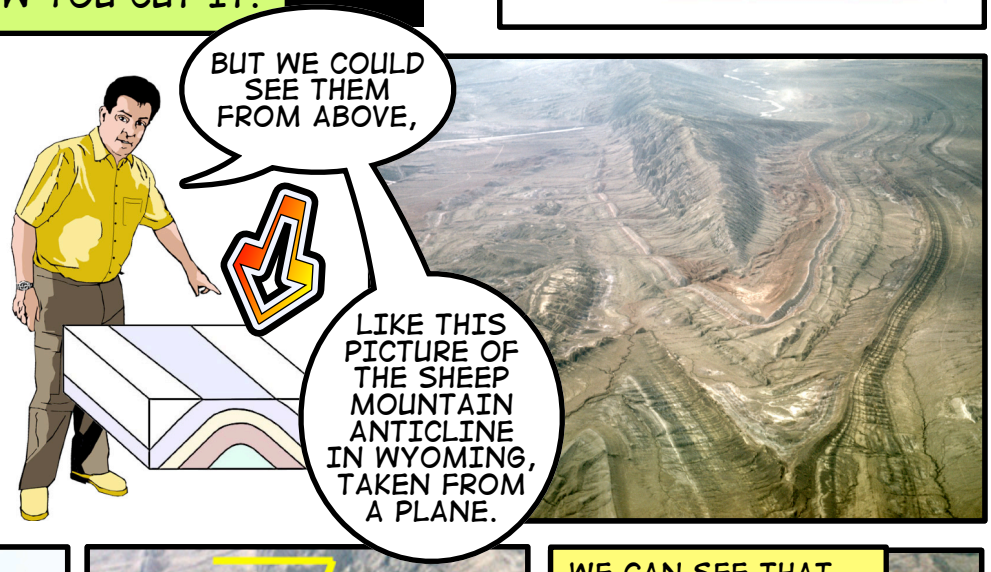
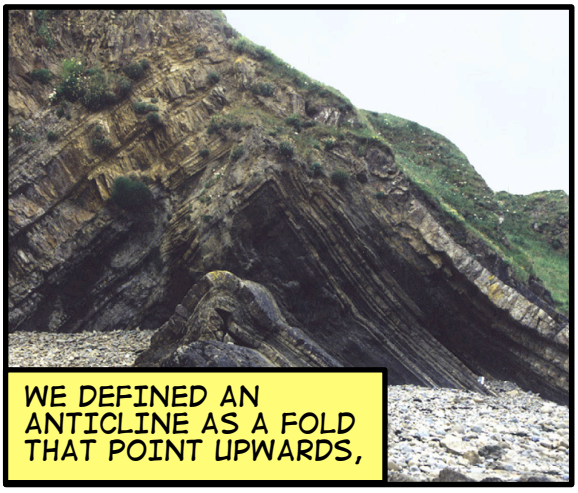
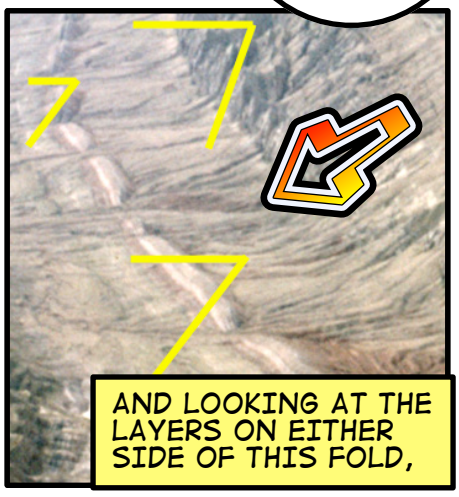

PART 6

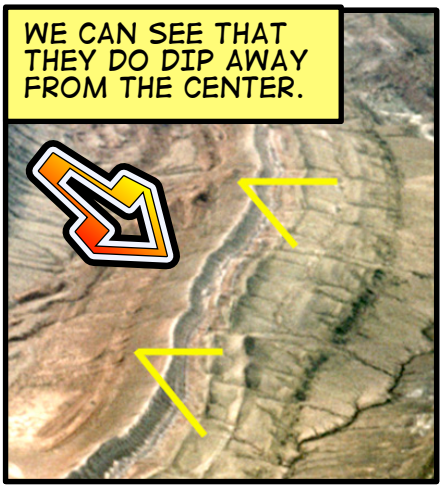

SO FAR MOST OF OUR VIEWS HAVE BEEN FROM GROUND LEVEL,
AND CONSEQUENTLY, YOU HAVE BEEN SEEING THE STRUCTURES FROM THE SIDE,
IT DEPENDS ON HOW YOU CUT IT.

