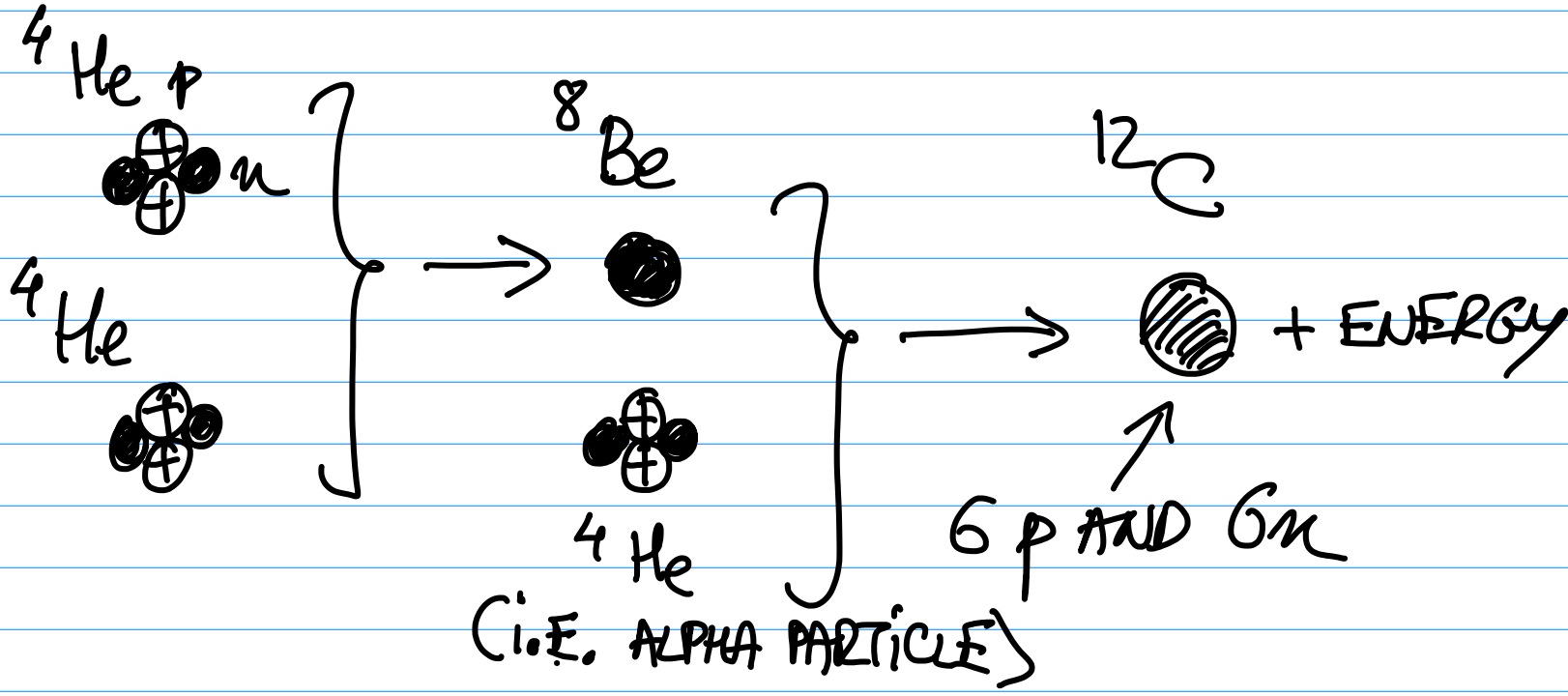
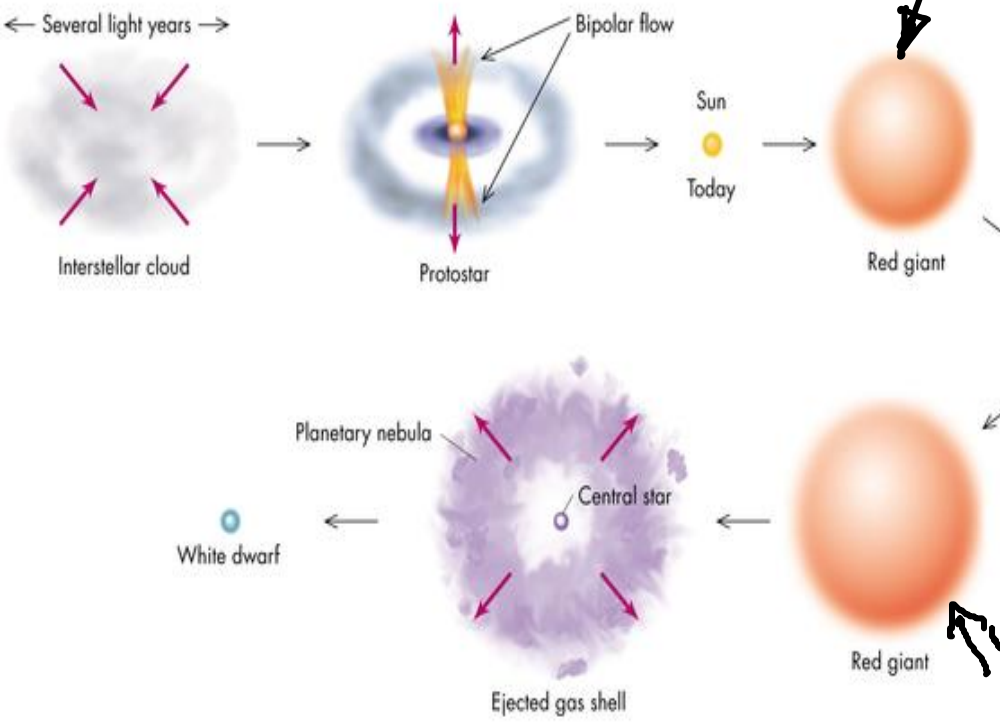
THE TRIPLE ALPHA-PROCESS:



