Scientific Museum.

(For the Scientific American.)

Dendrology.

There are many professed naturalists who can give a name to every tree as it stands in the forest, and yet cannot distinguish one from the other when cut into timber; and there are nearly as many mechanics who are excellent judges of timber, but are unable to tell one tree from another. A few words on the prominent characteristics of the most common woods may not, therefore, be inappropriate.

ASH.—Leaves about a foot long, often made up of 7 leaflets. Flowers, paniculate, appearing in May. Wood is light, durable, tough, elastic, permanent, splitting with a straight grain. Grows in United States and Canada.

BASS.—Leaves, cordate, 4 by 3. Flowers, cymose, appearing in June. Wood is fine grained, light, soft, white, clear, and flexible. Grows in Northern and Middle States.

BEECH.—Leaves, alternate, lanceolate, 4 by 2. Nuts, ovoid-triangular. Bark, smooth, light gray. Wood, fine grained, red duramen, white alburnum. Buds in May. Abounds in New England, and Western States and Canada.

BIRCH.—Leaves, alternate, ovate, serrate, 3 by 2. Buds in April and May. Bark, laminated. Wood firm, compact, takes good polish. Abounds in Eastern and Middle States.

BUTTERNUT.—Leaves alternate, pinnate, formed of 7 or 8 pairs of leaflets. Buds in April and May. Branches horizontal. Wood reddish and light. Abounds in Eastern, Middle and Western States. Its kindred black walnut is rarely found north of New York. Its heartwood is heavy, tenacious, and violet colored, but turns black.

CEDAR.—Leaves evergreen, imbricate, squamose. Flowers in May. Wood soft, smooth, light, durable, aromatic. Abounds in swamps of Middle States.

CHERRY.—Leaves oval-oblong, shining above, 4 by 2. Flowers in May and June. Bark rough, black, and bitter. Wood colored, compact, fine grained.

CHESNUT.—Leaves oblong-lanceolate, with teeth 7 by 2. Flowers in July. Wood coarse, porous, strong, elastic, light, durable, apt to warp.

ELM.—Leaves ovate, serrate, short stalked, 4 to 5 long. Flowers purple, in clusters, appearing in April before leaving. Wood tough, hard to split. Abounds in the Northern States.

HEMLOCK.—Leaves evergreen, linear, in rows. Cones appear in May. Branches brittle. Wood soft, elastic, coarse. Abounds in Northern States and Canada.

HICKORY.—Leaves oblong-lanceolate, on long stalks. Flowers in April and May. Bark shaggy. Wood elastic, compact, heavy, tenacious, warps.

MAPLE.—Leaves 5-lobed. Flowers suspended, appearing in April. Bark light gray, scaly. Wood strong, compact, smooth. *Soft Maple* bears yellowish green flowers.

OAK.—Leaves lobed. Flowers in May.—Bark white. Wood strong, durable, coarse grained, warps. Abounds in United States and Canada. Red oak leaves are sinuate-lobed, wood reddish. Black oak bark deeply furrowed.

PINE.—Leaves evergreen, acerose in pairs. Flowers in May. Bark smooth. Wood soft, fine grained, durable, resinous, light, homogenous.

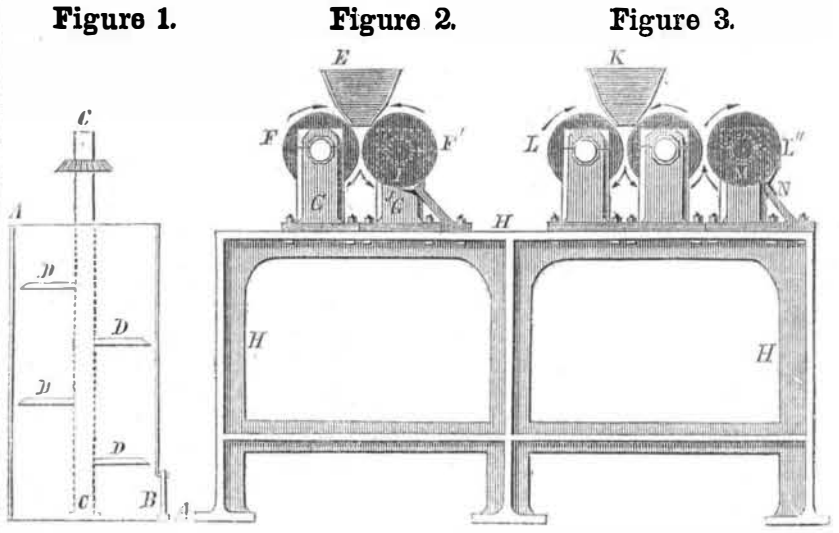
SPRUCE.—Leaves four-cornered, evergreen, straight, half an inch long. Flowers in May. Wood light, elastic, strong. Abounds in Northern States.

