 30° with the anterior surface of the sternum (see figure 3). Deep to the sternum the wound traverses the thymus gland which shows extensive fresh hemorrhage. The parietal pleura is then penetrated and the pleural space is entered. From here the tract continues through the pleural space to

the pericardium, which is then incised. The pericardial incision measures approximately 3/4 of an inch in maximum length. Exuding from this there is fresh liquid blood and there remains in the pericardium proper approximately 50 ml of liquid blood. The pericardial space is traversed and the wound tract continues by entering the pulmonary artery just at its origin. The wound in the pulmonary artery measures 3/4 of an inch and it has an inverted "V" shape. The inferior margins of the anterior and right cusps of the pulmonary valve are incised creating free openings into the sinuses of Valsalva from below. Following this the wound tract continues posteriorly penetrating the membranous portion of the interventricular septum. The inferior margin of the right cusp of the aortic valve is then incised producing a lesion similar to those described in the pulmonary valve. The tract of the wound then continues posteriorly through the anterior leaflet of the mitral valve, and then further posteriorly and ends as a small 1/8 inch incision in the posterior wall of the left atrium just superior to the posterior leaflet of the mitral valve. The wound tract thus traverses the skin, subcutaneous tissue, skeletal muscle, sternum, thymus, pleural space, pericardium, pericardial space, pulmonary artery, pulmonary valve, membranous portion of intraventricular septum, aortic valve, anterior leaflet of mitral valve, and posterior wall of the left atrium (see figure 4). The maximum depth of penetration measured at autopsy is 3½ inches. This represents the distance from the skin surface to the level of the wound in the left atrial wall.

MUSCULO-SKELETAL SYSTEM

Conclusion: STAB WOUND OF STERNUM

No significant lesions are noted in the vertebrae, ribs or pelvis. For a description of the sternal abnormalities see above.

PERICARDIAL CAVITY

Conclusion: HEMOPERICARDIUM
STAB WOUND OF PERICARDIUM

The pericardial cavity contains 50 ml of blood. For a description of the remaining abnormality see above.

HEART

Conclusion: PENETRATING STAB WOUND OF HEART

The heart weighs 230 grams. The valve circumferences are normal. The left ventricular wall has a maximum thickness of 1.5 cm and the right a maximum thickness of 0.4 cm. The coronary arteries are normal. No significant abnormalities are noted of the epicardium. For a description of the remaining abnormalities see above.

PLEURAL CAVITIES

Conclusion: Left hemothorax, 3000 ml.

The left side contains 3000 ml of fresh blood. For a description of the remaining abnormality see above.

LARYNX

Conclusion: No pathologic diagnosis

No significant lesions are found in the epiglottis, laryngeal cartilages or vocal cords.

LUNGS

Conclusion: Tracheobronchial asperation of gastric content
Compression atelectasis of left lung
Severe pulmonary congestion

The right lung weighs 340 grams and the left 220 grams. No significant lesions are noted of the pleural surfaces, pulmonary parenchyma, or pulmonary vessels other than unaeration of the left lung. Within the larger ramifications of the tracheobronchial tree there is copius gastric content. These findings are confirmed microscopically and in addition severe bilateral vascular congestion is noted.

MAJOR BLOOD VESSELS

Conclusion: STAB WOUND OF PULMONARY ARTERY

No significant lesions are noted in the aorta, major aortic branches or great veins. For a description of the wound in the pulmonary artery, see above.

LIVER

Conclusion: No pathologic diagnosis

The liver weighs 1150 grams. No significant lesions are noted grossly or microscopically within the capsule, hepatic parenchyma, intrahepatic bile ducts or blood vessels.

GALLBLADDER AND BILE DUCTS

Conclusion: No pathologic diagnosis

No significant lesions are noted of the gallbladder, bile ducts, or ampulla of vater.

PERITONEAL CAVITY

Conclusion: No pathologic diagnosis

No excess fluid is noted. No significant lesions are noted.

ALIMENTARY TRACT

Conclusion: No pathologic diagnosis

No significant lesions are noted in the esophagus, stomach, small intestine, large intestine or appendix.

PANCREAS

Conclusion: No pathologic diagnosis

No significant lesions are noted grossly or microscopically in the ducts, parenchyma, or interstitial tissue.

