miting. It may, however, be fairly doubted whether the Epsom salts were chargeable with these effects.

Uses.—On account of the mildness and safety of its operation, its ready solubility, and its cheapness, sulphate of magnesia is by far the most commonly employed purgative, both by the public and the profession.[1] The only objection to its use is its bitter and unpleasant taste. To state all the cases in which it is administered, would be to enumerate nearly the whole catalogue of known diseases. It must, therefore, be sufficient to mention, that it is excellently well adapted as a purgative for febrile and inflammatory diseases, obstinate constipation, ileus, lead colic, even incarcerated hernia, narcotic poisoning, &c. It may be used as an antidote in poisoning by the salts of lead and baryta.

Administration.—As a purgative it is usually administered in doses of from half an ounce to an ounce and a-half; but if dissolved in a large quantity of water, a smaller dose will suffice. Thus, two drachms in half a pint or more of water, taken in the morning fasting, will act speedily, sufficiently, and mildly, in ordinary cases; and in delicate females, a drachm, or even less, in the above quantity of water, will usually produce the desired effect. Some carminative or aromatic (as peppermint water or tincture of ginger) is frequently conjoined, to obviate flatulency. In febrile and inflammatory diseases the solution may be acidulated with dilute sulphuric acid with great advantage; or the sulphate may be dissolved in the compound infusion of roses. It is frequently used as an adjunct to the compound infusion of senna, whose purgative effect it promotes, but whose griping tendency it is said to check. In dyspeptic cases, accompanied with constipation, it is conjoined with bitter infusions (as of quassia, gentian, calumba, &c.) As a purgative enema, an ounce or more of it may be added to the ordinary clyster. The *bitter* purging saline waters (see p. 252) contain sulphate of magnesia.

PULVIS SALINUS COMPOSITUS, E.; *Compound Saline Powder.* (Take of Pure Muriate of Soda, and Sulphate of Magnesia [of each,] ℥iv.; Sulphate of Potash, ℥iij. Dry the salts separately with a gentle heat, and pulverize each, then triturate them well together, and preserve the mixture in well-closed vessels.)—A mild, cooling, saline aperient. May be employed in habitual constipation. Dose, ℥ij. or ℥iij. It may be taken dissolved in half a pint of plain water, or in bottled soda water (carbonic acid water.)

Order XVI.—COMPOUNDS OF ALUMINUM.

ALU'MEN, *L. E. D.* (U. S.)—ALUM.

(Sulphas Aluminæ et Potassæ, *L. E. D.*)

History.—Although the term alum (*Alumen* of the Romans—στυπτηρία of the Greeks) occurs in the writings of Herodotus, (*Euterpe*, clxxx.) Hippocrates, (*De Fistulis De Ulceribus*, &c.) Pliny, (*Hist. Nat.* xxxv.) Dioscorides, (Lib. v. cap. 123.) and other ancient writers, yet it is not satisfactorily proved that our alum was the substance referred to. On the contrary, the learned Beckmann (*Hist. of Invent.* i. 288.) has asserted that the alum of the Greeks and Romans was sulphate of iron, and that the invention of our alum was certainly later than the 12th century. But Geber, (*Search of Perfection*, ch. iii.; and *Invention of Verity*, ch. iv.) who is supposed to have lived in the 8th century, was acquainted with three kinds of our alum, and describes the method of preparing burnt alum; and it is not, I think, improbable, that even Pliny was acquainted with our alum, but did not dis-

[1] Sulphate of magnesia is extensively used in the diseases of cattle. In a letter which I have received from Mr. Youatt, Veterinary Surgeon to the Zoological Gardens, he says—"For cattle we use the sulphate of magnesia or soda. The former is preferable, on account of its easier solution. I purge the larger elephant, whenever I please, by giving him a drachm of calomel at night, and a pound and a-half of Epsom salts in the morning."

tinguish it from sulphate of iron, for he tells us that one kind of alum was white, and was used for dyeing wool of bright colours.[1]

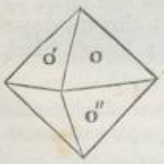
Natural History.—It is found native in the neighbourhood of volcanoes, and constitutes the mineral called *Native Alum*.

