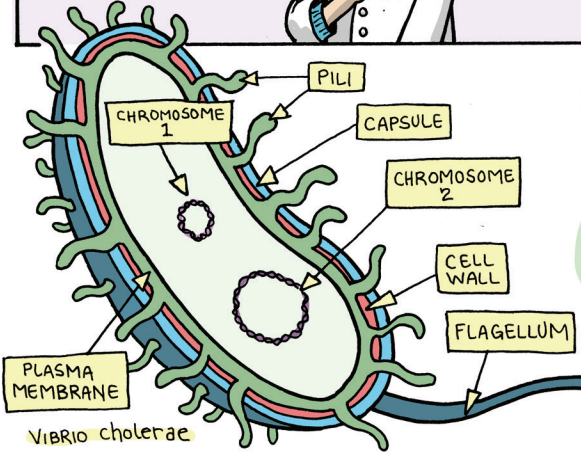
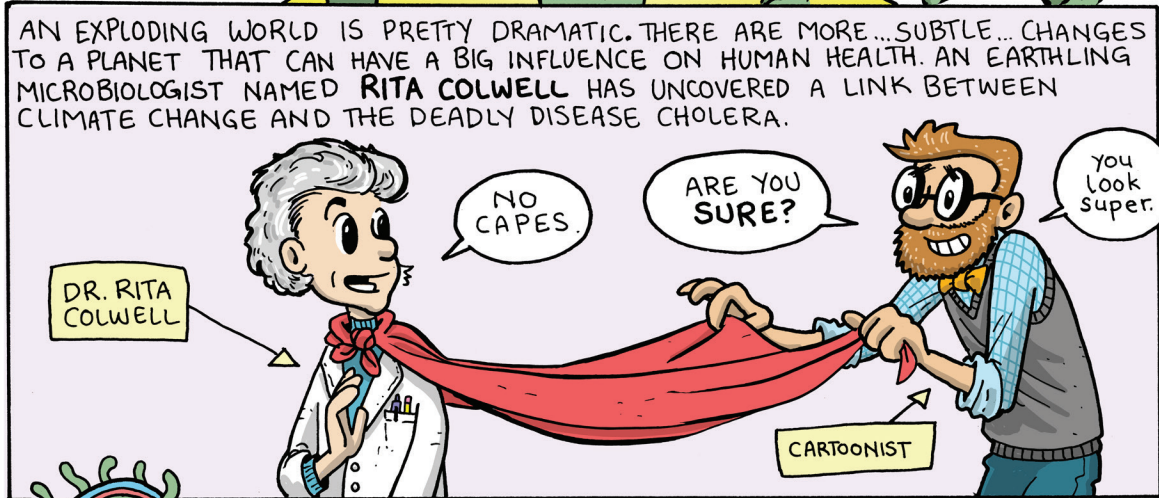


Colwell's Cholera/Climate Conundrum

story and art by Jay Hosler



CHOLERA IS CAUSED BY A BACTERIUM NAMED VIBRIO CHOLERAE. VIBRIO CHOLERAE GROWS IN THE HUMAN GUT AND SPREADS TO THE ENVIRONMENT BY CAUSING BOUTS OF DIARRHEA AND VOMITING. CONTAMINATED FECES CAN THEN POLLUTE LOCAL WATER SOURCES AND MAKE OTHERS SICK.

UNTREATED, A PERSON CAN LOSE SO MUCH WATER THAT THEY'RE DEAD IN A FEW HOURS. EACH YEAR 21,000 - 143,000 PEOPLE DIE THIS WAY. HERE'S THE WEIRD THING: AFTER AN OUTBREAK, THE CHOLERA BACTERIA... DISAPPEARS?

I'VE SPENT MY CAREER LOOKING FOR IT'S HIDING PLACE.

1968

WE'VE FOUND VIBRIO CHOLERAE LIVING ON SMALL MARINE ARTHROPODS CALLED COPEPODS.

WRONG!
IT'S PASSED FROM HUMAN TO HUMAN.

IT ISN'T IN THE ENVIRONMENT.

EVERYBODY KNOWS THAT.

