

## Lesson Six

# Free To Create

### LESSON IDEA

One of freedom's greatest benefits is that under it, man will be at his most creative. While without freedom, creativity is stifled.

### VISUAL AID

Optional: an example of a tool or machine that is mass produced today, and otherwise would not be available.

**T**HE MASTER Creator, who declared, "Let us make man in our own image," has given every individual the ability to create. Man the dreamer is also man the builder, and when man's imagination and creative talents are given the opportunity to develop, they can bear fruit equivalent to that produced by the world's most bounteous orchards. Thanks to this gift, each of us has the ability to make significant contributions that can benefit our families, our country, and even the entire world.

The great sculptor Michelangelo translated his artistic thoughts into enduring marble. Beethoven, though deaf, walked in the woods with God, and in his glorious and enduring music expressed the triumph of the human soul over adversity. Shakespeare dipped his pen so deeply into the ink of human understanding that centuries later his plays and poems continue to enthrall each succeeding generations.

A group of courageous and inspired statesmen, after defeating England's armies, drafted the Constitution of the United States and secured liberty for a new nation. A century later, a child born into slavery, who did not even know his father's name, dedicated himself to a career of service that brought knowledge and skills to many tens of thousands of his people. Indeed, the life of Booker T. Washington included so many useful lessons about freedom, character, and achievement, that a future lesson will be devoted to review of his career.

We may not all become famous writers, painters, musicians, or scientists, but we all have creative capability. Do you think it is important to

develop and utilize such God-given talents? Why? [Let everyone answer.] Since we are happiest and most productive when we are exerting our talents, it is important to know the conditions under which our creativity can best thrive. What are some things that would encourage you to be creative? [Examples: necessity (the "mother of invention"), ambition, possible reward, opportunity, and encouragement.]

There are many factors that determine how creative we will be. One of the most important is freedom. The greatest potential invention benefits no one if the inventor is not allowed to create and develop it. The most beautiful music cannot inspire someone unless it is composed and performed.

Throughout recorded history most people have lived in poverty. In country after country, century after century, even most rulers lived in homes without windows, chimneys, and plumbing. Most of mankind has seldom had enough food to keep stomachs filled, clothes to keep bodies warm, or shelter to fend-off the elements. Yet within just a few generations, Americans grew to take for granted well-stocked refrigerators, an abundance of stylish (or non-stylish) clothing, and well-furnished homes replete with telephones, washing machines, indoor plumbing, furnaces, air conditioners, television sets, VCRs, and computers. They now drive automobiles equipped with CD players, cell phones, and other accouterments. Such common "necessities" that most Americans take for granted are unimaginable luxuries for much of the world's population.

The stunning advances made in America illustrate how individual creativity can benefit virtually everyone. Let us now take a brief look at the creative experiences and contributions of one of our forefathers, to see if we can discover in his example some truths about freedom and creativity that apply to us today.

**E**LI WHITNEY, the son of a prosperous farmer, was born in Massachusetts on December 8, 1765. After graduating from Yale College, he moved to Georgia, intent on becoming a private tutor and studying law. When he arrived in the Peach State, however, he found that the teaching position he had hoped to fill had already been taken.

Rather than return to Massachusetts, young Eli decided to settle in Georgia. An amateur mechanic with considerable ability, he soon became absorbed by the difficult challenge of separating seeds from cotton. Until then, cotton had to be picked by hand, and the seeds had to be removed from the cotton bolls by hand before the crop could be sold. Whitney determined to invent a machine that would automatically do this job.

Within a few months, he had constructed the world's first cotton gin, which enabled one man to separate seeds from 50 pounds of cotton in a single day. Before, it had required nearly four dozen men working by hand to prepare the same amount of cotton for the mills.

As a result of Whitney's invention, do you think that more people, or less, began growing cotton? What do you think happened to the price of cotton? With fewer workers investing less time to prepare the same amount, did it become more expensive, or less?

The price of cotton decreased substantially while many more people began growing it. Throughout the South, cotton acreage expanded, and the area entered a period of great productivity. Indeed, within less than a decade, the annual production of cotton in America increased from less than five million to over 50 million pounds.

But that is not all. The availability of cotton in such large quantities and at such low cost stimulated the development of weaving and manufacture of cloth in the North. Soon, machine-produced cloth was available at prices within the reach of virtually everyone. It was no longer necessary for housewives to work until late at night with spinning wheels and hand looms, making cloth for shirts, dresses, and other clothing items for themselves, their husbands, and children.

The invention of the cotton gin made inexpensive, quality clothing widely available. It ultimately benefited most Americans. But at the time, it did not benefit Eli Whitney. At first, he

decided to build a factory in Connecticut to manufacture cotton gins. But his invention was so easy to duplicate, and so simple to operate, that others decided to build gins rather than buy one from him. Whitney sued some of the other manufacturers for copying his invention without his permission, but before he collected anything, his own factory burned down and his partner died. And some people disputed whether Whitney had even invented the cotton gin. The machine that helped so many others make more money, and improve their living conditions, actually lost money for its inventor.

**A**FTER SUCH an ordeal, how do you imagine that Eli Whitney felt about his invention? How would you feel if an invention of yours saved many hours of work, and helped produce many goods, but brought you nothing in return? Would you be discouraged if your idea was stolen by others and your factory burned down?

Eli Whitney must have been very disappointed. But it did not stop him from applying his creative talents to other efforts. He turned to a another project which made him a wealthy man. He decid-

#### FOR YOUNGER AMERICANS

The important point of this lesson is that man must be free to invent and create. In the United States, where we have enjoyed more freedom than in any other nation in history, man's inventiveness and creativity have produced an abundance of goods unimaginable even two centuries ago.