Preparation.—The method of preparing alum varies somewhat in different places. The mineral from which (in this country) it is procured is called *Aluminous Slate*, *Aluminous Shale*, or *Aluminous Schist* (*Schistus Aluminaris*.) This substance varies somewhat in its composition in different localities, but always contains sulphuret of iron, alumina, carbon, and sometimes a salt of potash. In the neighbourhood of Glasgow there are two alum manufactories, one at Hurlet, the other at Campsie. The most extensive alum manufactory in Great Britain is at Hurlet, near Paisley. Here the aluminous schist lies between the stratum of coal and limestone. (Williams, *Nat. Hist. of the Mineral Kingdom*, 2d edit. ii. 315.) By the action of the air it undergoes decomposition, and falls down on the floor of the mine. The sulphur attracts oxygen, and is converted into sulphuric acid, which combines partly with the iron (oxidized by the air,) and partly with the alumina. The solution obtained by lixiviating the decomposed schist is evaporated, and the sulphate of iron allowed to crystallize: to the mother liquor, which contains sulphate of alumina, sulphate of potash, or chloride of potassium, obtained from soap-boilers, is added, by which crystals of alum are procured, which are purified by a second crystallization. Of late years, sulphate of ammonia, obtained from gas liquor, has been employed as a substitute for the sulphate of potash or chloride of potassium. In general the alum made at Hurlet contains both potash and ammonia. (Dr. T. Thomson, in *Athenæum* for 1840, p. 771.)

At Whitby, in Yorkshire, the method of making alum is somewhat different. The schist is piled in heaps, and burnt by means of a slow smothered fire. The calcined ore is lixiviated, and a salt of potash added to the solution after it has deposited sulphates of lime and iron, and earthy matters. (Winter, in *Nicholson's Journal*, vol. xxv.)

Properties.—Alum crystallizes usually in regular octohedrons, frequently with truncated edges and angles, and sometimes in cubes. The ordinary alum of the shops consists of large crystalline masses, which do not present any regular geometrical form; but, by immersion in water during a few days, octohedral and rectangular forms are developed on its surfaces. (Daniell, *Quart. Journ.* i. 24.) Alum has an astringent and sweetish acid taste: its reaction on vegetable colours is that of an acid. Its sp. gr. is 1·7. By exposure to the air it slowly and slightly effloresces. Its transcalent or diathermanous power is very slight. When heated, alum undergoes the watery fusion, swells up, gives out its water of crystallization, and becomes a white spongy mass, called *Dried Alum*. When submitted to a very strong heat, a portion of the acid is expelled, and escapes, partly as sulphuric acid, partly in the form of oxygen and sulphurous acid, and the residue consists of alumina and sulphate of potash: the acid liquor obtained by heating alum was formerly termed *Spirit of Alum*. When alum is calcined with charcoal or some carbonaceous substance, as sugar, we obtain a spontaneously inflammable substance called *Homberg's Pyrophorus*, composed of sulphur, potassium, aluminum or alumina, and charcoal.

Fig. 80.



Octohedron of Alum.

Alum dissolves in 18 times its weight of cold and less than its own weight of boiling water.

The alum procured at Tolfa and other parts of Italy, and called *Roman Alum* (*Alumen Romanum*,) is covered with a pale, rose-coloured efflorescence, composed of oxide of iron and an aluminous sulphate of potash. Under the name of *Roche* or *Rock Alum* (*Alumen Rupeum*, seu *Alumen de Rochi*, so called from

[1] For farther information, consult Parkes' *Chemical Essays*, i. 625; and Thomson's *History of Chemistry*, i. 125.

Roccha, in Syria, whence a red-coloured alum was formerly brought,) we find in English commerce crystalline fragments of alum not larger than almonds, coloured externally with bole or rose-pink.

Characteristics.—That alum is a sulphate is shown by the tests for the soluble sulphates already mentioned (p. 406.) It reddens litmus, and forms sulphate of lead when mixed with pure carbonate of lead: in these properties it agrees with the supersulphates. The nature of its basic constituents is shown by the following tests:—The ferrocyanides, the oxalates, and hydrosulphuric acid, occasion no precipitate in a solution of alum. Hydrosulphuret of ammonia, the caustic alkalis and their carbonates, and phosphate of soda, throw down white precipitates: that produced by the alkalis is soluble in an excess of alkali, but is insoluble in solutions of the carbonated alkalis: these characters show the presence of alumina. Potash is recognised by perchloric acid and bichloride of platinum (vide p. 415.) Lastly, the crystalline form of the salt assists in recognising it.

