reat deal of labour on smooth ground. Threshing Machines have roved very useful where it was important to dispose of a great uantity of grain at short notice, for although grain keeps well in he stack, it is difficult to preserve it long after it is threshed. It oes not however appear to have been proved that it is *cheaper* to resh with machinery than to beat it out the grain with a flail, or read it out with horses, according to the old Dutch method.

Some of these mills that thresh oats very well, waste a great uantity of wheat and barley by breaking off the heads instead of ating the grain out.

There are a great number of ploughs of different kinds lately reated, which are each praised by different parties, but it should e remembered that no one plough can suit every kind of soil. A ery short plough is drawn easier than one that is longer, and for ome kinds of work may be the best, but to turn the sod completely certain length is necessary. It is useful to have a wing of conderable breadth to the share in a free loose mould, but in stoney round the wing can hardly be too narrow, and there are soils hich ought not to be entirely cleared of small stones. Many ayey soils are of this description, and there are some grounds hich are very fertile while they are allowed to remain very full f pieces of decaying limestone, which are quickly impoverished hen cleared of stones.

The German forked hoe appears to be unknown in some part f the Province, but it is an excellent tool in hard sticky ground. The thin cast steel hoe is necessary for hoeing turnips that are own broad cast on land made quite mellow; few will ever learn o hoe their acre in a day with the common heavy hoe

Many different implements are used to cut grain The cradle is he most expeditious, but when the grain is tangled by high winds t wastes a considerable quantity. Long practice is required to arn to reap fast, and it is to most people very fatiguing; but e are inclined to think that the scythe is the best upon the hole; a good mower will soon learn to lay the grain so that it can e bound with but little more labour than when reaped; the straw s cut close to the ground, and there is not nearly so much grain helled out as is done by the cradle. Whenever a man is working ith a bad tool he should consider whether he will not lose enough y it in one week to purchase a good one, as if this is the case he ought immediately to change it for a better. Some say that they ork with bad tools because they cannot afford better, but in reality it is more frequently the consequence of that kind of indolence idiculed by Sterne in his account of the bad hinge whose creaking had tormented Mr. Shandy for ten years, although it could ave been mended at any time in two minutes. A very poor man an much better afford to buy a new axe, hoe, or fork, than he can o work with a bad one for two months.

For the Colonial Farmer.

ELEMENTS OF AGRICULTURAL CHEMISTRY AND GEOLOGY.

INTRODUCTION.

In introducing the subject of Agricultural Chemistry, it would would be useless to insist on the importance of Agriculture, or the ecessity of practical skill and industry to its successful pursuit. Of the value of theoretical knowledge however, farmers are not usually so well aware. Agriculture is not merely a mechanical rt, but one whose success depends on some of most delicate and ysterious processes, which are carried on by nature or influenced y human labour. Every soil tilled by the farmer is a complex ixture of mineral substances, the presence or absence of any one of which, may render it comparatively barren or fertile; every heap of manure or compost is a chemical laboratory, wherein are proceeding changes, it may be wasteful and injurious, or saving and beneficial; every plant which he cultivates, is a complicated structure, requiring for its growth and maturity, a variety of delicate chemical processes; and every crop which he takes from his fields deprives the soil of some ingredients, the want of which if they are not restored by art or nature, may in time impair or destroy its productiveness From these and many similar considerations, which might be adduced, it is evident that economical and profitable agriculture, requires much scientific knowledge. It is true that it may be carried on, in an imperfect way without this, or with only a small amount of information; yet is it also true, both with respect to individuals and nations, that if they are content to follow imperfect modes of culture, and refuse to avail themselves of the new facts constantly resulting from scientific enquiry, they will soon be left far behind in wealth and comfort, by those who are more enlightened. Neither should we be ready to suppose, that our knowledge is already sufficiently extensive, for though every man is well aware of the extent of his own information, he can form but a very imperfect estimate of the extent of that which he does not know; and it may often happen that his ignorance of one fact, may neutralize much otherwise valuable knowledge.

The object of the writer of these papers is to lay before the farmers of Nova Scotia, a short and simple sketch of those chemical and Physiological principles which are more immediately connected with Agriculture; and to direct attention to the important discoveries which have been recently made respecting their practical application. The utility of such an attempt at the present time is apparent from the facts, that the works of Davy and of our own Agricola, though still of great utility, are in many respects left behind by the late rapid advancement of Chemical science, and that the more recent treatises of Liebig, Johnston, and other writers, are not yet either generally known or well understood.

In studying Agricultural Chemistry, the following arrangement may be adopted. We may *first* consider the nature of chemical combination and decomposition, and of simple substances particularly of those of which plants consist. *Secondly*, The structure of plants and its uses; with the relations of light and heat to plants. *Thirdly*, The substances which are the results of vegetation, their origin, and the changes which accompany the germination, flowering, ripening, and decay of plants. *Fourthly*, The modes in which the supply of food for plants is kept up,—and relations of the atmosphere to plants. *Fifthly*, The inorganic substances contained in plants—and the composition of soils, with its influence on cultivated plants. *Sixthly*, Geological relations of soils, soils of Nova Scotia, &c. *Lastly* The applications of those principles to modes of culture which are, or might be, pursued in this Province.

From the extensive subject embraced in this outline, it will be attempted to select the most important truths and render them generally intelligible.

I.—CHEMICAL COMBINATION AND DECOMPOSITION,—SIMPLE SUBSTANCES OF WHICH PLANTS CONSIST—AND STATES IN WHICH THESE OCCUR IN NATURE.

COMBINATION, DECOMPOSITION, &c.

If we take 100 pounds of pure limestone, and expose it for some time to red heat, and invisible air or gas escapes from it, and at length we have only 56 pounds of quick lime remaining. If however we have collected the gas which has been given out, it will be