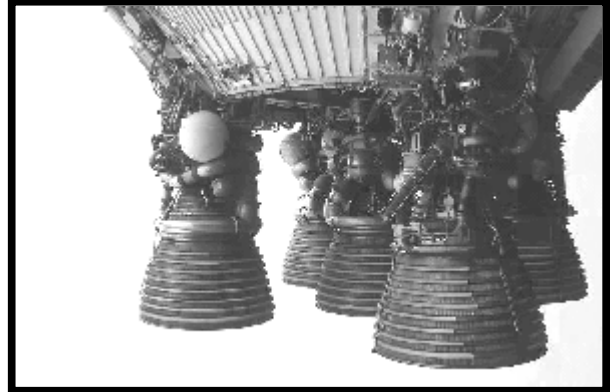


## ROCKETS

To the right are the exhaust nozzles for a large rocket. Describing the rocket's operation, fuel is ignited and discharges through a narrow passage {i.e. nozzle} with a tremendous thrust – which propels the rocket into the air and possibly into space. Similar to a rocket, a missile uses a similar principle but is described as being armed with some type of explosive device.



Some rockets *breathe air* like an aircraft while others contain an internal supply of oxygen like a rocket.

Rocket engine propulsion is described in some detail in [Encarta](#) – here are the different types:

- \* Chemical
  - Solid fuel
  - Liquid fuel
  - Hybrid fuel
- \* Nuclear – more powerful than chemical but still considered risky or unsafe for use in Space or on Earth
- \* Electric – application is only for Space or where a vacuum exist

A basic description of the chemical fuel rocket is described below.

Rockets produce the force that moves them forward by burning their fuel inside a chamber in the rocket and then expelling the hot exhaust that results. Rockets carry their own fuel and the oxygen used for burning their fuel. In liquid-fueled rockets, the fuel and oxygen-bearing substance (called the oxidizer) are in separate compartments. The fuel is mixed with the oxygen and ignited inside a combustion chamber. The rocket, like the balloon, has an opening called a nozzle from which the exhaust gases exit. A rocket nozzle is a cup-shaped device that flares out smoothly like a funnel inside the end of the rocket. The nozzle directs the rocket exhaust and causes it to come out faster, increasing the thrust and efficiency of the rocket.

North of my town, Huntsville is the place where much rocket and space development began after World War II and continues today. Matthew has visited the Space Camp with the Cub Scouts – someday I hope to take the rest of you there. Space Camp is an intriguing place...even for an adult! In the meantime, venture off into this subject of rockets and space; and try to watch the movie "October Sky" – it will inspire you *to boldly go where no one has gone before, to take one small step for man and one large step for mankind, and to go to infinity and beyond!*

In a

WORD