Composition.—The composition of alum is as follows:—

	Atoms.	*Eq. Wt.*	*Per Cent.*	*Thomson.*	*Berzel.*		*Atoms.*	*Eq. Wt.*	*Per Cent.*
Alumina	3	54	11·088	11·09	10·76				
Potash	1	48	9·856	9·86	9·95				
Sulphuric Acid	4	160	32·854	32·85	33·74	or	Sulphate of Alumina	3	174	35·728
Water	25	225	46·201	46·20	45·55		Sulphate of Potash	1	88	18·069
							Water	25	225	46·201
Crystd. Potash-Alum.	1	487	99·999	100·00	100·00		Crystd Potash-Alum	1	487	99·998

In the above table I have assumed, with Thomson and Phillips, that alumina is a protoxide of aluminum, (1 eq. Aluminum = 10, and 1 eq. Oxygen = 8,) and that its equivalent is 18. But, according to Berzelius, it is a sesquioxide (composed of 2 eq. Aluminum = 26·44, and 3 eq. Oxygen = 24.) Moreover, he found only 24 eq. of water in crystals of alum. Hence alum is composed, according to him, of KO, SO^3 + Al^2 O^3 $3SO^3$ + 24 HO.

Purity.—Alum should be colourless, completely soluble in water (by which the absence of uncombined earthy matter is shown;) with a solution of caustic potash or ammonia should form a colourless precipitate of hydrate of alumina soluble in excess of potash; and should not suffer any change of colour by the addition of tincture of nutgalls or hydrosulphuric acid. The ferro-sulphate of potash, sometimes mixed with alum, cannot be distinguished from the latter by its form, colour, or taste; but is readily detected by potash, which throws down oxide of iron, and by tincture of nutgalls, which communicates a bluish black colour to it.

It is entirely soluble in water. From the solution, ammonia or potash, when added, throws down alumina free from colour, which again dissolves when the potash is added in excess. *Ph. L.*

Physiological Effects. *α. On Vegetables.*—Alum is probably injurious to plants. (De Candolle, *Physiol. Végét.* 1341.)

β. On Animals.—Dogs support large doses of alum with impunity. Orfila (*Ann. d'Hyg. Publiq. et de Méd. Lég.* i. 235.) gave seven drachms of *crystallized* alum in powder to dogs: the animals retained it for from ten to thirty minutes, then vomited, and in an hour or two were apparently well. Two ounces of *burnt* alum in four ounces of cold water occasioned vomiting only. When the œsophagus was tied to prevent vomiting, death took place in five hours with symptoms of great exhaustion and diminished sensibility. On a post-mortem examination the mucous membrane of the stomach was found inflamed in the whole of its extent. One ounce of finely-powdered burnt alum applied to the sub-cutaneous cellular tissue of the thigh, caused excessive suppuration, and death in fifteen hours. Devergie (*Méd. Légale*, ii. 653.) found burnt alum somewhat more active: he says 6½ drachms killed a dog when the œsophagus was tied, and two ounces when it was not tied. Moreover, he found burnt alum suspended in cold water, more active than when dissolved in warm water. Ve-

terinarians employ it in doses of from 1 to 6 drachms for large animals. Bourgelat has seen a phthisical condition induced in horses by the use of alum in too great quantities. (Moiroud, *Pharm. Vétér.* 225.)

γ. *On Man.*—The immediate topical effect of a solution of alum is that of an astringent, namely, corrugation of fibres and contraction of small vessels, by virtue of which it checks or temporarily stops exhalation and secretion, and produces paleness of parts by diminishing the diameters of the small blood-vessels. It is by these local effects that alum, when taken internally, causes dryness of the mouth and throat, somewhat increases thirst, checks the secretions of the alimentary canal, and thereby diminishes the frequency and increases the consistency of the stools, as observed by Wibmer (*Die Wirkung*, &c. i. 114.) in his experiments made on himself, with alum in doses of 3 grains dissolved in 5 drachms of water, and taken several times during the day.

But when alum is applied to a part in larger quantities, and for a longer period, the astriction is soon followed by irritation, and the paleness by preternatural redness. And thus taken internally in large doses, alum excites nausea, vomiting, griping, purging, and even an inflammatory condition of the intestinal canal,—effects which may be perhaps induced by small quantities in persons endowed with unusual or morbid sensibility of the stomach and bowels, as in the case of the lady in whom dangerous gastro-enteritis was apparently induced by a single dose of a solution containing between ten and twenty grains of burnt alum. (*Ann. d'Hyg. Publique et de Méd. Lég.* i.) Ordinarily, however, tolerably large doses of alum may be given without any unpleasant effects. Thus, Professor Dumeril has given a drachm, properly diluted, in chronic diarrhœas, within twenty-four hours: Professor Marc, two drachms, in passive hemorrhages, within the same period of time: and MM. Kapeler and Gendrin have administered three drachms at one dose, in colica pictonum. (Devergie, *Méd. Lég.* ii. 656.)

