

# WITH AN EYE TO THE

# FUTURE

by Leigh B. Estabrooks

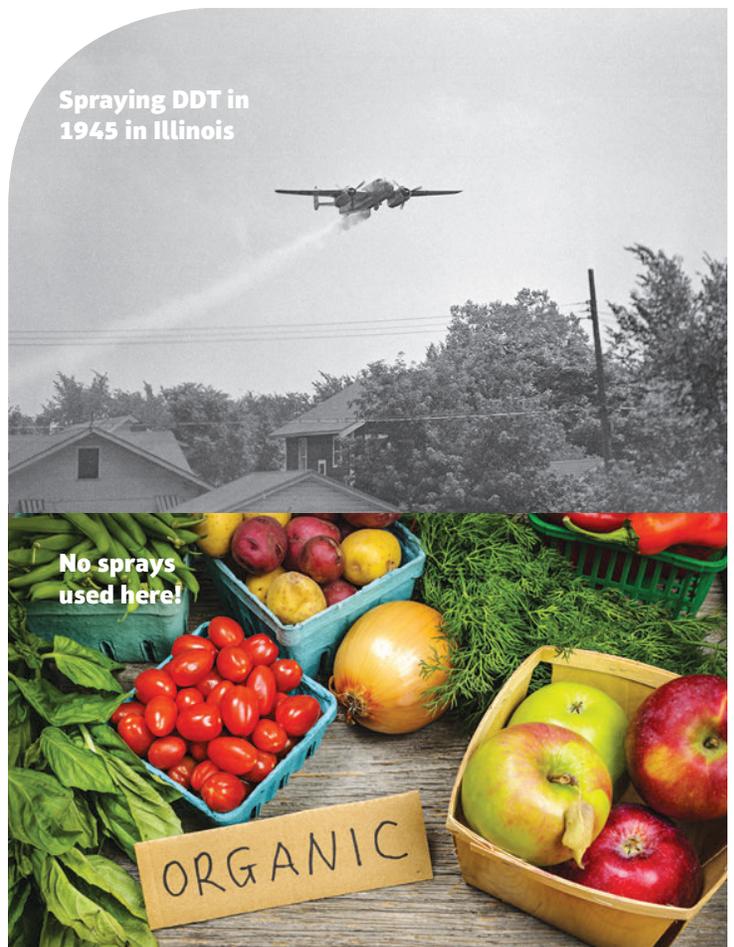
Inventions impact the way we live. A good many inventions have had a positive impact on society and improved the health and wellbeing of people. In fact, many of the far-reaching advances made in science and technology have changed the way we live.

Invention and innovation play a major role in the economic development of regions and countries. Consider, for instance, the impact technological advances have had on a region near San Francisco in northern California. Known as “Silicon Valley,” this region became the center of high tech after inventors and innovators such as William Shockley and Robert Noyce moved there. The companies they founded in the mid- to late-1950s to manufacture electronic devices fueled the digital revolution.

## THE NEGATIVES

Not all inventions, however, have had a positive

Spraying DDT in  
1945 in Illinois



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outcome on the health and wellbeing of people. One example is dichloro-diphenyl-trichloroethane, a synthetic chemical commonly known as DDT. Swiss chemist Paul Hermann Muller discovered that the compound could be used to kill insects in 1939. Many communities bought it to kill mosquitoes that host malaria parasites and lice that carry a typhus-causing bacterium. In 1948, Muller received the Nobel Prize in Physiology or Medicine for his discovery. In World War II, DDT was used to control diseases carried by insects in Europe and the Pacific. Its use continued to increase in the United States, peaking in 1959. A few decades later, however, DDT's harmful effects became evident and were made known to the public.

## MEET RACHEL CARSON

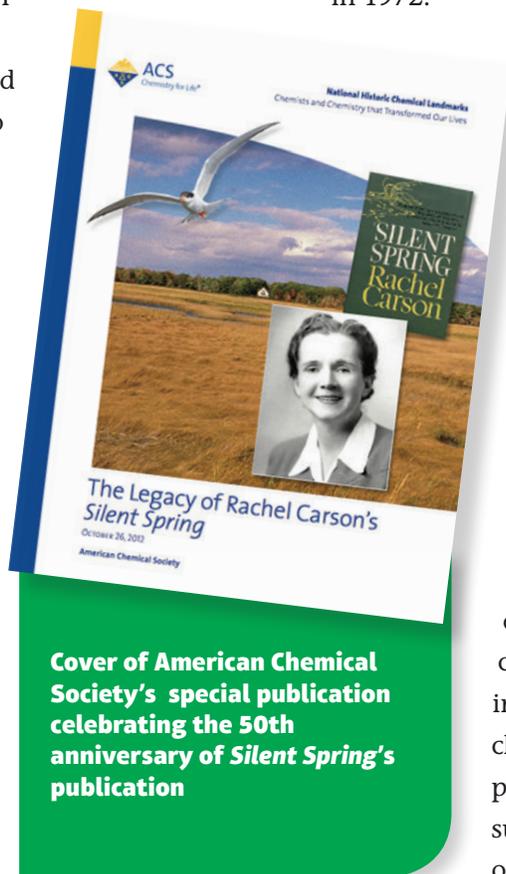
In 1962, zoologist and writer Rachel Carson published *Silent Spring*. In it, she made clear that DDT

