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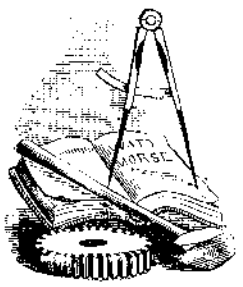
THE AGE OF INVENTION.



VERY sensible mechanic once made the remark to us, respecting a certain machine, "It is very ingenious, but there is not much invention about it." The idea couched in these words, we thought, was contradictory, and so we asked for an explanation, when he replied: "I mean by *ingenuity* a very complicated combination of devices to produce a result that is not very useful; by *invention* I mean the most simple arrangement of the fewest number of devices to produce a truly useful result." There is, perhaps, more truth and shrewd observation in these remarks than may appear at first sight. This is truly the age of great inventions; and yet, if we look to other eras, we find that as much mechanical ingenuity has been exhibited as at the present day. We read in ancient memoirs that Jean de Montroyal presented to the great emperor, Charles V., an iron fly which made a circuit around the inventor's head, then alighted on his arm and closed its wings, as if it were fatigued. This toy certainly exhibited a wonderful amount of mechanical ingenuity. In 1738, Vaucanson constructed one figure which played upon the flute, another that performed on the tambourine, and an artificial duck which moved its head, eat and drank, flapped its wings, swam on the water, dabbled with its bill and quacked like any living duck. These feats of mechanical ingenuity were exhibited publicly in Paris, and they certainly evinced as *great* powers of mind for combining and arranging mechanical devices as were ever witnessed in any age; but as they were designed for purposes of amusement merely, they do not deserve—according to the idea we wish to establish—the dignity of being called "great inventions." We wish to inculcate a more sacred regard for the efforts of those men who invent improvements that are designed for the benefit, rather than the amusement and wonder, of men; hence we think that *invention* should always be associated with the idea of *utility* and *good* to mankind.

This is truly the age of invention. The great feature which distinguishes it from every other is the uniform and constant effort of inventors to construct machines for saving severe human labor—a noble aim for a noble end. Some sentimentalists have called this a "mechanical age," and have done so in a taunting spirit, as if mechanical progress were opposed to intellectual cultivation. The fact is that this is the most intellectual age the world has ever seen; and this is due in a superlative degree to the application of mechanical genius to useful purposes. The invention of the printing press has given us cheap periodicals and books, and by these knowledge has increased, and the general intellect of the whole civilized world has thereby been improved and refined. By labor-saving machinery, thousands of men and women, who were aforetime "yoked with the brutes and fettered to the soil," have been lifted from their hard lot and advanced to more intellectual occupations. The cases of this character are so numerous that we have not space to name them, but for their sake we ought to name this "the age of invention."

With modern inventions we are enabled to travel faster and cheaper, to cultivate the soil with less labor, to traverse the ocean more safely and quickly, and to communicate with distant friends in an instant; in short, there is not an art, a manufacture, nor a single pursuit for business, or needful pleasure, which has not been elevated and benefited by our inventors. It must be a source of great pleasure to every sensible person to witness the great augmentation in the number of patents issued weekly, with their claims, as published in our columns; it is the best evidence we have of the progress and general elevation of all classes, it is the most cheering "sign of the times." Every improvement and discovery, of a useful nature, is a benefaction to the world; every inventor is a benefactor; and this is "the age of invention."

THE ART OF POISONING.

About one hundred and fifty years ago, there was living in Naples, in a quiet way, a certain Madam Tofana, who was destined to occupy a conspicuous place in history. She lived to a great age, namely, seventy years, and then was not ready to "pay the debt of nature," but she was cut down in the midst of her active career by violence; she was *hanged*. The claim of this woman to a place in history is based upon her skill in poisoning—an art which was much esteemed and practiced in her day, and numbered among its zealous votaries and patrons the highest dignitaries of the church and state. To believe the stories current in Tofana's time, there were wonderful poisons, and altogether above the knowledge of our modern chemists, for there were poisons conveyed in rings, gloves and handkerchiefs, which killed by the odor they exhaled, by the touch and almost at sight. But the most notorious of the artists this Tofana (who could reckon up six hundred tombs, as the monuments of her skillful practice before her real "virtues" became known), made use of what in our days is considered one of the crudest and most vulgar of poisons—arsenic.

The fact is that the ancients and the notorious poisoners of the 15th and 16th centuries knew as little about the chemistry of poisons as of other substances, and that the stories about them, are to be ranked with the stories of ghosts, witches and sorcery. There were poisoners, and they had plenty of victims; and it was only by reason of the gross ignorance and superstition of the people, that the clumsiness of their work was not detected. All the little chemical skill of those days was monopolized by physicians and priests; and the vulgar herd saw, with big eyes, whatever did not coincide with the most ordinary experience.

