The Crucifixion—In the Eyes of a Physician

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How did Christ die? He was crucified. These are the words repeated over and over on Good Friday with the usual emphasis, “He died for us”—but when we asked the question, “How did he actually die on the cross? no one gave us a good answer.

This topic for a short noon day Lenten talk was assigned to us by our minister two years ago and it stimulated us to inquire into the medical aspects of this form of death. The Bible accounts of all four of the gospels are terse and matter-of-fact with almost complete omission of any physiological details.

When we read the theological concepts of the execution from such books as The Day That Christ Died by Jim Bishop, or in The Week That Changed The World, and many others, we found interesting narratives developed by the authors but without any real medical perspective. The historical literature covering that period in books such as Caesar and Christ by Will Durant afford us a fair understanding of this technique of execution as the Romans practiced it. We learn that crucifixion was mentioned by Herodotus in early Greek history, and the Roman historian Pliny wrote that Tarquinus Priscis invented the Roman crucifixion which came into general use between 260 and 160 B.C., two hundred years before Christ. The historians emphasize that Rome ruled by terror and that the technique of crucifixion, which Cicero described as the “most cruel and hideous of tortures,” became the designated method of execution for slaves and insurgents against the state. Into this latter class Jesus fell as Pilate pronounced his sentence: “Pone Crucem servo” (Place a cross on the slave).

Next, we sought enlightenment on the scientific aspects of crucifixion from medical literature, and have been amazed to find so little scientific explanation available about this, the most famous death in all history. We sought research help from the staffs at the New York Academy of Medicine and the Philadelphia College of Physicians libraries, and we reviewed the old articles which they found for us. Literally nothing new in recent medical literature came to light from the medical libraries. A number of articles from the second half of the nineteenth and early twentieth century were written by doctors to express their own theses and were quite speculative, usually mixed with theology. In due course, we have frequently asked our medical colleagues and have been met with blank looks and empty explanations, even from pathologists who specialize in the causes of death. Recently, however, one of our gospel-minded pathologist friends recalled a thesis on the subject worked up by a resident physician in Boston and was able to obtain a copy for us to review.

Then another friend gave us the best resource book that we have found, A Doctor At Calvary by a French surgeon, Pierre Barbet, published in France in
1953. He pursued this subject as a hobby for fifteen years of personal research including some experimental work on the piercing of the chest. First, Dr. Barbet considers the historical practice of the crucifixion and its technique. Secondly, he reviews the theological literature, especially that of the early church, and thirdly, he provides a reasonable scientific explanation of the physio-pathology of death on the cross which coincides well with our own analysis. The weak part of his discourse is the description and interpretation of the “shroud,” which may have encased the body of Jesus and now is treasured in the Cathedral of Turin. His somewhat lengthy discourse on the shroud favors its authenticity, but after an elaborate interpretation of the blood stains, he states, “The shroud, as Pope Pius XI used to say, is still surrounded by many mysteries.”

HISTORICAL CRUCIFIXION

In studying this subject we must first look to the historical technique of crucifixion as practiced and described in Roman history. The conciseness and lack of detail in the eye witness reports of the disciples about the actual process of the crucifixion is best explained by the historical evidence that crucifixion was the common and frequent method of execution of that day and therefore so well known to everyone that it seemed unnecessary to describe details. For example, after the uprising of the slaves led by Spartacus was quelled, some 6,000 crosses lined the highway from Corporea to Rome. We do know that the upright post of the cross, called the stirpes, was usually already fixed in the ground on a hilltop (such as Calvary) or by a busy road where a crowd of onlookers were sure to gather. The height of a low cross was said to be about six feet, eight inches, which would mean another three feet or so in the ground to anchor it firmly. The high cross, reserved for more important personages, was said to be much higher and more difficult for the executioners. The stirpes had to be heavy and strong and was probably a rough hewn log rather than any smoothly squared off plank as we observe in the usual pictures. The cross bar or patibulum weighing about one hundred ten pounds was the only part intended to be carried by the victim. Even this alone must obviously have been a fairly heavy log in order to support a man’s weight and probably was seven feet or more in length. The correct concept of Jesus carrying the cross bar was shown recently in an historical television documentary.

After the sentence most of the victim’s clothes were removed and his initial torture began with a “flogging” or “scourging” which was a prescribed legal preliminary to all crucifixions. The official designation was thirty-nine strokes with a flagrum, a sort of whip with a short handle and several leather thongs. Such a beating was not a minor punishment and undoubtedly was intended to weaken the victim and leave his skin raw and broken. Next, he was forced to drag or carry the crossbar on his shoulders up the hill to the site of the crucifixion, which added to his exhaustion. Arriving at the site, the condemned man was laid across the patibulum and his arms were pilloried to the log by fastening the hands or wrists usually with cord, or by nailing. Christ’s hands were nailed, as he himself
called attention to the fact: "See My hands and my feet that it is I myself" (Luke 24). Most of the paintings and statues of Christ on the cross picture him as nailed through the hands, but a simple anatomical knowledge indicates that a nail driven between the longitudinal metacarpal bones of the hands would soon tear through the soft flesh and pull out. For adequate fixation it is necessary to nail through the wrists.

