



FIRST IN THE U.S.—This Cockcroft-Walton Accelerator, the first commercial machine of its type produced in the U. S., will be used at the University of Arkansas. The 350,000 volt, 400-micro-ampere positive ion accelerator was manufactured by Applied Radiation Corporation, Walnut Creek, Calif. D. W. Garbellano, ARCO vice president, left, and R. C. Marker, ARCO chief engineer, are in the foreground.

BACTERIOLOGY

Distinguish Bacteria By Their Cell Walls

► ANALYSIS of bacteria's cell walls promises to provide scientists with a valuable method for distinguishing different strains of the microscopic one-celled organisms.

Two bacteriologists and a biochemist report in *Nature* (Aug. 17) that they found an unusual degree of variation among eight strains of *Lactobacillus bifidus*.

Considering only the amino acids, there were four different patterns or acid combinations among the walls of the eight strains. This is described as a "surprisingly high degree of variation" and quite unlike anything previously encountered. There was also considerable variation in the sugars present.

On the basis of cell wall components, it is unlikely the bacteria belong to some group other than the lactobacilli as has been suggested. Analysis of some cell walls indicated differences from those of other lactobacilli, however, and the scientists suggest these strains are in an unstable state.

In addition to becoming "tolerant" of oxygen and assuming a rod-shape, *L. bifidus* strains may change their cell wall structure, a possibility which the scientists point out needs to be investigated.

Drs. C. S. Cummins and Olivia M. Glendenning, department of bacteriology, and Dr. H. Harris, department of biochemistry, London Hospital Medical College, London, England, reported the research.

Science News Letter, August 31, 1957

AGRICULTURE

Witchweed Threat Serious

A weed that has turned up in North and South Carolina farms has Federal and state agricultural scientists working to end the threat it poses for important crops.

► PROSPECTS for a quick victory over witchweed are not bright, the U. S. Department of Agriculture has reported.

Currently, the only weapon on hand to combat the plant parasite that threatens the nation's \$5 billion corn, sorghum and sugar cane crops is cooperation between farmers and research scientists.

Farmers can help by immediately reporting all suspect plants to their county agricultural agents, but also, by not bringing them to the county agent. Seeds can be spread from an infested area to a "clean" one in this manner. (The weed grows between six and 12 inches high, occasionally as high as 18 inches. It is a pretty plant, with bright green fuzzy leaves and stem and showy, nasturtium-red flowers that have yellow centers).

Before its discovery and then identification in North and South Carolina in 1956, witchweed, or *Striga asiatica*, was found in tropical Africa, Saudi Arabia, India, Burma, Thailand, Cambodia, China, Java and northern Australia.

Losses resulting from witchweed infestations have been high in these countries and agricultural experts in the U. S. fear comparable losses can materialize if the weed gets out of hand. Losses in the Sudan have run as high as two-thirds of the grain crop.

One of the difficulties in any program for controlling witchweed is the plant's seeds.

One plant can produce 50,000 to 500,000 seeds. These are so tiny it would take six of them laid lengthwise to span a type-written "period" and 125 to measure one inch. They are about three-fifths as wide as they are long. Their near-microscopic size means they can be carried in soil and dust. They can contaminate almost everything on a farm infested with the parasitic plant.

The fact that the seed can lie dormant in the ground for 20 years also makes control or eradication difficult.

Research currently being undertaken by Federal and state agricultural scientists is directed at attacking the problem through both basic and "applied" science. The goal for much of their research is finding ways of getting the witchweed seed out into the open.

Catch and trap crops are being tested for their efficiency in clearing the soil of seeds. Peanuts are an excellent trap crop, causing the parasite's seeds to germinate but not supporting its growth.

Fumigants such as methyl bromide are being tested now. Herbicides will be tried on witchweed in a search for plant-killing chemicals.

USDA scientists are adding to the store of basic information—much of it imported—concerning the witchweed seed and plant.

The kind of soil it requires, the amount of water, soil temperature and the range of its hosts in this country are all being studied.

Resistant lines of host plants are being sought through exposing selected strains to witchweed parasitism. As yet, no resistant line of corn has been found, but sorghum materials collected by USDA scientists in Africa include two strains of African resistant plants.

At the present time, identification and quarantine, to keep it from spreading, appear to be the most effective weapons against witchweed.

Science News Letter, August 31, 1957

GENERAL SCIENCE

Science Talent Search Scholarships Tripled

► THE NATION'S top 40 science-minded high school seniors, picked in the 17th Annual Science Talent Search which begins this school year, will share a total of \$34,250 in scholarships and awards. This is more than triple the amount awarded to previous winners of the annual nationwide search for promising research scientists.

The increase in the awards was announced by Gwilym A. Price, chairman and president of the Westinghouse Electric Corporation, on behalf of the board of directors of the Westinghouse Educational Foundation. The Science Talent Search is supported financially by the Foundation and conducted by Science Clubs of America and administered through SCIENCE SERVICE.

The increase means that the grand scholarship to the top winner of the Search, which was formerly \$2,800, is now \$7,500. Four other science scholarships now range from \$6,000 to \$3,000 and each of the other 35 finalists will receive a \$250 award. In addition, each of the 40 finalists receives a five-day all-expense-paid trip to Washington, D. C., to attend the Science Talent Institute in the spring.

The Westinghouse science scholarships are unique in that winners can use them at any accredited college or university of his or her choice and can also accept other scholarships.

More than 224,000 high school seniors have entered the Search since its inception in 1942. Of these, 44,048, including 10,288 girls, have completed all the requirements. Westinghouse science scholarships worth \$176,000 have been awarded to 640 of the teen-agers and an additional 4,160 have been named for honorable mention.

It is estimated that well over \$4,000,000 in additional scholarships and financial aid has come to both groups.

Science News Letter, August 31, 1957