

A device for Twisting Yarn into Hanks has been patented by Messrs. B. S. and A. Jennings, of Sullivan, Ill. The twisting rod, which is contained in a box, has a hook for the hank at one end, and is attached at the other end to a weighted cord. As it is drawn through the box it is caused to rotate by means of a fixed spiral guide, and the number of rotations is regulated by an adjustable stop pin.

A new Brake for light vehicles, invented by Mr. C. H. Weiss, of Eckley, Pa., consists of a friction strap surrounding the inside hub band, and prevented from turning by an arm attached to the axle. It is operated by a lever, which draws the ends of the strap together so as to clamp the hub band.

A folding and otherwise adjustable Ironing Table has been devised by Mr. M. S. Prescott, of Otisville, Mich. It is strongly braced, and furnishes a support for large articles which would otherwise touch the floor.

Mr. J. M. Castillo, of New York city, has invented a convenient Hat Hanger, designed for suspending a hat from the back of an opera chair, or in similar positions. It may be folded into small compass and carried in the pocket.

An improvement in Wagon Box Fastenings has been made by Mr. C. G. Conkling, of Hopewell, Pa. The object is to furnish a means of quickly taking apart or putting together the sides, bottom, and ends of a wagon body, so that it may readily be adapted to the nature of the material to be carried, and the invention consists in hinging straps or stirrups to the bottom bars, and locking them by eccentric levers carried by the side boards.

An improved mode of Securing Vehicle Wheels to their Axles has been patented by Mr. F. C. Lee, of Ridgefield, Conn. The outer end of the hub is closed, and upon its inner cylindrical end a ring groove is formed, in which fit adjustable keys carried by projections of the axle and held in place by an annular open spring band. The hub can be readily released by springing the band open, when it is desired to oil the bearings, or for other purposes.

SOME SEASONABLE HINTS ON PLANT CULTIVATION.

In order to obtain good plants, especially those for the vegetable garden, it is absolutely essential to raise them from seed, for those offered for sale in the markets are grown for sale and are neither healthy nor robust. If, however, there are no facilities for seed propagation and the purchase of plants becomes unavoidable, the following instructions will be found valuable:

THE SHAPE OF GOOD PLANTS.

Select those that have short, robust stems, for a long or slender stem indicates that the plants have been rapidly forced by artificial heat, or were grown too close together, in which case the sides and undergrowth have been excluded from the light and air, and the plants have, as it were, stretched their necks in their efforts to reach the light. If a plant has a small amount of root in proportion to the foliage it is weakly from having been forced too quickly or under too great a heat. The more root, the stronger and the greater the growing capacity of the plant. If the leaves are of a yellow cast it may occur from an unhealthy condition caused, in all probability, from having been but recently taken from the hotbed or forcing house, from having been taken from the plant bed too long, and, in some cases, from there being insects or grubs at the roots. If the roots are very short it shows that they have been carelessly taken from the beds and the rootlets have been broken off. A short or stubby root is always detrimental to the plant, while if the root is long and fibrous it is of little consequence if the foliage is small or short, providing that it has a deep green, vigorous appearance.

HOW TO PLANT THE SEED.

The beds to receive seed should be composed of a light, loamy or peaty soil, prepared when comparatively dry, and finely pulverized. The bed should be raked level and smooth, the seed being sown not too thickly and covered to a shallow depth. Large sized seeds should have nearly half an inch of covering, while fine seeds require an eighth of an inch only, and very fine ones still less. The soil should be flattened about them sufficiently to close the earth without making it very compact, and the bed should be lightly watered immediately after the seeds are planted.

WATERING THE SEED.

A common error is the giving of water in too great a quantity, and in too large drops. The soil requires to be kept moist but not wet, or the seeds are apt to rot. It must be remembered that the seed has to force its way through the soil, and that the latter will readily give way to the pressure when moist, but not when caked hard and dry. A little water often applied through a fine rose spout or sprinkler is the most advantageous.

THE TEMPERATURE.

If the temperature is too great the seed will propagate quickly and shoot up, in a spindling condition, above the surface of the soil. The stems will appear whitish and partly transparent; the growth of the foliage will be excessive in proportion to that of the root; the plants will be weak and comparatively valueless. If kept too cold they will appear yellowish and stunted, many will die, and the remainder will become old without attaining vigor. The best temperature ranges between 45° and 50° Fah., and in order to maintain this as near as possible the plants should be watered, at this time of the year, in the morning. The plants should not be placed in a position in which the light comes in from one side only, or they will stretch themselves in that direction.

TRANSPLANTING.

