

OUR INDUSTRIAL ESTABLISHMENTS.

Many persons, unacquainted with the state of the arts and sciences in our country have deemed it impossible that we should be foremost in the production of rare and beautiful articles of *virtu* or should succeed in emulating the most costly French bronzes, chinas, glass and such fragile articles. Such is the fact, however, and we need no longer look abroad for tasteful decorations to our houses, halls, libraries and public edifices of every kind. In this city all the above-mentioned articles are manufactured and many others which we have not included in our list.

The various mechanical and artistic productions in the country, and particularly in this city, have a great charm for us, and we frequently furnish our readers with descriptions of some of the processes by which they are made. The stroller in Broadway sees costly warehouses on both sides of that street, piled high with glittering silver, china and glassware, and so beautiful are the articles that, as he stops and gazes, he assumes, as a matter of course, that they were imported. In some instances the inference is true, but in the great majority of cases the articles are of home production, and *vis* with, if they do not excel, foreign wares. In bronzes we are undoubtedly behind the French; but this is wholly owing to the value of labor in this country, which prevents them from being made at remunerative prices—not, as some would argue, from a lack of artistic taste and cultivation. In the manufacture of beautiful glass, however, we are unapproachable. Certainly, no refined person, gazing with admiring eyes upon the prismatic splendors of the flint glass made in Brooklyn, could wish or hope to see finer. So also with the engraving and cutting, which relieves the plainness of the exterior; the delicacy of execution and elegance of the designs—made in this country—cannot be excelled abroad. In silver ware and cutlery and, in fact, in every branch and appliance necessary to elegant housekeeping, we are fast gaining a most enviable reputation.

One of those large warehouses—that of Messrs. E. V. Haughwout & Co., 488 Broadway—was recently visited by us, and we propose to give a brief account of what we saw. Passing directly through the large warerooms on the first and second floors, filled with beautiful works of art, we ascend to the workshops. Under the guidance of a gentleman connected with the establishment we enter a long workroom wherein a number of artists are busily engaged in decorating china—occupied in putting on those brilliant shades of color so much admired, and also with the delicate wreaths of flowers and representations of scenery which adorn a modern table-service. The process is very similar to that of ordinary designing and sketching in color, with the exception that after the pigments have been applied they must go through the process of baking or burning in a furnace in order to fix them indelibly on the china. The colors are metallic, and the fixing of them under the high temperature of the furnace causes them to unite with the siliceous or “glaze,” as is now popularly termed, on the surface of the ware. These colors are applied on a peculiar varnish, with a sponge, and the plate or dish is then ready for the furnace. After remaining until the colors are fused the ware is taken out and carried into another apartment where the gilding, if there be any upon it, is burnished by being rubbed with steel tools. The gold before being baked in the furnace looks like tar, but, on the application of heat, the agent which held the precious metal in suspension is driven off and the gold is left behind. Much loss sometimes occurs in this branch of the business, and a very thorough knowledge and attention to the several details is required. Messrs. Haughwout & Co. introduced this branch of the decorative art into this country as long ago as 1847, and they have given very many evidences of their progress since that time.

Passing over other departments of interest we come to the room where the gas fixtures or chandeliers are made. The designs of these we have seen below in the show-room, and they comprise every beautiful and unique pattern in vogue. Most, if not all of them, are constructed in the rooms above. The arabesques, scrolls and the several component parts, are first cast and then bronzed or gilt, as the nature of the design demands; these parts are then put to-

gether with screws. Many parts of the chandelier are made in the lathe, and we saw several men actively occupied on the individual pieces; and we can say that, mechanically, the work was well done.

Large quantities of the most excellent table-cutlery are annually produced in this establishment; and we examined the rough forgings from which they are made and also the finished articles and found them each excellent. The blade of the knife is made from steel hammered out and then ground down to the proper shape on heavy stones; the blade is then finely tempered in an oil bath and, if it is to be plated, goes to the department assigned for that duty. The handles of the knives are of ivory, pearl or any other substance desired, but the finer knives have the first-named materials fitted to them. The ivory is at present very dear, and the reason given for this is that few ships are fitting out for the Coast of Africa, owing to the high price of cotton goods and the artificial value of gold; these two articles of commerce being those which are given in exchange for the ivory. The knife handles are sawed out of the ivory blocks; those blocks are obtained from the tusks by sawing them to the right size, and the pieces thus produced are drilled for the reception of the tang or end of the knife blade which goes into the handle; afterwards they are polished and made ready for market. An apt illustration of the economy practiced in the arts was pointed out to us in the disposition of the ivory shavings remaining after the operations. These raspings, we were informed, make a very excellent *jelly*, when purified and nicely flavored! We never, to our knowledge, ate any gelatine prepared from elephant's tusks, but we can readily see how, if the gluten was extracted from them, an edible might be produced whose delicacy would, of course, be dependent upon the degree of culinary skill attending its manufacture. The refuse ivory is also a very valuable fertilizer and large quantities of it were formerly sold for that purpose. The knives in the finished state present a very handsome appearance and cannot be excelled by any imported.