Closely connected with the botanical qualities of these trees are their hygrometric properties. The power of absorbing moisture generally varies as the porosity. To show the extent of the meteorological changes and the corresponding expansion and contraction of bodies, a simple method is to cut a thin slip of wood across the grain, and insert into its corners four needles pointing backwards. When set on a table it will crawl along and thus register the sum of damp and dry weather. The one I have, though kept in a close room, travels more than half an inch per week. In order to ascertain the relative absorbing powers of different woods, I procured similar slips of the spruce, oak, elm, pine, cherry, chesnut, ash, hemlock, bass, and butternut, which when baked were exactly eight inches in length. These being fastened at one end, each showed its avidity for atmospheric vapor by stretching longitudinally.—Their comparative increase is seen in the order just given; spruce gaining a quarter of an inch over butternut. By this hygrometer it may be proved that the amount of moisture in the air increases from sunrise till 9 A. M.; decreases till 4 P. M., and again increases till 9 P. M.

J. O.

ZINC PAINT MILL.

Figure 1. **Figure 2.** **Figure 3.**



Our readers are aware that peroxyd of zinc, generally called "white oxyd of zinc," is now much used as a pigment in competition with, and by many in preference to white lead; this article, of a very superior quality, is imported in large quantities into the United States by "La Societe des Mines de Zinc de la Vieille Montagne," of France and Belgium. The agent of that company has communicated to us the description of a process for mixing the oxyd of zinc with oil, used in one of the first paint manufacturing establishments of Paris, which, it is asserted, combines speed, efficiency, and economy. We give it herewith for the benefit of all concerned.

Figure 1 is the mixing mill; A is a hollow cylinder made of sheet iron, 31 inches deep, and 15 inches in diameter; it is set upright. B is a door closing hermetically when shut. C is an axle revolving vertically in the cylinder, A. D D D D are cross-blades fastened to the axle at a right angle and at equal distances.

Fig. 2 is the roughing mill. E is a hopper or funnel; F F' are cylinders made of cast-iron, 40 long inches and 8 in diameter. G G are bearings screwed down to the cast-iron table and frames, H. I is a circular iron plate fastened to, and edging both ends of cylinder F'. J is a thin elastic blade or scraper pressing against the whole length of said cylinder.

Figure 3 is the finishing mill. L L' L'' are cylinders similar to F F', but set closer and supported on the same frame. M is a circular edging placed similar to I, and set at both ends of cylinder, L'' N is a scraper.

By the use of this apparatus 100 pounds of the 'vieille montagne' zinc require only 12 to 15 pounds of purified linseed oil, while inferior descriptions of zinc ground in common burr stone mills require from 20 to 30 per cent. One half of the oil is first poured in the mill, A, and then the oxyd; the mill is set in motion at the rate of 30 revolutions of the axle per minute, and after a short time the remainder of the oil is added by degrees. When the substances appear to be well embodied together and the *paste* to be homogenous, the door, B, is opened and the contents allowed to be driven out by their own weight and the effect of the rotating motion, and are carried into the funnel, E, between the cylinders of fig. 2.

The cylinders, F F', make 30 revolutions per minute, and in proportion as the paint goes through them and falls behind the blade, J, on the table, H, it is taken up and poured into the funnel, K.

The rolling cylinders, L L', have the same motions as F F'; cylinder L'' makes 60 revolutions per minute; all these cylinders move in the various directions marked by the arrows.

The apparatus must be contrived so that the proximity of the rollers may be increased or decreased, according to what may seem best. It might be an improvement to it if the three mills were on three different levels, in order to avoid the labor of ladling the paint from the one to the other.

As described, it occupies a space of about 36 feet superficially, and can grind 2600 pounds of paint per day with a power of less than two horses; its first cost in Paris is about $800.

The zinc paint mixed by this process is perfect in body; it contains no grit or clots, and has a creamy appearance, which is well appreciated by painters.

Any further information which may be desired can be obtained by addressing F. Millirroux, 33 Broadway, New York.

Bronze Colors.