**Alma mater** refers to the school, college, or university a person attended or graduated from.



A "green" skyscraper building in Australia

harmed not only dangerous insects, but also birds, as well as entire biological systems, the food chain, and humans. DDT was ultimately banned in 1972.



Cover of American Chemical Society's special publication celebrating the 50th anniversary of *Silent Spring's* publication

In 2012, on the 50th anniversary of *Silent Spring's* publication, the American Chemical Society honored Carson's legacy of shining a spotlight on the environmental connections among insects, animals, and humans. Today, a plaque at Carson's **alma mater**, Chatham University in Pennsylvania, reads: "The legacy of *Silent Spring* continues today in the chemistry community's increased focus on green chemistry practices and the public's heightened support for sustainability in all areas of our lives."

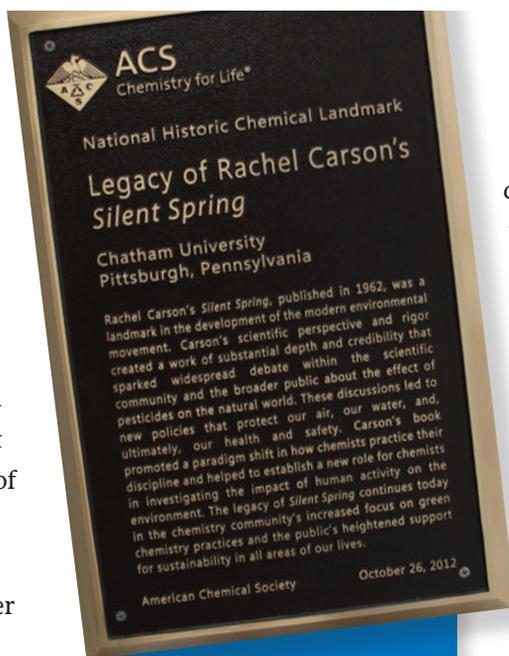
## HERE'S TO RENEWABLE!

“Sustainability” is a modern word. It was not used during Muller’s or Carson’s lifetimes. The term has multiple meanings, but traces its roots to the fields of biology and ecology. It is often applied to renewable resources such as fresh water and solar energy. In recent decades, inventors have begun to consider what it means to design sustainably. VentureWell, an organization that funds and trains college faculty and students to design sustainably, encourages inventors to think about entire systems that can be impacted by an invention. It also notes that the life cycle of physical inventions should be considered. This means looking at the raw materials that will be used to make the product as well as at how the product will eventually be recycled and reused.

## YOUR ROLE! WAYS TO PARTICIPATE

Learning about and practicing personal sustainability actions will help direct your thinking as you consider solutions to real-world problems. Some of these actions may include using fewer natural resources, adjusting consumption patterns, recycling and reuse, limiting food waste, composting old food, and learning to fix things when they break.

Youth development organizations such as Girl Scouts, Scouts BSA, and 4-H offer many resources to help young people learn more about sustainability. These organizations offer hands-on



**Plaque presented to Chatham University by the American Chemical Society on the 50th Anniversary of the publication of *Silent Spring***

activities that allow participants to experience what it means to be sustainable. Perhaps one of these resources may encourage you and a group of your friends when you are in high school to apply for a Lemelson-MIT InvenTeam™ grant. In preparation, you might want to start thinking about a solution to a real-world problem in a sustainable way.

## LOOKING AHEAD

You might also want to consider a career that focuses on sustainability. It could be one that allows you to work to conserve natural resources or to make things more environmentally

friendly by reducing pollution. You may be interested in the “green economy” and invent new ways to conserve resources, increase energy efficiency, or engineer “friendly” products. You may be an eloquent communicator about sustainability, just as Rachel Carson was.

The U.S. Department of Labor notes that there is no set path for a person wishing to pursue a career in sustainability. Indeed, jobs related to this field vary greatly from industry to industry and from organization to organization. Occupations that focus on sustainability are **interdisciplinary**. This means that you will need to understand science, technology, engineering, and math. Remember, no one is ever too young to consider inventing sustainable ideas or solutions that will have a positive impact on the economy and that will improve the health and wellbeing of life around us.

**Interdisciplinary means combining or involving two or more academic disciplines of study.**