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ART. I.—*Encyclopédie - Roret. Naturaliste Préparateur.* Paris: Librairie Encyclopédique de Roret, Rue Hautefeuille, No. 12. (Roret's Encyclopædia. Volume, The Preparing Naturalist.) 1852.

2. *A Manual of Scientific Enquiry; prepared for the Use of Officers in Her Majesty's Navy, and Travellers in General.* Edited by Sir John F. W. Herschel, Bart. Second Edition. Published by Authority of the Lords Commissioners of the Admiralty. London: John Murray. 1851. Articles:—*Geology*, by Charles Darwin, Esq.; *Mineralogy*, by Sir H. T. De la Beche; *Zoology*, by Richard Owen, Esq.; and *Botany*, by Sir William Hooker.

3. *Käfer Kalender* (The Beetle Calendar). *Schmetterlings Kalender* (The Butterfly Calendar). *Entomologisches Vade Mecum* (The Entomologist's Vade Mecum).

4. *Report on the Investigation of British Marine Zoology by means of the Dredge.* Part I. *The Infra-littoral Distribution of Marine Invertebrata in the Southern, Western, and Northern Coasts of Great Britain.* By Edward Forbes, F.R.S., Professor of Botany in King's College, London, and Palæontologist of the Geological Survey of the United Kingdom. (From the Report of the British Association for the Advancement of Science for 1850.) London: Richard Taylor. 1850.

5. *Taxidermy.* By Archibald Hepburn. (Maunder's 'Treasury of Natural History.') London. 1849.

THESE titles seem somewhat multifarious. They assemble themselves, however, naturally enough, around what we may call the idea of this paper, which, indeed, in the mind which indites it, resembles exactly those little marine molluscs who protect their own shells and their own existence by glueing around them all contiguous and convenient objects, and especially the shells of their neighbours. Our talk is of specimens illustrative of the natural sciences. The maternal idea of this paper is to give out a few general notions, or useful hints, how to find, prepare, and preserve minerals, plants, and animals. Thousands of individuals and families, remembered affectionately by the writer, rise up before him, who are full of intelligence, but somewhat exclusively bookish, who would seek health and instruction together in the pages of creation, if the commencement of their researches were not made discouraging and disagreeable by technical terms and practical difficulties. We write to help them. 'What to observe' is less the object of our plain and familiar hints than 'how to preserve' the objects of the sciences of observation. Of course, our objects are purely initiative; we profess nothing more, than to give our readers a few clues of the glorious labyrinths, the wandering mazes of which are the laws of nature, and lead to infinitude.

A few words upon these publications.

1. The 'Preparing Naturalist' was compiled by M. Boitard. It is a volume in the encyclopedia of manuals, published by M. Roret, many of which are cheap and valuable treasuries of practical knowledge. The 'Naturaliste Préparateur' consists of 504 pages (18mo), of small print (nonpareil), and is illustrated by 130 figures; the price is thirty-five pence (three francs and fifty centimes). It contains instructions in the art of stuffing animals, of preserving vegetables and minerals, and of preparing normal and pathological pieces, with a treatise upon embalming. It teaches the elements of classification, and, in addition to directions for preservation, puts the student in the way to pursue the art of preparation, by which organized beings retain the appearances of life. Condensing a great mass of information, and expressing himself with clearness and good sense, M. Boitard has produced a manual which is practically and honestly valuable.

2. 'The Admiralty Manual of Scientific Enquiry,' edited by Sir John Herschel, and containing contributions by Airy, Sabine, Beechey, Whewell, Hamilton, Darwin, Mallet, De la Beche, Birt, Owen, Hooker, Bryson, and Porter, is a book well worth the half guinea it costs. The advice of such men is cheap at any price. But the English book contains less matter, and ought not to cost more than thrice the price of the French one; and the difference is owing to the British taxes upon paper which were imposed, and are maintained, to restrict education

and knowledge. Napoleon III., in the first months of his dictatorship, tried to impose taxes upon paper in the British fashion, but was compelled to desist by the opposition he encountered in a capital familiar with his cannons. Presuming that the French and English manuals combine the best methods of the naturalists of their respective nations, it will, we hope, prove instructive to compare the directions of M. Boitard with those of Mr. Charles Darwin on geology, Professor Richard Owen on zoology, and Sir Henry De la Beche and Sir William Hooker on mineralogy and botany.

