Science and Art.

Cochineal.

The French, it is said, are now cultivating the cochineal, successfully, in Algeria. This insect, originally, belongs to old Mexico, from which country, it was first brought to Europe by the Spaniards. Its use is to dye a scarlet color on silk and wool, and it has entirely supersede the old *kermes*. This insect is a *bug* —the cactus amphidia. In Mexico and Honduras, immense fields of cactus are cultivated. Every pound of cochineal is composed of about 70,000 insects.

The cochineal secretes a white cotton-like substance which envelopes it on the plant it lives on. There is nothing more simple than the way the harvest is made. The insects are made to fall into a basin by means of a dull knife, and are then plunged for a few minutes into a vessel of boiling water, and are afterwards placed on a sieve and exposed to the sun for a day and a half.

The insects are then completely dried, and look like little wrinkled seeds of a purplish gray color. It is in this state that they become an article of merchandise.

To dye a scarlet on wool, the cochineal is ground fine, and boiled with cream of tartar, and the chloride of tin in a kettle, for five minutes, then the wool is introduced and boiled for about an hour. That beautiful pigment —carmine—is made of this Mexican bug, boiled in a weak solution of alum, then strained through a cloth, and the fine precipitate dried in cakes.

Preparation of Colcothar.

Sulphate of iron is dissolved in boiling water and filtered; concentrated solution of oxalic acid is added as long as a precipitate continues to be formed. When quite cold the liquid is filtered through linen, and washed on a cloth as long as the water shows an acid reaction. When partially dry, it is heated on an iron plate over a small fire. At 392 deg. Fah. the decomposition commences; and on raising the temperature still higher, red oxyd is formed in the finest possible state. This colcothar, without any washing, may be employed for polishing plate-glass, lenses, gold and silver, daguerreotype plates, concave mirrors for reflectors. By using this preparation the polishing of glasses may be greatly quickened.—[London Artizan.

Oxyd of Tin as a Polishing Powder.

M. Vogel prepares a solution of tin by pouring six parts of boiling distilled-water on one part of the commercial chloride. The solution is strained through a cloth into a glass vessel. A concentrated solution of oxalic acid is added to the liquid while still hot. When cold, the clear liquor is decanted, and the precipitate washed with cold water upon a linen cloth, until the rinsings no longer affect blue litmus. The oxalate thus obtained is dried and heated on an iron plate over a small charcoal fire. At a red heat decomposition commences; carbonic acid and carbonic oxyd are given off, and peroxyd of tin remains in a state of minute subdivision. During calcination the matter should be constantly stirred; and it increases very much in bulk. We obtain 1 lb of oxyd from 2 of chloride of tin and 1 lb. of oxalic acid. The oxyd thus prepared is found admirable for polishing optical glasses, metals, &c., &c.—[Ib.

Milk of Wax for the Skin.

One of the best cosmetics for the skin is milk of wax; it is simple in its composition, all the ingredients being perfectly harmless or non-medical, therefore its daily use will not produce any future injurious effects. Take virgin wax, oil of sweet almonds, spermaceti, and any fine white soap, of each a quarter of an ounce; rose water, or of elder flower water, three quarters of a pint; essence of lavender, or of real eau de Cologne, three ounces. Cut up the soap into very small pieces, and place them with about a wine-glassful of the water in a jug; put the jug into a saucepan containing boiling water, at the side of the fire; in a few minutes all the soap will dissolve in the water; when this is done, put into the jug the oil, the spermaceti, and the wax, stirring the whole well together as the wax liquifies. Now very gradually, little by little, pour into these ingredients the remainder of the water; then allow the whole to cool, and add the scented spirit; when perfume is not desired, plain spirits of wine will answer just as well as that which is called essence of lavender, &c. This operation done, the milk has only to be strained through book muslin to be ready for use. Yellow soap, and many of the common soaps, although very good for household cleansing purposes, are far too alkaline for use on "the human face divine;" hence many ladies reject the use of soap for the face altogether on account of its irritating qualities; those who do so will be much pleased with the emollient properties of the milk of wax.—[Piesse's Art of Perfumery.