Then the crossbar was raised, a step that was certainly not easy with a struggling man attached to it. Probably four soldiers were required to lift the crossbar to the top of the stripses as a T. To have placed it below the top of the upright would have meant that a preliminary slot had been prepared to receive the bar and to dovetail it in deep enough to support the heavy weight. This is unlikely. The T cross does not coincide with the type of cross seen in our modern churches but most archaeologists agree that the T type was the common one in Roman days.

With the victim now hanging free from the supported cross bar, the soldiers next fixed his feet to the front of the upright. History says they were usually tied but sometimes nails were used and in Roman days these nails were heavy thick iron spikes. Assuredly it would not be easy to drive one of these spikes through the back of the mid-foot where it would hold, and then penetrate through the other foot of a struggling man, driving it on deep enough into the post to hold his weight. Yet this is the usual picture in paintings and statues. More likely two nails were used, one for each foot, and the feet were nailed alongside of each other. All agree, however, that the knees were kept partly flexed for an insidious purpose. As the body begins to hang freely from the outstretched fixed wrists, the muscles of the arms begin to fatigue, cramp, and stretch; then the shoulders, and next the respiratory muscles of the chest, diaphragm and abdomen. Breathing becomes more and more of an effort but the victim can correct this temporarily by straightening his knees, lifting his body up an inch or so and thus releasing the tension. Soon the pain of this effort forces him to relax and sag down again. This cycle, repeated many times over through the hours and even days, was an ingenious and devilish part of the torture. Sometimes the Romans even nailed a small post or seat called a sedulum in between the victim's legs or sticking out against his lower back. As a final insult, a placard of ridicule was often fixed above the head of the cross, as Jesus was labeled "King of the Jews." This would encourage the bystanders to mock and rail at the helpless victim.

MEDICAL ASPECTS

How long did the crucifixion last? Days on days often. Diocletian records an instance in 213 A.D. of a man and his wife being crucified together and both living until the tenth day. What basic pathological processes are present in the crucifixion technique which caused death? And how did they act? Historically, numerous writers have described the various forces that perhaps accelerate death such as thirst, hunger, heat, cold, insects, burning, or stoning by onlookers. We may discuss these as minor contributions. No one has explained why Jesus died so rapidly while most people lived on for days. Our best explanation, gleaned
from thoughts, queried from many learned colleagues is summarized as follows:

In the hanging position with both hands and feet fixed, the whole weight of the body sags first from the arms whose muscles gradually ache and fatigue and stretch out into clonic contracture or spasm (or a state of tetany). Some reports mention convulsive seizures of the muscles in the final stages. As the arm and shoulder muscles stretch the tension builds up more and more on the intercostal and accessory chest breathing muscles which expand the chest to inhale air so that waste carbon dioxide can be transferred out and essential oxygen absorbed into the blood. The gravity weight of the hanging body slowly embarrasses the respiration. As the process develops further, the abdominal muscles and the diaphragm also become fatigued, stretched out, and function less and less. The head involuntarily droops as the neck muscles pull it down so that it is literally impossible for the victim to look up into the heavens. To counteract this respiration paralysis, the bent knees allow for a respite cycle of torture which can go on and on depending on the strength, the endurance, and will power of the victim.

Physiologically two slowly devitalizing forces are taking place; one, as just described, interferes with the mechanism of respiration and exchange of oxygen and \( \text{CO}_2 \). The second force is the hypostatic circulatory embarrassment which comes from immobilization of the body in the upright position, particularly the arms and legs. The circulation of our blood to the vital organs and extremities of the body is a carefully balanced process. While the heart pumps the blood up to the brain and down into the extremities, the return circulation depends so much on gravity plus muscle contraction. Action of the muscles of the legs and arms is vital to propel the proper circulation back through the veins to the heart. Therefore, with both arms and legs fixed to the cross, we can readily understand the slowly developing stasis of the circulation which gradually affects all of the vital organs. Undoubtedly, swelling of the legs takes place in all crucifixion victims. With the increasing handicap on the return circulation “puddling” of the blood develops in all the vital organs of the abdomen and chest. Hypostatic congestion of the lungs may even have led to pleural effusion to explain where the blood and water came from when the spear pierced Jesus’ chest. The gradual development of toxemia follows from lack of adequate circulation to the vital organs to eliminate \( \text{CO}_2 \) and waste products plus a gradual diminution of the oxygen content of the blood from respiratory embarrassment. The circulation grows more sluggish and the breathing weaker. Anoxemia or lack of oxygen is a critical depressant that affects the brain suggesting to us quite definitely that the victim lapses into a final peaceful coma as he expires.