SPLEEN

Conclusion: Accessory spleen.

The spleen weighs 150 grams. No significant lesions are noted of the pulp or capsule. Within the gastrocolic ligament there is a 3 cm spherical accessory spleen.

KIDNEYS

Conclusion: No pathologic diagnosis

The right kidney weighs 130 grams and the left 150 grams. No significant lesions are noted grossly or microscopically of the capsule, cortex, medulla, calyces, pelvis, ureters, or renal vessels.

URINARY BLADDER

Conclusion: No pathologic diagnosis

The estimated urine volume of 10 ml, clear. No significant abnormalities are noted of the wall, mucosa or ureteral orifices.

UTERUS

Conclusion: No pathologic diagnosis

No significant abnormalities are noted grossly or microscopically of the corpus or cervix. There is no evidence of pregnancy.

OVARIES AND FALLOPIAN TUBES

Conclusion: No pathologic diagnosis

No significant lesions are noted of the right ovary, left ovary, right tube or left tube.

ADRENALS

Conclusion: No pathologic diagnosis

No significant lesions are noted in the right or left adrenal glands.

THYROID AND PARATHYROIDS

Conclusion: No pathologic diagnosis

No significant lesions are noted. The parathyroids are not identified.

LYMPH NODES

Conclusion: No pathologic diagnosis

No significant lesions are noted grossly or microscopically of the cervical, axillary, thoracic, or abdominal lymph nodes.

BONE MARROW

Conclusion: No pathologic diagnosis

No lesions are noted in the sternal marrow.

THYMUS

Conclusion: STAB WOUND OF THYMUS GLAND

For a description of the abnormalities see above.

PITUITARY

Conclusion: No pathologic diagnosis

No significant lesions are noted of the anterior or posterior lobe.

CENTRAL NERVOUS SYSTEM

Conclusion: No pathologic diagnosis

The brain weighs 1390 grams. No significant lesions are noted grossly or microscopically of the skull, dura, leptomeninges, cerebral hemispheres, internal capsules, ventricles, pons, medulla, or cerebral arteries.

PHOTOGRAPHS

Excoriations of ear and mastoid area - one (1)
Skin wound - three (3)
Contusion of chest - one (1)
Sternal wound - one (1)
Heart - four (4)

TOXICOLOGY SPECIMENS

All of the specimens listed below are in the custody of the Pennsylvania State Police:

Nail scrapings
Hair
Gastric content
Urine
Blood

Thomas J. Magnani, M.D.
Pathologist

FINAL SUMMARY

This 22-year-old, white female, Pennsylvania State University graduate student was admitted to the Ritenour Health Center dead on arrival. She had alledgedly been found unresponsive on the floor of the Pattee Library, and initial examination of the body at the Health Center disclosed a wound of her chest.

Autopsy examination demonstrated the presence of a penetrating wound of her left thorax which involved the heart and great vessels and directly led to her death.

From the anatomic findings of the autopsy, it is concluded that the wound was inflicted as a result of an act of violence.

The configuration of the skin wound and wound tract suggest that the weapon is a pointed, bladed instrument. The blade of this measures 7/8 of an inch in width and has a minimum length of 3½ inches. This length could vary from the minimum of 3½ inches to a maximum of 4 inches, depending on the phase of the cardiac cycle at the time the wound was produced. It is further suggested that the weapon had one sharpened edge which was directed superolaterally with respect to the thoracic skin wound. Also, the angle of thrust of the weapon is fixed at 30° with respect to the anterior sternum. The findings also suggest that the wound was inflicted with considerable force at the time of a face to face confrontation of the victim and the assailant, and that this weapon was held in the right hand of this assailant.

The abnormalities created by the wounds in the heart point to a very rapid, almost immediate collapse following their infliction, and death very likely then followed in less than five minutes.

