

A mutation on the other hand is a heritable characteristic. It can be inherited. Now what brings about a mutation and what actually is it? Well it's believed that in the makeup of a cell - possibly you're familiar with the term "chromosome". The chromosome contains genes which are the determiners for color, for size, for shape, for general structure of animals and plants. If there is some change in the gene, if there's some internal change, we have an unusual condition existing - and this is a mutation. A mutation can either be obvious - it could be a sudden change in color, or it can be some change that we wouldn't be able to detect - it could be a small chemical change in the structure of one of the cells. A typical example of a mutation is the fruit-fly. You're familiar with that around the tomatoes and peaches in the summertime. Fruit-fly normally has red eyes but when a mutation occurs, the eye usually turns white. Now can mutations happen under natural conditions or do we bring it about artificially? Well the scientist has been able to do it artificially. We know that certain amounts of radiation, in the form of x-rays or gamma radiation, can produce a mutation. This mutation theory has been brought out by experiments using grasshoppers. They've taken grasshoppers in the early stage of their development ~~XXXX~~ - in the nymph stage - and applied radiation, particular x-rays - and they've produced all sorts of weird conditions - two-headed grasshoppers, grasshoppers with many extra legs and so forth. Now how does it happen in nature? More experiments have been done to prove that it actually does exist in nature. One that I can recall is where they take another batch of insects and they segregate them. These are all of the same kinetic makeup. The one bunch was out in a certain location in the United States where there was little or no radiation from natural sources. The other group was taken to a particular area where there were definite deposits of uranium giving off radiation. And they found in the young, after the development and through to the adulthood, that there was a definite change in some of the structures - change in shape, change in leg and wing development, and so forth. And the only explanation was the influence of the radiation. Now our third though is what are these general tendencies? What are the trends in evolution of either plants or animals? Well, being a botanist, I would rather stick to the plants - I'm more familiar with that than the animals. Let's look at the seed plants and the plants that are producing flowers. If you will think for a few moments you will be aware of some of