THE

MONTHLY REVIEW;

OR

LITERARY JOURNAL,

ENLARGED:

From JANUARY to APRIL, *inclusive.*

M,DCCC,XIV.

With an APPENDIX.

"Be mistrustful of all that shuns the trial and examination of dispassionate and impartial inquiry." ZOLLIKOFER.

VOLUME LXXIII.

LONDON:

Sold by BECKET and PORTER, Booksellers, in Pall Mall.

M,DCCC,XIV.

Mr. Morier, to be immense, we are perfectly satisfied that it is little or nothing: but we make this conclusion on reasons very different from those which lead Mr. Morier to reject its perpetual accumulation: our assurance arises from a knowlege of the difficulty of collecting such a treasure in Persia, and the facility of spending it; of the perpetual existence of such reports, and the perpetual discovery of their falsehood.

In confining our report of this volume to those features of it which more immediately form the national portraiture of Persia, we have been obliged to pass over a great number of minute and incidental circumstances which much contribute to its variety and its interest. On the subject of monuments of antient history and remains of antient art, to which Mr. Morier occasionally attends with laudable diligence and curiosity, (as particularly at Persepolis and Shapour,) our boundaries now compel us to be silent; and the same cause restricts us from gratifying our readers with the author's biographical account (p. 220—223.) of Mirza Abul Hassan, the late Persian envoy to our court, whom he accompanied to England, and who excited much attention while in this country. The anecdotes also relative to this personage, during his passage to Europe, which Mr. M. has inserted in the 'Conclusion,' are amusing and informing. We recommend the remark of one of his attendants, on seeing the Waltz danced at a ball given by the English ambassador at Constantinople, to the consideration of all lovers of that now fashionable *whirl*:—"*Pray*," said he, "*does any thing ensue after all this?*"

A number of plates greatly enrich and satisfactorily illustrate this work.

ART. II. *Catalogue de la Collection Minéralogique du Comte de Bournon*, &c.; *i. e.* A Catalogue of the Mineralogical Collection of the Count de Bournon, Fellow of the Royal and Linnéan Societies of London, Member of the Geological Society in the same city, of the Wernerian of Edinburgh, and of several of the Academies of Sciences in France; drawn up by himself, and containing many Observations and interesting Facts not hitherto detailed, &c. To which is annexed an Answer to the Abbé Haüy's Memoir on the Simplicity of the Laws to which the Structure of Crystals is subjected, &c. 8vo. pp. 680. With a folio Volume of Plates. 1l. 1s. Boards. De Conchy. 1813.

As the Count de Bournon's communications, on all matters connected with his favourite study, are characterized by a rare union of accuracy and originality, we had confidently anticipated much unalloyed gratification from a perusal of the present performance. The preliminary discourse, however,

which is penned with all the eloquence of acute feeling, has thrown a gloom over the exquisite mental repast which the author has prepared for his readers: since we learn from it that the noble collection, which had been assiduously accumulated during eighteen years of care, anxiety, and perseverance, is now offered for sale; and its learned and ingenious proprietor bids a mournful adieu to that science which had formed one of the principal charms of his existence, and had softened with its benign influence the visitations of misfortune. The statements, with which he has deemed it proper to accompany this afflicting intelligence, are of a very painful description: but, as far as they are intended to affect the reputation of a distinguished individual, they fall not within the sphere of our critical cognizance. Besides, the allegations to which we allude are those of the offended party only, and therefore cannot be fairly received as a full and genuine record of the matters of fact. By this reflection, we are very far from insinuating the most remote tendency to represent circumstances otherwise than they were supposed to have really taken place: but it is, we think, extremely probable that both the Count and the eminent person of whose proceedings he complains may, from want of mutual and candid explanation, have laboured under prejudice and misconception. At all events, the former will readily excuse us from pronouncing an opinion in affairs of so much delicacy, on *ex parte* evidence. We owe it, moreover, to ourselves and to the public, to allot as much room as we can conveniently afford to notices of some of the more interesting portions of his valuable cabinet.

'This collection is composed of more than 22,000 specimens, of which above 10,000 are insulated crystals. It is included in 225 drawers, each divided into compartments or cases, in which the specimens are placed on a layer of cotton. Many of these drawers, selected from among the largest, contain 130 or more of these compartments. The insulated crystals, when small, are placed on a support of green wax, which admits of their being examined with ease, and without risk of their being lost. In each case, they are separated from the layer of cotton by a small paper-box. In various instances, when the specimens are small, or when there are many similar crystals, a single case includes a considerable quantity of them.