IMMEDIATE CAUSE OF DEATH

MASSIVE LEFT HEMOTHORAX

BASIC CAUSE OF DEATH

PENETRATING WOUND OF THORAX

Thomas J. Magnani, M.D.
Pathologist

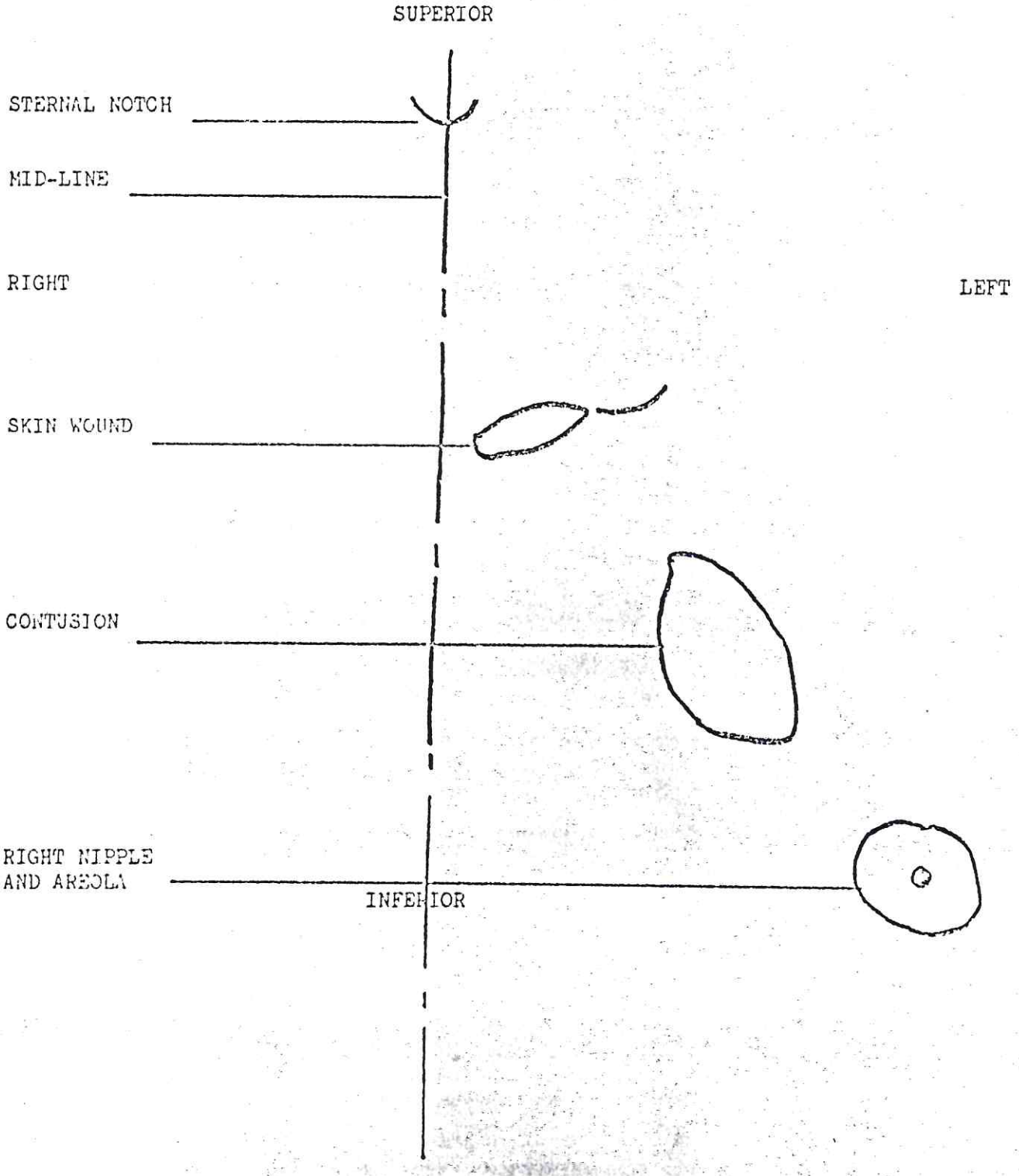

SUPERIOR
STERNAL NOTCH
MID-LINE
RIGHT
LEFT
SKIN WOUND
CONTUSION
RIGHT NIPPLE
AND AREOLA
INFERIOR

FIGURE I

Aardsma, Betsy R.

