For Teachers: Please have the students read the sentences one at a time and correct their pronunciation of each sentence then have them repeat after you. Wait until after they read the sentence (use the number in place of the missing word) to have the students choose the correct answer to fill in the blank. When the students finish the article, move on to the further questions.

日本語訳なしタイプBもございます。スクロールダウンするとございますのでお好きな方をご利用下さい。

3[A] – Leprosy (ハンセン病) and Armadillos (アルマジロ)

AP1E 11-2

1. Leprosy (ハンセン病（びょう）) has been feared since ancient (古代（こだい）の) times. This infectious disease (伝染病（でんせんびょう）) attacks the nerves (神経（しんけい）) and can cause (引（ひ）き起（お）こす) blindness (盲目（もうもく）の) and the loss (喪失（そうしつ）) of feeling (感覚（かんかく）) in the hands and feet. Leprosy was widely considered to be an inherited disease (遺伝性疾患（いでんせいしっかん）) until 1873, when Norwegian (ノルウェー人（じん）) researcher (研究者（けんきゅうしゃ）) G.A. Hansen
2. identified the bacterium (細菌（さいきん）) responsible for (～の原因（げんいん）である) it: *Mycobacterium leprae* (マイコバクテリウム・レプレ、らい菌). His discovery (据（す）える) laid the foundation (基礎（きそ）) for scientific research into the disease and the development (開発（かいはつ）) of a treatment (治療法（ちりょうほう）) for humans. Initial (最初（さいしょ）の) attempts (試（こころ）み) to
3. cultivate (改良（かいりょう）する) *M. leprae* in the laboratory (実験室（じっけんしつ）), however, only yielded (生（しょう）じた) small amounts, which prevented (妨（さまた）げた) any useful research from being carried out (遂行（すいこう）させること).

Further Questions&A

*Ask student to answer the question on their own at first. If the student can't answer correctly, have him look at the last page and read the "example answer" for the question. Have the student try to memorize the answer, if it's too long or difficult, you should divide the sentence into 2 or 3 parts to make it easier to remember. Once they have memorized the answer, the teacher should ask the question one last time so that the student can practice answering. Also if you find any mistakes, please mark the page and let me know ASAP.

4. 1) **What symptoms (症状（しょうじょう）) are caused by Leprosy?** ハンセン病（びょう）によってどんな症状（しょうじょう）が引き起（お）こされますか。
5. *It can cause blindness and the loss of feeling in the hands and feet.*
6. 2) **What did G.A. Hansen identify in 1873?** 1873年（ねん）にG.A. Hansenは何（なに）を突（つ）きとめましたか。
7. *He identified (見極（みきわ）めた) the bacteria (～の原因（げんいん）であって) responsible for leprosy.*

8. In the late 1960s, an American biochemist (生化学者（せいかがくしゃ）) named Eleanor Storrs tried cultivating (培養（ばいよう）すること) *M. leprae* in the nine banded armadillo (ココノオビアルマジロ), a mammal (哺乳動物（ほにゅうどうぶつ）) common in the southern United States. She knew that in humans, *M. leprae* thrives (勢（いきお）いよく成長（せいちょう）する) in cooler extremities (末端（まったん）) such as toes and fingers. Because
9. the body temperature (体温（たいおん）) of the nine-banded armadillo is lower than that of humans, she thought they would be a good breeding ground (温床（おんしょう）) for the bacterium. Furthermore (さらに), nine-banded armadillos give birth to (～を生（う）み出（だ）す) four genetically (遺伝子的（いでんしてき）に) identical (同一（どういつ）の) young, a fact Storrs knew would be useful when conducting experiments (実験（じっけん）) to compare the condition of diseased (病気（びょうき）の) and healthy animals.
10.

