

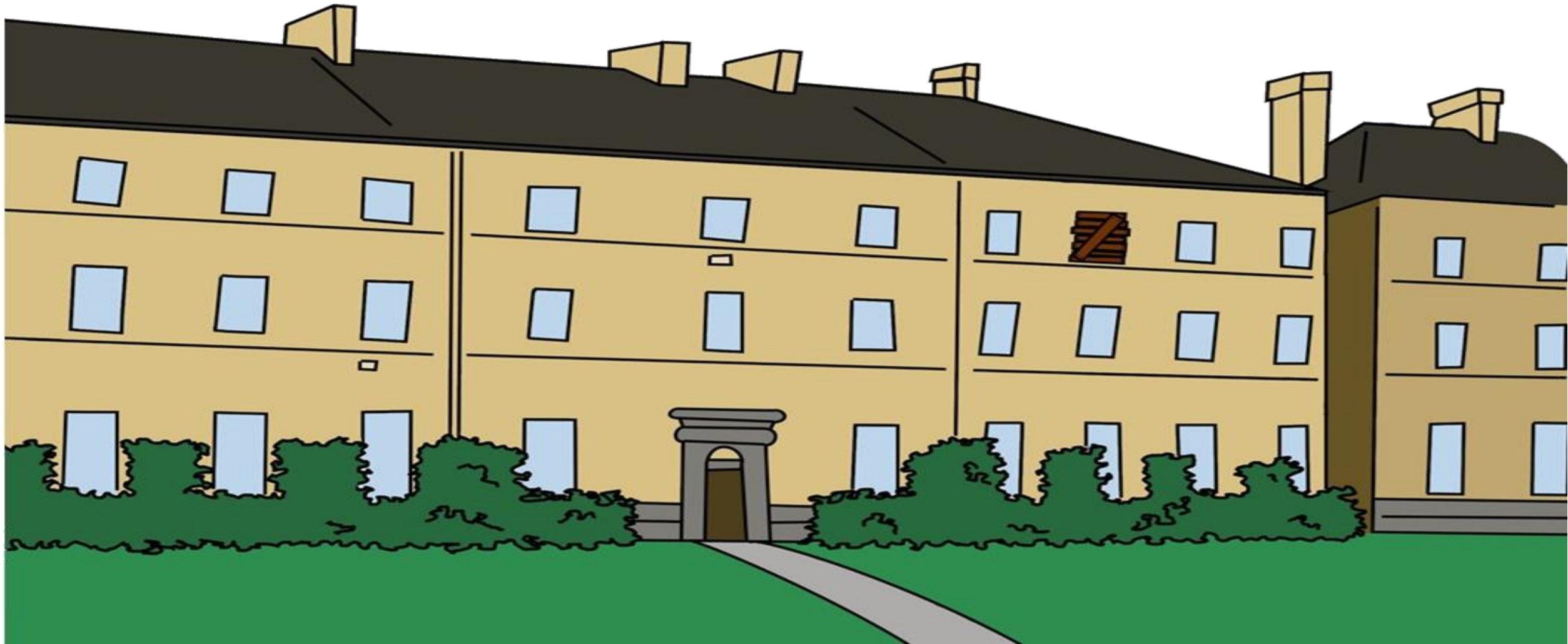
Baker Street *Elementary*

PRESENTS
"THE LIFE AND TIMES IN VICTORIAN LONDON"



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THE LIFE AND TIMES IN VICTORIAN LONDON
A045 -- SLITHERING ASSASSINS -- SNAKES IN THE SHERLOCK HOLMES
STORIES -- FEBRUARY, 2022



WELCOME TO TOPIC # 045... TODAY, MASTER
PAGET AND I WILL LOOK AT THOSE DISGUSTING
REPTILES, THE SNAKE...



IN 'THE ADVENTURE OF THE SPECKLED BAND,'
SHERLOCK HOLMES IDENTIFIES THE CULPRIT
BEHIND JULIA STONER'S DEATH AS A SWAMP
ADDER, 'THE DEADLIEST SNAKE IN INDIA.'



