

PHYSIOLOGY

Vitamin A Necessary For Proper Functioning of Eye

VITAMIN A, known to be necessary for the proper functioning of certain elements in the retina of the eye, has now been demonstrated as apparently necessary for all of it, by Drs. Charles Haig, Selig Hecht, and Arthur Patek, Jr., of Columbia University.

The sensitive cells in the retina are of two shapes, known respectively as rods and cones. Each class is sensitive to a specific range of light intensity, so that if either is disabled, vision is partially impaired. Vitamin A was known to be necessary for normal functioning of the rods, but hitherto it was not known to be necessary for the cones.

Patients suffering from alcoholic cirrhosis of the liver furnished the key in the present researches, which are reported in (*Science*, June 10.) Cirrhosis patients are known to have trouble with their vision, particularly in their ability to see in dim light after being in bright light—the phenomenon known as dark adaptation. This is tied up with defective working of the retinal cones.

Two alcohol-cirrhosis patients were selected for the experiment. They were fed heavy doses of vitamin A as supplements to their diet. Definite improvement was noted in visual functioning dependent on the retinal cones. It appears therefore that Vitamin A is as necessary for these parts of the retina as it is for the rods.

Science News Letter, July 2, 1938

PHOTOGRAPHY

Red Blood Corpuscles Used as Light Filter

A NOVEL color photographic process that would use a layer of differently dyed red blood corpuscles as filters for separating colors in order to record them on film has been patented by Chalmers C. Smith, of Glendale, Calif., and Ray H. Pinker of Los Angeles.

Mr. Smith and Mr. Pinker would use corpuscles from animals such as sheep, according to the patent specifications accompanying Patent No. 2,115,886.

Use of the corpuscles, the inventors claim, represents an advance over present color photography technique, which uses either a ruled screen or a layer of starch grains to achieve the color separation.

Colored motion pictures and still

photographs are all made essentially by using one or another means to separate the three primary colors that make up all shades and tints and to record them separately, then put them together again for viewing purposes.

Practical development of the unique process might well mean a fundamental change in the technique of making colored motion pictures used at present. These are made by means of a triple-coated film, one layer with its associated filter being sensitive to one of the primary colors. This process has, however, serious practical limitations. The screen processes are not used in commercial color motion pictures because the starch grains and the rulings show in the enlargement thrown on the screen.

The red blood corpuscles of sheep, .003 millimeter across, are sufficiently small so that when enlarged 240 diameters in being thrown on a screen as in motion picture projection, they would still be less than a millimeter in diameter, a size small enough perhaps not to show.

A further advantage claimed by the inventors for their idea of using a corpuscle screen is that the corpuscles are more translucent than starch grains, cutting down the amount of light required for taking pictures, and are also more regular.

Science News Letter, July 2, 1938

MEDICINE

Sulfanilamide Chemical Combats Meningitis

TREATMENT of meningitis with sulfanilamide, new and potent chemical remedy for many infectious ills, was reported by Dr. John A. Kolmer of Philadelphia at the meeting of the American Laryngological, Rhinological and Otological Society.

The greatest effect is obtained when the drug is given as early as possible and according to a specific dosage scale, Dr. Kolmer told his fellow physicians. His advice was based on laboratory studies made with the assistance of Anna M. Rule and Mary L. Werner.

Sulfanilamide is more effective in treating meningitis due to streptococci than that due to pneumonia germs. Best results are obtained in sulfanilamide treatment of meningitis when the drug is given both by mouth and by injection under the skin with occasional doses injected directly into the spinal fluid.

Science News Letter, July 2, 1938

IN SCIENCE

AVIATION

Airplane Made From Plastic-Bonded Plywood

OPENING up wide possibilities for rapid manufacture and assembly of airplanes, a plane whose fuselage is made from two pre-molded pieces of plywood bonded by a synthetic plastic is being readied at a Hagerstown, Md., factory for acceptance tests by the Bureau of Air Commerce.

The new plane, built by the Clark Aircraft Corporation, already has more than 60 hours in the air to its credit and is reported to be highly promising in performance.

The U. S. Army is interested to the point that it has a similar plane, made by the same manufacturer, under trial by the Materiel Division of the Air Corps at Wright Field, Dayton, O.

Great importance is attached to this and similar developments in view of the quick-manufacture possibilities inherent in plastic materials and to concentrated attention such planes have been receiving abroad.

The plane's fuselage is made of two molded halves which are made of a laminated plywood bonded by a synthetic resin developed in Germany.

With a gross weight in the neighborhood of 4,500 pounds it is about the same size as the larger private planes. This model is equipped with a 450-horsepower 12-cylinder V engine.

Planes made of plastic materials have been tried in the United States several times in the past, but they have not made great progress to date. An advantage derived from use of the material is speed in assembling the fuselage. Since airplanes are still largely hand-assembled, this is a factor of importance.

Although it is understood that the material used in this case was not one of those tested by the National Bureau of Standards, laminated plywood of the type used has a high strength to weight ratio, an all-important consideration with aircraft.

Science News Letter, July 2, 1938

Whether or not silk is weighted cannot be determined just by feeling it.