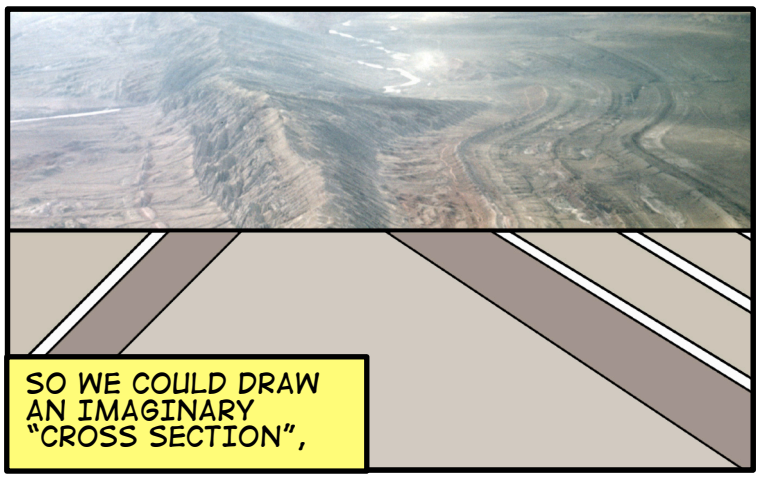

AS IF THEY ARE PART OF A CLIFF FACE.

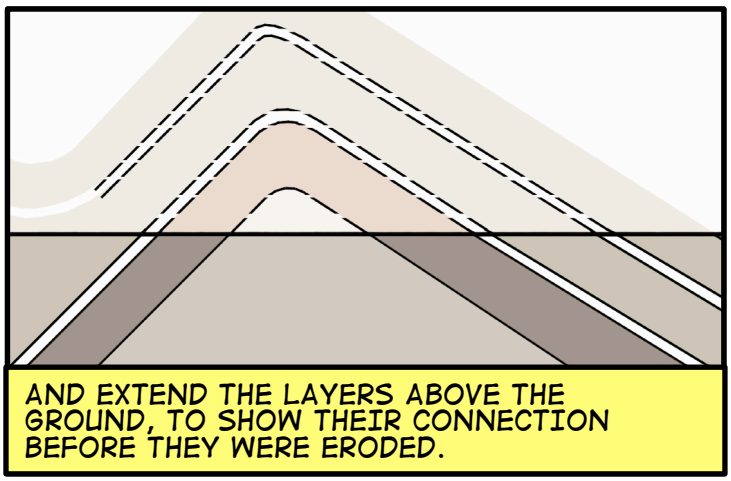

BUT WE COULD SEE THEM FROM ABOVE,
LIKE THIS PICTURE OF THE SHEEP MOUNTAIN ANTICLINE IN WYOMING, TAKEN FROM A PLANE.


WE DEFINED AN ANTICLINE AS A FOLD THAT POINT UPWARDS,


AND LOOKING AT THE LAYERS ON EITHER SIDE OF THIS FOLD,


WE CAN SEE THAT THEY DO DIP AWAY FROM THE CENTER.


SO WE COULD DRAW AN IMAGINARY "CROSS SECTION",


AND EXTEND THE LAYERS ABOVE THE GROUND, TO SHOW THEIR CONNECTION BEFORE THEY WERE ERODED.

USING THIS TECHNIQUE WE CAN RECONSTRUCT WHAT HAS BEEN LOST BY EROSION.

SHOWING THE STRUCTURE OF MOUNTAIN CHAINS,

THAT HAVE LONG BEEN ERODED AWAY.

BUT THE AERIAL VIEWS GIVE US INFORMATION TOO.

ALLOWING US TO DRAW MAPS.

Fault?

?

