Mars Essay, Research Paper

On a clear night, only a few hundred stars can be

seen without the use of any astronomical

instruments. The Milky Way Galaxy consists of at

least 200 billion stars. Stars are huge balls of hot

gases. The sun is a star, but it is not the largest

star; it is only the nearest star. A star has three

recognizable stages: its birth; the years in which it

exists; and its death. Its formation and its life

expectancy have captured the curiosity of

astronomers for centuries. Astronomers from the

past have devoted their entire lives to the studying

of the formation of stars. Gases make up 99

percent of the materials in the galaxy. These gases

in space gather together to form clouds of gas,

known as nebulae. Millions of years later, "the

temperature of the cloud climbs until it becomes

hot enough to radiate light. It is then no longer a

gas cloud; it is a star"[1] (Asimov 182). New stars

are formed when nuclear reactions occur in these

concentrated clouds of gas. Stars are made of 60

different elements, all of which are found on Earth.

Elements such as hydrogen, helium, iron, and

calcium. The average star’s atmosphere consists of

87% hydrogen, 10% helium, and 3% of other

elements. Each star has its own motion, but it is

not obvious. Although the sun appears to be huge,

many stars are bigger than it. Our sun’s diameter is

864,000 miles. Betelgeuse, a red supergiant, has a

diameter 500 times bigger than the sun: 500 million

miles. Betelgeuse, though, is not the biggest star.

Epsilon Aurigae is close to one billion miles in

diameter and VV Cephei has a diameter of two

billion miles, known as the super-supergiants.

There are also stars that are small. One of the

smallest is the Whale and it has a diameter of

1,600 kilometres. Small stars are known as white

dwarfs. Stars also have different temperatures.

Temperatures ranging from 2,100C to 50,000C.

The temperature of the stars is indicated by the

colour of the stars. The blue colour stars are the

hottest and usually the brightest stars, the yellow

stars are medium hot, and the red stars are coolest

and the most dim. Over time, there have been

many questions concerning the supply of gas

clouds in our galaxy. Some people concluded that

there will be only enough to fuel the creation of

stars for another 200 million years. Due to this

immature hypothesis, astronomers investigated and

came to the conclusion that there will be materials

enough for the creation of new stars for at least

another 10 billion years. Other questions asked

were: will there be new stars being born after 10

billion years and how long will the stars last? The

question concerning new stars being born after 10

billion years is still left unanswered. Certain stars

will last for a very long time because "stars with

masses from one-quarter to one-tenth that of the

sun burn long and slow, some lasting more than 10

trillion years before finally sputtering out"[2]

(Adams and Laughlin). Nothing in the universe

seems to last forever. From studies, astronomers

predict that "by 10 trillion years from now, the last

stars will have winked out. The sky, containing the

darkened and collapsed corpses of a trillion trillion

once brilliant suns, will finally fade to black"[3]

(Adams and Laughlin). Stars seem enduring, but

eventually die out. Stars die out when they have

used up all their hydrogen fuel. The hottest stars

actually have the shortest lifetimes, usually

100,000 years. The life expectancy of our sun is

about 12 billion years. It has already lived half of

its lifetime, and in about 6 billion years the sun will

begin to "die." By that time, the sun will have used

up most of its energy fuel and will start releasing its

gases into space. Some stars die quietly and some

stars explode. Before dying out, stars go through

processes of expansion and contraction. When a

star has used up all its hydrogen supply, the helium

in the core begins to fuse into carbon which causes

the star to expand and become a red giant for

many thousands of years. After thousands of

years, the star will collapse and shrink to the size

of a white dwarf star. This entire process of

expansion and contraction will take about

100,000 years. When our sun expands and

becomes a red giant, "its hot surface gases will

swallow up Mercury, the planet closest to the Sun,

and vaporize the planet\_Our planet’s climate will

have grown warmer\_The oceans will heat up\_until

life on Earth surface will be impossible. Earth will

become a molten dead planet"[4] (Gallant 63).

Centuries later, the sun will collapse. It will shrink

and the Earth will begin to cool. There will be

oceans again because: the huge stores of water

vapour in the atmosphere will condense and fall as

rain\_Earth will grow colder and colder. The

centuries-long rains will turn to snow, and the

oceans will freeze. It will snow for thousands of

years until the last parcel of water vapour is wrung

out of the atmosphere. Earth will become locked

in a planet-wide ice age that will last forever.[5]

(Gallant 64) The sun will end up being 100 times

smaller than it originally was; it will be a white

dwarf star. Huge stars end their lives differently.

They explode with a bang, producing very bright

light. These violent explosions are known as

supernovae. A supernova can only be seen once

every few hundred years. Astronomers believe

that "their explosions are the most violent events

since the Big Bang with which the universe

began\_in a single second, a supernova releases as

much energy as the Sun does over a period of

about 60 years."[6] (Gallant 87) The mysterious

life of the star can be explained by the examination

of the relationship between the star, its surrounding

atmosphere, and the individual elements that make

up the star itself. Although astronomers now, have

resolved many questions concerning the stars, they

are still continuing on the studies of the stars and

the hidden nature of the universe. The universe is

huge and mysterious. Our Earth is just a small dot

in it. Perhaps most of its riddles will never be

solved. The exploration of the stars and the

universe seems to be an endless journey, resulting

in astronomy as a lifetime hobby.

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