

Copying Drawings.

Tilhet's method of copying drawings in any desired color is thus described in the *Polytechnisches Notizblatt*:

The paper on which the copy is to appear is first dipped in a bath consisting of 30 parts of white soap, 30 parts of alum, 40 parts of English glue, 10 parts of albumen, 2 parts of glacial acetic acid, 10 parts of alcohol of 60°, and 500 parts of water. It is afterward put into a second bath, which contains 50 parts of burnt umber ground in alcohol, 20 parts of lampblack, 10 parts of English glue, and 10 parts of bichromate of potash in 500 parts of water. They are now sensitive to light, and must, therefore, be preserved in the dark. In preparing paper to make the positive print another bath is made just like the first one, except that lampblack is substituted for the burnt umber. To obtain colored positives the black is replaced by some red, blue, or other pigment.

In making the copy the drawing to be copied is put in a photographic printing frame, and the negative paper laid on it, and then exposed in the usual manner. In clear weather an illumination of two minutes will suffice. After the exposure the negative is put in water to develop it, and the drawing will appear in white on a dark ground; in other words, it is a negative or reversed picture. The paper is then dried and a positive made from it by placing in on the glass of a printing frame, and laying the positive paper upon it and exposing as before. After placing the frame in the sun for two minutes the positive is taken out and put in water. The black dissolves off without the necessity of moving it back and forth.

FRESH GRAPES FOR THE TABLE.

Our engraving is an actual representation of a vine grown by Herr Sage, gardener of Lord Brownlow. It was carried in October of last year to the Exposition at South Kensington, where it received the highest medal from the committee on fruit. A yet more beautiful and regular vine was carried to the Exposition at Ealing Park, by William Cole, in 1873. In both of these cases the vine was propagated according to the system of Mr. William Thompson, who has published a work called "The Practical Treatise on the Grapevine."

We can recommend the growing of fruit vines in pots to gardeners and amateurs, as being easily accomplished, and the nature of the vine is such that more satisfactory results may be obtained in a shorter time than from the propagation of fruit-trees in pots. By this means of cultivation fruit may be obtained from the rare southern vines. Nothing can be more beautiful than a natural centerpiece of this kind; it would be an ornament even for a royal table. England has set the example in this method of vine growing.

The cultivation of the vines designed for pot culture may be carried on for one or two years in baskets in the open ground. By this means the roots may be properly held together, and transferring the plants to pots may be successfully accomplished. This should be done in March, before the buds begin to start. With warmer weather a rich compost earth should be used, which, mixed with a small quantity of cow hair from a tannery, forms an excellent manure. The pot should be covered with moss, so that it will not dry up, and it is to be buried in the earth so that it may remain uniformly moist, the ground being sprinkled from time to time. When the strong table varieties of grapes are used for pot culture the vines must not be too much pruned. It is better to prune the plants in the autumn rather than in the spring, because then the sap will not escape, and the vines in baskets or pots may be protected from frost, so that there will be no loss of buds.

Among the varieties of grapes which are best adapted to pot culture the ordinary blue *Trollinger*, called in England the "Franconia Valley," stands at the head. Close to this comes the *Parisier gutedel*, also the *Chasselas fontainebleau*, which is a free bearer, having a beautiful large gold-colored grape, and is universally esteemed.

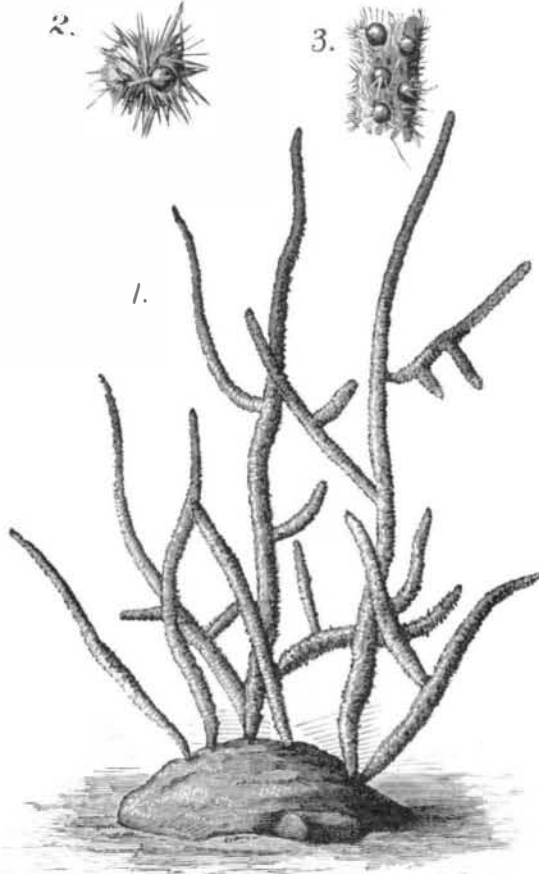
In 1879 the establishment of Van Houtte, in Ghent, in order to assist amateurs in the pot culture of vines, announced for sale (at from 5 to 8 francs) twenty different kinds of vines. They were placed in large pots, after the English method of culture, and were very strong plants, from which fruit might be expected. Among the varieties were the long clustered and very sweet *Black Prince* and the *Black Alicante*, which is worthy of recommendation. The last is a vine of strong growth, has broad, large clusters of grapes, nearly black, which will keep for a long time and neither decay nor shrivel up.

