

yanine film, developed in Eastman research laboratories, reproduced the picture from penetrating infra-red rays

that pierced the hundreds of miles of haze obscuring the view.

*Science News Letter, April 9, 1932*

## CHEMISTRY

## Opiates Found Related to Essential Elements of Diet

Research Shows Substance Giving Benefits of Vitamin C Can Be Prepared from Derivative of Harmful Drug

**C**HEMISTS are building a bridge over the seemingly impassable gap between destructive, habit-forming drugs and essential, building elements of diet, it appears from a report made to the closing session of the American Chemical Society. From an alkaloid derived from the age-old drug, opium, there may come after a series of chemical changes a substance bringing the benefits of the anti-scurvy vitamin C, possibly the vitamin itself.

Spurred by the recent discoveries which indicate that the effects of vitamin C can be gotten from a substance easily made from narcotine, a by-product in the manufacture of morphine from opium and which is now of little value, chemists throughout the world are racing to learn more about narcotine and its compounds. Progress of an American laboratory was described by Dr. Carl R. Addinall, research chemist of Rahway, N. J. He told how he has made from narcotine, by methods simpler and more general than those used in the past, a number of compounds, the proportions and transformations of which may become valuable allies in the investigation of citrus fruit juices and other foods well supplied with vitamin C.

Dr. Otto Rygh, Norwegian chemist, announced at the first of the year that by heating narcotine with hydrochloric acid he had obtained a substance very much like vitamin C, possibly the vitamin itself. He admitted, however, that it is likely to be a mixture of the potent substance with impurities. When he fed it to guinea pigs suffering from scurvy, the pigs were cured of the vitamin C deficiency disease.

The claims of Dr. Rygh are contested by a prominent English biochemist, Dr. Silva, who reports that the substance he prepared from narcotine by the method adopted by Dr. Rygh did not cure guinea pigs of scurvy. The work of the Norwegian chemist is now being ex-

amined in other laboratories throughout the world.

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## CHEMISTRY

## New Method May Result In Cheap Supply of Ramie

**A** NEW cellulose industry for America seems to be a step nearer reality following the development in laboratories at Louisiana State University of a method of treating ramie to obtain from it longer and stronger fibers than are now available from cotton, flax or hemp. The work is being carried on by Dr. P. M. Horton of Louisiana State University, and G. L. Carter of the University of Virginia, and was reported to the American Chemical Society by Mr. Carter.

The unusual durability and strength of ramie have been known to the world since ancient Egyptians used it for wrapping those mummies which have been

## CHEMISTRY

## Castor Oil Yields Drug That "Unpoisons" Cobra Venom

**T**HERE IS MORE to castor oil than the rebellious small boy or even his insistent parents ever imagined. For from it a drug has been made that takes the poison out of poisons. It renders harmless the quick death-dealing venom of the cobra and rattlesnake, as well as those sluggish, ill-defined toxins in the bowels of man which are responsible for the condition commonly known as auto-intoxication.

Sodium ricinoleate, better known as soricin, is the name of this castor oil

best preserved for modern examination. But the only processes that have ever been available for separating the useful fiber from the worthless parts of the stalk are slow and expensive and are carried out entirely by hand labor.

By chemical means of digestion and bleaching Dr. Horton and Mr. Carter report that they have separated the fiber from its closely clinging bark and have given it a clean white color with practically no loss of strength.

There remains, it was pointed out, the separation of the fiber and bark from the interior pulp and woody tissue. In the laboratory this was easily accomplished by hand. The development of a machine for this simplified operation is not expected to be difficult. The many machines of the past, all of which have been failures, have attempted to separate the fiber from both the outer bark and the inner wood and pulp.

If the laboratory method of separating the fiber from the bark, which has been developed at Louisiana State University, can be applied commercially, chemists agree that one of the greatest difficulties preventing the extensive use of ramie in industry will be overcome.

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## CHEMISTRY

## Sulfur Dioxide Harmless As Food Preservative

**D**RIED FRUITS preserved by treating with sulfur dioxide, the pungent gas obtained by burning sulfur, are not actually harmful, Dr. P. F. Nichols and Prof. W. V. Cruess of the

derivative. The intricate process leading to its isolation is described by Dr. Theodore H. Rider.

The action of soricin merely removes the toxic properties of the bacterial toxins and other poisons and leaves their other properties intact, according to Dr. Rider. Thus a toxin such as that of tetanus or diphtheria, when detoxified by soricin, is said still to retain the power of producing immunity even though it is no longer a dangerous poison.

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**REVERSED**

Common swallow-tail butterfly, with prints from "self-photographed" plate substituted for left wings. It will be noticed that the colors are reversed, being light where the natural colors are dark, and vice versa.

