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Ready-to-Use English Lessons by Sean Banville

Level 3
Scientists make super-strong spider web silk

14th January, 2017

http://www.breakingnewsenglish.com/1701/170114-spider-web.html

Contents

Please try Levels 0, 1 and 2 (they are easier).

THE ARTICLE

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

A group of researchers from Sweden has unlocked one of nature's biggest secrets. The scientists worked out how spiders make such strong silk when they spin their spider webs. The silk that spiders spin is incredibly strong and is tougher than steel. For decades, scientists have been researching what makes the silk so amazing. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have found the answer. They found that the materials for webs are stored in a spider's silk gland as protein. The gland has a level of acidity that helps to make the protein into very strong silk. The researchers copied this process to make enough artificial spider-web silk to stretch for one kilometer.

The new artificial silk could be very useful to humans. Doctors are interested in it to use for stitches. They also think it can help the skin recover after a burn. Some doctors believe the new silk could replace torn ligaments in the body. Airplane manufacturers and makers of protective clothing also see many uses for the new silk. Senior researcher Anna Rising spoke about how important the discovery could be. She said: "This is the first successful example of [copying] spider silk spinning. In the future, this may allow industrial production of artificial silk for bio-material applications or for the manufacture of advanced textiles." The silk could become an important new material for us in the future.

Sources: https://www.**cnet.com**/news/spider-web-artificial-swedish-university-agriculture/
http://www.**livescience.com**/57458-strong-spider-silk-produced.html
https://**cosmosmagazine.com**/chemistry/new-synthetic-spider-silk-that-s-almost-as-strong-as-the-real-thing

WARM-UPS

1. SPIDER WEBS: Students walk around the class and talk to other students about spider webs. Change partners often and share your findings.

2. CHAT: In pairs / groups, talk about these topics or words from the article. What will the article say about them? What can you say about these words and your life?

researchers / nature / secrets / silk / spider webs / answer / materials / process / artificial / doctors / recover / clothing / discovery / industrial / production / future

Have a chat about the topics you liked. Change topics and partners frequently.

3. SPIDERS: Students A **strongly** believe spiders are good; Students B **strongly** believe spiders are bad. Change partners again and talk about your conversations.

4. NATURE: What can we learn from these creatures? Complete this table with your partner(s). Change partners often and share what you wrote.

	What they are best at	What we can learn from them
Spiders		
Bees		
Ants		
Dolphins		
Eagles		
Snakes		

5. SECRET: Spend one minute writing down all of the different words you associate with the word "secret". Share your words with your partner(s) and talk about them. Together, put the words into different categories.

6. CREATURES: Rank these with your partner. Put the most useful creatures at the top. Change partners often and share your rankings.

- spiders
- dogs
- ants
- horses
- cats
- dolphins
- camels
- bees

BEFORE READING / LISTENING

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

1. TRUE / FALSE: Read the headline. Guess if a-h below are true (T) or false (F).

a. Swedish researchers have unlocked nature's biggest secret. **T / F**
b. Researchers have made a spider's web made from steel. **T / F**
c. Protein in the spider's silk gland helps make the spider web. **T / F**
d. Researchers made a 10-km-long spider-web thread. **T / F**
e. Doctors say the new silk could be used to stitch up cuts and injuries. **T / F**
f. Airplane manufacturers are interested in the artificial silk. **T / F**
g. The researchers are the first to successfully copy how spiders spin silk. **T / F**
h. The artificial silk is already being used to make advanced textiles. **T / F**

2. SYNONYM MATCH:

Match the following synonyms. The words in **bold** are from the news article.

1. unlocked	a. heal
2. secrets	b. kept
3. worked out	c. mysteries
4. stored	d. manmade
5. copied	e. manufacture
6. artificial	f. opened
7. recover	g. duplicated
8. protective	h. fabric
9. production	i. discovered
10. material	j. safety

3. PHRASE MATCH: (Sometimes more than one choice is possible.)

1. unlocked one of nature's	a. for stitches
2. when they spin	b. as protein
3. stored in a spider's silk gland	c. for one kilometer
4. The researchers copied	d. textiles
5. enough artificial spider-web silk to stretch	e. their spider webs
6. Doctors are interested in it to use	f. clothing
7. help the skin recover	g. biggest secrets
8. makers of protective	h. of artificial silk
9. allow industrial production	i. after a burn
10. the manufacture of advanced	j. this process