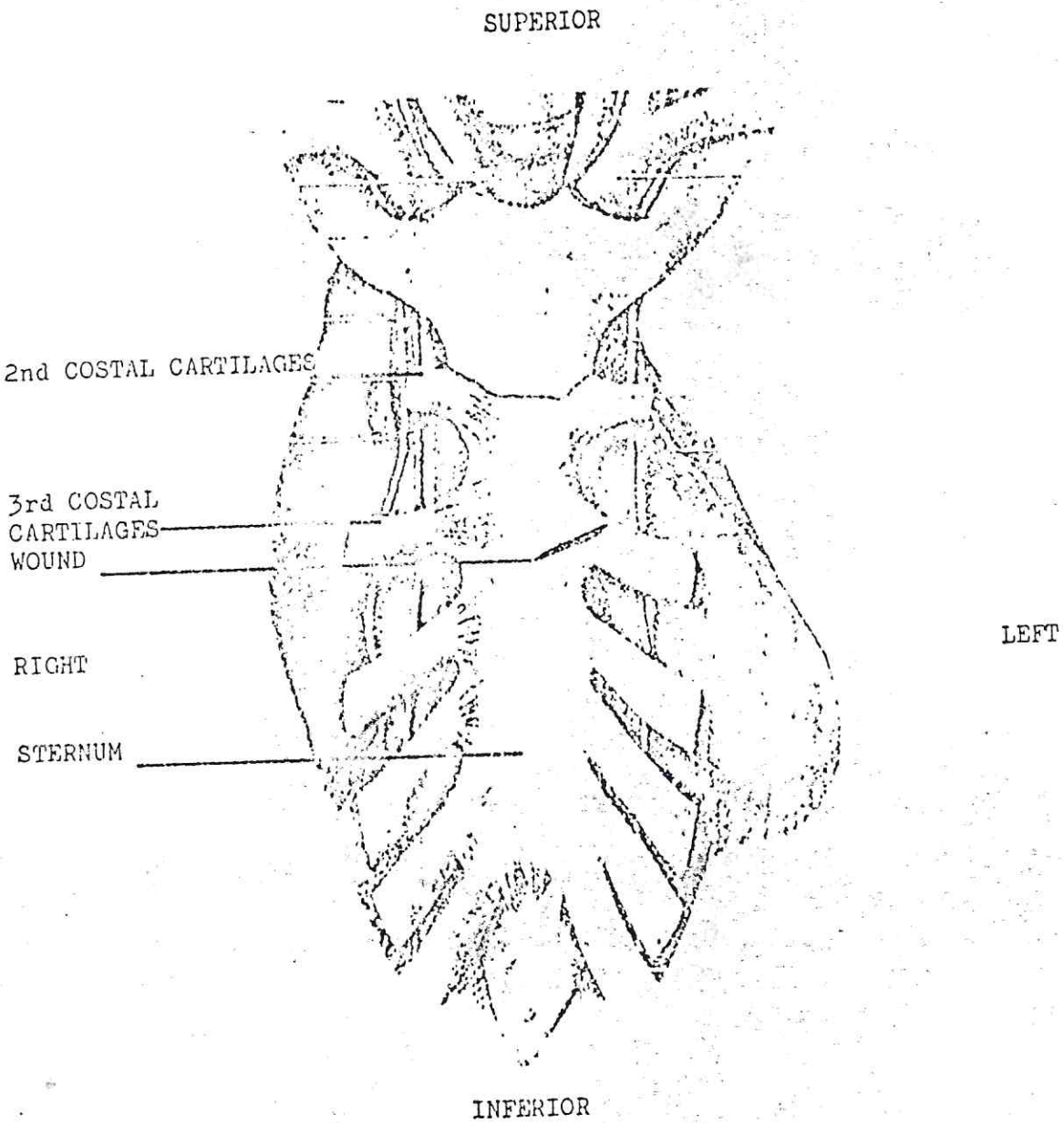
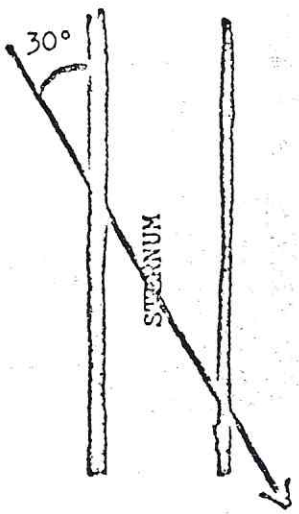


