THE

MONTHLY REVIEW;

OR,

LITERARY JOURNAL,

ENLARGED:

From MAY to AUGUST, *inclusive*,

M,DCC,XCIV.

With an APPENDIX.

Defendat quod quisque sentit: sunt enim judicia libera: nos institutum tenebimus; nullisque unius disciplinæ legibus adstricti, quibus in philosophiâ necessariò pareamus, quid sit in quâque re maxime probabile semper requiremus.

CIC. *Disp. Tusc. lib.* IV. *cap.* IV.

Judicavimus tamen: neque enim soli judicant, qui malignè legunt.

PLIN. *Epist.*

VOLUME XIV.

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TABLE

OF THE

TITLES, AUTHORS' NAMES, &c. of the Publications reviewed in this Volume.

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☞ For the Names, also, of those learned Foreigners who are the Authors of new Dissertations, or other curious Papers, published in the MEMOIRS and TRANSACTIONS of the Scientific ACADEMIES on the Continent, and also for the Titles of those Dissertations, &c. which they include, and of which Accounts are given in the Review,—see the *Index*, printed at the End of this Volume.

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Macgregor

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M

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O

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ERRATA in Vol. XIV.

Page 40. l. 23. *for* 'said he,' *r.* (says he,)
65. l. 8 & 25. *for* 'deceased,' *r.* diseased.
89 l. 10. from bottom, dele the turned comma after *law*.
111. l. 7. from bottom, *for* 'resentment,' *r.* refinement.
388. l. 16. from bottom, for '*cum*,' r. *in*.

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THE

MONTHLY REVIEW,

For MAY, 1794.

ART. I. *Letters from a Father to his Son*, on various Topics relative to Literature and the Conduct of Life. Written in the Years 1792 and 1793. By J. Aikin, M.D. 8vo. pp. 348. 5s. Boards. Johnſon. 1793.

IT is impoſſible to compare the eſtabliſhed modes of education with the preſent ſtate of knowlege without perceiving that they are defective, in ſeveral reſpects, but particularly in this, that the plans of inſtruction commonly followed are by no means ſufficiently varied and extenſive. The grand object ought not ſo much to be to form great ſcholars, or great mathematicians, as to furniſh young men with ſuch general principles of knowlege and taſte as may be uſeful to them in future life:—whereas the fact is, that, in our public ſchools and univerſities, one or two objects of purſuit, and theſe often only indirectly connected with the ſcholar's future deſtination, are almoſt excluſively regarded. Claſſical or mathematical learning, in relation to other ſtudies, like the ſerpent of Aaron, ſwallows up all the reſt. Whatever temporary benefit may accrue to individuals from the arbitrary connection which has been eſtabliſhed between high attainments in theſe branches of learning and the acquiſition of academical honours, or profeſſional emolument, the general inconveniencies attending this narrow plan of education are very ſeriouſly felt; and it is become a concern of the firſt moment ſo far to new model our ſyſtems of inſtruction, as to accommodate them to the preſent enlightened and improved ſtate of ſociety.

The ingenious and judicious author of the work now before us is ſo ſtrongly convinced of the propriety of ſuch an extenſion of the current plans of education, that, as we learn from the introductory letter, he has educated his ſon, to whom the letters are addreſſed, on a broad ſcale, which has comprized many changes of diſcipline, and has embraced a large field of inſtruction. By theſe means, he has endeavoured to give the

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THE

MONTHLY REVIEW,

For JUNE, 1794.

ART. I. *A View of Nature, in Letters to a Traveller among the Alps:* with Reflections on Atheiſtical Philoſophy, now exemplified in France. By Richard Joſeph Sulivan, Eſq. F.R.S. and F.A.S. 8vo. 6 Vols. About 500 Pages in each. 1l. 16s. Boards. Becket. 1794.

