Collier's
Sept 14, 1912

The Flint Skinners

Learning Economy in Little Things—The Modern Era of the By-Product

By JAMES OLIVER CURWOOD *and* ANNESLEY BURROWES

ILLUSTRATED BY VINCENT LYNCH

THE man who skins a flint or flays a flea for its hide and tallow is no longer an object of public scorn.

Quite the contrary. Great men pat him on the back and invite him to dinner. His picture gets into the magazines and his biography into "Who's Who." He inhabits a big house on the avenue and goes to work in a ten-thousand-dollar limousine—all because he fell in touch with the Spirit of the Times and learned that the twentieth century is the age of small economies, which bring gigantic returns, just as its predecessor was one of gigantic wastes that made profits smaller than they should have been.

As yet most of the flint skinning is being done in Germany. The United States has lagged behind. But recently the Spirit of Thrift has been stirring in many places, and before the present decade has expired it will be fully awakened. Already the great corporations are saving, and soon the individual producer and even the individual consumer will follow suit. Saving has become a business, and vast industries are being built up to assist it, promote it, and profit by it. The United States to-day presents an unlimited field for ambitious men who wish to build up fortunes by developing economy among the American people.

Already the tightwads of the twentieth century are abroad with the brooms, the rakes, the sieves and the rag pickers of civilization, poking into all the cracks and crevices of the industrial world to find any base excretions which they can transmute into one of those metals used to extract greenbacks from the United States Treasury.

BUTCHERS' WASTE

THE Pro Bono Publico of the twentieth century is a combination of junk hunter and wizard, and the yet to be made in it and trusts yet to be formed. In the butchers' shops of the United States each year there is, according to the latest statistics, nearly three billion pounds of flesh and bone thrown into the waste-basket. If this were packed into coal cars it would make nearly two thousand trains of thirty-five cars each, and these running three-quarters of a mile apart and over a single track would reach from Chicago to San Francisco. In the slaughterhouses of the United States the refuse material amounts to fourteen billion pounds annually, and if loaded into trains they would reach from New York to San Francisco three times over.

CHARCOAL, LAUNDRIES, AND TIN CANS

IN THE great slaughterhouses, such as those in Chicago, this refuse is all utilized on the spot, but in the smaller cities and in the towns much of it is available for the buyers of butchers' waste. The butchers' waste and slaughterhouse waste at the disposal of the independent flint skinners probably exceeds six billion pounds annually, and if this could all be utilized under favorable circumstances, the profit would be a colossal one.

There are also large profits awaiting the men who introduce the latest flint-skinning methods into the manufacture of charcoal, for from the vents of the charcoal kilns of the United States millions of dollars' worth of valuable products is allowed to soar away into space. In the smoke of one hundred cords of wood there is twenty thousand pounds of acetate of lime, worth more than $500; fifty pounds of tar, worth $2.50, and one thousand gallons of alcohol, worth nearly $500. But the American charcoal burners do not get it. Many of them are using methods which are not greatly different from those used twenty-five centuries ago to fire the braziers of ancient Rome. For instance, the old-fashioned kiln system is used throughout the State of Michigan, while the up-to-date retort system is used in Pennsylvania. The Pennsylvania burner gets two hundred pounds of acetate of lime out of one cord of wood, while his Michigan brother gets only fifty pounds. The Pennsylvanian gets ten gallons of alcohol while the Michigander secures but four. The retort produces fifty bushels of charcoal while the kiln makes only forty. It is quite easy to figure that the

the trunks offered for sale. The salesman will tell her that they are for the protection of the trunk, but their real purpose is to conceal the fact that the trunk is covered with tins which at one time enclosed lobsters, peaches, condensed milk, cigarettes, tooth powder, corned beef, gasoline, turtle soup, varnish, lampblack, or any of the thousand and one commodities which are offered to the public in cans. The collection of these disused packages is another of the infant industries from which the flint skinners of the twentieth century are realizing fortunes. These old tins are gathered in vast quantities, and subjected to a heat which causes the solder to melt and run into prepared receptacles. This solder when melted into bars sells for twelve cents a pound and pays the entire cost of treating the cans. The cans are then sorted out. The sides of those which are in good condition are rolled out by machinery and sold to trunk makers, who use them to cover trunks, the rough edges being hidden by the bands and battens already mentioned. The bottoms are heated and pressed into window weights. The cans which are not suitable for these purposes are treated with chemicals, which remove all the tin from the outsides of the plate. This tin is molded into bars and sold to the tin-plate factories. The sheet iron, which is the basis of the tin plate from which the cans are made, is sent as scrap iron to the mills, to be melted up and molded into stoves, agricultural implements, or whatever the wish of the purchaser may suggest. Only a small proportion of these disused cans finds its way to these plants, and there is plenty of room for active men who wish to line their pockets and help the world along by reclaiming old tins from back yards and public dump heaps.

