

VALUABLE RECEIPTS.

PYROPHORUS—"GREEK FIRE."—Much has appeared lately in several of our papers respecting incendiary shells and unextinguishable combustible fluids, which are likened to the ancient "Greek fire," and claimed as re-discoveries of that famous pyrophorus with which the Athenian sailors terrified their enemies. It seems not to be very generally known that there are several substances and mixtures which take fire spontaneously when exposed to the air. "Homberg's pyrophorus" possesses this property and is prepared as follows:—Take equal parts of alum and coarse brown sugar and mix them together in an iron ladle, held above a fire until the mixture melts, swells and runs into small dryish lumps. It should be stirred during the period of melting with an iron rod. The fused lumps are next reduced to powder in a mortar, and again roasted until all the moisture is perfectly expelled, in which condition it looks like charcoal powder. While hot it is next placed in a phial, which must not be more than three-fourths filled, and in the neck of the phial a long narrow tube must be closely luted. The phial, with its contents, is now placed in a crucible, which is covered with sand, and placed in a fire, leaving the small tube projecting some distance out. When heated to redness a thick smoke first issues through the tube from the contents of the phial, for about fifteen minutes, and this is succeeded by a sulphurous vapor, which must be inflamed and allowed to burn as long as it issues. The tube is now to be closed with a plug of soft clay and the crucible removed from the fire. When the phial becomes cool the contents must be hastily transferred to another dry and warm strong glass phial, of the same size, and fitted with a ground-glass stopper. The powder thus prepared is the pyrophorus; a little of which, when thrown upon a flat surface and exposed to the air, bursts into flame. Another mixture, called "Gay Lussac's pyrophorus," is made by calcining 16 parts of lamp-black with 27 parts, by weight, of sulphate of potash, in a crucible. It forms a shower of sparks when thrown into the air. A pyrophorus powder may be mixed with an inflammable liquid devoid of water and oxygen, which, when ejected into the atmosphere, will take fire spontaneously; thus, when mixed with naphtha or benzole, it will form a fluid for incendiary shells. It is also stated on page 25, Vol. VI, (new series) of the SCIENTIFIC AMERICAN, that Disney's incendiary shell is filled with naphtha mixed with phosphorus, and that, when it bursts, the fluid ignites and burns in the air. Phosphorus inflames spontaneously in the atmosphere. It is soluble in naphtha and bisulphide of carbon, which dissolves about one-fourth of its weight, and is well adapted for use as an incendiary fluid for war purposes.

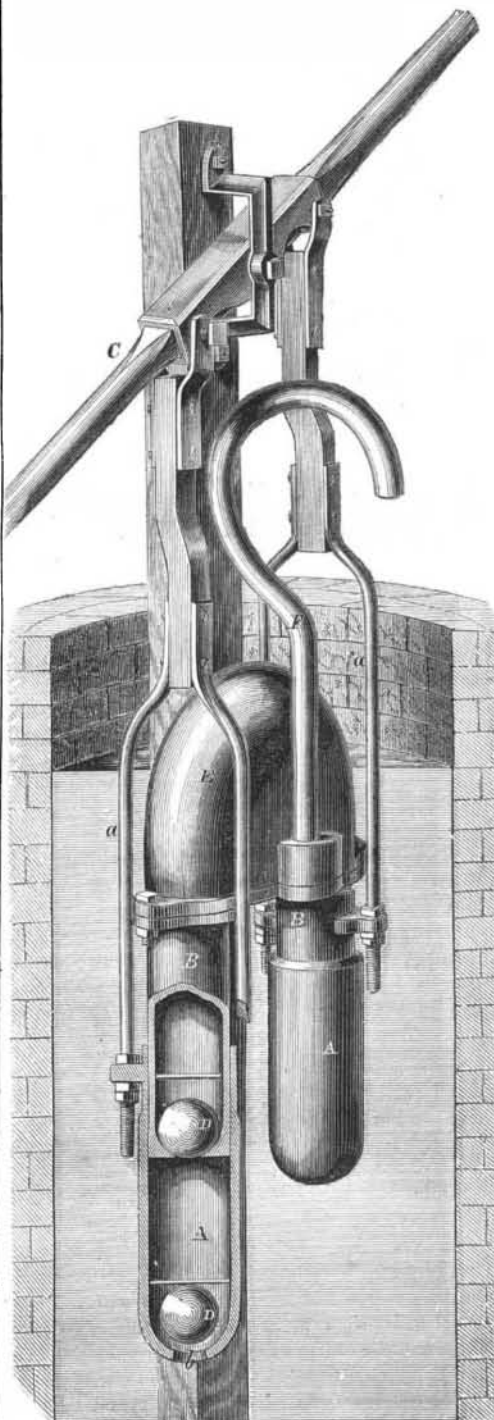
TANNING SKINS WITH THE WOOL OR HAIR ON.—First wash the skin in strong soap-suds, to remove the grease and dirt from the wool, then rinse in clean cold water. The skin should now be tacked upon a board (with the flesh side out) and stretched, its edges trimmed, and the whole fleshy part scraped off with a blunt knife. It is now rubbed over hard with as much chalk as it will absorb, or until the chalk falls down in powder. Now take the skin down, fill it with finely ground alum, wrap it closely together, and keep it in a dry place for two or three days; at the end of that time unfold it, shake out the alum, and it will be ready for use, after being again stretched and dried in the air. This method is for white sheep-skins for door-mats. Another mode of treating them consists in applying a strong solution of alum, moderately warm, with a sponge, to the flesh side of the skin, when it is stretched, then allowing it to dry, before the chalk is rubbed in. It must always be dried in the open air, or it will turn very hard. Another mode of tanning skins with the hair on, after they are stretched on the frame and scraped, is to apply a warm decoction of sumac, prepared by boiling one pound of sumac in a gallon of water for about five minutes. The sumac liquor is applied with a sponge to the whole fleshy surface, then the skin is dried in the open air. Three applications of the sumac are given, and when the skin is dried it is laid upon a smooth board or table, and rubbed down with pumice stone. Both alum and sumac combine with the gelatine of the skin, and form leather.