ONE principal cauſe of the vices, the follies, and the miſeries of the world is the general want of thoſe clear and ſteady principles of conduct, which are the reſult only of diligent inquiry. A more eſſential ſervice cannot, therefore, be rendered to mankind, than by enticing them to think. Were all men, indeed, duly ſenſible of the value of knowlege, enticement would be unneceſſary. The direct road of ſyſtematic inſtruction would then, in all caſes, be the beſt; for every man would find a ſufficient inducement to ſubmit to the labour of inveſtigation, in the proſpect of the benefit attending the acquiſition of knowlege:—but, in the preſent ſtate of ſociety, in which objects more powerfully attractive than truth are continually preſenting themſelves to the imagination and the paſſions; and in which the purſuit of pleaſure, or of gain, ſcarcely leaves men leiſure for momentary reflection, much leſs for deliberate inveſtigation;—it requires no ſmall degree of addreſs to draw them aſide from their favourite walks in active life, and to lead them into the ſilent retreats of contemplation.

The author of the important work now before us appears to have been aware of the great difficulty of prevailing on the buſy and the gay, eſpecially in the higher ranks of life, to advert to any ſubjects, however important, which require much thought and reflection. Accordingly, inſtead of carrying his pupil within the dull walls of the ſchools, and there giving him a courſe of formal lectures from the preceptoral chair, he takes him by the hand, and conducts him, with eaſy and polite familiarity, into the muſeum of ſcience; in which he preſents

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before him, in pleaſing ſucceſſion, a great variety of curious and intereſting objects of attention.

Were we to conſider theſe volumes merely as a collection of materials from various authors, on different branches of knowlege; or of facts accumulated by obſervation in travelling, or aſcertained by experiment; we ſhould ſay that they are of great value, and muſt have been the reſult of diligent attention:—but Mr. Sulivan's merit is of a higher kind than that of an induſtrious and judicious collector. Every ſubject, in paſſing through his hands, is treated in a manner which diſcovers an active, vigorous, and well cultivated mind, enlarged and comprehenſive views, and an ardent thirſt of knowlege. On many topics, he ſpeculates with a conſiderable degree of originality: and, when the ſubject will permit, he diverſifies the uniformity of ſcientific diſquiſition, by an occaſional ſtroke of pleaſantry or flight of fancy, the eaſy effort of native genius. His ſtyle is not of that ſtudied kind which gratifies, and often ſatiates, the ear with a perpetual ſucceſſion of well turned and harmonious periods: but it has the rare merit of varying with the ſubject; being, as occaſion requires, ſimple, nervous, figurative, or animated; and, through all its varieties, preſerving the graceful eaſe of epiſtolary writing.

Still higher praiſe, however, is juſtly due to Mr. Sulivan on account of that benevolent ſpirit, and that zeal for the cauſe of religion and virtue, which appear to have firſt ſuggeſted the idea of the work, and to have ſupported him through the very conſiderable labour of executing it. Fully perſuaded that an atheiſtical ſyſtem of philoſophy is equally irrational and pernicious, he takes an extenſive and ſcientific *view of nature*, in hopes that thoſe, who may be diſpoſed to follow him in the ſurvey, will be hereby confirmed in a rational conviction of the exiſtence of a Supreme Being, and of the conſequent truth of the great principles of religion. If, on this ſubject, it ſhould be thought that he ſometimes ſteps, farther than was neceſſary, from the province of the cool reaſoner into that of the indignant Cenſor, it ought to be recollected that the cauſe which he is pleading involves in it the deareſt comforts and the beſt hopes of human beings. It ſhould be added alſo that, if, in a certain ſenſe of the appellation, he condemns free thinkers, he is no enemy to free inquiry; and his work is itſelf an excellent guide in that noble kind of *free thinking*, the office of which, (as Dr. Young expreſſes it,) is

> "To ſend the ſoul, on curious travel bent,
> Through all the provinces of human thought."

Having ſaid what we judged neceſſary in order to give our readers a general idea of the character and merit of this work,

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we muſt now endeavour to introduce them to a more particular acquaintance with its contents. Here, however, the limits of our work, and the preſent numerous demands on our time and attention from various quarters, compel us, inſtead of attending the author, as we wiſhed to have done, through all the fields of ſcience which he has viſited, to confine ourſelves to a few miſcellaneous extracts and obſervations.

