### Manufacture of Saltpetre.

The successive Goverments of France have, for many years, encouraged every invention and improvement in the production of nitrate of soda, to render them, if possible, independent of England for the necessary supply to the gun powder works. The artificial nitreries, or nitre beds, collected for this purpose, consists of animal matter, the rubbish from the walls of old houses, stable litter, refuse of plaster works, &c. The decomposition of the animal matter produces carbonate of ammonia, which, dissolved in water, in connection with air charged with oxygen, is transformed into nitrate of ammonia. This product, under the influence of the solar ray, and the action of time, decomposes the calcareous and magnesia carbonates in the plaster rubbish, forming nitrates of lime and magnesia and reproducing carbonate of ammonia, which, set at liberty, serve anew to form the nitrates. According to this theory, the nitrate plays a double part; it serves to reunite the elements of the atmosphere to produce nitric acid, and it causes this acid, formed under its influence, to act on the insoluble carbonates, to change them into nitrates. But this action is not the only one; for Kuhlmann, discovered that in most instances, the ammonia itself was decomposed, and that its nitrogen, combined with the oxygen of the atmosphere contained in the water, is thus transformed into nitric. These calcareous and other earthy nitrates dissolved in water are decomposed by sulphate of soda, thus forming nitrate of soda and sulphate of lime by double decomposition. The nitrate of soda is then heated with chloride of potassium and nitrate of potash (saltpetre,) and chloride of sodium (common salt) obtained.

Saltpetre is found native in the Mammoth Cave, Kentucky, and it is contained in the ashes of tobacco. Porous limestones through the agency of dew operates upon the constituents of the atmosphere to produce nitric acid without animal matter, yet it is well known that the admixture of animal offals with calcareous earth facilitates the production of saltpetre—hence the mode adopted to produce it by the French, and in this we can see a reason for the formation of nitre in city wells, described in a previous number of the Scientific American.

It takes two years to form, artificially, saltpetre, and during the wars of the revolution 2000 tons were annually made in France, mostly in Paris. In Sweden each peasant who has a house, is bound by law to make a certain quantity every year for the use of the State. In Spain, Egypt, Persia and India, vast quantities of saltpetre are formed by nature spontaneously, especially in India. This is a source of great profit to England as it is much used in the manufacture of gunpowder and for making nitric acid and a number of other things.

### Poison of Silver and its Antidote.

The only preparation of this silver likely to act as poison, is nitrate, which has been used in medicine; particularily of late in epilepsy.

When injected into the veins, it produces death speedily, and without our being able to ascertain the cause. But we shall notice these effects no more; as there is scarcely any substance, apparently the most simple, which does not in the same way produce death, and with the same trains of symptons. The action on the animal economy, in these cases, is not understood; but, in practical view, it is of moment, as death does not occur, either accidentally or designedly, in this way, unless in the case of experiments on animals.

The symptoms which nitrate of silver produces when taken in the stomach in a large dose, are exactly the same as those caused by the other metalic poisons. Blueness of the lips, from the change induced on this salt from exposure to light, in an additional symptons, which, when it is present, serves to indicate the nature of the poison. The appearance after death differs in nothing from those caused by the other metalic poisons.

When nitrate of silver has been given medicinally in small doses for any length of time, it is deposited between the skin and epidermis, producing a livid stain which never can be discharged, and which causes a great deformity through life.

TREATMENT OF THE PATIENT.

The muriate of soda, or common salt, decomposes this substance, and destroys its deleterious qualities.

Salt should therefore be given immediately diluted in as much warm water. Mucilaginousdrinks may then be given to diminish irritation.

The nitrate of silver is used to dye hair black.

### Walking.

Of all kinds of exercise, walking is that which is the most universally attainable, and at the same time the best. Calling so many muscles into action, and especially those of the lower extremities, of which the circulation is apt to be more languidly and imperfectly performed, from the degree of resistance presented by the force of gravity to the return of the blood to the heart—calling, moreover, so much of the moving apparatus of the body into a reciprocal and balanced action, flexor and extensor muscles being correspondently exercised—walking is undoubtedly the best of all exercises for the purposes of health independantly of its secondary, and by no means little useful effect, of carrying the respiratory organs into the freer and purer air, and exposing the system to the extraordinary and (at least in the colder and temperate countries of the earth) the healthful influence of the direct rays of the sun. The degree of the exercise must of course vary with the age, condition, and habits of the individual; but the degree of the exercise that is in most cases serviceable is generally much underrated. Three miles a day is the minimum distance which a person of moderate health and strength ought to walk. If the powers of the system increase, or are stronger to begin with, the minimum ought to be four miles. The subject should be able, in most cases, to walk four miles in an hour; and the invalid, beginning, perhaps by walking a mile, or a mile and a half, in an hour, might gradually increase his rate of walking until he had accomplished this end. Quick walking calls more muscles into action than slow walking does, and is therefore better. The muscles of the back and trunk, neck and arms are comparatively very little used in slow walking. A person can hardly walk quickly without using them to a very considerable degree. It is a maxim so sound and important, as to deserve frequent repetition, that the greater the number of the muscles used the more advantageous will be the exercise.