In the room devoted to glass-working we found a large number of operatives cutting the most beautiful designs upon glass goblets, preserve dishes, decanters, in fact all varieties of utensils which are formed of this substance. Some of the patterns shown were extremely tasteful and skillfully executed, and we particularly remarked the play of light which scintillated from each glistening angle and corner of the tracery. The process of cutting glass has been fully described in articles previously published in the *SCIENTIFIC AMERICAN*.

In the silver-plating department all the forks, spoons, salvers, goblets and dishes are heavily coated with silver by the means of an electro-plating bath. In this bath all articles are suspended and the deposit is formed on them by galvanic currents. The fork or spoon is first made from German silver, and the time of immersion in, and contact with, the silver in solution determines the thickness of the coating. When the articles leave the bath they are of a dead frosted white; this appearance is subsequently relieved by the burnishers; these are young women who—provided with a blood-stone set in a wooden handle—rapidly rub over the surfaces it is desired to brighten. The friction produces that brilliant luster so universally admired in silver-ware.

The Messrs. Haughwout & Co., have been engaged for a long time in a series of experiments respecting the feasibility of producing salvers elegantly designed and engraved by the electrotype process; and from a small plated salver which we saw at their establishment made in this manner, they seem to have been successful. An electrotype of the “Declaration of Independence” was shown us; it had very sharp and clear lines, and the signatures of the honored names thereunto attached were reproduced in the most faithful manner. We are assured and can readily conceive that the process, successfully applied, will have the effect of very much reducing the cost of plated-ware, while the quality of the articles are greatly improved.

We here conclude our observations, for to describe at length and in detail all of the operations would require vastly more space than we could spare. We have only adverted briefly to the more important branches and have left others unmentioned. From

the above description our readers will receive the only impression that we desire to give them, viz., that in the manufacture of beautiful works of art, as well as in the production of the more substantial ones, we are fast developing our immense resources, and acquiring thereby an additional importance in the eyes of the world.

PHYSICAL EDUCATION.

Seldom have we spent an evening to greater advantage than one lately passed in listening to Dr. Dio Lewis's lecture on the new system of calisthenics which he has introduced. If the truth must be told, we went prepared to hear and see something which we could not commend, and we sat through the first portion of the lecture while two speakers gave their views upon the subject under discussion. Dr. Lewis explained with much force, and a refreshing fertility of illustration, his position on the culture of the dormant powers of the body, and expatiated in interesting and fluent speeches on the practical difficulties under which the old systems of gymnastics were applied; and the audience, entering most heartily into the spirit of the lecturer's theme, applauded to the echo. And why? Solely because without stunning the people's brain with technical terms, with “words of learned length and thundering sound,” with dissertations upon the flexors and extensors, the forearm, the biceps, and what not, he told them plainly in a few words wherein they erred and what the proper course should be. Common sense, as applied to the care of the physical man, is a great virtue now-a-days, and he who imparts it to the people, by precept and by practice, is a benefactor indeed.

A pleasing feature of Dr. Lewis's entertainment was the introduction on the stage of a class of ladies and gentlemen appropriately attired, who performed certain exercises calculated to exemplify in a marked manner the benefits accruing from an observance of the lecturer's principle. These exercises consisted of a variety of posturings, and in swinging the arms up and down in various ways, so that every muscle should receive as much attention as its importance and position in the body demanded. One great fact that Dr. Lewis urged upon the attention of his hearers was that his system neither embraced or contemplated heavy lifting or severe straining in order to accomplish—nothing. Merely tugging at a huge dumb-bell, and grunting and groaning to elevate it a few inches above one's head, and then immediately replacing it upon the floor, the lecturer said is a very stupid thing to do, and more injury than benefit is likely to ensue from such a course. In this sentiment every sensible person will concur. The exercises of the evening were thus varied by alternate discussion and practical example, and the audience seemed fully impressed with the necessity that exists for invigorating their physical systems by stated periods of thorough and intelligent discipline. How many of them will act upon the suggestions thrown out, is another question which we cannot discuss; advice is so very cheap that few will take it, but he who neglects it when it is practical and sensible, as it was in this instance, will surely bemoan his folly when too late. Few men are so unreasoning or so blinded by prejudice but that they will admit that the education of the physical powers is just as necessary to the health of the human body as the cultivation of the moral ones are to the proper development of the brain. And it is to provide such a system and to call attention to the importance of the subject that Dr. Lewis has given his time and talent. That he may be rewarded by seeing a newer, stronger, and more healthy generation arise is the wish of every real lover of human progress. One of Dr. Lewis's pupils, Mrs. Plumb, has opened an academy at 59 West 14th street, in this city, where the principles set forth by the lecturer are practiced, and we would earnestly recommend those in search of health to give attention to the subject.

THE Commercial Bulletin says:—The Lowell (Carpent) Manufacturing Company have increased the wages of those employed by them in many of the rooms, ten or twelve per cent. The directors, at a meeting held a few days since, voted to make the increase commence with the last payment; and the first indication that most of the operatives received was the payment of their increased wages.