

By-Products Worth Billions

LITTLE THINGS WHICH ONCE WENT TO WASTE AND WHICH NOW BRING FORTUNES.

(Copyright, 1906, by Frank G. Carpenter.)
WASHINGTON, D. C.—The agricultural department is Uncle Sam's Aladdin. It rubs its old lamp and a horde of new geni go to work for the nation. It is looking up the waste places of our country and making them blossom like the rose. It brought macaroni wheat from the edge of the Sahara, and out of it built up a farming industry on the deserts of the west. It has thrust its long arm into the swamps of the south, and put in Japanese rice is pulling millions of dollars out of the mud.

Maryland to grind up granite for this purpose, and, if they are successful, other plants will probably be erected all over the country.

UNCLE SAM WORTH 125 BILLIONS.

Many people imagine that the United States is at the maximum of its prosperity. The truth is we are at the beginning. We shall make more during the next generation out of what now goes to waste, than we made a generation ago out of our staple crops. Indeed the waste of today makes the fortunes of tomorrow. In 1870 our national wealth amounted to about 30 billion dollars, and 30 years later it had almost reached the 100-billion mark. We are probably worth 25 billions more today and the great part of the increase comes from by-products once classed as waste. Take the beef trust. Its big dividend came from the saving of every scrap in the refuse. If the choice cuts of the meat alone were sold, the packing houses could not exist. They have scores of products which our forefathers never thought of from potter's meats to bouillions, liquid extracts and drugs.

Indeed, the by-products of these establishments bring in millions and a small army of scientists are kept busy analyzing the waste and making new things for man. It is said that every bit of the hog is now saved, excepting the squeal and the kick, and that not an atom of the beef goes to waste. A few years ago I visited a packing factory in Buenos Ayres and saw the blood running away in a stream. In our factories in Chicago the blood is worth \$10 a ton and is used to make albumen and other things. It is sold to printers, tanners and sugar refiners, and as a fertilizer. It brings a big price per ton. In some of the Australia and New Zealand factories I saw the bones thrown aside. At Chicago the bones are first cooked to extract the fat and gelatine. Certain kinds are saved to make umbrellas, tooth brush and knife handles, and other things in which hard bone is needed. The hoofs of the cattle are molded into ornaments, and the tips of the horns are flattened out and eventually sold as combs and buttons. The backs of brushes are made of horn tips, and some of the finest hoofs are shipped to Japan to be made into notions which are again sold in the United States.

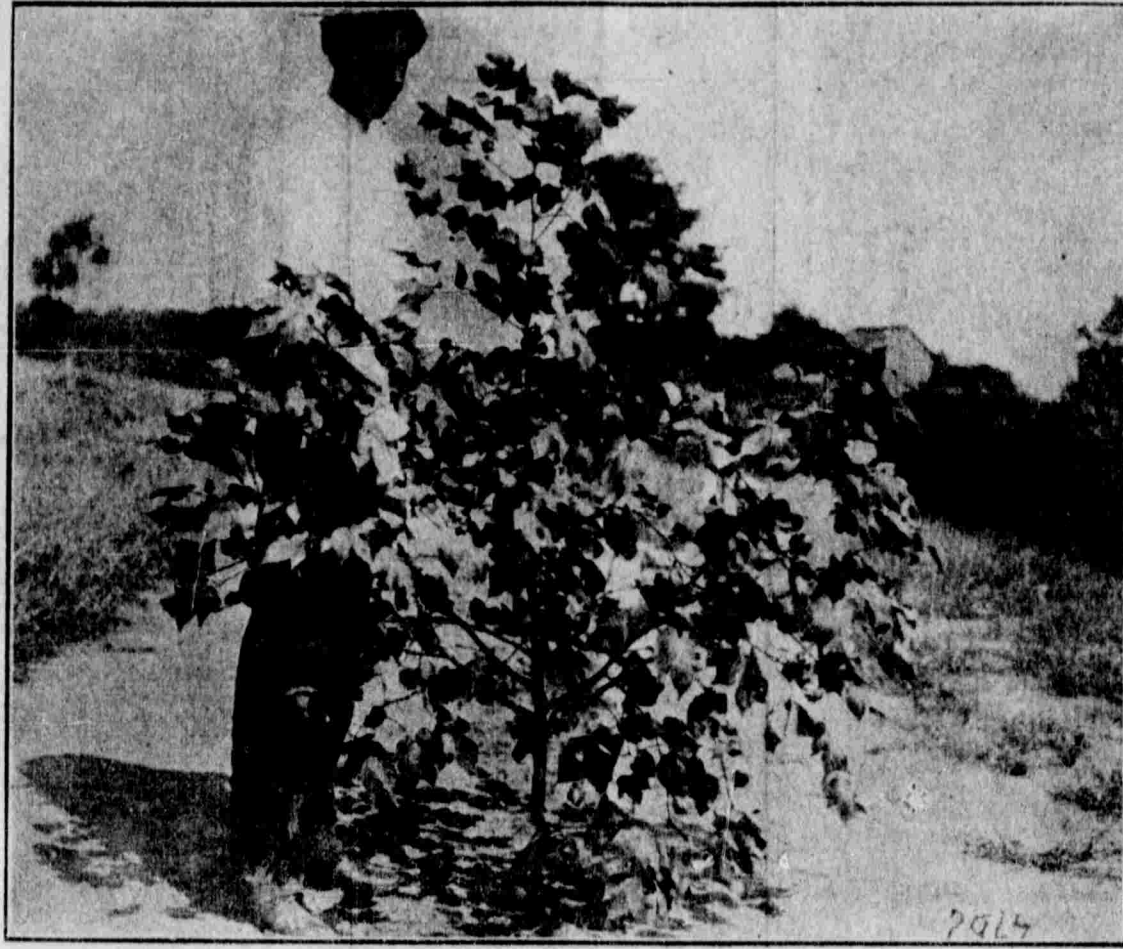
DRUGS FROM THE SLAUGHTER HOUSES.