THE ONSET OF He-FUSION INTO ^{12}C IS CALLED HELIUM-FLASH. THE STAR ENTERS THE YELLOW GIANT STAGE. IT LASTS ABOUT 100 MILLION YEARS ONLY. THE ENERGY RELEASED PER SINGLE He-FUSION REACTION IS SMALLER THAN THE ENERGY RELEASED PER SINGLE H-FUSION REACTION. THUS THE OVERALL FUSION RATE OF He MUST BE HIGHER THAN THE H-FUSION DURING THE MAIN SEQUENCE

AND THE He IS FUSED MUCH MORE QUICKLY (IN ABOUT 100 MILLION YEARS)

THE AMOUNT OF ENERGY RELEASED AFTER THE He-FLASH IS SO LARGE THAT IT HEATS UP THE CORE AND IT EXPANDS. AS A RESULT OF THE EXPANSION THE EDGE OF THE CORE COOLS DOWN. THIS CAUSES THE TEMPERATURE OF THE H-FUSING SHELL TO DROP AND THE FUSION IN IT STOPS. THE REMOVAL OF THIS IMPORTANT SOURCE OF ENERGY CAUSES THE PRESSURE TO DROP. AS A RESULT THE STAR STARTS TO SHRINK. THE SURFACE GETS CLOSER TO THE ENERGY PRODUCING CORE AND IT HEATS UP. AS A RESULT THE COLOUR CHANGES FROM ORANGE/RED INTO YELLOW.

