Democratic Watchman.

Bellefonte, Pa., July 14, 1916

The Story of Gunpowder.

To one part of charcoal of dogwood, or popular, add an equal amount of sulphur and six parts of saltpeter; mix thoroughly, add water enough to moisten and grind carefully between two smooth stones for two hours.

Seven hundred years ago an old monk, Friar Bacon, sat poring over an oriental manuscript, until suddenly he came across a recipe of which the above is a rough translation. He hastily copied it down, though he regarded it only as a great curiosity illustrating chemical compounds. Little did he think what would be the result of his find in the musty old manuscript; that this recipe would not only change customs, styles of architecture, methods of government, but it would change the destinies of nations and the map of the world.

Certainly at that time, in the thirteenth century, and for many centuries after, no scientific discovery was made which so materially affected the life of the human race as this recipe for making gunpowder. From that day it was brains, human ingenuity, the capacity to invent, to discover nature's secrets and harness her forces to the use of men that counted, rather than physical force. It took the northern races of Europe to know how to profit from this knowledge; the people who invented gunpowder may have had a higher civilization at the time, but they never knew how to use it to full advantage.

Just who did discover how to mix the wonderful recipe nobody knows, but there are records of Chinese fireworks being displayed at festivals seven hundred years before Christ, and the Chinese, who claim everything, say that its discovery was an interesting accident. Traders traveling over the plains with their shaggy little Chinese ponies used to camp for the night and build camp fires to keep away wild animals and robbers. There was a quantity of nitrate of potash in the soil, also traces of sulphur. This, mixed with the charcoal from their fires, left a crude sort of explosive, containing in imperfect proportions the ingredients of gunpowder.

Other traders came along and built their camp fires on the same blackened spots where previous fires had been. Frequently, when the fires were started, there would be weird flashes and "fizzing" sounds which the Chinamen took to be evil spirits. But some wise Chinaman investigated, and so, more than twenty-five hundred years ago, learned how to make gunpowder.

Undoubtedly Greek traders had traveled far into the East and had learned from the Chinese the art of making fire displays, for many of their religious ceremonies were also enlivened with the rattle of firecrackers. But the Greeks never had the ingenuity to invent a gun, otherwise they might never have been conquered and enslaved by the Romans.

The Chinese did, however, invent something very much like a canon, in B. C. 618. According to the records, it was a long tube made of bamboo, on it was inscribed, "I hurl death to the traitor and extermination to the rebel." The Chinese Wall, too, which was built to keep out the Tartars, shows even today holes through it which could have been pierced for no other purpose than allowing cannons to be shot through them.

India was not far behind the Chinese. There is a story recorded in the old Sanscrit records which gives account of the wars of the Egyptian Hercules in India.

The sages were being attacked in their stronghold. While the preparations for the siege were going on, they stood on their housetops and watched as though they were only unconcerned spectators. This so angered the enemy that they at once began an assault, whereupon the sages were suddenly awakened to life and "they repulsed it with whirlwinds and thunders, hurling destruction on the invaders." This is probably the earliest historical account of an artillery battle.

By the thirteenth century, when Friar Bacon discovered in an old Arabic manuscript the recipe for making powder, the Hindoos were fighting naval battles with cannons.

Even the "wild men of Borneo" knew the use of cannon and gunpowder as soon as the Europeans, for in 1500 the Portuguese, in attacking the town of Borneo, found the town defended by sixty-two pieces of cannon mounted on the walls.

For some years no use was made in Europe of the recipe except for church festivals. The priest employed fireworks, just as the Chinese and Greeks did for purposes of display, from which was orginally derived our own Fourth of July celebrations.

It was only when the Swiss alchemist discovered how to granulate powder in the making that it was possible to use it in driving missiles. In all the European countries hollow metal tubes appeared, which were filled with powder, and stones or iron balls were rammed down on top, the powder being set off through a hole at the other end.