**WHILE THIS PARTICULAR SERPENT IS FICTITIOUS,
ENGLAND IS HOME TO ONE POISONOUS ADDER
(VIPERA BERUS) THAT HAS KILLED TWO PEOPLE
SINCE 1950.**



THIS MORTALITY RATE CAN BE COMPARED TO THE SAW-SCALED OR CARPET VIPER (ECHIS CARINATUS) FOUND FROM SENEGAL TO BENGAL THAT BITES AND KILLS MORE PEOPLE THAN ANY OTHER SNAKE OR AUSTRALIA'S INLAND TAIPAN (OXYURANUS MICROLEPIDOTUS) WHOSE VENOM IS CONSIDERED THE WORLD'S MOST LETHAL.





**MORE THAN 3,000 SPECIES OF SNAKES EXIST IN
THE WORLD, AND THEY ARE FOUND ON ALL
CONTINENTS EXCEPT ANTARCTICA.**



OF THESE, ABOUT 600 ARE VENOMOUS, WITH 200 CONSIDERED 'MEDICALLY IMPORTANT' BY THE WORLD HEALTH ORGANIZATION.



IN ADDITION TO BEING VENOMOUS, SNAKEBITES FROM THE MEDICALLY IMPORTANT SPECIES RESULT IN HIGH LEVELS OF MORBIDITY, DISABILITY, OR MORTALITY... IN ADDITION TO BEING COMMON IN ALL BUT THE COLDEST CLIMES, SNAKES HAVE OTHER COMMON FEATURES, INCLUDING USING THEIR TONGUES (NOT NOSES) TO 'SMELL;' NOT HAVING EYELIDS, NOR EYES THAT MOVE; AND A LACK OF EARS.



THESE ANIMALS 'HEAR' THROUGH VIBRATIONS
FROM THE GROUND... IN OTHER WORDS, THE
SWAMP ADDER YOU ENCOUNTERED WAS A VERY
UNIQUE VARIETY.



IT COULD ACTUALLY HEAR A WHISTLE... NOT TO MENTION DESCEND A CORD AND DRINK MILK... WHICH IS BIOLOGICALLY IMPOSSIBLE... ALL THE SAME, DIFFERENT TRUE SPECIES HAVE SOME AMAZING QUALITIES... CORN SNAKES USE THEIR SCALES TO DIG INTO BARK AND CLIMB TREES, THE PARADISE TREE SNAKE 'FLIES' BY FLINGING ITS BODY INTO THE AIR...



...AND CATCHING AIRFLOW, THE AFRICAN BLACK MAMBA SNAKE CAN TRAVEL UP TO 12 MPH, AND THE KING COBRA CAN GO MONTHS BETWEEN FEEDINGS.



THE ADDER, SUCH AS ROYLOTT'S SWAMP ADDER, IS
A MEMBER OF THE ELAPIDAE FAMILY... ALSO
INCLUDES COBRAS AND MAMBAS... CHARACTERIZED
BY SHORT, SMALL, FIXED FANGS.



AFTER BITING AND INJECTING THE VENOM, THEY USUALLY DO NOT LET GO OF THEIR VICTIM... THIS IS IN CONTRAST WITH THE VIPERIDAE SNAKE FAMILY, WHICH HAS A VERY DEVELOPED VENOM INJECTION SYSTEM WITH FANGS THAT BECOME ERECT JUST BEFORE BITING.

