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ART. XII.—*An Index to the Geology of the Northern States, with transverse sections extending from Susquehannah river to the Atlantic, crossing Catskill mountains; to which is prefixed a Geological Grammar. By Amos Eaton, A. M. Lecturer on Natural History and Chemistry in the Troy Lyceum; Professor of Botany in Castleton Medical Academy, &c. Second Edition, wholly written over anew, and published under the direction of the Troy Lyceum.* Troy, published by William S. Parker, 1820.

WE hail with pleasure the appearance of any work on the natural history of our country, a subject which has been too long permitted to lie in obscurity, and the study of which has in no slight degree been retarded by the mistaken notion that it is incompatible with professional pursuits and an interruption to the active business of life. The necessity of pointing out inducements to the cultivation of an intimate acquaintance with our natural productions is however daily becoming less necessary, and we now rarely hear the inquiry, what pleasure or benefit can result from the study of plants and of animals? No one can be insensible to the interest awakened by the contemplation of animated nature; but the lifeless masses which lie scattered on the surface of the earth are less calculated to arrest the attention, and are daily passed by with neglect. Few persons are alive to the

pleasure, and still fewer to the utility of examining rocks, the structure of crystals, or the association and connexion of mineral substances. Rough and forbidding in their aspect, it is not to be wondered at, that they should so long have been viewed with no other interest, than is excited by the wish to select those apparently most suitable for the various constructions needed in a civilized society. 'Ils ne sont,' says the venerable Haüy, 'pour le commun des hommes, que des masses brutes, sans physionomie et sans langage, faites seulement pour être appropriés à nos besoins; on a peine à s'imaginer qu'il y ait une place pour le naturaliste, entre le mineur qui les extrait, et l'artiste qui les élabore.' But the taste for natural science has of late been rapidly increasing among us, and in some departments much has been already effected. In most of our large towns we have able and zealous teachers, and in all our universities and colleges are those, whose duty and pride it is to foster a spirit of inquiry into our animal, vegetable, and mineral riches. Every year sends forth into the remote parts of our country young and ardent students, who are announcing discoveries, or bringing to light productions of the highest importance in agriculture and the arts, for many of which we have long been dependent on foreign climes, and of which commercial obstructions have more than once nearly deprived us.

In zoology and botany much has been done; and from the presses of our country have issued, and are still issuing, works that do honour to the nation, some of which already adorn the libraries of the first naturalists of Europe.

In mineralogy we can boast at least of one work, which has merited and received the highest encomiums abroad, having not only been reprinted, but pronounced the best work of the kind as yet published in our language.

For some years mineralogy made less progress among us, than the other branches of natural history; but on the arrival of the magnificent collection of Col. Gibbs, a new and powerful impulse was given to this study. This splendid cabinet, deposited at New Haven under the charge of a gentleman eminently qualified to make it useful, rendered the mineralogical lectures doubly interesting, from the ample means of illustration it afforded; and mineralogists had there an opportunity of making themselves familiar with the characteristic forms of the objects of their pursuit. To the want of an extensive and well arranged

cabinet of specimens is, in a great degree, owing the little attention which has been paid in this vicinity to mineralogy. The student seeks in vain for standards of comparison, or characteristic specimens of the simple minerals, without a previous acquaintance with which, geology cannot be pursued with any prospect of success. 'As all sound scholarship,' says Mr. Aikin, 'is founded upon grammar, so all sound geology depends primarily on a familiar acquaintance with the distinctive characters of simple minerals.' Those, who are unable to identify every mineral substance that presents itself, cannot undertake the examination of the geological structure of a tract of country, without betraying the grossest ignorance; with all the impudence of which, they will claim the credit of new discoveries, call in question the observations of others, or perhaps eke out a meagre description of the most common minerals, with an unacknowledged abstract of the remarks of their predecessors. From New Haven the zeal for geological studies radiated throughout the land, and thence have departed many ardent students to explore the mountains and vallies, and to trace the torrents and water courses, which in so striking a manner lay open the interior of the country. The eyes of the geologists of Europe are turned to this continent, in the grand and extensive formations of which, they anticipate with no feeble interest the solution of some of the long contested problems of their favourite science. Let us neither disappoint their just expectations, nor suffer ourselves to consider every substance *we* have not before seen, as new; let us not announce discoveries we have never made, nor describe rocks with which we are unacquainted. Our country is peculiarly interesting to the geologist, and already have we found an abundant supply of some minerals rare in the Old World; the chrysoberyl of Haddam, the tourmalins of Connecticut, the beryls of Maine, the kyanite of Chesterfield, and many other substances, are no where surpassed in the magnitude of their crystals, or the delicacy of their colour.

