

PEOPLE WHO FACE DEATH IN THE POWDER MILLS

BY A. E. BONSER.



WITHIN easy access of a university town, and at some distance from the nearest railway station, lies a beautiful village.

Branching off from the main highway is a most enticing lane. It leads by the side of a clear stream and beneath the spreading branches of overhanging trees. Like a mirror lies the placid water, its reflection only broken, it may be, by the leap of a fish or the plunge of a water-rat from the sedgy bank. A lark sings as it rises from the green meadow to the right, and, far away, the pearly-grey hills melt into a cloudless sky.

It is hot, but not oppressive—such a day as gives a feeling of great gladness to all living things. In the quiet enjoyment of the scene the discords of earth are forgotten, and “peace on earth” inspires “goodwill toward men.”

By-and-by a massive gateway is gained, and, peeping within, one sees a long avenue of stately poplars, with well-kept lawns to right and left. A butterfly flits across the path, a thrush sings on yonder bough, and the drowsy hum of a bee is heard busy among the lilacs whose perfume fills the air.

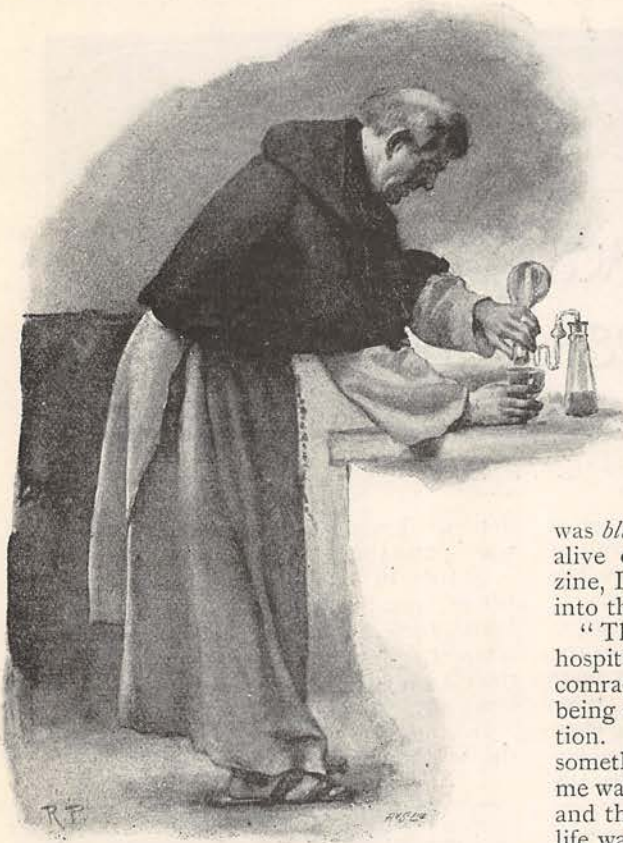
This delightful retreat is so jealously guarded that few indeed are the strangers who enter; nor can any do so without strict preparatory search and interrogation, and the close accompaniment of an escort thereafter. The beautiful trees that you so much admire are planted as a necessary *precaution*. Within the low, isolated buildings, whose roofs rise picturesquely here and there amongst the foliage, Death lurks in his most awful form—death, sudden and swift, or death by life-long lingering moments of unspeakable agony,

none the less sure, for here “sleep the dogs of war”; and this is a gunpowder factory!

Nature in her most savage aspects would better assort with the place—verdureless lawns, trees gaunt and bare, lightning and tempest, winter and darkness, and a storm such as occurred on a night not so many years ago.

It was pitch dark, the rain fell in torrents; the wind, shrieking like some lost spirit in





THE INVENTOR OF GUNPOWDER.

anguish, tore the branches from the trees and the slates from the house-roofs. Now and again a blinding flash of lightning showed up the landscape, and gave a momentary glimpse of the lurid laboratory of the sky. The thunder crashed and rattled, and was reverberated from cloud to cloud in booming echoes. A wild night, truly!

It was about half-past two in the morning, and ten men and an overseer were busily at work in the cam-room, or building where powder was crushed. The room was divided by a water-wheel—some men working on one side, some on the other.

