DENTISTRY IN THE UNITED STATES.

MANUFACTURE OF ARTIFICIAL TEETH.

No. 1.

An artificial tooth, says "an expert," in *Old and New*, is made of porcelain ("ceramic dentistry" is the elegant title to which some of the more elegant in the business aspire); which porcelain differs from the material of a stone pot, a china teacup, a Wedgewood ware match safe, or a Parian statuette, in the same way as they differ from each other. In its manufacture are chiefly used felspar, quartz, and kaolin; oxides of titanium, gold, manganese, cobalt, uranium, and silver; platinum; glass of borax; and sal tartar. The tooth is made somewhat as follows: Mix into a putty-like mass, with water, calcined and pulverized silex and felspar, and kaolin properly washed and dried, for the "body" of the teeth; with oxide of titanium or other selection or combination of oxides for coloring matter (there may be sixteen hundred different sorts and shades of colors). For the enamel, mix in like manner felspar, platinum sponge, and a flux of quartz, borax, and tartar. The teeth, either separate or in "sections," are shaped in a brass mold, which is about one fifth larger than the tooth, to allow for shrinkage. When the materials are all ready, the molds are greased; the platinum pins for fastening the teeth to their bases are placed in the holes made for them in the mold; the enamel is laid first in a thin coat on the inside of the mold; and the "body" of the tooth, in a properly shaped lump, put inside of this coat of enamel; then the top of the mold is put on; the whole is laid under a press, which compacts the mass; and then mold and all are exposed to a slow heat until perfectly dried. The teeth will now drop out of the mold when it is opened, but are extremely tender. Next they are "carved," or trimmed and finished, and laid on coarse quartz sand on small slides or trays, of fire clay. These are slid into a "muffle" or firing pot: this is run into the furnace; and after it is in place, the muffle is closed and carefully luted hermetically tight; and the heat is put on. The only way to know when the teeth are done is by the judgment. If over fired, they are injured; if not fired enough, they must be quickly put back, and heated longer. There are many variations in combining the "body," the enamel, the flux, etc., and in the subsequent manipulations; but the above brief summary will sufficiently show what sort of process is used.

The average annual sale of artificial teeth, in the six New England States, in the three years 1870, 1871, 1872, was three hundred and forty thousand sets; though it does not follow that all these were made up and actually used. Two and sometimes three sets must be made and tried, before the patient is satisfied. As the set made for one mouth will not fit another once in twenty-five thousand times (I know personally of but one case, and have heard of two more, about one of which I doubt), all these rejected sets are wasted A set is also frequently cracked or broken in mounting it on the base to which it is to be attached, which accounts for a further proportion of loss. Again, partial sets are sometimes required; and if the operator does not find a good match among his promiscuous teeth, he takes one out of some full set in order to make a perfect case. The chances are five hundred to one that he will not be able to use the rest of the set thus broken, along with any other set, as size, color, or shape will fail in some minute particular; and thus another set is lost. These various losses reduce the number of sets of teeth actually put into use each year in New England, from three hundred and forty thousand to about two hundred thousand.

The Western division of the country yields a better crop to the dental farmer (if so he may be called, and indeed his operations of pulling, digging, transplanting, and so on may reasonably well admit it) than either New England or the South. In the West, more sets are made up in proportion to the population, and fewer are lost out of the number sold. This greater demand seems to depend upon two circumstances. The Western people, as if they considered false teeth not merely useful and ornamental, but also as evidence that the wearer has money to invest in luxuries, are in the habit of informing their neighbors that they are using a set; and they also mention the name of the dentist who made them, and what they cost; so that they advertise their "bene factor," and increase his business. Secondly, the Westerners are not so fastidious as their fellow countrymen about a fit, or about their teeth looking "too natural;" and thus the operator can induce them, by honeyed words or positive assertions, to accept the set he has made for them, and to pay for it. As the patient is thus generally satisfied, a large per centage of loss is prevented. It is not intended to deny that the profession consists of honorable men in this more than in the other two sections; but taking them at an average, they certainly manage to use their stock cleaner than in the Eastern or Southern sections. There are certainly also in this division more "butchers" than in the others; men who, instead of being benefactors to their patients, might be justly termed their despoilers. It is notorious that there are such persons, who will extract sound teeth, as well as loose and decayed ones, for the sake of making room for a full set, as they are quacks, and cannot make a good partial set. Estimates made from personal observation of the traffic in this section show the sales for an average year to be, in round numbers, seven hundred and twenty-eight thousand sets, with a shrinkage in losses of two hundred and nine thousand, leaving five hundred and nineteen thousand sets used. The Southern division, including, for the present convenience, the rest of the United States, is at this time, for the most part, an entirely new field for dental operators, though part of it has been well worked over, insomuch that the amount of sales in it rolls up to one hundred and eighty two thousand sets, from which must be deducted a greater discount than elsewhere for losses, for the reason that the work has been done by young and inexperienced dentists, or, indeed more properly, dental students. The "practising" of these enterprising young gentlemen has resulted in the loss of one hundred and seventeen thousand sets, leaving only sixty-five thousand actually used.