The powder that won us our freedom from Great Britain was carried in a horn by the soldier, who measured it with a little tin measure, poured it down the muzzle of his musket, dropped a lead bullet on top of the charge, then rammed wads of paper with his ramrod down on that to tighten it. It was the uncertain supply of powder that handicapped the forces under Washington more than any other cause. So difficult was it to get the necessary ingredients for the manufacture of the powder used by Washington's Army and all over the country people were rquested to gather the saltpeter formed on the damp walls of their cellars and turn it over to army headquarters.

The first powder mill in this country was erected almost on the old battlefield of Brandywine, shortly after the close of the Revolution, and there it stands today. It was from this mill that nearly all the powder used in the war with England in 1812, was sent to Perry on Lake Erie and with which he defeated the British fleet.

From the time of earliest record until quite recently, only a few years ago, the actual manufacture of powder has kept pretty close to the recipe discovered by Friar Bacon, except that the proportions of the three ingredients may have varied a little from time to time. But though the process of mixing is simple enough, the mixing has been one of the most dangerous industries that men have ever been engaged in and this danger has only been slightly reduced of late years; it has never been entirely eliminated.

The three ingredients used to be taken to separate mills and each was reduced to a very fine dust by successive grindings. The actual danger began in the mixing house, where the three were brought together. These mixing houses have always been relegated to lonely, isolated spots, as though they were pest houses where, if they blew up, as they often did, only the actual workers engaged in the work would be killed.

Here the charcoal is spread in a trough, and the sulphur and saltpeter being sifted upon it, the mixture is stirred with the hands.

Being first dampened enough to give it the consistency of a thick mud, the mixture is next shoved in between two mill stones. So dangerous is this part of the process that in England a law was passed limiting the amount of each grinding to forty-two pounds, for the protection of the men engaged in work.

All the bearings of the millstones are copper, to lessen the danger from friction. This grinding takes from one to six hours, according to the quality of the powder desired, but the standard powder requires about three hours. After being thoroughly pulverized and caked by the moisture, the powder leaves the mill in small lumps, called "mill cakes."

This is the product used for the fire displays and firecrackers, but for explosive purposes the powder must be forced through minute holes in a parchment seive, making it into fine grains, as according to the size of the grains, so is the explosive force of the powder. After that the dust is blown off and the grains are subjected to the gentle friction of a revolving cylinder. Out of these cylinders come the finished product.—"The Boy's Lantern."

Making Waste Work.

In France, as in Germany, "nothing is allowed to go to waste." That has been the French and German system all along, but since the beginning of the war it has been brought to the limit of efficiency.

The French and German method of putting "waste" to work has been a lesson to England; as it should be to America, where so much that might be made of value is thrown away. Of the conservation of waste material in France, the magazine, "Tit-Bits," says:

What becomes of old sardine boxes, tomato tins, meat tins, fruit tins and tins of all kinds? In France they gather them up and use them—to cut into tin soldiers. In France, too, the old boots and shoes are collected, and every part is used over again. The work is mostly done by convicts in prisons. They take the boots and shoes to pieces and soak them; then the uppers are cut over into children's shoes; or, if they are too far gone for that, a peculiar kind of pressed leather is made by some chemical action. The nails are saved and sold, and the scraps go to the farmers to fertilize the soil.

Who would have thought it possible to make anything out of old saws? Yet it is said that many of the finest surgical instruments and some of those used by engineers are manufacturned from the steel that first did duty in saws. The steel of saws is of the very best quality and finest temper; and since it is good in the first place it is always good.

What we are accustomed to regard as worthless is made to contribute to every branch of industry. The people are trained to it; it is characteristic of their domestic economy, as of the work of the "gleaners" of the battlefields, who gather shattered shells, bits of rubber tires—anything and everything which may be reconstructed for future use.

There has been some progress in this line of "making every edge cut" in this country, but there is room for great improvement where, through a system like that of France, or Germany, money may literally be "picked up on the streets" and highways by recognition of the value of what has heretofore been regarded as little or no account.

