indication of the way it is tilted. This object, it was announced, "trails its arms as it rotates." In five others, though it is not so certain, the same condition seems to prevail, so they conclude that "all spirals trail their arms as they rotate."

Science News Letter, May 3, 1941

Produces Seedless Tomatoes

PRODUCTION of seedless tomatoes from unpollinated flowers, and even from unopened buds, by spraying with solutions of a growth-promoting substance was described before the Academy meeting by Dr. P. W. Zimmerman of the Boyce Thompson Institute for Plant Research. The substance is an organic compound known as beta naphthoxyacetic acid, which the speaker stated has several advantages for practical production of seedless tomatoes and possibly of other fruits.

The flowers were sprayed just after opening, or in some cases as well-developed buds. In the latter, the fruits sometimes began to enlarge before the flowers opened, bursting out through the sides of the corollas. Petals, stamens and pistils of sprayed flowers persisted for an abnormally long time. In some cases both petals and stamens remained in good condition for 30 days, while flowers left unsprayed withered within three days after opening.

The naphthoxyacetic acid and its derivatives caused erratic behavior in other plants. Tobacco stalks sprayed at the tip grew taller and flowered earlier than unsprayed control plants. Compound leaves were either reduced partly or altogether to simple leaves, or stimulated to develop into double-compound forms. When spray treatments were suspended, however, treated plants again grew normally, producing leaves and flowers of their customary types.

Science News Letter, May 3, 1941

Draper Medal to Wood

DR. Robert Williams Wood, professor emeritus of experimental physics at the Johns Hopkins University, Baltimore, was awarded the Henry Draper Gold Medal of the National Academy of Sciences. It was conferred by Dr. Frank B. Jewett, president of the Academy.

The medal, awarded 25 times since it was established in 1883, is given for important original investigations in astronomical physics. Dr. Otto Struve, director of the Yerkes Observatory and a member of the committee which recommended the medal for Dr. Wood, said that three of his researches, among many others, stand out particularly. These are his pioneer work in resonance spectra, his use of color screens in astronomical photography and the advances he has made in the preparation of diffraction gratings, which take the place of prisms in analyzing light, from sun or stars, into spectra.

Science News Letter, May 3, 1941

X-Ray Danger Postponed

X-RAY workers whose reproductive cells are exposed to heavy doses of powerful radiations need not fear that their immediate offspring will be deformed or defective as a consequence. Nevertheless, there is a chance that such deleterious mutations may crop up among their descendants centuries later, after as many as a hundred generations.

These are possible practical implications of a statistical study on X-rays and human gene mutations reported by Prof. H. J. Muller, of the University of Edinburgh and Amherst College. Despite the remoteness of possible ill consequences of X-ray exposure, Prof. Muller recommended that laboratory workers with the dangerous radiations shield themselves behind lead plates wherever practicable.

Gene mutations caused by X-rays or other powerful radiations are usually undesirable from the human point of view. Fortunately, however, they usually are also recessives, that is, two of the same kind have to be mated in order to produce the ill effect.

There are two ways in which genes made defective by X-rays can cause trouble. One is by the encounter of an X-ray mutation with a similar gene already existing in the general population. Prof. Muller calculated the chance of this occurrence as possible once in 30, or more likely 100 or more generations—that is, some 750 to 3,000 years of human history.

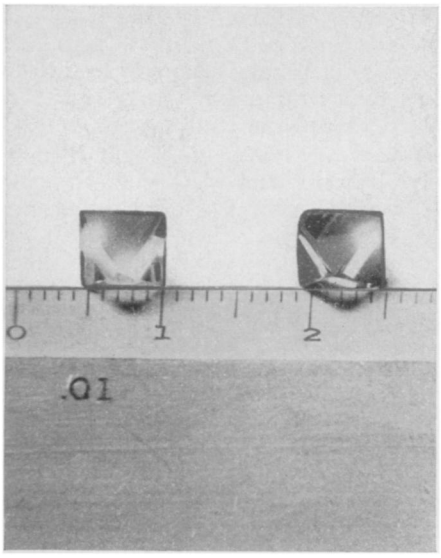
The second possible way for two such genes to encounter is through the mating of relatives descended from the original victim of the rays. Even with the closest kind of human inbreeding, this would not be likely to happen more than once in 200 generations—about 5,000 years.

However, Prof. Muller cautioned, the likelihood of a defective gene being "bred out," once it is established, is exceedingly remote. Hence the desirability of protection for persons habitually exposed to heavy X-ray doses.