But the poisoners of our time have a very extensive *materia toxica* from which to select their subtle "charms." There are poisons which take life with the swiftness and certainty of a bullet, or death may come after a long sleep, or with pleasant dreams, or with pain worse than torture. The poisoner may procure the material for his business, skillfully prepared, of any apothecary. Poison is cheap; a few cents will buy enough arsenic to "extinguish" a family, and a homœpathic dose of some things is enough for a stout man—a sixth of a grain of strychnine, for example.

Luckily for those who desire to die a natural death, the power of the poisoner is circumvented. Every bane has its antidote, and every poison gives unmistakable evidence of its work and its presence. No crime is detected and punished with such certainty as poisoning. The murderer who uses the pistol, bludgeon or knife, often escapes; but how rarely the poisoner! We have only to recall the recent cases of Palmer, Smethurst, Stephens, Hartung, Harden and others, to understand the reason. Each poison is a peculiar kind of matter, and has characteristic properties, and the skillful chemist as readily distinguishes one from another as we do butter from cheese, pepper from salt, or Jones from Brown. The chemist knows the properties of poisons by his senses; he knows how they smell, taste or appear to the eye. If the particle is too small to be seen by the eye, he magnifies it, when it may be as readily examined as a stone or a flower. He tries the effect of heat, acids, alkalies and other re-agents; and when he reaches his conclusion, it is of the most positive character—the identification need not be more perfect.

Mineral poisons remain in the body after death, forming a perpetual testimony of crime. If the bodies of Tofana's victims could be exhumed, the chemist would make his investigation for poison with as much confidence as in a case of the present week.

Thus it appears that, although Science has furnished facilities for the commission of crime, she still serves the cause of Justice and Virtue by pointing out the means for its certain detection.

WATER GAS.

Mr. Paine, and others who have made so many promises of gas and light from water, must "look to their laurels," for what they only *talked about*, appears to have been accomplished by Frenchmen. The city of Narbonne, in France, has been lighted by genuine water gas for nearly three years. The so-called water gas of White, Sanders and others, is only a mixture of hydrogen with coal or resin gas, but the Narbonne gas is pure hydrogen.

The first process at Narbonne was to decompose water by passing steam through a highly heated retort containing coal. The explanation of the decomposition is that the carbon takes away the oxygen from the water, thus setting the hydrogen free; the carbon and oxygen combine and become carbonic acid and carbonic oxyd. The chief objection to this process is, that the heat required to effect the decomposition is so great that the retort is soon destroyed; hydrogen produced in retorts, by the best management, would probably cost more than oil, coal or resin gas. But lately at Narbonne they have entirely dispensed with retorts, and decompose the steam by passing it directly into the furnace. The furnace of the cupola form, is charged with coke, the fire urged by a blast, and when the whole is intensely heated the blast is shut off, the flue closed, and steam at 30lbs. is let in. The steam is decomposed and the gases pass away to the purifier and gasometer. This system seems plausible, but requires the practical test to fix its value.

The gas generators erected at the above place have been in successful operation about six months, have cost nothing for repairs; and M. Fages, the inventor, thinks they will last an indefinite period. Each generator produces 30,000 feet of gas in 24 hours, at a cost for materials (coke, coal and lime) of about 80 cents per 1,000. The period of admission of steam and generation of gas is about 20 minutes; of the re-heating, four or five minutes.

The gas thus produced on burning gives little light but great heat. Light is secured by adjusting over the burners coils of fine platinum wire.

SCIENTIFIC VS. PRACTICAL INSTRUCTION.

A recent number of *Silliman's Journal* contains the following testimony of Liebig, as to his famous school at Giessen; it is worth considering in these days of practical science:—"The technical part of an industrial pursuit can be learned; principles, alone, can be taught. It is only after having gone through a complete course of theoretical instruction in the lecture-hall that the student can, with advantage, enter upon the practical part of chemistry He must bring with him into the laboratory a thorough knowledge of the principles of the science, or he cannot possibly understand the practical operations. If he is ignorant of these principles, he has no business in the laboratory. In all industrial pursuits connected with the natural sciences—in fact, in all pursuits not simply dependent on manual dexterity—the development of the intellectual faculties by what may be termed school learning constitutes the basis and chief condition of every improvement. A young man, with a mind well-stored with solid scientific acquirements will, without difficulty or effort, master the technical part of an industrial pursuit; whereas, in general, an individual who is thoroughly master of the technical part may be altogether incapable of seizing upon any new fact that has not previously presented itself to him, or of comprehending a scientific principle and its application."

A GUN invented by Gilbert Smith, and manufactured by Poultney & Trimble, of Baltimore, has completely eclipsed the Sharp arms, and it is to be adopted in the army. Gov. Moore, of Alabama, has ordered enough of these weapons to arm two companies of cavalry; it being well adapted for use on horseback.

THE attention of the traveling community, as well as that of railroad companies and locomotive and car builders, is directed to the description of Bourshett's patent car wheel, illustrated in another column.