Suddenly, above the roar of the tempest, a sharp report was heard. The man who was at work nearest to the door saw a bright tongue of flame leaping above the water-wheel, and made a dash for his life.

"Marvellous to tell," said he, "I got outside unhurt, though bricks and stones were flying in all directions. Close by the cam-room ran the canal, and here a barge with a cargo of gunpowder was moored. She was partly unloaded, but the flames ignited the remaining

barrels, and another fearful explosion was the result. *A red-hot blast as from an oven struck me, and as I fell to the ground all the air was a flaming furnace, and I was enveloped in fire.*

"I don't know how long I remained unconscious, but as my senses slowly returned, one horrid thought took possession of me and for the time drove me crazy. *Close by was the great powder magazine, and if that should ignite—*

"I managed to crawl to my feet, and, dazed and half blinded, stumbled I knew not whither—anywhere away from the fearful peril.

"I heard a voice cry, 'You are on fire!' Actually, such was my terror that only then was I aware that I was *blazing*; and the horror of being burnt alive outbalancing the horror of the magazine, I rushed to the canal bank and plunged into the water.

"The next that I remember I was in the hospital ward with the rest of my unfortunate comrades. Their faces were a sickening sight, being swollen and distorted beyond recognition. Their groans and piteous cries were something awful to hear, and even now haunt me waking and sleeping. Day by day one died and then another in merciless torment. *My* life was despaired of; but thanks, I suppose, to my youth and strong constitution, in six months I managed to pull through, and here I am—the *sole survivor* of eleven.

"My former work is, of course, out of the question. I am only fit for light jobs. My hands are blistered and drawn as you see them; my back is injured; and my nerves have suffered such a shock that whenever I hear the slightest explosion the old horror returns, and I quake and tremble with apprehension of I know not what."

It seems a far cry from these scenes to the quiet cell of Schwartz, the monk of Cologne, who, in 1340, invented this fearful engine of destruction. One wonders how far he realised what widespread misery would follow. There are various kinds of gunpowder for various purposes. English gunpowder, as used for war, is composed of seventy-five parts of nitrate of potash, ten of sulphur, and fifteen of carbon; but, enormous as is its explosive power, it is by no means the most *deadly* explosive. Gun-cotton has about six times and pure nitro-glycerine ten times its explosive effect.

Gun-cotton was invented by Professor Schönbein, of Basle, in 1846, and consists of purified cotton steeped in a mixture of

equal parts of nitric and sulphuric acid, which is afterwards dried, and has the appearance of cotton-wool. Its deadly character may be appreciated by the fact that on August 11th, 1871, nearly the whole town of Stowmarket was destroyed as if by a bombardment, by an explosion of gun-cotton. Twenty-four persons were instantly killed, whilst sixty were fearfully injured. This catastrophe was caused by the culpable addition of sulphuric acid to the gun-cotton.

Dynamite is still more deadly. It is made of twenty-five parts of silicum earth saturated with seventy-five parts of nitro-glycerine. Its effects may be instanced through the diabolical wickedness of a man named Thompson. This fiend in human shape forwarded a cask of dynamite to Bremerhaven by the North German Lloyd's steamer *Mosel*. He had connected an infernal machine with the cask, and the clockwork was timed to go off in eight days and explode the dynamite, thus blowing up the ship. By some unforeseen circumstance the machine went off whilst the vessel lay in dock, killing eighty and wounding two hundred people—these latter mainly emigrants and their friends. This occurred on the 11th December, 1875. Thompson's only object was to get the insurance on his goods.

