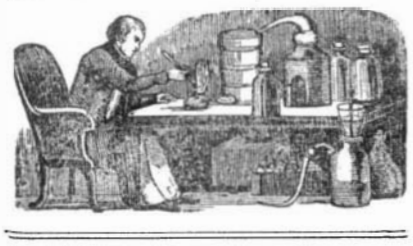


For the Scientific American.

Curiosities of Mechanism.

Homer informs us that Vulcan fabricated tripods for the banquetting hall of the gods which advanced of their own accord to the table and again returned to their places moving on living wheels instinct with spirit. Appollonius saw similar pieces of mechanism among the Indian Sages. Dedalus of Greece, next made statues that could move. Archytas of Tarentum, who lived about 400 years before Christ, constructed a wooden pigeon that could fly. Archimides, it is said, constructed similar automata, but the particular account of them is lost. The first great piece of ingenious mechanism that we have any particular account of, was made in the East. It was a curious clock presented to Charlemage by the celebrated Mohamedan Sultan Haroun Alraschid. In the dial plate there were twelve small doors corresponding to the twelve hours, and at each hour a door opened and little balls of metal came out and struck the hours upon a bell. Each door when it opened remained so until twelve o'clock, when twelve little knights mounted on horseback came out at the same instant and paraded round the dial, returning each to his own door and shutting it behind him. In the thirteenth century Albert, Bishop of Ratisbon, Germany, (a place singularly famous for novel inventions,) spent thirty years in constructing a human figure, which advanced to the door when any one knocked, opened it and saluted the visiter. About the same time Friar Bacon was engaged in constructing his brazen head, so famous in story, but in the wonders of which we are very thick in the skull to admit the light of ancient faith to illuminate our modern unbelief. In the 14th century Regiomontanus alias John Muller, constructed a wooden eagle, which is reported to have flown to meet the Emperor Maximlian on the 7th of June, 1470, at Nuremburg, and after saluting him it flew back to the gate of the city and sat down upon it. This is a historical fact. This same ingenious man is reported to have made an iron Fly which could fly from the hand of its master round the room and again return. When Charles the 5th left his throne and retired to a secluded life, he was amused with automatons of various kinds. Figures of armed men and horses, some beating drums and others playing flutes and others going through military evolutions, were generally introduced to the retired monarch after dinner. Wooden birds also used to fly around the room and deposit themselves in their nests again. These were all made by the illustrious self exiled monarch, and he is also reported to have made some corn mills so small that they could be concealed in a glove, yet so powerful that they could grind in one day as much as would feed eight men. If all these things are true, the best of our millwrights will have to say mum on the subject of modern improvements. A celebrated mechanic in France, named Camus, constructed for Louis 14th, a small coach drawn by two horses, having a footman and page behind and a driver in front and a lady inside. The coachman smacked his whip, the horses paced off when placed upon the table and when the carriage stopped before the king, the page stepped down and opened the door, when the lady alighted and with a curtsey presented a petition to Louis, and waiting for a short time she curtsied again, re-entered the carriage, the page closed the door, assumed his seat and the carriage drove on, and the footman, who had also alighted, was made to run after the carriage and jump on his seat.

Degennes, the celebrated French officer who defended St. Christopher against the British, constructed a peacock that could walk about, pick grain and digest it, and it was probably this peacock that suggested to Vaucanson the idea of his wonderful duck, already noticed in No. 33 of this vol. Scientific American. Vaucanson also invented a flute player and a pipe and tambor player, which were exhibited in many places in Europe and produced a great sensation. The flute player was 5 feet 6 inches high and placed upon a piece of rock 4½ feet high by 3½ feet wide.—The pedestal contained six pair of bellows and the machinery by which they were worked. The air passed into the body of the figure by three tubes and its passage out through the mouth was regulated by valves worked by levers so perfectly adjusted that the performances of the figure were generally allowed to surpass all living performers on the flute.—The pipe and tabor player was always considered by Vaucanson to be a more ingenious piece of mechanism than his duck, and these automatons acquired the reputation of being the best flageolet and tabor players in Europe. The mechanism of these was so intricate and difficult that he was frequently on the point of abandoning the invention in despair, but his patience and inventive genius at last overcame every difficulty and made him the greatest automaton mechanic that ever existed. In constructing the flageolet player Vaucanson found that this instrument must be the most difficult of all others to play in consequence of the different and changing efforts which the muscles of the chest have to make during the performance. The pressure for the highest notes required fifty six pounds while the lowest required only the pressure of a single ounce.

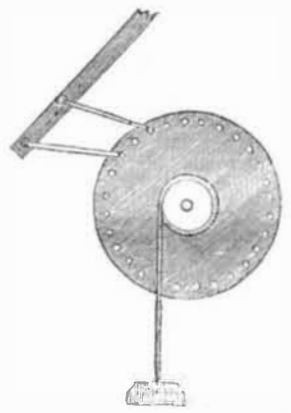
The famous chess player of Kempelen for a while overshadowed the fame of Vaucanson, but it is now well known that trickery more than mechanical invention were the characteristics of the automaton chess player. The real chess player was a living one.

