THE

EDINBURGH NEW DISPENSATORY:

CONTAINING,

I. THE ELEMENTS OF PHARMACEUTICAL CHEMISTRY.

II. THE MATERIA MEDICA; or, the Natural, Pharmaceutical and Medical History of the different Substances employed in Medicine.

III. THE PHARMACEUTICAL PREPARATIONS AND COMPOSITIONS;

INCLUDING

COMPLETE AND ACCURATE TRANSLATIONS

OF THE

Octavo Edition of the LONDON PHARMACOPOEIA, published in 1791;

DUBLIN PHARMACOPOEIA, published in 1794;

AND OF THE

New Edition of the EDINBURGH PHARMACOPOEIA, published in 1803

Illustrated and Explained in the Language and according to the Principles of MODERN CHEMISTRY.

With many New and Useful TABLES,

AND

Several COPPERPLATES, explaining the new System of Chemical Characters and representing the most useful Pharmaceutical Apparatus.

BY ANDREW DUNCAN, JUN. M.D.

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ANDREW DUNCAN, M.D.

PROFESSOR OF THE INSTITUTIONS OF MEDICINE

IN THE UNIVERSITY OF EDINBURGH,

THIS WORK

IS

MOST DUTIFULLY

AND

AFFECTIONATELY

INSCRIBED

BY

HIS SON.

PREFACE.

DR LEWIS publiſhed the firſt edition of his *New Diſpenſatory* in 1753. The principal part of the work was a Commentary upon the London and Edinburgh Pharmacopœias, of both of which it contained a complete and accurate tranſlation. A conciſe ſyſtem of the Theory and Practice of Pharmacy was prefixed, as an introduction; and directions for extemporaneous preſcription, with many elegant examples, and a collection of efficacious but cheap remedies, for the uſe of the poor, were added as an Appendix.

The manner in which the whole was executed, placed Dr LEWIS at the head of the reformers of Chemical Pharmacy; for he contributed more than any of his predeceſſors to improve that ſcience, both by the judicious criticiſm with which he combated the erroneous opinions prevalent in his time, and by the actual and important additions he made to that branch of our knowledge. He was juſtly rewarded by the decided approbation of the public. During the Author's lifetime many editions were publiſhed, each ſucceeding one being improved as the advancement of the ſciences connected with Pharmacy ſuggeſted improvements.

After the death of Dr LEWIS; Dr WEBSTER, Dr DUNCAN, and Dr ROTHERAM, ſucceſſively contributed to maintain the reputation of the work, by taking advantage of the diſcoveries made in Natural Hiſtory and Chemiſtry, and by making thoſe alterations which new editions of the Pharmacopœias, on which it was founded, rendered neceſſary. From the place of their publication, and to diſtinguiſh them from the original work of Dr LEWIS, which was ſtill reprinted in London, theſe improved editions were entitled, *The* EDINBURGH *New Diſpenſatory*.

When the Edinburgh College ſome time ago determined to publiſh a new edition of their Pharmacopœia, the bookſellers who purchaſed the copy-right of that work being deſirous that it ſhould be accompanied by a correſponding edition of the Edinburgh New Diſpenſatory, applied to the preſent Editor to make the neceſſary alterations. This he readily undertook,

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and the number of the alterations made will ſhew, that if he has not fulfilled what was expected from him, it has been owing to want of ability, and not to want of exertion.

The general plan of the work remains the ſame. It is divided into three parts. The firſt contains Elements of Pharmacy; the ſecond, the Materia Medica; and the laſt, the Preparations and Compoſitions.

The *firſt* of theſe is entirely new, nothing being retained but the title. It is divided into two ſections. The firſt contains a very conciſe account of ſome of the general doctrines of *Chemiſtry*, and of the properties of all ſimple bodies, and the generic characters of compound bodies. In the ſecond part, the *Operations of Pharmacy*, and the neceſſary apparatus, are deſcribed; and an Appendix is added, containing many very uſeful Tables, and the Explanation of the Plates.

We now poſſeſs ſo many excellent elementary works on Chemiſtry, both tranſlations, and original works, ſuch as thoſe of Dr THOMSON, Mr MURRAY, and Mr NICHOLSON, that it is perhaps neceſſary to explain why we have introduced an Epitome of Chemiſtry into this work.—But its introduction is not only authoriſed by the example of former editions, and in attempting to explain in a ſcientific manner the operations of Pharmacy, we found ourſelves ſo frequently obliged to mention the general principles and facts of Chemiſtry, that, to avoid tedious repetitions, it became neceſſary either to refer to ſome elementary book already publiſhed, or to prefix to this work a ſhort abſtract of Chemical Science. The latter alternative was preferred, as it would form a bond of connection between the detached ſubjects treated of in the other parts of the work, and as it appeared, that, by means of a due attention to arrangement, and by rejecting hypothetical reaſoning, a very few pages would be ſufficient to contain a valuable collection of the facts aſcertained with regard to the ſimple bodies, and the generic characters of compound, which would enable us to explain the properties of the ſpecies employed in medicine with more facility to ourſelves, and with more advantage to our readers. Long after this part was ready for the preſs, Mr DAVY's *Syllabus* was publiſhed, and we were agreeably flattered to find, that beſides the ſame general arrangement, we had often taken the ſame view of the ſame ſubjects.

jects. This ſimilarity enabled us on ſeveral occaſions to profit by Mr DAVY's Syllabus during the printing of the ſheets.

The principal addition to the ſecond and third parts of this work, is the introduction of a complete tranſlation of the excellent Pharmacopœia of the Dublin College, which has never, we believe, appeared before in the Engliſh language. We therefore truſt, that it will be found an important and valuable addition. In Ireland, in particular, it muſt give the *Edinburgh New Diſpenſatory* an intereſt which it did not formerly poſſeſs.

The *ſecond part* contains the *Materia Medica*, arranged in alphabetical order. The alterations in this part are alſo very conſiderable. We have adopted the Nomenclature of the Edinburgh College, or rather of Natural Hiſtory, in preference to the officinal names hitherto employed. To the ſyſtematic name of each article, are ſubjoined its ſynonimes in the different Pharmacopœias, and the deſignations of the parts uſed in medicine; then the claſs and order of natural bodies to which it belongs, and if a vegetable, the exact number of its genus and ſpecies, according to the excellent edition of LINNÆUS's *Species Plantarum*, now publiſhing at Berlin by Profeſſor WILLDENOW.

In other particulars, conſiderable additions have been made to the Natural Hiſtory of the different articles, to the means of diſtinguiſhing them from other ſubſtances with which they are apt to be confounded, and of detecting frauds aud adulterations. Almoſt every thing which regards their Chemiſtry is entirely new. As from the principal liſt every article has been excluded which is not contained in the Materia Medica of at leaſt one of the Britiſh Colleges, we have given in an Appendix a very conciſe account of ſuch other articles as poſſeſs a place in ſome reſpectable foreign Pharmacopœias; but we have to expreſs our regret, that notwithſtanding repeated attempts, we have never been able to procure the laſt edition of the Pruſſian Pharmacopœia, publiſhed at Berlin in 1799. We have alſo added liſts of the Medicinal Simples, arranged according to the beſt ſyſtems of Natural Hiſtory.

The *third part* contains the *Preparations and Compoſitions*.

In our general arrangement of theſe, we have not followed any of the Colleges exactly, although we have not deviated much from that of the Dublin Pharmacopœia. It is not of very great importance in what order the claſſes or chapters be arranged; but theſe claſſes ſhould be natural, and, if poſſible, eſtabliſhed on one general principle. Unfortunately, however, in moſt Pharmacopœias, ſome of the claſſes are founded on Chemical Analogy, and others on the ſimilarity of form, or mode of preparation; and what is ſtill worſe, ſome are entirely anomalous and unnatural. The laſt error we have carefully endeavoured to avoid, but we have not attempted, and, indeed, it ſeems ſcarcely poſſible, to form an uſeful arrangement, on a ſingle principle. The analogous preparations in the different Pharmacopœias, are always placed immediately next each other, which renders it eaſy to compare them, and to diſcover at once the circumſtances in which they reſemble or differ from each other.

The Commentaries upon this part, are more or leſs full, as the ſubject ſeemed to be more or leſs important. Little alteration has been made in the obſervations upon their medical powers, becauſe theſe were generally the reſult of more practical experience than we poſſeſs, and becauſe this Diſpenſatory is to be conſidered rather as a pharmaceutical than a practical expoſition of the Britiſh Pharmacopœias. At one time it was alſo intended to have inſerted examples of extemporaneous preſcription, with obſervations; but it would have extended the work too much beyond its uſual limits; and fortunately the latter deficiency is well ſupplied by the Theſaurus Medicaminum, and the former by the Practical Synopſis of the Materia Alimentaria et Medica, and by Dr CULLEN's claſſical work.

During the progreſs of this publication, all the beſt journals and ſyſtems of Chemiſtry, particularly FOURCROY's *Syſtême des Connaiſſances Chimiques*, have been occaſionally conſulted, for chemical information. But we lie under more immediate obligations to ſome of the German writers on Pharmacy, ſuch as HAGEN, HERMBSTAEDT, GÖTTLING, GREN, and WESTRUMB. The writings of the French Chemiſts, alſo contain detached pharmaceutical facts; but it is not a little remarkable, that a nation which has publiſhed the beſt ſyſtems of Chemiſtry, ſhould not have produced a ſingle elementary work on Pharmacy that is not below mediocrity.

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The ancient practice of naming medicines from their inventors, or ſuppoſed virtues, has been for ſome time exploded from our Pharmacopœias; but it has been long cuſtomary to deſcribe both ſimple ſubſtances and their preparations or compoſitions by what are generally termed Officinal Names, in contradiſtinction to the preſent ſyſtematic names of the ſame ſubſtances. But their officinal names are in fact the old ſyſtematic names, which were unaccountably retained for the denomination of medicinal ſubſtances, after the improvements in Natural Hiſtory and Chemiſtry rendered the introduction of a new nomenclature into theſe ſciences neceſſary.

Attempts have been made, both in this Country and in Germany, to introduce the language of Chemiſtry into Pharmacy; but theſe attempts, however uſeful, were but feeble and incomplete. The honour of being the firſt to compoſe a Pharmacopœia in the pure and unmixed language of Science, belongs indiſputably to the Royal College of Phyſicians of Edinburgh, in the beginning of the Nineteenth Century. It is extremely probable that to this innovation many objections may be made; but it is probable that they will rather apply to the neceſſary imperfections of a firſt attempt, than to the principle itſelf, the propriety of which can ſcarcely be doubted, when we conſider, that Materia Medica and Pharmacy are but an application of Natural Hiſtory and Chemiſtry to a particular purpoſe. If the general principle be admitted, it naturally follows, that the names of all Subſtances employed in Medicine, ſhould be the ſame with the names of the ſame ſubſtances, according to the moſt approved ſyſtems of Natural Hiſtory and Chemiſtry, and that the titles of Compound Bodies ſhould expreſs as accurately as poſſible the nature of their compoſition.

Conſiderable difficulties, however, occur, in attempting to form a nomenclature in ſtrict conformity with theſe principles. The moſt apparent of theſe is, that the titles of the more compounded medicines would become too verboſe and inconvenient, if they were to expreſs every ingredient, although of little importance. The College, fully aware of this difficulty, have therefore contented themſelves with indicating in the titles the prin-

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cipal ingredients only, on which their powers and uſes ſeem to depend. For the ſame reaſon, they have preſcribed ſome well-known ſimples in very frequent uſe, by their common names, ſuch as *Opium*, *Moſchus*, *Caſtoreum*, *Crocus Anglicus*, thinking it ſufficient to have pointed out in the catalogue of the Materia Medica the animals and vegetables from which they are obtained.

