Student Voice

By Vail Weller and
Nanette Quatchak
Feature Editors

This edition's question - What are your plans for the summer?

Julie Elabarger
6th semester
Communication Behrend

"I am working with an insurance firm where they are training me for a job after graduation."

Jim McDermott
8th semester
MIS

"I'm staying here to take courses and I'll have an internship. I'll also be drinking a lot."

Tammy Furyesz
4th semester
Communications

"I'm going to live in Orlando and I'll be working at Disney World and getting a great tan."

Dave Fletcher
6th semester
MIS

"I'm going home and framing houses for my brother and getting a tan on the Cape."

Jim Byrne
8th semester
MIS

"I'm going to graduate, go to Hilton Head, SC and then come back to find a job."

Photos taken by Michelle Schneider

Science

Is it Mighty Mouse?

by Robert D. Eggleston
Collegian Staff Writer

Look! Up in the sky; it's a bird, it's a plane, it's a fuzzy star! No, it's not a fuzzy star it's a comet. Have you ever seen a comet? Halley's perhaps? It's not impossible to see one, but if you're looking for a Mighty Mouse kind of streak in the sky, you might be disappointed.

Where do comets come from? In his book, **Comets, Meteors and Asteroids**, Melvin Berger describes the planets as a group of houses at a building site and comets as the "building" materials that are left over. These leftovers are the stone and metal pieces that remained after the planets were formed nearly five billion years ago. The study of these bits of material helps us realize what Earthy as well as the other planets, are made of, much like archaeological finds reveal the cultures of other people.

When a comet isn't in range of the sun's light, it looks like a dark, dirty snowball. The nucleus, or the solid center of the comet, is made mostly of ice mixed with ammonia, methane, and carbon dioxide. Inside this ice ball are bits of rock and metal; picture a scoop of rocky-road ice cream. The nuclei of most comets are as large as one-half mile to thirty miles across, but the grains of rock and metal in them are usually no bigger than a walnut.

Around the nucleus is a dust and gas mixture called the coma. Its diameter can reach up to 625,000 miles. That's twenty-five times bigger than the Earth's. Considering the average diameter of a coma, can you imagine seeing the Great Comet of 1811? Its diameter was the largest ever recorded, 1.25 million miles across at its widest point!

Together the coma and nucleus make up the head of the comet which is followed by another gaseous mixture. Unlike the coma's spherical shape, it is streamlined. Here in the tail, the gases are much less dense than in the coma. Solar wind (a high speed stream of subatomic particles emitted by the sun) pushes on the gas molecules and dust particles in the coma. It spreads them out to form the long tail, and because the tail is heated by the pressure of the solar wind on the head of the comet it always faces away from the sun. This phenomenon was first observed by Girolamo Fracastoro and Peter Apian, in 1532. The tail extends out behind the comet only when it is going toward the sun. At other times it is either ahead of or to the side of the comet.

Surrounding the head and part of the tail is a giant cloud of hydrogen gas which can be millions of miles wide. According to Melvin Berger; "The first hydrogen clouds were discovered around 1970. Other observations since then have helped astronomers realize that the hydrogen cloud is as much a part of a comet as the nucleus, coma, gas tail, and dust tail." Because comets are made mostly of gas they have very little mass or matter. In fact, it is known to scientists that the Earth has passed through the tail of comets at least twice. At the times of passing, though, there was no tangible evidence to show that we were traveling through anything. This is because the matter that makes up the tail is so thinly spread out it cannot be detected. In **The Guide to Halley's Comet**, a reference is made to just how thinly spread out the material is: "So insubstantial is the material of a comet tail that stars shine through it with no evident loss of brightness. The tail is only visible at all because the tiny dust particles in it are such marvelous reflectors of sunlight. The same kind of phenomenon can be seen in everyday life when motes--the tiniest particles of dust and bits of other things that ought to be invisible--can be seen adrift in a sunbeam."

A comet's light is produced in two ways. As radiant energy from the sun knocks electrons from the gas molecules, other electrons

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replace the missing ones, and in doing so produce tiny bursts of light. This is what causes the bright bluish light. Secondly, as I stated earlier, the sun is reflected off the bits of material in the coma and tail which creates the yellowish color.

Where do comets go to? Most comets move in orbits around the sun, just like the planets, so they don't **really** go anywhere. As early as 350B.C., Aristotle concluded that comets don't travel in regular orbits and that they are not in outer space but in the Earth's atmosphere. But, as most theories often are, his was turned over by a German Astronomer, Regiomontanus. In A.D. 1473, he observed a comet for several nights and traced its elongated orbit. By making observations, we are able to plot out the orbit or path of a comet, and from these means we know when the comet will pass Earth again. For example, Edmond Halley traced the arc of the now famous Halley's Comet. He researched previous sightings in 1682 and predicted its next visit in 1758. His prediction came true, and including its 1986 sighting it was spotted a total of thirty times (sightings occur every seventy-five [six] years).

If you're not busy during an evening in the year 2061, look up in the sky; it may be a bird you see, possibly even a plane, but if you see a fuzzy star chances are it's Halley's comet.