THE GROWTH OF PLANTS IN ODD PLACES.

It has been said that if an absolutely clean plate were placed out of doors, it would, after a certain length of time, become covered with small plants taking root in and sustenance from the dust that had been deposited upon it. The fact is that mountains furnish us at every instant with examples of the facility with which trees and other plants obtain nourishment upon absolutely bare surfaces. In the mountains of the Jura especially, the firs adhere to and live upon the exposed rocks; and in the defile of the Roches, upon the route from Gros-Bois to Locle, all tourists are acquainted with the tree that has grown upon the very edge of the rock forming the northern crest. We have collected a few peculiar cases of plants that have taken root in the masonry of certain buildings We shall, in the first place, take our readers to the charming little church of Fenioux, in the department of Charente Inferieure. It is a little gem of Roman art situated between the villages of Grandjean and Mazeray, upon the line from Bordeaux-Etat to Paris. Arriving in front of the structure, we shall not take time to examine the charming details of the ornamentation of it, but shall simply advise you to raise your head and observe above the porch and immediately above an entablature supported by a row of heads, a Scotch fir that has succeeded in taking root upon this narrow space and in finding sustenance in the dust brought by the wind (Fig. 2). It owes its own origin to the wind, which deposited upon the entablature a seed of one of the trees, which are quite numerous in the vicinity.

It is probable that France possesses other examples of such odd growths as these, but we shall mention some that occur upon English edifices. In the city of Norwich, the church of St. Benedict is provided with a round tower having a series of windows at the top. From one of these issues a tree that rises several yards above the platform of the tower, and which is growing very vigorously (Fig. 3). At Bicknoller, in Somersetsbire, upon a tower of the church, there grows an evergreen oak which has already reached a height of five feet. It is well known and is much wondered at by tourists who visit the west of England. There may be observed, too, a sycamore which has been growing for more than half a century upon the tower of the little parochial church of Saint Petrochius, at Clanaborough, in North Devon. It has inserted its roots so deeply into the masonry as to threaten the solidity of the building. A few years ago the city of Stony Stratford possessed a plant curiosity of the same nature. In the wake of a great fire in 1742, one of the few structures that remained standing was the tower of the Saint Mary Magdalen church. A bird doubtless carried a seed to the summit of this, and there soon appeared a tree that buried its roots so deeply that it had to be pulled up in order to save the tower from falling in.

We are able, with our contemporary, *The Million*, to cite another church which is similarly situated. It is the parochial church of the village of Culmstock, in Devonshire. Here again there is an evergreen oak that has found a means of taking root at the top of the tower. To judge of it from its height and circumference, it must be at least two hundred years old. Its trunk is very straight and issues at an angle from the masonry, to which in days gone by some bird or the wind had brought an acorn from the evergreen oaks that grow in the neighboring cemetery. The oldest inhabitant of the village, who is eighty-eight years of age, says that in his childhood the tree had the same appearance that it has at present.

Finally, we shall mention a case that is still more curious, that of two trees growing in the interior of a church and through the pavement. This phenomenon is visible in the old church of Ross, in Herefordshire. These two trees grow near the pew occupied by John Kyrle, an inhabitant celebrated for the sums that he devoted to the planting of elms in his native city. A few years after his death, it became necessary to cut down several elms planted in front of the church, and two shoots were soon observed lifting the tiling of the church and increasing in size near the old pew in which Kyrle assisted in divine service. Since then the two trees have been allowed to continue their growth.—*La Nature.*