In moſt caſes it is proper to mention both the Generic and and Specific names of ſimples; but where it is neceſſary to point out even the Variety employed, it will be in general more convenient to omit the ſpecific name, and to retain thoſe of the genus and variety, as *Aloës Socotorina* for *Aloës perfoliata Socotorina*, *Crocus Anglicus* for *Crocus ſativus Anglicus*. Alſo when any ſubſtance is obtained indiſcriminately from ſeveral ſpecies of the ſame genus, the ſpecific name may be omitted with propriety. Thus, it is ſufficient to ſay, *Reſina pini*, *Oleum volatile pini*, &c.

Another difficulty ariſes from the Reformers of Chemical Nomenclature not having pointed out the manner of expreſſing certain, and theſe very common forms of combination, without employing a periphraſis totally incompatible with the brevity of a name. Pharmaceutiſts have therefore been obliged to ſupply this deficiency from their own ſtore.

The Edinburgh College have accordingly retained ſome titles, ſuch as *Tincture* and *Spirit*, which, although not ſtrictly chemical, have been long received in Pharmacy, and are ſo well underſtood and defined that they can lead to no error or ambiguity.

The principles, therefore, upon which the Edinburgh College have eſtabliſhed the new nomenclature which they have introduced into Materia Medica and Pharmacy, appear to be ſo rational and ſcientific, that it can ſcarcely fail to be generally adopted. As ſcience advances, its imperfections will be remedied, and its deficiencies ſupplied; for, beſides other advantages, it facilitates remarkably the application of diſcoveries and improvements in Natural Hiſtory and Chemiſtry, to the purpoſes of medicine.

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CONTENTS.

PART I.

Page

Elements of Pharmacy.

SECTION I.

Epitome of Chemistry.

Quaternary

SECTION II.

Pharmaceutical Operations.

Chemical

APPENDIX.

PART

PART II.

MATERIA MEDICA.

APPENDIX.

PART III.

PREPARATIONS AND COMPOSITIONS.

THE

The reader is requested to correct the following material

ERRATA.

Page.	Line.		
17	19	hydrogen. *for*	oxygen.
29	26	nitrous	nitric
116	1	2	3
	2	3	2
129	41	potafs,	lime,
183	42	GENTIANA	CHIRONIA

521 In consequence of the Edinburgh College having altered the title of the *Spiritus ammoniæ fœtidus*, after this sheet was thrown off, the new name ALCOHOL AMMONIATUM FOETIDUM, could not be introduced in its proper place.

THE EDINBURGH
NEW DISPENSATORY.

PART I.
ELEMENTS OF PHARMACY.

1. THE object of Pharmacy is to provide thoſe ſubſtances which may be employed for the prevention or cure of diſeaſes.

2. To obtain this object completely, an acquaintance with the phyſical and chemical properties of bodies is neceſſary. This may be termed the Science of Pharmacy.

3. As few ſubſtances are found in nature in a ſtate fit for their exhibition in medicine, they previouſly undergo various preparations. Theſe conſtitute the Art of Pharmacy.

4. Pharmacy is ſo intimately connected with chemiſtry, that the former can neither be underſtood as a ſcience, nor practiſed with advantage as an art, without a conſtant reference to the principles of the latter. For this reaſon, it will be proper to premiſe ſuch a view of the general doctrines of chemiſtry, and of the moſt remarkable properties of chemical agents, as is neceſſary for the purpoſes of pharmacy.

SECT. I.
EPITOME OF CHEMISTRY.

5. Matter is of different ſpecies.

6. The phenomena of matter are regulated by attraction and repulſion.

7. Attraction comprehends thoſe forces which cauſe bodies to approach towards each other.

8. It operates
   a. at ſenſible diſtances, as in the attraction of gravity, electricity and magnetiſm.
   b. at inſenſible diſtances:
      a a. between particles of the ſame ſpecies, conſtituting the attraction of coheſion or aggregation;
      b b. between particles of different ſpecies, the attraction of compoſition or affinity.

9. Repulſion tends to ſeparate bodies from each other.

10. It alſo operates either
   a. at ſenſible diſtances, as in the repulſion of electricity and magnetiſm; or,
   b. at inſenſible diſtances, as in the repulſion of the matter of heat or caloric.

11. The phenomena reſulting from the operation of the ſecond claſs of attractions, (8. *b.*), and ſecond claſs of repulſions, (10. *b.*), conſtitute the proper objects of chemiſtry.

Aggregation.

12. Bodies exiſt under different forms of aggregation:
   a. Solid, in which the attraction of coheſion reſiſts relative motion among the particles, either
      a a. perfectly, as in hard bodies; or
      b b. imperfectly, as in ſoft, malleable, ductile and elaſtic bodies.
   b. Fluid, in which it admits relative motion among the particles, either with facility; or difficultly, as in viſcid fluids.
   c. Gaſeous, in which the particles repel each other.

Affinity.

13. Affinity is regulated by the following laws:
   a. It does not act at ſenſible diſtances.
   b. It is exerted only between integrant particles of different ſpecies.
   c. It is exerted by different bodies, with different degrees of force.
   d. Moſt bodies combine only in certain proportions.
   e. It is the inverſe *ratio* of ſaturation.
   f. Its action is oppoſed by the attraction of aggregation.
   g. It is often accompanied by a change of temperature.
   h. Subſtances, chemically combined, acquire new properties;
   i. And cannot be ſeparated by mechanical means.

14. Affinity

14. Affinity is

a. ſimple, when two bodies unite, in conſequence of their mutual attraction alone, whether theſe bodies be themſelves ſimple or compound, and even although, in the latter caſe, it be attended with decompoſition.

b. compound, when there is more than one new combination, and when the new arrangement would not have taken place, in conſequence of the attractions tending to produce either combination ſingly.

c. diſpoſing, when bodies, which apparently have no tendency to unite, combine, in conſequence of the addition of another body, which has a ſtrong affinity for the compound.

When the ſcience of chemiſtry comes to be better underſtood, all the caſes at preſent referred to this laſt ſpecies of affinity, will probably be found to belong to one of the preceding ſpecies: For, it is abſurd to ſuppoſe, that a body can poſſeſs affinities before it is formed.

15. The attractions which tend to preſerve the original arrangement of bodies preſented to each other, are denominated Quieſcent attractions; thoſe which tend to deſtroy the original, and to form a new arrangement, are termed Divellent attractions.

16. It is evident, that no new arrangement can take place, unleſs the divellent be more powerful than the quieſcent attractions.

Claſſification of SIMPLE SUBSTANCES.

17. Simple ſubſtances:

a. Without appretiable gravity,	Caloric.
	Light.
	Electricity.
	Galvaniſm.
	Magnetiſm.
b. Gravitating ſubſtances:	
aa. Capable of ſupporting combuſtion,	Oxygen.
bb. Capable of combining with oxygen,	Nitrogen.
	Hydrogen.
	Carbon.
	Sulphur.
	Phoſphorus.
	Metals.
cc. Having no affinity for oxygen,	Earths.
	Alkalies.

In treating of theſe ſubſtances, we ſhall begin with the firſt claſs, on account of the very great influence of caloric on all chemical actions: but, of the ſecond claſs, we ſhall firſt conſider the laſt order, becauſe they are tangible objects, conſiderably permanent in their properties, and ſimple in their action; and becauſe we ſhall thus become gradually familiarized with chemical language, before we enter upon the conſideration of ſubſtances, whoſe properties are ſcarcely the objects of our ſenſes, and which are highly alterable in their nature, and complicated in their action.

18. Compound bodies may be divided into

a. primary compounds, conſiſting of ſimple ſubſtances, combined with each other. Theſe may be ſubdivided into binary, ternary, quaternary, &c. according to the number of their conſtituents.

b. ſecondary compounds, conſiſting of compound bodies combined with ſimple bodies, or with each other.

19. As the chemical nature of bodies is determined by their action on each other, and as, in every caſe, we ſhould endeavour to advance from what is known to what is not known, the ſimple ſubſtances will firſt be deſcribed, and then ſuch of the primary compounds which they form with ſubſtances already treated of, as are not more conveniently arranged in ſeparate claſſes.

Caloric.

20. Heat, in common language, is a term employed to expreſs both a certain ſenſation, and the cauſe producing that ſenſation. In philoſophical language, it is now confined to the ſenſation, and the term Caloric has been ſubſtituted to expreſs the cauſe.

21. Temperature is that ſtate of any body, by which it excites the ſenſation of heat or of cold, and produces the other effects which depend on the preſence of caloric.

22. The moſt general effect of caloric is expanſion; the only real exception to this law, being the contraction of water from the 30th to the 40th degree of Fahrenheit's thermometer. This expanſion either conſiſts,

a. in a ſimple increaſe of volume; or

b. it produces a change of form in the ſubſtance heated.

23. The former ſpecies takes place gradually, and at all temperatures, as long as the bodies expanded undergo no other change.

24. Bodies differ very much in the degree of expanſion, which equal increments of temperature produce in them. Gaſes are more expanſible than fluids, fluids than ſolids. The individuals of each form of aggregation alſo exhibit conſiderable differences.

25. The ſecond ſpecies occurs ſuddenly, and always at certain degrees of temperature.

26. The degree at which any ſolid is rendered fluid by means of caloric, is denominated its point of fuſion; and that at which either a ſolid or a fluid is converted into vapour, is its boiling point, or point of evaporation. Evaporation is much retarded by

increaſe

increase of pressure, and facilitated by its diminution, insomuch, that those substances which, under the ordinary pressure of the atmosphere, seem to pass at once from the state of solid to that of vapour, may, by the application of sufficient pressure, be made to assume the intermediate state of fluidity.

27. From analogy, all bodies are considered as solid, when totally deprived of caloric; but they are termed solid, fluid, or gaseous (12.), according to the state in which they exist at the ordinary temperature of the atmosphere. They are also termed fusible, or infusible, volatile or fixed, condensible, or permanently elastic, according to the effects of caloric upon them.

28. Another very general effect of caloric, is increase of temperature. This effect is constant when bodies retain their form of aggregation, or undergo the first or gradual species of expansion, (22. *a.*); but while they undergo the second or sudden species, (22. *b.*), they remain at one determinate temperature, that necessary for their fusion or vaporization, until the change be completed throughout the whole. During the time necessary to effect this, the influx of caloric continues as before, and as it does not increase the temperature, it is said to become latent or combined.

29. The caloric necessary for these changes, is best denominated the caloric of fluidity, and the caloric of vaporization; and its quantity, is determinate with regard to each substance.

30. The absolute caloric, or total quantity of caloric contained in any body, is perfectly unknown; but, the quantity which increases the temperature of any body a certain number of degrees, is termed its Specific caloric, when its weight is the object of comparison; and its Capacity for caloric, when its volume is considered. The specific, and therefore the absolute, caloric of bodies, varies very much.

31. Incandescence is the least general effect of caloric, as it is confined to those substances which are capable of supporting the very high temperature necessary for its production, without being converted into vapour or gas.

32. On the living body caloric produces the sensation of heat, and its general action is stimulant. Vegetation and animal life are intimately connected with temperature, each climate supporting animals and vegetables peculiar to itself.

