

Correspondence.

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Propagation of Roses.—Dwarf Pear Culture.—Ornamental Trees and Shrubs.—Manufacture of Ladies' Apparel.

To the Editor of the Scientific American:

Last week I took an excursion through Monroe and Wayne counties, N. Y., visiting several fruit nurseries and flower seed gardens, and one novel manufacturing establishment, and witnessing practical application of scientific principles to the production of fine fruits and flowers, not less interesting than those involved in the construction of steam engines or the propulsion of canal boats. Moreover, I found an evident willingness, on the part of those who have subjected theories to the test of experience, to impart their dearly bought wisdom to others, thus smoothing for their successors in the business the rugged way over which they have themselves achieved success, and contributing to the higher development of their noble calling. The method of

PROPAGATING ROSES

was minutely described and shown by Mr. John Houston, the skillful propagator at the extensive ornamental and small fruit nursery of A. M. Purdy, Palmyra. This work is done at any time during the season in the greenhouse. I saw plants which were set early in the season and had made considerable growth, others set at various times since, and others still, cut from the bushes and set while I was looking on. Good thrifty shoots from six to twelve inches long were cut and laid in a market basket, sprinkled, and covered with two or three thicknesses of wet paper. They were next taken into the workroom attached to the greenhouses and there cut with a thin bladed keen pocket knife into pieces from one inch to two inches in length, and thrown into water and left from one quarter to one half hour. These cuttings are made with a smooth, somewhat oblique cut, so as to leave but one bud to each, and that at the upper end. The leaf at the base of the bud is cut away, except the two lower leaflets. After having lain in water until all the pores are filled, they are set in coarse sand in the smallest crocks, one in each, or several in a large one. The subsequent treatment consists in keeping them uniformly moist and warm, too much or too little water being injurious. After the cuttings have taken root, they are transferred to larger crocks or to the garden beds. Persons wishing to propagate roses on a small scale may substitute a bottomless box with a light of glass over it for a greenhouse. A writer in *The Garden* says he has succeeded finely by putting a dozen or more cuttings in coarse sand in a marmalade jar, with water enough to stand about a quarter of an inch above the sand, and plunging the jar in a slight hot bed, giving all the light and sun possible, and adding a little water occasionally to replace that lost by evaporation.

Mr. Purdy has 130 acres of rolling land, with soil of sandy loam, devoted to small fruits and ornamental shrubs, probably the largest small fruit nursery in the country. The acres of Mammoth Cluster black cap bushes, literally covered with thimbles of jet, were a sight for an epicure.

From Palmyra, I rode north six miles through a fine farming section, along the line of a projected railroad from the Ontario iron mines by the New York Central to Walworth, a lovely little village which crowns the summit of one of several parallel north and south ridges. Almost encircling and imbosoming the village are the nurseries and orchards of T. G. Yeomans, Esq., to whom, with his estimable family, I am indebted for two days of rare enjoyment in studying the results of twenty years' thorough and systematic devotion to the cultivation of fruit trees and fruit. Though equally successful in raising all other orchard trees and fruits, Mr. Yeomans is without doubt unrivaled as a cultivator of

DWARF PEARS.

From 400 to 500 barrels of pears is the ordinary product of his orchards. The "Duchesse d'Angoulême" is his favorite variety. They are very large, a barrel having been filled with 125 pears. They are delicious and always marketable, \$1,000 having been received for the product of one third of an acre for two years. Quince roots are imported from France. These are set in spring and budded in summer, or grafted the following winter and reset in spring. Clean cultivation follows for two or three years, when the trees are ready for the orchard. The "Bartlett," "Louise," "Bonne de Jersey," "Howell," "Seckel," "Sheldon," and "Vicar of Winkfield" are considered next in value to the "Duchesse."

Mr. Yeomans relies on thorough preparation of the soil by underdraining, manuring, deep and frequent plowing before planting, and clean cultivation, frequent stirring of the soil, and skillful pruning afterwards for success in fruit raising. As an illustration, he has laid four miles of tile drain on fourteen acres of lately purchased land. Cultivators and small plows are kept in operation all the season through, the ground being thus kept mellow and clean as a garden. The most perfect system prevails in all parts of the establishment, and one who visits it is at no loss to know why the products of these grounds are so eagerly sought for. The reason is simply this: The very best varieties are cultivated in the very best manner and sold for what they really are. Varieties which he has thoroughly tested and found the best, Mr. Yeomans raises largely. Of the Baldwin apple, for instance, he has entire blocks in the nursery and over sixty acres of orchard. His entire apple, pear, and peach orchards contain over 14,000 trees. A full crop of apples is about 3,000 barrels; of peaches, 1,000 bushels. Every peach tree is full of fruit.