Excessive Division of Labor Injurious.

The Philadelphia *Ledger* of the 2d inst. contains an article on the above subject, the substance of which ought to be scattered broad cast throughout the world. Its object is, to point out the injurious effects upon men and nations of doing one or two things in the most superior manner by excessive division of labor and limited exercise of thought, and to show the benefits of a larger area for labor and thought. It says:—

"The division of labor, though it may bring to perfection the production of a country up to a certain point, is most deleterious in its effects upon the producers. To make pins to the best advantage, it may answer for a time to divide the operation into twenty parts. Then each man will only have to consume the time necessary to learn how to perform the twentieth part of making one pin, before his labor becomes available. Let him concentrate the whole of his attention on the one simple work, for instance, of learning to make pin heads, and on this ever let his time be consumed. It is astonishing the perfection and rapidity which he will acquire in performing the operation. But what is the result upon the man? His powers of mind will dwindle, and his head become, for all practical purposes, after a number of generations, no larger than that of one of the pins that he makes. He ceases to be a man, and becomes a mere tool.

"Any person who has been familiar with the most prosperous farmers or mechanics in this country must have observed their immense mental and physical resources, and their superiority over the same class of persons from the older countries of Europe. In the more newly settled portions of the country, the fertility of resource and invention acquired by persons who have removed from the older States is very obvious in many occupations, so that the Western men have the idea that they are, as a class, 'Eastern men enlarged.'"

Price of Coal in England.

As regards the prices of coal in England, I have not been able to perceive any difference between the rates paid per tun in the London market and those paid in Philadelphia for Lehigh and Schuylkill. From 16 to 20 shillings, or $4 to $5 per tun is obtained in London for the best qualities. This is probably less than house coal is commanding at the present time in Philadelphia; but in making a comparison we must not forget the difference in the nature of the fuel at the two places. Barring the 'slack' with which the Pottsville folks in hard winters persist in encumbering the stoves and furnaces of their good easy customers of the Quaker City, the anthracite, which Pennsylvania alone of all the world, furnishes in any quantities, is decidedly more economical, producing a greater proportion of heat for the same expenditure of fuel, than the bituminous article which smokes and blackens the Cockneys so terribly. In the large towns of the manufacturing district, Manchester, Sheffield, Leeds, Blackburn, Bolton, Bradford, Stockport, &c., which are all situated in close proximity to the mines; coal is certainly very cheap being no more than from $2 to $2·50 per tun of house coals, and from $1·25 to $1·50 for engine coal. At Pittsburg, which city is in the heart of the Pennsylvania bituminous field, I believe the same species is delivered for 5 cents per bushel, equivalent to about $3·50 per tun, and this in the face of the fact that there are no shafts whatever with the expensive machinery necessary to work them in the Pennsylvania mines, all the workings being horizontal, and entered from the sides of the banks. —[Correspondent Pottsville Journal.

Extract of Indigo—Salts of Tin.

Messrs. Editors—I mean always to continue a subscriber to the Scientific American; I am by profession a dyer and scourer, and have gained more knowledge from your journal than all the receipts I ever met with. It would confer a favor on me if you would inform me how the "extract of indigo" is made, also the "salts of tin." M. Cassel.

Lafayette, Ind., Jan. 1856.

