SCIENCE NEWS

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ANTIRACHITIC FOODS

"SYNTHETIC cod-liver oil," stuff that builds bones and prevents the childhood disease of rickets without the unpleasant taste of the fish oil, was recognized when the 1928 Nobel prize for chemistry was awarded to Dr. Adolf Windaus, of Göttingen, Germany. This is the first time that the Nobel Prize Committee has recognized any of the scientific work done on the problems of human nutrition.

The work for which Dr. Windaus received the prize was the successful repetition of experiments proving that ultra-violet light, either in the sunlight or artificially produced, will activate the chemical called ergosterol and confer on it antirachitic properties. According to information available, the experiments were originally performed by Professor George Barger, of the University of Edinburgh. Dr. Windaus was so impressed by Dr. Barger's original results that he asked permission to collaborate with Barger in subsequent work on the problem. Windaus himself had been experimenting along similar lines without achieving definite results.

A scientific controversy may arise from this Nobel prize award since priority honors and patent rights are involved in the situation. While the prize was awarded to Dr. Windaus, the subject of the antirachitic properties of foods has engaged the attention of scientific investigators both in this country and Europe for many years. The work along these lines began when Dr. E. V. McCollum and his associates at the Johns Hopkins University found that a substance, known as vitamin D and found in cod-liver oil and to a lesser extent in other fats, has the power of preventing rickets. These scientists also were the first to find that irradiating animals by exposing them to ultra-violet rays would keep the animals from having rickets even if the antirachitic vitamin D was not in their diet.

The next step was taken by Professor Harry Steenbock, of the University of Wisconsin, who instead of irradiating animals tried irradiating their food. He worked with a mixture of foods and found that irradiation gave to the foods the antirachitic power. Commercial production of irradiated foods is now in progress under the Steenbock patent. Dr. Alfred E. Hess, of Columbia University, irradiated the different classes of foods separately and found that the antirachitic substance was contained in fats. He and every one else believed for some time that it was the cholesterol of fats that was the antirachitic substance.

Then in July, 1926, Dr. Barger and his associates in England announced that pure cholesterol can not be activated by ultra-violet rays, but that irradiation does activate ergosterol which is found as an impurity in ordinary cholesterol not purified by a special process. They believed ergosterol had the antirachitic property. Dr. Windaus repeated their experiments, and again tested cholesterol which had been specially purified. He proved definitely that it is ergosterol and not cholesterol which is activated by exposure to ultra-violet light. Dr. Barger and his associate, Dr. T. A. Webster, have also proved by experiments with animals that this activated ergosterol can prevent rickets.

ARTIFICIAL COAL FROM WOOD

CELLULOSE and lignin, the two principal constituents of wood, have been converted into artificial coals practically identical with natural coal found ready-made in the ground, according to an announcement made by Dr. Friedrich Bergius, of Heidelberg, Germany, to the Second International Conference on Bituminous Coal. In 1926 Dr. Bergius at the first coal conference told how he had made synthetic gasoline, oil and other products out of coal and since then the German Dye Trust has utilized his process for producing commercially thousands of tons of synthetic motor fuel.

During theoretical researches upon the constitution of coal conducted from 1910 to 1913, Dr. Bergius first transformed cellulose into coal on a laboratory scale. This accomplishment led to the hydrogenation of coal under high pressure and during the fifteen years of developmental work upon this process further theoretical work on coal formation was not undertaken. In the past year, however, Dr. Karl Schoenemann, of the Bergius laboratory, has manufactured several pounds of the artificial coal from cellulose and smaller quantities from lignin. Chemical analysis and conversion of the artificial coal into products similar to those produced from natural coal have convinced Dr. Bergius that the substance made from the wood elements is a real coal.

Making of coal from wood and the production of oil from coal provide hints of the processes leading to the formation of these substances in nature.

COLOR SNAPSHOTS

THE amateur photographer will soon be able to make snapshots in natural colors, in his own film camera, and without the need for exposures much longer than he would give with ordinary films. This is the announcement made in *Nature* by F. J. Tritton. These color films will be on the market within a month or two.

A triple film makes the new method possible. It forms what is known as the "tripack." In any process of color photography that reproduces all the colors of nature, it is necessary to make separate records of the reds, the greens and the blues in the original scene. One of the first methods of doing this was to make these photographs separately, first exposing a plate through a blue glass filter, which passed only the blue light, and so gave a record of the blues. Similar pictures, on separate plates, were made with green and red filters. By making transparent prints from these, dyeing each with the proper color, and then combining them, a color picture could be obtained. As the separate color pictures had

to be made one after each other, the method could not be used for pictures of moving objects, though it is generally used to-day for making color reproductions in magazines.