'I have said that the specimens in this collection are small; and, in fact, those which form its basis are of very inconsiderable dimensions, though perfectly defined. Upwards of 3000, however, without being of any extraordinary size, would make a conspicuous figure in any collection. Few are the substances of which the appropriate series does not involve, either in crystals or in the other varieties, facts not hitherto quoted; and with respect to many, the new facts, those especially of a crystallographic description, amount to

to a very considerable number. Some of these series are astonishingly rich; such, for example, among the stones, are those which belong to the carbonet of lime, arragonite, the fluate and sulphate of lime, the sulphate and carbonate of barytes, the carbonate of strontian, quartz, corundum, and those which relate to the oriental gem, spinell, most of the gems, pyroxene, mica, &c.; and, among the metals, those which refer to native and red silver, the sulphuret and muriate of that metal, and to almost all the kinds of copper, iron, tin, and lead ores, &c. Corundum, including every thing relative to the eastern gem, alone presents an immense collection; which is at the same time very precious, and probably could not again be formed. I believe that I am even warranted to assert that a freedom of choice, in all the collections of Europe, would be altogether inadequate to the institution of such another; and I am very confidently persuaded that, unless a person were conveyed to the different places in which nature herself might present the facility of selection, he would resort in vain to the combined resources of all the dealers in stones and jewellers of Ceylon, and of the peninsula of India. The astonishing riches which my collection contains in this substance, and in the spinell, the series of whose crystals is also unique, I owe to one of those fortunate circumstances to which chance alone can give birth, and which science ought to improve with so much the more activity, nay even eagerness, because the recurrence of the case is not to be expected.'

The Catalogue, though very summary with regard to many particulars, conveys detailed information relative to the more remarkable substances, with occasional notices of the author's ingenious investigations. To have conducted it on a more extensive scale would have required a greater sacrifice of time and expence than was compatible with the exigencies of his situation. — The whole collection appears to have been formed and arranged chiefly with a view to illustrate the crystallography of the several species: a department of the science in which the Count has long and successfully laboured, although his results are occasionally at variance with those of the celebrated Haüy. In the event of his collection passing into the hands of an individual, or of any corporate society worthy of possessing it, he takes leave particularly to recommend the following objects as the most deserving of study and research:

'1. The crystalline department of the oriental gem. It contains a very considerable number of forms of which I was ignorant when I published my memoir on the subject in the Philosophical Transactions of the Royal Society of London, many of them very interesting, and not to be traced in any other collection. 2. Red silver. The series of crystals of this substance is immense, and very probably unique: its varieties of forms excite a singular degree of interest, on account of the striking relation which they present between the modifications of its primitive rhomboid, and that of the carbonate of lime. 3. Native

metallic copper, of which this collection comprizes a very numerous series of crystals, most of them presenting a very peculiar aspect, apparently quite remote from the form of their primitive crystal. The forms of these crystals may, in short, be reckoned among the most interesting in the whole range of crystallography. 4. Every thing relative to lead, of which this collection possesses, in all the species, very considerable suites of crystals, the greatest number of which have not been described. To the collection is annexed a series of wooden models of 1200 crystals, presenting 1415 varieties of form, as several of them exhibit a different variety at each of their extremities. These crystals, which were made by myself, are of a very hard wood; they are executed with much care, and preserve the angles of the substance to which they belong.'

The author's account of his specimens of stones and metals is more minute, and more interspersed with critical observations, than his notices of the other divisions of his cabinet: but, whatever may be the fate of his accumulated stores, his printed catalogue will descend to posterity as a lasting memorial of genius, zeal, and perseverance. In our present report, we can merely glance at a few of its most prominent contents.

The Count de Bournon's elaborate treatise on the Carbonate of Lime evidently bespeaks his familiar acquaintance with a most extensive diversity of specimens in that department; and we find, accordingly, that his samples of this substance amount to 3160, of which 1890 are detached crystals: besides a very considerable series, illustrative of the author's ideas on the growth of shells and pearls; upwards of 300 large pieces, which cannot be reduced without rendering them useless; and some apparently anomalous crystals, from the Ferœ Isles, which are particularly described in a note. The Arragonite series is extremely rich and precious, consisting of 134 articles, 100 of which are separate crystals. The fluate of lime comprizes 334 pieces in all, 212 of which are insulated crystals. Among these fluates, is an *Entrochus* from Derbyshire, about ten lines in diameter; which, throughout its length, is half in the state of lamellated carbonate of lime, with the organic texture perfectly preserved, and half in the state of purple fluor. Among the varieties which illustrate the phosphorescence of this substance, some exhibit the phænomenon in water heated to near the point of ebullition. A green variety from Siberia, when pounded, and thrown on a shovel, heated to the first approach to redness, displays a beautiful phosphorescent light, of green, yellow, and violet. Other mixtures of coloured flames are produced by other varieties.