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BUTCHERS' WASTE

THE Pro Bono Publico of the twentieth century is a combination of junk hunter and wizard, and the things which he does with his big caldron and his little wand are making the world sit up and wonder. He scrapes the scales off a dead fish and they reappear as pearls upon the neck of a society belle. He seizes the gas whirling out of the mouth of a blast furnace and uses it to light a city or drive a mill. He delves into heaps of rubbish and digs out pure gold. He turns old boots into table jelly and ragged shirts into wine fit for a king's table. He catches the stinking liquid that runs from the tanners' vats and turns it into graceful vines and glowing blossoms. He saves the sickening ooze from the retorts of a gas house and makes it into flavors which would tickle the palate of a Petronius and perfumes which would titillate the nostrils of a Cleopatra. The twentieth century flint skinner finds in America possibilities to which there are no limits.

There are two of these flint skinners in a Middle-Western city who are drawing down dividends on their investment which might make a Standard Oil magnate envious. They have grown wealthy simply by helping individuals to save money. These individuals are chiefly butchers. A few years ago, when a salesman cut off the head of a chicken or chopped the bone from the end of a porterhouse steak, he threw it into a basket and let anybody carry it away who would. To-day the flint skinners send a green wagon for it and pay the butcher two cents a pound. There is one wholesale butcher in an Eastern city who draws down $90,000 a year for his refuse, but the average butcher in a Middle-Western city would not get more than five or six hundred dollars a year. He is glad to get that sum, however, and the flint skinners are glad to pay it, for the fat that comes out of one pound of such refuse brings them five cents. For the residue they get three cents, which means a gross profit of six cents a pound over and above the cost of raw material. The two men referred to handle 42,000 pounds of meat refuse every day, or 13,146,000 pounds a year. Any schoolboy can figure that the gross profit from these operations is $657,300. And these men are not monopolists. They do not get all the meat refuse of the city. An imitator has risen up who is realizing big profits on a daily turnover of 8,000 pounds of refuse.

This kind of flint skinning was unknown fifteen years ago. It is still an infant industry. There are fortunes into space. In the smoke of one hundred cords of wood there is twenty thousand pounds of acetate of lime, worth more than $500; fifty pounds of tar, worth $2.50, and one thousand gallons of alcohol, worth nearly $500. But the American charcoal burners do not get it. Many of them are using methods which are not greatly different from those used twenty-five centuries ago to fill the braziers at ancient Rome. The old fashioned kiln system, for instance, is used throughout the State of Michigan, while the up-to-date retort system is used in Pennsylvania. The Pennsylvania burner gets two hundred pounds of acetate of lime out of one cord of wood, while his Michigan brother gets only fifty pounds. The Pennsylvanian gets ten gallons of alcohol while the Michigander secures but four. The retort produces fifty bushels of charcoal while the kiln makes only forty. It is quite easy to figure that the slow-going charcoal burner of the Wolverine State loses $7.50 in by-products alone on each cord of wood, while the up-to-date burner gains that sum, and increases his receipts from the main products by twenty per cent. The first cost of discarding old methods and installing new ones is always a damper on progress, but the man who has the ambition and the courage to do it can make money by introducing flint-skinning methods into the charcoal industry.