E FIELDS

MEDICINE

Alcohol Protects Against Trichinosis Organism

FOR protection against trichinosis, take a drink of beer, wine or other alcoholic beverage with your hot dog, hamburger or other meat that might harbor the germs of this serious ailment.

The alcohol will keep the larvae of the trichinosis germs, called trichinella, from burrowing into the walls of the digestive tract, Drs. James B. McNaught and G. N. Pierce, Jr., of Stanford University School of Medicine, told members of the American Society of Clinical Pathologists at their meeting in San Francisco.

Trichinosis is surprisingly widespread in the United States, recent surveys have shown. The disease is acquired by eating meat, usually pork, containing the trichinella. Thorough cooking kills the trichinella and makes the meat safe but sausages and hamburgers are usually not cooked long enough to kill the trichinosis germs.

Alcohol does not kill the germs, either, the Stanford scientists found. However, a single dose of alcohol given to rats simultaneously with trichinosis meat gave 80 per cent. protection against the disease. The alcohol cuts down the number of trichinella larvae developing in the rat muscles and reduces the severity of the infection.

Alcohol, the studies showed, is no good as a treatment for the disease, only as a preventive. Large doses given continuously for more than six weeks gave practically no protection when the first dose of alcohol was given longer than 48 hours after eating infected meat.

Science News Letter, July 2, 1938

MEDICINE

Large Blood Cells Assist In Recovery From Pneumonia

DISCOVERY of a new body mechanism which helps toward recovery from pneumonia was reported by Dr. Oswald H. Robertson of the University of Chicago.

The new mechanism consists of certain large, germ-eating cells which appear at a certain point in the disease, engulf the red blood cells, the white blood cells which had previously fought the pneumonia germs, and the germs themselves. As soon as these large cells appear, the patient begins to recover, it is believed.

This mechanism alone is not considered enough to bring about recovery. Dr. Robertson thinks there is some general still-undiscovered process which does part of the job. Part of the recovery mechanism must lie in the pneumonia germ-killing power of the blood, he said, any other factor being unknown. If both parts of the recovery mechanism are effective, recovery occurs, but if either one fails, death follows.

Resistance to pneumonia by means of a substance in the blood that kills the germs is not enough to prevent the ailment, Dr. Robertson believes. Experiments with dogs showed that if there is obstruction of the air passages in the lower part of the respiratory tract, where the lung's mechanism for getting rid of foreign material is not extensive, the disease may develop even if the blood has germ-fighting antibodies. Such an obstruction may occur in a cold when the infection reaches the lower part of the breathing system.

Science News Letter, July 2, 1938

ORNITHOLOGY

Siam Has Three Kinds of Migration Among Birds

BIRDS of Siam have three kinds of mass migration, instead of the one kind that is known to temperate zones. Besides the usual north-and-south seasonal movement in which many Siamese species take part, there are also a water migration and a food migration, reports H. G. Deignan of the Smithsonian Institution.

The water migration consists in the movement of vast numbers of water birds toward higher land areas with the coming of the rainy season and its attendant higher water levels in swamps and shallow lakes.

The food migration may be simply the result of scouting activities, in which certain individual birds discover places where mangoes, wild figs, and other fruits are ripe, and are then followed by the millions of members of the main flocks. Food migrations are indulged in only by birds of the pigeon and parrot families.

Science News Letter, July 2, 1938

BIOCHEMISTRY

Wins First Award of \$2,000 Harvard Prize

DR. Wendell Meredith Stanley of the department of animal pathology of the Rockefeller Institute for Medical Research at Princeton, N. J., has been named as the first winner of Harvard's Isaac Adler prize of \$2,000.

The award was made "for his researches on the isolation of a crystallizable factor which have developed a new approach in the study of viruses, thereby stimulating a widespread interest among works in this important field." (See SNL, Jan. 9, 1937)

The prize was established in 1934 under a bequest of \$20,000 of Mrs. Frida Adler of New York in memory of her husband. Under its terms, the prize is awarded every three years "for the best piece of original research produced within that period in the United States or Canada on any subject within the medical or allied sciences."

Science News Letter, July 2, 1938

GEOLOGY

Gems Reveal Dates Of Mountain Building

GARNET and tourmaline, staurolite and zircon, and a host of other heavier-than-average semi-precious stones now have a new use—telling the age of mountains. In the Big Horn Basin of Wyoming, Dr. Marcellus H. Stow, Washington and Lee University geologist, is tracing the source of the ancient sediments back to the still more ancient mountains from which they came.

Piled one over the other, with the youngest on top and the oldest below, the Cretaceous and Eocene sediments of the area were derived from the wearing away of the highest of the ancient Rocky Mountains.

Thus, the Hell Creek beds contain abundant zircon in all samples, suggesting their origin from a zircon-containing mountain. They contain no hornblende, showing that the source of the sediments was hornblende-free. Further studies show that the Hell Creek beds were derived from the erosion of sediments.

Each bed of the series present in the Bighorn basin was likewise studied for heavy minerals, and its probable source determined. From this, Dr. Stow hopes to determine which areas were "up" during each phase of the Laramide period of mountain-building, 90,000,000 years ago, more or less.

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