BRONZE COLORS FROM BRAZIL AND LOGWOOD, SUITABLE FOR PAPER STRAINERS—If some alum be dissolved in a hot decoction of Brazil wood, which has been previously allowed to clear itself by standing some days, a precipitate will form on the liquor cooling, which will gradually increase if it be set aside, and will contain nearly the whole coloring matter. If this precipitate be once washed with water, and rubbed thick on paper, it will dry with a beautiful brilliant golden color, tending somwhat to green, resembling the wing-cases of dried Spanish flies. If a little of this precipitate, in the condition of paste, be mixed with size and some satining materials (formed of wax dissolved in soap), and then rubbed with a brush upon paper, it may be polished with an agate, or glass ball, upon which it will assume the beautiful yellow metallic lustre, very similar to bronze. To obtain this effect, it must be laid on so thick as to be perfectly opaque.

Similarly, a bronze color may be made from logwood; but the preparation is different, and the color is more like that of copper, whilst the former approaches to brass. If a fresh prepared decoction of logwood be heated in a copper pan, then precipitated with chloride of tin (tin salt), a rich dark brown precipitate will be obtained. This precipitate washed and treated as the last, communicates to paper a copper bronze. A different shade may be obtained by adding to the hot decoction of logwood a little alum, and then decomposing it with a still smaller quantity of red chromate of potash. This precipitate is darker, tending more to yellow than the latter.

Paper from Wood.

At the last sitting of the Societe d'Encouragement pourl'Industrie Nationale, of Paris, a paper was read setting forth a plan for making paper from wood. The bark is taken off the wood, and the wood cut in such away as to be easily made into shavings; the shavings are then cut very thin; next they are placed in water for six or eight days, then dried; afterwards they are reduced to the finest powder possible by means of a corn mill. This powder is then mixed with the rags which serve to prepare the pulp of paper, and the ordinary operation of paper-making is proceeded to. All white woods, such as the poplar, the lime, and the willow, are suitable for the purpose, but the discoverer ascribes a good deal of his success to the quality of the water he employed, that of the little river Dollar, which runs near the Mulhouse. For the first experiment he employed the wood of the trembling poplar, and he presented specimens of paper from it.

A Grain Fleet.

The "Chicago Journal" of Wednesday week, records the departure of quite a fleet of vessels from that port, all loaded with grain, for Buffalo and Oswego. The fleet numbered nineteen vessels, (three barks, six brigs, and ten schooners,) having on board 260,120 bushels, of which 208,332 bushels were of corn, 32,939 bushels of wheat, and the balance barley and oats. Of the whole quantity over 213,000 bushels went to Buffalo.

LITERARY NOTICES.

AUTOBIOGRAPHY OF HUGH MILLER.—This is quite a large volume just published by Gould & Lincoln, of Boston; being an autobiography named "My Schools and Schoolmasters," by the author of "The Old Red Sandstone," "Foot-prints of the Creator," &c. It is an interesting volume; the principal design of the author in writing it is to show his method of self-cultivation. It is adorned with a fine steel engraving of the author as a working mason, with his sleeves rolled up and his mallet in his hand. Hugh Miller presents one of the strongest examples of a working man—comparatively poor—without friends to help him, rising to the very front ranks of science and literature, both as an author of books and a journalist, he being the editor of the "Edinburgh Witness." This work is very interesting, and written with the author's usual ability.

GEOLOGY OF THE CREATION.—The above publishers have also just issued in neat pamphlet form "The two Records, the Mosaic and Geological," by Hugh Miller. This is a lecture delivered by the author before the London Young Men's Christian Association. It should be read by all young men.

THE BIBLICAL REPERTORY AND PRINCETON REVIEW.—This learned and able Review for this quarter, of the Presbyterian Church, (O. S.) contains seven profound and well written original articles on various subjects. It is conducted by Prof. Hodge, of Princeton, and published at 265 Chesnut street, Philadelphia. To regular subscribers its price is $3 per annum, but it is furnished to theological students for $2.25, not one of whom in our country should be without it.

SPIRITUAL MANIFESTATIONS EXAMINED AND EXPLAINED.—This is a neat volume by John Bovee Dodds, and published by Dewitt & Davenport, this city. It is written to refute Judge Edmonds, and others who have written on the supernatural side of the question. We do not profess to be able to pass any judgment on what are called "spiritual manifestations." We know nothing of them personally, but have heard of much nonsense being transacted by such agency.

BLACKWOOD'S MAGAZINE.—The April number of this old magazine, re-published by Leonard Scott & Co., No. 79 Fulton st, this city, is as usual rich and racy. It contains an able article on the commercial results of a war with Russia, and the continuation of the thrilling tale, "The Quiet Heart."