BOTANY

Finds Another Clue To Riddle of Chlorophyll

ANOTHER clue to the riddle of how plants, ultimately responsible for the world's food supply for only plants can manufacture food from simple substances, combine carbon dioxide and water to form sugar was reported by Dr. E. D. McAlister of the Smithsonian Institute.

Chlorophyll, the green coloring matter of leaves and also the chemical which enables plants to manufacture food, acts as a single molecule at a time and not in large groups, he told the Philosophical Society of Washington.

"Looking inside" a plant by means of his new spectrophotometer, which he invented recently, while the plant was "waking up" after being left in the dark for varying periods has enabled him to reach this conclusion, another step toward the still future day when scientists will attempt to duplicate one of nature's fundamental processes.

Science News Letter, November 6, 1937

CHEMISTRY

Japan Makes Gasoline From Manchurian Coal

IF YOU have been reading the headlines in the undeclared war between Japan and China and have asked yourself why Japan wants Chinese territory you have only to turn to the pages of the technical magazine Industrial and Engineering Chemistry, published by the American Chemical Society, to find one answer.

Japan is without natural resources of oil and wants gasoline. Years ago Japanese scientists tried to use the famous Bergius process for liquefying coal and turning it into petroleum, for treating their Japanese coals. Yields of only 30 per cent. could be obtained, even when the coal was processed in Dr. Bergius' laboratory in Germany where years of experience have enabled chemists to get superior results.

Recently, however, Japan sent some of the coal from the puppet state of Manchuko to be tested. Yields of 74.5 per cent. liquid from the total coal consumed were obtained. Moreover, the octane rating—the anti knock properties—of the gasolines made from the coal is as high as 69. By the addition of one-tenth of one per cent of tetra ethyl lead it is possible to raise the octane rating of these fuels up to 82. This is nearly as high as the octane figures of commercial aviation gasolines in America which run 87 octane.

In Korea a coal hydrogenation plant has been built which will have an anticipated production of 50,000 tons of gasoline a year. And in South Manchuria an even larger plant is under construction.

Because of the low cost of natural petroleum in the United States it has not been necessary to go to the hydrogenation of coal to obtain gasoline. But when the petroleum resources here are exhausted or depleted the method undoubtedly will be used. A small experimental plant of the U. S. Bureau of Mines is already in operation in Pittsburgh; a pioneer against that distant day.

Science News Letter, November 6, 1937

ENGINEERING

"Ground Noise" Cut Out From Talking Pictures

A SIMPLE yet ingenious device to cut out the buzzing "ground noise" that still accompanies talking pictures was patented by Edward W. Kellogg, Moorestown, N. J., inventor. The device has been assigned to the Radio Corporation of America.

Making use of a neatly-timed set-up of three photoelectric cells or "electric eyes," the device guarantees that the silent portions of the photographic sound track will be truly silent.

Sound is recorded on motion picture film by picking it up with a microphone, thus converting it to a varying electric current. The latter in turn operates a lamp which makes a record on a strip of film alongside the regular film. In projecting the "movie" in the theater, the process is reversed, starting with a film record and ending with sound accompanying the motion picture.

Because not all the sound track is filled with sound at all times, there are portions which should be black and "silent." However, diffusing light spreads onto the silent portion, causing a low tone which detracts from the quality of reproduction.

Mr. Kellogg's device solves the difficulty by making two additional "electric eyes" operate a shutter that covers up the "silent portion" of the sound track of the film on which a copy is being made. That, the papers of the patent, No. 2,096,811, explain, guarantees that no light will leak through to those portions and that there will be no ground noise.

Science News Letter, November 6, 1937

IN SCIENCE

ARCHAEOLOGY

Hairnets Worn in Egypt 1,600 Years Ago

HAIRNETS are old fashioned, for women in Egypt wore them about 1,600 years ago. But such hairnets!

A hairnet of that era, exhibited at the Field Museum of Natural History in a collection of ancient textiles, is a knitted cap of bright red wool with tie-strings. The style was to swath the hair in linen veils and stretch the net over that.

Sunbonnets are Egyptian, too. One displayed has embroidered lines of brown silk making a plaid effect on tan linen. The edge is of blue striped linen.

Science News Letter, November 6, 1937

PUBLIC HEALTH

250,000 Workers in Industry Suffer From Skin Diseases

MORE than a quarter of a million industrial workers in the United States lost time from their jobs last year because of skin diseases directly traceable to chemicals and other substances they were required to handle as part of their jobs, Dr. Louis Schwartz, medical director of the U. S. Public Health Service's dermatoses investigations, declared before the National Safety Congress.

Many of these workers develop allergies, states of super-sensitivity, to the particular substances with which they come into contact, Dr. Schwartz stated in recommending increased safety measures to cut down on industrial hazards.

Each case of industrial skin disease costs on an average $200, he asserted,—$100 as compensation to the workman and a like amount for medical care.

Blonds and fair-skinned people are more susceptible to skin trouble from chemical irritants than are darker, oily-skinned people, his survey showed. Some workers, on coming into contact with a chemical, may develop a slight form of skin disease and after that be immune, but many do not ever become so immune.

Lack of cleanliness in the shop as well as on the part of the individual, was blamed as a primary contributing cause.