Among 74 specimens of Apatite, some are very rare, and a considerable number of the varieties are undescribed. — Of Bardiglione and Gypsum, the series is rich and precious; and the same

same remark applies to the sulphates and carbonates of barytes and strontian, with the whole family of quartz, chalcedony, and most of the siliceous species; particularly those of corundum, (of which the collection contains 1444 specimens,) spinell, and topaz. — Under the denomination of *Garnet*, are included as varieties not only the precious and common, but the pyrope, colophanite, topazolite, melanite, &c., an arrangement of which the propriety would perhaps require some farther investigation. Among the rarer substances belonging to this class, we find 16 specimens of aplome, 8 of pyrophysalite, 3 of pyenite, 10 of Haüyne, 13 of dichroïte, 19 of Humite, 7 of fibrolite, 6 of Indianite, 6 of zoizite, 148 of sahlite, a species which the author proves to be perfectly distinct from augite, delineating at considerable length the primitive and derivative forms of its crystals. Various samples are also quoted of spodumene, anthophyllite, yenite, scapolite, fahlunite, gabronite, allochroïte, natrolite, sodalite, &c. &c. In his observations on lepidolite, the Count assigns very satisfactory reasons for its non-identity with mica. Iron, he observes, appears to be essential to the constitution of the latter: but neither iron nor manganese, according to the analysis of Klaproth, seems to be requisite in the constitution of lepidolite. Mica is fusible, but with difficulty, under the blowpipe, and yields a glass more or less inclined to brown or black; whereas the flame has scarcely touched lepidolite, when it melts with ebullition into a perfectly colourless glass. Its primitive form likewise differs from that of mica. — An article too long for transcription, but involving some new and important views, is given on mica itself; and the collection of specimens belonging to this substance amounts to 471, 183 of which are detached crystals.

The volcanic specimens, 475 in number, chiefly refer to some of the questions which have been most keenly agitated between the advocates of the Plutonian and the Neptunian theories:

'I would here,' says the author, 'be permitted to make an observation to which I am prompted by the interest that I feel for the progress of science. How is it possible that M. Werner, the extent of whose knowlege, and the ability with which he has rendered it useful, have elevated him throughout Germany to the rank of the principal legislator of mineralogy, by giving at the same time the sanction of a law to his decisions at the very moment when he saw mineralogists, who were calculated to inspire some confidence, object to his excluding many substances from the number of those of volcanic origin, and grounding their objections on facts exhibited by the volcanoes themselves, either those extinguished at unknown and more or less remote epochs, or those in actual combustion:—how, I say, is it possible that he could cherish no desire of adding to his amazing knowlege that of the

effects produced by these grand and powerful phænomena of nature How is it that he has not come forwards to study them in their sanctuaries, and thus acquire the right of refuting, with appropriate weapons, all opposition to his exclusions; or tearing out with his own hands the leaves of the system which contain them? Thus would he have completed the large measure of obligation, which his labours have conferred on mineralogy.'

Although, on most occasions, we are much inclined to concur in the Count's opinions and reasonings, we cannot greatly applaud his anxiety to retain the Scotch appellation of *whin*; which is purely provincial, and of such vague application as to be predicated of almost any stone that possesses more than usual hardness. He no doubt restricts it to a series of rocks which, if we rightly comprehend his meaning, includes basalt at one extremity, and coarse-grained green-stone at the other: but this is a limitation of the ordinary use of the term, and, after all, tends little to the purposes of precision.

The Inflammable Substances are arranged under sulphur, amber, mellite, mineral pitch and asphaltus, elastic bitumen, lignite, coal, authracite, plumbago, and pieces intended to illustrate a sort of shrinking experienced by coal and bituminous schistus. Under each title, the number of specimens is announced: but these substances, like the salts, which are next introduced, are very shortly passed in review. Some of the samples in both these departments are, however, extremely rare. Of *Glauberite* we find not fewer than 26 specimens:

'This salt, which exists quite formed by nature, has been observed within these very few years by M. Brongniart, who has given its description and analysis in No. 133. of the Journal of Mines. It is obtained from Oscagna, in New Castille, in Spain, where it is included in the heart of rock-salt, from which it is very easily detached into separate crystals by breaking the pieces. Among those that belong to this cabinet, many completely reveal the direction of their primitive planes.

'M. Brongniart, after having observed that glauberite is not a salt with a double base, reports, according to the analysis which he made of its composition, 0.49 of sulphate of lime, and 0.51 of sulphate of soda, both deprived of water. Thus, as the Abbé Haüy very properly remarks, since we are ignorant of the crystalline form of the sulphate of soda deprived of water, we cannot be certain that glauberite does not belong to this salt, mixed with simple or waterless sulphate of lime. Here, however, I would beg leave to ask of M. Brongniart, why this salt may not be the result of a triple combination of sulphuric acid, soda, and lime? I am aware that many chemists do not believe in triple combinations: but I confess that I cannot easily conceive their reasons.'

