

NATURE AND ART.

One of the most interesting general subjects, with which a philosophically inclined mind can occupy itself, is the comparison of a natural object with a product of human art. An artificial object may indeed excite our admiration and even delight; but after some study, we comprehend all that it is intended to, and all which it possibly can, teach us. As it has been executed by the genius, skill, and perseverance of a man, it can be understood by another man, provided his intellectual development is not so low and his preparatory education not so defective that he cannot elevate himself to the standard required to appreciate the genius of his more advanced fellow man. By studying the products of such genius, he finds that, after all, they partake of many (and if not of many, at least of some) of the human imperfections. The finest human production represents, after all, nothing more than the state of scientific knowledge or artistic ability possessed at the time of its production; it silently admits of improvements, and confesses that probably it will be improved by advancing science, or, even worse, entirely set aside by the more perfect productions produced by later generations, and elaborated on a different type.

In studying a natural production, that is, an object made by Nature, alone, without human interference, we find that all the above remarks are totally inapplicable. We find that we never will be able to learn all that it can teach. Its place in the universal economy is such that we are compelled to confess that it was assigned by the most Supreme Wisdom, and while science comes, in its giant steps of progress, nearer and nearer to that wisdom, new perfections are discovered in it. Every natural production appears more and more elaborate, and more and more in harmony with the whole universe; it will never be superseded or set aside, but is steadily fulfilling its functions in the great mysterious evolution and differentiation of the material universe. At every step of our investigation, it admonishes us of the eternal laws of its being. A thought of the great German philosopher and poet Goethe, which flowed from his pen when his mind was turned to the study of botany, is worthy of attention; it is

"Suchst du das Höchste, das Grösste?
Die Pflanze kann es dich lehren.
Was sie wissenlos ist.
Sei du es wollend,—das ist's."

We add the translation:

"Wouldst thou the highest, the greatest attain?
The plant may instruct thee.
What it unwittingly is,
Wittingly strive thou to be."

And this may be said of any natural object as well as of the plant, even of every part of a plant, of every part of the minutest animalcule; and if we recall the millions of organisms which the microscope is revealing in our time, in every grain of fossil earth, in every drop of stagnant water, even in the mud of the ocean bottom, at depths so great as to be formerly considered utterly inaccessible and devoid of life, we are dumbfounded at the infinity of the mysterious Power which presides over Nature's productions, and the comparative insignificance of man, notwithstanding all his pride.

CANADIAN PATENTS.

Our provincial neighbors have commenced their annual discussion of their Patent law. In the Canadian House of Commons, a few days ago, the Hon. Mr. Pope moved that the House go into committee on certain resolutions to amend the Patent law. He explained that in effect the measure was intended to assimilate the Canadian Patent law to that of England and the United States. The proposed amendment does away with the provision of the present law which requires a year's residence in Canada. The only other change proposed is that patented articles shall be manufactured in Canada. The House then went into committee, Colonel Gray in the chair, and adopted the resolutions and reported. The report was received. The resolutions were read a second time, and a bill founded on them was introduced.

We shall watch with interest the progress of the new bill, but have but little hope that the Canadians will so amend their Patent law as to permit their cousins in the States to secure protection for their inventions within the Provinces. The Canadians have so long practiced the habit of appropriating the inventions of our people that they will not readily give up the privilege; but at every Parliamentary session, a great deal of virtuous discussion takes place about Patent reform, which always ends without affording any protection to American inventors. We apprehend that the present discussion will terminate in the same manner.

EAST INDIAN IRON.

The *Indian Mail* is wondering why so little has been done to develop India's alleged wealth in iron, while the demand for that metal is so great as to divert British capital into foreign mines. It states that the steel now wrought in Cutch may vie in beauty of temper with the best productions of Sheffield and Glasgow, and that iron was lately turned out, from a rude furnace erected in the hills near Simla, superior to that obtained from Glasgow and Merthyr Tydvil at seventy shillings a ton. For sixty miles, along the base of the lower Himalayas, extends a rich iron bearing country, while the materials for smelting the ore lie close at hand in the shape of forests of hard timber. The iron bearing tract near Simla, covers two hundred square miles and yields a malleable ore very like that of Sweden. No doubt is entertained that plenty of iron may be found all over India, and that it may be brought into the market there cheaper than the English metal.

SCIENTIFIC AND PRACTICAL INFORMATION.

A NEW BLUE COLOR.