It is much to be regretted that many among us, who commence the study of mineralogy with zeal, too soon sit down contented with a slight knowledge of the more common simple minerals, while others attain little beyond an imperfect acquaintance with the rocks of their immediate vicinity. Let such remember that to become familiar with these, is the first

step only in this fascinating pursuit. The student should next be led to the field, and to the mountain's side, where their situation in nature can be traced and explored, and where the desire will be awakened to know the characters of the compound masses, of which they constitute but a small proportion. Here his views will expand, he will be anxious to discover the composition, the connexion, and relative position of extensive beds and regular strata, and to trace the course and effects of mineral veins.

So well established are the relations and connexions of many rocks, and so confident are we of the presence of certain minerals in a certain set of rocks, that with some knowledge of geology we can assure ourselves of the probable existence of coal, of gypsum, of salt, and of many other useful substances, beneath the spot on which we stand, before a shovel full of earth is removed.

Do we desire to erect works of utility or ornament which shall withstand the ravages of time, geology will enable us to select the materials; nor shall we derive less aid in our endeavours to improve a barren soil, to build the most permanent roads, to produce the most transparent glass, the most delicate porcelain, or compact and durable pottery. These are a few only of the many inducements to the study of geology, and but a small proportion of the benefits to be derived from it. When pursued through all its branches, and with more exalted views, it conduces to habits of accurate and minute examination, it calls into operation all the powers of the mind to trace the causes of the great revolutions which have taken place in the solid mass of our planet. The grand and varied phenomena of nature, the effects of electric and galvanic action, the formation of rain, dew, hail, and snow, the forming and destroying effects of water, the appalling earthquake, the terrific explosion of meteors, and the desolating eruptions of volcanos, are but a portion of the sublimer researches of the geologist. Thunder-storms, and water-spouts, and the destructive effect of frost and thaws are no less important and elevating subjects of his consideration.

The great and increasing attention which has of late been bestowed on geology is no feeble evidence of its importance and utility. To the man of leisure, to the general scholar, and accomplished gentleman, some knowledge of it is daily becoming more necessary, without which scarce a volume of

travels or topography, a review, or a journal, can be read with all the interest it demands. The structure of the country and the stratification of its mountains, are now as often and as minutely described, as the plants and the animals which are found upon their acclivities.

To men of wealth and leisure, natural history in general presents itself as a source of the purest happiness, and as a relief from the ennui of idleness. In the words of one of the ornaments of our country, 'it is every where present, it meets you in the air, on the earth, or on the water; it can be brought into your closet, or surround you at the fireside.'

We were led to the foregoing remarks on laying down the work, the title of which is at the head of this article, from an anxiety to urge on our mineralogical students the necessity of a minute acquaintance with simple minerals, and to point out to them objects of higher interest, than the few rocks of their immediate vicinity; the knowledge of which has been too often thought sufficient to render them distinguished as geologists. The labour of many is yet wanted in the examination of particular tracts of country, and in the collection of unquestionable evidence respecting the nature, properties, relative position, &c. of the formations throughout the United States. The leading features of our geology have been ably traced by Mr. M'Clure, but he has done little more than to sketch an outline, to be filled up by others. Let theory be laid aside, and the actual phenomena be first well described and faithfully recorded; conclusions may then be drawn with safety, and hypotheses indulged in. But he who previously adopts a theory will inevitably distort facts and give but imperfect and partial statements.

