THE CRYSTAL PALACE

General Remarks—Nothing of special interest has been added to the Exhibition during the past week, and the improvements are going on most wretchedly slow. The paintings are on the floor, and most of the machinery is all hurly-burly. Mr. Holmes will please hurry up his department—the readers of the "Scientific American" are anxiously waiting to examine it; they won't come until the belts, pulleys, cog-wheels and shafts are all in stirring order. By some time in September, as we have said before, all things may be put to rights. The number of visiters is daily increasing, and the Association must be getting quite good-natured over the fairer prospect. There is a loud complaint however about the cost of cold water (3 cents a glass) and other refreshments. If our readers do not wish to be swindled out of four or five shillings for a tolerable dinner, they must be their own stewards when they visit the Palace.

The English Department has still many an aching void: there is room enough to display twice as much as is now arranged. But amends are made, perhaps, in the quality of what we have—it is generally of the real substantial and useful. The glory of the Swiss quarter, as might be expected, are the watches and jewelry; Geneva, for centuries, has been the center of these manufactures, and the display in the Palace will satisfy all expectation. There are watches of all the fashionable styles, sizes, and prices. The little watches the size of a gold dollar, set in bracelets, memorandum books, and port-monnaies, attract universal admiration and wonderment.

Arrangements have been made for opening the Palace in the evening.

The Sevres porcelain has been arranged but too late for notice this week.

The Scientific American and the Exhibition.—We wish to remind our careful readers, who intend to visit the Exhibition, (if they have not thought of it before), that they are better qualified than any other class of persons to appreciate justly what they may see. The ready and practical judgment which is habitual in their trades, will enable them here easily to distinguish the wheat from the chaff. And they are posted up so well in the improvements in the arts and sciences, that nothing will take them by surprise. There will be no great mystery or novelty for them, unless it be the millinery and other finery. In the machine room they will meet many familiar acquaintances. They will be surprised at the number of machines they have seen described and illustrated in the Scientific American. Indeed, we doubt if there will be a better commentary on the useful features of the Exhibition, than the eight volumes of our paper.

The Gobelin Tapestries.—The Gobelin Tapestries excite a great deal of attention from those who know what they are. Others, supposing them to be only paintings, pass them by; this may be a compliment, but even in this way they merit a higher, for there are many paintings in the Palace which are mere daubs in comparison. If the tapestries were hung among the paintings in the gallery, they would suffer little by a comparison with the best.

There are thirteen specimens of these tapestries, of different sizes and shapes, displayed in a neat little space prepared for them on the lower floor in the French Department. We understand that, at the closing of the Exhibition, they are destined to adorn the President's White House, as a gift from Louis Napoleon.

But the tapestries are only cloth—not woven by machinery, but slowly knitted by a process similar to the crochet-working so popular at present with the ladies. The workman, sitting, with the design on one side and the warp fixed in a vertical frame on the other, toils for years in producing a tapestry of but a few feet square. The largest pieces cost a labor of seven to ten years, and are estimated to be worth from fifteen to thirty thousand dollars. The manufactory is at Paris in the Fauburg St. Marcel. In the year 1453 Giles and John Gobelin, celebrated dyers of that time, erected the building in which the tapestries are now made. But the dyers, although their name is immortal, seem to have failed in their enterprise, for the building was popularly known as the "Gobelin Folly," till Louis XIV., in 1667, by an edict, dignified it with the title of the "Hotel des Gobelins," and established in it a manufactory of furniture and decorations for his new palaces. The establishment has been continued under exclusive royal patronage and control to the present day. The best artistic talent has always been employed, and their work has been unrivalled. The number of workmen at present is about 120, receiving from $300 to $500 per annum, and a pension of half that sum when disabled by age.

Chemicals and Philosophical Apparatus—The show of drugs and chemicals in the exhibition is quite interesting and complete. Most of the common or new, useful, or curious substances employed in medicine or the arts, may be found here. There is also a fine display of chemical and philosophical apparatus, chiefly from Germany and the United States. But the foreign apparatus cannot compare with the American in neatness of finish and appropriateness of form. The American Air Pump, exhibited by Chamberlain, of Boston, is a model for such an instrument, and is a fair specimen of the American style for the best apparatus. Much of the chemical glass ware in the Austrian and German quarters is quite awkward in form, but has the great advantage of being made of the genuine Bohemian glass.