After its absorption, alum appears to act as an astringent, or astringent-tonic, on the system generally, and to produce more or less general astriction of the tissues and fibres, and a diminution of secretion. Such at least appears to be its effects in some passive hemorrhages and mucous discharges. Barbier (*Traité Elément. de Mat. Méd.* 2d ed. i. 440.) says, alum "irritates the lungs, and often produces cough," but I am not aware of any other practitioner having confirmed this statement. Kraus (*Heilmittellehre*, 255.) observes, that the urine becomes remarkably acid from the use of alum.

Uses.—Alum is employed both as an external or topical, and as an internal remedy.

α. *As a topical remedy.*—Solutions of alum are sometimes employed *to produce contraction or corrugation of the tissues*, and thereby to prevent displacements of parts, especially when accompanied with excessive secretion. Thus, it is used as a gargle in relaxation of the uvula with evident advantage. In the early stage of prolapsus of the rectum, a solution of alum, applied as a wash, is sometimes of service, especially when the disease occurs in infants. Washes or injections containing alum are of occasional benefit in prolapsus of the uterus.

In hemorrhages, whether proceeding from an exhalation or exudation from the extremities or pores of the minute vessels, or from the rupture of a blood-vessel, a solution, or, in some cases, the powder of alum, may be used with advantage as a *styptic*, to constringe the capillary vessels, and close their bleeding orifices. Thus in epistaxis, when it is considered advisable to arrest the hemorrhage, assistance may be gained by the injection of a solution of alum into the nostrils, or by the introduction of lint moistened with the solution. Where this fails to give relief, finely-powdered alum may be employed in the manner of snuff. In hemorrhage from the mouth or throat, gargles containing alum are useful. In hæmatemesis, as well as in intestinal hemorrhage, alum whey may be administered; though, of course, no reliance can be placed on it, as the hemorrhage usually

depends on circumstances which astringents merely cannot be expected to obviate. In uterine hemorrhage, a sponge soaked in a solution of alum may be introduced into the vagina with good effect. To check the hemorrhoidal flux when immoderate, washes or enemata containing alum may be employed. To stop the bleeding after leech bites in children, a saturated solution, or the powder of alum, may be applied to the punctures.

In certain inflammations, alum has been used as a *repellent*; that is, it has been applied to the inflamed part in order to produce contraction of the distended vessels, and thereby to diminish the quantity of blood in the seat of the disease in a manner almost mechanical. Thus, in the first stage of ophthalmia, it is sometimes considered expedient to cut short the disease by the application of a strong astringent solution (as a saturated solution of alum or of acetate of lead.) "It is not to be denied," observes Dr. Jacob, (*Cyclopædia of Pract. Med.* art. *Ophthalmia.*) "that such applications may have the effect of arresting the progress of the disease at once; but, if they have not that effect, they are liable to produce an increase of irritation." But, as the details necessary for making the student acquainted with all the circumstances respecting the use of stimulating or astringent applications, in the first stage of ophthalmia, are too lengthened and numerous to admit of their proper discussion in this work, I must refer, for farther particulars, to the essay of Dr. Jacob before quoted, as well as to the treatises of writers on ophthalmic surgery. I may, however, add, that whatever difference of opinion exists as to the propriety of these applications in the first stage of ophthalmia, all are agreed as to their value after the violence of vascular action has been subdued. In the treatment of the purulent ophthalmia of infants, no remedy is perhaps equal to an alum wash.

In angina membranacea, called by Bretonneau (*Rech. sur l'Inflam. spéc. du Tissu Muqueux*, 1826.) diphtheritis, great importance has been attached to the employment of local applications. Of these, hydrochloric acid, calomel, and alum, have, in succession, been highly praised by this writer. In order to promote the expulsion of the false membrane, he recommends the insufflation of finely-powdered alum. This is effected by placing a drachm of it in a tube, and blowing it into the throat. (See also Trousseau and Pidoux, *Traité de Thérap.* ii. 291.) Velpeau has subsequently confirmed the statements of Bretonneau, and extended the use of alum to other inflammatory affections of the throat, as those arising in scarlatina, small-pox, &c. In these cases powdered alum may be applied to the affected parts by means of the index finger. Gargles containing this salt will be found useful in most kinds of sore throat, ulcerations of the mouth and gums, aphtha, &c. In inflammation of the uvula, accompanied with membraniform exudation, alum washes are serviceable both in children and adults. (Trousseau and Pidoux, *op. cit.*)

