

Waltham Watch Company, are working on defense orders for instruments such as the girls are learning to make. The women in this project have already demonstrated that they possess hand and finger dexterity needed for this precision work.

The trainees are taught to operate light lathes, watch lathes, bench engine lathes,

kick presses, punch presses and eyelet and riveting machines. They also receive instruction in spot welding.

The program was initiated by the Newton Public School system, as part of the national WPA Vocational Training Program.

Science News Letter, February 8, 1941

ARCHAEOLOGY

Magnificent Art Gallery Created by Cavemen of France

Discovery Originally Made by Five Schoolboys Near Montignac Is Confirmed By Abbe Henri Breuil

DISCOVERY in unoccupied France of a "magnificent" 30,000 year old gallery of prehistoric cave-man art, rich in pagan human figures, enormous bulls, horses and one black rhinoceros, is stirring scientific circles in the United States.

The world-famous authority, Abbe Henri Breuil, has succeeded in reporting to the British science journal, *Nature*, (Dec. 21) his authentication of the art discovery near the little town of Montignac in southwestern France.

Five schoolboys were the real discoverers of Lescaux cave, which will take its place in prehistoric annals alongside the "Sistine Chapel of Magdalenian art" in Altamira cave, in Spain. The new-found gallery of European art is pronounced far more ancient than the Altamira paintings, which are rated about 20,000 years old. Lescaux cave was decorated in closing days of the Aurignacian era of the Old Stone Age, a stage of culture which archaeologists have begun to distinguish by the still rather unfamiliar name of the Perigordian epoch.

Enormous bulls nearly 16 feet long, drawn in wide black lines with big spots sprinkled on the beasts' heads, impressed the Abbe Breuil, as he became first expert critic to appraise the ancient masterpieces. In one area of the dark underground passages and galleries, he counted more than 80 pictures, chiefly done on blocks that have fallen from the vault above. Some ascending galleries of the cave are still almost entirely unexplored.

The artists who worked by torchlight in the cave, painted horses with red color, giving them heavy coats in softly dappled pattern. Other animals portrayed, probably with magic rites as an aid in hunting, include oxen, bison, stags, two

lions, and one questionable bear figure.

Describing a striking scene, suggesting prehistoric European drama, the Abbe Breuil reports:

"To the left a black rhinoceros walks slowly away; in the center, drawn in red, a half-conventionalized man is lying beside a javelin and a throwing stick. To the right, a sand-colored bison outlined in black gazes at him; its entrails seem to be flowing out like a horse ripped open in a bull-fight."

In peaceful contrast: near the man a bird is perched on a post.

Foreseeing many surprises in store when the art can be further studied, the French prehistorian says that the pictures show signs of different techniques with frequent painting over the same space and frequent attempts at restoration.

Signs, such as chessboard patterns, resembling coats of arms, and pronged, comb-shaped patterns, and barred rectangles are numerous among the pictures.

Science News Letter, February 8, 1941

PLANT PHYSIOLOGY

One-Celled Plants Stimulated by Ultraviolet

ULTRAVIOLET radiation, usually considered inimical to life, proves a stimulant to reproduction in primitive one-celled green water plants when applied in less than lethal doses, experiments by Mrs. Florence Meier Chase, Smithsonian Institution biologist, have demonstrated.

Ultraviolet rays of certain specific wavelengths are now widely used in hospitals and elsewhere to rid the air of bacteria. Earlier researches by Mrs. Chase showed that the invisible rays

had similarly deadly effect on her primitive green plant cells. But when the same kind of plants are exposed to the same ultraviolet wavelengths for about two-thirds of the time necessary to kill them, instead of dying they multiply at greatly increased rates.

Increased reproduction rates differed according to specific wavelengths, Mrs. Chase found. She found four wavelengths biologically effective: 2352, 2483, 2652 and 2967 Angstrom units, respectively. Each of these wavelengths increased the cell-division rate in a quite definite ratio.

Green cells exposed to the stimulating dose of the 2352-Angstrom rays multiplied 4.7 times faster than a control culture of unirradiated cells of the same kind. The 2483-Angstrom wavelength stimulated cell multiplication to 3.9 times the normal rate, and the 2652-Angstrom wavelength rays produced a stimulation to 4.65 times normal. Least stimulation was brought about by the longest (2967-Angstrom) wavelength: 1.62 times normal.

Although the green cells increased their numbers thus rapidly under the influence of ultraviolet radiation, the size of the individual cells in the stimulated cultures became much smaller than normal, as if the cells could not take time to grow up before they were hurried into reproduction.

Science News Letter, February 8, 1941

ENTOMOLOGY

Bees Have No Rulers, Yet Their Society Is Not Anarchy

See Front Cover

SPRING'S first hints, bringing earliest tree buds to swelling, tempts venturesome bees out of doors to see what's going on. Already, on warm days, they are dragging out of the hives the bodies of their luckless companions who have not survived the winter, and dumping them unceremoniously to the ground beneath. Bees, often pointed to as the ultimate in the socialist state, certainly are complete utilitarians and apparently have no sentiments of any kind.

The life of the bee colony is ably described and beautifully pictured in a new book by Edwin Way Teale, *The Golden Throng* (Reviewed, SNL, this issue). Every bee in the hive knows its job and does it, without needing to be told or compelled to do so. It goes through a definite round of duties according to its age: nursemaid, home worker, forager afield—again with no authority other than its own instincts to

notify it of promotions or changes of task. Socialist state the honeyed commonwealth may be; but it is no dictatorship.