Ask your younger children to make a list of some of the items in your home that were not available to our pioneer forefathers. Examples could include electric lights, central heating and air conditioning, television, telephones, radios, refrigerators, computers, video recorders, and so much more. What was life like for those early Americans without these inventions? What did they use in place of them?

Are there any countries today where people are not free to be creative? How does the standard of living there compare with ours? Would the people in those countries be more creative if they had more freedom? [If you have access to a current *World Almanac & Book of Facts* or other similar reference, compare such factors as average income and gross national product of the U.S. with that of other selected countries.]

ed to manufacture muskets.

At the time, every gun was made completely by hand. A gunsmith carved the stock, drilled the barrel, filed the trigger, and made the other components until the firearm was completed. As a result, each rifle differed slightly from all others. And every part of one gun differed slightly from the same part in another. As you can imagine, repairing such rifles was a real problem, since a gunsmith would have to make a piece that looked about right, and then re-file it, and re-fit it, and re-test it until it worked properly.

Whitney came up with the idea of using machines to manufacture the basic pieces for rifles. Since each trigger spring would be identical, production and assembly — and repair — would be greatly simplified. Parts from one firearm would be interchangeable with those from other guns, and the parts could be manufactured (and the rifles assembled) by ordinary workers, rather than by highly-skilled gunsmiths.

Whitney received a contract from the U.S. War Department (now the Defense Department) to produce 10,000 muskets over a two-year period. The government officials assumed that each musket would be handmade by a gunsmith, and they expected to begin receiving some of them right away. However, it can take much longer to start mass producing something than to build a few by hand.

Once all of the machinery is operating, whatever you are making — whether rifles, roller skates, or recorders — will come off the assembly line very quickly. But first, you must build the assembly line. Whitney was unable to buy the machinery he needed, because in those days it did not exist. He had to make the machines before the

machines could make the rifles.

By the end of the first year, Whitney's factory was barely beginning to produce muskets. About 500 were delivered to the War Department. By this time, however, the Department had expected to receive ten times that many. Whitney was summoned to Washington to appear before a committee of officials who wanted to ask him some very pointed questions.

**R**EMEMBER, none of these men knew anything about Whitney's plans for mass production. They did not know that he was developing a major new aspect of the manufacturing process — interchangeability. They weren't interested in his problems with machinery; they wanted to know why he did not have enough gunsmiths making guns.

If you were Eli Whitney, how would you have convinced the officials that your new methods were better than the old, and that you would soon be producing more guns less expensively than had ever been done before? Once again, Eli Whitney demonstrated the importance of individual creativity.

When he appeared before the committee, he brought enough loose parts to make ten muskets. Before the startled eyes of the officials, he dumped the parts on the table. While he explained the advantages of mass production, he started assembling a musket. Within just a few minutes, with parts chosen at random and without any special filing or fitting, he had completed two muskets. Then he passed them around the table for inspection.

Not all of those present were convinced by Whitney's presentation. However, his contract was not cancelled, and in time he delivered all 10,000 muskets. Soon, he had many more orders for his mass-produced firearms. And in time, as a just reward for his inventiveness and persistence, he became very wealthy. It was not until after his death, however, that he was definitely recognized as the inventor of the cotton gin. At last, he had received the recognition it he so richly deserved.

Eli Whitney demonstrated that the principle of mass production would work. Those first few hand-assembled muskets paved the way for the great factories of today. If it were not for mass production and interchangeable parts, the least

#### FOR SERIOUS STUDENTS

The lives of many inventors were as interesting and exciting as those of explorers, military leaders, and great statesmen. Encourage older students to learn more about the achievements of some of these men, such as Alexander Graham Bell, Thomas Edison, Samuel Morse, and Benjamin Franklin.

How did their accomplishments affect our lives? Was freedom important to them? Would they have achieved as much — or anything at all — in a regulated society? Could they have been ordered to make the discoveries for which they are famous? Can anyone be ordered to be creative? Why not?

expensive automobile would likely cost half-a-million dollars more, and would be become useless for long periods awaiting hand-made replacement parts. What are some of the other useful machines that would not exist today, or would be prohibitively expensive, were it not for mass production? [Ask everyone to name some of the machines and tools that we take for granted thanks to mass production.]

### **Concluding Thought**

For nearly two hundred years, men and women with imagination and creativity have applied the principles displayed by Eli Whitney to make life more comfortable and more enjoyable for all. And nowhere in the world has man's creative talent flourished more freely and beneficially than in the United States.

With less than five percent of the world's population, and only six percent of the its land area, Americans have far out-produced other nations. For many items, we produce more than the rest of the world combined. Our creative talents have been put to work to make us the best-fed, best-clothed, best-housed, and most prosperous people on the face of the Earth. Wherever man is free to dream, to experiment, to invent, and to create, the same miracle of creativity can occur.

Unfortunately, throughout most of human history (and throughout much of the world today), individuals are denied the freedom to be creative. Instead, they are told what they must do and where they must work. But it is impossible to order someone to make a great discovery or to become a great inventor. Where freedom is denied, creativity is stifled. We should be grateful that our forebears provided the environment of freedom in which Americans could be creative. We should not only work to retain that environment for ourselves, but to extend it to the rest of the world, so others may also prosper.

### **Looking Ahead**

In our next lesson, we will learn about something that should encourage effective use of individual talents and abilities. The incentive is astonishingly simple, but as we shall see, it is often ignored because, among other things, its enormous potential is not understood. Even our early settlers did not realize how important it is. But once they rec-

ognized it, and applied it, fantastic changes began occurring in their lives.

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This lesson is adapted from Henry Grady Weaver's great classic, *The Mainspring Of Human Progress*.