mentioned; and, finally, sufficient hose to run the fermented wine down the cellar. A good common house-cellar, cool in summer and safe against frost in winter, will fully answer the purpose.

For those, however, who intend to make wine on a large scale, a separate wine-cellar will, of course, become a necessity. A good wine-cellar should be dry; in damp cellars the casks become mouldy, the wine gets a bad taste and spoils. The cellar should be well drained, that it may be daily washed, for which purpose it must be amply supplied with water; it should have a sufficient number of air-holes to regulate ventilation and temperature. The temperature of a wine-cellar should not rise above 60° F. (12° R.) in summer, nor fall below 50° F. (8° R.) in winter. Such a cellar, with press-house and fermenting-room, store-room for casks, pumps, and other tools, costs thousands of dollars, and the additional expense of having plans and specifications made by an able architect or builder, well informed as to the requirements of a good wine-cellar, will be money well spent; it will protect you from great losses, which are the inevitable result of poorly and incorrectly constructed wine-cellars. In places where deep cellars are impracticable or too costly, good wine-cellars can also be built above-ground, on the system of the American ice-houses, whose double-frame walls are tightly stuffed with straw, sawdust, ashes, or other substances which are non-conductors of heat; the roof should be well projecting, and heavily covered with straw.

As necessary furniture and tools of a producer's wine-cellar must be mentioned—Supports and layers of sound timber on which the casks rest, about 18in. above the floor and at least 15in. from the wall, so as to enable you to examine and to clean the casks at all times. The casks should vary in size from 160 to 500 gallons (the capacity to be distinctly marked on each). Very large establishments will, of course, also use larger casks. They should be made of good, well-seasoned white-oak wood. The larger-sized casks should have so-called "man-holes," through which a man can slip in and clean them thoroughly; also, wooden funnels, pails, and tubs, which can be obtained from any cooper; faucets, funnels; thieves for drawing samples out through the bunghole; rotary pumps with rubber hose, to facilitate the drawing-off from one cask into another; bunghole-borers, wooden hammers, and various kinds of other tools; sulphur-strips and hooks, candles and candle-sticks, gauge-sticks and measures, wine-glasses for tasting, small step-ladders; and other utensils which are demanded in the course of operations, and may be seen in any properly furnished wine-cellar.

New casks, however are not ready and fit to receive wine; they must first be rinsed with boiling-hot water—the casks must, however, be emptied again before the water gets cold—they are then to be filled with fresh water daily during several days; then again a few gallons of hot water, in which common salt (2oz. to each gallon) has been dissolved, are to be poured into the empty cask, the bung firmly put in, and the cask rolled or turned until every part has been in contact with the hot salt water. After this operation (considered unnecessary by some) the cask is treated in like manner with 2 to 4 gallons of fermenting or boiling-hot young wine. This is called making new casks wine-green. Another process much in use is to put in the cask a hot lime-wash, made of unslaked lime and hot water, forming a kind of milk; the cask is turned about, so that its entire inside becomes coated with the mixture, after which the cask is washed with clean water, and finally rinsed with hot wine, as before. If this last operation is not convenient, pour in a pint of pure alcohol, or brandy, and ignite it, leaving the bung slightly open. The fumes of the burning brandy will free the wood from its unpleasant taste, which would otherwise taint the wine. In large modern wine-houses steam is used to great advantage in this important operation.

When a wine-cask is emptied, and not at once refilled with other wine, it should be cleaned, and when dry a small piece of sulphur (about 1in. square) should be burnt in the cask, which is then to be closed tightly by the bung; when it is again to be used, it must be examined as to tightness, by pouring water into it, and, if leaking, is to be made tight by filling it with water and driving the hoops until it ceases to leak. It must also be examined as to the purity of its air, which can be tested by a small piece of burning sulphur-strip or paper. If extinguished when brought into the cask, this indicates the impurity of its air, from which it may be freed by the common small bellows, and by then washing it thoroughly, as above indicated. Old casks and barrels which are to be used for wine must be watered and treated in like manner as new casks to be made wine-green: but never use a mouldy or sour cask; better burn it up than to attempt its cure.

White Wines.

The white-wine grapes—and, as a rule, no black or blue grapes should be used for white wine—are to be mashed as soon as they are hauled to the press-house. This is best done in a grape-mill, placed above the fermenting-vat. The vat is covered with a board or cloth as soon as filled, and the mashed grapes are there allowed to ferment from twenty-four to forty-eight hours. The juice, which may then run off through the faucet inserted in the spigot-hole near the lower end of the vat, is put into a well-prepared, clean cask; then the entire balance of the mashed grapes is pressed, and the juice which comes off from the press is added to that obtained without pressing.

The cask into which the juice has thus been put should not be completely filled, nor the bung-hole closed, as long as violent fermentation lasts. During that time the (carbonic-acid) gas which rises and fills that space prevents an access of air, and the old method of closing the bung-hole by a grape-leaf, over which a small sand-bag is placed, is still preferable to any complicated siphon. Care must be taken that the sand-bags remain clean, for if soaked by the must or by wine, vinegar would form in them; some, therefore, use a cork stopper, holding a doubly bent glass or rubber pipe leading into a small glass jar, half-filled with water, through which the gas escapes without admitting the outer atmosphere. A funnel-shaped bowl with an air-tube or chimney in the centre, covered by an inverted cup or tumbler, which forces the escaping gas to pass through the water in the bowl, combines the same advantages and is less apt to break or get out of order. When the