Science News Letter, February 8, 1941

PHYSIOLOGY

Discover How Vitamin D Acts to Cure Rickets

ALMOST every school child can tell you that vitamin D, the sunshine vitamin, cures and prevents rickets. Neither the doctors who prescribe vitamin D for prevention or cure of rickets, however, nor the scientists who discovered the vitamin and learned how the sun's rays produce it have heretofore been able to tell exactly how the vitamin does its rickets curing and preventing work.

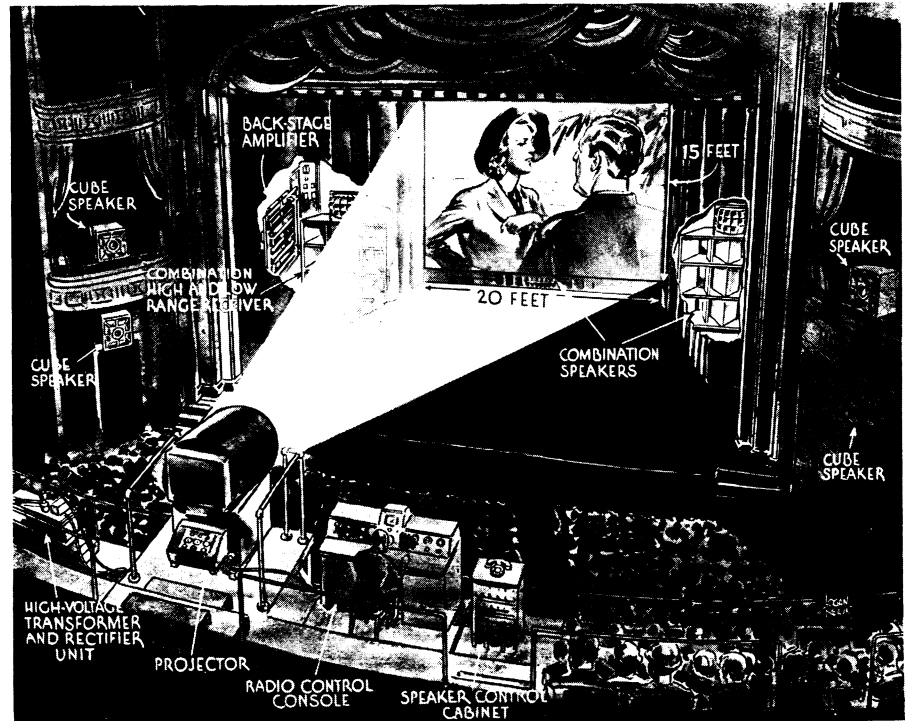
Now it has been discovered that the vitamin cures rickets or prevents it probably through its action on both the kidneys and intestines. Discovery of the vitamin's effect on kidney function has just been reported by Dr. Harold E. Harrison and Dr. Helen C. Harrison, of Cornell University Medical College. (*Journal of Clinical Investigation*, January.) The discovery, like so many others in science, depended on previous research by many other scientists who each added a bit of evidence that gave clues for further discoveries.

The bowlegs and other bony deformities of rickets, as you probably have heard, are due to the fact that the bones do not get enough calcium and phosphorus to make them hard and strong. Even with a plentiful supply of calcium and phosphorus coming into the body in the food, the bones fail to calcify unless there is also a plentiful supply of vitamin D.

The vitamin, scientists found, helps in the process by which the calcium and phosphorus from food are absorbed from the intestines into the blood for transportation to the bones. But this is not the only way in which the vitamin helps to prevent or to cure rickets. Even with plenty of phosphorus in the blood, rickets can develop because the phosphorus, instead of going to the bones, is eliminated through the body via the kidneys.

Vitamin D, the Harrisons found, also acts to prevent this loss of bone-building phosphorus. The kidneys may take the phosphorus out of the blood but when vitamin D is present, instead of eliminating the phosphorus with waste material, they return it to the blood in sufficient amounts for bone building purposes.

Science News Letter, February 8, 1941



NEXT: TELEVISION NEWS REELS?

When your local theater is equipped to show television with sound, this is the way the instruments may be placed.

ENGINEERING

Television Pictures Thrown On Screen From Balcony

In Order To Use Maximum of Light, Projector Is Schmidt Astronomical Camera in Reverse Position

TELEVISION pictures projected on a theater screen 15 by 20 feet, from a projector in the balcony sixty feet away, were demonstrated in New York by RCA engineers to show the Federal Communications Commission the latest advances in this field.

In order to use the greatest possible amount of light, a projector is used which is really an astronomical camera of the Schmidt type in reverse. The seven-inch face of the high voltage kinescope, on which the picture is formed, faces away from the screen, towards a 30-inch concave mirror. This reflects the image through a glass plate to correct certain faults or aberrations, then to the screen. By the method used for rating camera lenses, the system has a speed of F. 0.7.

The Commission was also shown a

home television receiver in which the pictures were projected to a screen 13½ by 18 inches. This used a conventional type of high speed lens, treated, however, with non-reflecting films, to reduce light losses.

Some of the views witnessed were transmitted from the RCA mobile television unit, stationed at Camp Upton on Long Island, 68 miles away. Automatic relays, at Hauppauge and Bellmore, picked up the short range signals and passed them along. A new horn type antenna was used to receive them, in the relay towers and finally in a window on the 62nd floor of the RCA building.

Radio facsimile, by which a newspaper complete with illustrations can automatically be printed in a home re-