GAP FILL

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

A group of researchers from Sweden has (1) _____ one of nature's biggest (2) _____. The scientists worked out how spiders make such strong silk when they (3) _____their spider webs. The silk that spiders spin is incredibly strong and is (4) _____than steel. For decades, scientists have been researching what makes the silk so (5) _____. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have found the answer. They found that the (6) _____for webs are stored in a spider's silk gland as protein. The gland has a (7) _____of acidity that helps to make the protein into very strong silk. The researchers copied this process to make enough (8) _____spider-web silk to stretch for one kilometer.

tougher

unlocked

artificial

spin

materials

secrets

level

amazing

The new artificial silk could be very (9) _____to humans. Doctors are interested in it to use for (10) _____. They also think it can help the skin recover after a (11) _____. Some doctors believe the new silk could replace (12) _____ligaments in the body. Airplane manufacturers and makers of (13) _____clothing also see many uses for the new silk. Senior researcher Anna Rising spoke about how important the (14) _____could be. She said: "This is the first successful example of [copying] spider silk spinning. In the future, this may allow industrial (15) _____of artificial silk for bio-material applications or for the manufacture of advanced (16) _____." The silk could become an important new material for us in the future.

protective

stitches

discovery

torn

textiles

burn

production

useful

LISTENING – Guess the answers. Listen to check.

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

1) A group of researchers from Sweden has unlocked one of nature's _____
   a. biggest secretive
   b. biggest secretes
   c. biggest secreted
   d. biggest secrets
2) The scientists worked out how spiders make _____
   a. such strongly silk
   b. much strong silky
   c. such strong silk
   d. much strong silky
3) The silk that spiders spin is incredibly strong and is tougher _____
   a. than steel
   b. than steal
   c. that steel
   d. that steal
4) They found that the materials for webs are stored in a spider's _____ protein
   a. silk grand as
   b. silk gland as
   c. silk bland as
   d. silk brand as
5) The researchers copied this process to make enough _____ silk
   a. artificial spider-web
   b. art if fishy spider-web
   c. arty fish all spider-web
   d. are tea fish all spider-web
6) The new artificial silk could be _____ humans
   a. very useless to
   b. very usefully to
   c. very useful to
   d. very used full to
7) They also think it can help the skin recover _____
   a. after a burnt
   b. after a burns
   c. after a burned
   d. after a burn
8) makers of protective clothing also see many uses for _____
   a. the new silk
   b. the knew silk
   c. the anew silk
   d. the newly silk
9) This is the first successful example of copying spider _____
   a. silk spanning
   b. silk spinning
   c. silk spawning
   d. silk spun in
10) bio-material applications or for the manufacture of _____
   a. advance it textiles
   b. advanced textile
   c. advantage textiles
   d. advanced textiles

LISTENING – Listen and fill in the gaps

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

(1) _____ researchers from Sweden has unlocked one of nature's biggest secrets. The scientists (2) _____ spiders make such strong silk when they spin their spider webs. The silk that spiders (3) _____ strong and is tougher than steel. For decades, scientists have been researching what makes the silk so amazing. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have (4) _____. They found that the materials for webs are stored in a spider's silk gland as protein. The gland (5) _____ acidity that helps to make the protein into very strong silk. The researchers copied this process to make enough artificial spider-web silk (6) _____ one kilometer.

The new artificial silk (7) _____ useful to humans. Doctors are interested in it to use for stitches. They also think (8) _____ skin recover after a burn. Some doctors believe the new silk could replace torn ligaments in the body. Airplane manufacturers and makers of protective clothing (9) _____ uses for the new silk. Senior researcher Anna Rising spoke about how important the discovery could be. She said: "(10) _____ successful example of [copying] spider silk spinning. In the future, this (11) _____ production of artificial silk for bio-material applications or for the manufacture of advanced textiles." The silk could become an important new material (12) _____ future.

