**Twentieth Century Magic**

CINDERELLA'S FAIRY GODMOTHER, according to the storybooks, merely waved her hand over a yellow pumpkin and magically transformed it into a golden coach.

Today equally miraculous feats are being wrought by chemurgists—modern-day magicians who are transforming products of the soil into objects of use and beauty, and are creating for Louisiana and other states entire new industries based on agricultural and natural resources once neglected, or only partially used.

The name “chemurgy” is coined from “chemi”, the black magic of ancient Egypt, and “ergon”, Greek for work. Chemurgy means literally “putting chemistry to work”, and, in its application, putting chemistry to work for the farmer.

Now it is confidently predicted that chemistry, teamed with industry and agriculture, will develop a new South, which will utilize millions of acres of land now idle, will create hundreds of thousands of new jobs, and will bring more than one billion dollars of revenue annually.

The South’s first chemurgic group was formed in Shreveport, Louisiana, in 1936, to “attract chemurgic industries to Louisiana, to maintain public interest in chemurgic work, and to bring about the building of research laboratories to investigate possible industrial application of Louisiana crops”. Because Louisiana is primarily an agricultural section, the chemurgic movement in this State aroused keen interest among farmers and industrialists alike.

The list of products that can be made from Louisiana-grown materials is long, and continues to grow.

The sweet potato has been found a prolific source of power alcohol which experts predict will soon be mixed with gasoline for fuel, serving to lengthen the life of our petroleum supplies; from the sweet potato also there can be made an adhesive that meets every government specification for postage stamps.

Tung oil, through the genius of the chemurgist, has also come into widespread industrial use. Paints, varnishes, linoleum, brake lining, and waterproofing materials have sprung from this once valueless fruit of the tung tree.

Louisiana sugarcane, used throughout the world in the form of sugar and molasses, has also been made to yield important by-products, and also such valuable chemicals as acetone, butanol, and citric and acetic acids—once imported. Great hopes are now held that from sugarcane can be produced a satisfactory synthetic rubber.

New uses also have been found for the fruit of the pecan tree. Pecan oil as an article of diet, and for use in certain manufacturing processes has been found comparable in all respects to olive oil. The same oil, blended with other ingredients, yields a fine grade of cold cream.

These and other Louisiana products adaptable to chemurgic transformation are discussed more fully elsewhere in this folder.

The major objectives of the chemurgist are the production of new products, and the discovery of new uses for those products we already have. His work is doubly beneficial, since its very foundation is economy. The materials with which the chemurgist works are drawn from the soil itself—a source that with reasonable conservation will never be exhausted; and some of the most astonishing creations have been made from so-called “waste” materials. That is magic to make the greatest of the fictional miracle-workers look to their laurels.
Louisiana’s Chemical Resources

The industrialist no longer looks to the farm crops for their food value alone. He is in search of starches, sugars, glues, cellulose, fiber, and other base materials required by modern industry. But he must also have adequate quantities of oil, gas, salt, sulphur, lignin, and other minerals from which essential chemicals for the conversion of the agricultural products can be obtained. Fortunately, Louisiana is able to provide all of these vital resources in ample quantity.

Petroleum—Crude petroleum and natural gas, while not ordinarily considered as chemical raw materials, are certainly destined to be so regarded as the necessity for conserving these materials becomes better recognized, and as the chemistry of the hydrocarbons points the way to the synthesis of many valuable products from them. The utilization of refinery gases for the production of alcohols, acetic acid, adhesives, various special solvents, and resins, indicate the field for future expansion.

Louisiana is fourth producer of petroleum, approximately 200,000 barrels of oil being drawn each day from insensibly large fields in every section of the State. Much of this oil goes to the many refineries in Louisiana, including that of the Standard Oil Company of Louisiana, at Baton Rouge, one of the world’s largest.

Natural Gas—Gas fields of Louisiana include the Monroe Field, largest and most productive in the world. Total annual production in the State is approximately 200,000,000,000 cubic feet. Three-fourths of this amount is used to supply domestic and commercial needs of the South at the cost of saving it from gas.

Sulphur—Louisiana is particularly rich in sulphur deposits, and sulphur is produced and shipped by rail or ship in all commercial grades. There is great opportunity in the State for the establishment of grinding and sulphonating plants and the manufacture of coal-tar, that is, coal-tar.