Alum has been employed as an *astringent*, to diminish or stop excessive secretion from the mucous surfaces. Thus, a weak solution of this salt is used to repress the discharge in the latter stages of conjunctival inflammation; to check profuse ptyalism, whether from the use of mercury or other causes; and to remove gleet or leucorrhœa. In old-standing diarrhœas it has been administered, in combination with the vegetable astringents (kino, for example,) with occasional advantage. It is also applied to check profuse secretion from ulcers.

β. *As an internal remedy.*—Alum has been employed, in conjunction with nutmeg, as a remedy for intermittents. Given just before the expected paroxysm, it has in some cases prevented it. (Cullen, *Materia Medica.*)

In the treatment of *lead colic*, alum has been found more successful than any other agent or class of remedies. It was first used in this disease by a Dutch physician, named Grashuis, (*De Colica Pictonum*, Amst. 1752, et *Append.* 1755.) and was afterwards administered in fifteen cases by Dr. Percival (*Essays, Med. and Exper.* ii. 194.) with great success. Its efficacy has been fully established by Kapeler, physician to the Hôpital St. Antoine, in Paris, and Gendrin, (Quoted

by Trousseau and Pidoux, *op. cit.*) and by Dr. Copland, (*Dict. of Med.* i. 374.) as well as by several other distinguished authorities. It allays vomiting, abates flatulence, mitigates pain, and opens the bowels more certainly than any other medicine, and frequently when other powerful remedies have failed. It should be given in full doses (as from a scruple to two drachms,) dissolved in some demulcent liquid (as gum-water) every three or four hours. Opium and (according to Dr. Copland) camphor may be advantageously conjoined. Kapeler also employs oleaginous enemata. The modus operandi of alum in lead colic is not very clear. The benefit has been ascribed by some to the chemical action of the sulphuric acid on the lead supposed to be contained in the intestines; and in support of this view must be mentioned the fact, that other sulphates (as those of magnesia, soda, zinc, and copper,) as well as free sulphuric acid, have been successfully employed in lead colic. But, on the other hand, the presence of lead in the primæ viæ or evacuations, and, consequently, the formation of sulphate of lead in saturnine colic, have not been demonstrated; though the experiments of Dr. C. G. Mitscherlich (*Müller's Archiv.* No. V. 353, 1836, quoted in *Brit. Ann. of Med.* vol. i. 204, 1837.) have shown, that when the acetate of lead is swallowed, the greater part of it forms an insoluble combination with the gastro-intestinal mucus, and in this state may remain some time in the alimentary canal. Moreover, alum has been found successful by Kopp (*Denkwurdigkeit*, i. 342, quoted by G. A. Richter, *Ausführ. Arzneim.* Suppl. Bd. 515.) in other varieties of colic not caused by lead, and unaccompanied by constipation. Dr. Copland is disposed to ascribe the benefit of alum, and other sulphates, in lead colic, to their "exciting the action of the partially paralyzed muscular coat of the bowels, and thereby enabling them to expel retained matters of a morbid or noxious description,"—an explanation which is inconsistent with the observation of Kopp just quoted.

Alum is administered internally in several other diseases, of which a brief notice only can be given. In passive or asthenic hemorrhages from distant organs; as hæmoptysis, menorrhagia and other uterine hemorrhages, hæmaturia, &c. In colliquative sweating, diabetes, gleet, gonorrhœa, and leucorrhœa. In the three latter diseases it may be combined with cubebs. Kreysig (*Die Krankh. d. Herzens*, Bd. ii. Abt. 2, S. 714, in Richter, *op. cit.*) has advised its use in dilatation of the heart and aortic aneurism. More recently Dzondi (*Aeskulap.* Bd. 1, St. 1, 1821, in Richter.) has also recommended it in these diseases; and Sundelin (*Heilmittellehre*, ii. 278.) has mentioned a case of supposed dilatation of the heart, in which relief was gained by the use of alum. In chronic diarrhœa, alum is occasionally serviceable.

