

IMPACT CRATERS

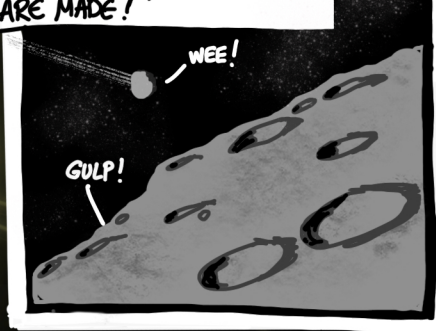
SPACE ISN'T COMPLETELY EMPTY, SO SOMETIMES THINGS BUMP INTO EACH OTHER. WHEN THAT HAPPENS, **IMPACT CRATERS** ARE MADE!

OBJECTS IN OUR SOLAR SYSTEM CAN TRAVEL **VERY FAST** RELATIVE TO EACH OTHER.

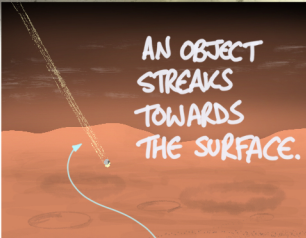
TYPICAL SPEEDS NEAR THE EARTH ARE **30 KM PER SECOND!**

SO EVEN SMALL OBJECTS HAVE A **LOT** OF KINETIC ENERGY.

WHEN THE OBJECT HITS ANOTHER, ALL THAT KINETIC ENERGY IS RELEASED IN ONE PLACE: **EXPLOSION!**

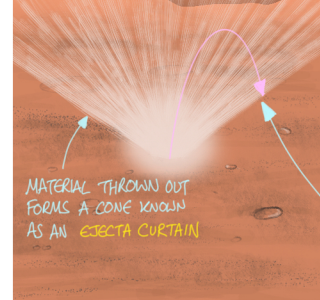


FORMATION OF A CRATER
THE SIZE & DEPTH OF A CRATER DEPENDS ON THE SIZE OF BOTH OF THE BODIES, WHAT THEY'RE BOTH MADE OF, AND IMPACT SPEED.



AN OBJECT STREAKS TOWARDS THE SURFACE.

IT STRIKES THE GROUND, THROWING MATERIAL OUT AT HIGH SPEED. THIS IS CALLED **EJECTA**.



MATERIAL THROWN OUT FORMS A CONE KNOWN AS AN **EJECTA CURTAIN**

THIS PLANET HAS AN ATMOSPHERE, SO THE OBJECT HEATS UP BEFORE STRIKING THE GROUND.

ALL THE GRAINS AND BOULDERS FOLLOW CURVED PATHS, BUT CONE APPEARS TO MARCH OUTWARDS FROM THE IMPACT

MAIN FEATURES OF AN IMPACT CRATER

CONTINUOUS EJECTA

-THE ORIGINAL GROUND NEAR THE CRATER IS COMPLETELY COVERED BY EJECTA.

EJECTA FARTHEST FROM THE CRATER WAS THROWN OUT FIRST & FASTEST.

DISCONTINUOUS EJECTA - WHERE CRATER MATERIAL DOESN'T COVER ALL THE GROUND

SECONDARY CRATERS - CLUMPS OF EJECTA CAN FORM SMALLER CRATERS IN LINES POINTING AWAY FROM THE MAIN CRATER

TERRACES

-FORM WHERE CRATER WALLS HAVE SLUMPED.

CRATER RIM

-STANDS ABOVE THE ORIGINAL GROUND LEVEL.

CENTRAL PEAK

FORMS WHERE THE SURFACE 'REBOUNDS' THESE DON'T FORM IN SMALL CRATERS. ON MARS, CENTRAL PITS ARE SOMETIMES SEEN.

IMPACT MELT

-FORMS IF LOTS OF HEATING WHEN CRATER EXCAVATED.

