energy for photosynthesis. Corn is particularly responsive to sunlight; the more it gets, the faster it grows.

Wheat, often considered the world's most important food crop, is also facing an upward rather than downward swing in productivity. Using a gene-altering chemical called Cycocel or CCC, scientists have produced a new variety of wheat with shorter stems and fuller grain heads—a hardy, drought-resistant type that grows in many areas of the world where normal wheat dies.

And recent work at the International Rice Research Institute in the Philippines, where scientists crossed tall tropical rices with short types from Taiwan, promises a 30 percent increase in yield. This new variety of rice grows successfully in Southeast Asia and matures in only four to four and a half months, making three crops a year possible.

In addition to changing the shape of plants to get more productive varieties, agricultural researchers are turning to carbon dioxide as a potential catalyst to improve crop productivity. For photosynthesis, plants annually extract some 16 billion tons of carbon dioxide from the atmosphere. But carbonates are also plentiful in the earth, constituting a sleeping giant just waiting to be harnessed by imaginative researchers, according to Dr. Wittwer. Adding carbonates to the soil or spraying them in water solutions directly on plant leaves could boost photosynthesis efficiency severalfold, as experience in greenhouses has shown. This approach should be used in the field as well, he says.

CANCER SOCIETY

Long way to go

Over the years inroads have been made against cancer, the research effort has multiplied again and again, and the results have been gratifying, to some, but hardly good enough. The delegates to the American Cancer Society's annual meeting in New York this month couldn't find time to pat themselves on the back for listening to accounts of unfinished business. Some incidence curves continue to climb, research targets may be inadequately defined, and there is a management problem. "We run the risk of seriously diluting our efforts," Dr. Richard P. Mason, the organization's senior vice president for research, warned.

Not nearly enough is known about the peculiarities of the cancer cell in contrast to the healthy one, he said, or about processes of growth of malignant cells and their ability to move through the body. More work is needed on the production of immune responses within the body as well as on the peculiarities of viruses known to produce cancer in animals and suspected of doing so in man.

Research expenditures of the society have risen from $1.2 million in 1947 to $15.5 million in 1965. Other organizations' research grants continue to climb—the comparable figures for the National Cancer Institute are $664,000 and $72.8 million.

But if the present rate continues, more than 50 million Americans now living will eventually develop cancer.

Lung cancer leads the number of deaths, with 55,300 estimated for 1968, divided between 46,600 men and 8,700 women. From all cancers 172,000 men and 143,000 women are expected to die next year.

There is a bright side of the coin, in spite of the growing cancer rate. About 200,000 men, women and children will probably be saved from the disease in 1968; 100,000 more could escape death if they would go to physicians for earlier treatment.

Some 1.4 million Americans alive today have been officially cured of cancer; they show no evidence of the disease at least five years after treatment. Actually, there are more than 2 million Americans cured; some 700,000 former patients will not be counted until they complete the five years.

One of the most encouraging trends has been the decline of uterine cancer. Statistics are deceiving in this respect because the number of deaths this year—13,500—remains the same, but the population is rising. Over the past 25 years the death rate from uterine cancer has been cut in half.

SUPERCONDUCTIVITY

Theory diluted

Current theories on the causes of superconductivity—the flow of electric current without resistance at very low temperatures—have been in trouble because some predictions based on them haven't been backed up by experiment.

One prediction—that the temperature at which a substance becomes superconducting should be lower in the heavier of two isotopes of a given element—has been found to be way off, according to experiments reported in the Oct. 16 PHYSICAL REVIEW LETTERS. Uranium 235 was found to have a lower temperature than its heavier isotope, U-238 by Dr. Robert D. Fowler and four other physicists at Los Alamos Laboratory.

The test results were claimed to be "final proof that here a mechanism other than the phonon-electron interaction (as currently theorized) leads to superconductivity."