There are some great opportunities for the twentieth-century flint skinner in the laundry business, for from these plants there are rivers of wealth running into the sewers on three hundred and thirteen days of each year. These rivers are composed of soapsuds. The laundryman pays six and a half cents a pound for the soap which makes these suds. It is not like the starch, for none of it goes away to the customer in his shirts and collars. Every ounce of it remains in the tubs and is allowed to run away through the sewers, and yet every ounce of it might be recovered by chemical means and used over again. The same is true of textile factories, where hundreds of thousands of dollars' worth of soap are allowed to run away. Other soap wasters are the cloth-cleaning houses, which pay as much as twenty cents a pound for their soap and yet make no effort at all to save it after use. In Germany this reclaimed soap has been put to a variety of uses. Pressed into bricks, it has been burned in retorts, yielding an illuminant twice as powerful as coal gas. It is also used to make lubricants and fat acids.

The observant housewife, bound for mountain, cottage or sea-coast hostelry, who enters a store in order to increase her traveling equipment, may be surprised at the multiplicity of iron bands and wooden battens on

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If ever something was made of nothing, it has been the incomes, if not the fortunes, acquired by the retailing of sawdust. A few years ago sawdust was obtainable in any quantity simply for the hauling. Within easy reach of New York, it now brings $3.50 a load at the mill door. The sawdust industry in New York employs five hundred men, engages a capital of $200,000, and involves an annual turnover of $2,000,000. Most of the dust is sold to saloonists, who spread it on their barroom floors, but a great deal of it is sold to merchants and others, who use it to lay the dust while their floors are being swept. Some of the flint skinners of the twentieth century, acting on the advice of chemists, mix cheap disinfectants and deodorizers with the sawdust and sell it to housewives at high prices.

This infant industry offers an opening for any ambitious young man. The raw material is cheap, the mixing easy, and the marketing of it direct to the consumer or through local merchants should be quite a simple matter.

THE BLAST FURNACES

THESE are a few of the ways in which flint skinners with small capital may extract a livelihood, or perhaps a fortune, from the wastage of our twentieth-century industries. There are still greater opportunities open to the corporations and individual manufacturers already established in business. Some of these opportunities are so vast that they stagger the imagination. Out of the tops, for instance, of the blast furnaces of the United States there soars every day enough gas to light and heat every city, town, village, and farmhouse in the United States, Canada, and Mexico. Little attempt is made to save it except in a few instances. The sixteen blast furnaces of the United States Steel Corporation at Gary, Ind., present a shining example of what it is possible to accomplish with this waste gas. These furnaces every hour generate no less than forty-five million feet of gas, which has a heating and lighting value of about one-quarter that of coal gas. The production of these furnaces for one year would be almost eight hundred billion feet of gas, which is more than five times as much as all the heating and illuminating gas manufactured in the United States. The Gary furnaces make less than one-tenth of all the pig iron produced in the United States, so it follows th[illegible]

if all the waste gas from blast furnaces were saved it would amount to more than fifty times as much as all the gas now manufactured in this country. If this were marketable at one-quarter the present price of coal gas it would represent an annual value of $2,000,000,000. The gas saved at Gary is used for heating the vast quantities of air that has to be forced through the furnaces, and which is known as "the blast." It is also used in the gas engines which operate the greatest electric light and power plant in the world. This house is one hundred feet wide and a thousand feet long. It would fill Fifth Avenue from Madison Square to Thirtieth Street, and it utilizes each day no less than one hundred and twenty thousand horsepower of gas, which under the methods of ten years ago would have been allowed to soar away into the atmosphere. The gas produced by the Gary furnaces would, if all used in gas engines, develop half a million horsepower, and the product of all American furnaces would develop five millions of horsepower, which is nearly as much as all the water power developed in the United States up to four years ago.

MILLIONS IN DIRT

THERE are vast fortunes yet to be made out of the coal gas produced in the manufacture of coke. Each year about one hundred billion pounds of coal is transformed to coke in the ovens of the United States. Each pound of coal gives off five cubic feet of gas. So it follows that the coke ovens produce five hundred billion feet of coal gas each year, which is three times as much as all the artificial illuminating and heating gas now made in the United States. Most of this is allowed to soar away through the tops of the wasteful "beehive" and "Belgian" ovens. Some of it is saved by means of the new-fashioned by-product ovens, and from these it may be piped for long distances and sold at a handsome profit. The city of Baltimore, for instance, is almost entirely lighted by coke-oven gas, which is piped a distance of nine miles. Trenton, N. J., is lighted by coke-oven gas, which is piped a distance of thirty-six miles. It is only a question of time before the saving of coke-oven gas will be general throughout the country, and many gas houses now manufacturing their product at great waste of labor and material will be obliged to close down.

