

ng, and discovering he has performed, from that juvenile essay of his on the textile fabrics of the ancients to the last line of his "Cosmos," which reminds us of Copernicus reading the last proof-sheet on his death-bed, shortly before his departure; or of Mozart, who, in his darkened room, directed with dying looks the singing of a portion of that requiem which he had in part composed, conscious that his ears would never hear its pealing sounds of resurrection. Let us, one and all, young and old, symbolize by the name of Humboldt the fact that, however untrue assuredly the saying is that genius is labor, it is true that the necessary co-efficient of genius and of any talent is incessant diligence. We are ordained not only to eat the bread of our mouth in the sweat of our brow, but to earn in the same way the nourishing bread of the mind. This is no world of trifling; it is a world of work; and Humboldt, like the Greeks whose intellectuality he loved to honor—whose Socrates loved to say: "Arduous are all noble things"—was a hard-working man—far harder-working than most of those who arrogate the name to themselves. He ceased to work, and to work hard, only when he laid himself down on that couch from which he rose no more.

I visited Humboldt at Potsdam in the year 1844, when he had reached, therefore, the age of seventy-five; for you know that he was born in that remarkable year of 1769, in which Cuvier was born, and Wellington, and Chateaubriand, and Napoleon—just ten years after Schiller, just twenty after Goethe. Humboldt told me at that time that he was engaged on a work which he intended to call "Cosmos."

I desire to show what interest he took in everything connected with progress. I have reason to believe that it was chiefly owing to him that the King of Prussia offered to me, not long after my visit, a chair to be created in the University of Berlin, exclusively dedicated to the Science and Art of Punishment, or to Poenology, as I had already called this branch. I had conversed with the monarch on the superiority of solitary confinement at labor over all the other prison systems, when he concluded the interview with these words: "I wish you would convince Mr. von Humboldt of your views. He does not entirely agree with them. I shall let him know that you will see him."

Humboldt and prison discipline sounded strange to my ears. I went, and found that he loved truth better than his own opinion or bias, and my suggestion that so comprehensive a university as that of Berlin, our common native city, ought to be honored with having the first chair of Poenology, for which it was high time to carve out a distinct branch, treating of the convict in all his phases after the act of conviction, was seized upon at once by his liberal mind.

Many of my young friends have asked me, as their teacher, and, indeed, many other friends have repeated the question—Was he not the greatest man of the century? I do not believe it is fit for man to seat himself on the bench in the chancery of humanity, and there to pronounce this one or that one the greatest man. If all men were counted together, each one of whom has been called in his turn the greatest of all, there would be a crowd of greatest men. Mortals ourselves, we should call no one the greatest. History is abstemious even in attributing simple greatness. But if it is an attribute of greatness to impress an indelible stamp on the collective mind of a race, and to give a new impulse to its intellect; if greatness, in part, consists in devising that which is good, large, and noble, and in perseveringly executing it by means which, in the hands of others, would have been insufficient, and against obstacles which would have been insurmountable to others; if it is great to graft new branches on the trees of science and culture, leading the sap to form henceforth choicer fruit; if the daring solitude of lofty thought and loyal adhesion to its own royalty is a constituent of greatness; if lucid common sense—the health and rectitude of our intelligence which avoids, in all direction, the Too-Much—is a requisite of greatness; if rare and varied gifts, such as mark distinction when singly granted, showered by Providence on one man—if this makes up or proves greatness, then indeed we may say, without presumption, that one of the great men has been our own.

That period has arrived to which Cressus alluded in the memorable exclamation, "Oh! Solon, Solon, Solon!" And we are now allowed to say that Humboldt was one of the most gifted, most fortunate, and most favored mortals—favored even with comeliness, with a brow so exquisitely chiseled that, irrespective of its being the symbol of lofty thought, is pleasant to look upon in his busts as a mere beautiful thing; favored even in his name, so easily uttered by all the nations which were destined to pronounce it.