There are five extensive manufacturers of artificial teeth in the United States, besides numerous smaller ones. They turn out, in all, about a million and a quarter sets of teeth every year.

Carrier Pigeons.

"One of the most curious incidents connected with modern journalism," says *Land and Water*, "is the regular employment of carrier pigeons in collecting intelligence for the daily and weekly newspapers. In the competitive exertions to procure the latest intelligence, it has been found that for short distances newspaper reports can be sent readier, cheaper, and quicker by press carrier pigeons, flying a mile per minute, than by the postal telegraph. These aerial postmen are entrusted to resident correspondents in various places, ready to be despatched at any moment, while others are sent out by reporters to places where important events are transpiring. It is now no uncommon thing to see reporters at police courts, inquests, public meetings, etc., despatch folio after folio of "copy" by press carrier pigeons tossed through the nearest window, or thrown out of a train or steamer going at full speed. The attachment of these birds to the place of their birth, and the ability to find their homes from marvelous distances, are, of course, their distinguishing characteristics. A "columbier," or home, is established at the various newspaper offices, and whenever a bird arrives with a message, the act of the pigeon entering its cot sets a call bell ringing in the editor's room, the bell machinery continuing in motion until attended to.

Carrier pigeons, though as a rule only used for short distances, in competition with the electric telegraph, can be specially trained to distances of 500 miles, and frequently fly to England from Dublin, Brussels, Paris, Lisbon, and even Rome. The utilization of the instincts of birds for press purposes is being carried even further than this. An ocean homing bird of great docility, intelligence, and spirit has been found in Iceland, and it flies at a meteor-like speed of 150 miles an hour, and is able to find its home, over sea and land, from any part of the habitable world. A pair of these birds, a few days ago, brought despatches from Paris to a lonely spot, congenial to their nature, in a wild and rocky part of Kent, within ten miles of London, in 1¼ hours. Press carrier pigeons took the despatches on to the city, the whole distance from Paris to London, by actual parcel mode of conveyance, being done within 1½ hours."

The New York *Sun* was the first newspaper, we believe, to employ the aid of carrier pigeons for the rapid transmission of news. Thirty years ago, before the electric telegraph had come into vogue, the *Sun* concern had a large pigeonry upon the roof of its building, just over its editorial rooms, corner of Nassau and Fulton streets, in this city, where many carrier pigeons, of the best procurable breeds, were maintained. In those days the public were often surprised by the appearance of important news, brought by the birds, in advance of the ordinary mails. The advent of the telegraph superseded the *Sun* pigeons, and the department was sold out.

At the present time, the telegraph business here is in the hands of competing private companies, who take especial pains to transmit the news despatches of the press with the greatest promptitude, and at very low rates. But when the telegraphs pass into the hands of the government, as in Great Britain, the press will no longer have the advantages of this promptness and economy. Lazy officials will then govern the sending of telegrams on the red tape system, and our newspapers will doubtless find an advantage in using pigeons, as they are now doing in England.

Chrome Steel.

With the exception of eighteen pieces, all the metal used in the superstructure of the St. Louis bridge is chrome steel, this alloy being selected by the engineer, Captain Eads, on account of extended experiments thereon showing the highest tenacity under tension and the utmost refractoriness under compression. The steel was made by the Haughlin process, belonging to the Brooklyn Chrome Steel Company, of Brooklyn, N. Y. The following details regarding the metal, we find in the St. Louis *Railway Register:*

The quantity of chromium required in the steel is so small, relative to the quantity of iron, that the cost of the alloy is not greater than that of the usual grades of carbon steel. In a pure and crystalized state, it is a grayish, very hard metal, not oxidizable by any acid nor reducible in any furnace.

It is quite probable that the mixture of chromium and iron is truly chemical. As far as can be learned, there is no gathering together into separate crystals, nor congregating in spots, as in the case of carbon; and it would, indeed, appear that, after combination, separation in whole or in part is almost impossible. From this stability of the alloy, it is possible to grade the mixture in exact accord with proportions of ingredients, and to judge of character with much precision.