33. Caloric influences affinity, both on account of the operation of its own affinities, and of its facilitating the action of bodies, by counteracting the affinity of aggregation, (12.). For the latter reason, it also promotes solution, and increases the power of solvents.

34. The particles of caloric repel each other: It is therefore disposed to fly off in every direction from a body in which it is accumulated, or to pass off by radiation.

35. Radiated caloric is tranſmitted with the velocity of light; and, like it, it is reflected and refracted.

36. Caloric is attracted by all other bodies. It has therefore an irreſiſtible tendency ſo to diſtribute itſelf as to produce an univerſal equilibrium of temperature, or to paſs from bodies in which it is accumulated, into bodies in which it is deficient, until the attraction of each for caloric, and the repulſive force (34.) of the caloric contained in each become equal to each other.

37. Caloric, communicated in this way, is ſaid to be conducted; and the conducting power of different bodies ſeems to be inverſely as their affinity for caloric. Metals are the beſt conductors; then ſtones, glaſs, dried wood. Spongy bodies, in general, are bad conductors. Fluids alſo conduct caloric; but as they admit of inteſtine motion among their particles, they carry it more frequently than they conduct it.

38. The general effects of the abſtraction of caloric, are diminution of volume, condenſation, diminution of temperature, and ſenſation of cold. It alſo influences affinity, and, in general, retards ſolution. The abſtraction of caloric never can be total; and the attempts to calculate the thermometrical point at which it would take place have hitherto been fruitleſs.

39. The means employed to increaſe temperature are, the rays of the ſun, collected by means of a concave mirror, or double convex lens, electricity, friction, percuſſion, colliſion, condenſation, and combuſtion. Caloric is abſtracted by rarefaction, evaporation, and liquefaction.

40. Temperature is eſtimated relatively by our ſenſations, and abſolutely by means of various inſtruments. The thermometer indicates temperature, by the expanſion which a certain bulk of fluid undergoes from the addition of caloric, and by the condenſation produced by its abſtraction. Mercury, from the uniformity of its expanſion, forms the moſt accurate thermometer; but for temperatures in which mercury would freeze, alcohol muſt be employed. Air is ſometimes uſed to ſhew very ſmall variations of temperature. The pyrometer of Wedgewood, which is employed for meaſuring very high temperatures, depends upon the permanent and uniform contraction of pure clay at theſe temperatures.

LIGHT.

41. Light emanates in every direction from viſible bodies.

42. It moves in ſtraight lines, with a velocity equal to 200,000 miles in a ſecond.

43. Its gravity is not appretiable.

44. When a ray of light paſſes very near a ſolid body, it is inflected towards it.

45. When

45. When it paſſes at a diſtance ſomewhat greater, it is deflected from it.

46. When a ray of light falls upon a poliſhed ſurface, it is reflected from it, and the angle of reflection is equal to the angle of incidence.

47. Bodies which do not allow light to paſs through them are termed Opaque.

48. Bodies which allow it to paſs freely through them are termed Tranſparent.

49. When a ray of light paſſes obliquely from one medium into another of greater denſity, it is bent towards the perpendicular; but if the ſecond medium be of leſs denſity, it is bent from the perpendicular. The light, in both caſes, is ſaid to be Refracted.

50. The refracting power of bodies is proportional to their denſities, except with regard to inflammable bodies, of which the refracting power is greater than in proportion to their denſities.

51. By means of a triangular priſm, light is ſeparated by refraction into ſeven rays; Red, orange, yellow, green, blue, indigo, and violet.

52. Theſe rays are permanent, and ſuffer no further change by reflection or refraction.

53. They differ in flexibility and refrangibility; the red poſſeſſing theſe properties in a leſs degree than the orange, the orange than the yellow, and ſo on in the order of their enumeration.

54. They poſſeſs different powers of illumination. It is greateſt between the yellow and green, and gradually declines towards both ends of the ſpectrum.

55. The different colours of bodies depend on their tranſmitting or reflecting thoſe rays only which conſtitute their particular colours.

56. White conſiſts of the whole priſmatic rays united.

57. Black is the total abſence of light, or complete ſuffocation of all the rays.

58. Light poſſeſſes the power of heating bodies.

59. The heating power of the different rays is inverſely as their refrangibility.

60. Bodies are heated by light inverſely as their tranſparency, and directly, as the number of rays ſuffocated by them.

61. Light poſſeſſes the chemical property of ſeparating oxygen from many of its combinations; and on this property its ſalutary effects on vegetable and animal life depend.

62. The diſoxygenizing power of the different rays is in proportion to their refrangibility.

63. Light is abſorbed by many bodies, and again emitted by them in the dark.

64. The ſources of light are the ſun's rays, combuſtion, heat, and percuſſion.

Electricity.

65. The particles of the electric fluid repel each other, with a force decreaſing as the diſtances increaſe.

66. They attract the particles of other bodies, with a force decreaſing as the diſtances increaſe; and this attraction is mutual.

67 They are diſperſed in the pores of other bodies, and move with various degrees of facility through different kinds of matter.

a. Bodies, through which they move without any perceivable obſtruction, are called Non-electrics.

b. Bodies, through which they move with very great difficulty, are called Electrics.

68. The phenomena of electricity ariſe

a. from the actual motion of the fluid from a body containing more into another body containing leſs of it;

b. from its attraction or repulſion, independently of any transference of fluid.

69. By rubbing electrics on each other, the diſtribution of the electric fluid in them is altered. On ſeparating them, the one contains more, and the other leſs, than the natural quantity; or, the one becomes poſitively, and the other negatively, electrified.

70 Electrics may alſo be excited by rubbing them with non-electrics.

71. If a body B be brought into the neighbourhood of an electrified body A, B becomes electrified by poſition.

72. If a body B be inſulated, that is in contact with electrics only, when brought into the neighbourhood of an electrified body A, a ſpark paſſes between them, accompanied by noiſe. B becomes permanently electrified, and the electricity of A is diminiſhed.

73. When a body A has imparted electricity to another body B, they repel each other, unleſs B ſhall have afterwards imparted all its electricity to other bodies.

74. Bodies repel each other when both are poſitively or both negatively electrified.

75. Bodies attract each other, when the one is poſitively and the other negatively electrified.

76. If either of the bodies be in the natural ſtate, they will neither attract nor repel each other.

77. The ſpark (72.) is accompanied by intenſe increaſe of temperature (39.), and will kindle inflammable bodies.

78. It produces very remarkable chemical effects, depending chiefly on ſudden and momentary increaſe of temperature, and on the light produced.

79. Electricity acts on the living ſyſtem as a ſtimulus.

Galvanism.

Galvanism.

80. The phenomena of galvanism seem to depend solely on the agency of electricity, excited during certain chemical actions.

81. The galvanic fluid is excited by arranging at least three heterogeneous bodies; for instance, two metals and a fluid, in such a manner that the two metals be in direct contact with each other in one part, and have the fluid interposed between them in another.

82. The pile of Volta, by which it is rendered most manifest, is constructed, by combining a series of simple galvanic arcs (81.) into one continuous circle, in one uniform order of arrangement.

83. The solids capable of exciting galvanism, are the metals and charcoal; and the most efficient fluids are certain saline solutions.

84. The effects of the simple galvanic circle (81.) on the animal body, are the production of a sensation of light when applied to the eye; of an acid taste on the tongue; and the excitement of the muscles through the medium of the nerves.

85. The pile, when well constructed, besides these effects, also gives a shock and spark resembling those of electricity (72.), and proves, that the galvanic action is always accompanied by the decomposition of the fluid, and a combination of one of its constituents with one of the metals.

Magnetism.

86. If an oblong piece of iron be suspended freely, it will assume a determinate position with regard to the axis of the earth.

87. When the same end always points in the same direction, it is said to possess polarity, or to be a magnet.

88. The similar poles of two magnets repel each other; and the dissimilar poles attract each other with a force decreasing as the distances increase.

89. Any piece of iron, when in the neighbourhood of a magnet, is a magnet; and its polarity is so disposed, that the magnet and iron mutually attract each other.

90. Magnetism does not seem to affect sensibility or irritability, or to influence chemical action.

Salifiable Bases.

91. The great bulk of this globe consists of earths and stones. Although these vary infinitely in their external character and physical properties, they are found to consist of a very few substances, mixed together in different proportions, and modified by external agents.

92. These

92. Theſe elementary ſubſtances are termed Earths. Their general characters are, total want of inflammability, infuſibility, fixedneſs, a ſpecific gravity leſs than 5, inalterability, whiteneſs, dryneſs, brittleneſs, ſparing ſolubility in water, and, in general, inſipidity and want of ſmell, capability of forming chemical compounds with acids, alkalies, ſulphur, phoſphorus, and oils, and fuſibility when mixed with each other, or with alkalies, into colourleſs glaſſes, enamels, or porcelains.

93. Alkalies are a claſs of bodies which are commonly defined to be incombuſtible, ſoluble in water, cauſtic, and capable of neutralizing the acids, of combining with alcohol, oils, earths, ſulphur and phoſphorus, and of changing vegetable blues and reds to green: But as many of theſe properties are poſſeſſed in a greater or leſs degree by ſubſtances uſually claſſed with the earths, and as there is a continual gradation from the inſipidity, inſolubility, and infuſibility of ſilica, to the cauſticity, ſolubility, fuſibility, and comparative volatility of potaſs, we ſhall treat of them in ſucceſſion under the name of Saliſiable Baſes.

94. *Silica*, when obtained perfectly pure by art, is in the form of a very fine powder, hard, rough and gritty to the touch; when applied to the tongue, giving a rough and dry ſenſation, but without taſte or ſmell, having a ſpecific gravity of 2.66; when completely diſaggregated, ſoluble in 1000 times its weight of water; ſoluble in the fixed alkalies and fluoric acid; fuſible with the fixed alkalies and other earths; and combining by fuſion with the metallic oxides, and the phoſphoric and boracic acids. It has a tendency to cryſtallization, and its ultimate particles ſeem to be tranſparent. It in general imparts to the foſſils of which it is a principal conſtituent, tranſparency, luſtre, a tendency to cryſtallization, and a degree of hardneſs, enabling them to ſtrike fire with ſteel. Rock-cryſtal, quartz, agate, flint, calcedony, jaſper, ſhorl, are examples of ſiliceous ſtones.

95. *Zirconia* is obtained in the form of a fine white powder, almoſt ſoft to the touch; without taſte or ſmell; having, in a ſtate of aggregation, a ſpecific gravity of 4.3; inſoluble in water; infuſible by heat alone, but, when ſurrounded by charcoal, its particles become agglutinated, and ſo hard as to ſtrike fire with ſteel; ſoluble in all the acids; fuſible with ſilex and alumina; inſoluble in the alkalies, but ſoluble in their carbonates. It is only found in the zircon or jargon of Ceylon, and in different varieties of hyacinth.

96. *Alumina* is obtained in friable fragments, or in a very fine white powder; ſoft and unctuous to the touch; adhering ſtrongly to the tongue, abſorbing its moiſture, and producing a ſlight ſtyptic effect upon it; ſpecific gravity, 2; inſoluble in water, but very diffuſible through it; abſorbing a certain quantity of it rapidly, and forming with it a very ductile adheſive paſte, which

contracts

contracts and hardens remarkably in the fire, but is perfectly infuſible. Its ultimate particles ſeem to be opaque. It combines with moſt of the acids, and theſe compounds have a ſweetiſh ſtyptic taſte; it unites with charcoal, the alkalies, baryta, ſtrontita, lime, and ſilica; it is manufactured into porcelain and glaſs. Foſſils, containing much alumina, have generally a laminated ſtructure; it exiſts cryſtallized in ſapphire; and it forms the baſis of all clays, boles, mica, trap, baſaltes, ſlate, and corundum.