When we pray not only for the kindly fruits of the earth, but also, as we ought to do, for the kindly fruits of the mind, let us always gratefully remember that He who gives all blessed things has given to our age and to all posterity such a man as Humboldt.

**The Cedars of Lebanon.**

Mr. Jessup, an American missionary, has recently discovered several extensive groves of cedars in Lebanon. Of these there are three of great extent in Southern Lebanon. This grove lately contained 10,000 trees, and had been purchased by a barbarous Sheikh, from the Turkish Government, for the purpose of trying to extract pitch from the wood. The experiment of course failed, and the Sheikh was ruined, but several thousand trees were destroyed in the attempt. One of the trees measured fifteen feet in diameter, and the forest is full of young trees, springing up with great vigor. He also found two small groves on the eastern slope of Lebanon, overlooking the Buka'a, above El Medek; and two other large groves containing many thousand trees, one above El Baruk, and another near Ma'asib, where the trees are very large and equal to any others; all are being destroyed for firewood.

**New Style of Photographs.**

The process is due to Mr. Charles Durand. Put into a small mortar a teaspoonful of kaolin, and thereto about a quarter of an ounce of sensitive collodio-chloride, and well stir with the pestle until it becomes a smooth paste. Add to this three fourths of an ounce more of the collodion, and again stir, and pour the whole into a bottle with one or two drops of castor oil. Well shake, and place it aside until the coarse particles have subsided.

Edge a piece of talc or glass for about a quarter of an inch all round with dilute albumen, afterwards coat with the kaolin collodion, and dry by gentle heat, when the talc or glass, if placed upon a piece of white paper, will have the appearance of alabaster.

If the film splits, it should have a trifle more castor oil in the collodion; but the best remedy is to choose a more powdery collodion.

If the film is upon glass, the progress of printing may be examined from the back; but if talc be the medium used, it may be turned back in the same manner as when printing upon paper.

Tone, fix, and wash in the same manner as with an ordinary collodio-chloride print upon opal glass, and mount in a frame or case, to protect the picture from being scratched. It must not be varnished.

After three years' trial, the film has been found not to crack or leave the talc or glass after the picture has been once finished.

Many pretty effects may be produced by putting different colored papers behind vignettes produced in this way, as whatever color is placed behind the picture gives a delicate tinge of that color to the picture.

I may add that I have tried oxide of zinc in place of kaolin, and that it also gives a good effect, but not better than the latter. There is another point worth naming. For those skilled in the use of powder colors, here is the most delightful surface which can possibly be worked on. The surface has a tooth which bites the color most perfectly, and the purity of the white gives a rare delicacy and brilliancy to the applied colors. By skillful manipulation and some knowledge of flesh painting, an effect resembling a highly-finished miniature can be obtained. A good print produced in this way on mica, and backed, to give warmth, with cream or buff-tinted paper, makes one of the prettiest, cheapest, and most easily produced portraits for a locket which can be desired.—*Philadelphia Photographer.*

**Editorial Summary.**

**TO REMOVE RUST.**—A lady writing from Vermont to the *Heart and Home* says that she accidentally discovered an easy way of removing rust from steel. She put a number of badly-rusted forks in a tumbler of kerosene oil, and after leaving them there some time, found that the rust had become so much loosened that it rubbed off readily. She says that she has since then used the oil to clean her knives and sewing machine. We suppose that many of our readers have already learned of the beneficial effects of oil on steel, but we give the correspondent's experience for the benefit of those who have never used it for such a purpose.

**WONDERS OF SCIENCE.**—Wonders of science never cease! Some years ago the opinion was expressed by a distinguished astronomer of Cambridge, England, that if the earth's atmosphere were but increased thirteen thousand yards in height, so as to have an increased power of retaining the warmth poured upon it from outer space, we might do without the sun altogether, so far as our heat supply is concerned. More recently, by means of an instrument called the galvanometer, used in connection with a refracting telescope, it has not only been proved that the stars actually give heat to the earth, but the comparative amount of heat received from different stars has been, as it were measured.