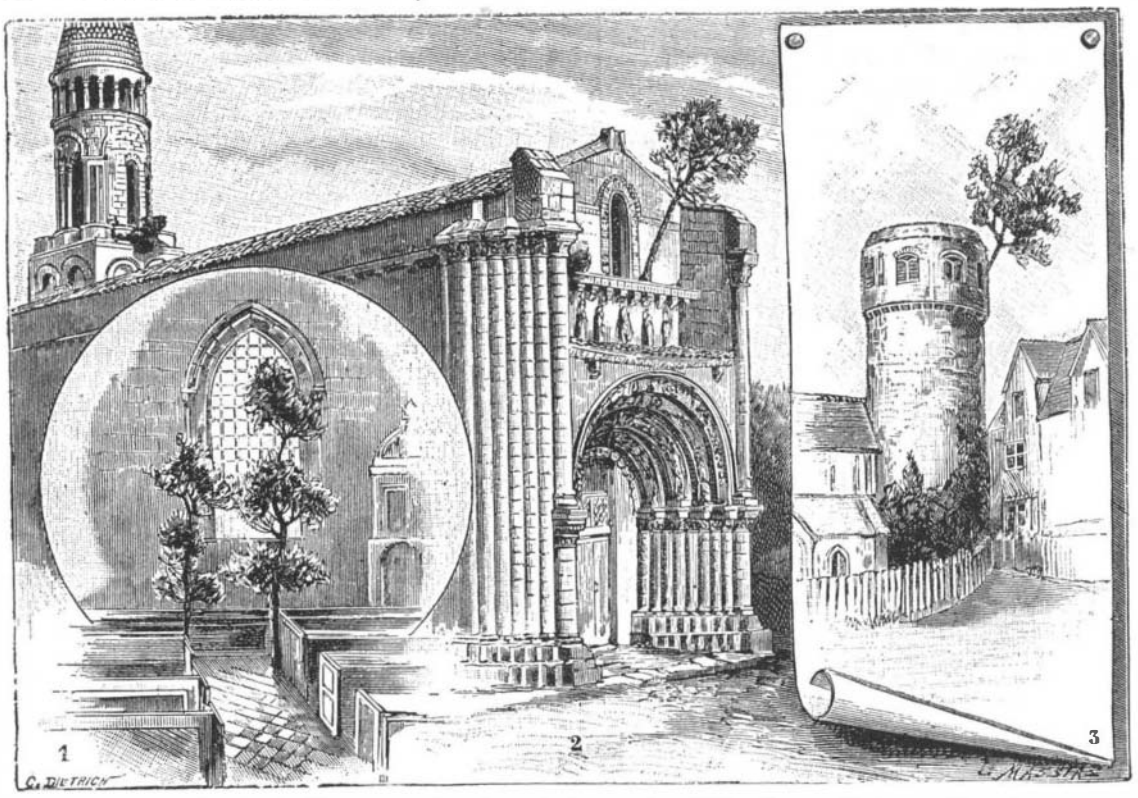


Fig. 1.—Trees growing in a church of Herefordshire in England. Fig. 2.—Tree on the church of Fenioux.
Fig. 3.—Tree on the Saint Benedict tower at Norwich.

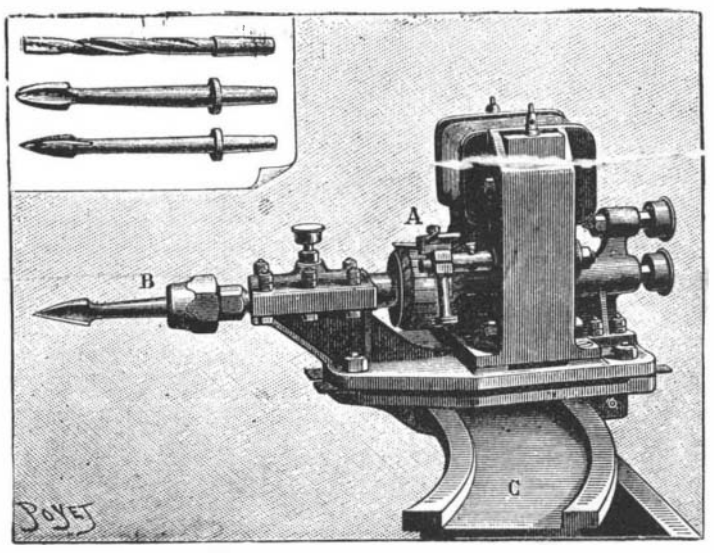


Fig. 2.—ELECTRIC DRILLING MACHINE.

AN AUTOMATIC SCULPTURING MACHINE.

We have recently had an opportunity of examining a new application of electricity that is worthy of being made known. It is a question of a sculpturing machine actuated electrically. This machine is evidently not designed to replace the hand of artists, but is valuable for making copies, and is capable, in a short time, of making rough-hewn statues, upon which the talent of the professional sculptor can afterward exercise itself usefully. The first idea of this application is due to Mr. Delin, a manufacturer of religious statues at Paris. It is he who conceived this arrangement and installed it practically in his studios.