COMPREHENSION QUESTIONS

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

1. In which country was the research conducted?

2. What do spiders spin?

3. What did the article say spider web silk is stronger than?

4. What is the material for spider silk stored in the spider's silk gland as?

5. How long could the artificial silk the researchers made stretch for?

6. What could the new silk help recover after a burn?

7. What do doctors think the silk could replace in the body?

8. What other companies besides clothing companies like the silk?

9. What kind of applications could the artificial silk be used for?

10. When could the artificial silk become important for us?

MULTIPLE CHOICE - QUIZ

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

1) In which country was the research conducted?
a) Malaysia
b) Brazil
c) USA
d) Sweden

2) What do spiders spin?
a) bottle tops
b) webs
c) their eyes
d) flies

3) What did the article say spider web silk are as strong as?
a) acid
b) concrete
c) steel
d) an ox

4) What is the material for spider silk stored in the spider's silk gland as?
a) protein
b) acid
c) steel
d) level

5) How long could the artificial silk the researchers made stretch for?
a) 500m
b) 2km
c) 1km
d) 3km

6) What could the new silk help recover after a burn?
a) glands
b) skin
c) spider webs
d) spiders

7) What do doctors think the silk could replace in the body?
a) bones
b) veins
c) hair
d) torn ligaments

8) What other companies besides clothing companies like the silk?
a) airplane companies
b) electronics manufacturers
c) construction companies
d) Internet companies

9) What kind of applications could the artificial silk be used for?
a) bionic applications
b) biology applications
c) bio-material applications
d) bio-diesel applications

10) When could the artificial silk become important for us?
a) when some buys the company
b) in the future
c) after spiders die out
d) November 22

ROLE PLAY

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

Role A – Spiders

You think spiders are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): ants, cats or horses.

Role B – Ants

You think ants are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): spiders, cats or horses.

Role C – Cats

You think cats are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): ants, spiders or horses.

Role D – Horses

You think horses are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): ants, cats or spiders.

AFTER READING / LISTENING

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

1. WORD SEARCH: Look in your dictionary / computer to find collocates, other meanings, information, synonyms … for the words 'spider' and 'web'.

spider	**web**

- Share your findings with your partners.
- Make questions using the words you found.
- Ask your partner / group your questions.

2. ARTICLE QUESTIONS: Look back at the article and write down some questions you would like to ask the class about the text.

- Share your questions with other classmates / groups.
- Ask your partner / group your questions.

3. GAP FILL: In pairs / groups, compare your answers to this exercise. Check your answers. Talk about the words from the activity. Were they new, interesting, worth learning…?

4. VOCABULARY: Circle any words you do not understand. In groups, pool unknown words and use dictionaries to find their meanings.

5. TEST EACH OTHER: Look at the words below. With your partner, try to recall how they were used in the text:

• group • worked • tougher • stored • level • enough	• useful • after • see • important • allow • become

SPIDER WEBS SURVEY

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

Write five GOOD questions about spider webs in the table. Do this in pairs. Each student must write the questions on his / her own paper.
When you have finished, interview other students. Write down their answers.

	STUDENT 1 _____	STUDENT 2 _____	STUDENT 3 _____
Q.1.			
Q.2.			
Q.3.			
Q.4.			
Q.5.			

- Now return to your original partner and share and talk about what you found out. Change partners often.
- Make mini-presentations to other groups on your findings.

SPIDER WEBS DISCUSSION

STUDENT A's QUESTIONS (Do not show these to student B)

1. What did you think when you read the headline?
2. What springs to mind when you hear the word 'spider'?
3. What do you think of spider webs?
4. What other kinds of webs do you know of?
5. What do you think about what you read?
6. How useful is silk?
7. How important is this new discovery?
8. What do you think of spiders?
9. What three adjectives best describe spider webs, and why?
10. What other secrets of science should researchers unlock?

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SPIDER WEBS DISCUSSION

STUDENT B's QUESTIONS (Do not show these to student A)

11. Did you like reading this article? Why/not?
12. How useful could the artificial silk be to humans?
13. What uses could the new silk have in hospitals?
14. What uses could the new silk have in our homes?
15. Do you think silk could be used to make a real-life Spiderman?
16. What are bio-materials?
17. What else can we learn from spiders?
18. What do you do when you see a spider web?
19. Why are spider webs also called cobwebs?
20. What questions would you like to ask the researchers?

DISCUSSION (Write your own questions)

STUDENT A's QUESTIONS (Do not show these to student B)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

DISCUSSION (Write your own questions)

STUDENT B's QUESTIONS (Do not show these to student A)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

LANGUAGE - CLOZE

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

A group of researchers from Sweden has (1) _____ one of nature's biggest secrets. The scientists worked out how spiders make such strong silk when they (2) _____ their spider webs. The silk that spiders spin is incredibly strong and is tougher than steel. For decades, scientists have been researching what makes the silk so (3) _____. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have (4) _____ the answer. They found that the materials for webs are stored in a spider's silk gland (5) _____ protein. The gland has a level of acidity that helps to make the protein into very strong silk. The researchers copied this process to make enough artificial spider-web silk to stretch (6) _____ one kilometer.

