

DISCOVERIES AND INVENTIONS ABROAD.

Preparing Red Colors.—We should judge from the great number of patents which have recently been taken out in France and England, for applying and preparing coal-tar colors, that these have nearly superseded (in Europe) all the colors which were formerly derived from innumerable dye-woods. The following is the condensed description of a patent, obtained by W. Spence, of London, for obtaining a fast brilliant red by the transformation of carbohc acid. The inventor takes 23 pounds of phenic or carbohc acid, about 15 pounds of oxalic acid and 10 pounds of sulphuric acid, and mixes these together in a vessel heated over a fire. A deep greenish substance of the consistency of pitch is thus produced, which is washed with boiling water to remove the excess of acid in it. It is next thoroughly dried and reduced to powder. About 2½ pounds of this product are now mixed with 5½ pounds of the ammonia of commerce, placed in a close vessel and submitted to a heat of 270° Fah., for three hours, then allowed to cool in the vessel. The coloring matter is now found to be dissolved in the ammonia, forming a thick liquor. When this is treated with sulphuric or hydrochloric acid it forms a deep red precipitate, called *peonine*, which is capable of dyeing silk, wool, and other textile fabrics a fast red color.

Preparing Blue Colors.—In order to obtain a blue color for dyeing and printing, Mr. Spence mixes five parts, by weight, of the above-described red coloring matter with six parts of aniline, and subjects the mixture to a heat of about 210° Fah., for about three hours, when the red color is gradually transformed into a blue coloring substance, which is washed thoroughly with water, then boiled in water acidulated with sulphuric or hydrochloric acid. After this it is heated with coal oil and again washed with a dilute solution of caustic soda, then mixed with boiling water acidulated with sulphuric acid and dried. It is now obtained in powder of a golden shade; it is soluble in alcohol and methyle, and is suitable for dyeing and printing generally.

Printing Coal-tar Dyes.—W. H. Perkin, of Sudbury, England, has also taken out a patent for printing and dyeing coal-tar colors on cotton and linen fabrics. He takes either aniline purple, violet, blue de Lyon, or magenta, and mixes it with 1,000 parts of the acetate of alumina, having a density of 10 degrees in Beaume's hydrometer, and 80 parts, by weight, of arsenite of soda, and stirs them all together and then adds starch or gum to thicken the solution for printing. It is applied to the cloth by machinery used for printing, after which it is submitted to the action of steam in the usual manner of steaming calicoes. The aniline colors are first dissolved in alcohol, before being mixed with the mineral mordants, at the rate of 16 parts of dry coloring matter to the 1,000 parts of the acetate of alumina. For the magenta color about 136 parts of the arsenite of soda is used, but for the other colors only 90 parts. The application of aniline colors to calicoes is very troublesome. One of our New England calico-printers told us recently that he had found it very difficult to mix such colors for printing on cloth.

Blue Coal-tar Color.—A patent has also been taken out by E. C. Nicholson, of London, for a soluble aniline blue color, obtained by the mode described as follows:—He takes, by preference, the substance known as "blue de Lyon" or that known as "azaline," these being blue-coloring matters obtained from aniline and similar bases. He extracts all soluble matter from it by boiling it with water containing sulphuric acid. He employs for this purpose the said acid in the proportion of about four ounces, by weight, to every gallon of water. When all or nearly all the soluble matter is extracted, he collects the insoluble matter and dries it thoroughly. He then takes this substance, reduced to powder, and adds to it about four times its weight of concentrated sulphuric acid of commerce, and he raises the temperature of the mixture to about 300° Fah., and keeps it stirred until all is dissolved; and he then maintains it at about this temperature until a sample, when added to water, is entirely dissolved. If the temperature is raised too high sulphurous acid is evolved and the dye gradually destroyed. The acid solution can be diluted and used for dyeing or printing in the ordinary way, or, if too acid, the excess of

sulphuric acid may be removed by lime or other suitable alkali; or, if an excess of lime be added, the sulphuric acid is entirely precipitated in the form of sulphate of lime, and a colorless solution is obtained which, when neutralized with any vegetable or other acid, develops the improved soluble blue dye.