**DECAY OF IRON RAILINGS.**—Every one must have noticed the destructive combination of lead and iron, from railings being fixed in stone with the former metal. The reason for this is, that the oxygen of the atmosphere keeps up a galvanic action between the two metals. This waste may be prevented by substituting zinc for lead, in which case the galvanic influence would be inverted; the whole of its action would fall on the zinc; the one remaining uninjured, the other nearly so. Paint formed of the oxide of zinc, for the same reason preserves iron exposed to the atmosphere infinitely better than the ordinary paint composed of the oxide of lead.

A CORRESPONDENT from Plymouth, Mass., kindly refers us to an article supposed to be the one alluded to by several correspondents lately, deprecating the use of night soil. It is on page 103, Volume III. of the New Series of SCIENTIFIC AMERICAN. Referring to the article, we find it to be a short extract from an exchange on the use of artificial manure called *poudrette*, made from night soil, and was so credited. It was copied by some other journal and improperly credited to the SCIENTIFIC AMERICAN. Having got started in that way, it has gone the rounds.

A BLIND man in Chicago has invented a tin lunch box, with a receptacle for cold coffee inside of it, and the whole thing is only 4½ inches wide and 9 inches long. The box is so constructed that when empty it can be conveniently folded together, like a thin book, and carried in the pocket.

M. JANSSEN, in a letter dated from Darjeeling, Sikim, British India, 22d May last, says that the spectra of some stars, which are rather ruddy colored when not disclosing the presence of hydrogen, do positively disclose the presence of aqueous vapor.

THE month so far has brought us a series of accidents and casualties, by land and sea, which will make it memorable. The damage done by the recent gale in New England, and the Avondale disaster, are the two most remarkable occurrences of this kind, but the number of minor accidents has also been very numerous.

THE *American Horological Journal* says that rings with settings likely to be damaged by heat may be soldered without injury if the part liable to injury be buried in a piece of raw potato.

SALE OF MACHINERY.—We call the attention of our readers to the Auction Sale of machinery of the Spencer Repeating Rifle Co., advertised in another column. It is to be sold in Boston on the 28th of September.

THE loss of weight experienced by a rower through perspiration in a prolonged contest like that of the Harvards with the Oxforas is from four to eight pounds.

THE metal sodium is stated not to take fire on cold water, but this is incorrect. A small piece of the metal will not do so, but a piece the size of a nut will frequently ignite.

**MANUFACTURING, MINING, AND RAILROAD ITEMS.**

At Ottawa, Canada, there is great activity in the sawed lumber trade. Nearly 40,000,000 feet are now piled up at the mills there.

The nickel ore at the Litchfield, Conn., mines will be worked as soon as workmen arrive from Germany. A furnace capable of reducing ten tons of ore daily is just completed, and two others are building.

A dispatch from Central City, Colorado, states that the bullion shipments in the month of August amounted to \$325,000. One company sold 20 tons of gold ore for \$100 per ton, to be shipped to England.

A trial has lately been made of a "steam omnibus" in Edinburgh, Scotland, and the experiment, as far as can be judged by the details given, appears to have been successful. As to the construction of the new vehicle nothing as yet is said.

An Atchison, Kansas, telegram says that the contract for the Nemaha Valley Railroad has been let, and ten miles will be completed by February 15, 1870, and the road will be finished to Pawnee City in eighteen months. This is an outrun of the Quincy and Keosauqua road, and diverts the business of Southern Nebraska to Chicago instead of St. Louis.

The receipts of internal revenue for July and August, this year, were \$36,594,031.75, against \$30,890,028.62 same months last year—an increase of \$5,704,003.13. The receipts for the fiscal quarter ending September 30, 1868 were \$38,735,863.08, and it is estimated that for the corresponding quarter this year they will reach \$48,000,000.