THAT CAN HELP US FIND OUR WAY AROUND THE GEOLOGY.

WE USE SYMBOLS ON THE MAPS TO SHOW THE STRUCTURES THAT WE OBSERVE, AND DIFFERENT COLORS DENOTE THE VARIOUS ROCK TYPES.

SO WE NEED A KEY, RIGHT?

THIS MAP SYMBOL SHOWS THE STRIKE AND DIP OF THE LAYERS.

Strike

40°

Dip direction

STRIKE BEING THE ORIENTATION OF A HORIZONTAL LINE ON THE ROCK LAYER.

Strike

N

AND DIP, THE ANGLE DOWN FROM HORIZONTAL, AS NOTED EARLIER.

Horizontal

Dip Angle

HORIZONTAL LAYERS HAVE THEIR OWN SPECIAL MAP SYMBOL.

AND SO DO VERTICAL LAYERS.

THIS SYMBOL SHOWS AN ANTICLINE,

AND THIS A SYNCLINE.

THRUST FAULTS HAVE THEIR OWN SYMBOLS,

KLIPPEN

WITH THE TEETH ON THE OVER-THRUSTED SHEET,

LOWER

UPPER

UP

DOWN

AND SIMILARLY FOR A NORMAL FAULT.

MAPS PROVIDE US WITH INFORMATION TO HELP US UNDERSTAND THE THIRD DIMENSION.

WHICH IS IMPORTANT SINCE FOLDS ARE 3D TOO.

Flat, horizonta surface

Vertical face

WHILE WE ALREADY SAW HOW FOLDS CAN BECOME INCLINED & RECUMBENT,

THEY CAN ALSO BE TILTED IN THE THIRD DIMENSION,

Synform

Antiform

PRODUCING "PLUNGING" FOLDS.

SURFACE OF ROCK LAYER

ANTICLINE

HORIZONTAL

PLUNGE

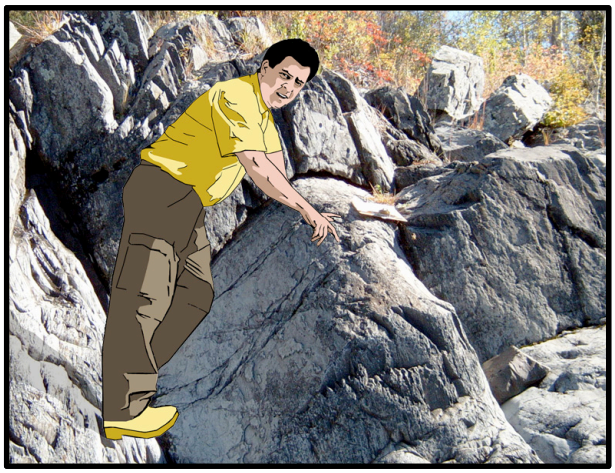
DIP

DIP

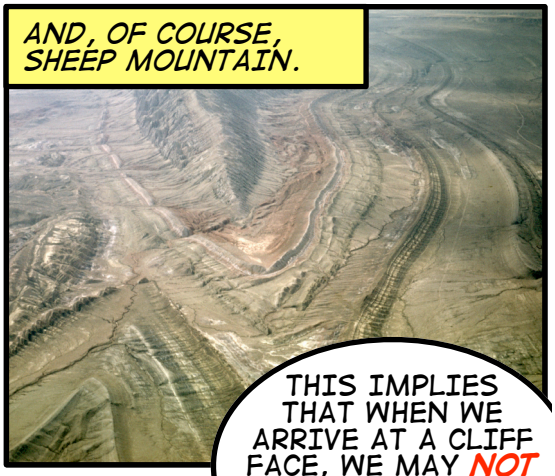
LIKE THIS SMALL ONE IN JASPER KNOB, MICHIGAN.

AND THIS LARGER ONE ON THE BANKS OF THE ST. LOUIS RIVER IN MINNESOTA.

I'M POINTING TO THE "HINGE" OF THE FOLD – WHERE THE CURVATURE IS THE GREATEST. IN A PLUNGING FOLD THIS HINGE IS NOT HORIZONTAL.