### Cranberries a Cure for Cancer.

The Tuscaloosa Observer says it has "seen it stated, more than once, that the common cranberry was efficacious in the cure of cancer, but have never, until very recently, been an eye-witness to the fact. Mr. Middleton Belk, residing within four or five miles of this city, who was afflicted with a cancer on the nose for the last eight years, was induced to try cranberries applied as a poultice; and to his great joy and satisfaction, has experienced a perfect and radical cure. We mention this fact at the instance of Mr. Belk, who is desirous that others suffering under the same affliction, may avail themselves of this simple, but valuable remedy.

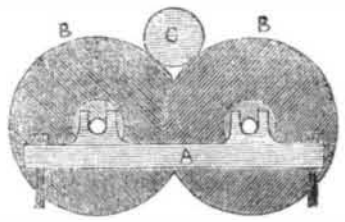
### Taking Wrinkles out of Papers.

It is presumed that as many as 8000 volumes of last year's numbers of the Scientific American will be bound and that those who have received their numbers by mail may know how to straighten out their papers as smooth as they were before folded, we give the following simple receipt: Take each number of the paper separately, open it, sprinkle it slightly with pure water, place it between two sheets of clean smooth paper and run a warm sad iron over it, or if you have a press at hand place the sheets between pasteboards and press them all at once.

## MECHANICAL MOVEMENTS.

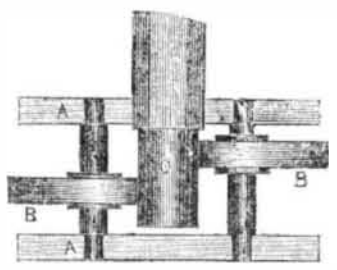
### Friction Wheels.

FIG 1.




Friction wheels are used for the purpose of diminishing the friction on bearings, and their value depends upon converting a sliding into a rolling motion—the stress being borne by the axles of the friction wheels. The construction and operation of the friction wheels will be better understood by these engravings,

FIG. 2.




in which figure 1 is a vertical and figure 2 a side view. A A, represents an iron plate, which is generally made to be bolted square down upon the framing. It has holes in it to receive the friction wheels B B, and has supports cast upon it, which are provided with sockets for brasses in which the pivots of the friction wheels revolve. The friction wheels being fixed in their places, the gudgeon C, of the shaft lies between them, so that when it turns round, it rolls upon, or rather their circumferences move with it, and consequently the pivots of the friction wheels move so slowly as to diminish the friction far more than if the journal revolved in a permanent bearing. The proportion of this depends upon the diameter of the friction wheels and the gudgeon of the shaft C.

There are two or three more plans for modifying the friction of journals—the one displayed in these engravings is far better than some others which we have seen proposed, but we will present another plan in our next number, which some have esteemed much superior to this.

### Near Sightedness.

In all persons that are extremely fair-haired, and white-skinned, there is either a deficiency in the quantity, or a derangement in the quality; or, (speaking technically,) a morbid secretion of the colouring matter of the skin, and of the black pigment, Pigmentum Nigrum, of the eye, a black or darkish looking substance that completely overspreads that delicate expansion of the optic nerve, the retina, and acts as a shade to it, and prevents the too strong action of the rays of light from deranging its fine organisation.

If this Pigmentum Nigrum is either deficient in quantity, or too transparent in its nature, to act as a proper and sufficient shade, there will, in such cases, be a proportionate contraction of the pupils, in order to prevent too strong a glare of light striking upon the retina, and in proportion as the pupil is contracted, the distance of vision will be lessened.

It is from this cause that the Albinos, or Leuco-Æthiopians, take their strange peculiarity. In their case, there is probably a total want of the Pigmentum Nigrum, and, from the exceeding vascularity of the iris, in the completely transparent eye, the peculiar *red* appearance arises.

The colour of the eyes of white rabbits, white mice, owls, sparrows, &c., arises from the same causes; if a person will look clearly into the eyes of one of these animals he will distinctly see the manner in which the objects are *inverted*.

A specimen of Iron has been exhibited in Charleston, procured from the works of Cooper, Strouth & Wiley, Cass Co. Ga., converted into steel, and pronounced by judges to be fine for razor blades.

### Tomato Ketchup.

This being the season of the year for Tomatoes, we give the following, which, from long experience, we know to be the best receipt extant for making tomato ketchup:—

Take one bushel of tomatoes and boil them, until they are soft; squeeze them through a fine wire sieve, add half a gallon of vinegar, three half pints of salt, two ounces of cloves, quarter of a pound of allspice, three ounces of cayenne pepper, three table-spoonfuls of black pepper, and five heads of garlic skinned and separated. Mix together, and boil about three hours, or until reduced to about one-half; then bottle without straining.

### Iron Bedsteads.

In looking to benefits conferred upon man, would some of our moulders give their minds up to the study of a new cast iron bedstead; one that would be convenient as being easily tightened, having a small cast iron wheel with a bracing clamp, to be screwed up with a small lever. Such a bedstead would occupy less room than a wooden one, iron being stronger than wood, to the same bulk, and above all it would be easily kept clean, and there can be no doubt but they would thus be more healthy likewise.

### To Extract Lamp Oil from a Dress.

We have seen a receipt going round stating that "if a dress receives oil upon it, and it is then immediately rinsed in two or three changes of water in a tub, that the oil would all be taken out." This is entirely erroneous. The only way to remove oil from a dress, is to use fine soap in cold water. The reason of this is, that the oil combines with the alkali in the soap and is rendered thereby soluble in the water, which every body knows is not the case with pure oil and water—they will not mix.