THE GLEANER:

AND NORTHUMBERLAND, KENT, GLOUCESTER AND RESTIGOUCHE

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OLD SERIES] *Nec aranearum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.* [COMPRISED 13 VOLUMES

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Agricultural Journal.

THE PLOUGH AND THE SICKLE.

With pioneer axe what a conquest is made;
What a field from the forest is won!
What regions reduced from the wilderness shade,
Are now warmed in the beams of the sun!

From the rock where our fathers in exile first landed,
Their clearing from river to river has spread:
And mountains and plains by their sons are commanded,
Till now on the beach of Pacific we tread.

What a farm for a nation to cultivate now!
And gather the wonderful harvest in yield;
'Tis an empire reduced to the sickle and plough,
An empire of gardens, and orchards, and fields.

Hail, nation of farmers! rejoice in your toil,
And shout when your harvest is o'er;
Receive the oppressed to your land with a smile;
But frown every foe from your iron bound shore.

The plough and the sickle shall shine bright in glory
When the mitre and sceptre shall crumble in rust;
And the farmer shall live both in song and in story,
When bishops and kings are forgotten in dust.

From Chambers's Edinburgh Journal.

CHEMISTRY OF CREATION.

Chemistry is the science *par excellence* of experiment. Other sciences investigate the laws of nature by means of inquiry and induction; but the chemist places himself in the position of nature herself, and strives to obtain the knowledge he seeks by imitating her processes. His workshop is a copy in little of the great laboratory of creation, and we find there the human insect, whose life is but a span, dealing boldly with the elements of the universe, and turning by his art the wildest fictions of romance into every day facts. The other sciences expand the mind and enlarge the knowledge; but chemistry, in addition, devotes herself to the physical service of the human race. She heals their diseases, indicates and prepares their food, adorns their garments, warms, lights, and ventilates their dwellings, fertilises their fields, wafts them with the speed of the wind along the land and sea, flashes their distant messages, like lightning, through the air and underneath the waters; and deserting not her votary in the day of calamity, neutralises his pain, dispels his terror, and soothes him in death.

'The chemistry of creation, from which is derived the knowledge that governs the processes of practical chemistry, is not only the most useful, but the most elevating of studies; and we have accordingly been careful from time to time to present to our readers a popular glimpse of the progress of speculation and discovery connected therewith. We are now called to the agreeable task of noticing a very clever *resume* of the whole subject, by one of those chemists whose peculiar province is the healing art, a rising young surgeon in London.* The volume commences with a slight sketch of the history of chemistry, and then proceeds, to treat separately of the chemistry of the earth, the air and the ocean. All this is done with so little technicality of language, that the book, although in reality of considerable scientific pretensions, and embracing notices of the most recent discoveries, may be used as a rudimental work by common readers. We consider the publication, therefore, as meriting general attention, although it will be found more especially useful by those whose means or leisure does not admit of a regular course of study. To enable such readers to form an idea of the contents of the volume, it will suffice to notice a few points in each of the three departments of the volume. These, however, we must premise, will probably not be the salient points; for we must be guided in our choice by the novelty the subjects may have in our own pages.