3. Professor Von Ratzeburg is one of the most distinguished of German entomologists. The collector of beetles and butterflies derives from his tables useful hints for his researches, and is told what to expect at every season of the year.

4. The title of this very valuable Report, by Professor Edward Forbes, describes it sufficiently.

5. Mr. Hepburn has published a very good and concise manual of taxidermy, which word is now used to signify the preparation of all sorts of zoological specimens.

Minerals are easiest collected and preserved. Dust, air, and damp, are the foes from which they must be protected, by preserving the freshness of their fractures, and placing them upon shelves enclosed in glass. The size of the specimens and the preparing of them must be left to individual taste. The minerals of M. Haüy at the Jardin des Plantes are small, are carefully placed upon little pedestals to exhibit their crystals, and the tickets describing them are pasted upon the bases of the pedestals. The beginner will soon stumble against more minerals and metals than he knows, and he cannot do better than break into neat specimens, with fresh fractures, all he finds. After he is master of the chemical and crystalographical properties of these, he may climb the mountains, and dive into the mines to enrich his collections.

The most useful tools of the mineralogist and geologist are portable hammers and iron chisels; a magnifying glass of three lenses is necessary to examine the small crystals; but this instrument is of course always in the pocket of every naturalist. Specific gravities are ascertained by weighing specimens in the air, and then in distilled water; the angles are measured by the goniometer or angle-measure, and their chemical composition is exposed by the blow-pipe. Distilled water, often indispensable to the naturalist, can be obtained by condensing the steam from the spout of a tea-kettle. Three works, which have all been translated into English, are recommended to the student who determines to master the science of mineralogy;

Plattner's and Berzelius's on the 'Blow-pipe,' and Von Kobell's tables for the 'Determination of Minerals.'

Science is knowledge viewed as we know it; art is knowledge viewed as we work it. At a time when the English race is spreading itself around the world with unexampled rapidity, and in unequalled numbers, taking possession of the earth, a workable knowledge of mineralogy is invaluable. Men with this knowledge of it found the gold in California and Australia. A man who knows lignite, the out crop of coals upon a sea-coast, or the sort of springs issuing from coal-beds, may discover a station for a steam navy, or the fuel for a nation. Who can tell what power and wealth may come of a man knowing blackband or ironstone? Examples are endless; suffice it, that every wise man ought to turn his walks in the fields, and his excursions to the sea coasts or the high lands, to account, in cultivating the habit of observing and examining minerals. His explanations of his little collection, of the composition, characters and uses of his minerals and metals, will make mineralogy one of the lights and pleasures of his household. Most people know granite when they see it. Well, it is composed of quartz, feldspar, and horneblende, three most important minerals. The dark green horneblende is often replaced by mica, a silvery mineral which easily peels off. Break a bit of granite or lava, and it exhibits crystaline structure; a bit of clay-slate or sandstone, and it displays mechanical structure. Limestone assumes all hues, and effervesces with acids. Cleavage, to expose, structure for the determination of minerals, is an art which requires dexterity, and a fair knowledge of the planes or grain of the cleavage. The minerals which do not cleave readily receive a smart blow upon a chisel placed in the supposed lines of cleavage. In some, cleavage is traced by lines upon the faces of the crystals. Optical researches are sometimes necessary to show them. In the same mineral the cleavages are always disposed in the same manner; a fact upon which is based the trick of breaking flints with a blow of the fist. The solid resulting from three directions of the cleavage planes, always presents the same angles in the same kind of minerals. When there are more than three planes, one set is termed principal, and the other supplementary cleavage.

M. Dufrénoy has made the following arrangement of the characteristics of natural minerals:—

'1. *State of Aggregation.*—While minerals are commonly solid, some, like native mercury and certain bitumens, are liquid, so that they may be distinguished as *liquid, friable,* and solid.

'2. *Colour.*—Colours are either constant or accidental; when the former, and connected with chemical composition, they are important;

thus peroxide of iron is red, sulphuret of lead a peculiar blue grey, and so on. Accidental colours are chiefly due to the mixtures of mineral substances. The peculiar appearance known as *chatoyant* (browning) depends upon the structure, and is referred to the cleavage-planes, the reflected light from which changes according to their position. Labradorite is a good example of this property.

