

COOKING WITHOUT FIRE.

BY GEORGE J. JONES.

The fireless cookstove is not exactly a new thing, for its economies and conveniences have been known to the people of an out-of-the-way portion of the German empire. Only a year or two ago some ladies of that country had their attention attracted to the fireless cookstove, and they became so interested in it that an organization was effected for the purpose of making the women of the country generally familiar with it. In this manner one of the United States representatives in Germany heard of the scheme, and reported on it. This attracted general attention in this country, and the supply of government pamphlets was soon exhausted.

The system is based on the fact that a perfectly insulated vessel containing meat or vegetables and a proper supply of water will continue to cook for a long while after once having been brought to the boiling point. The operation of cooking proceeds just the same as if it were directly over the fire, except that it is much slower.

This apparatus was known as the hay box in Germany, and consisted of a crudely constructed box, which was insulated in that it was lined with some cloth or other material which happened to be convenient and then filled with hay. The article to be cooked was placed over a fire for a short time, a minute or two, and then quickly transferred to the hay box, where it was placed in a sort of a pocket made in the hay. Here the cooking continued slowly without any further application of heat or any attention.

The subject was called to the attention of the President, and he directed that the hay box be experimented with by the Commissary Department. This was done at Fort Riley, Kansas, under the direction of Capt. M. S. Murray with the assistance of Latrobe Bromwell, instructor of the school of army cooks at that place. These experiments were very successful, and the scheme was heartily indorsed. A box suitable for army use has been designed, and it is likely some great changes in the conduct of the company kitchen are about to be made.

This method of food preparation has been recently made available for domestic use by the introduction of the cooking cabinet. In the main this is nothing more or less than a well-constructed box of oak, thoroughly insulated to keep in the heat. It is thirty-six inches long, fifteen wide, and seventeen deep. It is equipped with three enamel vessels of a construction especially designed for this character of work, having covers which are clamped on to further facilitate the retention of the heat. The lids of these vessels are held on by a revolving bar-lock device, which not only makes a hermetically tight joint, but also acts as a handle. One of these three vessels is of eight quarts capacity, and the other two four quarts each. After the viands in the kettle have been exposed to the heat of the stove until boiling has taken place for a minute or so, the lid is clamped into place, and the whole pot transferred to one of the pockets of the cooker.

The actual time consumed in the preparation of food by this process is about double that ordinarily required, but the food may be left in very long and will not be overdone. The saving of fuel resulting from the use of the cooker is considerable, and the burdens of the housewife are about halved.

Steps of Trolley Cars.

A recent number of the Electrical World says that the New York State Board of Railroad Commissioners has received many complaints from women in reference to the excessive height of the car steps on the street surface roads in that State. It was decided by the Commission that a remedy could be more quickly obtained by a conference with the managers of the different roads than by recommendations to individual companies against whom the complaints have been received. For this reason the matter was brought to the attention of the New York State Street Railway Association, which at its last convention appointed a committee to consider the subject. This committee has reported to the Association that the preferable maximum height between the top of the rail and the first step of all cars of the box type with 33-inch wheel is 18 inches, with a minimum height of 14; that the

maximum distance between the first step and the car platform be 15 inches, with a minimum distance of 12; and that the maximum distance between the car platform and the top of the floor of the car be 10 inches, with a minimum distance of 8. "It is the opinion of the committee that an ideal condition would call for a height of 17 inches from top of rail to the first step, and from the first step to the platform, 14 inches, and from the platform to the floor of car, 10



Latest Form of the Fireless Cooker.

inches, making a total distance from top of rail to floor of car, 41 inches. It is also recommended that the tread of all steps be not less than 10 inches."

A CURIOUS CHEMICAL EXPERIMENT.

BY GUSTAV MICHAUD, D.S.C.

To keep an egg continually rotating in the midst of a liquid mass, without ever allowing it to come up to the surface or to fall down to the bottom, is a feat which does not seem easy to perform. Owing to a peculiarity of the composition of the shell the experiment is easily made, and will afford entertainment as well as impart some knowledge.

The eggshell contains a considerable amount of calcium carbonate, and will evolve carbon dioxide gas when submerged in a solution of hydrochloric acid. The reaction differs, however, from that which takes place under similar circumstances with ordinary limestone; the organic matter which enters in the composition of the shell causes most of the gaseous bubbles to remain attached to the egg. They increase its



Fig. 1.