In Part I. there is an interesting account of the natural process by which the substance of rocks is dissolved by the agency of air or water; and Mr Ellis proceeds to describe the results occurring on a large scale, and observable in a very few years. In one place, only six years after a path had been blasted through solid granite, those apparently indestructible walls were so much decomposed by the influence of the carbonic acid in the atmosphere, "that the solid rock, to the depth of three inches, was in a crumbling condition." In such dstricts, when a traveller steps upon what seems to be a piece of granite in its normal state, it falls to powder. In the quarries at Dartmoor, the rock is found to be more or less decomposed to the depth of fifty or sixty feet; and the walls of the prison, unadvisedly built of blocks taken from that surface granite, have "become a spongy mass, absorbing moisture continually, rusting the iron bars, and rendering the cells so damp, that they can only be used by covering the walls within and without with Roman cement or tiles." The granite used in the Nelson Monument in London is from the same locality; but being quarried, according to the admonitions of chemistry, from a depth beyond the influence of atmospheric decomposition, the column will in all probability be much more lasting than the prison. "All our earthenware," says Mr Ellis, "from the commonest jug to the house-tile and flower-pot, is in like manner produced from a material which is formed by the influence of water, air, and carbonic acid, upon rocks of various kinds, but all more or less agreeing in composition as to their chief ingredients. In certain districts in Devonshire and Cornwall there exist rocks of a fine white granite, which exhibit the decomposing effect of these agents in a remarkable manner.* On the surface, and for a considerable depth into their substance, the rock is altered to a soft matter resembling mortar. This is collected and washed; the water which comes from the washing of it being of the color of milk, in consequence of its containing a quantity of white earthy substance suspended in it, is conducted into tanks, and its passage through several reservoirs, deposits this white earthy matter at the bottom. The tanks are then emptied of water, and the white deposit being removed and dried in the open air, and subsequently more completely by a drying-stove, constitutes the beautifully fine white *clay* employed in the manufacture of porcelain. Not less than about 10,000 tons of this white clay, thus derived from the decomposed material of the granite rock, is exported annually for the use of the potteries. Its chemical composition—the composition in great part of our china cups and ornamental ware—is alumina (the basis of common alum), silicic acid, a little alkali and lime, and, in the unburnt state, a large proportion of water, together with a variable amount of sand. The Chinese as well as ourselves, employ the same material for the manufacture of their exqusite porcelain.'

The remarkable phenomenon of the geysers in Iceland is traced to a similar decomposition. The geysers, our readers know, are immense boiling fountains contained in lofty basins supplied from the common hot springs below by a natural tube; and the grand agent in producing them is the decomposition effected in a rock called palagonite by hot water, carbonic acid, and sulphuretted hydrogen. The explanation is as follows:—"The water of these boiling springs contains a dissolved hydrate of silica, which, on its evaporation is deposited around the mouth of the spring, on the margin projecting beyond the level of the water. Of course, in the basin of the spring, and below its surface, no evaporation takes place, and therefore no incrustation can occur. Imagine then this process of incrustation around the edge of the spring to continne for years, the natural result would be, that the margin would become higher and higher, forming a rocky tube of siliceous matter. As the margin rises the water of course rises also, being always a little below the former. The consequence is, that the spring, by this continued process of deposition, increases in height, until reaching a certain altitude, it becomes converted into a regular geyser. Surrounding the tube formed in this simple manner in a hillock of siliceous matter, formed by the overflowing of the water of the spring. These tubes are fed with water from the mountains above them, which become heated in the volcanic subterranean channels along which it is conducted. The high temperature converts a part of it into vapor, and the result is, that the water elevated by its expansive force, foaming and hissing, rises up through the tube which the incrusting waters have reared, and rushes boiling out of the mouth of the spring."

In Part II., relating to the air, there is a passing notice of the question as to the limits of the atmosphere. It is now recognised, though not proved, that the air does not extend more than about fifty miles into the regions of space. Astronomy discountenances the idea of illimitable extent, by showing that there are only two other planets in our system which appear to be provided with an aerial atmosphere; and chemistry applies the atomic theory to prove that there is no such thing as infinite divisibility of matter "It is held, for instance, as certain that we cannot subdivide matter beyond a certain point; at this point, its particles are called atoms, and these atoms have a certain size and weight. Applying the same reasoning to the air, it is considered that there is a point at which it cannot be expanded further; and this point is supposed to be the true limit of the air."