Further Questions&A

11. 3) Why were the bodies of armadillos a good breeding ground for bacterium?
12. アルマジロの体はなぜ細菌の温床となりましたか。
13. *It was a good breeding ground because their body temperatures are lower than that of humans.*
14. 4) What is unusual about the young of nine-banded armadillo?
15. 若いココノオビアルマジロはどんな点が珍しいですか。
16. *They give birth to four genetically identical young.*

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17. Storrs found that nine-banded armadillos injected (注射（ちゅうしゃ）した) with *M. leprae* developed
infection (伝染（でんせん）) resulting in (～の結果（けっか）となる) large numbers of the bacterium. Over the next 25 years,
researchers studied bacteria taken from infected (伝染（でんせん）させた)
18. nine-banded armadillos to learn more about leprosy (らい病（びょう)) . A major breakthrough
eventually (遂（つい）に) came when a substance (実体（じったい）) called lepromin (レプロミン) was produced. When
injected, lepromin causes a skin reaction in those infected with *M. leprae*. If
19. diagnosed (診断（しんだん）された) in this way at an early stage, leprosy is now curable (治療（ちりょう）できる) with
long-term (長期（ちょうき）の) treatment using a combination (配合（はいごう）) of antibiotics (抗生物質（こうせいぶっしつ）) .

Further Questions&A

20. 5) What happened when the nine-banded armadillo were injected with *M. leprae*? ココノオビアルマジロがらい菌を注射された時、何が起りましたか。
21. *They developed an infection (感染（かんせん）) resulting in (～の結果（けっか）になる) large numbers of the bacterium.*
22. 6) What was the result of 25 years of study of bacteria taken from the armadillo?
23. 25年にわたるアルマジロから採取された細菌の研究結果は何でしたか。
24. *A substance (物質（ぶっしつ）) called lepromin was produced.*

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25. Thanks to the development of easy diagnosis methods (診断法（しんだんほう）) and effective treatment,
cases of leprosy worldwide have dropped dramatically (劇的（げきてき）に). Unfortunatey, many of
the 200,000 or so (～ばかり) people who still become infected (感染（かんせん）している) each year fail to (～し損（そこ）なう) be
26. diagnosed and receive medication (薬物治療（やくぶつちりょう）) before the disease causes permanent (永久（えいきゅう）の)
damage because they live in poor and difficult-to-reach areas (到達困難（とうたつこんなん）な地域（ちいき）) of the world.

Further Questions&A

27. 7) What has happened thanks to the development of easy diagnosis methods?
28. 簡易な診断法の開発により、どうなっていますか。
29. *The cases of leprosy worldwide (世界中（せかいじゅう）に広（ひろ）がった) have dropped dramatically (劇的（げきてき）に).*
30. 8) Why can't many of the people infected each year be diagnosed and receive medication?
31. なぜ各年の感染者の多数は診断されず、薬物治療も受けられないのですか。

32. *They live in poor and difficult-to-reach areas of the world.*

33. *Choose the correct answer from these choices.

34. (32) What was G.A. Hansen's contribution (貢献（こうけん）) to the fight against leprosy?

35. ハンセン病（びょう）と戦（たたか）う G.A.ハンセンはどんな貢献（こうけん）をしまいしたか。

36. 1. He made it possible to test treatments for leprosy by growing large amounts of M.leprae in the lab (実験室（じっけんしつ）) .

37. 2. He developed (開発（かいはつ）した) a way to reduce (減少（げんしょう）させる) the severity (激（はげ）しさ) of nerve (神経（しんけい）) damage in leprosy sufferers (苦（くる）しむ人（ひと）たち) .

38. 3. He discovered that leprosy was actually an acquired (後天的（こうてんてき）な) diseased caused by one specific (特定（とくてい）の) bacterium.

39. 4. He reduced the public's fear (恐（おそ）れ) of leprosy by showing the disease was, in fact, not usually infectious (伝染性（でんせんせい）の) .

40. (33) One reason nine-banded armadillos proved useful in leprosy research was that

41. ココノオビアルマジロがハンセン病研究（びょうけんきゅう）において有益（ゆうえき）であることを証明（しょうめい）した一（ひと）つの理由（りゆう）は…

42. 1. the high rate (割合（わりあい）) at which they contracted (収縮（しゅうしゅく）した) leprosy in the wild (野生（やせい）の状態（じょうたい）では) provided researchers with a large study sample (標本（ひょうほん）) .