'3. *Form.*—This term is not intended to include the geometric form of a mineral, which is considered under the head of its crystalographic characters, but comprises only common imitative, pseudo-morphous, and pseudo-regular forms. The first term is applied to the mode of occurrence of the mineral in mass, fragments, plates, or in an amorphous condition. The second, to its occurrence in grains, nodules, &c. The third, when a mineral takes the form of a pre-existing body, whether organic or inorganic. The term *pseudo-regular* is applied to such arrangements of parts as are presented by basaltic columns and other prismatic forms of igneous rocks, apparently also extending to the parallelopipeds arising from the intersection of the divisional planes, commonly termed the *joints* and *cleavage* of rocks.

'4. *Lustre.*—Such as vitreous, wavy, silky nacreous, adamantine, semi-metallic, and metallic.

'5. *Transparency.*—Varying from diaphanous, through demi-diaphanous, translucent, and translucent at the edges, to opaque. Rock crystal is diaphanous, chalcedony translucent—both different aggregations of the particles of silica.

'6. *Fracture.*—This is distinguished as lamellar, granular, fibrous, radiated-fibrous, schistose, and compact.

'7. *Hardness.*—This character is relative. The following is a scale of hardness proposed by Mohs, and somewhat commonly adopted:—

> "1. Lamellar Talc. 2. Selinite (crystalized sulphate of lime.) 3. Iceland spar (carbonate of lime). 4. Fluor spar (fluate of lime). 5. Phosphate of lime. 6. Lamellar felspar. 7. Rock crystal. 8. Topaz. 9. Ruby or Sapphire. 10. Diamond."

'8. *Toughness.*—This character consists in the resistance which a substance offers to be broken or torn. A soft mineral may be very tough, such as sulphate of lime; a hard one readily fractured, as flint; and some are both hard and tough, as jade.

'9. *The Scratch.*—Trials for hardness give a scratch and powder, which are useful in the determination of minerals. Thus the ores of iron, named hematites, give a red or yellow ochre powder, which at once distinguishes the mineral from the concretionary ores of manganese, the powder of which is black.

'10. *The Stain.*—This character is only applicable to a few minerals, and those soft. It consists in marking paper or linen with the mineral—chalk and plumbago thus leave marks. Plumbago may be thus distinguished from sulphuret of molybdenum, which it otherwise much resembles.

'11. *Unctuosity.*—Many minerals are soft and soapy to the touch, such as talc and serpentine magnesian minerals.

'12. *Flexibility.*—Several are flexible, such as native silver and copper. Some are both flexible and elastic, as mica.

'13. *Ductility.*—Principally applicable to native metals. Though sulphuret of silver and halloysite cannot be lengthened under the hammer, they are nevertheless termed ductile by the mineralogist.

'14. *Taste.*—Only applicable to certain substances, distinguished as bitter, sweet, salt, &c.

'15. *Adhesion to the tongue.*—Generally sufficient for distinguishing argillaceous from pure limestones.

'16. *Odour.*—Such as of the bitumens and other similar substances, or by means of breathing on or rubbing a mineral, when a peculiar smell is perceived.

'17. *Cold.*—The feeling of cold when a mineral is placed on the head. In this manner rock crystals and gems can be distinguished from glass and enamel, which otherwise may be made closely to imitate them.

'18. *Sound.*—This property must be taken in its ordinary acceptation, and not with regard to the motion given to the molecules by percussion. Some substances are very sonorous; phonolite is so named from this property.

'19. *Weight.*—This property is also to be taken in its common acceptation, the mineral being only supposed to be weighed roughly in the hand. In this manner carbonate of lime, sulphate of baryta, and carbonate of lead, may be easily distinguished.'—pp. 245-247.

A knowledge of natural minerals opens up many routes towards useful information, and conducts the practical observer into the workshops in which artisans transform materials into commodities. He compares black lead or graphite with what he finds in his pencils. Clay slates are to him not merely minerals, they are roofs and tablets. An agate is not merely a silicate, it is also a fossil and an ornament. Gypsum is native sulphate of lime, and is burned into plaster of Paris, stucco, scagliola, porcelain. Feldspar decomposes and forms china clay. He learns to sympathize with the men who have worked in the useful and beautiful art of pottery—Cookworthy, Wedgewood, and Bernard de Palissy. Iron pyrites are the sources whence the English were obliged to obtain their sulphur, when Napoleon interrupted the commerce with Naples. Tripoli consists of silicious remains of infusorial animalcules. The mineralogical observer follows the processes by which pure white silicious sand becomes glass. He traces fuller's earth in its preparation for use in the woollen manufactures. He observes with wonder peacock coal, and learns that the iris hues in this mineral, just like those of the soap-bubble, or iridescent paper, come from the power of a thin film to decompose light. Iron, copper, tin, zinc, lead, and gold ores, conduct an intelligent and practical curiosity back towards the history of their formation, chiefly in the *faults* or cracks in the strata of the crust of the globe, and the processes by which they have been extracted; and forwards towards the arts by which they are transformed into grates, machines, instruments, locks, castings, pens, swords, cannons, silver, arsenic, coins, &c. &c. Probably it will be found worth the while of every father of a family to obtain and keep in a glass case neat specimens of the raw material of every mineral product he knows. Should he be asked questions he cannot answer, let him avoid all concealment of his ignorance under learned words. Never ought he to hesitate either to answer 'I do not know' (a response which stimulates curiosity), nor omit to encourage any juvenile project for finding out what is unknown.