COPEPOD

1977

WE'VE FOUND VIBRIO CHOLERAE LIVING IN THE WATERS OF THE CHESAPEAKE BAY. I THINK IT MIGHT OCCUR NATURALLY IN THE ENVIRONMENT.

PFFT!
YOU TALK AS IF VIBRIO IS IN YOUR BACKYARD.

MAYBE. I HAVEN'T CHECKED THERE YET.

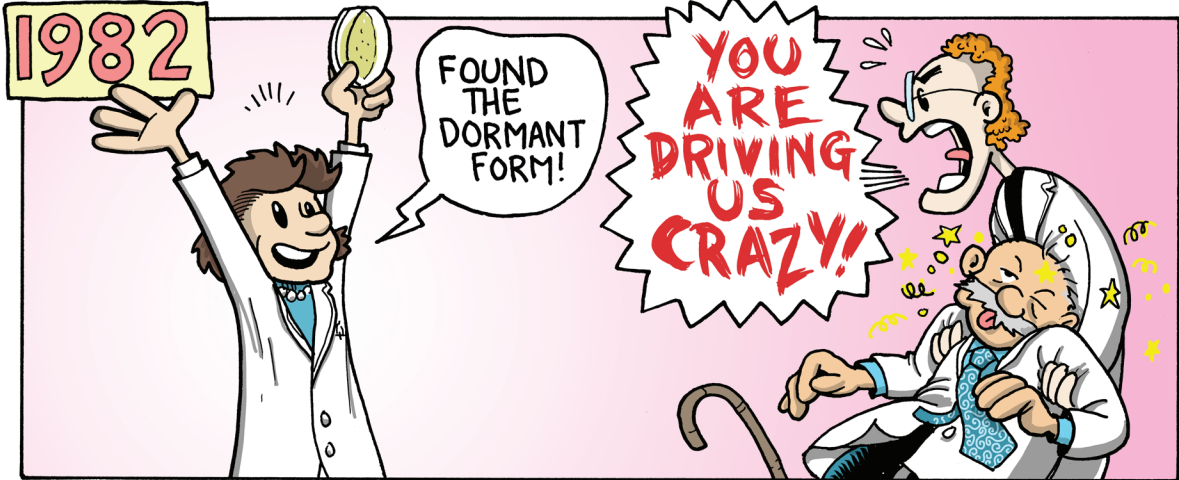
EARLY 1980s

WHAT IF VIBRIO CHOLERAE EXIST IN A DORMANT FORM THAT LIVES ON COPEPODS BETWEEN OUTBREAKS?

