



M. MARTIN'S ARTIFICIAL MAMMOTH.

AN ARTIFICIAL MAMMOTH.

M. Martin, a German naturalist, has recently constructed artificially a mammoth (*elephas primigenius*) of the quarternary epoch, after the many fine fossils of that extinct animal now existing in the Natural History Museum of Stuttgart. The form of the body of the gigantic creature, its trunk, tusks, and hair (the latter a close imitation of that of the real animal found in the Seberian ice) have been wonderfully counterfeited, so that the resemblance is as accurate as if the mammoth's skin had been stuffed. The animal, a representation of which is given in the annexed engraving from *La Nature*, measures 16 feet in height by nearly 26 feet in length. It is made upon a wooden framework, covered with wire cloth, the latter being coated with *papier maché*. The hair is reproduced from the fiber of an Indian palm, the tusks are of wood, and the trunk is ingeniously made of paper.

PEN MAKING.—Pens should be made of the best steel that can be got, as peculiar elasticity is required in them, which could not be obtained if poor steel were used. The steel is cut into slips some 3 feet long and 4 inches broad; these slips are then plunged into a pickle of diluted sulphuric acid so as to remove the scales from the surface; next it is passed between heavy rollers by which it is reduced to the thickness required, and made fit to undergo the first process in pen making. This is performed by a girl, who, seated at a stamping-press provided with a bed and corresponding punch, speedily cuts out the blank, which is perfectly flat. The next step is to perforate the hole which terminates the slit, and to remove any superfluous steel which might interfere with the elasticity of the pen. The embryo pens are thus annealed in a muffle, and the maker's name stamped upon them. The pens are next transferred to another class of workmen, who, by means of a press, either make the pens concave, if they are merely to be nibs, or, if they are to be barrel pens, they roll the barrel together. The next process is termed the *hardening*, and consists in placing a number of pens in an iron box which is introduced into a muffle. After they become of a deep red heat they are plunged into a tank of oil, and, when they get cool, the adhering oil is removed by agitation in circular tin barrels; *tempering* is the next step, by heating to the necessary elasticity in a warm bath of oil; and, finally, the whole number

of pens are placed in a revolving cylinder along with sand, ground crucible, and other cutting substances, which tends to brighten them up to the natural color of the steel; next the nib is ground down finely, with great rapidity, by a girl, who picks it up with a pair of pliers, and, with a single touch on an emery revolving wheel, perfects it at once. The slit is now made by means of a press. A chisel, or wedge, with a flat side, is affixed to the bed of the press, and the descending screw has a corresponding chisel-cutter, which is passing down with the greatest accuracy on the pen, which had been placed on the chisel affixed to the bed, and the slit is made and the pen complete. They are next colored brown or blue, by placing them in a revolving metal cylinder, under which is a charcoal stove, and, by watching narrowly the different gradation of color, the requisite tint is speedily attained; a brilliant polish is subsequently imparted by immersing the pens in lac dissolved in naphtha; they are then dried, counted, selected and placed in boxes for sale.

STEELPLATE ENGRAVING.—As regards steelplate engraving it has proved immensely superior to the old copperplate system. A soft steelplate is first engraved with the required subject in the most finished style of art, either by hand or mechanically, or the two combined, and the plate is then hardened; a softened steel cylinder is then rolled over the hardened plate, with great pressure by powerful machinery, until the engraved impression appears in relief,—the hollow lines of the original becoming ridges upon the cylinder, the roller is re-converted to the condition of ordinary steel, and hardened, after which it serves for returning the impression to any number of decarbonized plates, every one of which becomes absolutely a *counterpart* of the original, and every plate, when hardened, would yield the enormous number of 150,000 impressions, without any perceptible difference between the first and the last. In one instance, from one engraving of the Queen's head on the postage stamp, over 6000 plates were produced from the original, and plates for bank-note printing are multiplied in the same way. Great caution must be used in the various processes of annealing and hardening, as only slight carelessness would result in ruining the most costly plates. The method in use in the Bank of England is as follows: the work to be hardened is enclosed in a wrought-iron box with a loose cover, a false bottom, and with three ears projecting from its surface about midway; the steel is surrounded on all sides with carbon from leather, driven in hard, and the cover and bottom are carefully luted with moist clay; thus pre-