Artificial Fruit Essences—These essences have rapidly come into use, chiefly as flavors for confectionary and liquors: the most common are of pine-apple and banana. Although called fruit-essences or extracts, there is no fruit about them or used in their preparation, but strange enough, the most delicious flavor or perfume may be produced by a simple chemical process, from some of the most loathsome substances. Thus the essence of pine-apples is manufactured from a mixture of putrid cheese, sour milk, and sugar: for most of the other essences a very disgusting and poisonous oil, obtained in the distillation of potatoes, is used. But when the essences are well prepared and pure, they are as harmless as the natural flavors which they imitate, indeed some of them are perfectly identical in their properties and composition. Gehe & Co., of Dresden, Saxony, exhibit a fine assortment of these wonderful products of modern chemistry among their large collection of drugs and chemicals.

Preserved Food—In the French Department there are sixteen exhibitors of preserved meats and vegetables. The fruits put up in clear glass bottles seem as fresh as if they were just taken from the trees—and we have no doubt that the meats are as palatable as when they were enclosed in their tin cases. Chevalier Appert, of Paris, exhibits preserved roasted and stuffed mutton, and other alimentary preserves. This collection will perhaps receive the greatest attention, from the fact that Appert's name is generally connected with most of the processes. As early as 1810, he had become famous for his success in preserving vegetables and meats. The improved processes have borne the test of time and changes of climates. And now, if we can only pay for it, we may have a dinner off of anything we please, at any season we please. It is only necessary to exclude the food entirely from the air, and it may be kept for our grandchildren. It may seem a simple problem to exclude the air, but there are many difficulties. Air enters into all the minute pores of a body, sticks to the outside, and surrounds it. The most approved plan is to remove the bones, and heat the meat in a tin canister by means of a chloride of calcium bath at a temperature of about 300 degrees. When the air is removed from the interior of the meat, and the vacant space filled with steam, the canister is carefully closed up by soldering. When the canister and its contents become cold, and the steam condensed, the sides of the can will be hollowed in by the pressure of the atmosphere. This is a sign that the whole process has been performed successfully.

Mosaic Work—Rome and Florence send beautiful articles of mosaic work, and specimens of the stones which are used. The most interesting object in this collection is a mosaic center-table, estimated to be worth over $3,000. The top of the table upon which the design is worked is black marble. At a little distance the design has the appearance of a superb painting. But each color and each shade of color is reflected from separate bits or slices of stone only the sixteenth of an inch in thickness. Mosaic working is very slow and tedious, and requires the patience of a Chinaman. It will never be practiced in America unless some Yankee invents a machine to do it by wholesale.

Substitute for the Turn-table—Joseph Dunn, of Durham, England, exhibits a model of railroad track, car, and switches, for reversing locomotives. Two tracks, branching out from the main track, at suitable distances from each other, meet in a single track, the length of the locomotive. The car passes out by one track and returns by the other reversed. The switches are placed near each other so that they may be operated by a single man, and are kept open for the main track by springs, except when the reversing is made. This plan is new to many of our readers, and will readily recommend itself for simplicity and cheapness.

Grain Moistener.—U. Debaune exhibits in the French quarter a very simple and effectual machine for thoroughly moistening grain. The proprietor describes it as "a sort of a double rectangular watering pot." The principle will be readily understood. The grain in its passage along an inclined channel is sprinkled by little jets of water issuing from the sides of the channel. These jets are fed from a source or reservoir placed at a suitable distance above for the pressure. It will be seen that the amount of water may easily be regulated for the amount and kind of grain. The inventor says that by the machine one man can moisten the grain to feed ten pairs of millstones.

Whitworth's Measuring Machine.—A millionth of an inch is a very small space—you cannot see it with the eye or feel it with the touch. A keen razor edge, or the thinnest paper is thick in comparison with such a space. The Scientific American is printed on tolerably thin paper, but it is over 3,000 times thicker than the millionth of an inch. A million leaves of our paper would make a pile more than 250 feet high. A measure true to the hundredth part of an inch is rare, and the space of a thousandth of an inch could not be accurately measured by any device hitherto in use. But Mr. Whitworth exhibits, in the English Department, a very modest looking little apparatus which can determine easily the one-millionth of an inch. The use of such an instrument is chiefly for copying or regulating the standards of weights and measures, and in the construction of delicate philosophical instruments. The principle of this curious contrivance will be readily understood from a brief description. Two steel bars are placed in a cast-iron block, and are made to approach or recede from each other by means of screws moving accurately in their axes. The screw which moves one of the bars (the other being supposed stationary for the simplicity of the explanation) has 20 threads to the inch. On the head of this screw is a wheel with 200 teeth. Hence a motion of one space on the wheel would advance the bar 1-4,000 of an inch. An endless screw, which moves the wheel, has upon it a circle graduated with 250 divisions. One division of the graduated circle will therefore correspond with 1-250th of one of the wheel divisions, or to an advance of the bar of (1-250×1-4,000) one millionth of an inch.