Several of the Saline Crystals which are here enumerated have been procured artificially; and of several, also, the primitive form has been either ascertained or approximated.

The description of the metallic portion of the cabinet, with the accompanying observations, occupies 270 pages. In front are ranked 90 specimens of native gold, some of which exhibit small groupes of crystals; and a single detached crystal presents a beautiful and very rare variety, namely, a regular tetraëdron, having each of its sharp angles replaced by two planes, and each of its solid angles by three.

The next article is Platina in grain, both from Peru and Brazil; that which came from the latter country affording some puzzling cases of crystallization. From the platina-sand have been extracted some small grains and one minute plate of palladium, rhodium in the reguline state, and six insulated crystals of united iridium and osmium, also in the metallic state. In reference to this last-mentioned substance, the Count was desirous of ascertaining by experiment whether it were really insusceptible of malleability, as commonly alleged. With this view, he placed several grains on a small block of steel, and struck them forcibly with a hammer: when the blow, without breaking them, flattened and extended them; and, which is very remarkable, they thus contracted such a strong adherence to the steel, that it is no longer possible to separate them from it.

A series of 121 specimens of Native Silver is particularly valuable, on account of the variety and perfection of their forms; besides that some of them are of very rare occurrence. In several of the small samples from Kongsberg, in Norway, all the ramifications of native silver are so many aggregates of minute cubes. In other instances, this metal presents elegant exhibitions of fern leaves, regular octaëdrons, large hexaëdral plates, &c. The more rare modifications of silver ore, contained in this repository, are antimonial silver, antimonial and arsenical combined, the sulphuret and flexible sulphuret of silver and copper, and the fragile sulphuret, (*spröde glassertz* of Werner,) which is generally regarded by the French mineralogists as a simple variety of red silver that has undergone alteration.

'This mineral, which is very rare, is doubtless unknown to them; otherwise, they would assuredly have preserved it among the most perfectly distinct species of this metal. It is, nevertheless, true that most of the German mineralogists appear to me to confound, with the crystals of fragile vitreous silver, other crystals which very manifestly belong to red silver, and even sometimes to the altered sulphuret of silver; a circumstance that may have contributed to the error which they have committed in cancelling the substance in question from the list of mineral species.'

The sulphuret of silver and copper made part of a precious package which was transmitted from Petersburgh, by Dr. Crich-

ton, first physician to the Emperor of Russia. It was found in the mines of Culivan in Siberia, is extremely fragile, and very fusible under the blow-pipe.

In the list of Quick-silver specimens, we observe 14 of the native metal, 2 of native amalgam, 131 of cinnabar, and 16 of muriate of mercury.

The Copper series is among the richest that we recollect to have seen quoted; for, of 239 specimens of the native metal, 82 are insulated crystals, and many of them are of singular beauty and rarity. Those of the sulphurets amount to 138; of the double sulphuret of copper and iron, to 100; of grey copper ore, to 106; of copper pyrites, to 86; of the green carbonate of copper, to 120; of copper azure, to 222; besides a great variety of the arseniates and oxyds of the same metal, &c. which are particularly detailed. The yellow sulphuret of copper and iron, though composed of the same principles and nearly of the same proportions as the grey, is uniformly distinguished by its colour; a difference so striking as of itself to suffice for a permanent discrimination of species.

'I long ago advanced, (says the Count,) for the first time, that I supposed this difference might proceed from the state in which the iron is present in each of them. In the yellow sulphuret of copper and iron, it appears to me to be in the metallic state, as it exists in martial pyrites, whereas it is in the state of oxyd in the grey sulphuret of copper and iron. With what satisfaction have I observed M. Gueniveau supporting, and even demonstrating, this very opinion, by his skilful analyses of the yellow sulphurets of copper and iron, of St. Bel, near Lyons, and of Baigorry! One of his analyses yielded to him 30.2 of copper, 32.3 of metallic iron, and 37 of sulphur; and the second, 30.5 of copper, 33 of iron in the metallic state, and 35 of sulphur.

'The existence of iron in the metallic state being once recognized in the yellow sulphuret of copper and iron, while it is in the state of oxyd in the grey sulphuret of copper and iron, the composing substances of these two ores cease to be the same; and their difference, as species, is strongly pronounced. A difficulty concerning them, however, remains to be explained; for, if the two substances are different, why do they present the same primitive form? Our knowlege in crystallography is not yet, I apprehend, sufficiently advanced to enable us to answer this question, so as completely to resolve the doubt. I shall only mention that the characteristic form of mineral substances does not exclusively reside in the primitive form of the crystal, but likewise, and principally, in that of the integrant molecules which concur in the composition of that crystal. Many integrant molecules of different forms may contribute, by their union, to the production of primitive forms perfectly similar: thus it is that, in forms of more easy dissection than the tetraëdron, such as the cube, we may arrive at their construction by a great number of molecules of different shapes. Under the article diamond, we have