Administration.—The dose of alum is from ten grains to one or two scruples. It may be taken in the form of powder, or made into pills with some tonic extract, or in solution. To prevent nausea, an aromatic (as nutmeg) should be conjoined. A pleasant mode of exhibition is in the form of *Alum Whey* (*Serum Aluminosum*, seu *Serum Lactis Aluminatum*,) prepared by boiling two drachms of powdered alum with a pint of milk, then straining: the dose is a wine-glassful. The *Saccharum Aluminatum* of the Prussian Pharmacopœia is composed of equal parts of white sugar and alum: it may be given to children as well as adults. In prescribing alum, it is to be recollected that the vegetable astringents decompose it; by which the astringent property of the mixture is probably diminished.

For topical uses, alum is used in the form of powder, solution, and poultice. Powder of crystallized alum is applied to the mouth and throat as before mentioned. Solutions of alum are made, for topical purposes, of various strengths, according to the object in view.

Antidote.—In a case of poisoning by alum, let the contents of the stomach be immediately evacuated. Promote vomiting by the use of tepid diluents. The

inflammatory symptoms are to be combated by the usual antiphlogistic means. Magnesia has been employed, but is said by Devergie to be altogether useless.

1. ALUMEN EXSICCATUM, L. E. (U. S.) *Alumen siccatum*, D.; *Dried Alum; Alumen ustum; Burnt Alum.* (Let Alum liquefy in an earthen vessel over the fire: then let the fire be increased, until the ebullition has ceased, *L.*—The directions of the *Edinburgh* and *Dublin Colleges* are essentially the same; except that they order the dried alum to be reduced to powder.)—In the preparation of this substance care must be taken not to apply too great a heat, lest a portion of the acid be driven off as well as the water. On this account a shallow earthen vessel is preferable to a crucible. Dried alum has a more astringent taste and does not dissolve so readily in water as the crystallized salt. It is employed as a mild escharotic to destroy exuberant spongy granulations; as those commonly known under the name of proud flesh.

2. LIQUOR ALUMINIS COMPOSITUS, L.; *Compound Solution of Alum; Aqua Aluminosa Bateana*, or *Bates's Alum Water.* (Alum, Sulphate of Zinc, each ʒj.; Boiling Water, Oiij. Dissolve the Alum and Sulphate of Zinc together in the Water; afterwards strain.)—This solution is used as a detergent and astringent wash in old ulcers; when diluted, as a collyrium in mild conjunctival inflammation, as an injection in gleet and leucorrhœa, and as an application to chilblains and slight excoriations.

3. PULVIS ALUMINIS COMPOSITUS, E.: *Compound Powder of Alum.* (Alum, ʒiv.; Kino, ʒj. Mix them, and reduce them to fine powder.)—Astringent. Employed in hemorrhages from the stomach, bowels, and uterus; in old diarrhœas; and as an application to flabby indolent ulcers.

4. CATAPLASMA ALUMINIS, D.; *Cataplasm of Alum; Alum Poultice; Albumen Aluminosum.* (Whites of two Eggs; Alum, ʒj. Shake them together to make a coagulum.)—"In cases of chronic and purulent ophthalmia, it is applied to the eye between two folds of old linen. It has been praised as a good application to chilblains which are not broken." (Montgomery's *Observations on the Dublin Pharmacopœia.*) "Another kind of alum poultice in use is made by coagulating milk with alum, and using the curd as a poultice."

OTHER COMPOUNDS OF ALUMINUM.

RED ARMENIAN BOLE; *Bolus Armena rubra.*—This is found in Armenia (whence its name,) as well as in various parts of Europe. Bergmann found it to consist of *silica* 47, *alumina* 19, *magnesia* 6·2, *lime* 5·4, *iron* 5·4, *water*, 7·5.

The substance sold by druggists as Red Armenian Bole is prepared by grinding together, in a mill, Pipe Clay and Red Oxide of Iron, and afterwards levigating. It is principally used in the preparation of tooth powder. (see p. 212.)

The *Lemnian Earth* (*Terra Lemnia*) is very similar to Armenian Bole. It is not, however, always red. It is dug up at Lemnos, formed into flat cylindrical pieces, which are stamped and sold under the name of *Terræ Sigillatæ.*

ORDER XVII.—COMPOUNDS OF ARSENICUM.

ACIDUM ARSENIOSUM, *L.* (*U. S.*)—ARSENIOUS ACID.

(Arsenicum album, *E.*—Arsenici Oxydum album, *D.*)

HISTORY.—Arsenious acid, commonly termed *White Arsenic* (*Arsenicum album*) or *Oxide of Arsenic*, is first distinctly mentioned by Geber, (*Invent. of Verity*, ch. vii.) who seems to have been also acquainted with Metallic Arsenic. (*Sum of*