Caustic Soap in Cleaning Flax.—A patent has been taken out by Mr. Henry, of London, for the use of a very caustic soap in the treatment of vegetable products, such as hemp, flax, nettles, straw, grass, &c., to obtain fiber for spinning. The soap is made by combining a concentrated solution of caustic alkali, with oil, grease or any saponifiable substance, so as to have an excess of alkali. He states that flax, &c., may be taken without any other preparation after being gathered and steeped in a solution of such soap, when the fiber will be disintegrated from the glutinous parts of the plants, and pulp for paper also obtained. Such treatment of plants containing fiber, with a small quantity of caustic soap, it is stated, answers the purpose of the usual retting process, and the subsequent crushing operations of the plants are rendered much easier: The soap separates the gummy and oily matter from the fiber, and by subsequent washing it is removed with the water leaving a clean and beautiful fiber.

New Product from Sea-weed.—A new product has been obtained from sea-weeds of the order *algæ* by T. H. Ghislin, of London. The sea-weed is first steeped in dilute sulphuric acid for about three hours, then thoroughly dried and becomes hard, after which it is ground to an impalpable powder. About 10 per cent of glue dissolved in water, 5 per cent of gutta-percha and 2½ per cent of india-rubber dissolved in naphtha, and 10 per cent of coal tar, are thoroughly mixed and boiled together. To this mixture 5 per cent of the flowers of sulphur, 5 per cent of orosin, 2½ per cent of alum and 60 per cent of the pulverized sea-weed are added and intimately mixed in the boiling compound. The mass is now placed in an oven and heated to 300° Fah., when it forms a plastic compound capable of being molded, embossed and stamped into various articles useful in the ornamental arts, like gutta percha, as it becomes very hard and durable when cold.

RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week. The claims may be found in the official list.

Grain-dryer.—This invention relates to the employment within a tower or shaft through which an upward circulation of air is produced, of a series of screens grated or reticulated platforms, arranged one above another at alternately opposite inclinations and having a vibrating or shaking motion, so that the grain or other substances to be dried being deposited upon the uppermost screen or platform may pass down to the next below, and thence in succession from one to another of the whole series, while the air, circulating upward through and over the screens, absorbs and carries off the moisture with it to and through the top of the tower or shaft. The improvements consist, first, in so combining the whole series of such screens or platforms with a suitable apparatus for raising and lowering one end of each, that the inclination of the several screens or platforms may be varied or adjusted simultaneously for the purpose of regulating the speed at which the grain, or substance to be dried, will descend the tower or shaft, as the degree of its dampness may require; second, in the combination of such a series of screens or platforms and an elevating apparatus by which the grain or other substance to be dried, is delivered on to the uppermost screen or platform of the series. Samuel Schuyler, of Brooklyn, N. Y., is the inventor of this device.

Breech-loading Fire-arm.—This invention relates to the attachment of the barrel to a stationary breech, forming a portion of the stock, by means of a screw arranged below the barrel and parallel with the bore thereof, the opening of the said rear end of the barrel being effected by turning it to the extent of a quarter of a revolution on the said screw, in which movement it not only moves out of line with the barrel to expose its open rear end for the reception of the cartridge, but moves in a forward direction

on the screw, and so opens very easily and without friction against the breech. It consists in the employment, in combination with the said screw attachment of the barrel and breech, of a peculiarly-applied stop which serves not only to stop the barrel opposite to the breech in the closing movement, but to stop the barrel in its opening movement, and thereby prevent such movement from being continued further than is needed, and which is so applied as to be capable of being conveniently moved out of the way when necessary, to permit the unscrewing of the barrel from the breech to such an extent as to detach it. It further consists in a peculiar device applied in combination with the said screw attachment of the barrel and breech, for the purpose of partly withdrawing the discharged cartridge cases from the barrel by the act of opening the breech. Charles Jackson and Thomas Goodrem, of Providence, R. I., are the inventors of this improvement.