For the flint-skinning capitalist who is prepared to make a heavy investment there are fortunes to be made out of sawdust when handled on a large scale. In forest countries, where coal is high priced and sawdust a nuisance, the latter may be mixed with coal slack, peat, spent dyewood, and other substances and pressed into briquettes which make a cheap and very satisfactory substitute for coal. By the distillation of sawdust there may be obtained acetic oils gas, alcohol, acetic acid & tar; the tar in turn gives us carbolic acid, creo-

and tar; the tar, in turn, gives us carbolic acid, creosote, naphthalene, paraffin, and other substances, from which aniline dyes may be made. Other products of sawdust are oxalic acid, brown dyestuff, imitations of marble and expensive woods, similibois, used by sculp-

The fats taken from the wool are used chiefly for the ointments and cosmetics which are found on the toilet tables of the fair sex.

A GERMAN MONOPOLY

EVERY year the negroes of the South dance and frolic around a myriad of blazing straw stacks. The burning of the rice straw is a sort of festival among them, but few of the spectators know that in the smoke and ashes of these fires there is lost annually more than $25,000,000 worth of valuable raw material. It was after hearing a description of these conflagrations that A. W. Diack, a Detroit chemist, sent for a sample of the straw and experimented with it. The result of his labors was a fine, white paper, far superior to any paper made of wood pulp, and lighter even than the best rag paper. Mr. Diack estimates that enough rice straw is burned each year to equal a third of all the raw material used in the making of American paper. So far as known, Mr. Diack is the first man to produce rice paper. The paper used in the making of cigarettes, and commonly called rice paper, is made of rags. The so-called rice paper of China is not paper at all, but a sort of pastry made of the rice grain, and used as a covering for confections. It is intended to be eaten. The only mention made of rice paper is in connection with a tribe living in the interior of China. These tribesmen are said to have made it, but Mr. Diack has never been able to learn any of the details of manufacture. So far in this country no rice paper has been manufactured for commercial purposes, but in future years the rice straw of the South will undoubtedly be the basis of many great fortunes.

There is money to be made out of the collecting and treating of dead animals and the disposal of their products. In most places dead animals are either buried or allowed to lie or else rendered in the most wasteful fashion, but with proper appliances a dead horse or cow may be made to yield a variety of wealth-making substances. The hoofs may be polished and made into handsome pincushions, tobacco boxes, or other receptacles; the horns used for decorative purposes or for the making of combs, pocketknives, brooches, earrings, and all kinds of ornaments; the hair used for plumes, haircloth, cushions, mattresses, and for the making of bags to crush oil seeds; the hide used to cover tables and other purposes; the flesh boiled and used to feed poultry; the blood used to manufacture prussiate of potash and other chemicals;

the grease used to make candles and soap; the tendons used to make glue and gelatin. The most useful of all these products is the skeleton, such as those which may be

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pavements, and the manufacture of insulating materials. But in Germany, where the United States patents are held, from this foul and noisome liquid there are manufactured scents which make the perfumes of Araby seem coarse by comparison—heliotrope, violet, rose, and jasmine; flavors which might well revolutionize a Lucullian kitchen, dyestuffs which make the storied silks of Tyre look dull and beautiless, remedies which bring health and happiness to millions of the sick and pain-stricken, explosives which level mountains and destroy armies, and a thousand of those other products which fill pages in the tariff schedules and trade reports of nations. But as yet in America, which boasts itself the most progressive of nations, not a dram, not a teaspoonful, of these commodities can be produced until the Germans give us leave or until the laws provide that all patents must be forfeited unless the patented articles are manufactured within the borders of the United States.