**EXPERIENCE OF JESUS**

Now let us review the actual experience of Jesus Christ from the recorded facts, largely those found directly in the Bible. First, we know that he was psychologically prepared to die. He had told his disciples so at the Last Supper as well as previously. Later in the Garden of Gethsemane he prepared himself spiritually with prayer of such intensity and for so long that the “sweat of blood”
appeared on his body. He was so committed to his fate that there is no record of any rebellion or struggle from the time of the sentence which Pilate imposed onward through the ensuing tortures. We find but a scant description of the process of crucifixion of Jesus in any of the gospels. As soon as Pilate pronounced sentence, it is recorded that he was taken and "flogged." We can reasonably assume from this that the flogging, as routinely practiced before the crucifixion, was purposely severe enough to both weaken the victim and add to his further torture from exposure of his raw flesh. Further, it is mentioned that Jesus was struck over the head with a cane and this may have had even more serious effect. In addition a crown of thorns was placed on his head. These were not little bramble thorns as we know them hereabouts, but we have personally seen thorn bushes growing under the wailing wall in Jerusalem with thorn spikes an inch long. After this preliminary debilitating torture, Jesus was required to carry the cross (patibulum) a good half mile up the Via Dolorosa (we ourselves have helped to do this on one Good Friday morning twenty years ago) to the site of the crucifixion on Calvary now designated by the Church of the Holy Sepulchre. While John states that Jesus carried the cross, the other three apostles distinctly mention that the soldiers impressed a bystander, Simon of Cyrene, to relieve him from carrying the cross. From this, we may rationally assume that Jesus was too weak to carry the cross, because in no other way did they ease up on any of the routine tortures inflicted upon him.

At nine in the morning the cross was raised amidst a crowd of onlookers who cast ridicule and shame upon him. Among those in the background were some of his family, apostles, and friends, as well as those who taunted him and had urged his crucifixion. At noon, after three hours, the skies grew dark and ominous and the crowd began to disperse. We have record that Jesus cried: "I thirst." In response one of the soldiers dipped a sponge, or piece of cloth, into their own beverage concoction, which was commonly water flavored with vinegar and beaten eggs, and thrust it up into his face. We know too of his deep agony from the cry he uttered: "My God, My God, why hast thou forsaken me?" Before six hours were up, by three o'clock, he uttered the last intelligible words: "Father, I commit myself to thee," and after a few more mumbling cries, he ceased the struggle to breathe and quickly died.

When the soldiers recognized his death—we can assume that this group was an experienced crucifixion team—the centurion in charge went to Pilate and asked that they be permitted to take him down from the cross and give his body over to one of his friends, Joseph of Arimathea, who had stood by and asked for it. This was common practice of the day. Pilate asked them if they were sure that Christ was dead and their reply was yes but that the thieves were still alive. Then Pilate gave consent to take Jesus down from the cross and also permission for the soldiers to break the legs of the thieves so that they would quickly die and the whole sad execution could be cleared up before five o'clock when Passover began. Until we searched the historical literature, we did not know that breaking
the legs of the sufferers was an accepted procedure to finish off the process of
dying because the victim could no longer raise his body upward to aid respiration.

After breaking the legs of the thieves, one of the soldiers jabbed his spear
into the "side" of Jesus to make sure that he was dead. This too was common
practice. From the wound, it is clearly recorded that blood and then water flowed.
Some say this came from spontaneous rupture of the heart but this does not hap­
pen. The observation is not altogether easy to explain for blood does not flow
freely from a wound after death, unless the spear had penetrated a reservoir of
blood such as a big artery or the heart. Less easily understood is where the
"water" came from. Some have suggested that the sac around the heart, the peri­
cardium, had such an effusion of watery fluid that it would flow out. Dr. Barbet's
experiments tend to prove this. He thrust a knife into the heart through the right
side of the sternum or breast bone in recently deceased bodies that were held
upright, and found that he penetrated the right auricle of the heart. As he with­
drew the knife, first blood and then clear serum (or "water") flowed out, flowing,
as he interpreted it, from the pericardial sac around the heart. Perhaps this is the
most likely explanation, but we have not ruled out the possibility of serum collect­
ing in the pleural cavity between the chest wall and the lungs as a result of the
hypostatic congestion. This also could account for the "water." In any event,
it is clearly stated that the spear was thrust in to be certain that Jesus was dead
but not to cause his death.

The fact that Christ died unusually fast for the crucifixion process may be
explained quite reasonably by two factors: first, he was mentally and spiritually
prepared to die and did not make any struggle to prolong the ordeal. Secondly,
he was undoubtedly seriously weakened by the preliminary emotional strain, the
flogging on his body and beating upon his head with a cane, so that he did not
even have enough strength to carry the cross to his place of execution.

The historical and clinical facts indicate without question that Jesus was nailed
to the cross through his wrists and his feet with his knees flexed and that he
suffered the hideous torture for which the crucifixion technique was famous. He
died rapidly because he was mentally prepared and physically weakened.

The Christian doctor looks at the crucifixion with sympathy and spiritual
understanding that Christ came into this world to be our Saviour through the
ordeal of crucifixion. At the same time, it is most interesting to learn the historical
background and technique of the Roman crucifixion and then to understand the
actual pathological process of Christ's death in the light of modern scientific
medicine.