The mechanism is of extreme simplicity, and includes the use of electric motors skillfully combined. Fig. 1 gives a general view of the apparatus in a studio. In the center there is arranged a vertical axis, provided with a carriage capable of moving throughout the entire length, thanks to a gearing and to the motion furnished by an electric motor placed at the upper part. The carriage in question, which may be seen in the center of the figure, carries two supports, that extend to the right and left in front of the statues. These supports are provided with slides, in which are placed the apparatus that serve for the work, viz., to the right the pantograph that the workman operates in front of the model and to the left the sculpturing machine. The two apparatus, with their supports, are capable of moving around the central axis, and every motion at the extremity of the one is reproduced at the extremity of the other, as in every pantograph. The two apparatus can be brought in front of the statues, as shown in our engraving. One of them, that to the right, is the statue that serves as a model and that it is a question of reproducing. The block to the left is the reproduction of it. In front of the model stands a workman, who, by means of a small apparatus placed upon the slide, holds a wooden rod designed to follow the exterior contours of the model at a distance of from one to two millimeters. The model is mounted upon a vertical axis and a rotary motion is communicated to it at the lower extremity through an endless screw. The same motion is transmitted to the second statue, which at the beginning is but a shapeless piece of wood. In the figure may be seen the endless screw, as well as the transmitting shaft, with the pulley and belt that actuates it.

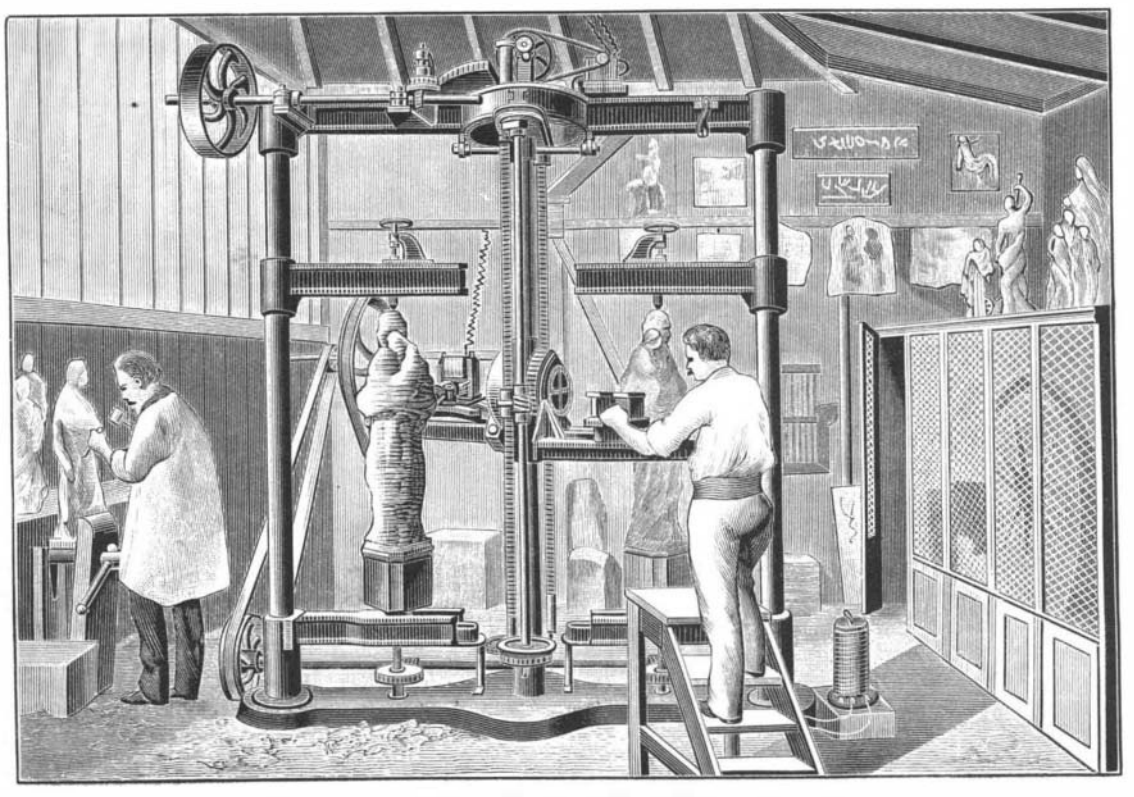


Fig. 1.—AUTOMATIC SCULPTURING MACHINE.