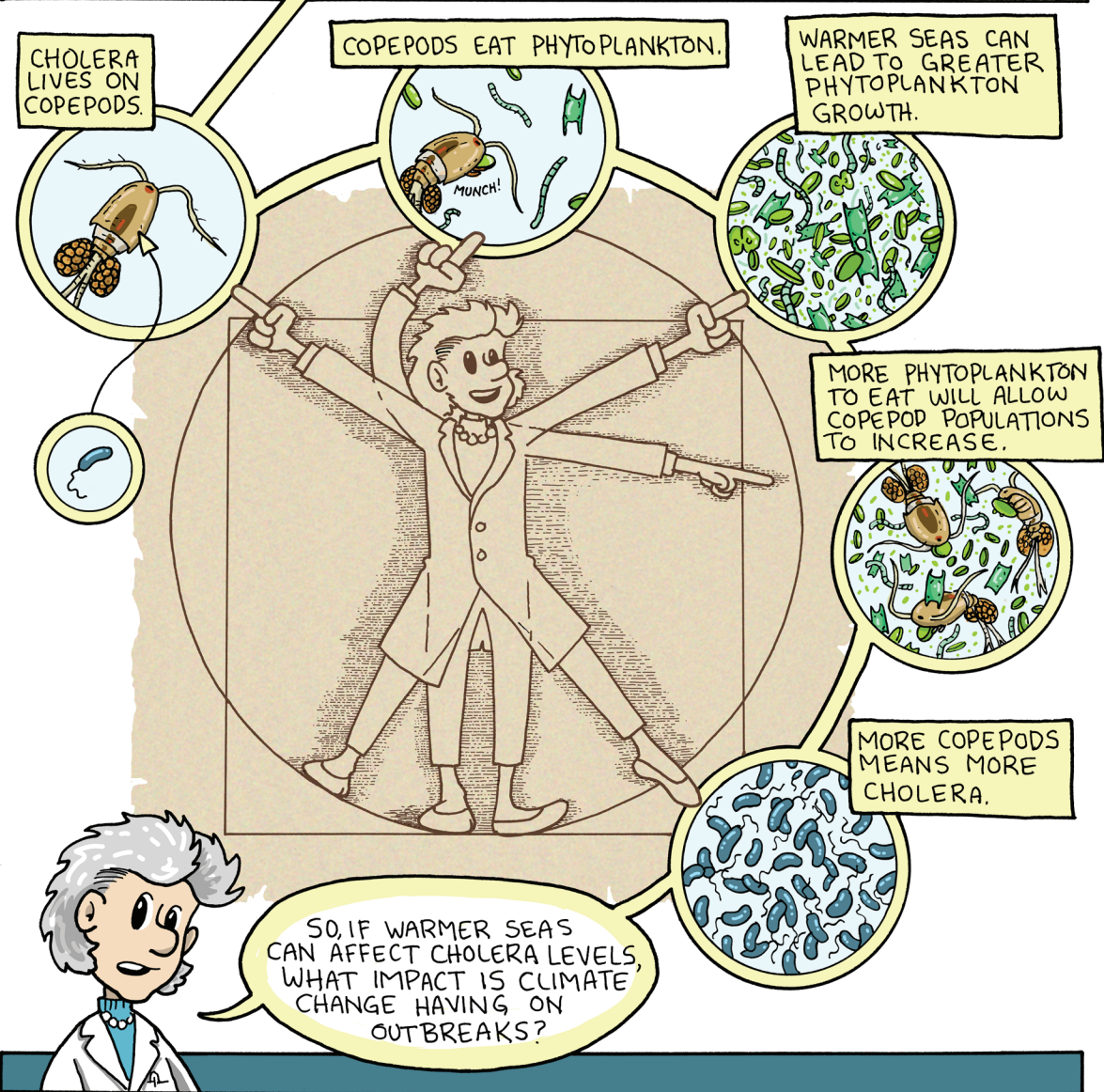
CHOLERA DOESN'T HAVE A DORMANT PHASE, THAT'S ONLY FOR SPORE-FORMING BACTERIA.

IT'S IN ALL THE TEXTBOOKS!

DON'T YOU READ?



AS ONE OF THE EARLY MICROBIAL ECOLOGISTS, COLWELL UNDERSTOOD CONNECTIONS.



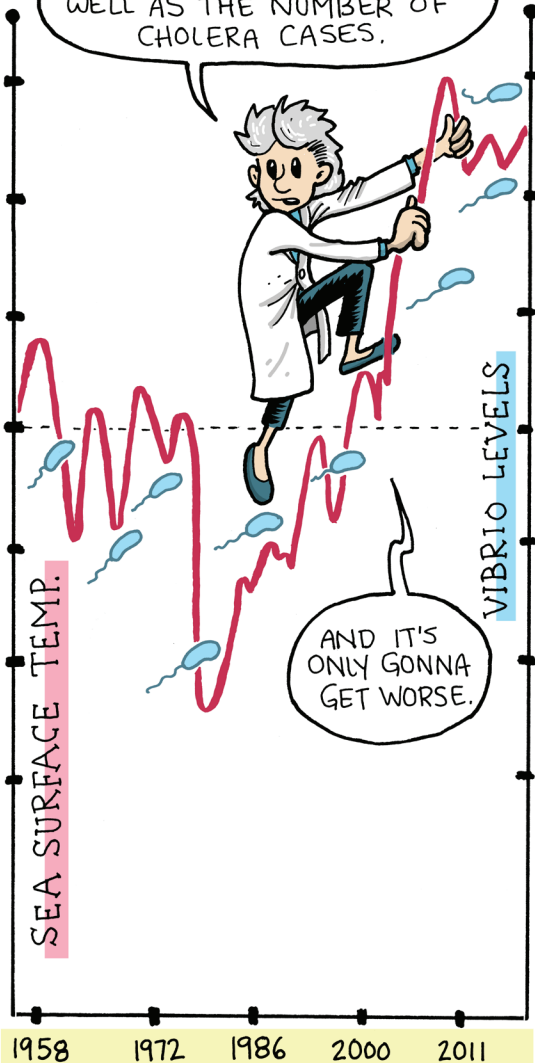
TO ANSWER THIS QUESTION, COLWELL TURNED TO DATA FROM THE CONTINUOUS PLANKTON RECORDER (CPR).