Minerals to be thoroughly known must be studied optically, chemically, and crystalographically. There is an intimate connexion between their chemical composition and their crystaline forms. But it is not absolute. About ten in three hundred and fifty crystalized minerals occur under two incompatible forms, or are *dimorphous;* while there are others which are *iso-morphous*, or equally formed, although certain substances may replace others in them. To present the same composition, all necessary is an exact relation of their bases and acids. Comte de Bournon was able to describe nearly 800 modifications of carbonate of lime, or Iceland spar, although the fundamental crystal of it is a given rhombohedron. Perfectly-arranged particles of carbon form a diamond. The particles of alumina slightly mixed with oxide of iron, silica, &c., freely adjust themselves into rubies or sapphires. Carbonate of lime, with its particles parted so as to increase its specific gravity, or, as some say, when crystalized from a warm solution, becomes arragonite, and instead of a rhombohedron, is a hexagon. M. Ebelmen, by dissolving and crystalizing their elements, obtained rubies, chrysoberyls, chrysolites; and emeralds, from pounded emeralds. But we must stop; our object is merely to erect finger-posts. Proceeding by observation the student will be led into the sublimities of sea-coast caverns, inland mines, and mountain peaks, and advancing by the way of experiment he will reach the laws of optics and the simple substances of chemistry. The chemical classification of minerals of M. Dufrénoy resolves them into simple substances—alkaline salts and alkalines, earths, metals, silicates, and combustibles.

The mineralogist is the chemist, crystalographer, and optician of the organized substances of the earth. He shows that, the temperature being equal, and the composition of particles identical, crystals of the same form and the same sort have constantly the same angles. An optician, he studies how minerals refract and polarize light, and exhibits the constant relation which subsists between the form and structure of minerals and their optical properties. A chemist, he tests minerals by the dry and the wet methods. But the business of the geologist is different. He is the anatomist of the earth. Geology is the anatomy of the globe. The first theory of what the earth is, at least the oldest which has been transmitted down to us, has as much truth in it as any formed since: the ancient Greeks believed the globe they inhabited to be an animal. The geologist dissects the animal upon which he lives;—its systems of production, nutrition, circulation, exhalation, absorption, secretion; its tissues, its apparatus, its skeleton. The geographer having taught that the form of this animal is that of an orange; the geologist studies the peel of the orange, the shell of the spheroidal animal, the crust of the grand and mysterious existence upon which he lives. The layers of the shell he calls strata. The materialistic theory which resolves the composition of the globe into dead matter is further from the truth than the grand guess that it is something like the back of a sublime tortoise.

Mr. Charles Darwin gives the practical student of geology excellent advice, derived, we believe, from Dr. William Smith, the worthy father of English geology, whose best title is his nickname, 'Stratum Smith.' Just as Bernard de Palissy the potter (and, by the way, one of the noblest of Protestant martyrs) was the founder of palæontology, the science of fossil or ancient plants and animals, a land surveyor, Stratum Smith, was the founder of practical geology, the science which teaches how to discover and explore the mineral riches concealed beneath the surface of the crust of the earth. How to make a section is the first lesson in geology, and the following extract teaches it:—