At the extremity of the second arm, to the left, is placed an electric drill, which is represented in Fig. 2. This motor is installed at C, upon a recurved part of the slide. It receives the electric energy at A, and sets in motion an auger bit, B, that revolves with great velocity. This bit may be replaced by others of various shapes, such as are shown in the upper left hand figure. When the machine is in operation, it suffices for the workman to bring the wooden rod near the model (an operation that he is performing in our figure), when the auger bit immediately approaches the piece of wood and cuts out a portion in such a way as to reproduce the model. The workman can likewise cause the carriage to rise or descend in order to effect the same work throughout the whole length of the statue.

This machine permits not only of accurately repro-

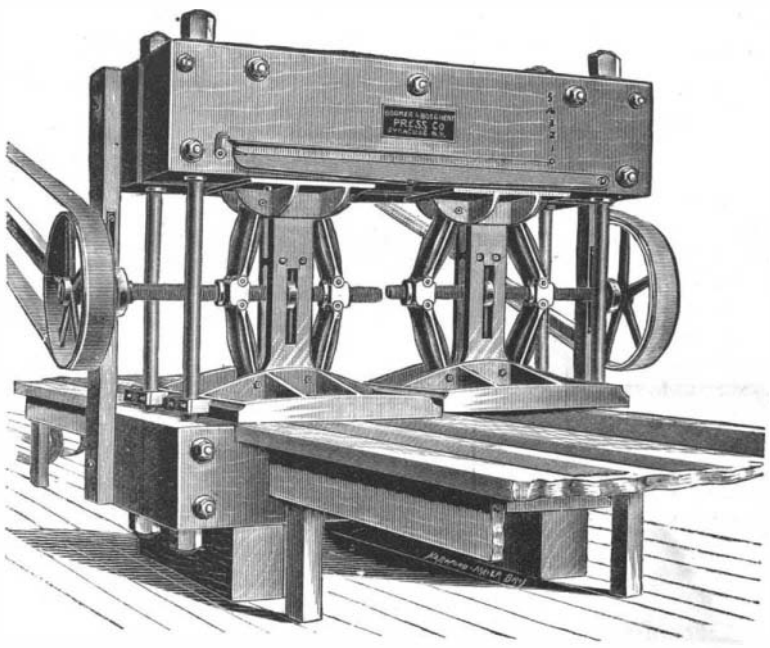
ducing statues to the same scale, but also of reducing or increasing at will the dimensions of a chosen model, through the aid of a few modifications in the respective positions of the counterpoints and of the bit, as well as in the different cog wheels of the gearings.

It has been possible to realize this application only through the facilities afforded by electric motors. As electric energy is not as yet distributed upon the left bank at Paris, recourse has been had to a Niel gas motor of 4 horse power, which actuates a Rechniewski dynamo, giving 70 volts and 45 amperes at an angular velocity of 1,800 revolutions per minute. This dynamo, in its turn, distributes the electric energy to the three motors whose different functions we have already mentioned, viz., to the electric drill, which consumes 70 volts and 30 amperes at an angular velocity of 7,000 revolutions per minute, to the motor that sets the statues in motion (70 volts and 6 amperes), and to the motor that moves the carriage vertically (70 volts and 9 amperes).

This sculpturing machine, which has been established for several months in Mr. Delin's studios, has, up to the present, given satisfactory results. Aside from the saving in time that it effects, it permits of very easily rough-hewing the pieces of wood, sketching the contours, and of having exact relative positions. The statue, thus-rough hewn in all its parts, is put into the hands of a skilled workman, who finishes it, and, when it comes from his hands, it leaves nothing more to be desired.—*La Nature.*

A DOUBLE BELTING PRESS.