The new artificial silk could be very useful (7) _____ humans. Doctors are interested in it to use for stitches. They also think it can help the skin recover after a (8) _____. Some doctors believe the new silk could replace torn ligaments in the body. Airplane manufacturers and makers of protective clothing also (9) _____ many uses for the new silk. Senior researcher Anna Rising spoke about how important the discovery could (10) _____. She said: "This is the first successful example of [copying] spider silk spinning. (11) _____ the future, this may allow industrial production of artificial silk for bio-material applications or for the manufacture of advanced textiles." The silk could become an important new material for (12) _____ in the future.

Put the correct words from the table below in the above article.

1.	(a)	unblocked	(b)	unlocked	(c)	clocked	(d)	flocked
2.	(a)	twist	(b)	spin	(c)	turn	(d)	swivel
3.	(a)	amazes	(b)	amazement	(c)	amazed	(d)	amazing
4.	(a)	done	(b)	found	(c)	spun	(d)	worked
5.	(a)	has	(b)	was	(c)	is	(d)	as
6.	(a)	all	(b)	by	(c)	for	(d)	at
7.	(a)	to	(b)	at	(c)	of	(d)	on
8.	(a)	burning	(b)	burnt	(c)	burn	(d)	burns
9.	(a)	view	(b)	watch	(c)	look	(d)	see
10.	(a)	be	(b)	do	(c)	have	(d)	take
11.	(a)	In	(b)	At	(c)	On	(d)	By
12.	(a)	us	(b)	we	(c)	them	(d)	they

SPELLING

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

Paragraph 1

1. one of nature's biggest scsrete
2. silk that spiders spin is bneiicdrly strong
3. the amtlsreia for webs
4. make the tiponre into very strong silk
5. make enough firialciat spider-web silk
6. ehcttrs for one kilometer

Paragraph 2

7. use for steschit
8. help the skin erovecr after a burn
9. makers of prtcioetve clothing
10. how important the sdcivyero could be
11. this may allow uistrnliad production
12. the crtaufnamue of advanced textiles

PUT THE TEXT BACK TOGETHER

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

Number these lines in the correct order.

( ) this process to make enough artificial spider-web silk to stretch for one kilometer.

( ) the manufacture of advanced textiles." The silk could become an important new material for us in the future.

( ) body. Airplane manufacturers and makers of protective clothing also see many uses

( ) for the new silk. Senior researcher Anna Rising spoke about how important the discovery could

( ) The new artificial silk could be very useful to humans. Doctors are interested in it to use for stitches. They also think it can

( ) help the skin recover after a burn. Some doctors believe the new silk could replace torn ligaments in the

( ) be. She said: "This is the first successful example of [copying] spider silk spinning. In the future, this may

( ) protein. The gland has a level of acidity that helps to make the protein into very strong silk. The researchers copied

( ) allow industrial production of artificial silk for bio-material applications or for

( ) so amazing. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have

( ) found the answer. They found that the materials for webs are stored in a spider's silk gland as

( ) strong and is tougher than steel. For decades, scientists have been researching what makes the silk

( ) out how spiders make such strong silk when they spin their spider webs. The silk that spiders spin is incredibly

(***1***) A group of researchers from Sweden has unlocked one of nature's biggest secrets. The scientists worked

PUT THE WORDS IN THE RIGHT ORDER

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

1. that silk The strong incredibly is spin spiders .

2. researching been have Scientists silk the makes what .

3. webs in silk for stored spider's Materials are a gland .

4. very make strong the silk protein Helps into to .

5. to Enough spider for kilometer artificial stretch one - web silk .

6. could useful The silk very humans artificial be to new .

7. to are use interested for in stitches it Doctors .

8. silk torn the new replace in The could ligaments body .

9. production industrial allow may This silk artificial of .

10. could important for silk an material The become new us .

CIRCLE THE CORRECT WORD (20 PAIRS)

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

A / The group of researchers from Sweden has *unlocked / unlocking* one of nature's biggest secrets. The scientists worked out *what / how* spiders make such strong silk when they spin their spider webs. The silk that spiders spin is *incredible / incredibly* strong and is *tougher / tough* than steel. For decades, scientists have been researching what makes the silk so amazing. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have found *a/ the* answer. They found that the materials for webs *are / is* stored in a spider's silk gland *was / as* protein. The gland has a level of acidity that helps to make the protein *into / onto* very strong silk. The researchers copied this process to make enough artificial spider-web silk to stretch *for / of* one kilometer.