FIGURE 2

SUPERIOR



ANTERIOR

POSTERIOR

INFERIOR

FIGURE 3

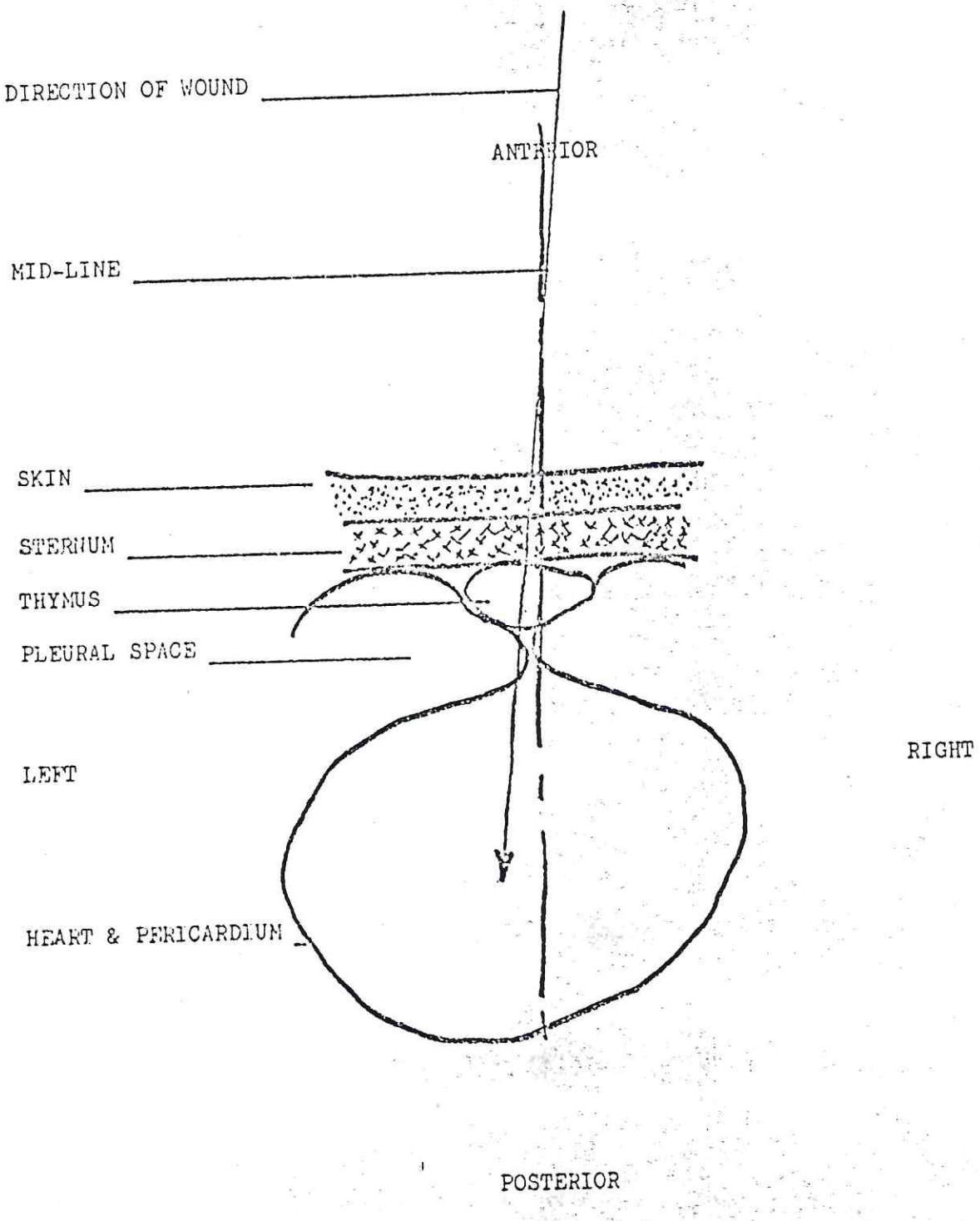
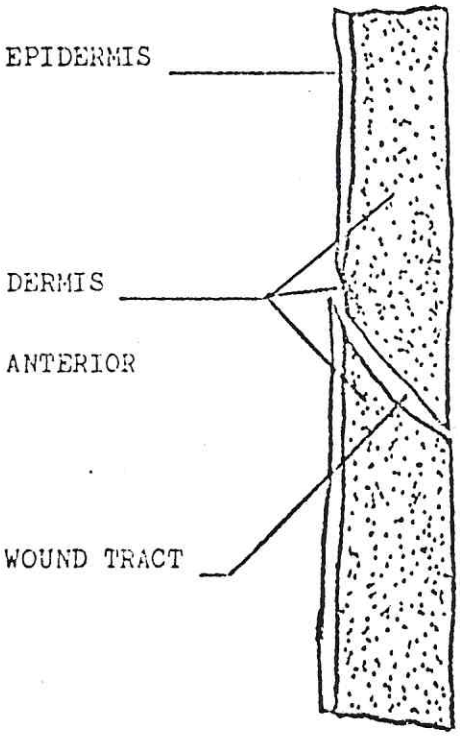