In ſeveral introductory letters, Mr. S. expreſſes his general ſentiments on the danger of contracting early prejudices againſt religion, in travelling; on the illiberality of ridiculing prieſts and religious inſtitutions; and on the compatibility of philoſophical reſearches with active life. We extract the remarks on the latter ſubject, as a ſpecimen of the eaſy vivacity of the author's ſtyle:

'It is an erroneous opinion, that ſequeſtration from the world, and a total dereliction of all pleaſures and all buſineſs, are eſſential to the full and powerful exertion of our mental faculties. The man who has received from nature a ſound and diſcriminating judgment, and who, as a ſtock of materials on which to exerciſe his faculties, has acquired a fund of uſeful knowledge, cannot be deprived of his ability and inclination for ſtudy, by any active purſuits for the benefit of ſociety, or by any laſſitude or fatigue from public employments. An ardent and a verſatile mind will find moments for ſtudy and for amuſement, as well as for buſineſs. Trying its force on variety, its keenneſs and aſſiduity will increaſe. Pleaſure ſprings from the ſource of unfettered ſcientific inveſtigation; and ſtability of ſtrength from the exertion of our faculties. Men of feeble parts, I confeſs, are not to be included in this number. I ſpeak of thoſe ſelect and exalted minds, "quos ardens evexit ad æthera virtus." But, retirement is far from being indiſpenſably requiſite. Cicero, Xenophon, Cæſar, Bacon, De Thou, and a variety of others, not only did more, but thought more, and wrote more, than any miſtaken recluſe that ever exiſted. But, thriſt, and frugality in the diſpoſition of time, are points which are in that caſe abſolutely neceſſary. Careful and undiſſipated in the application of them, a man's hoard will ſo rapidly increaſe, that in the end, he will have accumulated a ſtock, not only adequate to every common demand, but amply ſufficient for every future contingency.

'We ſometimes, however, meet with a man who drones away his exiſtence; and who, even in the buſtle of the world, is as thoroughly interred, as though he were irrevocably fated to a reſidence ſix feet under-ground; who is ſtill, if poſſible, more to be commiſerated than he who devotes himſelf to the auſterities and penance of a cell. Such a living dead man is a wretched being. 'He neither has intellectual ſatisfactions, which forcibly give birth to the ſocial affections; nor has he even imaginary plans, to ſooth him with the proſpect of eventual retribution or reward. Such an animated nothing is peſtiferous. The contagion of his baneful apathies has an enfeebling and unhinging power, like that of the Sirocco wind, ſo fatal to animal vigour in the ſouth of Italy. No blow which active virtue can receive, can de-

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ſtroy her native energy. Storms and tempeſts may howl around, ſhe is ſtill herſelf: in the midſt of every gloom, ſhe is ſtill irradiated by her own native ſplendor. The warm and properly tempered affections are in every inſtance the ſoothers of melancholy, the counter poiſes to ill-humour, and I had almoſt ſaid, the panacea for bodily diſeaſe.'

Mr. S. commences his extenſive view of nature with a general ſurvey of the globe of the earth. The ſeveral theories, which have been offered for the ſolution of the vaſt problem concerning its formation, are brought in review before the reader, not merely in the narrative form, as a part of the hiſtory of philoſophy, but with ſuch obſervations as could only have been the reſult of diligent inquiry and deep reflection. Our readers may obtain ſome idea of the author's manner of thinking and writing on phyſical ſubjects, from the following letter on the formation of mountains:

LETTER X.