This collection of facts is now advancing with rapidity, through the medium of various journals, and especially that of Prof. Silliman, in which geological descriptions of many parts of New England have been often ably given. Much still remains to be done, and we trust that one good effect of the very respectable continuation of Dr. Bruce's Journal will be the awakening of the attention of the public in general, to those branches of natural history, which have been hitherto the most neglected.

The work of Mr. Eaton contains many facts relating to the geology of the New England states, in the collection of which the author has evinced great zeal, and undergone much

bodily fatigue, as he informs us in the preface, where, after noticing the labours of others, he thus proceeds: 'the drudgery of climbing cliffs and descending into fissures and caverns, and of traversing in all directions over most rugged mountainous districts, to ascertain the distinctive characters, number, and order of our strata, has devolved on me. I make no pretensions to any peculiar qualifications, other than bodily health and constitutional fitness for labour and fatigue, which such an employment requires.' The district of country which Mr. Eaton professes to have 'attentively studied for the last four years,' is 'about one hundred and fifty miles in breadth, through the southern part of which runs the 42 degree of north latitude, and it extends very nearly from the 71 degree of west longitude.'....'I have also,' he continues, 'taken a hasty survey of the southern part of the state of New York. My journeys on foot, while in search of geological facts, will now exceed two thousand miles, leaving out of the account all my excursions in the vicinity of Troy and Albany, and more than another thousand of carriage and water travelling.' During these excursions we believe Mr. Eaton has given three or four courses of lectures on the outlines of geology, in various towns and villages of the interior, and has excited considerable attention to the subject.

However much we dislike this trade of itinerant lectureship, we confess that we have seen proofs of the usefulness of Mr. Eaton in the interior of our own state, having unexpectedly met with persons who began to feel great pleasure in mineralogy, which would probably never have been the case had they not been visited by Mr. Eaton or some other equally zealous teacher. It has been customary, we believe, with Mr. Eaton to collect specimens of the rocks in the vicinity of the towns and villages where his lectures have been given, which are labelled and placed by him in some room accessible to all who have a wish to prosecute the study. This mode of proceeding merits the highest commendation, as many persons, whose curiosity has been awakened and whose interest in mineralogy has been excited by Mr. Eaton's instructions, will be induced to pursue the study with increasing zeal from the means thus afforded of becoming acquainted with the characters of minerals, of recognizing those already described, and of distinguishing new varieties. As these

collections are the only standards to which students in many places can refer, it becomes highly important that specimens of undoubted character be selected, which shall, as far as possible, exhibit every peculiarity of structure, fracture, and other circumstances, by which slight shades of difference may be detected, and correct principles be indelibly fixed in the mind. Some of these collections we have lately had an opportunity of examining, and are compelled to express our regret that larger and better characterized specimens were not chosen, and more especially that any should have been misnamed; since fundamental errors resulting from the study of these at the outset will ever after impede the progress of the solitary student. This is not the first time that we have noticed the mistakes of Mr. Eaton; we remember to have seen in the American Journal of Science a catalogue of specimens collected by this gentleman at the Southampton lead-mine, and were not a little surprized to learn that alternations of granite and green wacke occurred there. We have lately examined the stratum described as green wacke, and our surprize vanished on finding that an imperfect mica slate with chlorite had been mistaken for that rock.