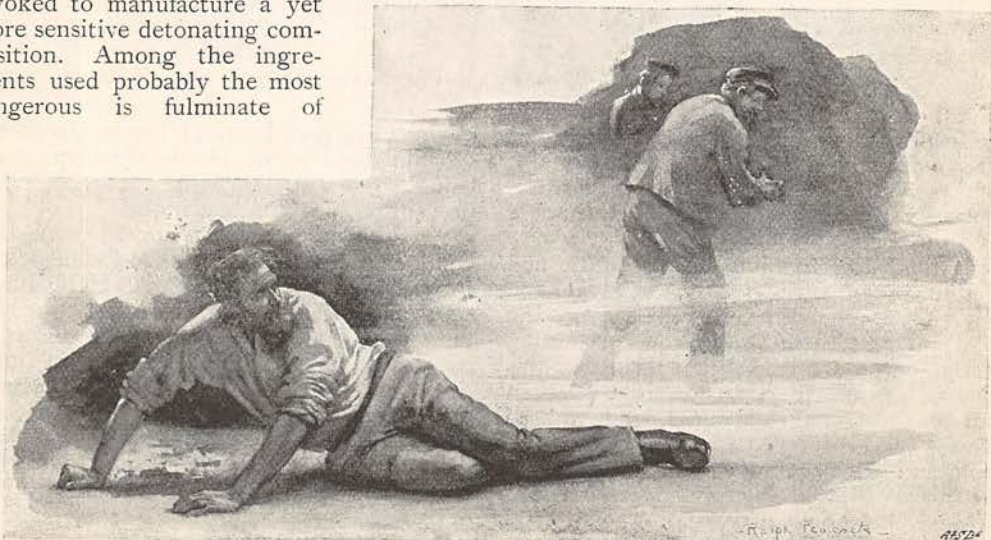
The danger of these fearful explosives lies not so much in themselves, for many of them may be handled with impunity, and some of them even may be safely burned in the open air—it lies in their *compression* and *sudden expansion*. The more sudden the expansion, the more deadly is the result, and the aid of modern science is continually invoked to manufacture a yet more sensitive detonating composition. Among the ingredients used probably the most dangerous is fulminate of

mercury, which, being too risky to handle, is kept in bags under water.

A good idea of the way in which detonating mixtures are made, and of the perilous nature of the occupation, may be gained by visiting one of these factories, such as that of Messrs. Joyce and Co., of Waltham Abbey. The firm are manufacturers of percussion caps, cartridges, and gun wadding, and their works give employment to upwards of two hundred hands. The buildings are all detached, and there are ten "danger" buildings still further apart, and standing amid trees, which serve to mitigate the effects of a possible explosion.

Within these "danger" buildings only one workman is allowed at a time, and each room is licensed to contain five pounds only of explosive compound. Before a man starts work he changes his clothes under supervision, dons a suit of non-inflammable garments, and puts on felt slippers. Then he is carefully searched and felt all over, to see that he has no matches or anything else dangerous about him. The room or building he works in is carpeted with felt, over which a white cloth is laid, so that any black grains falling on it may be at once detected. Overhead are skylights, but no windows.

The table he works at—say, four feet by five—is of three-eighths-inch deal, covered with half an inch of felt, and upon that several thicknesses of paper. The man's body is protected by a thick shield of gun-metal, which reaches from the middle of the face to within eighteen inches of the ground. In this shield are armholes, through which the arms are put, and the workman can just



"I MANAGED TO CRAWL TO MY FEET."

see what he is doing over the top of the shield.

On Friday, the 22nd December, 1893, a man named Burton was at work in one of these "danger" buildings. He had been examined, as usual, before entering, and had been re-examined, as usual, by the manager of the works about a couple of hours later. He was an "old" hand, having been in the employment of the firm eight years: indeed, all his life—and he was forty-seven—he had been engaged in the manufacture of explosives.

His present occupation was the mixing of

One lot had probably been mixed and placed in its bottle on a shelf behind him, and he was now engaged in mixing a second lot. What followed may be best described in the words of Mr. R. C. Courtman, the manager of the factory:—

"It was about ten minutes to twelve, as near as I can judge, and I was standing in the middle of the yard, when I heard a sharp explosion. At first I could not localise it, but then I saw that it must be at No. 45, and ran as fast as I could towards the building. I noticed that half the roof had been blown off, and that the walls were leaning; and as I got



"THERE WAS A SECOND AND WORSE EXPLOSION."

a detonating composition, the ingredients for which he himself fetched from the laboratory. They consisted of fulminate of mercury, chlorate of potash, sulphide of antimony, and ground glass.

His duty was to take the glass dust and chlorate and mix them by themselves, and then to put the other ingredients on the table and pass them through a sieve, using for the purpose a camel-hair brush. This done he carried the mixture to a sieve in front of the gun-metal shield, and worked with his arms through the holes as described. The nature of the composition he was dealing with was such, that merely rubbed between the fingers it would explode. When it was mixed it was poured carefully into a gutta-percha bottle, which would hold two pounds.

nearer I saw poor Burton lying on the ground groaning and feebly crying for help: something seemed to be lying across his feet, preventing him from getting up.