The packing houses are now getting big money out of chemicals and drugs of various kinds. They produce pepsin from the stomachs of pigs and pancreatine and other digestants as well. From the calves they get a gray brain matter which is now used for nervous diseases, and is especially valuable in neurasthenia, insanity and St. Vitus' dance.

One of the most important of the chemical by-products of the slaughter houses is employed in gold mining. It is a poisonous stuff, known as cyanide of potassium, which looks like alum. It comes, I think, from the hoofs of certain animals and other such refuse. This stuff has a strong affinity for gold and a certain proportion of it, mixed with water, is used to take the gold out of ground quartz. The gold goes into the liquid just like salt and the fluid is then drawn off and the gold caught again, by running it over zinc shavings.

FORTUNES IN COTTON BY-PRODUCTS.

We are now making millions out of what once formed the waste of our cotton fields, and we are likely to



A SPECIMEN COTTON PLANT.

One Fifth of the Profits of the Cotton Crop Are From Cotton Seed Meal.

make many millions more. The latest discoveries there are as to the fiber of the cotton plant. It has been found that it will make the finest of book paper, and the scientists predict that the stalks will be gathered for this purpose, and that a great industry will grow up in so using them. About a generation ago the cotton seed of the United States went to waste. Today it is ground up and the oil pressed out for food and for use in manufactures of various kinds. Much of our so-called Italian oil comes from cotton seed. Our sardines are packed in it, and it is taking the places of lard and butter in cooking. It is burned for light by miners and also in cathedrals. It is used in baking, it makes excellent soap, and it is manufactured into glycerine and candles. The value of the cotton seed is said to be about one-fifth of the total value of the cotton crop. The refuse from the grinding and pressing is made into cakes and sold to feed stock, while the hulls are ground up for the same purpose.

THE PAPERS OF THE FUTURE.

Many people are now deprecating the cutting down of our forests to make wood pulp, and are wondering where we shall get our newspapers when the trees have disappeared. It takes a number of acres of forest to supply the paper for the annual issues of a large daily journal, and the sheet you are now reading was once a part of some spruce, poplar or other soft-wood tree. The forests of Canada are

still vast in extent, and it will be a long time before the supply of pulp wood is cut off. We have little reason to worry, however. The agricultural department is investigating certain sources of paper supply which will furnish the world all it needs for the future. One of the most important of these investigations relates to paper as a by-product of the corn crop. Indian corn stalks have a fiber which will make every kind of paper and cardboard, and I am told that it will be but a short time before mills will be grinding them for this purpose. I have seen samples of paper and cards made from Indian corn stalks. The best paper comes from the outside fibers, and a lower grade from those within. The pith itself is already used to make linoleum, and also as a packing for the walls of our gunboats. The pith is spongy and it swells quickly upon touching water. If a shell breaks through the armor plate of a vessel so packed the water rushes in, and the packing is soon enough swollen to fill up the hole.