On the author's theory, with which we are first presented, and the annexed diagrams, we shall merely remark, that the former is a very imperfect outline of that of Werner, and the latter are fanciful and visionary sections through the earth, at the forty-second degree of north latitude. Diagrams are often employed by teachers of geology with success, when intended merely to convey more distinct ideas of the relative position of rocks, but here we have at one view the strata of the Rocky Mountains and of Tartary, of New England and of China, nor have the waters of the Atlantic and Pacific oceans concealed from the penetrating glance of our author the strata which they cover. The grammar of geology, as the succeeding seventy pages are entitled, must be highly acceptable to those who have been deterred from engaging in the study by the tables of species usually prefixed to elaborate treatises; for Mr. Eaton has been able to simplify the science beyond the most sanguine expectations ever entertained, and the student will not be shocked with the barbarous names which have of late been multiplying upon us. The great discovery to which we allude is what Mr. Eaton terms the Geological Alphabet, consisting of nine simple

minerals, an acquaintance with which will enable any one 'to spell out any rock with facility,' for quartz, feldspar, mica, talc, hornblende, argillite, limestone, gypsum, and chlorite, in various states of combination, compose the crust of the earth! Of these nine substances, meagre definitions follow, and the chapter concludes with a recommendation, which by the way we highly approve, of exercising students daily in pointing them out in the various states of aggregation.

We were struck with the truly original remark with which the next chapter commences, 'the exterior rind of the earth is divided into five classes,' which are, 1st. Primitive rocks, 2d. Transition, 3d. Secondary, 4th. Superincumbent rocks, and 5th. Alluvial formations. Volcanic rocks, we are told, 'do not form a distinct class;' to the description of these, however, nine lines are devoted. From the manner in which obsidian is here introduced, we presume Mr. Eaton considers it as always of igneous origin.

Each class is next subdivided into strata, and we accordingly have strata of granite, gneiss, &c.; a strict conformity in the application of terms, to their definitions by those writers and teachers to whom the pupil is to look for the first principles of a science, cannot be too strongly insisted upon, as the greatest confusion must otherwise result. As Mr. Eaton evidently sets out with a predisposition to the Wernerian theory of formations, he should have adhered somewhat more to the geological distinctions of the German geologist, to which he appears to have attended but little. Although we cannot admit the hypothesis of Werner to its full extent, yet we think his definitions are for the most part clearly expressed, and none more so than those of beds, strata, and veins. We do not object to the use of any term, let it be bed, deposition, formation, or any other, which shall leave us the power of saying in what manner these extensive masses are arranged. The term, as used by Mr. Eaton, will lead the student into error, and cause him to view all rocks as stratified; whereas it is sometimes evident that some are not so, while the arrangement of others cannot be satisfactorily determined. By stratification we understand the division of a mass of rock into many parallel portions, whose length and breath greatly exceed their thickness; the strata of mountains may not unaptly be compared to the division of

a book into leaves. The existence of granite in strata has long been warmly denied by many eminent geologists, and by others, not less distinguished, has been as strenuously maintained; this interesting question we have great reason to hope will be decided in this country, where such extensive beds and veins of the rock occur. In describing granite, as has been done in the work before us, the obvious inference is, that it is always stratified, which is far from being correct. We dislike exceedingly the air of self-confidence which pervades this work, and the slight regard paid to writers of high standing, many of whose opinions are the result of unequalled opportunities for observation, and should have great weight with geologists in this country. In the preface, Mr. Eaton evinces a presentiment of the justice of the foregoing remark, from which he endeavours to shield himself, by saying, he 'should not feel greatly mortified, if closet critics should object to' his 'plain, unvarnished, matter of fact method, and even if the more able theorists should accuse' him 'of placing too much confidence in' his 'own observations and opinions. I now,' he continues, 'answer them all at once. Go to the localities to which my index refers you, and let nature herself decide our controversies.' Unfortunately for Mr. Eaton, we have done this, and nature has decided against him. We shall, however, select but one remarkable example. At page 97 the author says, that after examining the granite of Chesterfield and Goshen very attentively, he has always found it in the form of veins traversing gneiss. We have visited these localities more than once, and have no hesitation in saying that more distinct and well marked beds do not exist in this part of the United States or in Europe; and what renders the fact more interesting is the distinctly stratified structure of some of them. Mr. Eaton, we imagine, has not acquainted himself with the circumstances which distinguish beds, veins, and strata; nor has he been sufficiently aware of the importance of these distinctions. It seems pretty generally agreed among geological writers, that those masses of rock, which are composed of materials differing from the strata wherein they occur, and which lie nearly parallel to the seams of stratification, shall be viewed as beds, while veins cross the strata at various angles, but most commonly at right angles. How far the granite of Chesterfield agrees with this definition of a vein, the most inexperienced