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Louisiana superphosphate, used throughout the world in the form of sugar and molasses, has also been made to yield high-quality by-products and also such valuable chemicals as acetic acid, butyric, and acetic and acetic acids—once imported. Great hopes are now held that from superphosphate can be produced a satisfactory synthetic rubber.

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Microscopic—Liquids, products, paper, sawdust, oil, supplies, matches, paints. lacquers, asphalts, asphalt products, glass, cements and adhesives, refractory materials, corrugated P. S. F. paper, sheeting products, adhesives. fertilizers, cleaning compounds, paper oil products.
LOUISIANA FARMS PROVIDE RAW MATERIALS FOR CHEMURGNY

COTTON

The chemist has been responsible for the promotion of the formerly insignificant cottonseed to one of the most important products of American agriculture. Listeners go into the manufacture of cellulose, celluloid, felts, photographic film, inks, lacquers, surgical dressings, and varnishes. Cottonseed oil, of which Louisiana annually markets more than 50,000,000 tons, besides its use as a cooking oil, also has value as a source of furfural, used extensively as a solvent, and for refining gasoline and motor oils, as well as for furfural derivatives in plastics and synthetic resins. Hulls can also be used as material for packing and as insulation.

SUGARCANE

Chemistry, applied to Louisiana's annual $70,000,000 sugar-cane crop, has created a $10,000,000 industry in Louisiana from one of its by-products alone.

Disposal of the juice remaining after sugar has been extracted has been a problem both to growers and refiners. But chemists have developed from it a variety of by-products, such as glucose, fructose, and sirup. The demand for these products is so widespread that the original small plant has been replaced by a giant factory at Marrero, Louisiana, which employs hundreds of men, produces millions of feet of cellulose monthly, and ships products to every state in the Union and to 60 foreign lands.

RICE

Chemurgy has developed a chemical utilization of the white products of the Southern cornfields, and has diverted many thousands of dollars into the pockets of Louisiana farmers and millers.

New uses for rice waste materials are almost limitless. They can be converted to safety glass, celluloid, synthetic silk, non-adhesive inks, photographic film, plastics in all forms, celluloid, linoleum, insulating materials, paints and enamels, rubber substitutes, furfural, glues, cosmetics, string, and insulating agents.

SWED POTATOES

Great development of Louisiana's sweet potato growing industry is exerted by chemurgy's perfection of a process for manufacturing sweet potato starch. Already one plant is in operation in Louisiana to manufacture the product.

Soybeans

Soybeans, of which Louisiana is the fifth producer, with an annual output of 1,500,000 bushels, also hold great possibilities through the accomplishments of chemurgy.

There are two main soybean by-products: oil and oil cake, which are specially treated for the many purposes they are turned to. Soybean oil is processed for foods—breakfast foods, confections, vegetable oils, cheese, diabetic foods, and flour—for plastic materials used in electric and automobile fields, distributor bases and covers, switch handles, timing gears, dashboard panels, boxes, and for adhesives used in laminated wood, paper and paper products.

TOUGH TREES

Tung trees, practically unknown to America 20 years ago, are now successfully cultivated in Louisiana. Mills for crushing tung nuts are located at Covington and Boguehe.

Planting of tung trees has progressed in this state to the production of more than 1 million pounds of tung oil yearly.

The United States now consumes more than one million pounds of tung oil yearly.

TIMBER

Achievement of success in the production of rayon from the cellulose of the Southern pine tree will mean much to Louisiana, for timber grows here more rapidly than in any other section of the country. By reforestation and careful cutting farmers are able to harvest a timber crop every year.

In the longleaf pine section of Louisiana and Mississippi there are approximately 37,000,000 acres of wood of the type suited to conversion to cellulose—more than enough to supply a great rayon industry.

Louisiana pine already has been found highly adaptable for the manufacture of paper. Here again, the rapid growth of trees is a distinct advantage. Ten years after a seedling pine is planted in Louisiana it is ready to be cut for pulpwood. With continued reforestation Louisiana's yearly crop of more than one billion feet of timber assures the permanency of her wood-consuming industries.

LOUISIANA - Eldorado of Farm Chemurgy

Chemurgy's Opportunity in Louisiana

Much of Louisiana's future economic progress will be the result of development of her chemical industries, for only through farm chemurgy is full utilization of our enormous raw material wealth possible. An abundance of agricultural crops, an adequate supply of the chemicals necessary to the various chemical processes, and the support and encouragement of the State government are the foundation of Louisiana's invitation to new chemical industries.