Science News Letter, May 3, 1941

EXAMINATION

Prof. Harry Berman examines one of his cyclotron-green diamonds under the binocular microscope. Its white "twin" is on the dark plate.



COMPARISON

A white diamond, and one that has been made green with the cyclotron, shown against a centimeter scale. One centimeter equals .39 inches.

PHYSICS

Atom-Smasher Turns White Diamond to Green Variety

SCIENCE is using one of its favorite atom-smashers, the cyclotron, in a new role—to make those highly-prized gems, beautiful green diamonds.

The technique is simple: put an ordinary white diamond in a cyclotron and bombard it with high-speed atomic particles for an hour and—presto—it becomes a gorgeous dark green gem. Studies show such cyclotron-treated diamonds to be virtually identical with naturally occurring green diamonds which are given their tint by long-term exposure to radioactive substances. The cyclotron bombardment, because it is considerably more intensive than that from radioactive substances, simply acts to speed up the process.

Prof. Harry Berman, curator of the Harvard Mineralogical Museum, who announced the new method of making these highly-prized gems after a series of experiments with Harvard's cyclotron, said the research might also throw some light on the little-understood problem of the effects of atomic bombardment, as well as that of crystal coloration.

The major difference between cyclotron-green diamonds and radium-green diamonds, Prof. Berman has found, is that the latter lose their color upon heating for half an hour at 650 degrees, Centigrade, whereas the cyclotron-green diamonds, even when heated for lengthy periods, merely turn a deep yellowish-brown which shows no sign of dissipating.

He believes this to be further proof that while the effects of the cyclotron are very similar to those of natural radioactivity, they are far more intensive.

Science News Letter, May 3, 1941

PSYCHOLOGY

Intelligence Can't Be Isolated As Chemical Elements Can

Only a Probability That Person Possessing It Will Act in Certain Way; Must Be Related To Study of Brain

INTELLIGENCE is only a probability that the person possessing it will act in a certain way under certain conditions. It is not an inner essence or a faculty or power that can be isolated and measured as the chemist can measure the elements.

This modern view of mental abilities was expressed before the American Philosophical Society by the eminent educational psychologist, Dr. Edward L. Thorndike, of Teachers College, Columbia University.

"Three or four hours testing of a person with suitable intelligence tests or meters," Dr. Thorndike said, "gives a score which is highly indicative of how well he will do in school, how likely he is to escape confinement in an institution for the feeble-minded, and how well he will understand the sermons he hears, the policies for which he votes, and the like. It is usefully indicative of his fitness to make wise decisions as a parent, neighbor, and citizen.

"Such a score obtained at age eight to eighteen is equal or superior in value to a careful physical examination at that age by an expert physician."

Psychologists would like to be able to isolate each individual mental ability, as the chemist does his elements, and measure all of it and nothing but it. But, unfortunately for science and perhaps fortunately for man, mental abilities do not occur in pure form in any person. Each score that the psychologist can obtain from his measures is contaminated by the influence of other abilities —it is a mixture.

By the mathematical procedures known as factor analysis, components or factors have been isolated that would be pure if we could get measurements of them in real people, but psychologists vary widely in their opinion of the result, Dr. Thorndike said.

"Some expect," he said, "that the factors discovered will inaugurate great advances in knowledge about, and control of, human abilities. Some think that these factors are unrealizable abstractions, like an animal defined as 40% man, 30% turtle, 20% shark and 10% earthworm."

Psychology will not be satisfied, Dr. Thorndike declared, until it succeeds in relating mental abilities to their causes, bases, parallels or counterparts in the brain and nervous system.

Not much is known along this line at present, although some former errors have been eliminated.

"We now know," Dr. Thorndike explained, "that a brain is not much like a system of factories and storehouses interconnected by railroad tracks.

"It is more like a telephone and telegraph system with the added feature of more or less permanent modification by all the connections made and messages sent. It may include an elaborate system of resonators. What corresponds to an ability is more like a system of connections and modifications involving all army or navy activities, than like a regiment of cell-bodies. The cell-bodies indeed may only nourish and care for the conducting parts of the neurones. What the pattern of the neurones' actions is may often be more important than which particular neurones they are."

Science News Letter, May 3, 1941

Nazis Have Taken Lead

THE LEAD in military psychology has passed from America to the Nazis, Dr. Robert M. Yerkes, of Yale University, warned the American Philosophical Society.

In the World War, American psychologists pioneered by making their methods serve the Army and the Navy, Dr. Yerkes said.