There are many manufacturers of leather belting who have limited capital who, when called upon for an estimate of the cost of a wide belt, are unable to give it, because of the expense of putting in a large press, which must necessarily stand idle much of the time or be used on work which could be done on a smaller press to better advantage. To such the accompanying illustration and description will prove interesting. The press consists of one frame having the working parts of two presses. so that two belts of one-half the width of the press, or less, can be made at the same time and each operator be entirely independent of the other, while for wider belts both presses are used together, thus making a belt of the full width of the press; or the presses can be used to advantage by one press making two narrow belts, while in the other a wider one is being made. When a wide belt is made a steel plate is provided to fasten on the platen, thus obviating any danger of a crease where the two platens join. The manufacturers of this press, the Boomer & Boschert Press Co., Syracuse, N. Y., are well known, and some of the largest belts in this country have been made on their presses. The same firm also make a large line of presses for other purposes, using either the knuckle joint, screw or hydraulic principles, according to the work to be performed.



BOOMER & BOSCHERT'S DOUBLE BELTING PRESS.

A New Automatic System of Lighting and Extinguishing Street Gas Lamps.

Each lamp is supplied with two sal ammoniac batteries and a spark coil, placed in an iron box buried in the ground at the foot of the post. In the lantern is a miniature gasholder of about two cubic inches capacity, pivoted on a hinge and held down by weights; and directly over this holder is an automatic gas lighter, similar to those used in houses, only much simpler, larger and stronger. Two wires, about ten feet long, connect the lighter with the batteries through the post. Such an installation is under complete control from the gas works.

When it is desired to light the lamps of a city, it is only necessary to open the valve connecting one of the large gasholders at the works direct with the gas mains. This results in a decided increase of pressure in the gas all over the city, sufficient to cause all the little gasholders in the lamp posts to lift up about one-eighth of an inch against a platinum stop, and thus close the local battery circuit at each post. The automatic lighter being then supplied with current, immediately turns on and lights the gas. In a word, the system is merely a huge pneumatic push button, and corresponds precisely to pushing a button when desiring to light the gas in a house supplied with automatic lighters.

Fifteen seconds is sufficient for maintaining this increased pressure, to give time to make the increase everywhere felt. It can then he brought back to normal pressure, when the pressure gauge will drop back and open the electric circuit. This operation, if repeated, will extinguish the lamps.

The mechanism of the lighter is extremely simple, and made so strong as to insure it from getting out of order or requiring attention of any kind.

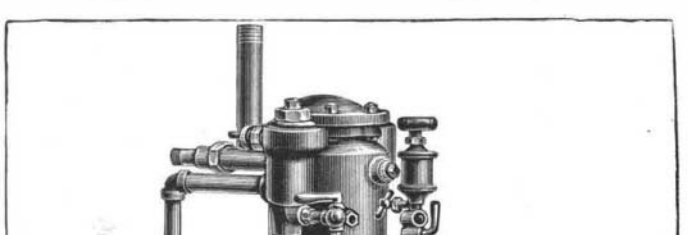
Hypnotism in Disease.

The chief arguments used against the employment of hypnotism in disease are, first, that it subordinates and enervates the will; second, that it renders the patient liable to be influenced by persons of evil intent; and, third, that only nervous or hysterical persons are subject to its influence. My own experience is that it may be used without injurious effects, and, also, that it may take the place of narcotics in a large number of cases in which they are now used. I have myself used it with advantage in delirium, in insanity, and in chronic alcoholism. I have successfully treated one case of kleptomania and two cases of excessive irritability of temper. At the same time hypnotism is a two-edged sword. Wielded by an unskilled hand, it may cut both ways deep into the faculties of intellection and into the nervous system generally. Also, it should never be used save by a skilled hand upon patients of an unbalanced mind accompanied by what is known in medical parlance as *paranoia*. In my treatment of a perfectly healthy, calm, intelligent, unimaginative man, whom I operated on fifty-one times, I found that the diapason of his whole mental and emotional system would give forth concordant sensations of pleasure, or discordant sensations of pain, at the will of the operator.

Summing up, I would say that hypnotism, as with every other new remedy, there is great danger that, on the one hand, it may be used indiscriminately, or, on the other hand, be scouted by a senseless skepticism. It has, beyond doubt, its definite limits of usefulness, and the medical man of the present day, realizing the futility of many of the old methods of treating disease, should keep his mind open to the reception of every new discovery.—*James R. Cooke, M. D., in the Arena, Boston.*

AN IMPROVED GAS ENGINE.