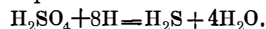
If metallic antimony be dissolved in *aqua regia*, after filtering through granulated glass, a solution of prussiate of potash being added as long as any precipitate is produced, a beautiful and permanent blue color is exhibited which can scarcely be distinguished from ultramarine. With chrome or zinc yellow, it gives a green, almost equal in color to Schweinfurth green and far less poisonous.

ACOUSTIC TELEGRAPH.

Professor Weinhold, of Chemnitz, Germany, has invented a phonic telegraph, employing neither electricity, magnetism, light, nor heat. The wire, which must be very carefully insulated, is attached at both ends to sounding boxes. Words uttered near one sounding box are repeated by the other very distinctly. This telegraph has been found to work well on the short line (2,200 feet long) where the experiment was made.

THE MARSH TEST FOR ARSENIC.

In the Berlin laboratory, it was customary to pass the arsenuretted hydrogen gas through several wash bottles containing dilute solutions of nitrate of lead, before passing it into nitrate of silver. It was often noticed that, although using chemically pure acid and zinc, the lead solution always became quite black, a fact indicating the presence of sulphuretted hydrogen. If concentrated sulphuric acid were used, the smell of sulphuretted hydrogen is also noticed. Professor Kolbe, who has been studying this subject, concludes that the sulphuretted hydrogen is due to a reduction of the sulphuric acid by nascent hydrogen, the amount of heat generated favoring the decomposition. This reaction could perhaps be represented thus:



It seems probable that the sulphuretted hydrogen thus generated would precipitate a portion of the arsenic introduced and render the test less accurate. To avoid this, Professor Kolbe suggests the use of a very dilute acid.

ADULTERATION OF STEARIN WITH PARAFFIN.

To determine the amount of paraffin in stearic acid or in stearin candles, the following simple and practicable method may be employed: About five grammes of the substance is weighed out and treated with warm potash lye, not too concentrated. The stearic acid is, of course, converted into soap, while the paraffin remains suspended in the liquid in small drops which finally collect on the surface. By allowing it to cool, most of the paraffin could be taken from the top, but to avoid errors, caused by drops of paraffin which remain suspended in the liquid, a solution of common salt is added which throws down the soap from the solution. The solid soap and paraffin are brought on a filter and washed with cold water, or a very dilute alcoholic solution. After all the adhering salt solution is washed out, the soap itself dissolves and passes through the filter, leaving the paraffin alone on the filter. This is dried at a temperature below the melting point of the paraffin, say at about 35° to 40° C. The paraffin may still contain some water and excess of alkali, so that it is not yet ready to be weighed. It should be treated with ether on the filter, and the ethereal solution evaporated, in a weighed porcelain or glass capsule, at a low temperature on a water bath. This operation must be conducted with great care, for the solution is apt to foam and spatter. The weight of the evaporated residue gives the amount of paraffin present, while the difference is stearic acid.

THE FOREST FIRES.

The calamities of last autumn, which destroyed so much property in Michigan, Wisconsin, and other parts of the Northwest are now being supplemented in the States of New York and Pennsylvania. Fires are destroying the timber and brushwood on the mountains in Delaware county, N. Y. At Hancock, a steam sawmill and much other property, including over 1,000,000 feet of hemlock timber, have been destroyed. We are informed by a traveler on the Delaware, Lackawanna and Western road that a tremendous scene of devastation was visible from the train, the heat being such that the glass windows of the cars were uncomfortable to the touch.

SEXUALITY OF HEART DISEASE.

Dr. Richard Quain reports that enlargement of the heart, one of the most distressing and fatal diseases, is more than twice as frequent in males as in females, the precise proportion being 8 to 3. This remarkable liability to enlargement of men's hearts, as compared with those of women, is, he thinks, unquestionably due to the greater amount of work and anxiety which, under the present dispensation, falls upon man. Ladies may take this fact to heart, and reflect whether, in claiming the rights of women, they may not at the same time incur the risks of men, and with them a new and unexpected form of disability.

AN ANCIENT RECORD.

Mr. Henry Fox Talbot has recently read, before the Society of Biblical Archaeology, a paper on a "Curious Myth respecting the birth of Sargina." Sargina the First was an ancient king in Babylonia, his capital being at Agani, in that country, at a date so far distant that the site of the city has never been discovered. The remarkable discovery of Mr. Talbot is that the account of his birth and infancy, recorded on a tablet in the British Museum, has many strange points of similarity to the history of Moses recorded in the Pentateuch. The following is a literal translation of the hieroglyphical inscription: "In a secret place, my mother brought me forth. She placed me in an ark of bulrushes; with bitu-

men she closed up the door. She threw me into the river, which did not enter into the ark. The river bore me up and brought me to the dwelling of a kind hearted fisherman. He saved my life and brought me up as his own son," etc. The original inscription was doubtless a long one, but only the commencement has been preserved.