The novelties are somewhat more expensive. The *Muscat Derom* has large golden berries in beautiful clusters, with the delicious taste of the *Frontignan*. Mr. Pearson introduced an English novelty in 1876, a very large grape, of a greenish golden color, which will keep for a long time.

Robert's Gros Guillaume is also an English variety of 1877, with enormous clusters of very large black grapes. The *Alnwick Seedling* is a novelty of 1878, with broad clusters of oval black berries, which keep well and are of the best quality. Finally, the *Muscat Charles Alberdienst* is a novelty which cannot be surpassed, has a very large black berry, which has a very pleasant perfumed taste, and bears very freely. It is one of the best and most beautiful of existing grapes.—*Illustrirte Garten-Zeitung*.

SPONGILLA FLUVIATILIS.—THE CAUSE OF CUCUMBER TASTE IN WATER.

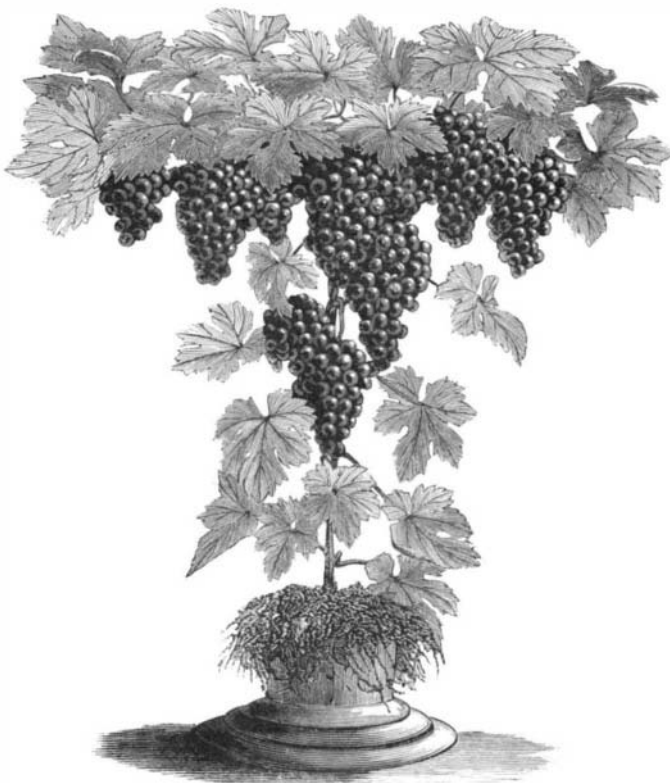
Last fall note was made of the fact that the offensive cucumber odor and flavor of certain portions of the water supply of Boston had been traced by Professor Ira Remsen to a freshwater sponge in one of the reservoirs. A full report of Professor Remsen's investigations has now been received in the



SPONGILLA FLUVIATILIS.

report of the Boston Water Committee. [City Document 143, 1881.]

As the cucumber disorder in public water supplies has caused much public discomfort and disquiet in Boston before, and also in several other cities, and, in the absence of proper precautions, is liable to be repeated, the discovery made by Prof. Remsen is of great importance. Our Croton water was affected much the same way two years ago; and several other cities have suffered from it, among them Hartford, Conn., in 1871; New Haven, Conn., in 1864-65 and 1872; Norwich, Conn., for several years in succession; Jacksonville, Ill.; Holyoke, Mass.; Lynn, Mass.; St. Paul, Minn.;



GRAPEVINE GROWN BY HERR SAGE.

Keene, N. H.; Albany, N. Y.; York, Pa.; Baltimore, Md., and others.