97. *Yttria* (Gadolina) is obtained in the form of a fine white powder, without taſte or ſmell; inſoluble in water; it does not alter vegetable blues; is infuſible; inſoluble in the alkalies, but readily ſoluble in the carbonate of ammonia. With the acids it forms ſalts, which have a ſweet and ſomewhat auſtere taſte. It has been found only in the gadolinite.

98. *Glucina* is obtained in white light maſſes or powder, of a ſoft feel, inſipid, but adhering ſtrongly to the tongue; apyrous and inſoluble in water, but forming with it a paſte, ſlightly ductile and adheſive; it is ſoluble in potaſs, ſoda, and carbonate of ammonia; it combines with moſt of the acids, forming ſoluble ſalts, difficultly cryſtallizable, of a ſweet and ſomewhat aſtringent taſte, and with ſulphuretted hydrogen. It has hitherto been found, very ſparingly, only in the beryl and emerald.

99. *Magneſia* is obtained in light white friable maſſes, or very fine powder; to the touch it is very fine; its taſte is not very ſenſible, but peculiar and pleaſant; its ſpecific gravity is 2.33. It is inſoluble in water, but forms with it a paſte without ductility. It is apyrous; ſlightly alters vegetable blues to green; forms ſoluble compounds with moſt acids, and unites with ſulphur. The foſſils, in which it predominates, are generally ſoft, and have an unctuous feel; the principal are talc, ſteatites, aſbeſtos, &c.

100. *Lime* is obtained in the form of a grey ſtone, or in fragments more or leſs pulverulent and white; warm, acrid, and urinous to the taſte; reddening the ſkin when applied to it for any time; ſpecific gravity 2.33. It is ſoluble in 450 times its weight of water, and has a ſtrong attraction for it. If a certain quantity of water be thrown upon freſh burnt lime, it is abſorbed rapidly, with the extrication of conſiderable heat, and ſome phoſphoreſcent light; at the ſame time the lime crumbles down into a very fine, white, dry powder, augmented much in bulk, but leſs cauſtic than before. Lime, thus ſlaked, does not renew theſe phenomena, on a further addition of water, but may be diffuſed or diſſolved in it. It is apyrous; it changes vegetable blues to green; it combines with all the acids, ſulphur, ſulphuretted hydrogen, and phoſphorus; it is very abundant in the mineral kingdom, and forms the baſes of animal bones and ſhells. The calcareous ſpars, marble, limeſtone, chalk, and marl, conſiſt chiefly of lime.

101. *Strontia* is obtained in ſmall, whitiſh-grey, and often porous maſſes; its taſte is warm, acrid and urinous; it is ſlightly cauſtic, acting feebly on animal matters. Taken into the ſtomach, it is not poiſonous; its ſpecific gravity is nearly 4.; it is ſoluble in 200 times its weight of water at 50°, but in little more than ſix times its weight of boiling water, which, on cooling, depoſites flat rhomboidal cryſtals; it is ſlaked more rapidly than lime, and it is infuſible; it changes vegetable blues to green; it combines with all the acids, ſulphur, ſulphuretted hydrogen, and phoſphorus, alumina, and ſilex. It is the baſis of ſome of the heavy ſpars.

102. *Baryta* is obtained in ſmall, grey, porous maſſes, of tolerable ſolidity; its taſte is acrid, urinous, and pungent; applied to the ſkin, it proves cauſtic, and it is deleterious when ſwallowed; its ſpecific gravity is 4.; it is ſoluble in twenty times its weight of cold water, and in twice its weight of boiling water; depoſiting, on cooling, tranſparent, white, priſmatic cryſtals; when ſlaked, it boils up with violence; becomes very hot; increaſes in bulk; and is changed into a ſpongy, white maſs. It changes vegetable blues to green; it is fuſible; it combines with all the acids, ſulphur, ſulphuretted hydrogen, and phoſphorus. It is the baſis of ſome of the heavy ſpars.

103. *Soda* is got in the form of ſolid plates, of a greyiſh-white colour, urinous taſte, and burning cauſticity; acting with conſiderable violence on animal matter. When a certain quantity of water is thrown upon it, it abſorbs and ſolidifies it, with the diſengagement of caloric, and a lixivial ſmell; a larger quantity diſſolves it; it abſorbs from the atmoſphere moiſture and carbonic acid, becoming leſs cauſtic. In the fire it melts like an oily ſubſtance; boils, and is converted into vapour; but is incombuſtible: it is cryſtallizable into tranſparent priſmatic cryſtals. It changes vegetable blues to green; unites with all the acids, oils, ſulphur, ſulphuretted hydrogen, phoſphorus, many metallic oxides, and the earths. It forms the baſis of rock-ſalt and ſea-water; is obtained from the aſhes of marine plants, and exiſts in ſome minerals.

104. *Potaſs* is a ſolid, white ſubſtance; extremely acrid to the taſte; unctuous to the feel, but highly cauſtic; deſtroying the ſkin, and diſſolving all ſoft animal ſubſtances. It is deliqueſcent and ſoluble in half its weight of water at 50° Fahrenheit; it is fuſible, and may be vaporized, but is perfectly incombuſtible; it is capable of cryſtallizing into very long quadrangular, compreſſed priſms, terminated by ſharp pyramids; it changes vegetable blues to green, and combines with all the acids, oils, ſulphur, ſulphuretted hydrogen, and the earths. It is obtained from the aſhes of vegetables, and exiſts in ſome minerals.

105. *Ammonia*

105. *Ammonia* is always classed with the alkalies, from the analogy of its taste, causticity, combinations with the acids, and effects upon vegetable blues; but as it differs in many particulars, being extremely volatile, and a compound substance, readily decomposed, and formed in many chemical operations, and its composition well known, we have ventured to separate it from the alkalies, and refer it to that place, which, in all probability, it will always retain, and to which the other alkalies will, perhaps, be referred, when their composition shall be detected.

PRIMARY COMPOUNDS of the SALIFIABLE BASES.

A. With each other; earthen-ware; glass.
B. With sulphur; alkaline and earthy sulphurets. *Vide* Sulphur.
C. With phosphorus; alkaline and earthy phosphurets. *Vide* Phosphorus.

106. The substances of this class exert a considerable action on each other. Potass was long believed to be the only solvent of silica; and it is now further proved, that the whole of this class are capable of combining, when presented to each other in a state of solution; and on this property, in part, the effect of mortars depends. Their action on each other, by means of heat, is of much greater importance, as it includes the theories of the manufactures of porcelain and glass.

107. Porcelain, and all kinds of earthen ware, consist of alumina and silica, mixed in different proportions into a plastic mass, fabricated into various shapes, dried and exposed to the heat of a furnace, where they undergo a kind of semifusion. They are glazed by being thinly covered with a more fusible composition, and may be afterwards painted with enamels, which are still more fusible than the glazing.

108. Glass is composed by melting about equal parts of potass or soda with silica. It is harder and more durable in proportion to the excess of the silica. The transparency of glass depends upon its being cooled quickly; for if cooled very slowly, it assumes a radiated crystalline appearance, and becomes perfectly opaque. By melting silica with about three times its weight of soda or potass, a glass is obtained, which not only is soluble in water, but even attracts moisture from the atmosphere. This solution has long been known by the name of Liquor of Flints. The property which metallic oxides have of rendering glasses more fusible, and of imparting to them certain colours, has given rise to the arts of imitating precious stones, and of enamelling.

Oxygen.

109. *Oxygen* is the principle on which moſt of the chemical qualities of atmoſpheric air depend. Its tendency to combination is ſo very ſtrong, that it has never been procured in a ſeparate ſtate. Oxygen gas, or the combination of oxygen with caloric, is its moſt ſimple form. This is permanently elaſtic, compreſſible, tranſparent, inodorous and inſipid. Its ſpecific gravity is 0.00135. It ſupports inflammation; is neceſſary for reſpiration and vegetation, and is decompoſed in all theſe proceſſes; it conſtitutes 0.22 of atmoſpheric air. Oxygen is alſo a principal conſtituent in water, in all acids and metallic oxides, and in almoſt all animal and vegetable ſubſtances. It is ſeparated from many of its combinations by light, (61.).

Oxygenizement.

110. As the characteriſtic diſtinction between the ſimple ſubſtances already treated of, and thoſe which remain to be examined, conſiſts in the former poſſeſſing no affinity whatever for oxygen, and in the latter having a more or leſs ſtrong attraction for it, it will be proper to explain in this place, the general phenomena which attend the combination of oxygen with oxygenizable baſes. The term Combuſtion has been by the French chemiſts incorrectly extended to all theſe combinations; for in common language, that word is applied to caſes in which oxygen is not an agent, and always ſuppoſes the production of heat and light, although in numberleſs inſtances of oxygenizement, theſe phenomena do not appear.

111. Oxygenizement is an example of chemical union, and is ſubjected to all the laws of affinity, (13.). It requires the preſence and contact of oxygen, and of another ſubſtance poſſeſſing affinity for it.

112. Oxygenizable baſes attract oxygen with very different degrees of force. This attraction is much influenced by temperature. Thus charcoal, which at ordinary temperatures ſeems to poſſeſs no attraction for oxygen, unites with it rapidly, and almoſt inſeparably, when heated to ignition.

113. Oxygen combines with moſt oxygenizable ſubſtances in certain definite proportions, perhaps only in one, and the apparent variety of proportions may be owing to a ſecond or third ſimilar combination of the firſt compound with another quantity of oxygen, or of the baſe and of the ſecond compound with a third quantity.

114. The attraction between oxygen and the oxygenizable baſes, is in the inverſe ratio of ſaturation; or, in other words, the affinity by which they form their primary combinations, is ſtrong-

er

er than that by which they form any secondary combination, and so on progressively.

115. In many instances, oxygenizement is so strongly opposed by the affinity of aggregation, that it does not take place unless assisted by a degree of heat sufficient to melt or vaporize the oxygenizable base.

116. It is also often accompanied by the extrication of caloric and light in a very conspicuous degree. To these the term combustion should be confined; and only such oxygenizable bases as are capable of exhibiting these phenomena are combustible. These phenomena depend upon the new compound, having a weaker affinity or less capacity than its constituents for light and caloric, which are therefore extricated.

117. If the combustible body be vaporized, flame is produced, and the process is then denominated Inflammation.

118. By its union with oxygenizable substances, oxygen undergoes very various changes of its properties. In many instances, the compounds of oxygen are fluid or solid, opaque, coloured, incapable of supporting inflammation, and deleterious to animal or vegetable life. The changes which the oxygenizable bases undergo, are no less conspicuous. Their form, colour, taste, odour, density, permeability to light and electricity, specific caloric, and, finally, their affinities, are often totally altered.

119. When, in consequence of oxygenizement, any substance acquires a sour taste, and the properties of converting vegetable blues to red, and of saturating or destroying the characteristic properties of alkalies and earths, it is said to be acidified, and such compounds are termed Acids.

120. When it does not acquire these properties, the compounds are termed Oxides.

121. Many oxides are capable of being converted into acids, by combination with an additional quantity of oxygen.

122. Oxygenizable substances, combined with each other, are capable of combining as simple substances with oxygen; and the oxides or acids which result from such combinations, are termed Oxides or Acids with a double or triple base.