DIRECTION OF WOUND
ANTERIOR
MID-LINE
SKIN
STERNUM
THYMUS
PLEURAL SPACE
LEFT
RIGHT
HEART & PERICARDIUM
POSTERIOR

FIGURE 4

SUPERIOR



POSTERIOR

SKIN OF CHEST

INFERIOR

FIGURE 5

W. ROBERT NEFF
CORONER

HOWARD, PENNSYLVANIA

PHONES:
NA 5-2551 OR NA 5-2552

RETURN OF VIEW

Commonwealth of Pennsylvania } ss.
County of Centre }

BE IT KNOWN, that at my office in the County of Centre and Commonwealth of Pennsylvania, the undersigned, Coroner of the county aforesaid, did receive information and notice coming from reliable source that .....Betsy Ruth Aardsma.....of Holland, Mich. (Penn State Univ)ged 22 years, died a .....Violent.....death, and under such circumstances that an investigation was necessary.

Believing the information to be correct, and acting under authority of the laws of the Commonwealth of Pennsylvania, I went to .....Ritenour Medical Center on Penn State Campus.....and viewed the body, death having occurred on the .....28th.....day of .....November..... 1969.

After a careful examination and interrogation of the witnesses, namely..Penna. State Police.....

Investigation ...On November 28, 1969, Betsy Ruth Aardsma, age 22, of 117 E. 37th St., Holland, Mich., a graduate student at Penn State University, living at 5A- Atherton Hall on the Campus, was found lying among the stacks on the second level of Pattee Library. She was taken by ambulance (University) to Ritenour Health Center where she was pronounced dead at 5:20 p.m.

An Autopsy held at Centre County Hospital by Dr. Thomas Magnani revealed the cause of death to be Intra Plural Hemorrhage due to Stab wound of Chest.

This office ruled the death Homicide by person or persons unknown.

I decided that there was not sufficient evidence of unlawful act or undue means used and that an inquest was not necessary. Death resulted from.....Intra Plural Hemorrhage due to Stab Wound of Chest

IN WITNESS WHEREOF, I hereby certify the above facts to be true, and have hereunto set my hand and seal this...3rd.....day of.....December....., A. D. 1969.

..... (Seal)
Coroner

No 158-1969

IN THE PROTHONOTARY'S OFFICE
CENTRE COUNTY
PENNSYLVANIA

IN RE-DEATH

OF

Betsy Ruth Aardsma
DECEASED

CORONER'S
RETURN OF VIEW

W. Robert Neff

CORONER'S FEES

Viewing Body ..... $ 18.00

Mileage ..... $ 5.20 (52)

Telephone Calls .....

FILED FOR RECORD
DEC 4 11 52 AM '69
MARTIN L. CULLEHAN
PROTHONOTARY
CENTRE COUNTY, PA.

BILL OF COSTS

Centre County in Account with ..... W. Robert Neff .....

to hold an inquisition over the dead body of one ..... Betsy Ruth Aardsma ..... at

... State College ..... in said County, on the ..... 28th ..... day of ..... November 19 69

Viewing Body		$ 18.00	
Summoning and qualifying jurors			
Subpoenaing and notifying witnesses			
Mileage		$ 5.20	$ (52)
Telephone Tolls			
Six Jurors, Fees	each $		
Return of View		$ 9.50	
Total		$ 32.70	$