When the Baltimore water was similarly affected, in the winter of 1880-81, Professor Remsen searched in vain for the cause, in view of which fact, and the repeated failure of careful investigators to solve the mystery in other places, he attacked the problem in Boston in no very hopeful spirit. With great patience and skill, however, the source of the contamination was traced to a body of water called Farm Pond, and, in that, to certain organized masses, which Professor W. G. Farlow, of Harvard College, pronounced to

be fragments of a fresh water sponge. A specimen was then submitted to Professor Hyatt, of the Boston Society of Natural History, who confirmed the judgment of Prof. Farlow. This sponge (*Spongilla Fluviatilis*), Prof. Hyatt says, is common in fresh water ponds, and in some places is very abundant. It has the cucumber odor while living, and the odor is intensified by decay. Masses of the sponge easily decompose, and are found part living and part dead.

Professor Remsen says in his report: "These masses [of sponge] growing upon the bottom easily become disintegrated, and undergo decomposition; and both the growing masses and the disintegrated parts must contribute to the taste of the water, though naturally the principal effect is due to decomposition. As this decomposition takes place the more readily the nearer the masses approach the surface of the water, the water near the surface has a stronger taste than that near the bottom." He adds, "I believe the presence of this sponge in Farm Pond furnishes a satisfactory explanation of every fact which has been observed in connection with the present condition of the water," and expressed the belief that the sponge would be found growing in the pond if the water were drawn off. The prediction was confirmed, large quantities being discovered on rocks at the bottom of the pond.

The cactus-like appearance of the growing sponge is shown in the accompanying engraving, one third natural size. The living sponge is green. It turns brown in decay. It possesses remarkable power of propagation, but seems to exhaust itself after a time, leaving the water in which it grew comparatively free from it, perhaps for years.

MISCELLANEOUS INVENTIONS.

Mr. Charles T. Christmas, of Lake Beulah, Miss., has patented an efficient and cheaply-constructed device by which the wires used for fences may be stretched in making the fence and held in place while being spiked to the posts. By the same implement the wire may be cut when desired.

A new apparatus for raising and lowering boats has been patented by Mr. Reginald H. Earle, of St. Johns, Newfoundland. This improved apparatus consists of a swinging frame and gravity cradle for carrying the boat bodily, and these are combined with davits in such manner that either can be used independently.

A novel packing fastener for furniture has been patented by Mr. Marion E. McMaster, of Shelbyville, Mo. The device consists of a plate formed with two or more points or barbs and two or more holes. In use the barbs are driven into the ends of the bars or pieces of furniture, and the fastener is further secured by nails passing through the holes.

A cigarette holder, made collapsible in order that it may retain its contents in good condition at all times, and also made waterproof to exclude dampness and perspiration, has been patented by Mr. Gabriel Rodriguez, of Matanzas, Cuba.

Mr. James Newby, of Paterson, N. J., has patented an improved device for stopping the rotation of the spindles of quilling-frames in case the silk thread that is being wound from the reel upon the bobbin breaks. This device consists of a lever held out of contact with a stop by the thread. When the thread breaks the lever drops and stops the spindle.

Mr. John Newkirk, of New York city, has patented a deflector for cuspidors, whereby the cuspidor may be entirely closed to prevent the escape of odors and the contents of the cuspidor deflected to the sides, entirely out of view.

Mr. Galen A. Peirce, of East Freetown, Mass., has patented an implement or tool for lasting the shanks of boots and shoes, adapted for rapid and easy application, and to be used in various ways or positions according to the position of the workman. The device is made so that the leverage will be continuous for drawing the upper to any extent desired at each grasp or hold upon the upper.

Messrs. Philip H. Sprague and Tobias A. Sprague, of Cornell, Ill., have patented an improved valve or plunger for pumps which is adjustable or expandible to take up the wear. The invention consists principally in the bucket or valve cup, formed of a single piece of vulcanized rubber, in combination with a metal cup placed inside the rubber cup, with a removable washer placed between the bottom of the metal cup and the bottom of the rubber cup.

Mr. George Van Dyke, of Skaneateles, N. Y., has patented an improved combined bagholder and truck. The truck is provided with handles at its upper end, and at its lower end are two wheels and a platform, which forms the nose of the truck and supports it in an upright position, and also serves for the bottom of the bag to rest upon. The back of the truck is provided with a slot in which works a sliding block to which is attached a hopper and a bag-holding device.

An improvement in fishing rods, patented by Mr. Henry Prichard, of Brooklyn, N. Y., consists in combining an elastic tube, cap, and thread with a wooden core. The rod section consists of a central core of wood and an outer tube of India-rubber or similar material, covering the lower end of the section. The covering will extend a suitable distance upon the wood, according to the style of rod, and is retained by a metal cap at the outer end, and a winding of thread around the wood at the inner end of the tube.