123. In general, the bases which are least simple, unite with oxygen in the greatest variety of proportions.

Primary Compounds of Oxygen.

A. Binary,

a a. with nitrogen:

1. Atmospheric air.
2. Nitrous oxide.
3. Nitric oxide.
4. Nitric acid.

b b. With

b b. With hydrogen: water.
c c. With carbon:
1. Incombuſtible coal, plumbago.
2. Charcoal, (carbonous oxide).
3. Gaſeous oxide of carbon, (carbonic oxide).
4. Carbonic acid.

d d. With ſulphur:
1. Oxide of ſulphur.
2. Sulphureous acid.
3. Sulphuric acid.

e e. With phoſphorus:
1. Oxide of phoſphorus.
2. Phoſphorous acid.
3. Phoſphoric acid.

B. Ternary, with Carbon and Hydrogen.
a a. Oxides. Hydrocarbonates, alcohol, ether, oil, vegetable ſubſtances.
b b. Acids. Vegetable acids.

C. Quaternary, with Hydrogen, Carbon and Nitrogen.
a a. Oxides. Animal ſubſtances.
b b. Acids. Animal acids.

124. *Nitrogen,* or azotic, *gas* conſtitutes 0.78 of the atmoſphere. But as it has few attractions at ordinary temperatures, its principal effect on the chemical properties of the atmoſphere ſeems to be the dilution of the oxygen gas, which in its pure ſtate would be more active than is conſiſtent with the economy of nature. It alſo is permanently elaſtic, compreſſible, inodorous and inſipid; it greens very delicate vegetable blues; its ſpecific gravity is 0.00115; it is unable to ſupport reſpiration, vegetation, or combuſtion, and is not decompoſed in theſe proceſſes; it is acidifiable, and is a conſtituent of the nitric and nitrous acids, nitrous and nitric oxides, of ammonia, and perhaps of the other alkalies, and of moſt animal ſubſtances; it diſſolves phoſphorus and carbon in ſmall quantities, and is not abſorbed by water.

PRIMARY COMPOUNDS OF NITROGEN, (Azote).

A. Binary,
a a. with oxygen:
1. Atmoſpheric air.
2. Nitrous oxide.
3. Nitric oxide. (Nitrous gas.)
4. Nitric acid.

b b. With hydrogen. Ammonia. (Nitroguret of Hydrogen.)
c c. With ſulphur. Sulphuretted nitrogen gas.
d d. With phoſphorus. Phoſphuretted nitrogen gas.

B. Quaternary

B. Quaternary, with hydrogen, carbon and oxygen.
  a a. Oxides. Animal substances.
  b b. Acids. Animal acids.

125. *Atmospheric air* consists of 22 parts of oxygen gas, and of 78 of azotic gas by bulk, or 25 and 75 by weight; it is transparent, compressible, and permanently elastic; its specific gravity is 0.00123; it is inodorous and insipid, respirable, and capable of supporting inflammation; its component parts seem to be chemically combined. The atmosphere, besides the air now described, also contains other gases, water in solution, &c.

126. *Nitrous oxide gas* is composed of 37 of oxygen, and 63 of nitrogen. It does not change vegetable colours; its specific gravity is 0.00197; it suffers no diminution when mixed with oxygen gas. Water absorbs about half its weight of it, at a mean temperature. It does not combine directly with alkalies; it supports combustion; and its respiration, when perfectly pure, or mixed with atmospheric air, produces the highest excitement the animal frame seems capable of undergoing.

127. *Nitric oxide gas* (nitrous gas) consists, according to Davy, of 44 azote and 56 hydrogen. It does not change vegetable colours. Its specific gravity is 0.001343. When mixed with about two-fifths of oxygen gas, they condense into red fumes, (nitrous acid), which are entirely absorbed by water. The quantity of oxygen gas that any air contains is sometimes estimated by the diminution of volume sustained after a sufficient quantity of nitrous gas has been mixed with it. Water absorbs 0.118 of its bulk of this gas. It is not inflammable; and only in very few instances supports combustion. It is noxious to vegetation, and its respiration is fatal to animals.

128. Nitrogen admits of higher degrees of oxygenizement, forming nitrous and nitric acids.

129. *Hydrogen gas* is often found collected in mines and caverns, and perhaps constitutes the upper strata of the atmosphere. It is permanently elastic and compressible. Its specific gravity is 0.000094, being the lightest body with which we are acquainted. It is highly inflammable, and burns in contact with oxygen gas or atmospheric air, and detonates on the application of a burning body when mixed with them. It extinguishes flame, and is deleterious to animal life. It dissolves sulphur, phosphorus and carbon, forming with them peculiar fetid gases.

Primary Compounds of Hydrogen.

A. Binary,
  a. With oxygen; water.
  b. With nitrogen; ammonia.

for hydrogen read Oxygen

c. With ſulphur; ſulphuretted hydrogen.
d. With phoſphorus; phoſphuretted hydrogen.

B. Ternary,

a. With carbon and oxygen:

1. Oxides; hydro-carbonates, vegetable ſubſtances.
2. Acids; vegetable acids.

C. Quaternary,

With carbon, nitrogen, and oxygen:

1. Animal oxides.
2. ——— acids.

130. Hydrogen, combined with oxygen in the proportion of 14.42, to 85.58, forms *water*. Water is tranſparent, colourleſs, inodorous, and inſipid. At 32° it exiſts in a ſolid form, and is cryſtallized. At 212° it expands to 2000 times its bulk, and is converted into a very elaſtic vapour. It abſorbs ſmall quantities of the ſimple gaſes, eſpecially oxygen. It diſſolves ſeveral of the ſalifiable baſes, and in ſome degree all ſaline bodies, and is eſſential to their cryſtallization. It is compoſed and decompoſed in many inſtances, and its chemical agency is almoſt univerſal. It is the only binary combination of hydrogen with oxygen.

131. *Ammonia* (hydroguret of nitrogen) conſiſts of four parts of nitrogen, with one of hydrogen. It exiſts in its pureſt form combined with caloric as a gas, which is perfectly tranſparent and colourleſs, elaſtic and compreſſible; ſpecific gravity 0.000732; has a urinous and acrid odour, irritating the noſtrils and eyes, and an acrid and cauſtic taſte; does not diſſolve animal ſubſtances; is irreſpirable; extinguiſhes flame; colours vegetable blues green; and is decompoſed by being tranſmitted through a red-hot tube, and by the electric ſpark, into its conſtituent gaſes; and by oxygen and atmoſpheric air at a red heat, and by oxy-muriatic acid, it is converted into water and nitrogen gas. It is abſorbed without change by porous bodies; it diſſolves ſulphur and phoſphorus; and combines readily with water in all its ſtates. Water is ſaturated by one-third of its weight of gaſeous ammonia, and is thereby increaſed in bulk, and acquires the ſpecific gravity of 0.905. Ammonia combines with all the acids, forming neutral ſalts. It is formed during the putrefactive fermentation; and it is commonly claſſed with the alkalies.

132. *Carbon*, in a ſtate of perfect purity, is well known by the name of diamond. It poſſeſſes the higheſt degree of luſtre, tranſparency, and hardneſs. It is cryſtallized, and generally colourleſs. Its ſpecific gravity is from 3.44 to 3.55. It is inſoluble in water, and can neither be melted nor vaporized by caloric. It is not acted upon by any chemical agent, except oxygen at very high temperatures. When expoſed in oxygen gas to the rays of the ſun, concentrated by a very powerful lens, its ſurface becomes

ſenſibly

ſenſibly blackened; it is ignited, and at laſt conſumed. The reſult of this combuſtion is carbonic acid gas; 100 parts of which conſiſt of 17.88 of carbon, and 82.12 of oxygen. It combines with iron, forming ſteel. It is a conſtituent of almoſt all animal and vegetable ſubſtances; and an oxide of carbon is obtained from them by expoſing them to heat in cloſed veſſels.

Primary Compounds of Carbon.

A. Binary,

a a. With Oxygen:

1. Incombuſtible coal; plumbago;
2. Charcoal (carbonous oxide)
3. Gaſeous oxide of carbon (carbonic oxide gas)

} oxides.

4. Carbonic acid.

b b. With metals; carburets.

B. Ternary,

a a. With oxygen and hydrogen:

1. Oxides.

a. Hydro-carbonates, gaſeous.

b. Alcohol,
c. Ether,
d. Fixed oil and fats,
e. Wax,
f. Adipocire,
g. Volatile oils,
h. Reſins,
i. Camphor,

} fluid or fuſible without decompoſition.

k. Starch,
l. Sugar,
m. Jelly,
n. Tannin.

} ſolid, and infuſible without decompoſition.

2. Acids.

a. Acetous.
b. Acetic.
c. Oxalic.
d. Tartareous.
e. Citric.
f. Malic.
g. Lactic.
h. Gallic.
i. Mucous.
k. Benzoic.
l. Succinic.
m. Camphoric.
n. Suberic.

o. Laccic.
p. Sebacic.

C. Quaternary,
With nitrogen, hydrogen, and carbon.
1. Oxides.
a. Gum.
b. Gum-resin.
c. Extract.
d. Lignin.
e. Suber.
f. Caoutchouc.
g. Gelatin.
h. Albumen.
i. Fibrin.
k. Urea.
2. Acids.
a. Pruffic.
b. Zoonic.
c. Uric.
f. Amnic.

133. *Plumbago* and *incombuftible coal* contain carbon in the firft degree of oxygenizement. The moft remarkable known property of this oxide, is the very high temperature neceffary for its combuftion.

134. Common *charcoal* of wood (carbonous oxide) is carbon in the fecond degree of oxygenizement, confifting of 63.86 of carbon, and 36.14 of oxygen. It is obtained in the form of folid maffes of a black colour. It has neither fmell nor tafte. It is brittle and never cryftallized. It abforbs light ftrongly, is perfectly refractory in the fire, infoluble in water, and a bad conductor of caloric, but an excellent one of electricity. At a red heat, it burns rapidly in oxygen gas, 28 of charcoal and 62 of oxygen forming 100 of carbonic acid gas. It alfo burns in atmofpheric air, but lefs vividly.

135. *Gafeous oxide of carbon* (carbonic oxide gas) is carbon in its third degree of oxygenizement. It is invifible and elaftic; fpecific gravity 0.001167. It does not fupport combuftion or refpiration. With oxygen gas it burns with a lambent blue flame, and is converted entirely into carbonic acid without producing any moifture. It has no affinity for lime. It confifts of 25.99 carbon, and 74.11 oxygen; or 40.41 charcoal, and 59.59 oxygen.

136. *Sulphur* is a cryftallizable folid; of a yellow colour; little fenfible tafte; particular fmell; fpecific gravity 1.9907; brittle; electric; fufible at 185°; converted into vapour at 170°; burning with a pale blue flame at 302°; and with a bright white flame at 570°; and capable of combining with different propor-tions

tions of oxygen. It is found pure in the neighbourhood of volcanoes, and exists in many minerals, and in animal substances.

Primary Compounds of Sulphur.

a. With oxygen:
 1. Oxide of sulphur.
 2. Sulphureous acid.
 3. Sulphuric acid.

b. With nitrogen. Sulphuretted nitrogen gas.
c. With hydrogen. Sulphuretted hydrogen.
d. With phosphorus. Sulphuretted phosphorus.
e. With salifiable bases. Earthy and alkaline sulphurets.
f. With metals. Metallic sulphurets.

