CHEMISTRY

Crotyl Alcohol, Once Rarity, Now Produced at Low Cost

CROTYL alcohol, a compound of great usefulness in research in both medical and industrial chemistry, is now available in pure form at a low price. Hitherto investigation of the possible value of its derivatives has been hampered by its prohibitively high price and also by the impure form in which it has been obtained.

The process of making this hitherto rare alcohol pure, cheap and abundant was described before the meeting of the American Chemical Society by Drs. William G. Young, Walter H. Hartung and Frank S. Crossley of the University of California at Los Angeles.

An impure form of crotyl alcohol has been in use for some time but it has not yielded dependable results and it has been relatively difficult to produce. In the method worked out in the Los Angeles laboratory, it is derived from crotonic aldehyde; which in turn is produced from acetylene. The new method produces four times as much of the pure crotyl alcohol as the old method could obtain of the impure product.

Science News Letter, September 7, 1935

EDUCATION—MEDICINE

Standards of Medical Education Growing Lax

DEPLORABLE conditions that prevailed in medical education thirty years ago again threaten this country, unless doctors, educators, state boards of examiners and public authorities combat present tendencies.

The American Medical Association issues this warning in the current issue of its *Journal* (Aug. 31), along with the annual presentation of medical education data for the United States and Canada. Fifty pages are given over to this report of its council on medical education and hospitals.

Financial stringency in recent years has caused some medical schools to rely more largely on income from student fees. Thus, larger numbers of students have been accepted for the money they will bring in, the medical journal explains.

Unfortunately, in most instances the teaching staff has not been correspondingly strengthened or the physical plant commensurately enlarged, it is pointed out.

More alarming to the American Medical Association than undermanned faculties and overcrowded laboratories is the failure of some schools to maintain high academic standards in the selection of students. Too many applicants with poor scholastic records are being accepted, the *Journal* charges, with the inevitable impairment of school efficiency.

Thirty years ago there were 160 medical schools in the United States with an enrollment of 26,147 students. The American Medical Association sprang into action with its council on medical education. The Carnegie Foundation for the Advancement of Teaching helped out with its publicity. Ten years later the number of schools had been reduced to 96 and the enrollment to 14,891.

Now in 1935 there are again some 23,000 medical students. Medical schools still are fewer and better, but the factors that caused the deplorable conditions of a generation ago are again at work, a *Journal* editorial points out, and history is repeating itself.

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PLANT PATHOLOGY

Plant Disease Fungi Have Diseases of Their Own

FARMERS of the future may fight diseases that now devastate their crops by sowing or spraying the germs of counter-diseases, to kill the pestiferous fungi. This possibility was suggested by a number of reports presented before the meeting of the Sixth International Botanical Congress at Amsterdam.

The suggestions came from research laboratories in widely separated parts of the world. Dr. S. D. Garrett of the University of London, who carried on his studies in Australia on a terribly destructive wheat disease called "take-all," found in certain types of soils a complex of fungi and other obscure organisms that are distinctly unfriendly to the cause of "take-all." From the University Farm, St. Paul, Minn., Miss Delia E. Johnson reported the antagonism of a newly discovered species of bacterium against the smut diseases of corn and various small grains.

A most comprehensive study in the field of microbiological antagonisms was presented by Prof. S. Endô of the University of Tokyo. He has examined dozens of kinds of bacteria and molds for their effects on several different disease-causing microorganisms. Some he has found to to be decidedly depressing, others less so; a fair number completely lethal.

It may be that bacteriologists and plant pathologists are ready to take a leaf out of the book of the entomologists, who long ago learned to fight enemy insects by turning their own insect enemies loose upon them.

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IN SCIENC

BOTANY

Mountains in Sahara Desert Support Growth of Trees

MOUNTAINS in mid-Sahara are not the sun-baked piles of barren rock which popular imagination, fed by Hollywood versions of the Foreign Legion, has pictured them. They manage somehow to gather enough moisture to support vegetation, even a growth of trees.

At the meeting of the Sixth International Botanical Congress, Prof. René Maire of the University of Algiers told of his explorations in what is probably the least-known botanical region of the world, the high mountains of central and southern Sahara, which rise to heights of 6,500 to 10,000 feet.

Earlier travelers' tales had clothed them with "forests" of pistachio and cypress pine, trees unknown in the New World. Under the more critical botanical eye of Prof. Maire, these forests dwindled to a thinner growth, mostly of pistachio and a kind of desert cypress. He did not deny, however, that denser forest growth may once have existed there, in a bygone age when the Sahara itself was a grassland instead of a desert.

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BOTANY

Ancient Flowers Had Sexes Widely Separated

FLOWERS of the most familiar modern plants have male and female parts —pollen-yielding and seed-forming organs—close together. Lilies, apple-blossoms and buttercups are common examples.

But it was not so in the most primitive flowers, some tens of millions of years ago, Prof. H. Hamshaw Thomas of Cambridge University, declared in an address before the Sixth International Botanical Congress. These earliest flowering plants kept their sexes carefully segregated, as they still are in some modern species, such as pines and willows.

Evidence from fossils and from the study of modern floral structures tends to indicate that the earliest flowers consisted of whorls of structures bearing the reproductive elements, each whorl tipping the end of a branch.