The national thrift campaign has set the people to thinking and to "taking stock" of their resources, and it will continue to be helpful in every line of national economy.—"Atlanta Constitution."

Set a Mark in Life.

Work for something, not for nothing. It is not wise to live just for today. Without some aim, one's time and work go for naught. The years go by and he has nothing to show for them. If not advancing, we are falling back. If not keeping alive, growing to something better and higher, we are becoming weaker and of less worth. Even though we never reach the goal, we have made some advance in striving for it. A good aim, a real purpose in life, makes worth of character. All have not the same tastes. There is a wide field from which to choose what one will work for. And this is well. The one universal aim is the same, to live truer, better lives from day to day. A life without a purpose is like a ship without a rudder. Want of motive makes life dreary and monotonous. Nothing satisfies. "Better little talent and much purpose than much talent and little purpose." Aim for something worth while and keep your mark steadily in view. Life will mean much more to you. You will be more useful to the world, you will find more satisfaction in living.

FLICKER
(Colaptes auratus)

Length, thirteen inches. The yellow under surface of the wing, yellow tail shafts, and white rump are characteristic.

Range: Breeds in the eastern United States west to the plains and in the forested parts of Canada and Alaska; winters in most of the eastern United States.

Habits and economic status: The flicker inhabits the open country rather than the forest and delights in park like regions where trees are numerous and scattered. It nests in any large cavity in a tree and readily appropriates an artificial box. It is possible, therefore, to insure the presence of this useful bird about the farm and to increase its numbers. It is the most terrestrial of our woodpeckers and procures much of its food from the ground. The largest item of animal food is ants, of which the flicker eats more than any other common bird. Ants were found in 524 of the 684 stomachs examined and 98 stomachs contained no other food. One stomach contained over 5,000 and two others held over 3,000 each. While bugs are not largely eaten by the flicker, one stomach contained 17 chinch bugs. Wild fruits are next to ants in importance in the flicker's dietary. Of these sour gum and wild black cherry stand at the head. The food habits of this bird are such as to recommend it to complete protection.

U. S. a Spendthrift Nation.

"Five hundred and fifty-four out of every thousand inhabitants of Switzerland, or fifty-five per cent," says Merle Crowell, "have savings-bank accounts, according to the latest available figures; here in our own country, ninety-nine out of every thousand, or less than ten per cent., have made similar provision for the future. The average savings per capita in Switzerland are $47.03; in America, $4.84."

——They are all good enough, but the WATCHMAN is always the best.

BOBOLINK
Dolichonyx oryzivorus

Length, about seven inches.

Range: Breeds from Ohio northeast to Nova Scotia, north to Manitoba, and northwest to British Columbia; winters in South America.

Habits and economic status: When American writers awoke to the beauty and attractiveness of our native birds, among the first to be enshrined in song and story was the bobolink. Few species show such striking contrasts in the color of the sexes, and few have songs more unique and whimsical. In its northern home the bird is loved for its beauty and its rich melody; in the South it earns deserved hatred by its destructiveness. Bobolinks reach the southeastern coast of the United States the last half of April just as rice is sprouting and at once begin to pull up and devour the sprouting kernels. Soon they move on to their northern breeding grounds, where they feed upon insects, weed seeds, and a little grain. When the young are well on the wing, they gather in flocks with the parent birds and gradually move southward, being then generally known as reed birds. They reach the rice fields of the Carolinas about August 20, when the rice is in the milk. Then until the birds depart for South America planters and birds fight for the crop, and in spite of constant watchfulness and innumerable devices for scaring the birds a loss of 10 per cent of the rice is the usual result.

Plan $5,000,000 a Year for Rural Post Roads.

Expenditure of about $5,000,000 annually in improving rural post roads is proposed in a bill favorably reported by the House Postoffice committee. It would permit the Postmaster General to use unexpended balances and surplus postal revenues on improvement of the condition of country roads, instead of turning them back into the Treasury.

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