WILLIAM JACKSON HUMPHREYS

Dr. Humphreys is general secretary of the American Association for the Advancement of Science. As professor of meteorological physics of the U. S. Weather Bureau, he is recognized as an authority in both physics and the science of the weather.

BOTANY

X-Rays Hurtful to Plants

X-rays can have harmful effects on plants as easily as they can on animals, and the result of an apparently mild dose given to a plant in its youth may show up in distortions and freak growths much later, when maturity has been reached. A series of experiments with X-rays on plants, conducted by Edna Louise Johnson, of the University of Colorado, is reported in the *Botanical Gazette*.

Miss Johnson used sunflowers for her material, raying them while they were young seedlings and even unplanted seeds. Then she let them grow up and watched for results. Most of the plants developed fasciated stems, a phenomenon occasionally observed in nature, caused by injury to the growing tip. The doubling tendency extended to leaves and flowers as well, for many leaves had two blades and some of the flower heads appeared in distorted and unnatural shapes.

The effects of the X-rays were evident internally as well as externally. The stem was made coarser and woodier, its water-conducting vessels were dislocated from their usual positions, and abnormal amounts of corky material appeared in the skin.

PHYSIOLOGY

Color Affects Reproduction

Different colors of light have varying effects on the rate of reproduction in several of the algæ and of the simple forms of life that lie in the biological borderland between plants and animals.

Dr. A. Brooker Klugh of Queen's University has found that two one-celled forms of life knows as *Volvox aureus* and *Closterium acerosum* reproduce most rapidly in red light. Experiments with two other species gave similar results.

Three boxes were constructed, each having the front open and a light-tight door behind. Into each of these boxes a vial containing five of these individuals or colonies was placed. Over the front of the boxes a color filter was fixed in such a way that the colors of the spectrum were divided into three portions, red, blue and green. The filters were so prepared that the light reaching the organisms was of the same intensity in all cases. They were exposed to sunlight for two hours daily, under carefully controlled conditions. Within a short time the *Volvox* colonies had increased from five to 35 under the red light, all under the green had died, and the blue allowed an increase to 16. Eleven days later there were 56 in the box under the red light, and all but three under the blue had died.

Under identical conditions *Closterium acerosum* gave parallel results. Dr. Klugh points out that, though these experiments give some indications regarding photosynthesis, to take these rates of reproduction as a criterion of the efficiency of light wave lengths in photosynthetic activity would not be wholly justified, because other factors are involved in the reproduction rate.

ARCHAEOLOGY

Chinese Porcelain Treasure

What is probably the greatest collection of Chinese porcelains in the world has lain hidden in the cellars of the treasure house of the "old serai" of the Turkish Sultans in Constantinople, according to Prof. Ernst Zimmermann of Dresden, one of the world's foremost authorities on ceramics. A large part of the collection consists of Sung and Ming pieces, ranging in date from the tenth to the seventeenth Christian centuries. It is believed that the bulk of the art treasure was gathered by Sultan Soliman the Magnificent, during the middle part of the sixteenth century.

BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

Holly and Mistletoe

Christmas and holly are so inseparable in the tradition of western Christendom that people who live where holly does not grow are willing to send long distances for their wreaths and garlands of the bright-berried branches.

It is only natural that this should be so. Our ancesters in the forests of northwestern Europe had a mid-winter festival celebrating the passing of the longest nights and the beginning of the return of the sun, long before Christ vanquished Odin and took away his feasts along with his worship. Winter, when the merriest birds fled, when leaves and flowers and fruits were gone from the trees, was a time of hardship and anxiety, and any green thing was treasured for its memory of good days gone and its promise of better days to come. Hence, the German folk-song "O Tannenbaum" to the hemlock; hence the use of ground-pine and wintergreen and all the little creeping verdant things; hence the use of holly.

The modern commercial exploitation of our holly resources has wrought havoc with the holly shrubs and trees in the more accessible regions, and the cultivation of holly is now seriously undertaken by horticulturists. It is a difficult plant to grow from seeds or cuttings, but recent scientific work has done much to overcome this trouble, and now any family that wishes can have its own holly tree in the back yard or even growing in a tub to bring indoors at Yuletide.

One cannot think of holly without calling to mind the mistletoe. Though the fate of the other plants that make up our Christmas greens is a source of anxiety to conservationists, nobody worries about the mistletoe. In spite of its romantic associations, it is a destructive parasite and as such is harmful to timber. Down South where most of our supply comes from, men knock clumps of it out of the trees with heavy charges of buckshot!

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