'To a person not familiar with geological inquiry, on first landing on a new coast, probably the simplest way of setting to work is for him to imagine a great trench cut across the country in a straight line, and that he has to describe the position (that is, the angle of the dip and direction) and nature of the different strata or masses of rock on either side. As, however, he has not this trench or section, he must observe the dip and nature of the rocks on the surface, and take advantage of every river, bank, or cliff where the land is broken, and of every quarry or well, always carrying the beds and masses in his mind's eye to his imaginary section. In every case this section ought to be laid down on paper, in as nearly as possible the real proportional scale, copious notes should be made, and a large suite of specimens collected for his own future examination. The value of sections, with their horizontal and vertical scales true to nature, cannot be exaggerated, and their importance has only lately been appreciated to the full extent. The habit of making, even in the rudest manner, sectional diagrams is of great importance, and ought never to be omitted: it often shows the observer palpably, and before it is too late (a grief to which every sea-voyager is particularly liable), where his knowledge is defective. Partly for the same reason, and partly from never knowing, when first examining a district, what points will turn out the most important, he ought to acquire the habit of writing very copious notes, not all for publication, but as a guide for himself. He ought to remember Bacon's aphorism, that "Reading maketh a full man, conference a ready man, and *writing an exact man;*" and no follower of science has greater need of taking precautions to attain accuracy; for the imagination is apt to run riot when dealing with masses of vast dimensions and with time during almost infinity. After the observer has made a few traverses of the country, and drawn his sections (and the coast-cliffs often afford him an invaluable one), he will be himself astonished, in the most troubled country, over which the surface has been broken up and re-cemented, almost like the fragments of ice on a great river, how all the parts fall into intelligible order. He will, in his mind, see the beds first horizontally stretched out one over the other in a fixed order, and he will then perceive that all the disturbance has arisen from a few nearly straight cracks, on the edges of which the beds have been upturned, and between which he will sometimes find great wedges of once heat-softened, but now crystaline rocks. He will find that large masses of strata have been removed and denuded, that is, ground down into pebbles and mud, and long ago drifted away, to form, in some other area, newer strata. He will now have a good idea of the physical structure of his district; and this much can be acquired with much greater facility than he will at first readily anticipate.'—pp. 172-174.

The relations of geology with mining and agricultural industry ought to occupy the chief place in the researches of the practical student. The relations which subsist between the scenery of mountains, their round tops or their ragged peaks, and their mineralogical composition and geological history, will not cause him to overlook the conditions which enable man to extract precious stones or ores from their *faults,* and form soils suitable to the alimentary vegetables and domestic animals. However susceptible to the emotions of poetry and the picturesque, and however interested in the speculations of science, he will do well never to contemn utterly nor forget practically the wisdom of the spirit of the Glasgow baillie, who, amidst the glories of the sparkling waters and fairy islands of Loch Lomond, remarked what a beautiful and fertile valley it would make if drained. Both scientific and practical curiosity are necessary to establish the keen habits of observation required for success in the natural sciences. The man who has been interested in one country in coal deposits, because he is puzzled to know how strata many thousand yards thick of vegetable remains could have been formed, has acquired knowledge which may enable him in another country to direct the sinking of a shaft for the working of a coal mine. Let every one follow the impulses of his curiosity and the bent of his mind. The answers to innumerable questions have not as yet been given. What is the cause of salt lakes? What goes on in the depths of the ocean? Whence come erratic boulders? How have chains of mountains been formed? By upheavings? or by collapses? Icebergs, glaciers, coral reefs, deltas, geysers, volcanoes, and earthquakes, with many others we might enumerate, are all names of phenomena which excite wonder and baffle interpretation.

Original investigators will find generally that they must invent their own tools and processes. But, in addition to the instruments of the mineralogist, geologists have ordinarily maps, sextants, and a clinometer or bed-measure. 'One of the simplest clinometers,' says Mr. Charles Darwin, 'is that constructed by the Rev. Professor Henslow: it consists of a compass and spirit-level fitted in a small square box; in the lid there is a brass plate, graduated in a quadrant of 90 degrees, with a little plumb-line to be suspended from a milled head at the apex of the quadrant. The line of intersection of the edge of the clinometer, when held horizontally with the plane of the stratum, gives its strike, range, or direction; and its dip or inclination, taken at right-angles to the strike, can be measured by the plumb-line. . . . . A flat piece of rock representing the general slope can usually be found, and by placing a note-book on it, the measurement can be made very accurately.' Barometers and hand-levels are useful. Mr. Robert Chambers found, that having ascertained the exact height of his eye, he could measure altitudes tolerably well by pointing the level to a stone or plant, and walking to it, and, by successive elevations of the level, arriving at the altitude required.