'The explanation, which had been given of the production of certain mountains by volcanic eruptions, was afterwards, by very intelligent men, applied to account for the exiſtence of all mountains whatever. Monſ. Pallas undertook to refute, by what he conceived undoubted facts, the antiquated opinion, that mountains aroſe from the waters. He travelled, by order of the Empreſs of Ruſſia, through her dominions in Europe and in Aſia; and during the courſe of a minute and fatiguing inveſtigation, found that the majeſtic primitive chains of mountains of Siberia were all granite with a baſis of quartz, more or leſs mixed with ſpars, mica, and little portions of baſaltes, ſcattered without order, and in irregular fragments. This ancient rocky ſubſtance, and the ſand produced by its decompoſition, he held to be the baſis of all our continents. This granite he never found lying in ſtrata or beds; it was either in blocks, or in maſſes, accumulated upon each other, and never exhibiting the leaſt mark or veſtige of petrifaction, or of organical impreſſion. Beſides which, he maintained, that in addition to theſe primordial mountains, there were others of a more recent origin. Theſe he called ſecondary and tertiary: the former, which were ſchiſtous, he ſaid, were produced at the ſides of the primordial mountains, by the decompoſition of the granite; the latter aroſe from the wrecks and contents of the ſea, raiſed and tranſported by volcanic eruptions, and conſequent inundations.

'On an hypotheſis ſomewhat ſimilar, others have ingeniouſly contended that mountains were incontrovertibly produced by volcanos, and not volcanos by mountains. "The entire baſis of the Iſland of Iſchia," ſays Sir William Hamilton, "about eighteen miles in circumference, is formed by lava. The great mountain in it, formerly called Epomeus, and now San Nicolo, which is nearly as high as Veſuvius, was thrown up by degrees, and the entire iſland has ariſen out of the ſea." The ſame creation he gives to Veſuvius itſelf. "For why," ſaid he, "ſhould not Veſuvius, in a ſucceſſion of ages, riſe to two thouſand feet, when it is well known Montagne Nuovo, near

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near Puzzole, roſe out of the Lucrine Lake in one night?" But, as I have already ſaid, this was no new doctrine. An Italian writer publiſhed a book at Venice in 1740, in which he maintained that mountains had been raiſed in the ſea by ſubterraneous fires, and had carried with them the ſhells of fiſhes, and other marine bodies uſually found at the bottom of the ocean. Even in *Hooke's Diſcourſe on Earthquakes*, publiſhed in 1688, mention is made of the bottom of the ſea having been raiſed by ſubterraneous fires; and he accounts for the ſhells which are found on mountains from that principle, and thinks it not improbable that earthquakes were inſtrumental in occaſioning the deluge. But, a mountain at Taberg in Sweden, ſaid to conſiſt entirely of *iron ore*, (the only ore, by the way, of which entire mountains have ever been found to be compoſed,) four hundred feet high, and in circumference about three miles, ſeemed to admit of no poſitive explication, but on the contrary, went to the ſolid concluſion, that no hypotheſis propoſed for the formation of mountains had yet proved ſatisfactory, or free from contradiction. No ore was found beyond the foot of this mountnin. It appeared as if it had been artificially laid upon the land; and yet the bones of animals were found in its interior fiſſures.

'It is no doubt matter of fact, that there are ſome eminences on this earth, improperly called mountains, which are little elſe than heaps of cinders and of pumice ſtones, caſt up by eruptions, but aggregated and ſettled into maſſes. Yet, ſuch are no ſufficient refutation of the opinion, that volcanos, ſo far from being cauſes to operate to the raiſing of mountains, are directly the reverſe, and moſt decidedly tend to their lowering and deſtruction*. The earth is rather depreſſed than elevated by forces from beneath.—No volcano, or earthquake, ever produced, within the knowledge of man, what ſhould be called a mountain. The ſhock would be too great for the globe. In all the tremendous accidents, which have happened within the memory of record, has there ever been one, whence proof can be deduced that a granite mountain has been raiſed? The contrary I ſhould ſuppoſe to be the caſe. Moreover, the configuration of their internal parts renders it incredible, that ſtructures ſo uniform and regular, ſhould have been produced by ſudden exploſions, or deſultory ſuccuſſions of the earth.

'Borelli on this ſubject obſerved, that the fire of a volcano neither proceeded from the center, nor from the bottom of a mountain, but from the top; and that the inflammation never kindled but at a ſmall depth. Buffon adopted the ſame opinion, and maintained, that the materials which iſſued from volcanos were always the ſame with thoſe on the top of the mountains, only disfigured by calcination, and the melting of the metallic particles they contained. "Fire," ſays he, "it is known, acts equally on all ſides. It cannot therefore act upwards with a force ſufficient to throw large ſtones half a league high, without an equal re-action on the baſe and ſides. Why, then, if the volcanic matter lies deep, does it not iſſue out of plains, where the reſiſtance is leſs than on the top of mountains? This is not incon-

'* Buffon.'