"At this moment I saw another man, Bird, coming in from the other side, whilst Lawrence, the engine-driver, and Hubbard ran up from the right. I was in the act of stepping in when there was a second and worse explosion, which met the man Bird full in the face, and drove him backwards, shattering his right arm and inflicting other dreadful bodily injuries. The two other men were driven completely through the hedge, Hubbard being blinded, whilst Lawrence lost four of his fingers and an arm.

"As for myself, had I been a second earlier my head would have been blown off; but

as it happened I was standing on one foot, the other being raised in the act of stepping, and was fortunately only knocked down and struck by some of the flying *débris*, receiving slight injuries in the leg and back.

"Picking myself up I jumped across the woodwork, and, fearing another explosion, tried to drag poor Burton out.

"Well, we got him out at last, and carried him to the laboratory. One of his arms had been blown off, and he was so fearfully mutilated that I snatched up a cloth that I saw lying near, and covered him up as well as I could. He was still sensible.

"Then the doctor came and examined him.

"'Is there any chance of saving his life?' I asked.

"'No,' he said, 'not the slightest—it is impossible that he can live: he will last out his strength, but he is a doomed man. Just feel his back; you will then judge for yourself.'

"Under the circumstances the only thing that could be done was to inject morphia. But there! it didn't seem to do a bit of good. For five long hours the poor fellow lingered in agony, and then came the end. It was not the first explosion that mortally wounded him, though it shattered one arm and part of the other: it was the second explosion that just did for him, and that was

caused, I suspect, by his struggles on the floor in trying to extricate himself.

"The other poor fellow, Bird, died too; in fact, he was worse hurt than Burton, although I did not know it at the time.

"Some of the effects of the explosion were very curious. For instance—Burton was blown clean out of his shoes, for they were left standing together side by side. The table he was working at was riddled all over with holes, just like a colander. Lawrence, who had on ordinary clothes, had all the nap taken off the surface of the cloth, and his coat was crammed all over with tiny splinters of wood.

"I can't tell you the cause of this explosion—Burton was a most experienced hand; but I suspect that he had too much in his sieve. Men get so accustomed to danger that they *will* run risks; and when one hand gets killed, another is always ready to take his place. Why, I have no doubt that they would go about in their ordinary boots, and even smoke, were they not so carefully supervised."

We who follow peaceful callings are inclined sometimes to quarrel with the humdrum nature of our daily tasks. Let us rather be very thankful that our lines have fallen unto us in pleasant places, when we remember the incessant peril to which those are exposed who face death in the manufacture of explosives.



TWO PRIZE RECIPES.

I.—THE MOTHER'S FRIEND.



TIME of preparation—
twenty minutes.

Time of cooking—
two hours.

Cost—about 1s. 3d.

Sufficient for six
persons.

Introduction.—The
dish about to be de-
scribed is not only

economical as regards its cost, but, in addition, requires but a small portion of time for its preparation, and this latter is often of the greatest importance to a cook when she happens to be the mother of a family, or the head of a household in which money is not plentiful, and where, in consequence, much work falls to the share of its members. But to the matter in hand:—

Ingredients.—Two pounds of leg of beef, one large carrot, one moderately large onion, one

tablespoonful of tapioca, one tablespoonful of bread-rasplings—the family baker would always supply the latter with the daily bread if so requested, and they should be kept in a dry tin ready for use—and half a tablespoonful of vinegar, or a small glass of claret. Cold water. For seasoning, use the following:—Three cloves, six allspice, a quarter of a nutmeg grated, and a teaspoonful of salt; also a liberal sprinkling of pepper.

Method of Cooking.—Into a large brown earthenware jar, with a close-fitting lid, place the beef, after having carefully washed and cut it up into convenient sized pieces. Next pare the onion, and prick into it the three cloves. Scrape the carrot, and cut into dice or long strips. Let the vegetables be put into the jar, and now sprinkle over all the seasonings. The bread-rasplings are next put in—they are intended to give colour to the dish. The tapioca is added just before the cold water, of which sufficient should be used