A great deal of paper is now made from balfa grass, found in Morocco and Algeria, and it is probable that the papyrus swamps of the Upper Nile will some day be harvested for this purpose. Between Uganda and Khartoum there are vast tracts of swamps, covered with papyrus. They lie right along the line of the Cape to Cairo road, and it may be that this will make them valuable. Papyrus was used to make the paper of the ancient Egyptians. The many scrolls of the famed Alexandrian library were written on papyrus, and the fiber with it is said, make some of the best paper known to man.

WHERE THE BUTTONS COME FROM.

One of the great questions of mankind since we began to wear more than fig leaves has been "What becomes of all the pins?" Another interesting one is as to where the buttons come from. They are largely from waste and by-products. The packing houses supply many made of horn and bone, and the big tin shops and can factories furnish their share. In the latter factories there are many little pieces of tin left after the bottoms and tops of the cans have been cut off. These are saved, and from them buttons are stamped. Each scrap may be only big enough for one button, but there are so many that they provide a large source of supply. Many buttons are made from shells and many from vegetable ivory. The pearl fishers make more money out of the shells of the pearl oyster than out of the pearls themselves, and just now there is a great industry in gathering the shells of the fresh water mussels. Such shells are used chiefly for buttons, and it is said that at least 5,000,000

Recent Discoveries of the Agricultural Department—Mountains of Potash at One Cent a Pound—Costly Drugs From the Slaughter Houses—Paper From Cotton Stalks and Cardboard From Indian Corn—The Papyrus Fields of the Nile and Our Future Paper Supply—Where the Tin Buttons Come From—Money in Grease and Garbage—Old Rags for New—The Chinese and French as Economisers New Kinds of Fuel, Etc.

All kinds of metals are saved. There is a regular business in China in old tin and old iron. The Standard Oil cans, for instance, are flattened out and used for house roofing, and the best of the Chinese razors are made of worn out househoes, which are imported by the shipload from Europe. As to food in China, nothing goes to waste. Almost every part of a chicken is eaten, even to the entrails. Tea grounds are used over and over again, and every scrap of meat is consumed. As to fuel, the fallen twigs and branches are gathered up, and straw is often burned for cooking. The Chinese understand how to get the most out of manure, and nothing of this sort is thrown away. The house sweepings are saved for the gardens, and even the beds of the streams are scooped up from time to time into acres and spread over the fields.

WHY THE FRENCH ARE RICH.

It is similar economies which largely aid in making the French one of the richest nations of the world. Every one thought they would become bankrupt when, in 1871, the Germans compelled them to pay a billion dollars in the way of indemnity. Since then they have wasted millions on the Panama canal, and are today about the wealthiest of all European nations. It is said that the French loaned about \$150,000,000 to our capitalists during the year 1905, as well as \$250,000,000 to Germany, and an even greater sum to Russia. They now hold foreign securities to the amount of \$14,000,000,000, and more than one-fourth of this is in Russian bonds and industrials. France is said to have an annual surplus of \$500,000,000, and she is gradually placing this in various investments throughout the world. If she has no war, she will soon have an interest in every national enterprise, and be the world's chief creditor.

All this comes from saving tea pennies and watching the waste. The average breakfast of the Frenchman costs about 2 cents, while that of the American is at least 10 cents, or five times as much. France has 40,000,000 people, and at this rate she daily spends \$60,000 for breakfast, whereas in our country breakfast cost us \$3,000,000. Had we the same population as France our

morning meal would cost us \$3,000,000 more every day than it does her, or more than \$1,000,000,000 every year. A similar saving goes on as to other things and the common people are all saving and investing. They could live on what we throw away and still, through their knowledge of cooking, have better eating than we have.

FUEL WASTE.

In the matter of fuel saving also, the French are making great strides. They are using the dust of their coal mines, and making it up into bricks or briquettes, of about the size of our building bricks. Many of the railroad trains are run with such bricks, and one sees cords of them near the larger stations. In St. Etienne they are now making briquettes which are half coal dust and half petroleum, and also some which contain 87 per cent of petroleum. Petroleum bricks sell for about \$15 per ton but they have three times as much heating power as coal, and they weigh only one-third as much. They burn without odor or smoke and will keep a long time without deteriorating. Coal briquettes are largely used in Germany and also in Belgium and Holland. The Germans make such fuel of a lignite, so poor that it would be regarded as of no value here in the United States.

FRANK G. CARPENTER.

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