The preparation and preservation of fossils is a matter of some difficulty. Flints are always fossils, or rather always enclose vegetable or animal remains. The flint walls and houses in the chalk districts will prove this observation to every one who takes the trouble to verify it. The most common are petrified pholades, echinides, sponges, pectens, terebratulæ. The Sussex agates are petrified sea anemones. When Dr. Mantell discovered these fossils he sent them to M. Cuvier. This celebrated man had a theory of successive creations of the globe to support against hosts of naturalists and theologians, and he declared them to be lost species. They are figured by Dr. Mantell as coanites and ventriculites. Like the agates, they are actiniæ, which have been caught in the petrifying and silicious solution in various shapes. This may be demonstrated by placing the petrifactions side by side with the living molluscs, and watching their changes of form. To remove the chalk adhering to them the fossil flints are placed in a solution of sulphuric acid. In the chalk many shells are found, which are cleaned in warm water by rubbing them with old and hard toothbrushes. Fishes, when perfect, are too valuable to be entrusted to unskilful cleaning. They must be confided to a professional geologist. Fossils in sandstone are placed in a vice, and the extraneous stone carefully chipped away by a mallet and chisel. But the great prizes of the paleontological collector are fossil bones. A virgin cavern full of bones creates a sensation throughout the geological world. Fossilized human bones, said to have been found in the island of Creta, are shown in a block of stone at the Jardin des Plantes. Cuvier placed there a fossilized bird from Montmartre.

Palæontology is the antiquarianism of the natural sciences, and the remains of the mastodon, dinotherium, &c., are to the palæontologist what hieroglyphic monuments, the remains of Athens or Nineveh, are to the antiquarian. Hence the importance of accuracy—'of labelling every specimen—of never mingling those of different formations, and of describing the succession of strata whence the fossils were discovered. Every single specimen ought to be numbered with a printed number (those which can be read upside-down having a stop after them), and a book kept exclusively for their entry.' . . . . 'Misplaced fossils are far worse than none at all.'

With regard to researches for fossils, we advise the beginner to commence by obtaining inspections of the collections of the districts he visits, and by placing himself in communication with the workmen who work in the quarries or mines, and excavate the tunnels, wells, or foundations which show the strata, and reveal the remains they contain. The best collections have been formed by compacts between intelligent workmen and the collector of the museum. Pill-boxes are recommended for packing up delicate fossils. Specimens containing shells in soft rocks ought to be three or four inches square, and wrapped in paper. Fossil footsteps are searched for in 'rippled' sandstone quarries, in which the strata are separated by seams of shale; the largest slabs portable are taken away, and drawings and casts are made of the footsteps. The packing of fossils in boxes for transport may follow the order of the strata, the heaviest and hardest specimens being placed lowest, and rubbing and collision prevented by a corresponding series of protective wrappages of straw, hay, saw-dust, sea-weed (*zostera marina*), oakum, moss, or cotton. We cannot pass from geology to botany without recommending to our readers, as a wise guide in their studies, the 'Geological Observer' of Sir Henry De la Beche, an invaluable store of practical information.

M. Boitard, by the way, finishes his hints to geologists with the following advice, which never was more necessary than at the present moment. We extract it for the benefit of such of our readers as may be thinking of spending their autumn holidays upon the continent in mineralogical, geological, botanical, or zoological researches.

'We shall conclude by an excellent bit of advice for all travellers, and especially for geologists who are constantly upon crossroads, and who are often near the natural limits of states, such as rivers, mountain chains, &c., which they pass and repass many times. This advice is to provide themselves with good passports, and to have them always *en regle.* Without the most careful precautions they incur the risk, thanks to the perfection to which the legislators of all nations have now brought civilization—of obtaining specimens, not of Alps and glaciers, but of the gloomy walls of prisons. It is indispensably necessary to distrust all countries in which they talk much of liberty, with the exception of England. We shall cite facts to support what we say. "Here," says M. Boué, "is a learned Prussian arrested in his researches by an absurd *gendarme* of his own country; elsewhere geologists have been taken for refractory *conscrits*, placed in prison, and dragged chained to thieves for neglecting certain *visa.* M. Hugi was taken up in Entlebach for a vagabond, and in answer to his complaints, was beaten with a stick by a fat *gendarme*, &c. The mayor of Montpezat caused me to be arrested in Vivarais, mistaking my barometer for a musket, my specimens for *cartouches;* and my book of memoranda for incendiary proclamations." '—p. 102.