

children who become attached to tea and coffee before they reach years of discretion. I have known girls and boys in their teens, who could not relish a breakfast, however good, unless they had coffee.

I see how the coffee drinkers (tea drinkers too, but now I happen to be writing about coffee) do upon their beverage, and sometimes seem to pity me because I eat my food without feeling the need of any fluid to wash it down. But I secretly pity every one of them. I can make a good, satisfactory meal wherever I happen to be, and at any time of day, from bread and milk, or crackers and apples.

GERANIUMS AND SNAKES.—We lately read an account of a mining locality in Calaveras county being infested with snakes. In this connection we may observe that the report is that every species of snake may be permanently driven away from an infested place by planting geraniums. In South Africa the Caffir people thus rid their premises of snakes. A missionary of South Africa had his parsonage surrounded by a narrow belt of geraniums, which effectually protected the residence from any kind of snake. A few yards away from this geranium belt a snake would occasionally be found. It is well known that the whole geranium genus is highly redolent of volatile oils—lemon scented, musk scented, and peppermint scented. What, therefore, is a very pleasant nose-gay for man is repugnant to the serpent tribe.

LATHE TOOLS AND TOOL POST SLOTS.—Robert Briggs writes for the *Polytechnic* some hints on lathe work which are of general interest. For the performance of a large quantity of work by the lathe, no greater necessity exists than for heavy turning tools. The numerous attempts of 30 and of 10 years since to use cutting points for turning have all ended in practical failure. No nicety of shape or fitness to meet the exact requirement for easy cutting of metals will recompense for want of material, both in continuity and in mass, to conduct away the heat of the cut and of friction on the cutting surfaces. The smallest working tool for turning iron should be $1\frac{1}{2} \times \frac{3}{4}$ steel in the shank, the slot of the tool post of the lathe, which swings 10° only over the ways, should take this dimension easily; $1\frac{1}{2} \times 1\frac{1}{4}$ steel is not excessive for tools for the 30 inch lathe, where profitable return for use of the lathe is expected. The posts themselves, with their gripping screws and bearing rings, can hardly be too heavy, while they can easily be too weak. For a 48 inch lathe it does no harm to have the slot in the post $2\frac{1}{2}$, or $3 \times 2\frac{1}{4}$, or $2\frac{1}{2}$, with a two inch screw. The refinement of spring tools for heavy cuts or for long cuts without a re-sharpening, are well enough for tool rests with V slides, or lathes where the ways have V's; but neither excellence of workmanship, nor speed of running, nor heavy cuts, will result from makeshifts of lathes, or of turning tools, however well the makeshifts may be contrived.

HOW POISONS ARE SPREAD.—Mr. G. Owen Rees, Consulting Physician to Guy's Hospital, London, has called public attention to some unexpected sources of arsenical poisoning. The green calico lining of bed-curtains has been found to have produced, for months, severe symptoms, which were treated as those of natural disease, without benefit to the patient. When the curtains were removed the patients at once recovered their health. The beautiful pale-green muslin, largely used for ladies' dresses, has been found to contain not less than 60 grains of the arsenical compound known as Scheel's green, in every square yard. He suggests that, in order to prevent much of the nausea, vomiting, headache, inflammation of the eyes, etc., from which so many suffer, there be a prohibition of the manufacture of such deleterious fabrics. Red scarlet, and mauve-colored fabrics are not always free from arsenic. He adds that the agitation of skirts in dance

Electrical Resistance of Trees.—M. Moucel recently reported to the Academie des Sciences on a series of experiments upon the conductivity of trees. He finds a resistance, when the leaves are the points of contact, equivalent to from 200,000 to 400,000 kilometres of telegraph wire. In moderately large trees, at a height of seven or eight metres on the trunk, it is about 3,000 kilometres.

Some Facts about Norway.—According to recent official statistics, the average duration of life in Norway is 58 years, longer than in Sweden, and 10 years longer than in Belgium. Public and gratuitous education is compulsory in Norway from the eighth to the fifteenth year. The work of children in factories has to be regulated so that they can perform the exercises of communal schools. Norway has one complete university, in which are 40 professors, 10 assistant professors, and 631 students. The exportation of wood, chiefly pine and fir, amounts to nearly 2,500,000 cubic metres annually, with a value of 60 sols per cubic metre. The silver mine of Kongsberg produces annually about 5,000 kilograms of pure silver. Norway is the principal country for production of nickel; it furnishes more than one-third of the total production. The last census gave the figure of 73,703 persons (families included) who lived by fishing, or 4.8 per cent. of the entire population. Norway has 493 kilometres of railway, and 11,681 kilometres of telegraph wires.

Kitchen Dresses.

Neat, plain calico wrappers are quite popular for kitchen use. They are easily made with a sewing machine, and can be ironed with less trouble than other dresses. They are becoming to most women, and can be worn as loose and comfortable as you please. But they have disadvantages which make themselves apparent to working women, especially to those who wash and iron their own clothes. They annoy me by bursting off the skirt buttons, or breaking out the button holes, as I take some of the divers shapes required in waiting upon the vari-

TO CURE A FELON.—The London *Lancet* suggests the following simple treatment for felons: As soon as the disease is felt, put directly over the spot a fly-blistar about the size of the thumb-nail, and let it remain for six hours, at the expiration of which time, directly under the surface of the blister, may be seen the felon, which can instantly be taken out with the point of a needle or a lancet. A piece of adhesive plaster will keep the blister in place.