At Walworth, and also at several of the Rochester nur-

series, I took note of such

ORNAMENTAL TREES AND SHRUBS

as pleased me most. Omitting those well known, I will name a few, any of which may be safely ordered by those who wish to add a rare and beautiful ornament to their lawns. The cut leaved birch has a graceful form, light drooping foliage, and smooth silvery bark which contrasts finely with the foliage. The red leaved beech is among trees what the *colens* is among plants. The honey locust is a rapid grower and a beautiful tree. The *Salisburyana adiantifolia* is remarkable for its peculiar fan shaped leaves. The magnolia and catalpa are fine trees. The *Wigelia rosea*, *Spiraea prunifolia*, *Deutzia crenata*, *Deutzia gracilis*, Japan quince, and red leaved barberry are very desirable shrubs.

While at Rochester I visited the establishment of Messrs Elwell & Moseley, manufacturer of ladies' suits and underwear. They are pioneers in the business. They have already secured an extensive trade, their orders being from almost every State in the Union. In the machine room are stands for 120 sewing machines, which are run by water power, the operator starting or stopping the machine by a slight pressure on the treadle, one foot crowding the band wheel against a disk attached to the shaft, the other removing it. Hemming and puffing are done with the Wilcox & Gibbs machine at the rate of 2,000 stitches per minute. For other work, the Singer, Wheeler & Wilson, Howe, and some other machines are used.

Much of the more elaborately wrought parts of under garments is formed by carefully stitching together narrow strips of bias tucking, puffing, insertion, and edging. The tucking is prepared by laying fine tucks obliquely in two yard pieces of cloth, and then cutting into narrow strips lengthwise. The material used is Victoria lawn, linen, and grass cloth. The wonderful feature of the establishment is that by the aid of machinery and proper division of labor, beautifully wrought garments are made and sold at less prices than the very plainest articles can be made for by hand. Now that ladies' garments have begun to be manufactured by the dozen and hundred by machinery, we may look to see the needle banished to the garret along with the spinning wheel and loom.

C. H. D.

Warsaw, N. Y.

[For the Scientific American.]

NOTES OF ENGLISH SCIENCE.

The treatment of sewage is calling forth a good deal of enterprise. The method adopted by the Peat Engineering Company is to treat with charcoal, a tun of which, they calculate, is equal to the absorption of at least two tuns of solid sewage matter. The mixture is reduced to powder and packed in bags for conveyance or storage. This mode is being applied at Bradford to a sewage of 5,000,000 gallons daily, including waste liquors from numerous dye works and factories. The liquid will be filtered through charcoal arranged in several rows of beds 700 feet long and 4 feet wide, each particle of sewage passing through twelve feet of charcoal. The same company are about to treat the Paris sewage, and offer for the solid *excreta* the high price of 6 francs 7 centimes per cubic meter. The Nuneaton sewage is about to be treated by Anderson's process, in which the sewage is admitted into tanks, and sulphate of alumina, dissolved in water, is thrown in, followed by a little slaked lime. Sulphate of lime is formed, and the alumina is set free. Precipitation follows; the water is run off, and the mud discharged into baskets, of galvanized iron wire lined with flannel, which act as strainers. These, when full, are lifted and the deposit is thrown on a sheet iron floor, heated from beneath with hot air, which, after heating the plate, is drawn back over the surface of the mud, and carried into the flue of the engine furnace. The dried mud forms the manure. Dr. Anderson says that at Nuneaton eight to ten tuns manure can be produced weekly at a cost of £7, including everything.

The Council of the Society of Arts offer prizes of £80, £20, and £10 for the best improved cabs, to be exhibited at the International Exhibition in 1873. The London cabs are thought faulty in the following respects: 1. Want of room. 2. Seats in four wheelers too high, not commodiously made, and the space underneath lost. 3. Difficulty of getting in and out of hansoms from height of step and interference of wheel. 4. Window arrangements in hansoms are bad. 5. The confined, ill ventilated space in hansoms when the window is closed. 6. Imperfect locking of wheels in four wheelers.

The Prince Consort memorial in Hyde Park is approaching completion. It was designed by Mr. Gilbert Scott, R.A., and its estimated cost is £120,000. The monument is elevated on a pyramid of steps, on the upper platform of which rises a pedestal surrounded by sculptured figures. Four pillars of polished granite bear aloft the four main arches of the canopy. The upper part consists of a lofty spire of "tabernacle work," largely gilt and enameled, and terminating in a gilt cross which reaches the height of 180 feet above the ground. Each side of the canopy is terminated by a gable containing a large picture in mosaic. Various sculptured groups represent Architecture, Painting, Poetry, Agriculture, Commerce, Engineering, etc. The figure of the Prince Consort is not yet placed, and is not likely to be for another year.