137. *Oxide of Sulphur* is of a reddish-brown colour, and an austere taste. It is formed on the surface of melted sulphur.

138. *Sulphuretted Nitrogen Gas* is only known to have a fetid odour.

139. *Sulphuretted Hydrogen Gas* consists of 71 sulphur, and 29 hydrogen; specific gravity 0.000135. It has the odour of rotten eggs; is not respirable; burns with oxygen gas without exploding, and sulphur is deposited; is readily absorbed by water, which is the mode in which sulphur exists in mineral waters; reddens vegetable blues; and in its affinities, and the crystallizability of its compounds, it resembles the acids.

140. *Hydroguretted Sulphur* is sulphuretted hydrogen combined with an additional dose of sulphur. It has the appearance of a yellow oil.

141. *Sulphurets* are solid opaque bodies, of considerable specific gravity, decomposible by heat, water, and the acids.

a. The alkaline and earthy sulphurets have a red or brownish-red colour, and by solution in water are immediately converted into hydroguretted sulphurets.

b. The metallic sulphurets have neither taste nor smell, are often possessed of metallic brilliancy, and are conductors of electricity.

142. *Phosphorus* is a semi-transparent solid, slightly brilliant, and of a waxy consistence; specific gravity 2.0382; taste in some degree acrid and disagreeable; smell alliaceous. It is brittle under 32°; its fracture is vitreous, brilliant, and sometimes lamellated; above 32° it softens a little, becomes ductile about 90°, melts at 105°, becoming transparent like a white oil; at 180° begins to be vaporized, and at 534° boils. It is crystallizable into prismatic needles or long octohedrons. It exists in many minerals, and is obtained from bones and other animal substances.

Primary Compounds of Phosphorus.

a. With oxygen:
1. Oxide of phoſphorus.
2. Phoſphorous acid.
3. Phoſphoric acid.

b. With nitrogen. Phoſphuretted nitrogen gas.
c. With hydrogen. Phoſphuretted hydrogen gas.
d. With ſulphur. Phoſphuret of ſulphur.
e. With metals. Metallic phoſphurets.
f. With ſalifiable baſes. Alkaline and earthy phoſphurets.

143. In its ſolid ſtate, phoſphorus is not acted upon by pure oxygen gas, but when melted, burns in it with a dazzling ſplendour, abſorbing about half its weight of oxygen, and forming phoſphoric acid. In atmoſpheric air, below 120°, it undergoes a ſlow combuſtion, emitting light in the dark, but without the production of ſenſible heat; abſorbing a portion of oxygen, and forming phoſphorous acid; above 120° it burns rapidly, but leſs brilliantly than in oxygen gas, forming phoſphoric acid. It is therefore always kept immerſed in boiled water; but even there its ſurface is oxidized, becoming white and opaque.

144. *Hydroguretted phoſphorus* poſſeſſes a peculiar odour, and the property of becoming luminous when mixed with oxygen gas. It may be combined with a much larger proportion of phoſphorus, acquiring then a fetid alliaceous odour, a conſiderable increaſe of ſpecific gravity, and the property of burning by the ſimple contact of oxygen, or of the atmoſphere, with a very brilliant white flame.

145. *Sulphuretted phoſphorus*, and phoſphuretted ſulphur, are of a yellowiſh colour, more fuſible than either of the components, and exceedingly inflammable.

146. Nitrogen gas diſſolves phoſphorus, forming a fetid gas, which inflames at a low temperature.

147. Phoſphuret of lime is inſoluble in water; but when thrown into it, decompoſes it, and produces phoſphuretted hydrogen gas, whoſe bubbles catch fire when they burſt on the ſurface of the water. Phoſphuret of barytes is a brown maſs; of a metallic appearance; very fuſible; luminous in the dark; decompoſed by expoſure to air; emitting an alliaceous ſmell when moiſtened; and decompoſed by water, furniſhing phoſphuretted hydrogen gas. The phoſphuret of ſtrontites is very ſimilar.

Metals, and Metallic Oxides.

148. Metals are cryſtallizable; their form depends on the regular tetrahedron or cube; their ſurface is ſpecular; they are perfectly

fectly opaque; their colour is various; their luſtre peculiar and ſhining, or ſplendent; their hardneſs various, but at leaſt conſiderable; many of them are brittle, others poſſeſs malleability and ductility in a ſurpriſing degree, and ſome are ſciſſile, flexile, or elaſtic; their fracture in general is hackly; their texture compact, fibrous or foliated; many of them are remarkably ſonorous; their ſpecific gravity is great; they poſſeſs no ſmell or taſte, unleſs when heated or rubbed; they are the beſt conductors of caloric and electricity; are powerful agents in producing the galvanic phenomena, and a few of them are the only ſubſtances which exhibit the phenomena of magnetiſm. By the action of caloric they are melted, but with different degrees of facility, and ſome of them may be vaporized. Except iron and platinum, they melt ſuddenly, without undergoing any intermediate ſtate of ſoftneſs; and when melted, their ſurface is convex and globular. They are inſoluble in water, but ſome of them decompoſe it, and are oxidized by it.

Primary Compounds of the Metals.

a. With oxygen:
  1. Metallic oxides.
  2. Acids of arſenic, tungſten, molybdenum, chrome, and columbium.

b. With hydrogen. Hydrogurets.
c. With carbon. Carburets.
d. With phoſphorus. Phoſphurets.
e. With ſulphur. Sulphurets.
f. With each other. Alloys and amalgams.

149. They are oxidized with different degrees of facility, ſome by mere expoſure to air, and others ſeem almoſt to reſiſt the action of heat and air. Their oxidizability is always increaſed by increaſe of temperature. Their oxides are in the form of powder, laminæ, or friable fragments; ſometimes cryſtalline; of various colours, determinate with regard to each metal; poſſeſs greater abſolute weight; are refractory, or fuſible into glaſs; inſipid, or acrid, and ſtyptic; in general inſoluble in water; and combine either with acids and alkalies, or only with acids. Some of thoſe are diſoxygenized by light alone, others by caloric, and others require hydrogen, carbon, &c.

150. Hydrogen gas is capable of holding arſenic, zinc, and iron in ſolution.

151. Carbon unites only with iron.

152. The metallic phoſphurets are fuſible, brilliant, brittle, granulated, lamellated, ſcarcely combuſtible, and permanent.

153. The ſulphurets are brittle; cryſtallizable in large brilliant and metallic laminæ, more eaſily fuſible than the refractory metals,

tals, but lefs eafily than the very fufible metals; decompofable by heat, humidity, and the acids.

154. The mixtures of the metals with each other are termed alloys: thofe in which mercury is contained are amalgams. They acquire by mixture new properties, and are in general more fufible than their components. The reguline metals are not foluble in the acids; but when acted upon by them, are firft oxidized, and then diffolved. The metallic oxides, by fufion, colour glaffes and enamels.

Oxidizable Metals.

155. *Gold* is of a brilliant, yellow colour, infipid, inodorous; fpecific gravity between 19.258 and 19.300; foft and flexible; little elafticity or fonoroufnefs; fo ductile, that its furface may be extended more than 650.000 times; of very great tenacity; eafily hammer-hardened; a good conductor of caloric, electricity, and galvanifm; fufing at 32° of Wedgewood; brittle when cooled too quickly; cryftallizing in octohedrons; unalterable in the air; converted, by a long and violent heat, into a vitrified, violet oxide; oxidized and difperfed by electricity; foluble in alkaline fulphurets; rendered brittle by phofphorus, arfenic, bifmuth, tin, and antimony; lefs brittle by lead; foluble in mercury; hardened by zinc, copper, iron, fteel, and filver; oxidizable, of a purple colour, and flightly foluble, in nitrous acid; very oxidizable, of a fawn or yellow colour by the nitro- or oxy-muriatic acids. Its oxide is eafily reduced by light and heat; colours glaffes purple or topaze-yellow, and forms a fulminating compound with ammonia.

156. *Platinum.* Of a grey, white colour, almoft black when polifhed, infipid, inodorous; fpecific gravity 20.850 to 21.061; fofter only than iron, and lefs ductile only than gold; moft difficult of fufion, above 160° of Wedgewood; a good conductor of electricity and galvanifm; unalterable by air and heat; converted into a grey powder, its firft degree of oxidization, by electricity; unites with phofphorus; forms alloys with arfenic, bifmuth, antimony, mercury, zinc, tin, lead, caft-iron, copper, filver, and gold. It is oxidized and diffolved by the oxy-muriatic acid, and more readily by the nitro-muriatic. Oxide grey.

157. *Silver.* Very brilliant, white, infipid, inodorous; fpecific gravity 10.474 to 11.091; hardnefs between iron and gold; elafticity between gold and copper; ftrong acute found; confiderable ductility and tenacity; hardening much under the hammer; a good conductor of electricity, caloric, and galvanifm; fufible at 28° Wedgewood; cryftallizable by cooling; unalterable in the air; changed into a greenifh oxide by long and violent heat, burning with a greenifh flame, and inftantly by the electric fhock. Its phofphuret is granulated, brittle and fufible; its fulphuret grey, black,

black, lamellated, or ſtriated and fuſible; it unites but ſlightly with the acidifiable metals and iron; is hardened by gold, biſmuth, antimony, tin, lead, and copper, and amalgamates with mercury. It is oxidized, and diſſolved by the ſulphuric, ſulphurous, nitric, and oxy-muriatic acids. Its oxide is greeniſh; reducible by light and heat, hydrogen, and the other metals; colours ſome glaſſes of an olive green, and is very ſoluble in ammonia.

158. *Copper.* Bright red; diſagreeable taſte and ſmell when rubbed or heated; ductile; of great tenacity; ſonorous; fuſible at 27° Wedgewood; granulated texture, and ſubject to bliſters; a good conductor of caloric, electricity, and galvaniſm; becomes brown, and at laſt green, in the air; when heated, turns blue, yellow, violet, deep brown; when ignited and plunged into water, forms brown, brittle ſcales of oxide. Its phoſphuret is brilliant, brittle, hard, and fuſible; its ſulphuret brown, fuſible, and very phoſphoric; its alloy with arſenic is white, with biſmuth reddiſh, with antimony violet, mercury deep red, with zinc forms braſs, and with tin is orange; it is oxidized and diſſolved by the ſulphuric, nitric, and muriatic acids; its oxide is brown, brittle, and ſoluble in ammonia, producing a beautiful blue.

159. *Iron* is of a bluiſh grey colour; texture either fine grained, fibrous or denſe plates; ſapid and odorous; ſpecific gravity 7.600; the hardeſt, and moſt elaſtic and moſt tenacious metal; very ductile; fuſing at 130° Wedgewood, fuſion at firſt clammy, afterwards very fluid; igniting by ſtrong percuſſion, and inflaming by the colliſion of flint; magnetic. It is oxidized ſlowly in the air, eſpecially when moiſt; when heated in contact with air, it is changed to a black oxide, containing 20 to 27 of oxygen; fuſible, hard, brittle, lamellated, ſtill attracted by the magnet; afterwards into a brown, red, fine pulverulent oxide, not attracted by the magnet, containing 0.40 to 49 of oxygen. It burns with ſplendour and deflagration in oxygen gas, and is converted into a fuſed, black oxide; it decompoſes water ſlowly, and when ignited, very rapidly. In ſome inſtances it is diſſolved in hydrogen gas. Carbon united to iron, converts it into ſteel.