POISON IN ARTIFICIAL FLOWERS.—Danger from picric acid lurks not only in colored stockings. The material is used for coloring in the manufacture of artificial flowers, and a well-defined case of poisoning therefrom is reported from New York. Mary Dougherty, aged 13, who had been employed a few months in a flower manufactory, has just died. Her death is attributed to poison which is supposed to have been communicated to the girl's system by the material with which she worked. The case needs to be carefully investigated to the end, that the exact character and effects of picric acid may be made known. Men who dye the cloth, which Mary Dougherty and other girls have made into flowers, receive no harm from working bare handed in the liquid. It is alleged sickness among the workers in the colored goods is the exception. Some organizations must be more susceptible to the influences of picric than others, or Mary Dougherty's death must be traceable to other causes. It is to be hoped the case will be carefully examined.

REMARKABLE SURGERY.—Robert F. Hurlbut, private secretary of Governor Bishop, of Ohio, has just had his tongue amputated near the root. The chin was sawed in twain and the jaws spread apart in order to take out the diseased tongue. The work was done in a comparatively short space of time, and the patient was comfortable and conscious in less than an hour. Next day Mr. Hurlbut walked across the room, and wrote his wants upon paper. He is not permitted to attempt to speak, and, of course, could not do so if he desired. The physicians think he will be able to articulate audibly in the course of time. Thus far the difficulty has been to give nourishment, which has been done by injection. Glass tubes have been secured, and hereafter nourishment will be given by that means until the soreness in the mouth is somewhat subdued. Mr. Hurlbut had a cancer at the root of his tongue. A like operation for the same cause was recently performed at one of the hospitals in Albany, but the patient died a few days subsequently.

In Breslau, a successful attempt has been made to erect a paper chimney. The one erected was about 50 feet high. By a chemical preparation the paper is rendered impervious to the action of fire or water.

MAKING TOILET SOAP.—The cheaper English soda cannot produce a fine soap of this kind; it is best to take the purest German soda. It costs about twice as much, but then it is 95°, while the commercial English soda is only from 80° to 85°, and impure, which is fatal for the production of a good article. In order to make caustic lye, quicklime is added in equal parts to ordinary German soda, and only half the quantity (always by weight) to the crystallised German soda. *The Preparation of the Lye.*—Dissolve the soda in water, or in a weak lye of about 30° Baumé, the remnant of a former operation; then mix the quicklime with water to a broth and add it to the soda solution, boil for two hours, and let it stand overnight to cool and deposit. The clear lye, which may be 10° or 12° Baumé, is then drawn off and concentrated by evaporation over a fire until it shows 34°; let it again cool and settle, and put it in bottles or covered iron vessels so as to keep out the air, because otherwise it will rapidly absorb carbonic acid and lose its causticity. The lye being ready, you have the choice between various kinds of fats, such as cocoa-nut oil, almond oil, palm oil, olive oil, beef tallow, mutton suet, lard, etc. The cheapest kinds of fats make the worst soaps, and vice versa; 10 pounds of lye of 85° are sufficient to saponify double that weight of fat. The latter is melted, and then half the amount of lye (5 pounds) introduced and well agitated for about an hour, while the temperature is not raised above 150° Fah.; after one hour the other 5 pounds of lye are added. A pasty mass is thus formed by the union of the two ingredients, and this mass should be perfectly homogeneous, and increase in consistency every hour, until at last it is ready to be poured into the frames. If perfumed soap is wanted, the scent is introduced before pouring. The next day it is to be cut, pressed and stamped; if this is postponed it may become too hard and brittle for this operation. Many manufacturers prefer to use mixed fats, such as olive oil and tallow. But there is no doubt that the cocoa-nut oil makes the best soap; next to this almond, palm, and olive oils; while mutton suet and lard make ordinary soap, especially when used with English soda. The kinds of perfume to be added, and the amount of the same, is entirely a matter of taste and opinion, therefore it is unnecessary to give a recipe for the same, as they differ in various prescriptions. The usual perfumes are, for bitter almond flavor, nitro benzoate, called off of Myrbane; this is a very cheap and common perfume. The next are oils of sassafras, of musk, of roses, of bergamot, of cloves, of cinnamon, of neroli, of roses, etc. The quantities needed are very small.

Cheese and the Microscope.

At the last meeting of the San Francisco Microscopical Society, Mr. E. J. Wickson, editor of the *Pacific Rural Press*, asked the attention of the members to a slide containing sections of ordinary full cream cheese and cheese made by introducing oleomargarine into skimmed milk. He described the process of making oleomargarine cheese, namely, by removing the cream from the milk, and then stirring in liquid oleomargarine to supply the fat removed in the cream. The mass is agitated and rennet enough added to form a curd quickly before the oil can separate from the skim milk. The aim of the process is to form an emulsion of oil and a menstruum of soluble casein, like that which exists in natural milk. This process has succeeded so well that chemical analysis has shown the artificial cheese richer than the genuine, and so great an improvement on skimmed cheese that large quantities are sold in New York and shipped to Europe. Mr. Wickson stated that he had studied this artificial cheese with the microscope, and found that the emulsion made by the cheese-maker was not nearly so perfect as that made by nature in the cow, and therefore it was easy for a microscopist to distinguish between the two products. In the slide which was shown the two sections of cheese were in juxtaposition. The cheese made from full cream milk was seen to be of close texture, and the natural fat was incorporated in the substance. The oleomargarine cheese showed cavities of irregular shape in which the artificially introduced fat was imprisoned when the curd formed. The difference simply consists in the results of an imperfect emulsion in which the fat exists in masses rather than in globules, as in milk. Mr. Wickson remarked the difference between the cavities usually formed by gas in full milk cheese and those which held the oil in oleomargarine cheese. He stated that he first pointed out the characteristics of the two makes of cheese, and regarded the microscope as an infallible detective of the true qualities of cheese.

The gross aggregate value of lead produced in Missouri in 1876, is stated at about \$2,500,000.