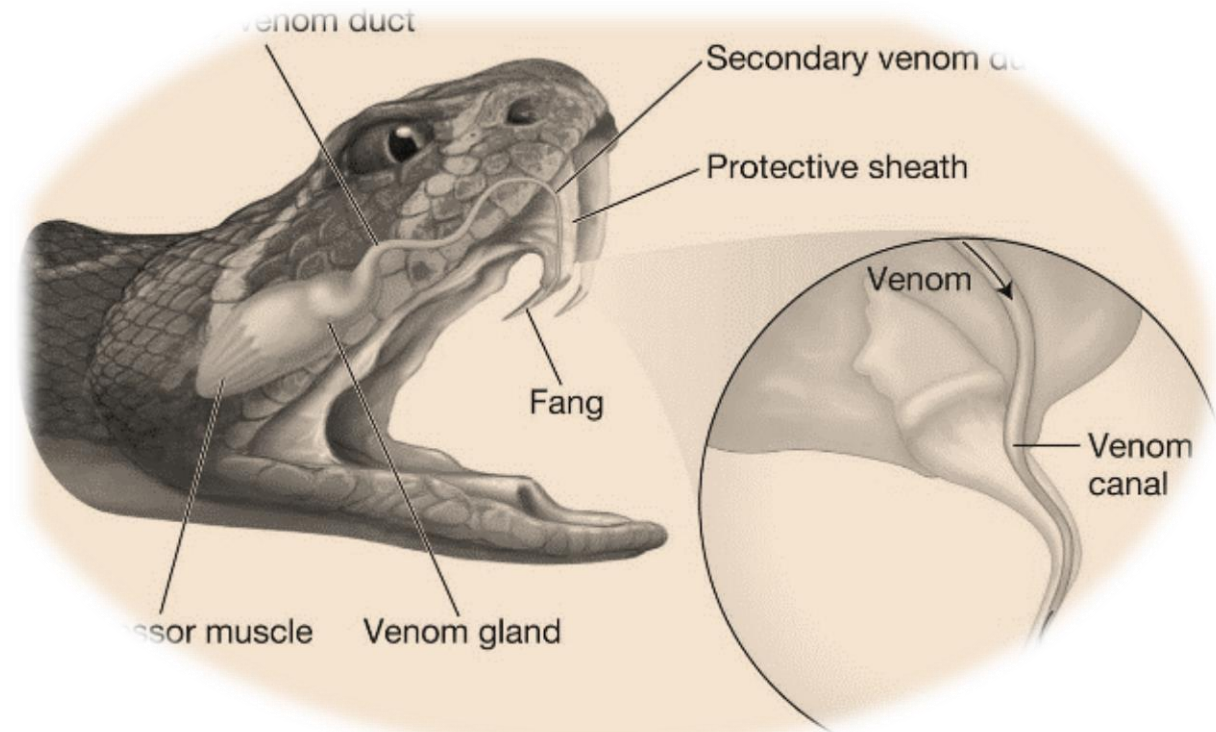


THEY RELEASE THEIR PREY AFTER INJECTION AND
WAIT FOR THE VENOM TO TAKE EFFECT... THE
FINAL CLASS OF VENOMOUS SNAKES, THE
COLUBRIDAE, HAVE FIXED REAR FANGS AND CHEW
THEIR VICTIM WHILE INJECTING THE VENOM.

