Artificial Rubber Made in Germany

Chemistry

Copies of the two new patents taken out in Germany and England for making rubber artificially have been received by the Department of Commerce. The sensational announcement made a few months ago by Dr. von Weinberg, of the German dye trust, at the annual convention of the German Union of Chemical Industries that synthetic rubber would "soon appear on the world markets as a commercial commodity, equal to natural rubber and cheaper in cost" aroused the curiosity of American chemists and tire makers, but the text of these patents will not satisfy them. since they relate merely to the improvement of the final stages in the process of the conversion of well-known chemicals into caoutchouc and do not disclose any cheaper source of the raw material.

The only apparent novelty in the new process is in the methods of carrying out the combination of chemicals. In one patent they are suspended in water thickened with something like soap, starch or egg albumen at 150 degrees Fahrenheit, while a stream of oxygen gas is passed into the emulsion. According to the other patent dried isoprene is mixed with metallic sodium in glycerine in an atmosphere of carbon dioxide, and agitated until rubber results.

If the method of oxidizing an emulsion results in artificial rubber having the peculiar colloid structure of the latex of the rubber tree the product may possess the elasticity that has hitherto been lacking in the laboratory products. The materials mentioned, isoprene and related hydrocarbons, can be made from various known sources, such as petroleum, potatoes, tar, coal, corn, etc., but no process so far published will turn them into rubber as cheaply as it can be grown on plantations. If the great German combine, the Interessengemeinschaft Farbenindustrie, is able to accomplish this it is most likely done in connection with their plants for the production of synthetic petroleum by the hydrogenation of coal.

The Soviet Government offered a first prize of $50,000 and second prize of $25,000 for five pounds of synthetic rubber with the recipe delivered at Moscow before January 1, 1928, but no announcement of the awards has yet been made. Another prize of $25,000 was offered sometime ago through the London *Financier* for a method of making rubber cheaper than sixty cents a pound, but no claimant appeared for the prize.

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"Bios", Yeast Vitamin, Crystallized

Physiological Chemistry

"Bios", a substance that promotes growth in yeast as vitamins do in animals, has been demonstrated to be really two substances, and one of these two "bioses" has been prepared in pure crystalline form in the laboratory of Prof. W. Lash Miller of the University of Toronto. It proves to be a form of a seldom-studied but long-known chemical compound, inosite.

In 1901, long before vitamins were discovered, a Belgian chemist named Wildiers found that yeast needed for growth small quantities of some unknown substance which he could not isolate. He gave to this unknown material the name "bios", which is the Greek word for "life." After the discovery of vitamins, scientists began to take interest in this vitamin-like stuff needed by yeast, but it still defied chemical analysis.

Then various researchers in Prof. Miller's laboratory began a systematic attack on the problem. One of them discovered that if a bios solution were shaken up with fine charcoal some of the bios vanished into the charcoal and what was left could not help yeast to grow. The part that was left could also be cleared out of the solution by other chemical means. This indicated that there was not one bios, but two; accordingly the names Bios I and Bios II came into use.

The latest advance has been to purify Bios I into crystal form. The crystals obtained have been analyzed and shown to contain the same proportions of carbon, hydrogen and oxygen as common glucose, but the chemical arrangement is much more complex.

Bios I, or inosite as it has now been proved to be, is abundant in young, vigorously growing plant shoots. The German investigators who first studied inosite obtained their material from bean sprouts. The Canadian scientists who purified Bios I and established its chemical identity bought up large quantities of tea siftings for their raw material.

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Nature Ramblings

By Frank Thone

Natural History

Bittersweet

Bittersweet is a name most commonly given to the bright red-and-orange fruited vine that reaches its full glory in autumn and figures prominently in winter bouquets. This vine, sometimes called "wax-works", has fairly run off with the proper title of one of our most attractive late-spring and early-summer plants, which is the true bittersweet but now has to be contented with some such half-apologetic explanatory label as "bittersweet nightshade".

The true bittersweet is a member of the nightshade family, together with potatoes, tomatoes, eggplant, tobacco, ground-cherry and a host of other familiar and useful plants. It belongs to the same genus, *Solanum*, as the potato and the eggplant, and its second or specific name, *dulcamara*, is a literal translation of the English, except that the two words are reversed and in the Latin read "sweet-bitter". As a sort of botanical variant upon one of the oldest joke-themes in the world, it may be added that the bittersweet is sometimes called "matrimony vine", though by rights this title belongs to a closely related plant from China.

It would be carrying a joke too far, however, to call attention to the fact that the bittersweet is poisonous. Its leaves and green fruits contain an alkaloid related to nicotin, which in much attenuated doses soothes the nerves of humans but in more concentrated form is used to slaughter insects. This poisonousness apparently extends to most of its kindred, for even the leaves of tomatoes and potatoes have been known to sicken live stock reckless enough to eat them.

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The Canadian Forest Service collected more than 9,500 pounds of tree seeds, or six billion seeds, for reforestation purposes last year.