CHEMISTRY

New Fiber Made From Soybean Protein To be Used in Autos

Ford Factories Already Have Half-a-Dozen Good Jobs For Chinese Legume's Products; Good Mixer With Tung Oil

A NEW synthetic fiber, made from the protein material of soybeans, was exhibited for the first time by Dr. R. A. Boyer of the research department of the Ford Motor Company before the meetings of the Fourth Annual Conference of the Farm Chemurgic Council, at Omaha.

The new fiber, destined for use in automobile upholstery, was developed as an outgrowth of work by Italian chemists in making a synthetic wool from milk casein. This Italian work, first announced two years ago, inspired American chemists to do similar things with soybeans. The new fiber will not stand washing and so, at present, may not be useful as clothing, but for upholstery it appears suitable.

New Extraction Plant

So successful has been the application of soybean oil and soybean meal in motor cars, said Dr. Boyer, that the Ford Company is soon to open a new soybean oil extraction plant at Salina, Mich.

Here are the ways soybeans enter into automobile manufacture as outlined by the Ford Company scientists:

1. The enamel on Ford cars contains 35 per cent. soybean oil and 300,000 gallons of this oil were needed in 1937.
2. The foundry uses some 250,000 gallons yearly in its operations.
3. Soybean meal, from which the oil has been extracted, is widely used in the plastic molding compounds from which are made steering wheels and other parts of motor cars. Last year 400,000 pounds of soybean meal were used in this way.
4. Soybean meal is also being used in the foundry of the steel mill, where large-sized cores in the molds are made of this material. A million pounds of this core binder, containing a large proportion of soybean meal, was used by the Ford plants last year.
5. Soybean meal finds additional use as an impregnating agent for gaskets.
6. A water-soluble paint, using soybean oil as the carrying agent for paint pigment, has been developed and is being employed in the Ford factories. While tests are still under way, a plant producing this paint is contemplated which would utilize 500,000 pounds of soybeans a year for its oil requirements.

Soy and Tung Blend

Two vegetable oils, from soy beans and tung nuts, have been blended and processed to make a new American-produced liquid for use in paints.

Future commercial use of the new soy-tung oil was predicted by Matt F. Taggart, of the O'Brien Varnish Company, South Bend, Ind., who told of 100,000-gallon tests in comparison with linseed oil paints.

Heating the oil mixture quickly to 850 degrees Fahrenheit is claimed to give it drying properties which will allow it to compete with linseed oil, most of which is produced abroad. Soy bean and tung oil are now being produced in this country.

Should Grow Drug Plants

American agriculture, seeking new crops to grow, might well consider the production of plants which form the basis of crude drugs and which are now imported to the amount of over $8,000,000 a year, Dr. Perrin H. Long of the Johns Hopkins University, told the conference.

Crude licorice from Russia, licorice extract from Spain, ma huang (ephedrine) from China, castor beans from Brazil and tragacanth from Persia; all these are among the important crude drug imports which might be grown in the United States, so far as climate and soil are concerned.

Licorice grows as a weed in the Southwest, said Dr. Long, and may have definite commercial possibilities.

Ma huang—ephedrine—is being cultivated in North Dakota at the present time, he pointed out. Whether it will be commercially successful remains to be determined, but the attempt is a noteworthy one of trying to free the United States from foreign factors which influence the importation of this important medical drug.

Current conflicts and past disasters have worried the importers of crude drugs. After the 1923 Japanese earthquakes the price of crude menthol doubled. Our supply of ephedrine has been seriously menaced since last August by the Sino-Japanese troubles.

Main disadvantage of American growers of drug plants is that if they use the hand cultivation methods, handed down from the past, and used in foreign countries, the costs of the plant drugs are too high, said Dr. Long. What needs to be done is to have science and industry cooperate and develop machines which can do the cultivation and harvesting job cheaply.

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METALLURGY

Static Electricity Used To Separate Ores

EVERY small boy who has ever rubbed a piece of sealing wax with cat's fur and attracted to it bits of paper knows that in the forces of static electricity lies one means of separating materials. Small boys, grown up to become mining engineers, long ago realized that somehow static electricity might be used commercially to separate valuable from worthless ores.

The idea is old, of course, but it never has been applied widely and successfully to large scale separation of ores as have the magnetic separation and various flotation methods. The trouble in those early days was that the sources of electricity—the old-fashioned Wimshurst machines and so on—were ineffective. Later the use of transformers and mechanical rectifiers of current arrived and some improvement came also. But, as H. B. Johnson reports to the American Institute of Mining and Metallurgical Engineers, there has been little development in the last ten years despite great advances in the radio and vacuum tube art in that decade.

Mr. Johnson has studied the electrostatic separation of over 90 different elements with a simple and ingenious apparatus. The mineral mixture to be separated feeds down a hopper on to the surface of a rotating cylinder charged electrically positive. Nearby this cylinder is another one charged with electricity of the opposite sign by using a full-wave high-voltage rectifying tube. The voltage created sets up a strong electric field that pulls the falling particles out of line in their vertical fall and makes them drop