HATCHING FISH.—The Chinese practice a peculiar method of hatching the spawn of fish, which perhaps may be useful for our fish cultivators to know. They carefully collect the spawn of fish in their streams and rivers, fill empty shells of fresh eggs with it, carefully stop up the holes in the eggs and set them under a setting hen. At the expiration of nine days they take these shells and break them in tanks containing water warmed by the sun. The water in these tanks is frequently renewed, and in it the young fry are gradually developed until they are sufficiently large to be placed in fish-ponds. The sale of fish spawn for hatching forms an important branch of trade in China.

HARDENING WOOD FOR PULLEYS.—After a wooden pulley is turned and rubbed smooth, boil it for about eight minutes in olive oil, then allow it to dry, after which it will ultimately become almost as hard as copper.

MORRELL'S PATENT PUMP.

The machine herewith illustrated is a force pump, with a peculiar arrangement of its working parts.



There are no pistons as in the ordinary pumps, their places being supplied by the external cylinders. A brief description of the invention will make it intelligible. A A are two barrels, turned true outwardly, to which are fitted the cylinders, B B. These cylinders have lugs on either side, to which rods are attached, connecting overhead with the handle or brake, C. The ball valves, D, seen in the section of one of the pumps, are seated at the bottom of the cylinder and barrels, and are prevented from rising

too far from their places by the small iron rods. The air chamber, E, communicates with the upper end of the barrels, and water is forced through the eduction pipe, F, into a pail placed beneath it. The operation of this pump is very simple. It is immersed in a well or cistern, as shown in our engraving, and by working the brakes the cylinders ascend and descend, the water flowing into them through the passage, b, opened by the rising of the ball valve. When the barrel rises, the lower ball closes and the upper one opens the passage into the air chamber, through which the fluid enters into the pipe. This pump, by the arrangement of two cylinders and barrels, has an uninterrupted discharge, as one fills the other empties, *ad infinitum*. When not in use, the water remaining in the chambers immediately after pumping finds its way out into the well again, and is consequently uncontaminated by any action of the metal upon it, and is also prevented from freezing for the same reason. This pump is said to force water to a great distance; it is made of either wood or metal, as parties desire.

The patent for this invention was procured, through the Scientific American Patent Agency, on January 7, 1862, by James A. Morrell; further information can be had by addressing Morrell & Borgion, at Richmond, Ind.

Power and Office of the Press.

A writer in the *Family Herald* (London) says:— "Mr. Kinglake, the historian of the Crimean war, an observant statesman and member of Parliament, gives it as his conviction that the *Times* newspaper alone caused that war; if so, it has made bankrupt one empire, caused the death of the greatest Emperor of the age, established another on his throne, broken the power of the nobles in Russia, freed the serfs, rendered thousands of women husbandless and childless, killed more than one general, made or ruined the reputation of others, and made hundreds of our best families mourners. It had first fed public opinion, impressed it with an idea, and then by constant iteration rendered this idea a reality. But during this very time a country squire, master of hounds, ordered his huntsman to warn off one of its editors as a person with whom he would not associate; and the editor of the *Times* having written a warm and friendly letter to Sir Charles Napier, begging him not to peril his great name by delay, but to take Cronstadt or Helsingfors, the club gossips and critics, nay, and some writers as well, take him to task and say: 'What insolence! a mere newspaper editor to attempt to dictate to a British admiral!' The true editor's position has not been altered from the time of Defoe. 'If,' writes that acute and honest observer of the world, 'I might give a short hint to an impartial writer, it would be to tell him his fate. If he resolves to venture on the dangerous precipice of telling unbiassed truth, let him proclaim war with mankind, and neither give nor take quarter. If he tells of the crimes of great men, they fall upon him with the iron hands of the law; if he tells of their virtues, when they have any, the mob attacks him with slander. But if he regards truth, then let him expect martyrdom on both sides, and then he may go on fearless; and this is the course I take myself.' This course by the way, rendered the life of Defoe of infinite value to the nation, perhaps of much more value than that of any great lord or minister of his time."

Migration of Eels.

A close observer states that the following interesting evolutions occur when eels come in from the sea. The aggregate shoal, about to ascend the inland streams, moves up the shore of the river, in the form of a long, dark, rope-like body, in shape not unlike an enormous specimen of the animal which composes it. On reaching the first tributary, a portion, consisting of the number of eels adequate for peopling this stream, detach themselves from the main body, and pass up; and in the subsequent onward passage of the shoal, this marvelous system of detaching, on reaching the mouths of brooks, a proportionate quantity of the great advancing swarm, is repeated, until the entire number has been suitably provided with rivulets to revel in—such being the wonderful instinct by which nature ordains that each stream shall be provided with a competent number of these migratory creatures.