The new *artificial / artificially* silk could be very useful to humans. Doctors are interested *on / in* it to use for stitches. They also think it can help the skin recover after a *burnt / burn*. Some doctors believe the new silk could replace *tearing / torn* ligaments in the body. Airplane manufacturers and makers of protective *clothe / clothing* also see many uses for the new silk. Senior researcher Anna Rising spoke about how *importance / important* the discovery could be. She said: "This is the *firstly / first* successful example of [copying] spider silk spinning. *In / On* the future, this may allow industrial production of artificial silk for bio-material *applications / applies* or for the manufacture of advanced textiles." The silk could become an important new material for *us / they* in the future.

Talk about the connection between each pair of words in italics, and why the correct word is correct.

INSERT THE VOWELS (a, e, i, o, u)

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

_ gr__p _f r_s__rch_rs fr_m Sw_d_n h_s _nl_ck_d _n_ _f n_t_r_'s b_gg_st s_cr_ts. Th_ sc__nt_sts w_rk_d __t h_w sp_d_rs m_k_ s_ch str_ng s_lk wh_n th_y sp_n th__r sp_d_r w_bs. Th_ s_lk th_t sp_d_rs sp_n _s _ncr_d_bly str_ng _nd _s t__gh_r th_n st__l. F_r d_c_d_s, sc__nt_sts h_v_ b__n r_s__rch_ng wh_t m_k_s th_ s_lk s_ _m_z_ng. F_n_lly, r_s__rch_rs fr_m Sw_d_n's _n_v_rs_ty _f _gr_c_lt_r_l Sc__nc_s _nd th_ K_r_l_nsk_ _nst_t_t_ h_v_ f__nd th_ _nsw_r. Th_y f__nd th_t th_ m_t_r__ls f_r w_bs _r_ st_r_d _n _ sp_d_r's s_lk gl_nd _s pr_t__n. Th_ gl_nd h_s _ l_v_l _f _c_d_ty th_t h_lps t_ m_k_ th_ pr_t__n _nt_ v_ry str_ng s_lk. Th_ r_s__rch_rs c_p__d th_s pr_c_ss t_ m_k_ _n__gh _rt_f_c__l sp_d_r-w_b s_lk t_ str_tch f_r _n_ k_l_m_t_r.

Th_ n_w _rt_f_c__l s_lk c__ld b_ v_ry _s_f_l t_ h_m_ns. D_ct_rs _r_ _nt_r_st_d _n _t t_ _s_ f_r st_tch_s. Th_y _ls_ th_nk _t c_n h_lp th_ sk_n r_c_v_r _ft_r _ b_rn. S_m_ d_ct_rs b_l__v_ th_ n_w s_lk c__ld r_pl_c_ t_rn l_g_m_nts _n th_ b_dy. __rpl_n_ m_n_f_ct_r_rs _nd m_k_rs _f pr_t_ct_v_ cl_th_ng _ls_ s__ m_ny _s_s f_r th_ n_w s_lk. S_n__r r_s__rch_r _nn_ R_s_ng sp_k_ _b__t h_w _mp_rt_nt th_ d_sc_v_ry c__ld b_. Sh_ s__d: "Th_s _s th_ f_rst s_cc_ssf_l _x_mpl_ _f [c_py_ng] sp_d_r s_lk sp_nn_ng. _n th_ f_t_r_, th_s m_y _ll_w _nd_str__l pr_d_ct__n _f _rt_f_c__l s_lk f_r b__-m_t_r__l _ppl_c_t__ns _r f_r th_ m_n_f_ct_r_ _f _dv_nc_d t_xt_l_s." Th_ s_lk c__ld b_c_m_ _n _mp_rt_nt n_w m_t_r__l f_r _s _n th_ f_t_r_.