43. 2. the young of the armadillos infected with (～に伝染（でんせん）した) *M. leprae* demonstrated (証拠（しょうこ）となった) a natural immunity (自然免疫（しぜんめんえき）) to the disease.

44. 3. their symptoms (症状（しょうじょう）) develop more slowly than in humans, which allowed the researchers to perform (行（おこな）う) long-term experiments (実験（じっけん）).

45. 4. they could be used as a means to grow *M. leprae* because of their relatively (比較的（ひかくてき）) cool body temperature (体温（たいおん）).

46. (34) What is one thing the author of the passage says about the current state of leprosy? この文章（ぶんしょう）の著者（ちょしゃ）はハンセン病の現在（げんざい）の状態（じょうたい）についてどんな一（ひと）つのことを述（の）べていますか。

47. 1. Leprosy sufferers in certain (一定（いってい）の) places are unable to receive treatment due to (～のために) limited access (制限（せいげん）された) to medical care (立（た）ち入（い）り 医療（いりょう）).

48. 2. Leprosy is particularly (とりわけ) difficult to control in areas with large populations of nine-banded armadillos.

49. 3. The treatment that has proven most effective (有効（ゆうこう）な) is difficult to manufacture (製造（せいぞう）する) in large quantities (多量（たりょう）に).

50. 4. Lepromin injections (注射（ちゅうしゃ）) are no longer considered a practical (実際的（じっさいてき）な) way to treat (治療（ちりょう）する) leprosy in developing countries (発展途上国（はってんとじょうこく）).

Review Questions

1) What symptoms are caused by Leprosy?

It can cause blindness and the loss of feeling in the hands and feet.

2) What did G.A. Hansen identify in 1873?

見極（みきわ）めた　～の原因（げんいん）であって

He identified the bacteria responsible for leprosy.

3) Why were the bodies of armadillos a good breeding ground for bacterium?

It was a good breeding ground because their body temperatures are lower than that of humans.

4) What is unusual about the young of nine-banded armadillo?

They give birth to four genetically identical young.

5) What happened when the nine-banded armadillo were injected with M. leprae?

感染（かんせん）　～の結果（けっか）になる

They developed an infection resulting in large numbers of the bacterium.

6) What was the result of 25 years of study of bacteria taken from the armadillo?

物質（ぶっしつ）

A substance called lepromin was produced.

7) What has happened thanks to the development of easy diagnosis methods?

世界中（せかいじゅう）に広（ひろ）がった　劇的（げきてき）に

The cases of leprosy worldwide have dropped dramatically.

8) Why can't many of the people infected each year be diagnosed and receive medication?

They live in poor and difficult-to-reach areas of the world.

解答: (29) 3 (30) 1 (31) 2

Type B 日本語訳なし

3[A] – Leprosy and Armadillos　　Version3 GP1 11-2

Leprosy has been feared since ancient times. This infectious disease attacks the nerves and can cause blindness and the loss of feeling in the hands and feet. Leprosy was widely considered to be an inherited disease until 1873, when Norwegian researcher G.A. Hansen identified the bacterium responsible for it: *Mycobacterium leprae*. His discovery laid the foundation for scientific research into the disease and the development of a treatment for humans. Initial attempts

to cultivate *M. leprae* in the laboratory, however, only yielded small amounts, which prevented any useful research from being carried out.

Further Questions *Ask student to answer the question on their own at first. If the student can't answer correctly, have him look at the last page and read the "example answer" for the question. Have the student try to memorize the answer, if it's too long or difficult, you should divide the sentence into 2 or 3 parts to make it easier to remember. Once they have memorized the answer, the teacher should ask the question one last time so that the student can practice answering. Also if you find any mistakes, please mark the page and let me know ASAP.

1) What symptoms are caused by Leprosy?
It can cause blindness and the loss of feeling in the hands and feet.
2) What did G.A. Hansen identify in 1873?
He identified the bacteria responsible for leprosy.