A remarkable method of preparing wood pulp for the manufacture of paper is exhibited by Mr. Houghton at the International Exhibition. The logs or blocks of wood, preferably pine, are cut into small pieces about one inch by one half or one fourth of an inch. These are treated with alkali at a temperature of 370° to 380° Fahr. (equivalent to a pressure of 175 to 180 pounds per square inch). All resinous

and other matter is thus dissolved out, and the skeleton fibrous framework of the wood collapses into half stuff, under compression, with moisture. The wash liquor is treated (in accordance with a discovery made by M. Tessié du Motay) so as to be utilized again, and this is the essential principle of the process. Carbonic acid gas is forced through the liquor, forming a resinous precipitate, which falls to the bottom on application of heat. The supernatant fluid remains still colored by some vegetal acids, and these are removed by introducing sulphate of soda, a cheap salt. The caustic alkali is thus made fit for use again.

A new mode of paving, called lignomineral, is about to be tried in one of the London streets. It consists of wood blocks impregnated with mineral substances, which make them impermeable to wet and homogeneous. The foundation is prepared with concrete, and the interstices between the blocks are solidly filled in with gravel. The blocks are beveled at the end to an angle of 60°, and those of adjacent rows are inclined in opposite directions. Cheapness and endurance are said to be the benefits of the system. It has been tested in Paris, with excellent results.

The Australian Telegraph Company have announced their readiness to receive telegraphic messages for Australia and New Zealand, at the sender's own risk. The land line is not yet complete, but by means of an express service, news may be received in Adelaide five days after London dates. The work of construction in Australia has been divided into two parts, one from Port Darwin southwards, the other from Port Augusta northwards; of the former 400 miles have been constructed, of the latter, 1,176 miles, leaving 250 miles incomplete. Great difficulties have been experienced from floods. If one walks a mile or two from the camp, he may find, on attempting to return, that he is almost cut off by creeks and water courses, which before had no existence. The rainy season would thus seem to threaten interruption to the line when constructed. Iron poles will further be wanted all through tropical Australia, on account of the ravages of the white ant. The company wishes to carry a submarine cable from Port Darwin to join the Queensland lines in the Gulf of Carpentaria.

A. B. M.

LONDON, July 8, 1872.

Saliva.

The action of the saliva in turning the starch of the potato into sugar is tolerably well known to students of popular science; but few among the ordinary reading public are aware that this saliva consists of a variety of fluids, some of which prepare or predispose the food to change, while others merely serve mechanical objects. Of these the saliva secreted by the parotid glands contains a peculiar ferment named ptyaline, and this principle is the only agent in saliva which has the power of transforming starch into sugar. The diastase of malt has a similar action, and a knowledge of this fact led Baron Liebig to employ diastase in the preparation of a food for infants "brought up by hand," which food supplies efficiently the want of ptyaline and alkaline fluids in the digestive juices. But little is known of the character of saliva in disease; that it is very materially affected cannot be doubted, and further research will probably throw more light on the subject. It is known that the administration of mercury causes a change in its constituents; several medicinal salts, such as iodide of potassium, pass very readily into the saliva from the blood, and, as is well known, the saliva is the bearer of the poison of hydrophobia. From these facts we derive information of a nature probably unthought of by many; for if ptyaline be the only substance in the human economy which can turn starch into sugar—for the gastric juice cannot, and the pancreatic fluid has only a trifling influence in this direction—we see at once how necessary and important it is to thoroughly masticate all food containing starch, not only in order to obtain the full nutritive value of what we eat, but also to prevent overloading the stomach with a mass of food, much of which is probably indigestible.

Canadian Canals.

The New Dominion Government, with a wisdom and foresight which can hardly fail to promote the largest results, is turning its financial prosperity to good account by projecting a series of public improvements on an extensive scale. It is not generally known that the St. Lawrence River above Montreal is not navigable, and that transportation is chiefly by means of canals. These canals were constructed at intervals to meet local wants, and are without uniformity or system. Vessels fully loaded passing through the Welland Canal must discharge part of their cargo, nearly one half, in order to go through the St. Lawrence canals to Montreal. It is intended to enlarge all the canals to a uniform size and depth, so that vessels of 1,000 tuns can pass with full cargoes from the Upper Lakes to tide water. This will be the nearest approach to direct trade between the lake cities and Europe which has yet been attained, and opens up the prospect of a formidable competition between Montreal and New York. Comparatively few vessels will make the voyage from Chicago to Liverpool. It will rather be to the interest of shippers to forward grain to Montreal for reshipment by regular ocean vessels to Europe. The lengthy inland navigation, partly by river with strong currents, and partly by canal, will be only favorable to steamers which it would scarcely be worth while to adapt to the exigencies of the ocean. The consequence is that Montreal is likely to become a great grain distributing port in the immediate future.

THE new postal rate, on transient newspapers, pamphlets, circulars, cards, photographs, roots, cuttings, etc., is 1 cent for each two ounces.