PUNCTUATE THE TEXT AND ADD CAPITALS

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

a group of researchers from sweden has unlocked one of nature's biggest secrets the scientists worked out how spiders make such strong silk when they spin their spider webs the silk that spiders spin is incredibly strong and is tougher than steel for decades scientists have been researching what makes the silk so amazing finally researchers from sweden's university of agricultural sciences and the karolinska institute have found the answer they found that the materials for webs are stored in a spider's silk gland as protein the gland has a level of acidity that helps to make the protein into very strong silk the researchers copied this process to make enough artificial spider-web silk to stretch for one kilometer

the new artificial silk could be very useful to humans doctors are interested in it to use for stitches they also think it can help the skin recover after a burn some doctors believe the new silk could replace torn ligaments in the body airplane manufacturers and makers of protective clothing also see many uses for the new silk senior researcher anna rising spoke about how important the discovery could be she said "this is the first successful example of [copying] spider silk spinning in the future this may allow industrial production of artificial silk for bio-material applications or for the manufacture of advanced textiles" the silk could become an important new material for us in the future

PUT A SLASH (/) WHERE THE SPACES ARE

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

AgroupofresearchersfromSwedenhasunlockedoneofnature'sbigges
tsecrets.Thescientistsworkedouthowspidersmakesuchstrongsilkwh
entheyspintheirspiderwebs.Thesilkthatspidersspinisincrediblystron
gandistougherthansteel.Fordecades,scientistshavebeenresearchin
gwhatmakesthesilksoamazing.Finally,researchersfromSweden'sUn
iversityofAgriculturalSciencesandtheKarolinskaInstitutehavefoundt
heanswer.Theyfoundthatthematerialsforwebsarestoredinaspider'ss
ilkglandasprotein.Theglandhasalevelofacidythathelpstomakethep
roteinintoverystrongsilk.Theresearcherscopiedthisprocesstomakee
noughartificialspider-websilktostretchforonekilometer.Thenewartif
icialsilkcouldbeveryusefultohumans.Doctorsareinterestedinittousef
orstitches.Theyalsothinkitcanhelptheskinrecoverafteraburn.Somed
octorsbelievethenewsilkcouldreplacetornligamentsinthebody.Airpla
nemanufacturersandmakersofprotectiveclothingalsoseemanyusesf
orthenewsilk.SeniorresearcherAnnaRisingspokeabouthowimportan
tthediscoverycouldbe.Shesaid:"Thisisthefirstsuccessfulexampleof[
copying]spidersilkspinning.Inthefuture,thismayallowindustrialprod
uctionofartificialsilkforbio-materialapplicationsorforthemanufactur
eofadvancedtextiles."Thesilkcouldbecomeanimportantnewmaterial
forusinthefuture.

FREE WRITING

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

Write about **spider webs** for 10 minutes. Comment on your partner's paper.

ACADEMIC WRITING

From http://www.BreakingNewsEnglish.com/1701/170114-spider-web.html

Spiders are very useful and important. They are not scary Discuss.

HOMEWORK

1. VOCABULARY EXTENSION: Choose several of the words from the text. Use a dictionary or Google's search field (or another search engine) to build up more associations / collocations of each word.

2. INTERNET: Search the Internet and find out more about this news. Share what you discover with your partner(s) in the next lesson.

3. SPIDER WEBS: Make a poster about spider webs. Show your work to your classmates in the next lesson. Did you all have similar things?

4. SPIDERS: Write a magazine article about how spiders could help us in the future. Include imaginary interviews with people who think spiders are very useful and with people who hate spiders.

Read what you wrote to your classmates in the next lesson. Write down any new words and expressions you hear from your partner(s).

5. WHAT HAPPENED NEXT? Write a newspaper article about the next stage in this news story. Read what you wrote to your classmates in the next lesson. Give each other feedback on your articles.

6. LETTER: Write a letter to an expert on spider webs. Ask him/her three questions about them. Give him/her three of your ideas on how spider web silk can help us in the future. Read your letter to your partner(s) in your next lesson. Your partner(s) will answer your questions.

ANSWERS

TRUE / FALSE (p.4)

a F b F c T d F e T f T g T h F

SYNONYM MATCH (p.4)

1. unlocked	a. opened
2. secrets	b. mysteries
3. worked out	c. discovered
4. stored	d. kept
5. copied	e. duplicated
6. artificial	f. manmade
7. recover	g. heal
8. protective	h. safety
9. production	i. manufacture
10. material	j. fabric

COMPREHENSION QUESTIONS (p.8)

1. Sweden
2. Spider webs (and silk)
3. Steel
4. Protein
5. One kilometer
6. Skin
7. Torn ligaments
8. Airplane makers
9. Bio-material applications
10. In the future

MULTIPLE CHOICE - QUIZ (p.9)

1. d 2. b 3. c 4. a 5. c 6. b 7. d 8. a 9. c 10. b

ALL OTHER EXERCISES

Please check for yourself by looking at the Article on page 2.
(It's good for your English ;-)