[The indigo is first reduced to an impalpable powder in a mortar. For each pound of indigo thus ground, six pounds of highly concentrated sulphuric acid, are put into a large stoneware jar. This is kept in as dry a part as possible, and the indigo is added gradually in small quantities, and care taken that the heat of the solution does not exceed 212 degs. Fah. When the indigo is all added, the vessel is placed in such a position that the heat may be kept at 150 degs. Fah., and allowed to stand, stirring occasionally, for 48 hours. It is then technically called chemic; and its quality determined rudely by painting a little of it on a piece of glass. The color it assumes on the glass affords evidence to the skillful dyer of its quality. Good chemic exhibits on the glass a few seconds after it is put on, a rich purple blue color. To make the extract of indigo now so common, chemic prepared as directed is then diluted with hot rain water, and the whole is put upon a filter of woolen cloth, by which means the insoluble impurities of the indigo are separated. The blue solution which has passed through the filter is transferred to a leaden vessel, and evaporated till reduced to about three gallons for every pint of indigo used. This is a pure extract of indigo, but that prepared for market has—according to Napier —the following also added to it, namely: "four pounds of common salt to the pound of indigo, and the whole is well stirred. The sulpho indylic acid is thus precipitated, and the whole is again thrown upon a similar filter of woolen cloth; the extract remains upon the filter, and when sufficiently drained is ready for the market. Some makers add a little potash or soda, which may be advantageous, and a little ammonia gives the extract a beautiful bloom. A pound weight of indigo should yield fourteen pounds of extract." The common "extract of indigo" is unsuited for dyeing dark blue and green shades on silk. Every jobbing dyer will find it to his advantage to make his own *chemic* "sulphate of indigo," and he should use only the best Bengal for this purpose. It requires the best of indigo, and strong pure sulphuric acid to make good chemic. The color of the best quality of indigo is a deep blue with a copper tinge. To select it, proceed as follows: break a cake, and examine its inner grain; if it is fine and of a deep blue shade, and exhibits a coppery metallic luster when rubbed with the finger nail, it is a very good sign that it is of a superior quality.

Salts of Tin—These as known in the art of dyeing, are a protochloride of tin. They are made by dissolving pure tin in hydrochloric (muriatic) acid at a heat of about 150 degs. Fah. The tin is fed into the acid, as is well known to all dyers, until no more can be dissolved. The solution is now known by the name of "muriatic tin spirits." If placed in a warm place the water will be evaporated, and crystals formed; these are the salts of tin. They dissolve in a small quantity of water; if put into a large quantity, the whole becomes milky, and a white powder separates, which is an oxychloride of tin. A clear and complete solution of salts of tin in water cannot be retained for any length of time, on account of the great attraction which this salt has for oxygen. A little hydrochloric acid put into the water, however, has the effect of greatly retarding, and, indeed, of almost wholly preventing their decomposition. It is the best plan for jobbing dyers to use the muriate of tin, and not the *salts*, if they wish to keep "spirits" on which they can place the utmost dependence.

Lake Superior Iron.

Vast stores of the purest iron ore in the world are found in the Lake Superior regions. During the past year 1400 tuns were shipped by the Cleveland Co., and more than 50,000 tuns could have been sold. Great preparations have been made for shipping vast quantities of it next season, and it is calculated that in three years from the present date, no less than 200,000 tuns will be mined and shipped in one season. It makes beautiful iron, of the best quality.

A Great Steamship Company.

"The Peninsular and Oriental Steamship Company," in England, is the richest and most powerful in the world. A report of the yearly meeting of the stockholders, contained in a recent number of the *London Mining Journal*, presents the astonishing fact that the Company owns 60,551 tuns of steamships, embracing 49 vessels, averaging 1237 tuns each. Some of these are very large, while others are of smaller dimensions. Twenty of them are propelled by the screw, the rest by paddle wheels. These vessels are running on nine different routes on as many seas, such as the Mediterranean, the Chinese sea, between England and Egypt, France and Malta, &c. Its affairs must have been well managed last year, and the Company must possess careful and able officers, engineers, and seamen. Forty-two of their steamers had run 2,000,000 miles without a single accident. If any of the Company's employees get injured by accident in their service, they get the same pensions as those given by the government to persons in the Navy. At Southampton there is a large school maintained to educate the children of their employees, and at present there are 340 children receiving instruction in it. The yearly dividends amounted to ten per cent., last year being one of great prosperity, owing to the demand for vessels caused by the war in the Crimea.

Gentility is neither in birth, wealth, manner, nor fashion—but in the mind. A high sense of honor, a determination never to take a mean advantage of another, an adherence to truth, delicacy, and politeness towards those with whom we have dealings, are its essential characteristics.