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ſiſtent with their being the cauſe of conſiderable earthquakes, nor with their communication by ſubterraneous paſſages. It is not difficult to diſcover the reaſon why volcanos appear only in mountains. Greater quantities of minerals, ſulphur, and pyrites exiſt in mountains than in plains. Mountains are more ſubject to the impreſſions of the air, and receive more rain and moiſture, by which mineral ſubſtances are capable of being fermented to ſuch a degree as to produce actual inflammation."

'But, ingenious as this idea is, it is not ſatisfactorily founded. Fire muſt be ſuppoſed much deeper than either the centers, or the baſes of mountains. Buffon, indeed, acknowledges, that volcanos never exiſt but in high mountains; but yet he ſuppoſes that ſome are connected with others by ſubterraneous paſſages, the eruptions not unfrequently happening at the ſame time. "Volcanos," ſays he in his figurative language, "are immenſe caverns, with apertures often of more than half a league in circumference; and certain fanciful writers have conſidered them as vents to the central fire." Whatever others might have ſaid upon this ſubject, or whatever Buffon himſelf might have conjectured, the fair reſult of inveſtigation ſeems to eſtabliſh that volcanos, (and they have been peculiar to no climate,) had neither a neceſſary, nor, in general, an accidental connection with other mountains*. With the ſea, indeed, they invariably appear to have had the cloſeſt and moſt inſeparable alliance. All ſuch as have been traced in a living ſtate, have been found, in general, in the neighbourhood of the ſea. Thoſe extinguiſhed, though in the inland parts of countries, afford convincing proof that the ſea had been in their vicinity, when they probably were in their ſtrength. In Peru, they reſt upon granite; in Heſſe and Bohemia, on ſchiſtus; in Sileſia, Italy, and other ſouthern parts of Europe, on lime-ſtone; and all theſe ſubſtances are indiſputably of aquatic origin. Subterraneous fires have exiſted univerſally in the bowels of the earth; and there is ſcarcely a country, where the ravages they have occaſioned, are not to be traced. Monſ. Condamine, in 1755, writes, that all the hills and mountains about Naples are huge heaps of matter vomited by volcanos, which are now extinct, whoſe eruptions, anterior to hiſtory, ſeem to have formed the ports of Naples and Puzzoli. He could trace lava the whole way from Naples to Rome. "It is impoſſible," ſays he, "for any one not to be ſatisfied of a perfect reſemblance between the productions of Veſuvius and thoſe he will meet with at every ſtep in his way from Naples to Rome; from Rome to Viterbo; and from Rome to Loretto. When I ſee on an elevated plain," continues he, "a circular baſon, ſurrounded with calcined rocks, the verdure with which the neighbouring fields are covered does not impoſe upon me; I inſtantly perceive the ruins of an ancient volcano. If there be a breach in the circle, I find out the paſſage of the torrent of lava. If there be no breach, the rain and ſpring waters, which aſſemble there, having no iſſue, generally form a lake in the mouth of the volcano. I look upon the Appenines and Cordelliers as a chain of volcanos. I do not, indeed, affirm that all

* Kirwan.'

mountains

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mountains are ſo. I could not obſerve the ſame appearances in the Alps; but I have found the ſame in Dauphiny and in Provence; and moſt countries afford inſtances of it."