In the late 1960s, an American biochemist named Eleanor Storrs tried cultivating *M. leprae* in the nine-banded armadillo, a mammal common in the southern United States. She knew that in humans, *M. leprae* thrives in cooler extremities such as toes and fingers. Because the body temperature of the nine-banded armadillo is lower than that of humans, she thought they would be a good breeding ground for the bacterium. Furthermore, nine-banded armadillos give birth to four genetically identical young, a fact Storrs knew would be useful when conducting experiments to compare the condition of diseased and healthy animals.

Further Questions

3) Why were the bodies of armadillos a good breeding ground for bacterium?
It was a good breeding ground because their body temperatures are lower than that of humans.
4) What is unusual about the young of nine-banded armadillo?
They give birth to four genetically identical young.

Storrs found that nine-banded armadillos injected with *M. leprae* developed infection resulting in large numbers of the bacterium. Over the next 25 years, researchers studied bacteria taken from infected nine-banded armadillos to learn more about leprosy. A major breakthrough eventually came when a substance called lepromin was produced. When injected, lepromin causes a skin reaction in those infected with *M. leprae*. If diagnosed in this way at an early stage, leprosy is now curable with long-term treatment using a combination of antibiotics.

Further Questions

5) What happened when the nine-banded armadillo were injected with *M. leprae*?
They developed an infection resulting in large numbers of the bacterium.
6) What was the result of 25 years of study of bacteria taken from the armadillo?
A substance called lepromin was produced.

Thanks to the development of easy diagnosis methods and effective treatment, cases of leprosy worldwide have dropped dramatically. Unfortunatey,

many of the 200,000 or so people who still become infected each year fail to be diagnosed and receive medication before the disease causes permanent damage because they live in poor and difficult-to-reach areas of the world.

Further Questions

7) What has happened thanks to the development of easy diagnosis methods?
The cases of leprosy worldwide have dropped dramatically.
8) Why can't many of the people infected each year be diagnosed and receive medication?
They live in poor and difficult-to-reach areas of the world..

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*Choose the correct answer from these choices.

(32) What was G.A. Hansen's contribution to the fight against leprosy?

1. He made it possible to test treatments for leprosy by growing large amounts of M.leprae in the lab.
2. He developed a way to reduce the severity of nerve damage in leprosy sufferers.
3. He discovered that leprosy was actually an acquired diseased aused by one specific bacterium.
4. He reduced the public's fear of leprosy by showing the disease was, in fact, not usually infectious.

(33) One reason nine-banded armadillos proved useful in leprosy research was that

1. the high rate at which they contracted leprosy in the wild provided researchers with a large study sample.
2. the young of the armadillos infected with *M. leprae* demonstrated a natural immunity to the disease.
3. their symptoms develop more slowly than in humans, which allowed the researchers to perform long-term experiments.
4. they could be used as a means to grow *M. leprae* because of their relatively cool body temperature.

(34) What is one thing the author of the passage says about the current state of leprosy?

1. Leprosy sufferers in certain places are unable to receive treatment due to limited access to medical care.
2. Leprosy is particularly difficult to control in areas with large populations of nine-banded armadillos.
3. The treatment that has proven most effective is difficult to manufacture in large quantities.
4. Lepromin injections are no longr considered a practical way to treat leprosy in developing countries.

Answers for "Further Questions"

1) Why are native plants considered more environmentally friendly?
They are considered more environmentally friendly, because they require less water than nonnative plants.
2) What do native plants attract?
They attract more birds and butterflies.
3) Why are native plants easier to maintain?
They are easier to maintain, because they are resistant to disease and harmful pests.
4) Where can gardeners buy nonnative plants?
They can buy them at a local nursery.
5) What do plant breeders have a long history of doing?
They have a long history of crossbreeding nonnative species with local ones.
6) What do many gardeners who insist on having only native plants fail to see?
They fail to see a contradiction in the choices they make for their vegetable plot.
7) Why would few gardeners consider limiting their fruits and vegetables to native species?
They wouldn't consider limiting them because most common vegetables are nonnative.
8) In your garden, do you plant mostly native plants?
No, because the most popular plants are all nonnative.

解答: (29) 3 (30) 1 (31) 2