Bolting Mill and Patent Bolting Cloth—This machine is exhibited chiefly to show the properties of the bolting cloth. The cloth, woven without seams, is stretched over a reel which turns on an inclined axis, at the rate of about 150 revolutions in a minute. Themeal falls into the upper part of the cloth, which, in passing round, strikes against six bars of wood, called beaters. By this means the flour is made to pass through the meshes of the cloth, while the refuse escapes at the lower end. It is said that this method of bolting has been in use a long time in England and her colonies. It is recommended for despatch and precision in dressing, and on account of the bolting mill requiring but little space and power. The proprietor says that 1400 lbs. in the hour are dressed in this way, and 430,000 lbs. before the cloth is worn out. This machine is exhibited by Walter Blackmore, of Wandsworth, England.

Barlow's Planetarium—We intended to present our readers with an engraving of the planetarium which we noticed two weeks since; but it was found that no engraving could give a correct notion of the complicated machinery. Its general appearance, however, will be readily understood from a few words of description. The instrument stands in a circle about 9 feet in diameter and 3 feet high. At the center of the circle, the sun is represented by a brass sphere 16 inches in diameter, around which Mercury, Venus, the Earth, and Moon, are arranged in proper order and position. The diameter of the ball representing the earth is 4 inches. The other planets are represented by globes of diameters corresponding with this.

Electrotypes—In the English Department is a large collection of electrotyped specimens which well show the condition and capabilities of this new art. The Exhibitors are Elkington and Mason, of Birmingham, who are proprietors of the largest electrotype establishment in the world: nearly 1,000 workmen are employed. The articles exhibited are electro-gilded and plated vases, candelabra, table-sets, &c. Of course they have the appearance of real gold and silver, and the decoration is quite equal, in artistic merit, to any thing of the kind in the Exhibition. The metal which forms the foundation or mass of these specimens is not copper, which was at first used, but an alloy called albata ware, composed of copper, nickel, and zinc, and so closely resembling silver in appearance, that if the plating be worn off, the article will not be disfigured.

But the most interesting part of this collection are the electrotypes of insects, flowers, and fruits: the objects are enveloped with a coat of bright metal, which copies and preserves their minutest peculiarities. We are surprised that so little attention has been paid to this branch of electrotyping in the United States. The manipulations are quite simple, and may be performed by any person of ordinary skill—and the curious results will well repay the expense and labor; anything, of whatever size or shape, can be covered with metal or accurately copied.

In a collection of charts, instruments, &c., exhibited by the United States Coast Survey, are some fine specimens from Mr. Mathiot's electrotype laboratory at Washington. They consist of the original plates, as produced by the engraver, the electrotype moulds, and the duplicate electrotype copies or fac-similes of the originals. These last are so perfect that the engraver could not distinguish them from his own work, and a microscope will reveal similarities that cannot be detected with the unassisted eye. The largest set of plates are 42 by 38 inches—making a surface of about 10 square feet. The engraving of such a plate requires the labor of skillful artists for several years, but Mr. Mathiot reproduces it in two or three days.

The Electrotype has been practiced with the greatest success by Mr. Mathiot, and to him we are indebted for some of the most valuable improvements and applications. The discovery of the use of iodine in copying metallic objects, ranks him among the most useful men of the age. The multiplication of engraved copper plates is now one of the most certain of the electrotype processes. Mr. Mathiot is also the author of the best practical treatise on electrotyping extant, which was published in Vol. 6, of the Scientific American.

Electro gilding and plating are now practiced in almost every village; some of the old processes of washing, amalgamating and plating by heat are fast going out of use. Copying wood engravings and types as a substitute for stereotyping and coppering the faces of types by electrotype are carried on quite extensively.