The Hot Zone: Part I

The Shadow of Mt. Elgon

Daily Grade 1 (1-5)

**1- SOMETHING IN THE FOREST**

1. Who is Charles Monet? Describe his history and habits. Where is he from?

2. What happens to Monet? Describe.

3. Describe the behavior of weaverbirds and what makes them interesting.

4. Why were workers burning the fields? What impact does this have on the migration of microbes and the natural biodiversity of an area?

5. What is the importance of the reference to Monet’s “women friends”?

6. How big is Kitum Cave? Describe it.

7. Why is salt so “precious” in the rainforest?

8. Why does the author take the time to describe the crystals so precisely?

9. As of page 13, list three possible sources of infection from the cave.

10. How did the pillar in the cave get scored and marked? How does this realization contribute to the mood of life in the cave?

11. Why do you think the author uses a reference about the pull of the cave “being like gravity”?

12. List the symptoms, feelings, and progression of the disease as it struck Monet.

13. Why don’t antibiotics work on viruses?

14. What is the relevance of the East Rift Valley in early human history? What famous skeleton(s) were found there?

15. Monet vomits even though his stomach is empty. What does this tell you?

16. What is the reference to “hot” in this sequence?

17. What does it mean for his bloodstream to “throw clots”?

18. What is a stroke?

19. Why is he not feeling pain at this point?

20. What does it mean for Monet to have “sloughed his gut”?

**2- JUMPER**

21. Describe some of the tools the doctor uses on Monet to find out what is wrong. What is the flaw in his procedure?

22. What happened to Dr. Shem Musoke, who worked on Charles Monet? How could this have been prevented?

23. What is the range of normal blood pressure?

24. What is the condition and tone of Monet’s tissue and blood vessels at this point? How does this impact their ability to treat him?

25. Describe the kidneys and liver during the autopsy.

26. Compare Dr. Musoke’s symptoms with Monet’s.

27. Dr. Musoke is concerned that he might have malaria. How do the symptoms of malaria compare to the ones he is experiencing?

28. What did Dr. Musoke do that contributed to the spread of the disease?

29. Describe the findings of the exploratory surgery performed on Dr. Musoke.

30. What is hemophilia and how would the symptoms compare to the ones described in this chapter?

31. Why did Dr. David Silverstein purify the serum? What is this?

32. Where did he send the samples? Why?

33. What is the significance of the title of this chapter?

**3- DIAGNOSIS**

34. Who is Dr. David Silverstein? What kind of practice does he have?

35. Why did he treat Dr. Musoke with “supportive care?” What do you think this means?

36. What was the diagnosis for Dr. Musoke? What is the history of this virus?

37. In the original home of the virus, what % of the monkeys were infected?

38. What does it mean to “jump species”? What are some more common examples of this?

39. Who was the first victim of Marburg virus and how many people did the 1967 outbreak affect? What was the fatality rate?

40. What everyday shape is the virus particle of Marburg compared to in the book?

41. What are some of the other main shapes of viruses?

42. Is a virus alive or not? How would you define life? What are the characteristics of a virus that make it seem NOT alive? What characteristics does a virus have that make it seem alive?

43. What are the two types of Ebola?

44. Describe the recovery period and problems from Marburg. What are some of the surprising organs attacked?

45. What was Mr. Jones’ business? How big was it?

46. In that business, how were the products inspected and what was the problem?

47. Mr. Jones feels guilty about the outcome. Should he accept blame for what happened? Why or why not?

48. What was being done with the sick monkeys? Why was this dangerous?

49. What is the WHO? What do they do?

50. What was Silverstein’s response to finding out about the Marburg diagnosis?

51. What is Shem Musoke’s recollection about his illness? Any lingering symptoms?

**4- A WOMAN AND A SOLDIER**

52. Describe Nancy Jaax. Where is she from? Describe her job, house, family, location.

53. How much education do you need to become a vet? Why does the Army need vets?

54. What was Nancy’s hobby/activity and how did this help her confidence?

55. Nancy is a meticulous cleaner and Jerry is impulsive. How does this set up the story about finding disease agents?

56. Nancy cuts herself in the kitchen. How does this foreshadow the events to come, and what kind of reaction and emotion does it signify on her part?

**5- PROJECT EBOLA**

57. Why do you think Nancy got up so early?

58. What was Nancy’s specialty in the lab?

59. Why does the author describe the location and ventilation system at USAMRIID?

60. What do the initials USAMRIID stand for? What other nicknames does the place have?

61. How did the USAMRIID mission change in 1969?

62. What are two examples of the lethal microorganisms being worked on at USAMRIID? What are the fears of these agents?

63. Describe the characteristics of the four levels of BSL.

64. What was Nancy’s job in Gene Johnson’s lab?

65. Why does she have to do autopsies very quickly in Ebola cases?

66. Why was Nancy so determined to get to level 4?

67. Anthrax is quite deadly. Why is it referred to as “safer” than Ebola? What is the kill rate of Ebola?

68. Who is Gene Johnson? Describe his personality and some surprises about him. What makes an expert like him so afraid of viruses?

69. Why does Gene Johnson have nightmares about airborne Ebola? What are the other vectors or transmission paths of infections (airborne is one method)?