APPLICATIONS FOR THE EXTENSION OF PATENTS.

Process for making Malleable Iron direct from the Ore.—Moses S. Salter, of Newark, N. J., obtained a patent on November 20, 1849, for an improved process for making malleable iron direct from the ore; and he has applied to the Commissioner of Patents for the extension of that patent for a term of seven years. The testimony will close on May 18th, and the petition will be heard at the Patent Office on June 1st.

Drying Grain.—Joseph H. Patten, of New York city, obtained a patent on June 19, 1849, for an improvement in drying grain; and he has applied to the Commissioner of Patents for the extension of that patent for a term of seven years. The testimony will close on May 18th, and the petition will be heard at the Patent Office on June 1st.

Magazines and other Publications Received.

THE ANNUAL CYCLOPEDIA FOR 1862. Published by D. Appleton & Co., New York.

D. Appleton & Co. have rapidly passing through the press the second volume of the new annual publication, which was received with such favor by all classes of the community. Its contents embrace the material and intellectual progress of the year, particularly in this country; the important civil and political measures of the Federal and State Governments; an accurate and minute history of the struggles of the great armies and the many battles, illustrated with maps of the country and plans of the actions, taken from official copies; the proceedings in the Confederate States to maintain the war and establish their Government; the debates of the Federal and Confederate Congresses; the financial measures of the Government, the commerce, &c.; also, the progress of foreign nations, including the Mexican Expedition; the ignominious flight of Otho from Greece; the Tae-ping Rebellion in China; the cautious march of the Russians into Persia, their intrigues in Afghanistan, and their march to the Chinese frontier; the Cochin China war; the distress of the Lancashire operatives; the stoppage of the looms of Mulhouse and Lyons; also the developments in the physical sciences; the progress of literature, mechanical invention and improvements; the religious statistics of the world, and biographical sketches of the eminent persons deceased in 1862.

NYSTROM'S POCKET-BOOK OF MECHANICAL LAWS. Published by J. B. Lippincott, Philadelphia, and Trubner & Co., London.

This is a compilation of valuable scientific data on every conceivable subject connected with the useful arts. It contains rules, or rather formulas, algebraically expressed, for the solutions of problems and for arriving at definite results in the proportions of machines, &c. Mr. Nystrom, the author, is an engineer of high standing in the profession, and has, from his observations and experience, collected the matter here published as an aid to memory; or, more plainly, for every-day use. The tables are very full, and, from the mathematical reputation of the author, are undoubtedly correct. There is no publication in existence with so complete and reliable formulas, we are assured, of the expansion of steam and its economy, when applied to different kinds of engines, as are to be found in its pages. We have not examined them thoroughly. Water wheels, motors of different kinds and mechanical miscellany of a useful character are condensed into a "pocketable" form, and many men can, by the aid of this little volume, supply themselves with portable knowledge of a very valuable kind. Every person connected with manufactures in general will find this a most desirable work of reference.

THE ATLANTIC MONTHLY FOR APRIL, 1863. Published by Ticknor & Fields, Boston, Mass.

The table of contents exhibits, in this number, an excellent variety. The interesting reminiscences of the poet Keats; the valuable contributions to the stock of popular knowledge concerning the globe we inhabit, by Prof. Agassiz; the narrative of events in the life of the historian Buckle, afford the seeker after entertaining and useful reading a capital field to select from. The article, "A Spasm of Sense," seems, however, to be mis-named. "A Chapter of Platitudes" would be more correct.

THE QUARTERLY MIRROR OF FASHIONS. Published by Madame Demorest, No. 473 Broadway, New York.

The spring number of this publication is now issued, and contains a fine fashion-plate engraving; also numerous other illustrations, which are very finely executed. Even in times of war our ladies seem to wish to keep up with the fashions, and, in order to do this, no better medium than Madame Demorest's *Mirror* can possibly be found. The number is sold for 25 cents.