HOW TO KEEP AN EGG CONTINUALLY IN ROTATION IN A LIQUID WITHOUT ALLOWING IT TO RISE TO THE SURFACE.

bulk, and hinder the contact of the acid with the shell to such an extent that a solution which would in a few minutes consume a piece of marble the size of a rupee, takes several hours to dissolve the thin shell of an egg. The phenomenon is most interesting to observe when produced by means of the following apparatus:

Take a glass jar and half fill it with water. Then, by means of a glass tube which reaches to the bottom

of the jar, pour an equal amount of hydrochloric acid under the water, as shown in Fig. 1, until the water rises to the top of the jar. If no effort be made to mix the two liquids they will remain neatly separated for days, the density of commercial hydrochloric acid being greater than that of water. Let an egg sink gently into the water. It will pass through it, reach the hydrochloric acid zone, and there almost instantaneously become covered with a thick layer of bubbles. These decrease its density and prevent its farther downward progress. The egg does not come up to the top, however, but settles on the dividing line between the two liquids. There it begins to revolve slowly around its greater axis, and will keep up that queer motion for more than an hour. The bubbles on the top of the egg gradually dissolve in the water, while they increase at the bottom, which is nearer the acid. The double process continually raises the center of gravity of the egg, and its rotation is due to this continued alteration.

Chinese Wood Oil.

Investigations by W. B. Hemsley at the Kew Herbarium (Bull. Kew Gardens) have led him to the conclusion that the wood oil, or "tung oil" of China, which it has heretofore been supposed was obtained from the seed of *Aleurites cordata*, is not derived from that species, but from another, to which he has given the name of *Aleurites fordii*, Hemsl., and has figured in Hooker, *Icones Plantarum*, t. 2, 801 and 2, 802. In this species the flowers are developed before the entire leaves, the styles are shortly bifid, and the apiculate capsule is not wrinkled. It is found in the Chinese provinces of Chekiang, Kiangsi, Fokien, Hupeh, and Yunnan. *Aleurites cordata*, R.Br., is, however, found in Japan, Formosa, Hainan, and Tonking, but apparently does not occur on the mainland of China. It has narrower petals, deeply divided styles and a wrinkled fruit. Shirasawa, *Iconographie des Essences Forestières*, vol. I., p. 93, treats this as a cultivated tree of Japan. *Aleurites triloba*, Forst., occurs in Malaya and Polynesia, and is naturalized in many other tropical countries. The seeds of a fourth species, *A. trisperma*, Blanco, were imported into Liverpool in 1891 and 1897 under the name of "Balucang," and are so much like those of *A. cordata* that they have been mistaken for them. There is no doubt that *A. cordata* yields a similar oil (probably in Japan and Cochin China). According to Dr. A. Henry, *Aleurites fordii* succeeds best in barren, rocky places where farming cannot be carried on, the soil being very thin. It grows where the temperature rises to 100 deg. F. in July, and where the snow lies on the ground for days in winter, but where severe frosts are unknown. It succeeds also in tropical regions. The oil is made in two qualities; the kind usually exported is cold-drawn. It is used in central China for varnishing, and for lighting purposes. The inferior quality, which does not appear to be exported, is extracted by heat and pressure, and is thick, blackish, and opaque. It is used for making putty for calking boats, etc. The wood oil is said to be sometimes adulterated with oil expressed from the seeds of a kind of soy bean, *Glycine hispida*, Max., which seriously affects its drying properties.

Timber Testing at Purdue.

A long series of experiments has been completed at Purdue University affecting certain processes to increase the life, strength, and physical qualities of timber. These processes are regarded necessary because of the steady diminution of the timber supply. The feeling is prevalent that everything possible should be done to increase the durability of the timber that is now being used for various purposes. The experiments at Purdue have been made chiefly in the interests of railroads by making mechanical

tests of the ties treated by different processes. Over 400 ties were used, and upward of 600 tests were made. The timber-testing laboratory at Purdue is the one used by the government at the St. Louis Exposition.

There are now over 700 motor omnibuses owned by London companies. According to the Commercial Motor, 469 of these were in service on October 4th, over 200 being in the repairers' hands.



Fig. 2.