THE POSSIBILITIES OF SLAG

UNTIL quite recently the man who suggested that houses might be built with the unlovely refuse of coal mines, known as "coal slag," would have been greeted with a merry laugh, but flint-skinning Frenchmen have pointed out the way, and men are now aware that coal slag makes an unrivaled building material. Crushed, mixed with lime, and made into a sort of concrete, the mass is shoveled into molds, and after a day or two becomes hard enough to support joists. It is indestructible. Its fire-resisting qualities are phenomenal. Among the buildings erected by the French inventor was a factory for the manufacture of nitro-benzine. Soon afterward the building caught fire and the contents created so fierce a conflagration that the machinery was melted into an indistinguishable mass. After the fire it was found that the coal-slag walls were absolutely unharmed, and they served for the new building without any repair whatever. With the constantly increasing price of lumber it may well be that in the coal States at least the manufacture of slag concrete will develop into a thoroughly profitable industry. The slag of blast and other furnaces is another by-product of which very little use is made in the United States, but which offers many possibilities to the twentieth-century flint skinner. Out of this almost hopeless material a sort of cotton is now made which is a non-conductor of heat and serves admirably for the covering of boilers & steampipes

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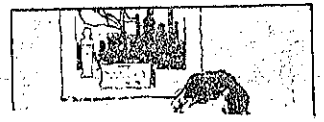

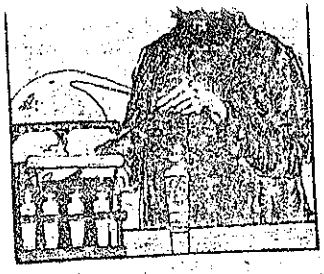

and for the making of bags to crush oil seeds; the hide used to cover tables and other purposes; the flesh boiled and used to feed poultry; the blood used to manufacture prussiate of potash and other chemicals; the grease used to make candles and soap; the tendons used to make glue and gelatin. The most useful of all these products is the skeleton, such as those which may be seen bleaching in the pastures of every other farm in America. These bones may be used to make oils, tallow, charcoal, paint, shoeblacking, filling for rubber shoes, knife handles, fans, buttons, and several kinds of chemicals. So it is easy to see that there is money in disused horses, cows, and other animals.

If the Germans would only give us leave, we Americans might make some overgrown fortunes out of the black, evil-smelling liquid which is turned out in quantities by the coke ovens and coal-gas houses of the United States. In all the tales of Fairyland—of rats turned into white horses, of hovels into palaces, of seaweed into cloth of gold—there is nothing more astonishing than those statistical reports which tell of the marvelous transformation of coal tar by the magic wand of the chemist. But the flint skinners of Germany hold the keys to this treasure house of wealth and beauty in their own pockets in the shape of United States patents, and, except in the manufacture of aniline dyes, they will not allow the people of America even to smell of the profits which they might otherwise make. The Germans can produce all these twentieth-century wonders with their own cheap labor and can send them across the ocean and compel the American people to buy because they are necessaries. So they reason that it is no use allowing them to be made in the United States, where labor is expensive. They would be perfectly willing to have the things made in America if Uncle Sam would place a tariff on them which would insure a bigger profit than they make at present, but this Uncle Sam will not do.

MODERN MIRACLES

AT PRESENT the coke ovens and coal-gas houses produce nearly seven hundred million gallons of coal tar every year. If great tanks were built so as to completely cover twenty-five city blocks, each two hundred feet square, and if these tanks were deep enough to completely hide the five-story houses standing sixty feet above the street, then all these twenty-five colossal receptacles would just about hold the coal tar produced each year in the United States in the making of coal gas and coke. This product is now put to the basest uses, such as the roofing of buildings, the filling in of

was found that the coal-slag walls were absolutely unharmed, and they served for the new building without any repair whatever. With the constantly increasing price of lumber it may well be that in the coal States at least the manufacture of slag concrete will develop into a thoroughly profitable industry. The slag of blast and other furnaces is another by-product of which very little use is made in the United States, but which offers many possibilities to the twentieth-century flint skinner. Out of this almost hopeless material a sort of cotton is now made which is a non-conductor of heat, and serves admirably for the covering of boilers & steampipes in order to prevent the escape and wastage of heat. This curious product is obtained by melting the slag and exposing it to a tremendous blast of steam. The molten slag is broken into drops, and these fly through the air like little comets, leaving behind them long tails made of a fiber which resembles cotton or wool and which can be pressed into sheets. It is snow white. Iron slag may also be converted into sand, mortar, bricks, paving blocks, glass, and shingles. As lumber increases in price all of these products will become increasingly necessary, and will perhaps be the basis of many a millionaire's fortune.