160. *Steel* is of a grey colour, brilliant and granular in its fracture; ſpecific gravity 7.795; harder than any of the metals, and more elaſtic, ductile, malleable, and fuſible at a lower temperature than pure iron. Its characteriſtic property is, that after being heated, if ſuddenly plunged into cold water, it becomes harder, more elaſtic, leſs pliable and brittle; but by being again heated and cooled ſlowly, it acquires its former ſoftneſs, pliability and ductility. Steel contains only ſome hundred parts of carbon, and is known chemically, by letting a drop of acid fall upon it, which produces a grey or black ſpot.

161. *Plumbago* consists of about 0.1 of iron, combined with carbon in its first degree of oxidizement. The phosphuret of iron is white, granulated, brittle, permanent in the air. Its sulphuret is yellow, hard, brittle, and very fusible, oxidizing slowly in a humid atmosphere. Iron forms alloys with arsenic, cobalt, manganese, bismuth, antimony, zinc, and tin. Iron is oxidized and dissolved by almost all the acids; oxides, black, brown, red. It gives glasses a brown, smoky, deep green, or black colour.

162. *Lead* is of a grey, blue, livid colour, streak grey, disagreeable taste and odour; specific gravity 11.352; soft; very laminable; hardens little under the hammer; very flexible; slightly tenacious; fusible at 594° Fahrenheit; volatile at a red heat; tarnished in the air; slightly oxidized by air and water; by heat and air it forms a grey, then a yellow, and, lastly, a red oxide, which is vitrifiable. Its phosphuret and sulphuret are brittle; it forms alloys with arsenic, bismuth, antimony, mercury, zinc, and tin; it is oxidized by, and combines with, the sulphuric, nitric, muriatic, phosphoric, and other acids. Its oxides impart to glass a uniform density, and strong refracting power.

163. *Tin* is pure, brilliant, white, sapid, and odorous; specific gravity 7.291 to 7.500, soft, flexible, and emitting a crackling noise when bent; fusing at 410° Fahrenheit; oxidizes slowly in the air; is converted, when fused, into a grey oxide; when red hot it burns vividly. Its sulphuret and phosphuret are lamellated and brittle; it forms alloys with arsenic, bismuth, antimony, mercury, and zinc; it is oxidized by many acids, and combines with the muriatic, fluoric, boracic, and carbonic acids. Its oxide is grey or white, unites readily with sulphur, and renders glasses opaque.

164. *Zinc* is bluish-white, lamellated, sapid, and odorous; specific gravity 7.190; laminable, soft, clogging the file; fusible at 700°; vaporizable; a powerful agent in the phenomena of galvanism; oxidized by fusion; at a red heat it catches fire, and emits white films of oxide, which contain about 0.33 oxygen; it is soluble in hydrogen; it combines with phosphorus, sulphur, arsenic, antimony, and mercury; it easily decomposes water; it is oxidized and dissolved by almost all the acids. Oxide, white films.

165. *Mercury*. Very bright white; specific gravity 3.563; freezing at —39; boiling at 248°; partly ductile and malleable; oxidizable by trituration in the air, and in a farther degree by the action of the air and heat; does not decompose water; forms amalgams with many metals; it is oxidized and dissolved by the sulphuric, nitric, and oxy-muriatic acids. Oxides, black, yellow, red.

166. *Tellurium*. White, lead-grey, very bright; harsh and brittle; lamellated; crystallizable; specific gravity 6.115; very fusible and volatile; burns with a blue and greenish flame, and a white

white ſmoke, having the odour of radiſh; oxide very fuſible into a ſtraw-coloured radiated glaſs; ſoluble in ſulphuric, nitric, and nitro-muriatic acids; unites with ſulphur. Oxides, black, white.

167. *Antimony.* White, very brilliant, lamellated; ſpecific gravity 6.702; moderately hard; pulverizable; fuſible at 809°; volatile when highly ignited; ſenſible taſte and ſmell; unalterable in cold air; oxidizable by air and heat; oxide fuſible into a yellow brown glaſs; decompoſes water when ignited; oxidized by the ſulphuric, nitric, and muriatic acids; combines with phoſphorus and ſulphur. Oxides, black, brown, orange, yellow, white; and colour glaſs yellow or hyacinthine.

168. *Biſmuth.* White, ſlightly yellow, in large ſpicular plates; pulverizable; ſpecific gravity 9.822; moderately hard; ſenſible odour and taſte; very fuſible and volatile at a high temperature; oxidizable by heat and air; oxide vitrifiable into a greeniſh yellow glaſs; oxidizable by boiling ſulphuric, nitric, and muriatic acids; unites with ſulphur. Oxides grey, yellow, dirty green, and colour glaſs of a greeniſh yellow.

169. *Manganeſe.* Small whitiſh grey globules; ſpecific gravity 6.850; very hard and very brittle; very difficult of fuſion; very oxidizable by expoſure to air; decompoſes water ſtrongly; is oxidized by the ſulphuric, nitric, muriatic acids; combines with many metals. Oxides white, red, brown, and black; colour brown, violet, or red; diſcolour glaſs coloured by iron.

170. *Nickel.* Yellow or reddiſh-white, granulated; ſpecific gravity nearly 9.; very difficult of fuſion, and of oxidization in the air; oxidizable by moſt of the acids, which it colours of a brilliant green; combines with phoſphorus, ſulphur, and the metals. Oxide light clear green, colouring glaſs brown, orange, red.

171. *Cobalt.* Reddiſh-grey, fine-grained, pulverizable; ſpecific gravity between 7.700 and 7.800; very difficult of fuſion; oxidizable before fuſion; unalterable by water; attacked by all the acids; combines with phoſphorus and ſulphur; its alloys are granulated, rigid, and brittle. Oxide deep blue or black, and colours glaſſes of a fine blue.

172. *Uranium.* An incoherent maſs of ſmall agglutinated globules, of a deep grey and pale brown; ſpecific gravity 6.440; very hard; very difficult of fuſion, even by long continued heat; is attacked by ſeveral of the acids; combines with phoſphorus. Oxide ſoluble in the alkalies, and very ſoluble in their carbonates. Oxide yellow, colouring glaſs of a greeniſh yellow, emerald green, or various brown.

173. *Titanium.* Agglutinated, hard, friable maſſes, cryſtallized, internally of a brilliant red; infuſible; unalterable by water; oxidizable by boiling ſulphuric, nitric, and muriatic acids. Oxides, blue, deep red, white.

ACIDI-

Acidifiable Metals.

174. *Chromum.* Agglutinated maffes of a whitifh grey colour; very hard, very brittle, and very infufible; appears to be difficult to oxidize and eafy to difoxidize; does not appear to decompofe water; not attacked by the fulphuric or muriatic acids; changed into a green oxide, and afterwards into a red acid, by the nitric acid diftilled from it. Oxide of a beautiful emerald green; acid a red or orange yellow powder.

175. *Molybdenum.* In black powder, or agglutinated, blackifh, friable maffes, having little metallic brilliance; fpecific gravity 6; by a ftrong heat changes into a white brilliant oxide in needles, and very acidifiable; oxidizable by boiling fulphuric acid, and acidifiable by the nitric acid. It forms a fulphuret, and its alloys are granulated and friable; acid white, pulverulent, ftyptic, fpecific gravity 8.400.

176. *Tungsten.* Small flightly adherent globules of a flate-grey; fpecific gravity 17.5; very infufible; oxidizable in the air by heat, and afterwards acidifiable. Oxide yellow, pulverulent, colouring glafs of a blue or brown colour; acid a white harfh powder; fpecific gravity 3.600.

177. *Arfenic.* Grey plates of a lively brightnefs; friable; fpecific gravity between 8.310 and 5.703; vaporizable at 540°; emitting a fmell like garlic; cryftallizable; oxidizable in the cold air; inflammable at a red heat, and fublimed in the form of the white oxide or acid; farther oxidizable by the nitric and nitrous acids; combines with phofphorus, fulphur, and many of the metals; foluble in hydrogen gas. Arfenious acid, white, cauftic, fublimable in white tetrahedrons, tranfparent, vitreous; fpecific gravity between 4 and 5. Arfenic acid, white, tranfparent, cauftic; fpecific gravity 3.391; fufible; not cryftallizable.

178. *Columbium* has hitherto been examined only in the ftate of columbic acid, which is a white powder infoluble in water.

Acids with Simple Bases, and their Compounds.

179. The fimple fubftances, in their extreme ftates of oxygenizement, conftitute a ftrongly marked clafs of bodies termed Acids, which are diftinguifhed by the following properties:

a. Their tafte is four;

b. They change vegetable blues to red;

c. They combine with water in almoft any proportion, without fuffering any change in their properties, except what depend on dilution.

d. They

d. They unite with alkalies, earths, metallic oxides; forming compounds with them, poſſeſſed of new properties, and commonly known by the names of Neutral and Metallic Salts.

180. Beſides ſome of the metals, hydrogen is the only ſimple ſubſtance which does not ſeem to be capable of acidification; and, on the other hand, there are three acids, the muriatic, boracic, and fluoric, with whoſe compoſition we are ſtill unacquainted.

181. *Carbonic acid gas* is tranſparent, colourleſs, without ſmell, irreſpirable, and incapable of ſupporting inflammation; its ſpecific gravity is 0.0018. Water abſorbs an equal bulk of it at 41°, acquiring a ſpecific gravity of 1.0015, and an agreeable acidity and ſparkling appearance, eſpecially if heated to 88°. It is ſeparated from water by freezing or boiling. It is alſo abſorbed by alcohol, oil of turpentine, and olive oil. It contains 17.88 carbon, and 82.12 oxygen, or 28 charcoal and 72 oxygen. Its compounds are denominated Carbonates.

182. The *carbonates* always preſerve their alkaline properties in ſome ſlight degree. They are decompoſed by all the acids, forming a briſk effervеſcence, which is colourleſs. The carbonates of the metals very much reſemble their oxides.

183. *Nitrous acid* is of a brown or red colour, exceedingly volatile and emitting an intolerable and ſuffocating odour. By the addition of water, its colour is ſucceſſively changed to blue, green, and yellow. In the ſtate of vapour, it is abſorbed by water, oil, and ſulphuric acid. It conſiſts of ſomewhat leſs than three parts of oxygen, and one of nitrogen, or rather of nitric acid and nitrous oxide. It forms Nitrites.

184. The *nitrites* are characterized by their emitting the nitrous acid in orange fumes, on the addition of ſulphuric acid.

185. *Nitric acid* conſiſts of nitrogen combined with oxygen. It is liquid, colourleſs, and tranſparent. It is very corroſive, and tinges the ſkin of a yellow colour. It has a ſtrong affinity for water, and abſorbs it from the atmoſphere. When moſt concentrated, its ſpecific gravity is 1.5543. It produces heat when mixed with water. It is decompoſed by many ſubſtances. Light converts it in part into nitrous acid. When entirely deprived of water, it ſets fire to oils, to ſulphuretted hydrogen gas, to iron filings, when perfectly dry; and to zinc, biſmuth and tin, when poured on them in a ſtate of fuſion. It oxygenizes all the metals, except gold, platinum, and titanium. It conſiſts of four parts, by weight, of oxygen, and one of nitrogen.

186. The *nitrates*, by the action of fire, furniſh impure oxygen gas, mixed with nitrogen, and are reduced to their baſes. By the action of concentrated ſulphuric acid, they emit a white vapour, and they are capable of ſupporting combuſtion.

