

## Better plants with temperature testing

Plants, like all living creatures, have adapted to specific environmental conditions in order to survive. Some plants can live where it is extremely dry, some live immersed in water. Some like lots of light, some like shade better. An important environmental factor is temperature—and some plants grow better in cooler temperatures than hot. If scientists could learn more about the specific physiological ways in which plants adapt to the environment, then they could breed better food crops.

A team of nine plant scientists from all over the United States and Canada, directed by R. S. Alberte of Duke University, studied just this problem. They chose 19 mutant corn, soybean and cotton species with marked sensitivity to temperature. By studying the exact amounts of two plant pigments present under various temperatures, they were able to probe one physiological adaptation mechanism.

The two pigments, chlorophyll *a* and chlorophyll *b*, are directly responsible for the photon-trapping talents of plant chloroplasts. Temperature, they found, seems to affect the ratio of one pigment to the other. These ratios in turn affect the quantity and composition of the photosynthetic units, and thus the plant's ability to capture sunlight and turn it into usable plant sugars.

By studying the hundreds of other plant crop species with chlorophyll mutations, the team says in the June *NAS PROCEEDINGS*, plant breeders will be able to tailor plants to specific and diverse environments, and thus improve the photosynthetic efficiencies of badly needed food crops.

## Plant "skin" and regeneration

Many plants and animals can regenerate lost parts and repair wounds by the despecialization of adult tissues into more amorphous ones. Scientists are inching along toward an understanding of that process, and even though the process in plants may differ significantly from that in animals, knowledge about either system is a step forward.

A Louisiana State University botanist, Shirley C. Tucker, reports in the Aug. 2 *SCIENCE* that leaf cells from many species in the magnolia family exhibit despecialization. Epidermal and guard cells, rarely before shown to exhibit the property, rearrange themselves into a more primitive state in these species after wounding and thus aid in wound repair. This unusually elaborate property in magnolias probably escaped scientific attention until now, she says, because most magnolia species are rare in temperate zones.

## A plant program for sinophiles

If Ling Ling and Hsing Hsing, the pandas in the national zoo, get homesick for China, they can visit New York. Chinese plants will soon grow at the Cary Arboretum in Millbrook, N.Y., following an official seed exchange between scientists in Nanking, China, and the arboretum curators. Nine different species were received last week and will go into a permanent collection of plants from around the world.

The exchange is more pragmatic than just pleasing tourists and homesick pandas. Arboretum scientists hope that Chinese ash trees will be resistant to the dieback disease now attacking American ash. And Zelkova, a Chinese shade tree suited to northern climates and soil, might become a substitute for the dwindling American elm.

Some of the Chinese seeds will be sent to other U.S. arboreta with international collections, and U.S. seeds will be sent to Nanking.

## Predicting dangerous behavior . . .

Bedwetting, fire-setting and cruelty to animals are disturbing signs of abnormal behavior sometimes seen in adolescents. But when all three of these behaviors are exhibited by the same male adolescent there may be real cause to worry, says Douglas Wax and Victor Haddox, clinical consultants to the California Youth Authority. They report in the spring issue of *PSYCHIATRY AND LAW* that a triad of bedwetting, fire-setting and animal cruelty in male adolescents is highly predictive of violent behavior in adulthood.

During a six-month period, 46 male delinquents were referred for psychiatric evaluation. The investigators screened out six young men who manifested all three of the supposedly predictive behaviors. A number of similarities emerged. Extreme violence—including assault, rape and attempted murder—was documented in each of the cases studied. Marked sexual deviation was also seen in each case. Together, the adolescents were said to illustrate practically all manner of sexual psychopathology. Also noted were severe depression, suicidal and self-mutilative behavior and rather infantile levels of psychological development.

This particular behavioral handicap, the researchers believe, cannot be accounted for by customary explanations for social deviancy and emotional disorder. They further state that the disorder is not currently accessible to present treatment methods. But the researchers suggest drug treatment to reduce explosive tensions and long-term treatment aimed at bringing about a personality change.

## . . . can be dangerous

Recent court decisions have made "dangerousness to self and to others" a major criterion for nonvoluntary commitment to institutions. For this and for other obvious reasons the ability to predict whether an individual will act dangerously is crucial. But, says the National Institute of Mental Health's Center for Studies of Crime and Delinquency, "no scientifically reliable method for predicting dangerous behavior exists."

The conclusion came from a recent symposium on dangerousness and mentally disturbed persons. NIMH is presently supporting research to develop new techniques for predicting dangerousness. But at present, the symposium members point out, "Prediction of potential dangerousness is highly inaccurate. Studies have shown that psychiatrists often are no more reliable than others who may be called on to make the difficult prediction." The newest information, says NIMH, suggests that a team of professionals representing psychology, law, medicine, sociology and psychiatry is more effective than psychiatrists alone in dealing with the complex issues involved in dangerousness.

## Predicting schizophrenia

The subjects are asked to watch a moving pendulum. Electrodes at the edge of the subjects' eyes monitor eyeball movements. If the eye follows the moving object in a halting rather than a smooth motion there is an indication of schizophrenia. This is the conclusion of Philip S. Holzman and his colleagues. Their research is reported in the August *ARCHIVES OF GENERAL PSYCHIATRY*. Researchers found that 86 percent of the long-term schizophrenic patients tested had tracking problems and 45 percent of the patients' relatives had problems. Only 8.3 percent of subjects selected from the general public could not track the pendulum smoothly.