been constrained to acknowlege that the true form of the integrant molecules of the octaëdron, and of the tetraëdron, is still unknown to us; so that we have been led to admit, for that of the integrant molecule of the octaëdron, the tetraëdron; and for that of the latter, the tetraëdron itself. It might, I think, be very easily demonstrated that these two forms cannot be those of the integrant molecules of these two solids: but it is by no means so easy to arrive at the knowlege of the true form o these molecules. This determination is, I conceive, a task which remains to be executed; and, until it is accomplished, our crystallographic information will continue incomplete: but what is the science of which all the parts are perfect? Let us honestly avow our ignorance; and, with it, the impossibility of our answering at present, in a satisfactory manner, the question which I have just proposed.'

The sulphurets of Copper and Antimony, of which the Count possesses eight specimens, and which are noticed for the first time, are derived from the mine of Bojojawletusk, near Katherinburg, in Siberia. It bears a considerable resemblance to the grey sulphuret of copper and iron, but differs from it essentially in the total absence of the last-mentioned metal; Dr. Wollaston having detected in its composition only copper, antimony, and sulphur.

Under the title of Blue Copper, will be found some important remarks on the differences which exist between the native and artificial crystals of that substance. — A fine suite of 91 specimens of the black oxyd of copper has enabled the author to describe that species in a much more ample manner than any preceding mineralogist had attempted.

The Iron genus is also richly illustrated by the voluminous contents of this valuable catalogue; the numerical items of this department being 13 specimens of native metal, (atmospheric,) 107 of the oxydulated or magnetic sort, 192 of the specular, 107 of that specimen oxydized to the maximum, 120 of the hydro-oxydized, 30 of the piciformly oxydized, 107 of the arsenical, 580 of different modifications and states of the sulphuret, 16 of the phosphate, 1 of Turquoise, 6 of the chromate, 52 of the arseniate, 12 of the sulphate, 34 of the sparry, and a few anomalous pieces.

Count de B.'s exposition of the most highly oxydized specimens of iron is enriched by many original and interesting observations, which we cannot stay to report. The columnar variety is asserted to be the effect of retreat or shrinking: but why may it not be ascribed to a rude crystallization? The crystallized varieties of the hydro-oxyd of iron are very rare, and have been little noticed. We therefore gladly make room for the following intimation:

'The district which, as far as I know, has hitherto furnished the finest specimens, and those containing the best characterized crystals of hydro-

hydro-oxyd of iron, is the neighbourhood of Bristol. There we meet with quartzoze geodes, the inner surfaces lined with crystals of quartz, on which are sometimes disseminated very minute though perfectly defined crystals of hydro-oxyd of iron, but always in small quantities, and frequently included even in the heart of the quartz crystals. Although these geodes always contain crystals of quartz in their interior, it sometimes happens that their outer crust, instead of being quartzose, is itself hydro-oxyd; in which case, the iron is manifest in diverging fibres round a common centre, and forms within the geode small mamillæ, on the surface of which these fibres frequently separate from one another, so as to reveal their crystallized form. The crystals belonging to this iron are always very minute, very much lengthened, and very slender. Their forms appear to be all deducible from the elongated cube, or the rectangular parallelopepidon; so that, as we have already seen in the preceding species, the prism here seems rather to supply the place of the straight rectangular parallelopepidon than that of the cube.'

On the Piciform-oxyd, likewise, we have some novel observations. Though it certainly resembles the vitreous black oxyd of Haüy, it does not, like that substance, become magnetic by heat; nor does it scratch glass; and its aspect approaches more to that of pitch or bitumen, than to that of glass. Neither does it seem to possess any of the characters of the black iron of Werner; which is more properly the hematiform oxyd of manganese, a substance which is always more or less mixed with the oxyd of iron. The primitive form of this new species is either a cube or a rectangular parallelopepidon, very nearly approaching to a cube. Its colour varies from a deep black, to blackish, and brown. Its faces have a shining lustre. When not crystallized, it may be very readily mistaken for asphaltus. Its fracture is conchoidal; and its specific gravity, which varies in different specimens, has not been found to exceed 40.00. Under the blow-pipe, it diminishes in bulk, and changes, without any indication of fusion, into a light scoriaceous matter, which exercises no action on the magnetic needle. With borax, it yields a glass of a dirty yellow. Some of its varieties very readily decompose into a powder, of different degrees of yellow: but both this substance and the sulphate of the hydro-oxyd of iron, which is also described, require to be more completely investigated.