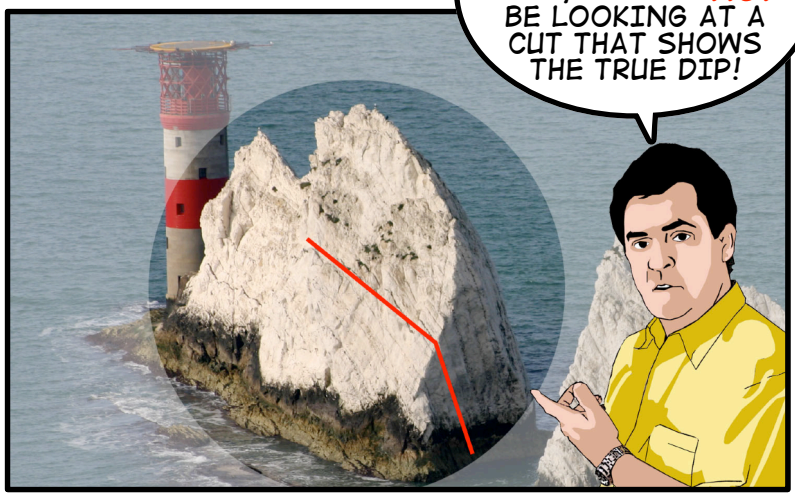


AND, OF COURSE, SHEEP MOUNTAIN.

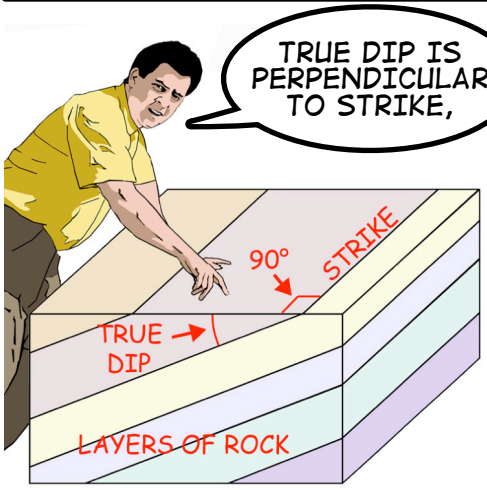


THIS IMPLIES THAT WHEN WE ARRIVE AT A CLIFF FACE, WE MAY *NOT* BE LOOKING AT A CUT THAT SHOWS THE TRUE DIP!

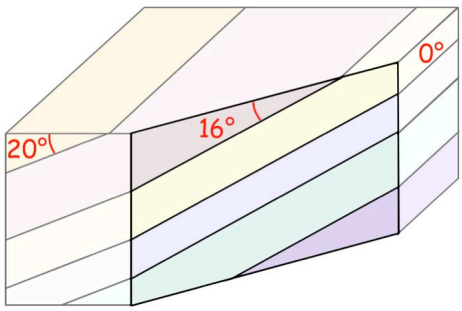
NATURALLY, SYNCLINES CAN PLUNGE TOO, LIKE THIS ONE IN THE ARBUCKLE MOUNTAINS OF OKLAHOMA.



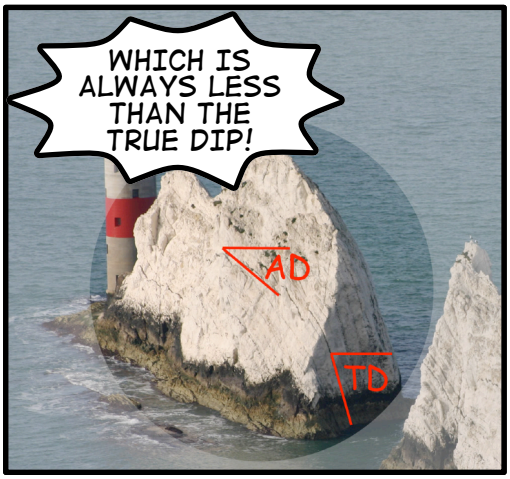
TRUE DIP IS PERPENDICULAR TO STRIKE,



BUT SOMETIMES THE ROCK FACE ISN'T!



WHICH MEANS THAT WE ARE LOOKING AT "APPARENT DIP".



AND GETS CLOSER TO ZERO, THE CLOSER TO STRIKE WE GO.