

SCIENCE NEWS

Science Service, Washington, D. C.

SELENIUM OXYCHLORIDE AS A SOLVENT

In reporting a five-year study of the solvent, selenium oxychloride, at the recent meeting of the American Chemical Society, Professor Gilbert B. L. Smith, of the Brooklyn Polytechnic Institute, said, "such strange things happen to substances dissolved in this solvent that chemists must revise their theories of ionization as applied to acids, bases and salts."

Selenium oxychloride is a heavy straw-colored liquid that freezes at about 65 degrees Fahrenheit. It has a corrosive action on many common materials. Describing its oxidizing properties, Professor Smith said: "Once some of it froze over night, broke its containers and dripped on the wooden floor of one of the laboratories at the institute. It ate right through the floor and dripped down into the physics laboratory below. The selenium oxychloride destroyed several instruments in the physics laboratory and even attacked bakelite fixtures."

To picture to his audience the strange properties of selenium oxychloride, Professor Smith described the world as it might be if it was as prevalent as water and took its place as the widest known solvent. Then mountains would consist only of glass or feldspar, two of the few substances which the solvent will not dissolve. All bridges and boats would have to be constructed of platinum or tungsten. From the time the temperature fell below 65 degrees in the fall, the whole world would be a great frozen mass. Snow would fall every time it became colder than in mild spring time and when it rained it would be necessary to use umbrellas made of glass, tungsten or platinum.

VITAMIN B

VITAMIN B, alone among the major vitamins so essential to health, is the one most lacking in modern diet, according to Dr. R. R. Williams who gave an invited address at the meeting of the American Chemical Society, Chapel Hill, N. C. Dr. Williams, chief of the Bell Telephone Laboratories, isolated, analyzed and synthesized vitamin B, and is now making it available to research workers on a relatively mass production scale. He said: "In some ways, we have materially bettered our diets in recent years. The rising use of dairy products provides more vitamin A, the vogue for sun tan and irradiated foods more vitamin D, the greatly increased practice of distributing fresh fruits and vegetables throughout the year by means of refrigeration more vitamin C, but we look in vain for any such significant upturn of our vitamin B intake."

Vitamin B is found most prevalently in outside bran coats of grains, and in ripe peas and beans and in lean pork. Since, however, ripe seed vegetables are often cooked for a long time to render their proteins more digestible most of their vitamin B may be extracted before they reach the table. Lack of vitamin B is known to cause the serious disease of beri-beri which is widely prevalent in the Oriental countries where a polished rice

diet has supplanted the former hand-hulled rice. It may be necessary to slowly change the eating habits of millions of people there before the disease can be conquered.

In occidental countries the ways in which the body utilizes vitamin B is now being studied. In Chicago a B-rich vitamin diet is being fed to dementia praecox patients. The test is so newly started, however, that definite results are yet unavailable. Dr. R. A. Peters, of the University of Oxford, has found that as the body supply of vitamin B increased the oxygen intake is stepped up proportionally, especially in the brain and the kidneys.

THE GEORGIA CHEMURGIC CONFERENCE

At the Georgia Chemurgic Conference, held recently at Macon, Ga., Carl B. Fritzsche, managing director of the Farm Chemurgic Council, explained the objectives of the farm chemurgic movement. An effort is being made to find industrial uses for farm products which will enlarge the demand for staple crops and which possibly will introduce new ones.

For instance, the adhesive used on postage stamps is made from an imported starchy raw material. Chemists of the U. S. Department of Agriculture have proved that an adhesive just as good, for stamps, envelopes and for many other purposes can be made from sweet potatoes. This is only one of the items in the possible industrial usefulness of the sweet potato, according to W. I. Ritchee, manager of the Laurel Starch Plant, of Laurel, Miss. Laundry starch of high quality is another sweet potato product; also sizing, used to give smooth attractive finish to paper and yarns. The sweet potato starch industry bids fair to make profitable use of the large percentage of culls thrown out when the vegetables are prepared for marketing as food. It may even necessitate the raising of large special crops to keep the factories fed.

W. S. Anderson, also of the Laurel Starch Plant, spoke on some of the practical problems connected with raising, harvesting and storing the sweet potato before they start through the starch mill.

Hitherto all tung oil, which is much in demand for paint, varnish and linoleum, has been imported from China and its now divorced province of Manchuria. The trees have never been cultivated there; the nuts have been merely harvested from wild trees, and the quality of the oil has been far from uniform due to primitive methods used in pressing, as well as a tendency to adulterate it. Tung trees were first planted at Gainesville in a tentative, small-scale way something over a dozen years ago. Now there are large plantations of them in various parts of the gulf region. Even yet, however, the American product supplies only a small fraction of the demand.

An entire session was given over to discussion of the wine possibilities of the famous Scuppernong grape, by Paul Garrett, of Atlanta, and H. P. Stuckey, director of the State Experiment Station. Certain legal aspects of the matter were discussed by Dr. M. Ashley, professor of law at the University of Georgia.

