

CHEMISTRY

Farm Wastes May Put Money In Farmers' Pocketbooks

Cellulose for Varnish, Starch for Motor Fuel Among Many Savings Which Chemists Can Give Farmers

CHEMISTS will turn millions of tons of waste farm products into useful materials for industry that will put additional cash money into farmers' pocketbooks, Dr. Henry G. Knight, chief of the U. S. Department of Agriculture's Bureau of Chemistry and Soils, predicted to the Southern Chemurgic Conference, provided they are given the opportunity to conduct the necessary research.

Dr. Knight pointed to millions of dollars added to the agricultural income through science-taught utilization of lemon and orange culls, cotton seed, sweet potatoes and naval stores, such as rosin.

Hundred Million Tons

"The total production of cellulose on all the farms of the country amounts to something like 100 million tons a year," Dr. Knight explained. "Its utilization in the form of paper, building board, insulating material, and absorbent material, as well as its conversion into foods, drugs, paints, varnishes, lacquers, dyes, and cosmetics, is an inviting field of research that many chemists would like to explore if they had the money and time."

Every pound of grain means from 1 to 2½ pounds of stalks and husks as by-

products, while cotton, rice, peanuts and syrup also means stalks, husks and hulls upon which farmers have expended soil fertility, labor and capital, he said. The old method of using stalks, hulls and culls for livestock feed and building up soil fertility does not provide a cash income for the farmer and for that reason processing of farm wastes into products of cash value is very desirable.

The hundred million tons of cellulose are only part of the chemical constituents of farm by-products. Southern stalks and hulls are about 40 per cent cellulose, 30 per cent lignin and 30 per cent semi-cellulose.

Use of starch as a fuel for running automobiles and other engines was hinted by Dr. Knight in discussing the U. S. Department of Agriculture's research which has made possible the conversion of sweet potatoes into a high grade starch for textile use. Germany has already demonstrated starch as auto fuel. Referring to recent estimates that the world's oil supply would probably be exhausted in another 20 years, Dr. Knight explained:

Plan for Future

"What seems impossible today often becomes a reality tomorrow, especially in times of war and other emergencies, and it is well for us to work out these chemical problems as we can and keep them on record for the future if they are not practical under existing conditions."

Commercial development of the new sweet potato starch industry is foreseen by Dr. Knight as the result of his bureau's pioneering at a small plant in south Mississippi. Of the 80 million bushels of sweet potatoes raised on one million acres in the South, a quarter are culls that could be made into textile starch to replace a product that is now imported. In addition there is a pulp by-product that the Mississippi Agricultural Station has found to be a valuable feed for beef cattle.

The conversion of cull citrus fruit from the liability that it was 30 years ago to a new source of millions of dol-

lars income to growers in California, Florida and Texas is an outstanding example of the fruitfulness of the federal government's chemical research in agriculture. American production of citric acid from cull lemons and by fermentation has practically eliminated the necessity of imports of this chemical and has made us an exporter in the world market.

Other crops whose major and by-products can be made more valuable by research, Dr. Knight said, include: bagasse of sugarcane, cotton, rice, peanut hulls, soybeans, etc.

"Chemists must not raise false hopes among the millions of farmers who deserve more money than they are getting from the culls and wastes of their crops," Dr. Knight explained. "We ought to make it clear that competition and the cost of producing the new products will determine largely whether or not they are practical. Everybody agrees that what is needed under present conditions is a practical way to utilize some of the millions of tons of waste material on the farms of the country. Nobody denies the need for this sort of chemical research."

Science News Letter, February 20, 1937

ENGINEERING

One-Cylinder Auto Comes to America

A ONE-CYLINDER midget automobile, the British-made Rytcraft Scoota Car, is about to invade the U.S. market, having won considerable popularity abroad. This vehicle has an overall length of eight feet, and with its 2½ horsepower rear-mounted engine is said to attain a maximum speed of 45 miles per hour, using one gallon of gasoline every eighty miles. The manufacturers of the Scoota Car claim that parking is made easy by standing the vehicle on end.

Science News Letter, February 20, 1937

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JUNGLE AND DESERT AMERICANS
—Dr. Vincent Petrucci, explorer, anthropologist.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.