The object of transplanting is to check the growth of the foliage and promote that of the root, and this is best done while the plants are young, so that, when they are finally planted out, there will be sufficient root to support a vigorous upper growth. As soon as the plants are well above the surface of the soil they should be thinned out; that is, the weaker ones should be removed, so that those left may have free access to the air and not be crowded. In thinning out, leave the shortest and strongest plants, keeping them as nearly as possible an equal distance apart and with a small space between the leaves of one plant and those of the next. As soon as the plants have six visible leaves the first transplanting (called the pricking out) should be performed. First the seed bed should be watered, and about an hour afterwards the plants should be removed to another bed, prepared of rich, light soil. In removing the plants from the old bed it is of great consequence to preserve the rootlets, and to this end a three or four pronged fork should be employed, lifting the plants gently and handling them carefully, planting them nearly up to the leaves in the new bed, placing them three or four inches apart, and pressing the earth very lightly about them, and finally lightly sprinkling them with water. The bed in which they are transplanted should be prepared rather dry, and if out of doors just before a shower of rain is the best time. Plants that have been thus transplanted not only grow to greater perfection, but are more hardy and will stand a protracted drought much better.

SELECTING DOUBLE SEED FROM SINGLE PLANTS.

Not many florists even are aware of the manner of selecting from plants having single flowers seed that will produce plants having double flowers. If we closely examine the bloom upon single wall flowers or single stocks we shall find here and there a bloom that has one more leaf in it than the ordinary bloom, and the presence of this extra leaf is an infallible sign that the seed produced from that bloom will produce a plant bearing double blooms. To mark the seed a short piece of scarlet silk is loosely tied upon the stem of the extra leaved flowers, or where the different plants have differed colored blossoms the color of the silk may denote the color of the flower also.

The Northeast Passage.

After the lapse of more than two centuries the discovery of a northeast passage from Europe to China is again about to be attempted, this time by Sweden, and though in the present state of geographical knowledge no one now expects to find a trade route to the East, still an undertaking of this nature is sure to excite a lively interest among seafaring nations, and more especially in England, the country which first sought to solve the problem. Professor Nordenskjöld, a well known Arctic explorer, to whom the suggestion and scheme of the intended exhibition are due, has already, in 1875 and again in 1876, passed east of Novya Zemlya to the further shore of the Kara Sea, where close to the eighty-first parallel of east longitude, and to a headland marked Effremoffstone Point on the English Admiralty chart, he found a good anchorage, and named it Deckson's Haven. This harbor lies considerably to the eastward of the furthest point previously reached by English or Dutch navigators, but as it is in Professor Nordenskjöld's opinion easily attainable before the end of August, in ordinary seasons, it ought, he thinks, to be regarded as a fresh point of departure for any future voyage of discovery; and, therefore, in reporting on the results achieved by former expeditions, he had confined his attention to those whose work lay east of the river Yenesei. Of expeditions from Western Siberia the first descended the Yenesei in a small vessel transported from Tobolsk. In 1738 and the following year the expedition stopped short while yet in the estuary of the river, and in 1740, when at last it passed fairly outside the Yenesei, its leader did not venture further north than latitude 75° 15', but on September 2 thought it prudent to turn back and seek winter quarters. In 1842, after an interval of more than a hundred years, a Russian named Tjeluschin, in command of a sledge party, followed the west coast of Taimoor peninsula until, in latitude 77° 34', he reached Cape Northeast, or, as it is sometimes called, Cape Tjeluschin, the extreme point of the Asiatic mainland in that direction. In May, the date of Tjeluschin's discovery, the sea, as might be expected, was completely frozen, but in the following year, when Nuddendorf, traveling overland, arrived on August 25 at Taimoor Bay, in latitude 75° 40', he could see nothing but open water to the northward, and reported upon the authority of one Fonin, said to have spent a winter there, that the ice breaks up in the first half of August, and is then, under the influence of prevailing winds, driven so far from the shore that it becomes barely visible from the high ground.

Between Cape Northeast and the mouth of the River Lena our knowledge of the coast is derived from the reports of Russian surveying expeditions sent out from Yakutsk. In 1735 Proutschischeff, a lieutenant in the Russian navy, starting from that town, descended the Lena for more than 800 miles, passed out to sea by its eastern mouth, and, after sailing westward round the delta, wintered in Olensk Bay, in latitude 72° 54'. Next year, on August 5, when the ice broke up, he started afresh, and continued his voyage until September 1, when in latitude 77° 29', quite close to Cape Northeast, he met ice, and turned back. In 1739 another expedition, under the command of Lieutenant Laptew, also of the Russian navy, left the Lena on August 1, and on

September 2 was turned back by ice at Cape Thaddeus, some fifty miles from Cape Northeast.