The most useful property of chrome steel, next to its stability, is the ease with which it may be welded. No wrought iron excels it in this; and moreover, sand and borax may be entirely dispensed with, since the effects of the heat—for a white heat may be used without fear—are to glaze the surface with a film of chromium, which, being unoxidizable, presents no obstacle to the full and entire union of the parts. Such springs as those used in vises need, when made of chrome steel, no tempering, but may be put in place direct from the anvil. Watch springs could, it is believed, be made from it, of extra quality. A ⅝ inch bar can be bent double when perfectly cold with the same certainty as with the best wrought iron. For anvil and hammer faces, and hammers and mauls, it is peculiarly fitted, because of its homogeneity and the exact equality of hardness over the surface. Blocks of four inches may be drawn out into a crowbar; any welding or upsetting necessary can be done, and the bar finished, with the same facility as though formed of the clearest iron.

As a test of toughness, a bar of chrome steel five eighths of an inch square has been twisted cold until the angles of the bar lay around a cylinder, resembling a wire cable strand. Seventy turns to the inch made on a cold bar of steel is sufficient evidence of toughness. The results of tests made at the West Point Foundery give for the material an average strength of 180,000 pounds to the square inch. This is considerably in excess of the figures given by authorities as the highest strength of carbon steel, namely, 131,909 pounds per square inch.

New Explorations in Central America.

Few persons are aware of the important exploration which has been going on for a year or two past in Costa Rica, under the direction of Professor William M. Gabb, a geologist and explorer of Philadelphia, well known for his excellent scientific work, especially in connection with the geological survey of California, under Professor Whitney. The special object is an investigation of an entirely unknown region of Southeastern Costa Rica, inhabited only by savages, but known to contain rich treasures of minerals, worked by the Spaniards in the early day of the conquest: this knowledge being only by traditions. Although the party has consisted only of Professor Gabb and four assistants, it has already gathered a great deal of important information and material in reference to the economical, scientific, and political history of the region investigated. In the course of his labors, Professor Gabb found the people less savage than had been supposed, and he has already succeeded in winning their confidence to such an extent as to induce their chief to accompany him on a visit to San José. As might have been expected, the geological structure of the country has occupied a large share of Professor Gabb's attention, and enough has been discovered to warrant the belief that the mineral resources are of great importance. The greatest interest attaches, however, to the discovery of two previously unknown volcanoes, not less than 7,000 feet high, in the main cordillera just northwest of Pico Blanco. Of these he is about to make a thorough examination. The natural history collections made by the Professor are of unusual magnitude and value, embracing all departments of zöology, and especially rich in mammals, birds, reptiles, and insects. Of fish there were but few species, but all that could be found were secured. The ethnology and philology of the country have been attended to very thoroughly. Material illustrating the manners and customs of the people was also gathered in great quantities, and important discoveries made of *huacos*, or prehistoric graves. In addition to these, Professor Gabb is on the track of an ancient buried city, of which no mention is made in any history of the country. The natural history and ethnological collections made have been sent to the National Museum, where they form a conspicuous feature in the Central American series. The material thus collected by Professor Gabb will, on his return, be made the subject of an elaborate work, in which he hopes to present the whole subject of the physical and natural history of the country in its fullest detail. An important geological discovery made by him is that the appearance of dry land on the isthmus is of tertiary date, and that it is coeval with the period of volcanic excitement in the Californian sierra.—*Nature.*

Trees for Avenues.

For avenue planting, those two near relatives, the cucumber tree (*magnolia acuminata*) and the tulip tree (*liriodendron tulipifera*), combine many excellent qualities. They are rapid growers, beautiful in foliage and flower, of perfect form; hardy, excepting in the extreme north, not particular about soil or situation, and comparatively free from insects and diseases. They are readily grown from seeds, gathered and sown at once in the autumn, or, as some prefer, preserved moist until spring. When two years old, they are generally sufficiently large to plant out with a protection; or if intended for the street, they may be cultivated in nursery rows for three or four years, until they are tall enough to be beyond the reach of animals. A long line of either of these trees forms a magnificent sight when in bloom, and for shade, combined with beauty, will satisfy the most fastidious. One of the greatest mistakes in street planting is the selection of an improper kind—for instance, a first class tree, such as we have named, for a narrow street, and a small slow-growing species for a wide avenue. Each is equally out of place, and never looks appropriate, no matter how handsome the individual specimens may be.—*New York Tribune.*

ERASIVE SOAP, TO REMOVE GREASE AND STAINS FROM CLOTHING.—Two pounds of good Castile soap, half a pound of carbonate of potash, dissolved in half a pint of hot water. Cut the soap in thin slices, boil the soap with the potash until it is thick enough to mold in cakes; also add alcohol half an ounce, camphor half an ounce, hartshorn half an ounce; color with half an ounce of pulverized charcoal.