University of California told the American Chemical Society meeting.

The use of sulfur dioxide or sulfurous acid, said Prof. Cruess, greatly improves the appearance of the dried fruit and keeps it fresh longer. Sulfurous acid is also essential to the preservation of vitamins A and C in the fruit.

"In dried fruits," it was stated, "the sulfurous acid is largely in combined form, which has been shown to be nearly or quite harmless. No harmful effects have been shown to result from the sulfurous acid in dried fruits even when eaten in excessive amounts."

No satisfactory substitute for sulfurous acid has been found for use in fruit drying. Sulfurous acid is formed when the pungent sulfur dioxide gas dissolves in the water of the fruit.

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**MEDICINE****Medical Students Liable To Get Tuberculosis**

**M**EDICAL students are particularly liable to develop tuberculosis, it appears from a survey of students of the University of Pennsylvania School of Medicine made by four members of the faculty, Drs. H. W. Hetherington, F. M. McPhedran, H. R. M. Landis and E. L. Opie.

Between 93 and 94 out of every 100 students examined had tuberculous infection. Among premedical students in college, the rate was slightly lower, being about 85 or 86 out of every 100, while among high school boys the rate was only between 77 and 78 per 100.

"Here is a problem for scientific medicine within its own gates," comments the *Journal of the American Medical Association*.

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**BIOLOGY****Dead Butterflies Photograph Themselves Without Camera**

**W**INGS that printed their own pictures on photographic plates in the dark are shown in a new book on the butterflies that can be found in and around Washington, written by Austin H. Clark of the U. S. National Museum and published by the Smithsonian Institution.

As described by Mr. Clark, the process of making such wing prints is a very simple trick, that anybody can do. It does not require even a camera. All you need is a supply of freshly-killed butterflies, some photographic plates and a dark room.

"The wings, cut from the butterflies, are attached to pieces of paper, black or white, with drops of shellac," Mr. Clark directs. "A fresh box of plates is opened in the dark room and the plates are removed. An old plate, or a piece of glass of proper size, is placed in the bottom of the box to form a firm and smooth backing for the paper with the wings, which is laid upon it. Then a fresh plate is placed, emulsion side down, upon the wings, another piece of paper with wings is placed upon the upper (glass) surface of this plate, a second fresh plate is placed, emulsion side down, upon these wings, and so on until all the plates have been replaced in the box, which is then closed and sealed and left in the dark room."

Although some dark wings will give results in as little as 12 hours, it is usually best to wait for a week or more before opening the box and developing the plates.

There is a direct relation between the color of the wings and their effect on photographic emulsion. The darker the color the more marked the effect; so that prints made from plates thus prepared will be negative pictures of the actual wings: dark where the wings were light, and vice versa.

The cause of this strange phenomenon is still unsettled. At first Mr. Clark was inclined to think there was some kind of radiation, like ultraviolet light from the wings. But a thin sheet of quartz, which is transparent to ultraviolet rays, stopped the effect just as completely as did common glass, through which ultraviolet will not pass. It is now considered most probable that

the emanation is some kind of a gas, probably a compound of sulfur.

The effect can be obtained best with fresh material, though wings of butterflies kept in collections for as much as 30 years have yielded prints. In his study, Mr. Clark made use of 43 species of butterflies, most of them native to the United States.

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**ASTRONOMY****Old Telescope Mirrors Satisfy Modern Standards**

**T**WO TELESCOPE mirrors made more than a century and a half ago by Sir William Herschel, famous English astronomer and discoverer of the planet Uranus, "are fully up to modern standards, and would bear comparison with the best work of any modern artist." So declares Inst. M. A. Ainslie, British amateur astronomer, in a report to the British Astronomical Association. The two mirrors are of metal, which was commonly used for the purpose at that time, and each is 6.3 inches in diameter. Though the data concerning them are somewhat sketchy they seem unquestionably to have been the work of Herschel, and Capt. Ainslie suggests that one may have been the actual mirror that Herschel used when he discovered Uranus in 1781.

Capt. Ainslie tried them on the night sky and found that with a power of 450 diameters a close double star was plainly seen to consist of two bodies. He also tried them on Uranus, and found that it looked entirely different from nearby stars of similar brightness, appearing as a round disc instead of a point of light. This, he states, shows that Herschel, as an experienced observer, must have had no difficulty in recognizing that the body was not a star. Even if one of the mirrors is not that used in the discovery, there is no doubt that they are "exact counterparts," he said.

Several of the large mirrors which Herschel made later are still preserved at Herschel's home in Slough, where his granddaughters are living.

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