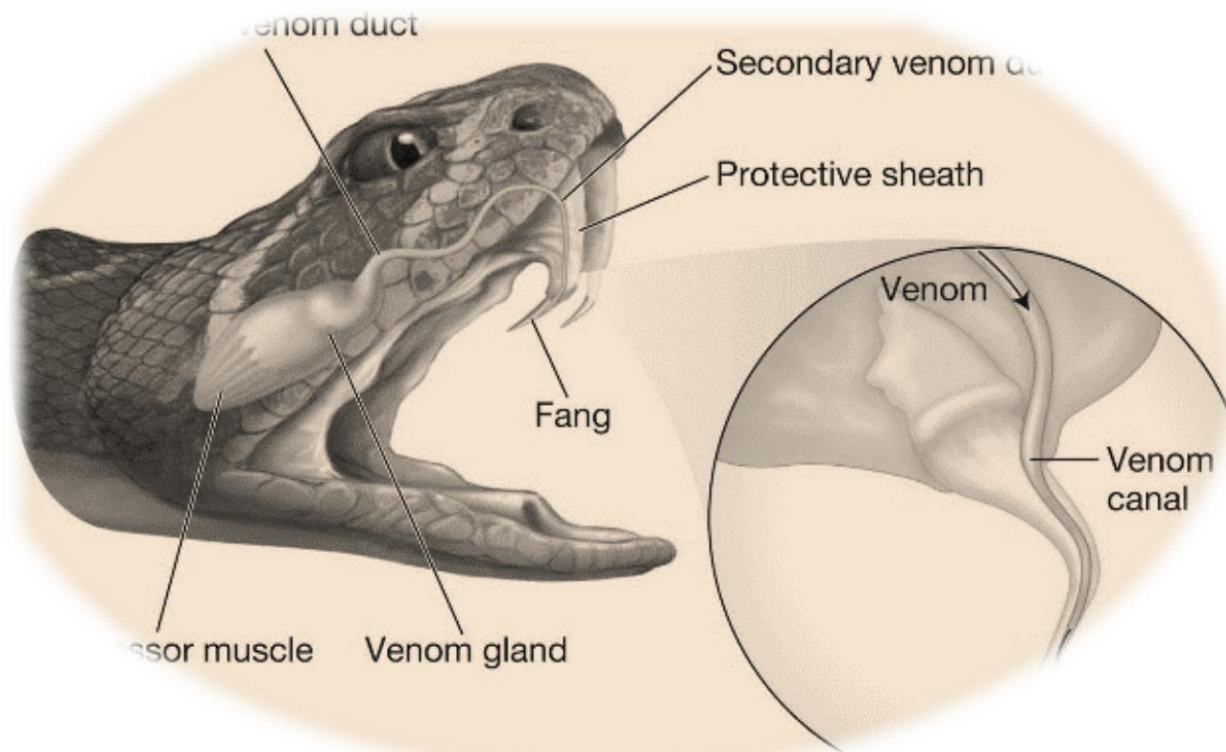


REGARDLESS OF THE TYPE OF FANG, THE INJECTION SYSTEM HAS FIVE PARTS:

- THE VENOM IS THE HARMFUL SUBSTANCE. WITH FEW EXCEPTIONS, SNAKES ARE VENOMOUS, NOT POISONOUS. VENOMS MUST BE INJECTED AND ONCE IN THE BLOODSTREAM BECOME EFFECTIVE.
- VENOM GLANDS ARE FOUND IN THE HEAD AND PRODUCE AND STORE THE TOXIN



- SPECIAL MUSCLES NEAR THE GLANDS SQUEEZE THE TOXINS FROM THE GLANDS
- DUCTS TRANSPORT THE VENOM FROM THE GLANDS TO THE FANGS
- FANGS, THE TEETH THAT INJECT THE VENOM, DO SO THROUGH CANALS THROUGH THE CENTER OF THESE SPECIALIZED TEETH.