TO THE SOIL AGAIN

THERE are vast fortunes to be made by the utilization of waste materials for fertilizing purposes, for, although this industry is growing enormously, it is yet in its infancy. It is not a fact commonly known that every bushel of wheat takes thirty cents' worth of nourishment out of the soil and air, and for the wheat crop of the United States the value of this nourishment would figure up to more than $200,000,000 annually. The entire output of artificially prepared fertilizer in 1909 amounted in value to little more than $100,000,000, just about one-half the amount that should have gone back into the soil to balance the drain of the wheat crop alone, and yet wheat forms but a small percentage of the grain production of the United States. The wheat crop in 1910 was only about half the combined crops of oats, barley, rye, and buckwheat. The crop of corn was four and a half times greater than the wheat crop, amounting in 1910 to more than three million bushels. The amount of nourishment taken out of the soil and air by corn is astonishing. Eighty bushels of corn contains one hundred and forty-six pounds of nitrogen, fifty-seven pounds of phosphoric acid, and eighty-two pounds of potash. This tremendous drain upon the soil is being replaced only to a very limited extent, and it is evident that before long the American farmer will have to resort to artificially prepared fertilizers or allow his land to become unproductive. That the necessity of more extensive fertilization is making itself felt is shown by the fact that in the five years preceding 1909 the production of artificially prepared fertilizers increased sixty per cent. Allowing the same rate of increase for six periods of five years, we shall in thirty years have an output of fertilizing materials amounting in value to more than a billion dollars annually, and even that vast amount would not be sufficient to restore to the farms of America what has been taken out of them by the growth of cereals. It requires very little foresight to perceive the immense

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possibilities for wealth that lie in the development of this industry. Fertilizers can be obtained from the waste of slaughter-houses, tanneries, and rendering plants. The sewage and garbage of cities can be utilized, and even the contents of cesspools can be treated in such a way as to make them available for fertilizing purposes.

The value of the waste material of cities is realized by very few people. In 1872, when the population of the United States was only forty millions of people, it was calculated that the sewage of the country, if utilized, would pay the interest on the national debt, which at that time exceeded $2,000,000,000. The population is now more than twice what it was then, and the national debt has been reduced by half, so it is easy to calculate that the sewage of the United States to-day, if utilized, would pay the interest on the national debt about five times over. That interest is now more than $21,000,000 per annum. The sewage of the city of Munich, which has a population of less than six hundred thousand people, has been valued at $500,000 annually, and the city of Antwerp, with a population of less than three hundred thousand, receives $200,000 a year in hard cash for its refuse.