East of the Lena, where the coast trends gradually to the southward, there is evidence of a regular coasting traffic carried on in the sixteenth century between the mouths of the different rivers, and between the mainland and the Lisikov islands. Of the voyages made at this early period little is now known. There is, however, a map dated St. Petersburg, 1758, on which the route is marked as *anciennement fort fréquentée*, and we have also the record of some legal proceedings arising out of a dispute as to the discovery of a walrus bank on the east coast of Kamtchatka. Thus we learn that of seven small vessels which left the river Kolyma on July 1, 1648, one, that commanded by a Cossack named Deschnew, passed through the straits since called after Behring, and in October arrived at Anadyr. Again, between 1735-40, Russian explorers attempted to find their way from the Lena eastwards, and though none of them reached Behring Straits they followed the coast as far as Cape Baranown, east of the river Kolyma.

Of attempts to sail westward from Behring Straits the most successful was that of the American expedition of 1855, under the command of Captain Rodgers, which reached the 170th parallel of east longitude, while Cook in 1778 stopped short at the 180th, and Behring in 1729 got no further than the 172d parallel of west longitude.

The Russian adventurers who bit by bit surveyed so great a length of unknown coast line had at their disposal none but country craft, dependent upon oars or a leading wind, and equally unable to live in a seaway or to resist the slightest pressure by ice. Moreover, as such vessels could afford their crews no sufficient shelter from the rigor of an Arctic winter their commanders were greatly hampered by the necessity under which they lay of securing a return to the nearest settlement before navigation should become impeded; the further, therefore, they advanced from home, the earlier they had to begin their retreat, and thus they seem to have always relinquished their object at the very beginning of September, just as the time was approaching when, as we have since learned, those seas are least encumbered by ice. Professor Nordenskjöld, therefore, while he acknowledged the courage and hardihood of the crews, and the tenacity of purpose displayed by their leaders, thinks nevertheless that their sufferings and frequent failure ought not to discourage Swedish sailors serving on board a roomy steamship, properly strengthened for Arctic work, and fully supplied with provisions and other necessaries, in case she should be compelled to winter in the ice.

Out of a fund raised by private subscription Professor Nordenskjöld has purchased the steamship Vega, and proposes, in a petition for assistance from the Swedish Admiralty, lately presented to the King, that, after being fitted out and supplied with coals and provisions at the expense of the government, she should be manned by volunteers from the navy under the command of their own officers. Besides her crew of 19 men and officers, it is intended that she should carry a surgeon, and by way of scientific staff Professor Nordenskjöld and three assistants. Leaving Gothenburg in July, she will call at a port in the north of Norway to ship four harpooners and to fill up with coal, and will thence sail direct for Deckson's Haven, where she is expected to arrive before the end of August.

The immense body of warmer water from lower latitudes poured into the Kara Sea by the Obi and the Yenesei forms a strong current which, according to Professor Nordenskjöld, is, off their mouths, deflected by the diurnal rotation of the earth and made to flow along the coast in a northeasterly direction. Starting from Deckson's Haven in September, when this warm current has had time to exercise its full effect upon the coast ice, Professor Nordenskjöld hopes to find, at all events, a lane of open water which will enable him to double Cape Northeast, and should he succeed in doing so without any great delay, he thinks that the expedition may reach Behring Straits before the end of the season. Should it prove impossible to pass round Cape Northeast until very late in autumn, or should the distance thence to Behring Straits render such a step necessary, the expedition, by wintering near the mouth of one of the larger rivers, would probably find some opportunity of communicating with home overland, and the ship would be in a position to complete her voyage in the course of the following summer, and return home by way of the Suez Canal.

Among the advantages which it is hoped may be derived from the proposed expedition, Professor Nordenskjöld, after referring to the happy results of fostering a spirit of enterprise in the English navy, lays especial weight upon the value of the observations which the scientific staff will be in a position to make, and points out the great benefit which will be secured to Siberia, and in a scarcely less degree to the world at large, should it prove possible, as in the case of the North Atlantic and the Yenesei, to discover a practicable summer route from the Pacific by way of Behring Straits to the Lena, one of the great navigable rivers which afford the chief means of internal communication throughout the vast extent of Central Asia.

THREE remarkable steps in scientific progress and discovery have been made within the past few months: The reduction of the telephone to practical use on telegraph lines; the discovery of the phonograph, by which the sounds of the human voice are mechanically recorded and redelivered; the liquefaction of hydrogen and oxygen gases by pressure and cold.