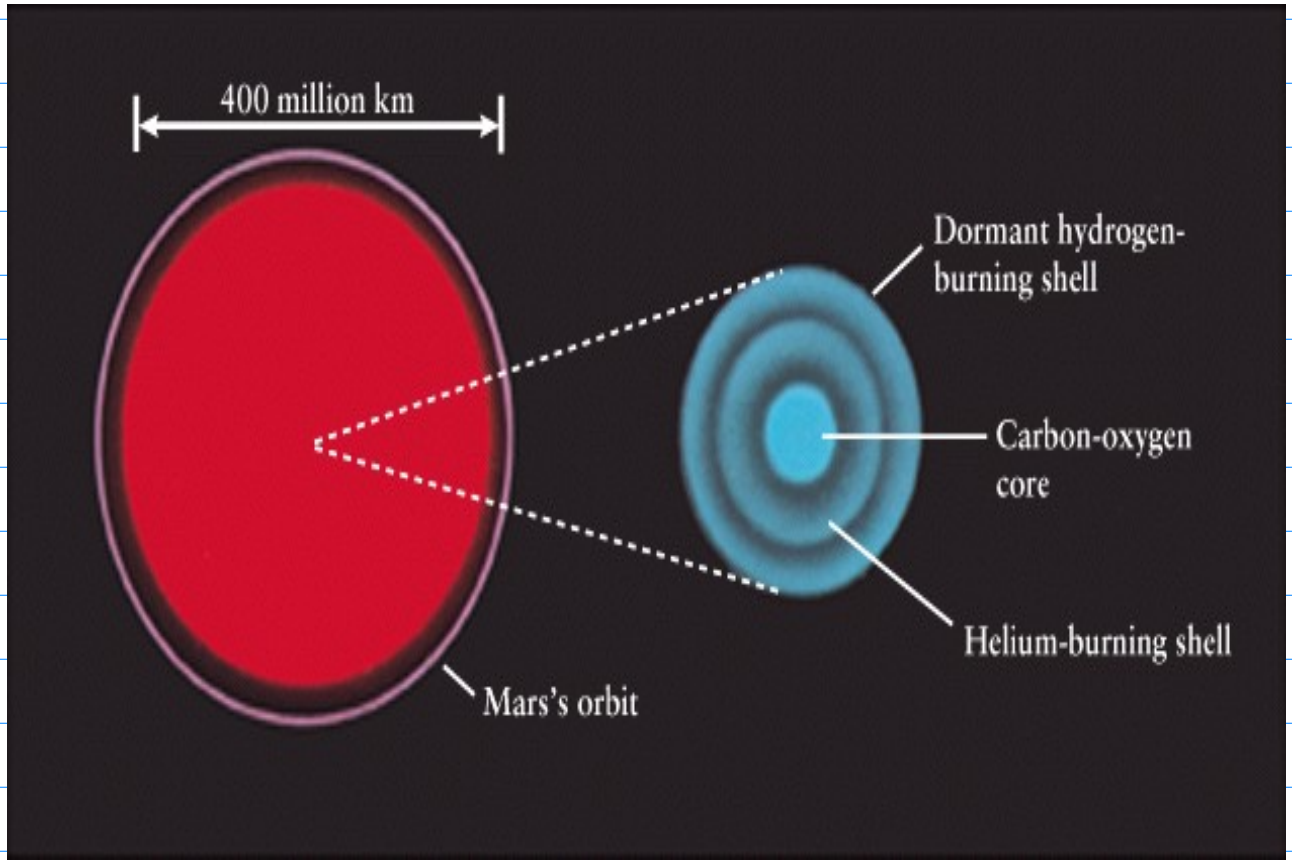


"DEAD" He CORE

ALIVE He FUSING CORE

"DEAD" CARBON CORE

EVENTUALLY ALL OF ^4He IN THE CORE IS FUSED INTO ^{12}C AND A STAR LIKE OUR SUN DOES NOT HAVE ENOUGH MASS TO, SQUEEZE THE CARBON CORE AND HEAT IT UP TO THE TEMPERATURES NEEDED, TO FUSE CARBON INTO HEAVIER NUCLEI. THE STAR ENTERS THE FINAL RED GIANT STAGE.



THERMAL PRESSURE CREATED BY THE ENERGY RELEASED IN THE He FUSING SHELL PUSHES OUT THE TOP LAYERS AND THEY COOL DOWN AS THEIR DISTANCE FROM THE ENERGY PRODUCING REGION INCREASES. THE COLOUR CHANGES FROM YELLOW TO RED.