The air has recently been supposed to be subject to a phenomenon called atmospheric waves, which is only now in process of examination. These waves—discovered by the barometer—do not resemble the undulations of the sea, but pervade the whole depth of the atmosphere, and occupy several days in their duration. The most remarkable has been observed for some years past to occur about the middle of November, when it lasts, from the commencement of its rise to its subsidence, about sixteen days. Sometimes it begins and closes with a gale of wind. This subject is so obscure, that the phenomenon called the Indian Summer can as yet be only connected with it as a coincidence. "In America, at this period, generally from the 12th to the 17th of November, after a fortaste of the severities of winter has been felt, a sudden change of temperature takes place, a delicious warmth is felt, the sky is without a cloud, not a breath of air is stirring, and the whole atmosphere is filled with a glowing transparent haze. In three days this is all gone, and winter comes on quickly afterwards. In Switzerland, the same phenomenon has been remarked from time immemorial. About the 11th of this month, the fete of St. Martin is celebrated, and the inhabitants call the delightful four or five days' return of summer weather at that time, after, to all appearance, the summer has ended, *l'Ete de St. Martin*, or St. Martin's Summer. Whether these interesting facts are more than mere coincidences, whether the great wave has anything to do with them or not, it is not at present posible to ascertain."

Rain acts as a great sanitary agent, by washing down the impurities contracted by the atmosphere from the smoke and exhalations of the more crowded haunts of human beings. These are so far injurious to our respiration, but they are much more so to that of the plants, which never enjoy health in large towns. Instead of complaining of the rain as we do, in this variable climate, we should consider it a blessing; but let us follow the benegcient fluid in its descent to the earth, and we shall find further cause of thankfulness. "Whatever soluble matter is met with by the rain at the surface of the soil, it carries with it as it sinks downward into the earth. All the unpleasant results of organic decay on the surface that are soluble are conveyed downwards by it, and the water thus polluted, sinks to the underground reservoirs, from whence man draws his supply of this indispensable fluid. What results might we not therefore anticipate on an examination of water drawn from such receptacles; and what a polluted condition might we not expect the soil to be in, which forms the filter through which this decaying organic matter penetrates! Yet, when we come to examine into these matters, "we do not find them," in the words of Dr. Smith, "present that exaggerated character which we might suppose." It is surprising, on the contrary, to find that organic matters, properly so called, are scarcely, in reality, found in these wells; and, more singular still, the wells nearest to a source of organic matter frequently contain less than others farther removed from the apparent probability of contamination." The chemical explantion of this seeming paradox is, that the filthy nitrogenous matters carried down by the rain into the soil, combining with the oxygen they meet, result in nitrates which are comparatively harmless; and in the same way the carbon of the soil is supposed to be oxodised, so as to form the carbonic acid gas which gives its sparkle and exhilation to spring water.

A proposal has been made by Mr Rowell to bring down rain, when wanted, by means of electrical conductors sent up towards the clouds in balloons. He tells us that on several occasions, when his own electrical kite came immediately under a light fleecy cloud, after a free current of sparks had passed from the apparatus for ten or twelve minutes, he found himself suddenly bedewed with fine misty rain.

(To be continued.)

RECIPES.

To wash Woollens.—Use soft water; and in order to make a lather, put half-a-pound of soap into a gallon of water, (or as much more in proportion as is necessary,) and boil it until the soap is dissolved; wash through two waters, (unless one is found sufficient,) as warm as can be borne, adding as you go on, what quantity of the soap water is needed: wring them out each time; then throw them into a rincing tub, and fill, to covering, with boiling water. Let them remain until cool enough to admit of handling, then proceed to rince well and ring them.

N.B.—Observe, the rincing water must be *hard water*—this is the secret. This method will do for any kinds of woollens; but for large and strong, such as blankets, or carpets, &c., perhaps wringing would be better omitted, and in all cases, care should be taken to spread out the articles straight and smooth.

Real Work.—It is better to accomplish perfectly a very small amount of work than to half do ten times as much.

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*The Chemistry of Creation: being an Outline of the Chemistries of the Earth, the Air, the Ocean. By Robert Ellis, M. R. C. S., &c. London: Printed for the Society for Promoting Christian Knowledge. 1850.

*At Shaw, a few miles from Plymouth, the surface for hundreds of acres consist of decomposed felspar, in a state resembling flour. When purified and baked it forms a fine porcelain