The sulphurets of iron, and especially their crystalline forms, many of which have not been before described, are here ranged under six sections; according as they belong to the smooth or the striated cube, to the regular octaëdron, to the prismatic rhomboid, to the undetermined forms, or as they happen to be effected by decomposition. Under each of these heads, will be found many excellent observations.

The

The assortment of the Arseniates is thus described:

'This series is very beautiful and very precious, on account of the selection of the specimens. We may here observe, in respect of colour, different shades, from deep grass-green to light green, as well as yellowish, and from reddish-brown to yellowish resin-red. Among the pieces of this last description, is one in which all the edges of the cube, the primitive crystal of this substance, are replaced by a linear plane, equally inclined on those that are adjacent; a variety of which I was ignorant, when I described this substance, for the first time, in the Philosophical Transactions for the year 1801.

'Moreover, in this suite, is included a very interesting series of specimens, in which the cubes of arseniated iron are decomposed without losing their form, and have passed to the state of a reddish-brown, and slightly yellowish oxyd of iron: this variety is extremely rare.

'Another piece likewise occurs, also very rare, in which the arseniate of iron forms a cellular mass, of a brown-red, mixed with small mamillæ of sulphureted copper and iron, and of minute particles of metallic copper.'

Under the article Tin, we are presented with 13 specimens of the metallic variety, 311 of the oxyd, 52 of the hematiform oxyd, and 12 of the sulphuret.

The Lead consists of a solitary specimen of the native metal, 193 of the sulphuret, or galena, 500 of the carbonate, 24 of the rhomboidal carbonate, 185 of the phosphate, 1 of the arseniate, 246 of the molybdate, 117 of the chromate, 357 of the sulphate, 3 of the murio-carbonate, and 4 of the red oxyd, or native minium.

'The existence of native lead has not been hitherto observed in a manner at all approaching to certainty, except by M. Rathke, in the island of Madeira; where that learned Dane is said to have found, in pieces of tender lava of that island, small contorted masses of lead perfectly in the metallic state. Although we should admit this fact as conclusive of the existence of native lead, it is too much impressed with the character of an accidental product, not to make the mineralogist desirous of a still more incontestible proof of the phænomenon.

'The characters of the specimen here deposited being calculated to remove all suspicion of an artificial origin, no doubt, I think, should any longer remain respecting the natural existence of metallic lead; which will, nevertheless, always continue to be regarded as one of the rarest substances in mineralogy.

'This specimen, of which the size is nearly that of a small orange, but without possessing its roundness, is a very compact lamellar galena; with laminæ, of moderate extent, which intersect one another in different directions. This galena has the aspect and lustre of the ordinary sort, and at first sight would create no suspicion of the native metallic lead. Yet, if we judge from its weight, which is considerably greater than that of common galena, the dose of metallic lead which it affords must be far from insignificant. This lead is contained

contained in the very substance of the galena, in perfectly distinct particles, easily discernible with a lens, and which are sometimes multiplied to such a degree that the portion of galena including them may be cut with a knife, as if it were wholly in the state of metallic lead. Under the stroke of the hammer, this galena is flattened nearly in the same manner as pure metallic lead; and, on examining with the lens the part that has been struck, we perceive that the sulphureted portion of its substance has been reduced to a black powder, which mostly remains included in the very substance of the flattened lead, and obscures its lustre. It is not without the greatest difficulty that we can effect, by the hammer, the separation of some fragments of this specimen.

'The value of this mass of galena is still enhanced by the circumstance of a part of its surface being invested with the red oxyd of lead, or minium, under the form of small mamillæ, which betray a slight transparency on their edges. Some parts of this same minium are contained even in the substance of the galena. The metallic state of the lead has, I presume, much contributed to the production of this red oxyd.

'I am ignorant of the locality of this precious morsel, and for the possession of it I am indebted merely to one of those fortunate accidents with which I have been frequently favoured; such as, in like manner, will always occur to every mineralogist, who is disposed to seek them without intermission, and not to allow them to escape. This specimen was placed among a considerable number of others, of very moderate pretensions, and the dealer was as completely ignorant of its locality as of its value! It is very often among pieces thus unknown, and frequently thrown among refuse, that I have found the most uncommon and the most interesting samples.'

Among the rarer sulphurets of lead, is mentioned a series from Siberia, presenting small-grained galena, contained in a white transparent substance, which phosphoresces if even rubbed with a tooth-pick.

The suite of Carbonates of Lead in this collection is in all probability unrivalled, whether we consider its numbers, the variety of its non-descript forms, or the specialties of interesting facts connected with its illustration: but any analysis of these particulars, howsoever abridged, would carry us far beyond our accustomed boundaries. A solitary specimen of the arsenite came from St. Prix, in Burgundy, where it is found in the fibrous capillary form, and of a pale yellow hue. — The Molybdates offer 197 detached crystals, among which are many undescribed forms. — The Murio-carbonate, which can no longer be procured from its Derbyshire repository, the mine having been submerged, has acquired a high value from this accidental circumstance; as well as from its extremely pleasing and elegant aspect. The characters and forms of this very rare species are here traced with great precision.