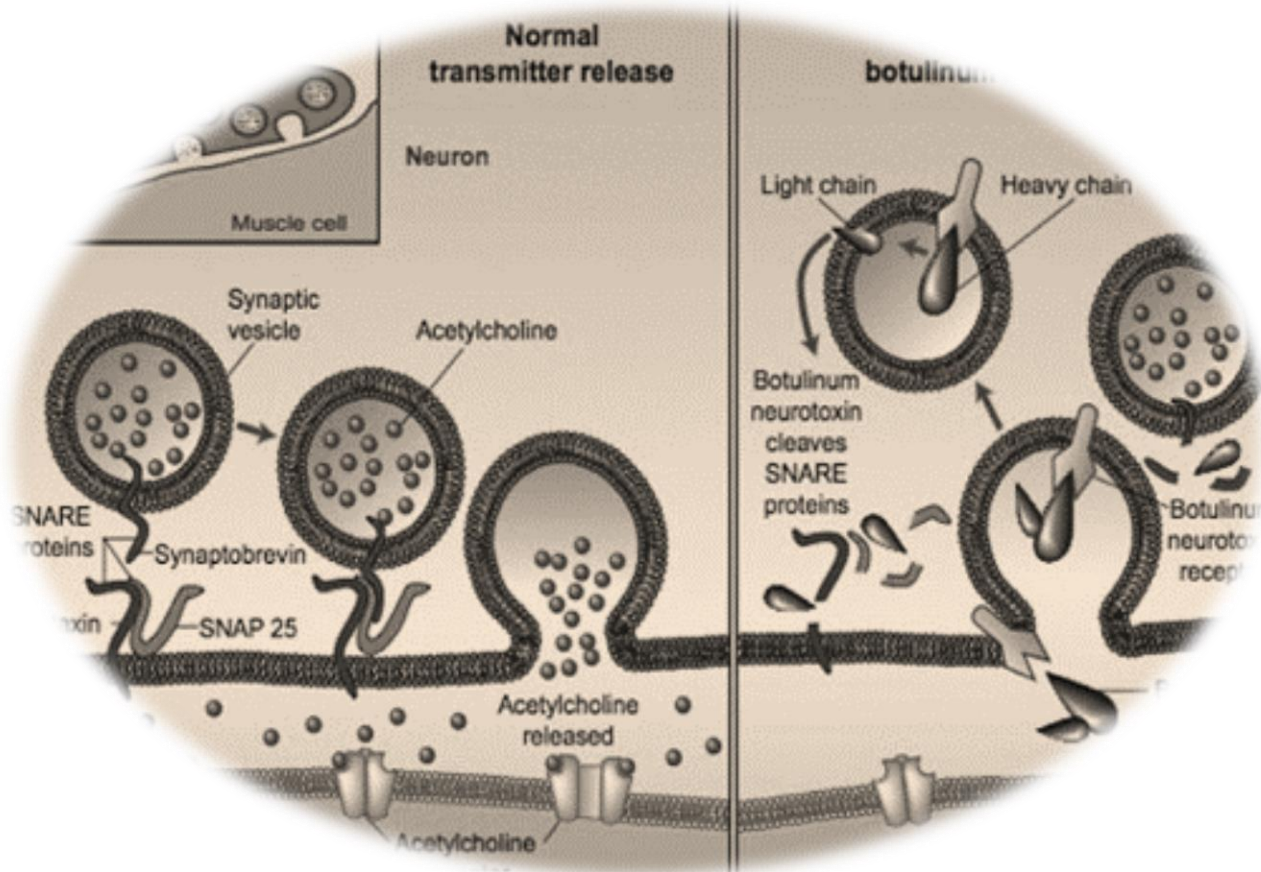


VENOMS FALL INTO THREE MAIN CATEGORIES:

- **CYTOTOXINS DESTROY CELLS, WHICH LEADS TO NECROSIS, AND ARE USUALLY SPECIFIC TO A PARTICULAR ORGAN**
- **NEUROTOXINS AFFECT THE NERVOUS SYSTEM, DISRUPTING THE TRANSMISSIONS BETWEEN NEURONS AND CAUSES PARALYSIS**



- **HEMOTOXINS CAUSE RED BLOOD CELLS TO BURST OPEN AND INTERFERE WITH CLOTTING, LEADING TO ORGAN DAMAGE AND TISSUE DEATH.**



VENOMOUS SNAKES ARE IDENTIFIED BY THEIR EYE PUPILS (ROUND FOR NON-VENOMOUS; ELLIPTICAL FOR VENOMOUS); A POINTED SNOUT A BROAD, TRIANGULAR HEAD WITH A BULBOUS HEAD AND SKINNY NECK; AND A COLORFUL PATTERN — ALTHOUGH THE AFRICAN BLACK MAMBA IS ONE COLOR.



THE CORAL SNAKE HAS BLACK, YELLOW, AND RED BANDS AND CAN BE IDENTIFIED WITH THE RHYME:
'RED TOUCHES YELLOW WILL KILL A FELLOW'...
SNAKE VENOM GLANDS APPEARED ABOUT 60-80-
MILLION YEARS AGO AND HAVE CONTINUED TO
EVOLVE, WITH THE TOXINS CONTINUOUSLY
BECOMING MORE DEADLY.



THE CURRENT ANTI-VENOMS (DEVELOPED BY INJECTING DILUTED VENOM INTO HORSES AND SHEEP AND FILTERING OUT THE ANTI-BODIES) WERE RUNNING LOW IN 2015 AND NEW TARGETED ANTI-VENOMS WERE BEING DEVELOPED TO ADDRESS THESE STRONGER VENOMS.





THE CREATION OF ANTI-VENOMS HAS BEEN CREDITED TO TWO GROUPS WORKING SIMULTANEOUSLY, BUT INDEPENDENTLY, ON THE PROBLEM. CESAIRE AUGUSTE PHISALIX, A NATURALIST...





...STUDIED THE PROBLEM FROM A NATURAL IMMUNITY APPROACH WHILE ALBERT CALMETTE, A MICROBIOLOGIST, PUT HIS STUDY OF ANTI-VIRALS INTO PRACTICE AND PRODUCED ANTI-VENOM IN LILLE IN 1895.



**GIVEN THAT THE ACCOUNT OF THE SPECKLED BAND
FIRST APPEARED IN 1892 AND WAS TO HAVE
OCCURRED IN 1883, NO ANTIVENOM WAS YET
AVAILABLE.**



THANKS TO YOUR FAST ACTION, HOWEVER, MISS
STONER HAD NO NEED FOR IT.



SO, WE HAVE COMPLETED TOPIC # 045 IN OUR SERIES...

IN TOPIC # 046, WE WILL BE LOOKING AT CYCLING, PARTICULARLY BY WOMEN, IN THE VICTORIAN PERIOD.



REFERENCES FOR THIS TOPIC:

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"THE LIFE AND TIMES IN VICTORIAN LONDON"

IS CREATED THROUGH THE INGENUITY & HARD WORK OF:

JOE FAY
LIESE SHERWOOD-FABRE
RUSTY MASON
&
STEVE MASON

