For the Scientific American.

New Chemical Law.

No. 6.

As the compounds of the substances composing the aggregated series derived by the aggregation of C H, are more particularly known, I shall give a few more examples. The following example of double hydrates comprises substances well known.

Pyroxilic Spirit 2 C H.+2 H O. specific gravity ,796—boiling point 140°—fluid.

Common Alcohol 4 C H.+2 H O. sp. grav. ,796—boil. pt. 173°—fluid.

Oil of Potato Spirit 10 C H.+2 H O. sp. grav. ,812—boil. pt. 270° —fluid.

Ethal 32 C H.+2 H O.—solid.

There is some difference in the experiments of chemists as to the true specific gravity of pyroxilic spirit and common alcohol; some considering the specific gravity of pyroxilic spirit as ,798, that is above common alcohol, whilst others consider them both of the same specific gravity. If we consider the slight difference between the specific gravities of common alcohol and the oil of potato spirit, and then compare the intervals of position which they occupy in the aggregated series, with the intervals of position which pyroxilic spirit and common alcohol respectively occupy, we are not surprised to think that chemists could find but little difference between their specific gravities. By the nature of the law, the difference can be but a trifle, say three or four parts at the most; but the specific gravity of common alcohol must be greater than that of pyroxilic spirit. As it is, the specific gravities are on the increase; the same may be said of the boiling points, which increase in the most regular manner. The density of the substances also increase with the series, the first three being fluids and the fourth a solid The specific gravity and boiling point of Ethal should be greater than those of the oil of potato spirit. The similarity of the chemical properties of the above substances, may also be noticed. Thus the similarity of the two former are complete, but as the substances increase in the series, it gradually changes, until we arrive at the chemical properties of Ethal, which is only different from the first two compounds, by reason of their distant situation in the series If we were in possession of a compound of the same aggregated series, and nearly similar to composition to Ethal, then it would possess similar chemical properties. The following example illustrates the composition of their single sulphurets.

Sulphuret of Methyle 2 C H.+S H. sp. grav. ,845—boil. pt 104°—fluid

Sulphuret of Ethyle 4 C H.+S H. boil. pt. 167°—fluid.

Sulphuret of Amyle 10 C H.+S H.—fluid.

The specific gravities of the above substances have not been ascertained. The boiling points however agree with the conditions required. The following gives an example of their double sulphurets.

Doub. Sulph. Methyle 2 C H.+2 S H. boil. pt. 70°.

Doub. Sulph. Ethyle 4 C H.+2 S H. sp. grav. ,842—boil. pt. 97°.

Doub. Sulph. Amyle 10 C H.+2 S H. sp. grav. ,835—boil pt. 243°.

The boiling points in this example are also perfectly in accordance with the general requirements of the law. The specific gravities also appear to decrease, which is owing to the superior specific gravity of the sulphur, although it would be unsafe to assert it as a fact, on account of the slight difference between the specific gravities given, which might possibly be erroneously computed. The following gives an example of their chlorides.

Chloride of Methyle 2 C H.+Cl. H. gas.

Chloride of Ethyle 4 C H.+Cl H. sp. grav. ,874— boil. pt. 52°—fluid.

Chloride of Amyle 10 C H.+Cl. H. boil. pt. 217°—fluid.

The boiling points of the above substances are also in perfect order; the chloride of methyle being a gas at common temperatures, must for reasons previously given, possess a boiling point far below that of the chloride of ethyle. The other conditions are also fulfilled. The Bromides might properly be introduced here, but as their specific gravities, boiling points, &c have not been calculated, I shall in their place introduce the Iodides, which gives an example agreeing perfectly with the conditions required.

Iodide of Methyle 2 C H.+I H. sp. grav. 2,237—boil. pt. 112°.

Iodide of Ethyle 4 C H.+I H. sp grav. 1,921 —boil. pt 161°.

Iodide of Amyle 10 C H.+I H.

In this case the specific gravities decrease as the series increase, and consequently the specific gravity of the iodide of amyle should be less than the specific gravity of the iodide of ethyle The reason why the specific gravities decrease, is owing to the superior specific gravity of the iodine, and is in accordance with the requirements of the law. The boiling points also increase, and there is no doubt but the boiling point of the iodide of amyle is greater than that of the iodide of ethyle. All compounds of the aggregated series given, must conform to the conditions required by the law, however complex their organisation. S. N.

Bridgeport, Conn.

For the Scientific American.

Evaporation of the Watery Particles in Butter.

As the good of the agricultural portion of the community receives a considerable degree of your attention, I would ask if it ever occurred to you that the principle of evaporation in vacuo could be applied to the separation of the watery matter from butter. Say take a box of suitable size made of wood, and lined with lead, the cover so fitted as to be air tight. The box must be of such length as to leave a space below the bottom of the pan that contains the butter for the introduction of a few lumps of quick lime. An exhausting syringe of simple construction will complete the machine. Butter by an operation such as this, can be so completely drained of its moisture as to keep sweet for an indefinite time. The butter must be submitted to this operation before the addition of salt.

A Subscriber.

Artifical Mahogany.

The following method of giving any species of wood of a close grain, the appearance of mahogany in texture, density, and polish, is said to be practised in France, with such success that the best judges are incapable of distinguishing between the imitation and mahogany. The surface is first planed smooth, and the wood is then rubbed with a solution of nitrous acid. One ounce of dragon's blood is dissolved in nearly a pint of spirits of wine, this and one-third of an ounce of carbonate of soda are then to be mixed together and filtered and the liquid in this thin state is to be laid on with a soft brush This process is to be repeated, and in a short interval afterwards the wood possesses the external appearance of mahogany. When the polish diminishes in brilliancy, it may be restored by the use of a little cold drawn linseed oil.