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E FIELDS

GENETICS

Transplanted Eyes Aid in Genetics Research

WITH an eye growing on the side of its abdomen, a tiny insect no bigger than a gnat attracted much attention at the Woods Hole meeting of the Genetics Society of America.

The insect, a drosophila or fruit fly, was brought back from France, where the exceedingly delicate operation was performed by Boris Ephrussi and G. W. Beadle of transplanting an eye almost too small to be seen without a microscope. The eye was transplanted while the insect was still a grub or larva, and it grew up to perfect adulthood with the added organ still in place. The eye transplant was made for the purpose of studying problems in the development of hereditary characters. Two kinds of fruitflies were used; one was the ordinary wild type, with brown eyes. The other was a specially bred type, with vermilion eyes. Cross transplants were made in both directions.

Wild-type eyes transplanted on vermilion-eyed individuals remained unchanged in their new environment. But vermilion eyes transplanted on wild-type individuals assumed the wild-type eye color: the new environment, genetically dominant, overcame and changed their vermilion color, which is a recessive Mendelian character.

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PHARMACOLOGY

Concentrated Vitamins Called Drugs, Not Foods

PURE vitamins made by the chemist and purchased at the drug store belong in the category of drugs rather than foods, declares Dr. C. D. Leake, professor of pharmacology at the University of California Medical School.

Dr. Leake warns against the danger of indiscriminate use of these new drug store vitamins. They should not be taken without the advice of a physician, he says.

Vitamin D, the rickets-preventing vitamin ordinarily obtained by the action of sunlight on the skin, or from that old standby cod liver oil, is now available to the public in highly concentrated form. Unless the pure chemical form of the vitamin is made with extreme care, however, it may have certain poisonous properties, Dr. Leake says. Consequently it should only be taken under the direction of a physician.

The same applies to cevitamic acid, the pure chemical form of anti-scurvy vitamin C found in citrus fruits and certain vegetables. Studies in the Pharmacological Laboratory of the University of California, by Dr. H. H. Anderson, B. H. Fisher and N. M. Phatak, show that if cevitamic acid is injected into the body as has been recommended, it may cause injury at the point of injection and it may also cause undesired blood changes. These effects may be prevented by proper chemical neutralization of the compound. While cevitamic acid, the pure chemical form of Vitamin C, is only available to physicians, great care is nevertheless necessary in its administration, Dr. Leake holds.

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ANTHROPOLOGY

Minnesota Man's Claim To Great Age Defended

MINNESOTA Man, a much-disputed skeleton of great but uncertain age, is defended as really ancient by Dr. Kirk Bryan, Harvard University geologist. (*Science,* Aug. 23).

Recently doubt was cast upon the skeleton's claim to great age by Dr. Ernst Antevs, noted Swedish geologist. He traced a route of migration by which America's first inhabitants might have entered this continent from Asia as much as twenty thousand years ago, but would admit no greater age for man in the Western Hemisphere.

The famous Minnesota skeleton had been found associated with earth strata known to be much more than twenty thousand years old. Dr. Antevs got around this difficulty by assuming that this ancient individual had been buried by a landslide.

Dr. Bryan has re-examined the locality where the Minnesota Man find was made. He calls attention first to the very gently rolling character of the country, not likely to produce landslides. Gullies do exist in the hills, he says, and they are sometimes filled up after they have formed. But there is no evidence that the disputed skeleton was found in such a refilled gully.

All the evidence he has been able to obtain, Dr. Bryan says, points to the presence of undisturbed, ancient layers of soil over the skeleton when it was first uncovered.

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BOTANY

California's "Orphan Plants" Once Grew on Island Chain

CALIFORNIA has a great wealth of endemics, or "orphan plants"—species found in limited areas in that state, and nowhere else in the world. There are over 5,000 species of higher plants in the state, of which about 2,000 represent these "orphans." As contrasted with the number of known species for the whole northeastern quarter of the United States, less than 3,500, this shows up sharply how varied the flora of California is.

A reason for this condition was offered before the meeting of the Sixth International Botanical Congress, by Prof. W. L. Jepson of the University of California. He called attention to the fact that most of these "orphan plants" grow on limited areas quite near the coast. Then he stated that every one of these "endemic patches," these "plant orphanages," had in past geologic time been an island.

Since the days when Darwin and Wallace popularized the idea of evolution, the role of island isolation in enabling new species to develop has been taken as an axiom among students of the life sciences. Here, then, Prof. Jepson pointed out, was an ideal situation for the development of large numbers of unique and solitary species of plants.

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PSYCHOLOGY

Hungry Rats Learn Faster, Psychologists Find

RATS, and presumably humans, learn faster when hungry. Experimental evidence for the effect of hunger contractions on learning in rats is reported by Dr. M. H. Elliott and W. C. Treat of the department of psychology at Harvard University. (*Proc. National Academy of Sciences,* August).

The rats in the study were given double stimulations of electric shock and light. They were supposed to learn to associate the light with the shock so that when the light alone was turned on, they would respond in the same way as if they felt the electric shock. Fasting rats having hunger contractions learned the correct response in about half as many trials as fasting rats given just enough food to stop the hunger contractions.

"The occurrence of hunger contractions favors learning," the investigators conclude.

Science News Letter, September 7, 1935