It has recently been decided in this city that "Shipping articles" are invalid unless a five cent stamp is affixed for the signature of each sailor. The ground of the decision is, that the agreement is made between the master and each man individually, and that, therefore, one five cent stamp which was affixed to the articles under consideration, was insufficient.

The number of mechanics and laborers employed in the arsenal works on Rock Island at present is greater than ever before. They are classified as follows: Laborers, 600; stone-cutters and masons, 150; carpenters, 50; teamsters, 100; total number, 900. Until this month '700 was the largest number on the island. The August pay-roll will not fall short of \$100,000.

The freight on wines from San Francisco to Chicago has been reduced to \$150 per hundred pounds—one half of the old charge. It is said that this reduction was procured by the efforts of a committee of California wine-growers, who represented to the General Freight Agent of the Central Pacific Railroad that the previously charged rates had the effect of absolutely prohibiting trade in wines.

By the completion of the Western Pacific Railroad on Monday the cars travel continuously from the harbors of New York, Boston, and Philadelphia, to the harbor of San Francisco. Arrangements have been made for carrying through passengers and mails between Sacramento and San Francisco without transshipment inside of four hours. The earnings of the Central Pacific Railroad for August were \$572,000, showing a steady increase in passengers and freight.

Professor Hitchcock says that the legislature of New Hampshire has recently inaugurated an examination of the rocks and minerals of New Hampshire in a manner reflecting great credit upon them. During its progress the bounds of the new gold field have been carefully traced out, extending in a narrow belt from Bellows Falls northwardly along the Connecticut river into the dividing ridge between Canada and Maine. The principal New Hampshire gold mine is at Lyman. The vein is fourteen feet wide composed chiefly of quartz, containing galena, ankerite and pyrites.

The British Consul at Chee-foo, China, reports that the wild silkworm is bred in large quantities by the country people of Shan-tung, and a great deal of wild silk is produced annually in the central part of the province, and in the vicinity of Tsi-nan-foo. The silk cloth made from this wild silk is used by the Chinese for summer clothing, is very strong, and wears extremely well. It is thought probable that the wild silkworm may be acclimatized in Europe, and attention has been drawn to it both in Italy and France. Chee-foo can furnish the eggs of both the wild and the domestic silkworms.

Feathers of ostriches and other birds, though naturally black, or dark gray colored, may be bleached by the following process newly discovered by M. Deflot. The feathers are placed for three or four hours in a tepid, dilute solution of bichromate of potassa, to which some nitric acid has been cautiously added. The feathers will then be found to present a greenish hue, owing to the oxide of chromium precipitated on the substance, and to remove this the feathers are placed in a dilute solution of sulphurous acid in water, whereby the feathers become perfectly white and bleached. Care is to be taken that the solution of bichromate be not made too strong; and that not too much acid be used, which would cause an irremovable yellow color.

**Mechanical Engravings,**

Such as embellish the SCIENTIFIC AMERICAN, are generally superior to those of any similar publication, either in this country or in Europe. They are executed by our own artists, who have had long experience in this branch of art, and who work exclusively for us. There is one pertinent fact in connection with the preparation and publication of an illustration in our columns, that needs to be better understood by inventors and manufacturers who often pursue a short-sighted policy in bringing their improvements to public notice. They go to a large expense in printing and circulating handbills, which few care either to read or preserve. Now, we undertake to say, that the cost of a first-class engraving, done by our own artists and printed in one issue of the SCIENTIFIC AMERICAN, will amount to less than one-half the sum that would have to be expended on a poorer illustration, printed in the same number of circulars, and on a sheet of paper in size equal to one page of our journal. A printed handbill has no permanent value. Thousands of volumes of the SCIENTIFIC AMERICAN are bound and preserved for future reference—beside, we estimate that every issue of our paper is read by no fewer than one hundred thousand persons. Parties who desire to have their inventions illustrated can address the undersigned, who are also prepared to send artists to make sketches of manufacturing establishments, with a view to their publication in the SCIENTIFIC AMERICAN. For particulars address  
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