'What Condamine ſays, is certainly juſt.—The coaſt of Pauſillipo, at Naples, the Capo de Monte, and the whole maſs through which the catacombs are excavated, are all indurated tufa & piperno, which is ſo readily diſtinguiſhed by its fragments of cloſe grained lava. The ſhores from the ruins of Pompeia to the ſea, for the diſtance of two miles, are known to be formed of pumice ſtone, pozzolano, and cinders, that fell in the year 79. In ſhort, the whole ſweep of the bay of Naples, from Stabea to Baia, is nothing more than volcanic matter, meliorated by time and culture into vegetable earth. On this ſubject Micheli publiſhed in 1733. He was the firſt who purſued the traces of volcanic productions among the Apennines, particularly in the neighbourhood of Radicofani. The obſervations of Condamine, however, ſeemed to eſtabliſh one ſtrong fact, namely, that the Alps has not the ſmalleſt veſtige of a volcanic origin. Notwithſtanding all this, the theory of the volcanic formation of all mountains was for a long time ſupported. Philoſophers ſtruggled for their opinion with a violence reſembling that of their favourite element. But they were at length ſtaggered. Farther obſervation gave increaſing probability to Condamine's ideas relative to the Alps. Monſ. De Sauſſure, the intrepid and reſpectable ornament of ſcience, at preſent at Geneva, particularly ſupported them in one of his publications. "Juſques à ce jour," ſays this able man, "on n'a trouvé aucun veſtige des volcans, ni dans nos environs, ni même dans toute la Suiſſe; & qu'aprés avoir viſité moimême en bien des endroits, & avec l'attention la plus ſcrupuleuſe, toute cette partie de la châine des Alpes, qui s'étend depuis Grenoble juſques à Inſpruck, je n'ai pas apperçu, à l'exception de quelques eaux Thermales, le plus léger indice de feux ſouterrains." But, of this, we ſhall have much more to ſay hereafter; I ſhall, for the preſent, merely remark that De Sauſſure himſelf has, ſince this publication, diſcovered indiſputable volcanic remains, not, indeed, immediately among the Alps, but, in fact, not very diſtant from their neighbourhood.'

After having diſcuſſed the doctrines of the infinite diviſibility of matter, and of attraction, Mr. Sulivan proceeds, through the remainder of the firſt volume, to treat of the four elements. In this part of the work, many curious ſubjects are diſcuſſed in a manner which ſhews the author to be well acquainted with the modern chemical philoſophy. On the much controverted ſubject of fire, the different opinions of philoſophers are ſtated, particularly concerning *phlogiſton*; the exiſtence of which is maintained in oppoſition to the new theory. Under the article of Air, the late diſcoveries concerning different kinds of air are accurately related. With reſpect to water, the queſtion whether it be a ſimple or a compound ſubſtance is ably diſcuſſed; the theories concerning the origin of rivers, and the aſcent of vapours, are examined; the origin of glaciers is traced; and

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St. Pierre's theory of the tides, drawn from the periodical increaſe and decreaſe, annual and diurnal, of the polar glaciers, is maintained to be attended with fewer difficulties than the lunar theory. Though we cannot find room for the whole of this ingenious diſquiſition, we ſhall copy the author's concluding remarks:

'This ſimple and plain deduction of the tides of the ocean, from the glacial effuſions at the poles, is too novel and too unfriended, I am afraid, to be generally adopted. Yet it bears itſelf up, with a wonderful appearance of probability. The origin of the flow of rivers from maſſes of ice, ſupports it by analogy; and the phænomena of the ſpring and neap tides are accounted for, both by reaſoning and by calculation. In the main of the ocean, for inſtance, it is proved that there are in general no tides. In the Caſpian Sea, which is about 860 miles long, and in one part 260 miles broad, there are no tides, though there are ſtrong currents. In the Baltic, there is no regular flux nor reflux. There is no tide in Falſe Bay at the Cape of Good Hope, which has the aggregated maſſes of the Indian, Southern, and Atlantic Oceans. The ſame may be ſaid of the Mediterranean, excepting in a few particularly ſituated ſpots, although in the Adriatic there is a flux and reflux. Why are the firſt of theſe conſiderable maſſes of the general body of the waters never raiſed, and the others always raiſed? And why is it, as Addiſon ſays, and as I have before remarked that, in ſummer, the lake of Geneva ſhould have ſomething like an ebb and flow, which ariſes, as it ſhould ſeem, ſays he, "from the melting of the ſnow that falls into it more copiouſly at noon, than at other times of the day?"