eye, we should think, might readily decide. These remarks apply not only to the particular mass of granite in which the red and green tourmalins occur, but to the greater number of granite masses in Chesterfield and Goshen. Let us not, however, omit to mention our perfect accordance with Mr. Eaton in respect to the blocks of granite at Goshen which contain the rose mica: these are unquestionably portions of a vein, which can itself be traced across the strata for some distance.

The reasons assigned in this work for embracing, under the title of hornblende rock, all the 'aggregates of which hornblende is a constituent, excepting the superincumbent class,' are by no means satisfactory. True it is that the term sienite has been applied to a great variety of aggregates with little or no discrimination, but the characters of the rock, to which the name was originally given, are strongly marked and cannot easily be mistaken. Unfortunately our geologists have too often acquired their knowledge of rocks from a few hand specimens only; their views have been too microscopic, they have not traced beds and strata to any considerable distance, nor considered them upon the great scale. A specimen or two has been broken from a stratum with little or no regard to the variety of structure, composition, and proportions of the ingredients in different parts of the bed or stratum, and the slightest difference in aspect has led to unnecessary distinctions, causing great confusion. We are often presented with a formidable catalogue of rocks, many of which we almost despair of recognizing; on examination, however, the greater number are found to constitute but one or two essentially different. With no set of rocks has this oftener been the case, than with those into whose composition hornblende largely enters. Mr. Eaton tells us that the rock at Charlestown, in which prehnite occurs, is a 'true greenstone.' The feldspar in this bed is abundant and distinct, nor are the quartz and hornblende less so. In the 'true greenstone' we have no quartz, but an intimate mixture of hornblende and feldspar; and it may be here remarked that augite frequently takes the place of the hornblende, constituting a variety of which we have beautiful examples in the West Rock at New Haven, and on the side of Mount Holyoke. We have been in the habit of considering the Charlestown rock as sienite, and have traced a most beautiful transition into distinct greenstone, by the loss of the quartz and more and more intimate mixture of the other ingredients.

No rock is more interesting to the geologist than grau wacke, from its peculiar structure, its position in regard to what are considered as more ancient strata, and from its presenting the first traces of the remains of organized bodies, generally of the less perfect animals and plants. As we ascend to the newer rocks, petrifactions of more perfect organization appear, till finally we meet with those of the most perfect animals, and even of man. Although the name grau wacke conveys little or no idea of the aggregate to which it was first applied by the Germans, their definition of it is sufficiently precise. Unfortunately it has been too often deviated from, and of late an extension has been given it, by which it is made to include some conglomerates, for which no place had been provided in the prevailing systems. By grau wacke is understood a mass having an *argillaceous basis*, in which are dispersed grains and portions of quartz, feldspar, flinty slate, and clay slate; a definition evidently not applicable to the rock described by Mr. Eaton, as consisting 'of grains of quartz cemented by indurated clay.' From the examination we have made of this rock in situ, we have been led to view it as a variety of quartz rock very similar to some varieties in the Scottish Islands, which have been so ably described by Dr. MacCulloch in the second volume of the Geological Transactions. Again Mr. Eaton employs the term 'Rubble stone,' after Kirwan, as synonymous with grau wacke, and at page 188 says, 'Messrs. Danas found the rubble stone variety of grau wacke in considerable quantities near Boston,' &c. The rock here referred to is known in this vicinity by the vulgar name Pudding-stone, and is the prevailing rock in Roxbury, Dorchester, and some adjoining towns. This rock forms one vast bed, which we have examined in various parts, and feel no hesitation in saying, that it is not the grau wacke of European geologists, neither will the definition of Rubble stone, as given by Kirwan, apply to it; which for the benefit of our readers, who have not the work at hand, we shall copy—'This is a particular kind of sandstone, containing not only grains of quartz, siliceous shistus or hornstone, but also scraps of bluish argillite in a *clayey cement*, and of this there is often no more than is barely sufficient to hold the grains together, sometimes with, and sometimes without mica.' *Kirwan's Mineralogy*, vol. i, p. 419. The rounded masses of which the Roxbury stone is