Krastien and Wills endeavored to make speaking automatons, but two German brothers of the name of Droz eclipsed them, in making a singing bird that poured forth a strain of the most rapturous music. The father of the brothers Droz, was also an ingenious mechanic and made a sheep that bleated perfectly, and a dog that watched a basket and barked when any one offered to take it away. About thirty years ago one Maillardett, an ingenious Swiss, constructed a humming bird which was exhibited in all the principal cities of Europe. He also made a steel spider resembling a living one which would run, and also a musical lady that could perform eighteen tunes on the piano forte in the most natural way and with all the appearance of feeling the effect of her own music. This singular genius also made the celebrated automaton magician that astonished the world by its fortune telling. It was dressed in the costume of a Seer and held a wand in one hand and a book in the other.—Twenty questions ready prepared were inscribed on oval medallions and any person selecting one it was placed in a drawer ready to receive it. The drawer was then shut and the magician arose from his seat, bowed his head, described a circle with his wand and remained in deep thought; he then struck the wall with his wand which immediately flew open, and displayed written upon the inside an appropriate answer. We have already spoken of Professor Faber's automaton, and also that of Dr. Lube. We may at some other time describe that of Dr. Roth. At present we close this article with the remark, that the passion for automaton machinery soon wears off, more especially when it is known that the fine machinery in our cotton factories almost rival those of the finest automaton. This is the utilitarian age of the world and what excited the wonder of past ages, though ingenious, if it is not useful, will be but little esteemed now The same combination of mechanical powers that made the spider crawl, or the finger of the automaton move are now adapted to nobler and more useful purposes. The present is the grand and majestic age of mechanical invention. The tiny wheels and pinions of the spider now move the spinning jenny and the loom in more large proportions. The magician of Maillardet has given way to the more mighty magician of Watt, and the miniature horse and carriage of Louis the 14th, is now to be observed in snorting locomotives, as hugely ingenious and powerful, as the other was minute and skilfully small.

Instead of producing inventions to amuse, the present age invents only to benefit man and increase the product of the earth. No piece of mechanism, however trivial, if ingenious, should be despised. It may be the germ of some mighty machine, as the wheel was that of the spinning jenny.

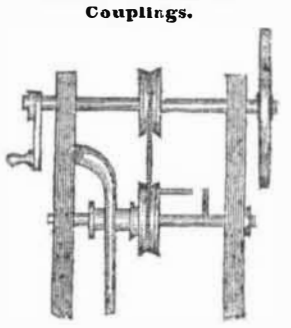
MECHANICAL MOVEMENTS.

Oblique Lever and Wheel.



A vibrating lever having catches which gather tooth after tooth of a ratchet wheel, can be applied either to raise a weight or let it drop down gradually. The escapement of of clocks lets the weights drop down gradually and thus by the simple manner of regulating the number of vibrations that will take place as a weight is falling a certain distance, do we measure our hours and days.—The above cut shows a method of raising the weight by the vibratory motion of the oblique lever, by means of the catches (which are not exactly right represented in the engraving) catch the pins on the wheel. An enthusiastic mechanic once combined this with the escapement and thought he had made a perpetual motion, but the loss by friction was not taken into consideration, and his clock soon ceased to operate.

Couplings.



This cut represents a method of coupling by which the revolution of the upper shaft may be transferred to the shaft below by bringing the pin on the loose wheel in contact with the one on the shaft. This is done by means of the small lever or handle. This method of coupling may be very useful in some cases where the clutch would be inconvenient. It shows at least the principle of coupling and uncoupling whereby a shaft to drive any machine may be under the perfect command of the operative by throwing it out and in gear as he chooses, but a secondary pulley of a smaller diameter than that of the main driver on the same shaft, is a more economical method of changing or stopping the motion, simply by throwing the band off the larger drum.

For the Scientific American.

Olive Green.

Olive green is a beautiful and agreeable color. It is refreshing to the eye and chaste to the fancy. It looks always best upon fine cloth, in fact, it is singular in this property, and should never be dyed upon any kind of wool or woolen cloth but that of the finest quality. It is very easily dyed. Any person following the subjoined directions cannot go wrong :—

Put into a clean copper or tin kettle in which the cloth or woolen yarn is to be dyed, as much water as will cover the whole cloth when put into the boiler and leave it plenty of room for stirring. (There is far less danger in having a large boiler than a too small one) Bring the water to boil and put into it for ten pounds of cloth, five pounds of fustic and one of logwood, in a bag Boil these for fifteen minutes and then add six ounces of the sulphate of copper and in a few minutes enter the cloth, with the liquor still boiling as strong as possible. The cloth must not have its folds pressed and squeezed together, but it must be free and loose in the boiler and there is no need of any shifting of the cloth, except with a proper long smooth stick to ease up the cloth gently and frequently from the bottom of the boiler. One hour's boiling will suffice when the cloth may be taken out and washed. It will then be found to be a beautiful olive green color, but rather light. If it is wanted to be very dark it will take seven pounds of fustic, three pounds of logwood and half a pound of camwood boiled in the bag, and the cloth boiled one hour in this, then taken out and aired, and six ounces of the sulphate of copper and four ounces of the sulphate of iron (copperas) added, and the goods then entered again and boiled one hour longer, when they are to be taken out, washed and finished. The last process is the best for a fast and dark color, and for home made cloth to be made into winter coats, it is certainly a much better looking color than the watery and snuff colored yellow greens that we often see. Walnut rinds will answer instead of the fustic and so will that of the butternut—but fustic is the best and is not dear. This color will spot with vinegar and other acids, but a little saleratus dissolved in water and applied to the spots will restore them unless the color is effectually destroyed.

The above receipts may be depended upon as thoroughly practical, but never let it be forgot that the liquor must be kept at the boil—a strong boil when the cloth is entered and a more gentle boil afterwards. Yarn takes one third more stuffs to dye a color than cloth, and coarse cloth one third more than fine.—This must also be kept in mind.

Coloring Wood.

French cabinet makers can now make wood of any color they please, by letting the roots of the trees absorb the colored fluids the year before it is cut down. A solution of iron passed up one root, and of prussiate of potash up the other will give the wood a permanent blue color.

Cleaning Trees.

Trees and vines which are kept the cleanest, bear the best; like the human body, the pores of their skin become clogged with dirt, and retain gases which should escape. Trees the bark of which has been scraped and scrubbed, become more thriving, and more vigorous.

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