The gas engine shown in the illustration affords a notable example of the excellence to which this class of motor is brought at the present day. It was but a few years ago that the gas engine was but little better than a toy; noisy and expensive in its operation and with but little promise of ever becoming a rival of the steam engine. Now, however, their action (in the best makes) is smooth and regular and their economy compares favorably with that of the steam engine. The Olin gas engines present many points of excellence. They are strong and simple in construction. Every part is easily and almost instantly accessible. The charge is ignited by an electric spark, making them very safe, cleanly and free from odor. The governing is accomplished by a simple shaft governor, which has been found by careful test to easily control the speed with a variation of but 2 per cent from full load to no load. This sensitiveness, together with its positive igniting mechanism, makes the engine especially adapted for running dynamos for electric lighting. The lubrication is thoroughly automatic. The valves are of the poppet style and require no lubricant. These engines are being built in sizes from ¼ to 25 horse power. One design of these engines, made especially for driving coffee mills or other light work, is remarkable for its compactness and power. They take up a floor space of only 14 by 16 inches, are 23 inches high and use but 15 feet of manufactured gas per hour. These small engines are also built combined with pumps and are used for pumping water in high buildings, flats, etc. They will raise 400 gallons of water per hour 50 feet, with a consumption of 15 feet of gas. Where desired, any of these engines may be fitted with a gasoline attachment, adapting them for places where gas is not available. They are manufactured by the Olin Gas Engine Co., 222 Chicago Street, Buffalo, N. Y.

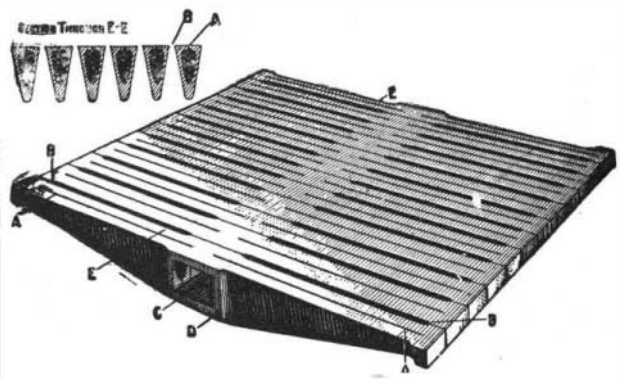


THE OLIN GAS ENGINE.

THE GADEY AIR GRATE.

This improved grate is made of hollow cast iron grate bars as shown in the sectional view.

In the top of each bar and running its entire length is a slot, A, A, about an eighth of an inch in width,



THE GADEY AIR GRATE.

through which a regular supply of air is delivered on the surface of the grate at the point of combustion. This supply of air is aided by the natural draught coming through the openings, B, B, between the bars. Through the center of the bars and across the entire furnace extends a supply chamber, C, to be kept continuously full of air by means of a small pressure blower. The side surfaces of each bar at the point, D, are planed so as to form an air-tight joint when the bars are placed together.

A one horse power blower will furnish sufficient air supply to boilers of 100 horse power or less. No alteration or reconstruction of either the fire box or chimney is required for the introduction of this improvement. The exact size and shape of the bars they are to replace are copied in making the patterns for the Gadey air grate.

It will be seen that this method of supplying air does not constitute forced draught, as commonly understood, because the natural draught admitted between the grate bars is employed in conjunction with the air blast through the hollow bars, thus enabling uniform and complete combustion to be maintained over the entire grate surface and increasing the capacity of any boiler where the improvement is introduced. It is especially advantageous in burning any small coal or screenings of coal, as well as such fuels as sawdust and mill waste from any kind of wood, bagasse from sugar cane and waste from cotton seed; in fact, any fuel requiring quick combustion to utilize it for steam purposes.

The constant circulation of air inside the bars tends to prevent clinker from adhering to the grate and also prevents the bars from being easily burned out.

This improved grate is patented and manufactured by Brown Bros. Manufacturing Company, Jackson and Clinton Streets, Chicago, Ill.

Boils.

Dr. E. L. Tiffany, of Princeton, N. J., in the *Eclectic Medical Journal* for December, considers the use of a fluid extract of barosma crenat., ʒj, in plenty of water, four times a day, to be a rapid cure for boils.