Science News Letter, November 6, 1937

FIELDS

PHYSICS

Science Has a Mystery in Stellar Spectral Lines

SCIENTISTS at Mt. Wilson Observatory are seeking the solution of the mystery surrounding six yet-unidentified spectral lines that can, in no way, be associated with any arrangement of atoms or molecules known on earth. The scientific "fingerprints" of the culprit have been taken in spectral plates of the Observatory but linking the owner of these fingerprints to known things in the universe is still unsolved.

Dr. Paul W. Merrill of the Observatory staff reports to the American Physical Society that a possible suspect is dust in interstellar space, but admits it is yet no more than a suspicion. (*Physical Review,* October 1.)

The "third-degree" tactics suggested by Dr. Merrill to solve the puzzle and perhaps obtain a confession from the scientific suspect consist of experiments in which dust particles are chilled to temperatures hundreds of degrees below zero. Light will then be shone through this chilled dust and attempts made to obtain the same fingerprints already known. Similar spectral line fingerprints for the suspect and the stellar lines would be clear identification in quite the same way that a suspect may be linked to a murder by his own characteristic fingerprints.

Science News Letter, November 6, 1937

ARCHAEOLOGY

Spanish Cave Explorer Pursues Studies in Italy

CIVIL war, raging in the hills of Spain, effectually stopped research there by one of the world's foremost investigators of Old Stone Age man, Dr. Hugo Obermaier of the University of Madrid. The insurgent forces have gained possession of western Spain, where his best caves are, and their siege of Madrid has laid waste the campus of the University which was his home base.

But "domestic fury and fierce civil strife" have not stopped the veteran student of ancient man from his studies. Dr. Obermaier has transferred his activities to Italy, where he has been exploring caves in collaboration with Italian scientists, tracing the effects on Italian cave men and the animals they hunted, of the ebb and flow of the glaciers during the Ice Age in the north of Europe.

Italy of course was never glaciated, but the climate of the peninsula became colder when the ice advanced; warmer when it retreated. Associated with man-made relics in the caves are the bones of such cold-climate animals as reindeer, mammoth, and woolly rhinoceros marking the glacial advances; hippopotamus, jackal, and elephant, taking their place during the warmer inter-glacial periods. Plant remains, too, keep the long calendar; fir-tree for cold, grapevine for warmth.

Dr. Obermaier, German-born, has built his fame mostly in foreign capitals. He began his career in Vienna, then shifted to Paris. From 1922 until the Spanish Civil War he was in Madrid. From here he conducted the notable field researches on the pictured caves of Spain that have written his name alongside that of the Abbé Breuil, pioneer investigator of the famous caves of France. Now, he adds, for a time at least, a fourth world capital, Rome, to his list of work-centers.

Science News Letter, November 6, 1937

ENGINEERING

Engineers' Committee Lists Approved Engineering School

FOUR hundred and forty-five study courses taught at 109 engineering schools were on the first list of approved schools issued by the Engineers' Council for Professional Development.

Including as one of its members Dr. Karl T. Compton, president of the Massachusetts Institute of Technology, a committee of seven, each representing one of America's largest engineering societies, has compiled the approved list after inspection of each school, its faculty and its teaching equipment, a statement from the committee declares.

Among the schools on the approved list are: University of California, California Institute of Technology, Massachusetts Institute of Technology, Carnegie Institute of Technology, Case School of Applied Science, Colorado School of Mines, Columbia, Cornell, Harvard, Illinois, Michigan, Minnesota, Ohio State, Pennsylvania State, Stanford and Yale.

Science News Letter, November 6, 1937

GENERAL SCIENCE

Five $2500 Fellowships To Be Awarded by Lalor

FIVE one-year fellowships in the sciences, worth $2500 each, will be awarded for the academic year 1938-39 by the Lalor Foundation.

Applications will be received by Dr. C. Lalor Burdick, secretary, until Dec. 31. The fellowships are open only to U. S. residents who hold Ph.D. degrees.

The fellowships, administered by the Lalor Foundation which was organized two years ago, can be used for studying here or abroad. One fellowship will be assigned to work at the Massachusetts Institute of Technology as a memorial to Dr. Arthur A. Noyes, founder of the M.I.T. physical chemistry research laboratory.

Science News Letter, November 6, 1937

ENGINEERING

Arranged Collisions Test Freight Car Strength

HEAVY railway cars crashing into each other in "collisions by arrangement" are the newest laboratory apparatus used in equipment engineering tests. These drastic experiments were described at the Second Industrial Research Conference of the Ohio State University Research Foundation.

Both passenger and freight cars are used, L. W. Wallace of the Association of American Railroads reported. Fully loaded, they weigh 84 tons each on the rails. Instruments set into them at 120 places on top and sides measure the strains developed in the crash.

Described also at the meeting was a new-type axle-testing machine, especially designed to take recently developed lightweight running gear and "give it the works." They go under full stress at speed equivalent to 80 miles an hour, keeping it up until the axle fails. A good axle can "take it" for 200,000,000 revolutions, representing up to half a million miles of travel.

"A great deal of what passes for research in industry is not research at all," said Dr. Robert B. Sosman of the U. S. Steel Corporation. He differentiated research from experimentation. Research he defined as the obtaining of new facts and principles without regard to their application. Experimentation aims at the discovery of new or improved processes or products, and unless the improvements result the work is regarded as a failure.

Science News Letter, November 6, 1937