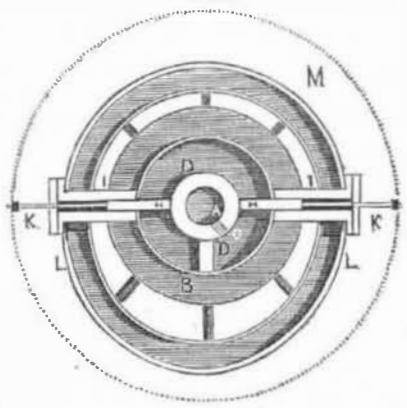
To obtain fresh blown Flowers in Winter any day one chooses.

Choose some of the most perfect buds of the flowers you would preserve, such as are latest in blowing and ready to open, cut them off with a pair of scissors leaving to each, if possible, a piece of the stem about three inches long; cover the end of the stem immediately with sealing wax: and when the buds are a little shrunk and wrinkled wrap each of them up separately in a piece of paper, perfectly clean and dry, and lock them up in a dry box or drawer; and they will keep without corrupting. In winter, or at any other time, when you would have the flowers blow, take the buds over night and cut off the end of the stem sealed with wax and put the buds into water wherein a little nitre or salt has been diffused and the next day you will have the pleasure of seeing the buds open and expand themselves and the flowers display their most lively colours and breathe their agreeable odors.

History of the Rotary Engine.

Prepared expressly for the Scientific American.

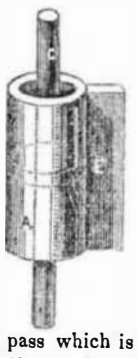
Fig. 11.



BRAMAH AND DICKINSON'S ROTARIES.

This is another rotary embraced in the same patent as the one in the Scientific American of last. In this the sliders are in the periphery of the outer cylinder, and the water, steam, or other fluid, passes first into a smaller or inner cylinder, previous to its producing its effect in the channel or groove, as in the other example. A is the end of a hollow smaller cylinder, placed in the centre of the larger cylinder B; the cylinder A is fixed on an axis or spindle C, as in the section. D D, is the channel or groove, formed between the outer surface of the cylinder A, and the inner surface of the cylinder B; to the cylinder A, is fixed a wing or fan E, of a projection sufficient to fill and act in the channel D D, as a piston, when A is turned round by the axis or spindle C, so as to sweep the contents of the channel; or, when any force is applied on one side of the surface, it will cause the cylinder A, and the axis or spindle C, to be turned round. The cylinder A is left open at both ends, which pass through the plates F F, into the caps, and is fitted water-tight in the junctions. In or about the middle of the cylinder A is a chamber or partition, which divides the upper end from the lower; H H, are two sliders, stationed at opposite points in the periphery of the outer cylinder B, where there are cells projected as at I I, to receive them and allow their motion. These sliders are moved by the small spindles K K, passing through stuffing boxes in the usual way. They are ultimately opened and shut by half the rotation of the inner cylinder, by means of a wheel with an eccentric groove fixed on the axis, as L L. In this groove move two friction wheels, which being joined to the sliders by a connecting bar, the sliders A A, are opened and shut, by the axis C turning round, so that one of the sliders H H, is always close shut against the cylinder A, whilst the other is opening to let

Fig. 12.



the wing or fan pass which is again shut before the passage slider begins its motion. The machine being thus complete, suppose that, at a pipe O, a current of water, steam, or other fluid having force, was admitted into the cap whilst the machine is in its present position, it would immediately fall into the upper cavity of the cylinder A, and, passing through the aperture into the channel D, would press against the wing or fan E, on the one side, and against one of the sliders H H, on the other; which slider not giving way would cause the wing or fan E to recede, and turn round the cylinder A with its axis C; which axis, turning the wheel with the groove L L, would cause the opposite slider to begin its motion; so that by the time the wing or fan E reaches the station of the slider, it is totally drawn back into its cell, so as to permit the wing or fan E to pass without interruption; and, by the continued motion of the machine, the slider is again shut, before that slider on which the fluid is pressing begins to move; so that, when the first slider, against which the water or fluid is still pressing, is opened, the pressure is then the same between the other slider and the wing or fan E; and the spent fluid between the two sliders immediately rushes through the lower aperture into the bottom of the cylinder A, and is carried off in that way to the open air: thus a uniform rotation will be maintained as in the former example.

This engine is very simple and will make a very useful rotative machine. But no packing except metallic will answer in the grooves of the sliders. It however has a general defect of rotary engines viz., the difficulty of keeping it tight. This engine was published in the Repertory of Arts and made some figure in the world when it was brought before the public —but oblivion in practice, has thrown a veil over its results.

Preserving Eggs.

Some time ago, a Mr. Jayne, of Yorkshire in England, adopted the following process for preserving eggs, which he says kept them in a good condition two years. He obtained a patent for the mode in England, but that will not prevent any one in this country from using it if he likes.

Take one bushel of quick lime, thirty-two ounces of salt, eight ounces of cream tartar.—Mix the salt together with as much water as will reduce the composition to a consisteney that an egg when put into it will swim. The eggs may now be put into it and be kept down by a board with a gentle pressure upon it.

New Cloak.

A new cloak for the ladies has been invented in Paris, and is called the Mantua Marguerite. It is made of velvet, in the form of a shawl and is trimmed with three rows of black lace headed by a narrow silk braid.