With a tripack, three films are used at once. They are really arranged as a sandwich, two films with another between. The front one, in the new method, is sensitive to the blue light; the green and red pass through; the middle one is sensitive to the green, and the red passes through to the back one. Though tripacks have been used before, previously it was necessary to put the red in front and the blue in back. As the blue image is the one chiefly responsible for determining the outlines of the subject, and as the back picture is not as clear as the front one, there was more or less fuzziness of the finished picture. By putting the blue in front, a much sharper picture is obtained.

Mr. Tritton stated that this film could be made with very fast emulsions, so that these color films might be as fast as the average roll film. This would permit color snaphots in ordinary light, and with ordinary cameras, a thing not possible with other methods. As the finishing and printing of the pictures is rather complicated, it is probable that the manufacturers will provide this service.

THE GREAT SMOKY MOUNTAINS NATIONAL PARK

THE northern wild turkey, *pièce de resistance* of the Pilgrims' first Thanksgiving Day feast, may be saved from threatened extinction in the Southern Appalachian region by the establishment of the Great Smoky Mountains National Park. At present, well-informed natives of the region admit, this most typically American bird is being gravely over-hunted and has reached a point of distressing scarcity. Game laws do not afford it the protection they should, because many of the native hunters calmly disregard them, and also because there are not enough game wardens to keep track even of the "city" hunters who come in from the outside.

The hope that a national park, with its absolute prohibition of all shooting, backed by an adequate ranger force, will bring an increase in the depleted stocks of game is based on the results of the establishment of similar game sanctuaries in the national parks of the West. Yellowstone National Park, for instance, has been the salvation of the remnant of the American elk. There are now over 20,000 of these animals in the Yellowstone region, and the problem now faced by the game-conserving forces there is not how to save the herd, but how best to dispose of the surplus animals.

Other animals which it is hoped will profit by the protection afforded by national park rules are black bear and Virginia deer. There are still a good many bear in the Great Smokies, but they receive rather too much attention from city hunters and have become so shy that the average citizen on vacation in the region never gets to see them. Deer have been shot out to a point where the herds are dangerously small and where the stock is declining in quality through lack of new blood and resulting inbreeding. Interested citizens on the Tennessee side are willing to bring in fresh stock from Pennsylvania or New England, where the deer are more plentiful, to improve the present herds. But such animals would only be shot, and until an area of complete year-round protection can be established re-stocking is of little value. But with the Great Smoky Mountains National Park once in actual operation, its boundaries will enclose a natural reservoir of game, within which the native birds and animals can increase and multiply, spilling over the border into areas where reasonable shooting will be permitted.

INFLUENZA AND OTHER COMMUNICABLE DISEASES

A GREAT increase in influenza is reported for the week ending November 17 as a result of the epidemics in California and South Carolina. From California 3,192 cases were reported by telegraph to the offices of the U. S. Public Health Service. In South Carolina there are 1,008 cases. The total for the whole country is now 5,017, an increase of nearly a thousand cases over the week before, when 4,175 were reported.

Because of the uncertain character of this disease and the little that is definitely known about it, it is impossible to predict what the future course will be. Prompt attention to all colds and coughs and isolation of all suspicious cases is advisable. Crowds are to be avoided when there is danger of an influenza epidemic, while plenty of fresh air, sunshine and nutritious food will help build up the body's resistance.

Other communicable diseases are following the usual cold weather course. Measles has increased in the last week from 1,661 cases to 2,679. Scarlet fever has also increased but has not yet reached the peak of the last two years. Meningitis has shown an alarming rise, nearly doubling the number of cases reported week before last. For the week ending November 17 there were 80 cases reported. The incidence of smallpox is also higher. The number of cases is 389, but this is still a little below the high points of the last two years.

Typhoid fever and infantile paralysis are dropping with the arrival of cold weather. Only 72 cases of infantile paralysis and 418 of typhoid were reported. Diphtheria is a little higher, 2,598 cases being reported. This disease has run an irregular course for the last two years. Preventive work among school children has done much to reduce the incidence of this disease.

ITEMS

HIT-AND-MISS methods of mixing paints will soon be replaced by mathematical methods when the results of an investigation into the strength of pigments used in making tints completed by the U. S. Bureau of Standards are put into practical use. The bureau has measured with the spectrophotometer the color value of 104 different mixtures of pigments combined with a standard color. The investigation has disclosed the exact strength and amount of a pigment that should be mixed with a standard color to bring a given result. The investigation is hoped to result in a numerical color value being given to each pigment instead of the mixture depending on more or less uncertain methods of comparing shades.