The

The Zinc specimens comprize 186 of the sulphuret, or blend, 6 of the oxyd, 130 of the quartzose oxyd, or calamine, and 83 of the carbonate. The sulphurets are particularly rich in non-descript forms, and some of them are remarkable for their compact, mamillated, and stalactitical appearance. The samples of the oxyd were transmitted by Dr. Bruce, Professor of Mineralogy in the University of New York. They are so nearly pure, and so different from calamine in specific gravity, in the absence of quartz, and in other properties, that the Count considers them as belonging to distinct species. With regard to the crystalline forms of calamine, the Abbé Haüy appears to have determined them from a very limited range of varieties; a defect which the present series is well calculated to supply, by exhibiting a diversity of modifications. A very small specimen from Siberia is of a fine sky-blue.

Bismuth. This series exhibits 44 specimens of the native metal, 7 of the sulphuret, 13 of the *nadel-erz* of the Germans, (which is a triple sulphuret of bismuth, lead, and copper,) and 6 of the oxyd.

Of Cobalt, the ores consist of 50 of the grey, 106 of the arsenical, 17 of the arseniate, and the same number of the oxyd, with 5 specimens of a more doubtful description.

Under Nickel, are ranged three specimens of the native metal, 35 of the arsenical, and 7 of the oxyd. The first belong to the capillary variety, for the knowlege of which we are indebted to Klaproth; because, previously to his analysis, it was regarded as a variety of capillary martial pyrites. The small fibres, when strongly magnified, appear to be very elongated rectangular parallelopepidons. Three of the pieces of the oxyd are distinguished by a very fine meadow-green, varying with yellowish and whitish green.

'One of these pieces, in particular, is extremely rare, and hitherto even unique, as far as it exhibits very marked indications of a crystallized form; whence we may infer that this substance is a regular hexaëdral prism. On this piece are observable three small crystals, which are depressed at their extremities, and evince a tendency to the pyramidal form, as is known to take place with regard to some varieties of the phosphate of lead. This series also contains a very beautiful morsel of the variety of this substance from Kozemutz, which has been denominated *Pimelite*.'

Arsenic includes 24 specimens of that metal, in the native state, 8 of the yellow sulphuret, or orpiment, 45 of the red sulphuret, or realgar, and 1 of the oxyd.

Manganese presents us with 187 specimens of the oxyd, 24 of the lithoidal modification, 4 of the sulphuret, and 6 of the phosphate. The epithet *lithoidal* is avowedly borrowed from

from Brongniart, and merely indicates the stony nature of this ore, of which the genuine constitution remains to be ascertained.

Six samples of native Antimony occur, all from Allemond, in the Alps of Dauphiny; 2 of the arsenical, 151 of the sulphuret, 23 of the sulphureted oxyd, (red antimony,) 13 of the oxyd, and 54 of *Bournonite*, or *Endellione* (a triple sulphuret of antimony, lead, and copper). Under the sulphurets, we find an admirable exposition of their crystalline forms, a subject very imperfectly treated by the Abbé Haüy himself: — but the article which, in this division, will afford the highest gratification to the professional mineralogist, is the supplementary account of the substance which Professor Jameson named in honour of the present author, who first described it in the Philosophical Transactions for 1804. Unfortunately, on this as on various other occasions, we can merely refer the curious to the original text and plates.

We hasten to notice, in our rapid sketch, 12 specimens of oxydulated Uranium, and 38 of the oxyd of that metal, or Uranite, with 20 of the sulphuret of Molybdenum, and 9 of its oxyd. These last mentioned are thus introduced to our acquaintance:

'The only author, as far as I recollect, who has hitherto spoken of this substance, is M. Karsten, (*Mineralogische tabellen*,) who alleges that it comes from Sweden. That specimen which belongs to this set, in which it forms a series of 6 pieces, has probably the same locality. I am indebted for some of these to my respectable friend, Dr. Crichton, first physician to the Emperor of Russia, who sent them to me from St. Petersburgh, without knowing their native repository. I have since met with the other pieces in London: but the dealer, who was ignorant of their nature, was not better informed with respect to their original situation. This substance invests them in the form of a lemon-yellow powder, and occurs in the small cavities of a brown granular quartz; containing, moreover, small particles of the sulphuret of molybdenum, disseminated within it.