SERUM IN THE TREATMENT OF PNEUMONIA

THE most powerful weapon the modern physician can use to fight pneumonia, which takes an annual toll of more than 100,000 in the United States, is specific immune serum, according to Dr. Edward L. Bortz, of the Post-Graduate School of Medicine of the University of Pennsylvania, who spoke at the Post Graduate Institute of the Philadelphia County Medical Society and the First District Councilor Meeting in Philadelphia.

Describing the dramatic results obtained with serum in treating pneumonia, Dr. Bortz said: "From a desperate, acute, consuming illness with a dangerous temperature, chest pain, restlessness, paroxysms of cough, and approaching delirium, the prompt administration of the correct serum will sweep away the toxemia, the temperature will fall, the pain in the chest will disappear, the pulse and respiration return to normal, the cough is quieted and the patient finds himself practically a well man, emerging as it were, from an evil dream."

Turning to statistics, he stated that the high pneumonia death rate can be cut at least fifty per cent. by modern treatment, which means prompt diagnosis and treatment with the appropriate serum. Diagnosis in pneumonia means determining by laboratory test of the patient's sputum which of the many pneumonia germs are causing the disease in a particular case. This test is called typing and the germs are known respectively as Type I pneumococcus, Type II pneumococcus, and so on for all the different members of the pneumonia germ family. Unfortunately, curative serums have not been developed for all the pneumonias, but where they have, their use will save thousands of lives. Nutrition, elimination, rest and nursing care are other important factors in the treatment of pneumonia. Dr. Bortz said that oxygen is an important aid, but that its use unfortunately has not affected the mortality rate.

ITEMS

CONTINUED cold and stormy weather, with much snow and rain, definitely puts 1937 down as a late-spring year, according to the U. S. Weather Bureau. Over the greater part of the great interior farm areas spring work is from ten days to three weeks behind schedule. Additional snows in the northern Great Plains area, and rain in the intermountain regions, raised the water content of the none-too-well moistened soil. Rains helped also in the Middle Atlantic states.

TABLE salt rich in vitamin B is now a distinct possibility. Professor L. R. Cerecedo, of Fordham University, has found that synthetic sand-like materials, of the general nature of the zeolites used as water softeners, have the ability to take up vitamin B from cereal and yeast extracts. These synthetic vitamin sponges retain the vitamin until they are treated with a salt solution when they transfer the vitamin to the salt solution. After evaporation of the water in the salt solution a residue rich in vitamin B is obtained. The amount of vitamin B

in the amount of salt ordinarily shaken on food at the table would be more than sufficient to supply that which is known to be lost in cooking because of heat and water extraction. It appears probable that the amount of vitamin B which could be obtained from the daily sprinklings of salt would equal the vitamin obtained by eating three yeast cakes.

BUTTERFLIES and moths will soon be breaking out of the cocoons where they have spent the winter, fast asleep as chrysalises. But what induced the caterpillars to spin themselves into their silken shrouds and go into the deep sleep of change. Two German zoologists, Drs. Alfred Kuhn and Hans Piepho, have found at least part of the answer. An internal gland secretion gathers in the brain of the caterpillar, and when its concentration has reached a certain point the caterpillar is irresistibly impelled to spin itself in. This "pupation hormone" is unknown except in caterpillars. Its chemical formula has not yet been fully worked out.

A NEW male sex hormone, known as epiallopregnalone, has now been isolated and made synthetically, it was announced to the meeting of the American Chemical Society, by Dr. R. E. Marker, of Pennsylvania State College, on behalf of his colleagues, R. V. McGrew, E. L. Wittle and D. M. Jones. In most minute amounts this hormone aids the development of male sex characteristics in birds and other animals, including man. Two other male sex hormones have previously been obtained, testosterone from the male sex glands, and androsterone. Dr. Marker believes that the sex hormones do not act primarily as physical stimulants of specific organs, but rather by chemical combination in the body. This supposition is strengthened by evidence showing that when the sex hormones are administered they can not be recovered in their original form. They are recovered as decomposition products, showing that they have entered into chemical combination in the body.

A MAJOR forward step toward the chemical synthesis of chlorophyll, the green coloring matter of plant leaves upon which depends nearly all life on earth, has been made. About seventy compounds closely related to chlorophyll have been prepared and some of them have strange and powerful physiological properties. One compound, for example, was injected into rats in small amounts of ten milligrams and virtually bound the animals to a life of darkness in order to live. As long as they remained in the dark they showed no effect. When removed to daylight they died in a few hours. Dr. Paul Rothemund, of Antioch College, in describing his researches on these chemical relatives of chlorophyll, at a meeting of the American Chemical Society, also told of a German chemist who tried some of the substance on himself with the result that he too, was bound to a life "after dark." For ten months he could not go out into the light without having his face swell up, suffering intense pain, and having patches of his hair fall out.