composed are cemented by a siliceous basis, formed of comminuted portions of the masses themselves. This fact alone is sufficient, we trust, to show the distinction which ought to be made between the two rocks, and we again urge upon our geological students the necessity of avoiding error and confusion, by carefully applying geological terms, and of limiting this and all others within the rigid compass of definition. On this rock we are not prepared to say more, than that it appears to belong to a series, for which a place has not as yet been assigned by systematic writers, but which are probably to be referred to an epoch anterior to the deposition of grau wacke and subsequent to that of those usually termed primitive rocks. There is a striking resemblance between this rock, and that which we have examined at the Fall of Fyers in the Highlands of Scotland; they were with difficulty distinguished in hand specimens. The stratification of the Roxbury conglomerate is denied by Drs. Dana, and Mr. Eaton quotes their opinion, with which he seems to concur. The division of this rock into so many large and remarkable concretions, renders the determination of the seams of stratification less easy than in most other beds, but we have often traced the latter to a great distance, have observed them in various parts of the bed, and have satisfied ourselves as to the class, direction, and inclination of the strata. Errors of this kind are not uncommon, but may be avoided by attending to a few circumstances, especially to the distinctions between accidental rents and fissures, and those natural divisions which mark the existence of strata. The former will be found, in many cases, to begin and terminate in the rock, to extend but a short distance, and frequently to cross the seams of true strata; whereas the latter can be traced throughout the bed, and will be always nearly parallel to each other. Again, where rocks have a slaty structure, this will correspond to the stratification, and on this we are sometimes obliged to rely, where but a small portion of a bed breaks out through the superincumbent soil. Drs. Dana, we fear, relied too much on the paper of M. Godon in thus denying the important fact of the stratification of this rock; but they should have considered that when M. Godon examined it, a view of its exterior alone could be obtained, that during his short visit he was unable to devote much time to this subject, and had not the opportunities of viewing the internal struc-

ture, which is now so beautifully and extensively displayed. The most perfect example of grau wacke, with which we are acquainted in New England, is at Pawtucket falls in Rhode Island.

Among the superincumbent rocks Mr. Eaton briefly notices the greenstone, which forms so grand and striking a figure in the geology of New England, extending with but little interruption from New Haven along Connecticut river. Of this we should have been pleased to have had a more detailed account.

At page 249 our author says, 'wherever I have had access to the basis of a greenstone trap rock in place, I found it rested on a fine grained variety, quite as fine as any specimens of European basalt.' Here again we are compelled to differ from him; but Mr. Eaton is not the only geologist among us, who has fallen into an error respecting basalt. We know of no locality in this country; all the rocks which have been called basalt are the compact greenstone of European geologists. The regularity of form in the concretions and the columnar structure so often seen in our greenstone have doubtlesss led to the application of a wrong name. It is to be regretted that we have no good definition of basalt. Mr. Jameson has given it a place among the simple minerals, and has enumerated all its properties with his usual minuteness; and in the third volume of the first edition of his treatise, gives the definition of Werner, that it is 'a simple substance, composed of indurated black coloured iron clay, and is distinguished from other fossils by its color, clayey and earthy aspect, its hardness and weight. This gives us but a very imperfect idea of the substance, and it is evident will not apply to what has been termed basalt by Mr. Eaton. So unsettled are opinions respecting this rock, that Daubuisson, than whom no one ever examined basaltic summits with greater attention, tells us in his admirable work on the basalts of Saxony, that he is not prepared to give a definition of it, but states with great exactness its characters and properties. Any one who will acquaint himself with these, will see how few of them appertain to the trap rocks of mount Holyoke, Deerfield, &c. Von Buch, we believe, considers olivin and augite as essential to basalt, and the adoption of this opinion would tend to remove much of the confusion, of which we in common with others have so much cause to complain.