'The other three pieces are, I believe, unique, being sulphuret of molybdenum, unaccompanied with its matrix; and displaying on their surface some portions of a pale green, and sometimes a slightly whitish substance. These specimens, when broken, discover in their interior small cavities which are filled with the same substance, and also of a pale green, sometimes whitish, and sometimes of a darker green. This substance much resembles that of a whitish green; but the green colour is increased by exposure to the air attached to the spoon, when the molybdenum is evaporated under the action of the blow-pipe, and appears to be a green oxyd of that metal. These are the only specimens which I ever observed, but I have not been able to learn their locality.'

To the samples of Titanium in this collection, belong 38 of the oxyd, 22 of the silicco-calcareous, (*nigrine*,) and 23 of

of anatase. Those of Craitonite, which are here classed in the same category, have been since ascertained to consist of a predominant quantity of zircon, silica, iron, and manganese; and they ought, therefore, to be referred to the stony substances, and placed immediately after zircon.—The series which belongs to anatase, a substance first observed by the author in the Alps of Dauphiny, in 1782, deserves to be particularly noted, on account of the rarity of such specimens. Those of Craitonite occur still more rarely, and generally accompanied by anatase. The discovery of this substance, which is also due to the Count de Bournon, dates from 1788.

Of the martial Scheelin, or Wolfram, we perceive 36 specimens; and of the calcareous, or Tungstein, 11. The varieties of tellurium are distributed into 8 specimens of the native metal, 21 of the lamellar, (*Naggiag-ertz* of Werner,) 20 of the grey, and 29 of the graphic. Also 6 specimens of cerite, 4 of Allanite, 2 of yttriferous oxyd of tantalium, and 7 of the oxyd of chromium; besides 70 detached pieces, connected with the metals, but placed out of their order, on account of their great size. Many of these particulars, which we have barely recited, might furnish room for much curious discussion: but it is now time that we should bring this article to a close, with all possible dispatch. For the same reason, and also because we have not at present the requisite documents within our reach, we forbear from entering on the consideration of those points concerning which the author and the Abbé Haüy have not been able to arrive at a common understanding. The Count's strictures on M. Tonnellier's report of his treatise on the carbonate of lime appear to us to be founded in justice: but, not having the report itself before us, we state our opinion with much diffidence.

We ought, perhaps, to apologize to our readers for having already detained them so long with numbers and names: but we were desirous of conveying to the British public some idea of the multiplied items of a collection which, we fondly flatter ourselves, will not be lost to this country, nor frittered down and dissipated in fragments. The present Catalogue, which forms its most valuable accompaniment, has strong claims on our favourable notice; since it is evidently the production of a master-hand, and may on various occasions be profitably consulted as a text-book on mineralogy. The composition and press-work certainly call for revision; but this remark is not unmingled with feelings of commiseration and indulgence, on account of those distressing circumstances which are so unfriendly to correct writing, and which have reduced

reduced the author to the cruel necessity of renouncing his precious stores and the favourite pursuits of his life.

The plates, which are twenty-one in number, exhibit distinct outlines of the figures of 413 crystals of various minerals.

Intending purchasers will have an opportunity of visiting the collection, by giving the Count one day's previous notice.

ART. III. *Clavis Calendaria; or a compendious Analysis of the Calendar;* illustrated with Ecclesiastical, Historical, and Classical Anecdotes. By John Brady. 2 Vols. 8vo. pp. about 370. in each Vol. 1l. 5s. Boards. Longman and Co. 1812.

SOME years ago, we were accustomed to meet with publications intitled "Companions to the Almanack." These supplements to the Calendar being now probably discontinued, Mr. Brady has undertaken to supply the deficiency on a much more extended and amusing plan; uniting to the usual explanations an account of every saint and every circumstance noticed in the holiday-columns of the Almanack; and ushering in the whole by a brief introduction, in which we are presented with a sort of history of the several inventions for measuring time, (viz. the dial, the *clepsydra*, the hour-glass, the clock, and the watch,) of the alterations which the Calendar (or Kalendar) has undergone, of the structure of almanacks, of the divisions of time into years, months, days, &c., and of the origin of the names of the twelve months of the year and the seven days of the week.

We are informed in the preface that this work has been 'the result of long and arduous application;' and the author hopes, 'from the scrupulous and vigilant attention which he has bestowed to attain correctness,' that he has succeeded. We wish that we could compliment him on this head: but we are under the necessity of remarking that, notwithstanding Mr. B.'s desire of being accurate, he has fallen into some errors; and that, in spite of his long and vigilant study of his subject, he has not furnished a complete *Clavis Calendaria.* On the Fasts, Festivals, &c. marked in the holiday-column of the Almanack, he has indeed afforded us something that is more amusing than the pages of good Mr. Nelson: but, as an astronomer, chronologist, and antiquary, Mr. B. is not extensively informed. Many of our ecclesiastical festivals and regulations being founded on the institutions and mode of dividing time which prevailed among the antient Hebrews, more notice ought to have been taken of the Jewish Calendar; and if Mr. B. had

even