70. What is the relevance of the practice of cleaning dead bodies for burial?

71. Why did Nancy take off her rings before entering the lab?

72. How does UV light act as a sterilizing agent?

73. What is the value of the pressurized suit?

74. Why are gloves portrayed as the most important part of the defense against Ebola?

75. What are some people’s superstitions in dealing with level 4?

76. What is the decon shower for?

Daily Grade 2 (6-9)

**6- TOTAL IMMERSION**

77. How did the monkeys react when they saw Jaax and Johnson?

78. Compare the behavior of healthy and sick monkeys in this setting.

79. How are the blood samples stored? How do these facilities work?

Why is this method of storage important?

80. Why is handling a monkey in level 4 “tricky”?

81. What were the safety considerations in getting the monkey out

of the cage and into the autopsy room?

82. What were the three “life forms” in the room at that time?

83. Why number the tools?

84. How and why does the author describe the sound of the air blowing in the pressure suit?

85. What is a parasite and why does the author describe a virus as a parasite?

86. Is Ebola a DNA or RNA virus? Why is this a meaningful way to distinguish viruses?

87. What is a “rongeur”?

88. Why can’t you use a bone saw in level 4?

89. What happened to Nancy Jaax while she was dissecting the monkeys with Lt. Johnson? What do you think is going to happen to Nancy?

90. Why do you think Nancy didn't contract the virus?

91. What is the Slammer? The Submarine?

92. After the shower, what does Nancy notice? What is her first reaction?

93. What is the end product of the test on Nancy’s glove?

**7- EBOLA RIVER**

94. Where is the virus’ original spreading point? Who was the “index case”?

95. How did the spread from P.G. compare to that of Mr. Yu?

96. How did the practices of the hospital in Maridi contribute to the spread of the disease? How can the medical community intensify an outbreak of infectious disease?

97. What is the fatality rate in Ebola Sudan strain (subtype) and how does it compare to the Marburg strain and to the bubonic plague in medieval Europe?

98. What are some of the possible vectors for Ebola Zaire?

99. What did the nuns at the Yambuku Hospital do to sterilize used syringes? What recommendations would you make to improve this practice?

100. The Sudan virus subsides, then vanishes. Can you explain why this might be happening? What are two possible reasons the outbreak burned itself out?

101. Define *hot* as it is used in this book.

102. How did the trip to the market contribute to the outbreak of the disease?

103. After the first recorded patient, how many villages were infected? What does this tell you about the possible location of the infection? What are the levels of spread of the disease?

104. What is “pavementing” in biological terms? What are “bricks”?

105. What is Ebola’s favorite protein food?

106. What is Ebola’s “strategy for success”?

107. What is so important about Nurse Mayinga’s story? Why doesn’t she go into quarantine for her condition?

108. What were some of the options of the government upon finding out this story?

109. What did the President do?

110. What happened to sister M.E.’s blood? Where did it go?

111. Who is Dr. Karl Johnson and what office does he head up?

112. What is the condition of the sample when it arrives at the CDC? What precautions does Patricia Webb take in handling it?

113. Who is Fred Murphy and what is his specialty?

114. What about the picture scares Murphy? What did he do next?

115. What is the characteristic shape they notice? Why did they decide it was a new strain?

116. If you’re Karl Johnson, what do you pack for a trip to Africa to study and contain a deadly virus?

117. Johnson says “I’m glad nature is not benign”. What do you think he means? Do you agree or disagree and why?

118. What are the implications if Ebola is airborne?

119. What is a species threatening event?

120. Who is Joel Breman and what does he do? Why is he so afraid?

121. How did the CDC team ultimately get to Bumba?

122. How did the native crew react upon landing?

123. How did the Belgian doctor on the scene handle the situation?

124. What was the purpose of felling trees on the road between villages? Describe the process of reverse quarantine.

125. Why were they burning mattresses?

126. What were some of the steps that the villagers had taken to control the spread of the disease on their own?

127. How did Nurse Mayinga die? How many contacts had she had before being hospitalized?

128. How did they store the bodies to prevent spread?

129. How did Karl Johnson set up an isolated hospital in this setting?

130. In the end, did the first Zaire outbreak show symptoms of airborne transmission?

**8- CARDINAL**

131. How was the sample stored for safety handling? How many levels of physical and biological protection were there?

132. Why is this chapter entitled “Cardinal”? What happened?

133. What is “third spacing” and why were his symptoms concerning about an airborne infection?

134. What is the distinction between parasites and predators?

135. Describe the shape of the virus particle called the 'shepherd's crook."

136. What hospital did Nurse Mayinga work at?

137. How did Gene Johnson culture the sample of Peter Cardinal’s blood serum? Describe the three steps of this experimental protocol.

138. What does the relative lethality rate in animal species tell us about the original host or reservoir species?

139. What did Lt. Johnson discover about Peter Cardinal and where he had been?

140. What did Lt. Johnson's team discover in Kitum Cave?

141. What did they place in the cave?

**9- GOING DEEP**

142. In investigating Peter Cardinal’s family’s house, why were they interested in the animals?

143. Describe the experiment in 1988 that confirmed that Ebola could travel through the air.

144. What did the U.S. Army scientific team members wear in Kitum Cave to protect themselves? What other kinds of equipment did they carry to increase their safety?

145. There were 35 specialists on this trip. What were some of their fields of expertise?

146. What are sentinel animals? Give two examples.

147. Who locally would be likely to have a Racal suit and why?

148. What were the methods used to collect samples? Describe how light traps and pitfall traps work.

149. Which other organisms did they test and collect samples from?

150. What was Nancy Jaax’s new job? How did she and Jerry get back to USAMRIID?