Mr. Eaton does not offer any opinion on the origin of trap rocks, a subject which has exercised the ingenuity of so many eminent naturalists of Europe; but from passages in various parts of the work we think he inclines to no one exclusive theory, but endeavours, in a most clumsy manner, to explain appearances, sometimes on the Wernerian and sometimes on the Huttonian hypothesis. As an example of the latter and at the same time as a specimen of our author's ingenuity and talent at description, we select the following account of the Salisbury iron mine.

'It will seem to be taking a bold, or rather visionary ground, to say that the stalactitic [hematitic] iron ore of Salisbury mine, was once specular iron ore, imbedded in this range of talco-micaceous rock, similar to that of Hawley. But when the reader is informed that the only rocks in the vicinity of the mines are of this kind, very similar to those in which the specular ore of Hawley is imbedded, and that the alluvion embracing the ore in its present state appears, by mere inspection, to have proceeded from the disintegration of a similar rock, it will begin to appear somewhat plausible. In addition to this, these iron stalactites are always pendent when laid bare before they are removed. They must therefore have been in a state of fusion as recently as the time when the alluvion was formed. And these stalactites are always suspended from masses intermixed with the soil in such a manner, that it is evident the iron was in a state of fusion when in contact with it. The soot, which still adheres to all stalactitic specimens, proves that the heat was continued after the ore was confined in its present state. If it was ever fused down from any rock, it must have been the same out of which the alluvion embracing it was formed. The cause producing such a high heat I shall not attempt to assign. But that the ore exhibits sufficient evidence of its having been recently fused, I believe no one can question, who has ever inspected it in place. I mean by recently, since all general strata were completed, and during the era of alluvial deposites.'

The short chapter on 'alluvial deposites as applied to agriculture' contains nothing new or original. The description of organic remains, translated from Martin's Systema Reliquiorum, we consider the best part of the work.

In bidding adieu to Mr. Eaton, we would again express our pleasure at the exertions he has made, convinced that he has excited the attention of many persons in the interior of New England to the study of mineralogy, and we think he

deserves the thanks of every lover of science and the encouragement of the community. At the same time we feel it our duty to caution students not to fall into some errors, which Mr. Eaton might have avoided by a little more previous study and careful examination of characteristic specimens. This little work will be found a convenient guide to mineralogists who travel in New England, as it contains numerous localities of simple minerals, and even where errors have been committed respecting rocks, the attention will be directed to the places where they are said to occur, which otherwise might be passed unnoticed.

ART. XIII.—*Documens historiques et Reflexions sur le Gouvernement de la Hollande par Louis Bonaparte. Ex Roi de Hollande.* Paris, 3 vols. 8vo. 1820.

SINCE the Bonaparte family have been relieved from the task of governing the greater part of Europe, they have devoted their leisure to literary pursuits of different kinds. A number of publications has appeared, in the composition of which Napoleon is supposed to have had a more or less direct agency; and it is reported that he is preparing a complete account of his own life. Lucien has published one or more voluminous epics, and may be allowed to have placed himself in this way at least on a level with the celebrated Cottle. Our guest, the Count de Survilliers, has favoured the world with a moral tale; and the author of the work, which forms the subject of this article, produced, some years since, a sentimental romance, which appeared in the first edition under the title of Mary, or the Pains of Love, and in the second under the equally seducing one, of Mary, or the Dutch Women. The king of Westphalia is, we believe, the only one of these illustrious brothers who has made no contribution whatever to the stock of literature.

The work we are reviewing is a production of a different character from any of those which we have mentioned. If one may judge from the number of translations which have been made of it, few works have passed so soon into a circulation so extensive. Besides the English, Italian, and German translations, four separate ones have been made into the Dutch. It is a work of no high literary claims, and is merely