ABSORPTION OF SOLID MATTER BY ANIMAL TISSUES.

Dr. Auspitz, of Vienna, gives the following result of a number of experiments on the behavior of some insoluble matter in contact with the living tissues. In mammals, granules of starch are absorbed by the subcutaneous tissue, and are able to reach the lungs and thence the general circulation; and, moreover, they pass through the lymphatic system to win their way into the veins. The epidermis presents an obstacle, to this absorption, which doubtless varies in pertinacity with its condition and the varying state of the pores in different states of health and cleanliness. "Absorption," says Dr. Auspitz, "is essentially promoted by the assistance of fatty matters which enter the system much more readily than starch, and in the same manner."

INDUSTRIAL ACTIVITY IN VERMONT.

The Messrs. Remington, whose works at Ilion, N. Y., we recently described, have taken a large interest in an extensive rolling mill at St. Albans, Vt. The capability of the new works may be judged from the following figures: Three steam engines, of an aggregate of 1,200 horse power, will run the machinery, and twenty-six steam boilers will be required to supply them. The iron mill will employ twenty puddling furnaces, ten reheating furnaces, and two 21 inch trains. The works are estimated to be able to turn out 90 tons of rails per day, using 500 tons of coal, and will employ 400 men, working day and night.

ELECTROPLATED JEWELRY.

The great demand for jewelry of the more ornamented patterns has induced manufacturers to produce the most elaborate specimens in inferior metal, coated with gold by electric process.

STEAM TILLAGE.

Mr. William Smith, of Woolston, England, has long been a successful practitioner of cultivation by steam. He states that by thus thoroughly working the land, he has grown on two fields fifteen crops in succession, wheat after beans, without a fallow; and the yield of wheat last year was fully forty bushels per acre. On two other fields of heavy soil he has grown wheat after wheat, and estimates the crop this year at quite forty bushels per acre. "The produce of these four fields under horse culture was," he says, "about twenty bushels per acre on an average of years." And notwithstanding the heavy and continued cropping under steam tillage, the land is so clean "that the total cost of working the seed bed for each crop, from the smashing up of the previous stubble to the pulverization of the surface in readiness for the drill, is only \$1.60 per acre.

IMPROVEMENT IN PUMPS.

An effective and novel application of steam power to the raising of water is evidenced in the action of a Reynold's atmospheric engine, at present engaged in pumping out the coffer dam surrounding the caisson which is being sunk, on the New York side, to support one of the towers of the East river bridge. The engine, which is of an improved form, has two vertical cylinders of 7½ inches in diameter, and two cranks. Its stroke is 14 inches. The steam, at a pressure of about 50 pounds, is led from the boiler through a half inch pipe for a distance of 75 feet, and enters the engine through a valve half an inch in diameter. With this valve half open, the engine, working at a rate of 65 strokes per minute, and condensing all its steam, raises a six inch column of water 28 feet high without the interposition of any extra machinery whatever.

There is no question but that this is one of the best results yet obtained from any pumping engine, more especially as the raising of the water is rendered doubly difficult from the fact of its containing large quantities of mud and grit. Two steam pumps from a well known manufactory in Brooklyn are also engaged at the work, but it has been found that, although they use together nearly eight times as much steam, raise only a four inch stream, and are placed some ten feet below the Reynolds engine, the entire volume of water discharged by them is not more than half as great as that raised by the latter.

BUILDERS' HARDWARE.

The complaints of our correspondent F. G. W. at page 76 of the current volume, regarding the very inferior quality of builders' hardware, we find echoed in the correspondence of *The Ironmonger*. It seems they have in England equal cause with ourselves to demand better articles in that line. F. G. W. and others think that the fault lies with the manufacturer, who should supply the market with goods of better quality; but a Wolverhampton lock maker takes the ground that the purchaser is the party to be blamed. He deplors the question of price taking so large a place in the purchase of useful articles, and thinks that if the buyer would only look to quality, and be willing to pay enough, the run of common goods would become unsalable. He states that manufacturers would rather send out a good article than a poor one, but so long as the public prefer quantity to quality, builders and cabinet makers will buy the cheapest they can.

There appears to be some force in these remarks. Whether they would apply to the relations existing between our own manufacturers and buyers is a question worthy of consideration.