CPRS HAVE BEEN PULLED BEHIND AVAILABLE SHIPS SINCE 1931. THEY'VE COLLECTED PLANKTON SAMPLES FROM OVER 13 MILLION KILOMETERS OF OCEAN WATER.



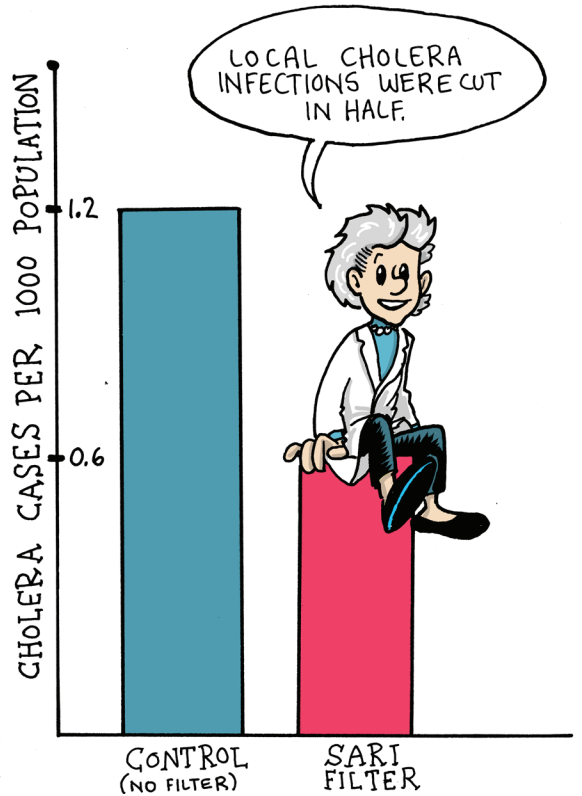
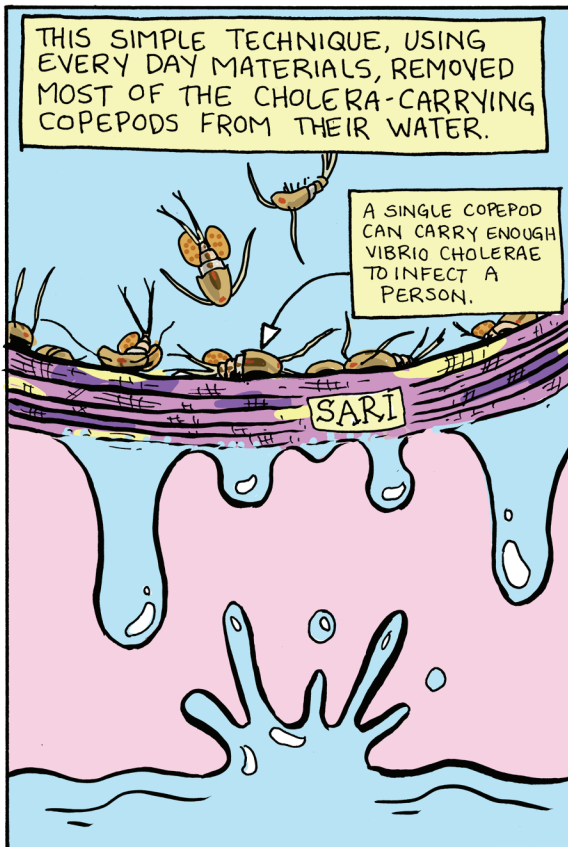
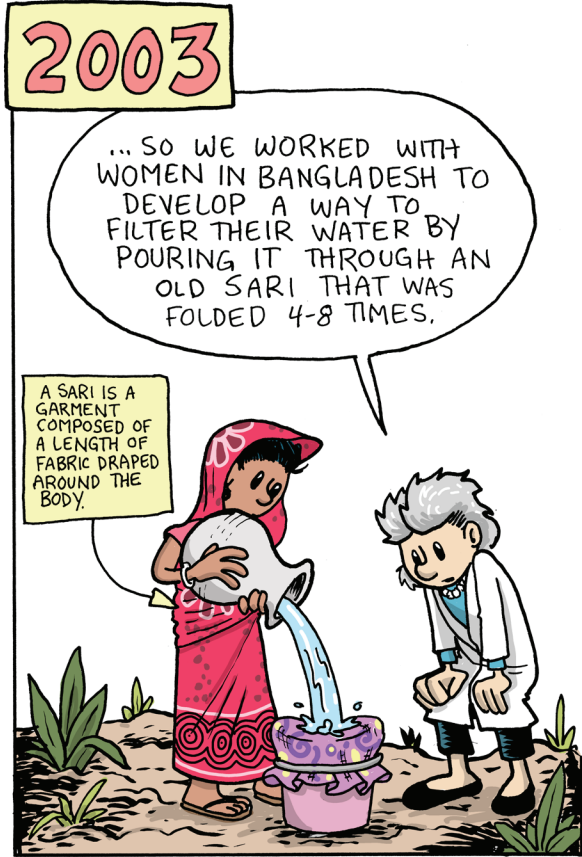
WE EXAMINED A 53-YEAR TIME SPAN BETWEEN 1958 AND 2011.

