explorers of the living creation

George Washington Carver: Pioneer Plant Scientist and Chemurgist

by Colette Stancel

Dr. George Washington Carver (1864–1943) was one of America's greatest plant scientists. Beginning in 1896 and continuing for 47 years, he taught classes and directed research in agriculture (the science of farming) at Tuskegee Institute in Alabama. From boyhood, Dr. Carver had always seemed to know how to grow plants and treat plant diseases. Because of his skill, he became known as "the Plant Doctor."

Dr. Carver's goal in his teaching and research at Tuskegee was to help the farmers of the South to rise out of poverty. At this time, Southern cropland was almost useless. Its minerals had been exhausted by the constant planting of cotton, and in many areas the land was barren, eroded, and sun parched. It seemed that in a few years the cotton crop itself would be destroyed by the ravages of insects such as the boll weevil. To help the farmers who could not attend classes at Tuskegee, Carver equipped a wagon as a traveling farmers' school. Every Friday after his regular classes he went out into the countryside and taught the farmers how to restore their land by rotating crops and planting legumes to return nitrates to the soil. He emphasized the importance of diversification into other crops besides cotton.

It was Dr. Carver's dream that each farm be self-sufficient in producing food and household items while also having a cash crop to replace cotton. To fulfill this dream, Dr. Carver did pioneering work in a new branch of science—**chemurgy** [kĕm′ûr·jĭ]. Chemurgy is the science which seeks to use the chemicals in farm and forest products as raw materials for manufacturing other products. Dr. Carver's desire was to find one or two plants that would grow well in the South and from which hundreds of practical products could be produced. The first plant that he successfully tested was the sweet potato. From it, he developed over one hundred products, including flour, glue, dyes, ink, paint, and candy.

Still not satisfied, Dr. Carver continued to search for a plant that he could exploit more fully. He settled on the lowly peanut, which grew wild in the South and was considered a nuisance by farmers and fit only to be fed to the pigs. Patiently, Dr. Carver analyzed the peanut, broke it down into compounds, and began to put these compounds back together in various combinations until he had produced more than 300 products—including an instant coffee substitute, ink, soap, shampoo, shaving cream, meat sauces, a milk substitute; and, of course, peanut butter and peanut oil. George Washington Carver had at last achieved his dream. From the peanut crop farmers could make many needed household items. (Dr. Carver wrote pamphlets explaining how to make the items.) Farmers could also sell peanuts for necessary cash. Thanks to the work of George Washington Carver, the multimillion-dollar Southern peanut industry had begun.

Dr. Carver, an accomplished artist, also developed a method of making synthetic marble from wood shavings and produced paints from Alabama clays—including an Egyptian royal blue that scientists declared to

be seventy times bluer than the bluest paint yet fabricated. Twenty-five years before the process was patented, Dr. Carver produced paper from Southern pines. He further improved agriculture by developing a more productive variety of cotton and better methods of fertilizing cotton, and when World War I cut off normal fertilizer supplies, he developed alternate fertilizers for other crops. He also developed improved methods that could be used in the home for preserving meat, fruits, and vegetables; and he showed farmers how to use the common fruits and vegetables that were available. For example, he wrote a pamphlet explaining forty-three uses for wild plums and another explaining 115 ways to prepare meals using tomatoes.

Dr. Carver's success in making practical use of plants and the soil lay in his familiarity with the natural world that God had created. He observed and collected plants to obtain the knowledge and raw materials for his lab work. He began each day by rising at 4:00 A.M. and taking a walk.

During these morning walks, he prayed for guidance and help for the day's work. When success came, he gave God the glory. He once said, "Without God to draw aside the curtain, I would be helpless. . . ." He called his laboratory God's Little Workshop. On his desk in the laboratory, he always kept a copy of the Scriptures. One of his favorite Bible verses, which he read over and over, was Genesis 1:29—

> *And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat.*

Dr. Carver believed that God made the beautiful world of plants and animals for man's delight and use and that it was man's duty to discover as many of those uses as possible for the benefit of mankind. This is why he was successful as a scientist and as a benefactor of mankind.