CHEMICAL WONDERS

BESIDES the possibilities already enumerated, there are scores of others which it would be impossible to describe at length. The European flint skinners in the brass trade, for instance, do not even waste the sweepings of the shops. These are pounded in mortars, treated with running water, melted in crucibles, and all the brass recovered. The scraps and cuttings of shoe factories may be saved, made into pulp, pressed into "leather board" and used for soles and heels of new shoes. Waste skim milk from cheese factories can be converted into imitation hens' eggs, billiard balls, and all sorts of things ordinarily made with horn or hard rubber. Paint, glue, and coatings for paper can be made from skim milk, which will also give up casein, albumen, milk sugar & lactic acid. From the deposits on the insides of wine casks tartaric acid and cream of tartar or baking powder may be made. Old rubber shoes and worn-out bicycle tires may be saved and treated, and the rubber in them used over again. The cork cuttings in bottling works and stopper factories may be collected and used as a basis for the manufacture of linoleum. Human hair is gathered and made into switches, wigs, and whiskers. The shipments of hair from China to France in one year exceeded one hundred thousand pounds. The skins of dogs and rats are saved and made into gloves. Catskin serves many purposes. From ox blood is obtained butyric acid, which in turn gives up butyric ester. The latter is used with spirits to make an imitation rum, and also to imitate fruit flavorings, such as raisin, strawberry, and apricot. Blood is used in the preparation of the most deadly of poisons, potassium cyanide, or prussic acid. It also produces fibrin, albumen, prussiate of potash, blood charcoal, and a most valuable fertilizer. Some years ago it was compressed into a hard, woody substance and used in the making of many articles, particularly blood buttons, which for a time were very popular. Since then cellulose, a wood product, has displaced blood by reason of its cheapness. The cloths used for wiping machinery are saved in Europe, and the oil extracted from them by chemicals. The waste liquors of dye houses can be made to give up their dyes and also large quantities of tin, which is now extensively used in dyeing processes. The scales of fish, cleaned and pulverized by a delicate and tedious process, produce a so-called "fish essence," which when put into hollow globules of glass forms a coating on the inside which perfectly imitates a pearl. After the insides are coated with fish essence they are filled with paraffin. The scales of dace are used for this purpose, and it takes the scales of about three hundred dace to make a common teaspoonful of the pearl essence. Gelatin, glue, and a substitute for isinglass can be made from useless fish and fish offal. The turnings, raspings, and filings of horn may be saved, chemically treated and molded or pressed into pipes, cigarette holders, umbrella handles, buttons, and a host of other things. The waste material in pearl-button factories may be ground up into a glistening, silvery powder, which may be stained any color and be used in the embellishment of artificial flowers and wall paper. Green apples blown off the trees can be made into a delicious jelly at a cost of five cents a pound. Broken porcelain pottery and white or colored glass can be utilized for making mosaic pavements. The making of table jelly out of old shoes and wine out of ragged shirts is no joke. It has actually been done by European chemists. Oil of pineapples may be made from rancid butter, and apple, pear, and grape flavors from the foul-smelling fusel oil, which is a waste product in distillation of spirits. The wool is extracted from generation after generation of garments, and used over and over again until it is practically worn into thin air. The swallow-tail coat of to-day is the hobo's jacket of to-morrow. The ball dress of this year may be the convict's sheet of the year after next. The cast-off shoes of a man of fashion are used to fertilize the soil that produces the grass that feeds the kid that yields the hide that makes the leather from which new shoes are manufactured for the daughter of the fashionable person aforesaid. Such is the cycle of nature and industry, which, after all, is nothing but a colossal "House That Jack Built."

There is waste and salvage at every step, and at every step there are fortunes to be made by the discriminating flint skinners of the twentieth century.

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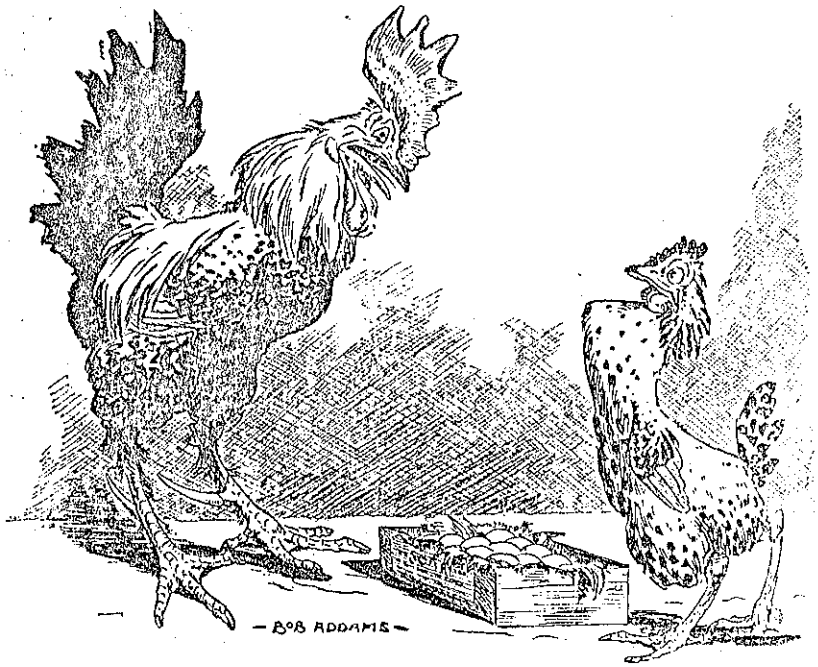

"Mr. Peck, this is the last time I set; no more homemade chicks for me—you can get an incubator!"