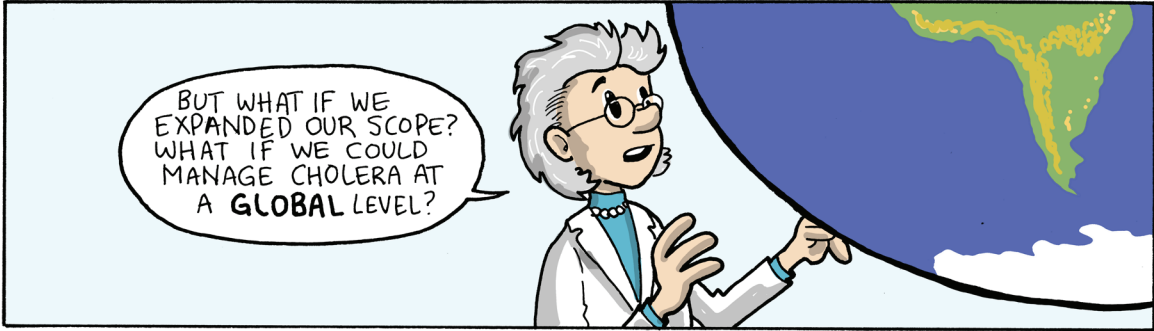
AS SEA TEMPERATURES HAVE INCREASED, SO TOO HAVE THE NUMBER OF VIBRIO CHOLERAEE IN THE WATER AS WELL AS THE NUMBER OF CHOLERA CASES.