'Theſe ſtriking deviations from, or rather contradictions to, the received theory of the tides, argue with me ſtrongly, I confeſs, againſt the infallibility of the doctrine. I cannot but think we may have impoſed upon ourſelves, when we have abſtractedly given the phænomena of tides, to the operating energy of cauſes arbitrarily imagined. However the phaſes of the moon may accord with the ſwellings of the water, may not both one and the other be looked upon as harmonious and co-ordinate effects of another diſtinct but powerful principle? What is the augmented quantity, or rather the increaſed elevation of the main body of the ocean, at the moment of a ſpring tide? Nothing, comparatively ſpeaking. Does not the fact then ſeem to be, that it is not the maſs of the ocean, which is diurnally *raiſed*, but, that it is the volume of the waters which is diurnally augmented? An increaſe of a fluid, we know, occaſions an uniform augmentation in every direction. But, before it gets to its general level, ſhould oppoſing bodies intervene, thoſe oppoſing bodies which would otherwiſe impede its progreſs, muſt experience a conſiderable change in appearance from its unuſual elevation. The ſhores of the northern and ſouthern hemiſpheres may be conſidered as oppoſing bodies of this nature. The ſhape of the ſhores, indeed, and the depth of the beds of the rivers, will determine the greater, or the leſſer height of the waters at their influx. For inſtance, in the Severn, the tides do not riſe higher than a few feet; whereas in the Wye, whoſe tides are immediately derived from the

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the Severn, they riſe to the extraordinary height of ſixty feet. Can this be occaſioned by any thing elſe, than a difference in the planes of the beds of theſe rivers? In a word, to my apprehenſion it appears, the ſwelling of the ocean, by the joint attraction of the ſun and the moon, is leſs phyſically intelligible, than the periodical effuſions of the polar ices: and more eſpecially, as we experimentally know, that the ſun's attraction of a fluid occaſions its *evaporation*, not its elevation; and that the influence of the moon, if it has any, is at beſt but problematical, and feeble in its operation.

'It has, indeed, been ſaid, that the lunar energy has been demonſtrated, beyond the power of contradiction; and that beſides its wondrous influence on the element of the waters, it can be further, and perhaps more clearly proved on the element of the air. This is going a great way. Give ſuch energy, indeed, to the ſun, and I am ſatisfied. But, if one be erroneous, the other muſt be erroneous. Or if one be true, the other muſt be true; for the ocean of the fluid air muſt be affected, as well as the ocean of the fluid water; and in a conſiderably greater degree, as it has eight hundred times its levity.

'Upon the whole, then, the theory of the polar effuſions ſeems to me, to have leſs difficulties attached to it, and to demand leſs implicit faith, than the theory of the ſolar and lunar attractions.'

Under the general head of Earth, among other ſubjects, that of cryſtallization is particularly diſcuſſed, and various kinds of ſubſtances, produced by cryſtallization, are deſcribed. Treating of calcareous earths, Mr. S. returns to a ſubject which he ſeems to have ſtudied with particular attention,—the formation of mountains,—and entertains his readers with many curious facts and ingenious obſervations, for which we muſt refer to the work.

[*To be continued in the next Review.*]

ART. II. *An Eſſay on the Materia Medica.* In which the Theories of the late Dr. Cullen are conſidered: Together with ſome Opinions of Mr. Hunter, and other celebrated Writers. By James Moore, Member of the Surgeons Company. 8vo. pp. 330. 5s. Boards. Cadell.

MANY ſenſible remarks are preſented to us by the author of this eſſay. He follows Dr. Cullen regularly through his treatiſe on the Materia Medica; previouſly noticing the obſcure and unſatisfactory doctrine of temperaments:—but on this ſubject we do not meet with much important matter.

Dr. Cullen divides his treatiſe into two parts: the firſt ſpeaks of Aliments: the ſecond, of Medicines. On the former of theſe heads, Mr. Moore's reaſonings are judicious; and we were, in particular, pleaſed with his ſentiments on a controverted queſtion: namely, whether a degree of putreſcency takes place in the blood, while circulating in the living veſſels. He ſays:

'Having

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