CRACKS FORMED DURING THE IMPACT. IF THE CRUST IS THIN, LAVA CAN REACH THE SURFACE THROUGH THEM

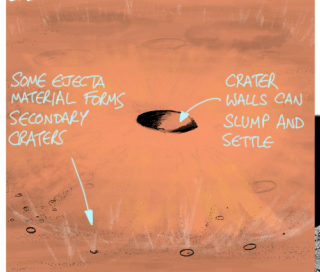
EJECTA RIGHT NEXT TO THE CRATER WAS THROWN OUT LAST & MOST SLOWLY - IT'S SURFACE MATERIAL THAT'S JUST BEEN FLIPPED OVER.

OUR PLANET **EARTH** HAS VERY FEW VISIBLE IMPACT CRATERS. THIS IS BECAUSE MOST HAVE BEEN DESTROYED DUE TO EROSION, BURIAL, AND WEATHERING.



IT HAS CERTAINLY BEEN HIT COUNTLESS TIMES!

THE FIRST PARTS OF THE EJECTA TO BE THROWN OUT LAND LAST.



SOME EJECTA MATERIAL FORMS SECONDARY CRATERS

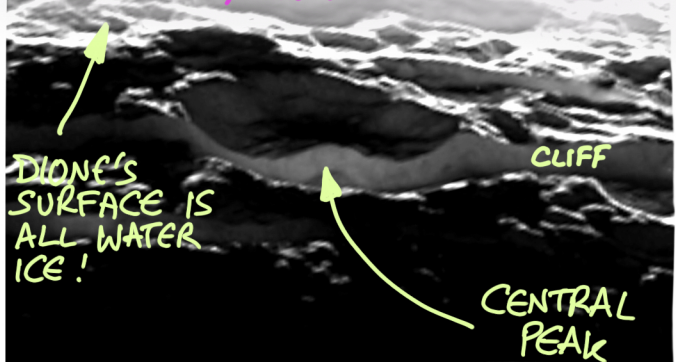
CRATER WALLS CAN SLUMP AND SETTLE

CRATERS ARE FORMED AT ALL SCALES. SOME ARE FROM IMPACTS LARGE ENOUGH TO DESTROY WORLDS!

SMALL CRATERS ARE BOWL-SHAPED

LARGE CRATERS HAVE FLATTER FLOORS

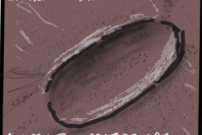
ON SATURN'S MOON DIONE, A CLIFF HAS FORMED THROUGH A CRATER, GIVING US A CROSS-SECTIONAL VIEW!



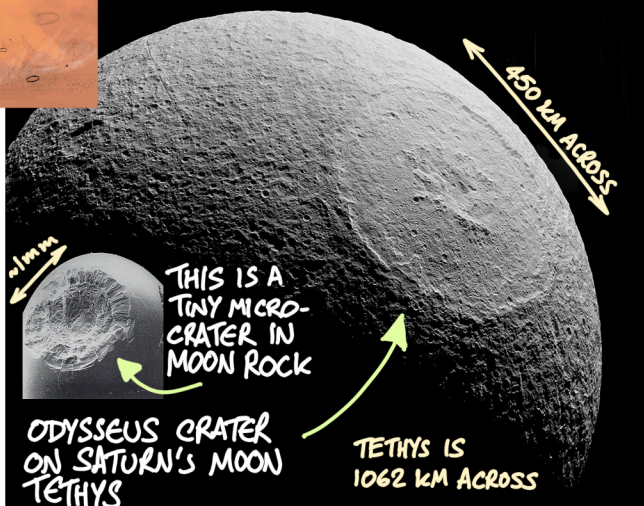
DIONE'S SURFACE IS ALL WATER ICE!

CENTRAL PEAK

ALMOST ALL CRATERS ARE CIRCULAR BECAUSE THEY'RE CREATED BY POINT EXPLOSIONS. THE ANGLE AT WHICH AN OBJECT ARRIVES HAS ALMOST NO EFFECT ON THE CRATER'S SHAPE.



A VERY FEW CRATERS ARE ELONGATED, WHEN AN OBJECT ARRIVED TRAVELLING ALMOST PARALLEL TO THE SURFACE.



THIS IS A TINY MICRO-CRATER IN MOON ROCK

ODYSSEUS CRATER ON SATURN'S MOON TETHYS

TETHYS IS 1062 KM ACROSS

450 KM ACROSS