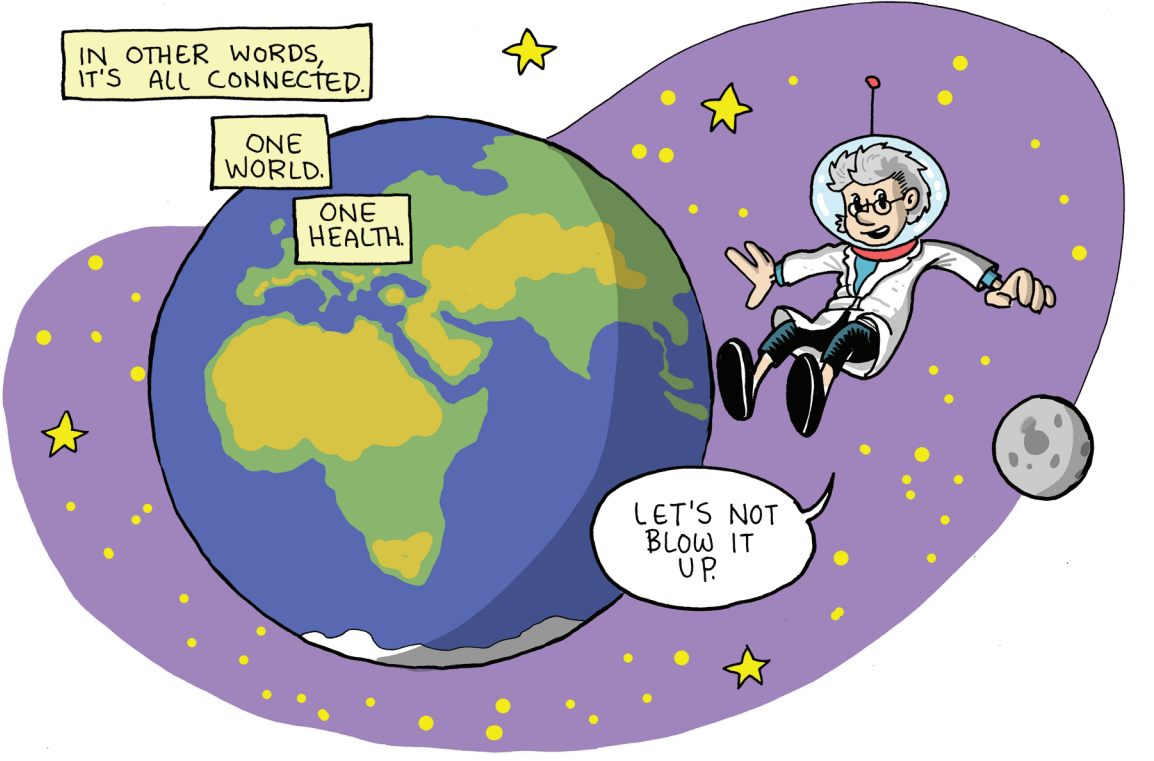
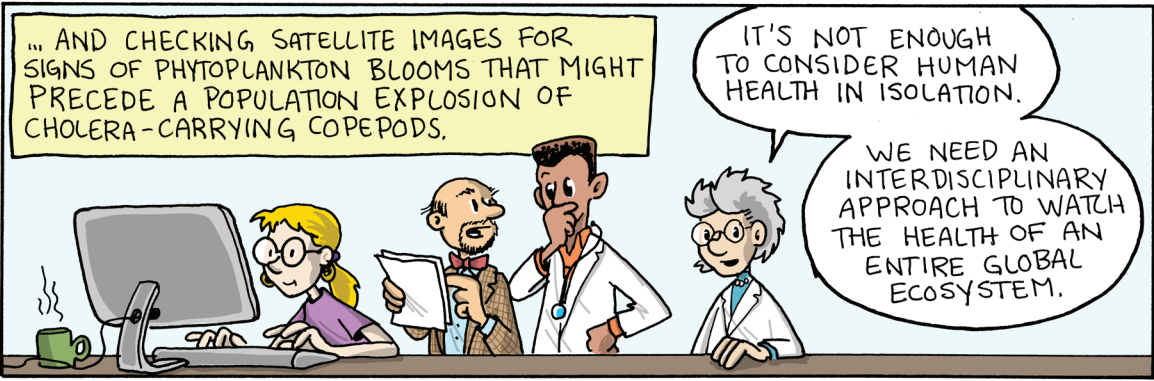
AS THE EARTH WARMS, SEA LEVELS WILL RISE, PUSHING MORE CHOLERA-LADEN COPEPODS INTO ESTUARIES AND INLAND SOURCES OF FRESH WATER.







IN HOPES OF PREDICTING FUTURE CHOLERA OUTBREAKS, COLWELL WORKS WITH OTHER SCIENTISTS AND PHYSICIANS TO MONITOR ENVIRONMENTAL HEALTH BY WATCHING FOR CONDITIONS FAVORABLE FOR AN OUTBREAK...



Rita Colwell Biography

https://www.nsf.gov/news/speeches/colwell/colwell_bio.jsp

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