187. *Sulphurous acid gas* is colourleſs, incapable of maintaining combuſtion, and deleterious when reſpired. It has a ſtrong ſuffocating

cating odour; its ſpecific gravity is 0.0046, or 0.00251. Water at 54° rapidly abſorbs one-fourth of its weight of this gas, and when ſaturated, acquires the ſpecific gravity of 1.040. It is again expelled from it by heat, but not by freezing. It is alſo abſorbed by oils and ether. When water is preſent, it is converted by oxygen gas into ſulphuric acid. It is decompoſed by hydrogen, carbon, and ſulphuretted hydrogen gas, when aſſiſted by heat. It oxidizes iron, zinc, and mangaueſe. It conſiſts of 85 ſulphur, and 15 oxygen.

188. The *ſulphites*, by the action of heat, furniſh ſulphur, and become ſulphates. They are alſo converted into ſulphates, with effervescence, and exhalation of ſulphurous vapours, by the ſulphuric, nitric, muriatic, and other acids, and gradually, by expoſure to the atmoſphere when dry, and very quickly when diſſolved.

189. *Sulphuric acid* is compoſed of ſulphurous acid and oxygen. It may be obtained in a cryſtallized or glacial form, but generally exiſts as a denſe liquid; ſpecific gravity 1.85; ſlightly viſcid; tranſparent and colourleſs; without ſmell; of a ſtrong acid taſte. In a ſufficient degree of cold it freezes; it boils at 572°. It has a ſtrong attraction for water, abſorbing it rapidly from the atmoſphere, and producing conſiderable heat when mixed with it. It is decompoſed by moſt inflammable ſubſtances. It does not oxidize gold, platinum, tungſten, or titanium. It decompoſes the alkaline and earthy ſulphurets, and reduces all organic ſubſtances to charcoal. In medicine it is a powerful refrigerent and antiſeptic. It contains 56 ſulphur, and 44 oxygen.

190. The *ſulphates* form ſulphurets, when heated to redneſs with charcoal, and furniſh copious precipitates with ſolutions of barytes.

191. *Phoſphorous acid* is a white fluid of an oily appearance. It has a fetid odour, and diſagreeable taſte; and gives out a thick white ſmoke and vivid flame when ſtrongly heated. It is decompoſed by ignited charcoal. The proportions of phoſphorus and oxygen have not been aſcertained.

192. The *phoſphites* are fuſible, and when heated in cloſe veſſels furniſh a little phoſphorus, and become phoſphates. When heated in the open air, they emit a phoſphoreſcent light, and often flaſhes of flame, accompanied by a ſtrong ſmell of garlic, and a thick white vapour, and are converted into phoſphates.

193. *Phoſphoric acid* is compoſed of phoſphorous acid and oxygen. It is cryſtallizable, fuſible and vitreſcent. Its ſpecific gravity is 2.687. It readily attracts moiſture from the atmoſphere, and then its ſpecific gravity becomes 1.417. Its mixture with water produces little increaſe of temperature. It is decompoſed at a high temperature by hydrogen and carbon, and by ſeveral of the metals. It conſiſts of 100 phoſphorus and 154 oxygen.

194. The

194. The *phosphates* are crystallizable, fixed, fusible, vitrifiable, and phosphorescent. They are not decomposed by charcoal. They are soluble in nitric acid without effervescence, and precipitable from that solution by lime water.

195. *Arsenious acid* is of a white colour; has a sharp acrid taste, and an alliaceous smell; specific gravity 3.706; is soluble in eighty parts of water at 60°, and in fifteen at 212°. At 283° it sublimes; if heated in close vessels is vitrified, and its specific gravity becomes 5.000. It consists of 93 of arsenic, and 7 of oxygen, and is a most virulent poison.

196. The *arsenites* are scarcely known; but their acid is driven off by heat, and is precipitated by all the acids.

197. *Arsenic acid* consists of arsenious acid and oxygen. It is not crystallizable; has an acid caustic taste, and is not volatile, but very fixed and vitrifiable. Its specific gravity is 3.391. It attracts moisture from the atmosphere, and is soluble in two-thirds of its weight of water. By a red heat it loses part of its oxygen, and becomes arsenious acid. It consists of 8 parts of arsenious acid, and 1 of oxygen, or of 91 arsenic, and 9 oxygen.

198. The *arseniates* are decomposed by charcoal at a high temperature.

199. *Tungstic acid* is a white powder of a rough, metallic, and feebly acid taste. Its specific gravity is 3.600. It is soluble in twenty parts of boiling water. Exposed to heat it becomes yellow, brown, and lastly black; emits no smoke, and is not fused; but loses its solubility in water. The sulphuric acid changes its colour to blue, and the nitric and muriatic acids to a fine yellow.

200. The *tung tates* are little known.

201. *Molybdic acid* is a white powder of an acid but metallic taste. Its specific gravity is 3.400. It is not altered in the air. It is melted, and is fixed in a covered crucible; but when the cover is removed, it sublimes in a white smoke, which condenses in brilliant yellow scales. It dissolves in 500 parts of hot water. By heat it forms a blue solution in sulphuric acid. It is also soluble in the muriatic, but not in the nitric acid.

202. The *molybdates* are scarcely known.

203. *Chromic acid* is a red or yellow orange powder, of a particular, rough, metallic taste. It is soluble in water, and may be obtained in ruby-coloured crystals. It is decomposable by heat and light, passing to the state of green oxide. It is reduced by heat and charcoal. It oxygenizes the muriatic acid.

204. The *chromates* are of a yellow or orange colour.

205. *Columbic acid* is a white powder, which reddens litmus paper, although it seems insoluble in water. It is soluble in boiling sulphuric and muriatic acids, but not in the nitric. It is precipitated from its solutions by water, potass, and soda. With

prussiate

pruſſiate of potaſs it forms an olive green precipitate, and with tincture of galls, a deep orange precipitate. It combines with potaſs and ſoda, and expels carbonic acid. It does not unite with ammonia.

206. *Columbate* of potaſs reſembles boracic acid in its appearance.

207. Other metallic oxides ſeem capable of acidification; but our information reſpecting them is not yet ſufficient to enable us to enumerate their properties.

208. The following acids have not yet been decompoſed.

209. *Muriatic acid gas* is tranſparent and colourleſs. It deſtroys life, and extinguiſhes flame. Its ſpecific gravity is 0.002315. Water is capable of diſſolving about an equal weight of it. Its ſpecific gravity is then 1.500; it is generally of a pale yellow colour; is very volatile, and emits white fumes of a peculiar unpleaſant odour. The gas decompoſes alcohol and oil, and deſtroys putrid exhalations. It is farther oxygenated by the nitric acid.

210. The *muriates* have a more or leſs pure ſalt taſte. They are not acted upon by any combuſtible body. They are all ſoluble in water, and are the moſt volatile and moſt difficultly decompoſed by heat of the neutral ſalts. They emit white fumes with the ſulphuric acid, and oxy-muriatic acid gas with the nitric.

211. *Oxygenized muriatic acid* (or by contraction, oxy-muriatic acid) *gas* is compoſed of muriatic acid 84 and oxygen 16. It is of a yellow colour, and very pungent ſmell, and acrid taſte. It ſupports flame, but is deleterious when reſpired. It deſtroys the vegetable colours. It oxygenizes all oxygenizable ſubſtances, (14. B. *b b.*), and repaſſes to the ſtate of muriatic acid. It is decompoſed by light. It does not unite readily with water. Water when ſaturated with it weighs 1.003.

212. The *oxy-muriates* give out very pure oxygen gas by the action of caloric, and become muriates. Their acid is expelled from them with noiſe, by the ſtronger acids; and they inflame combuſtible bodies, even ſpontaneouſly, and with detonation.

213. *Hyper-oxygenized muriatic acid* conſiſts of muriatic acid 35, and oxygen 65. It has been examined by M. Chenevix, whoſe paper we have not yet ſeen.

214. *Hyper-oxygenized muriates.*

215. *Fluoric acid gas* is inviſible, irreſpirable, and extinguiſhes flame. It has a pungent ſmell, approaching to that of muriatic acid. It is heavier than common air. It corrodes the ſkin. It is abſorbed by water. Its moſt remarkable property is that of diſſolving ſilica. Its compoſition is unknown.

216. *Fluates* afford, when treated with concentrated ſulphuric acid, a vapour which corrodes glaſs, and from which the ſilica is afterwards precipitated by water.

217. *Boracic*

217. *Boracic acid* exists in the form of small, shining, laminated crystals. Specific gravity is 1.479. It is fixed and vitrifiable in the fire. It is soluble in fifty parts of boiling water. It is also soluble in alcohol, to which it imparts the property of burning with a yellow flame. It oxidizes only iron and zinc.

218. *Borates* are vitrifiable; and their concentrated solutions afford, when heated with the strong sulphuric acid, brilliant, lamellated crystals.

Of Compound Oxides and Acids.

219. We have already noticed all the binary combinations which oxygenizable substances form with oxygen. These in general have considerable permanence in their characters, and admit of few variations in the proportions of their constituent principles. But oxygen is capable of entering into combination at the same time with more than one of these simple oxygenizable substances, forming oxides and acids, with double or triple bases, which, in consequence of the increased number of principles, are subject to greater variations in the proportion of these, and are less permanent in their characters. These are, however, the substances in which pharmacy is chiefly engaged, as they comprehend the whole of the vegetable and animal kingdoms. Chemists borrowing their arrangement from natural history, have almost always considered them under the title of Vegetable and of Animal Substances. But such an arrangement is so totally unconnected with the principles of chemistry, that the imperfect state of our knowledge is the only apology that can be offered for its continuance; and imperfect as that knowledge is, we are persuaded, that even a very imperfect attempt, at a chemical classification of these bodies, is to be preferred.

Compound Oxides.

220. The compound oxides are characterized by their great alterability, and by their affording, when burnt with a sufficient quantity of oxygen, both water and carbonic acid. They may be divided into

a. Ternary oxides (223.), containing various proportions of carbon, hydrogen and oxygen.
b. Quaternary oxides (261.), consisting of nitrogen, carbon, hydrogen and oxygen.

221. The ternary oxides coincide nearly with the class of vegetable substances, and are characterized

a. By their being converted entirely into water and carbonic acid gas, when completely decomposed by oxygen.
b. By their undergoing the acid fermentation, from the action of air and water.

c. And by their furniſhing nitrous gas and carbonic acid, when treated with nitric acid.

222. The quaternary oxides coincide nearly with animal ſubſtances, and are characterized,

a. By their furniſhing, when decompoſed by oxygen, ammonia as well as water and carbonic acid gas.
b. By their becoming putrid from the action of air and water.
c. And by their furniſhing nitrogen gas when treated with nitric acid.

TERNARY OXIDES.

223. The ternary oxides (221.), may be ſubdivided into gaſeous, fluid, or eaſily fuſible, and ſolid infuſible. In general the gaſeous and volatile compound oxides, contain the largeſt proportion of hydrogen, and the infuſible denſe oxides the largeſt proportion of carbon.

224. *Hydro-carbonates* (carburetted hydrogen) are inviſible elaſtic gaſes of a ſtrong diſagreeable ſmell, irreſpirable and incapable of ſupporting combuſtion, inſoluble in water, burning with oxygen with a blue lambent flame, and producing carbonic acid gas and water. From their furniſhing charcoal, when decompoſed by melted ſulphur, and from the products of their combuſtion, they evidently contain oxygen. There are different ſpecies of hydrocarbonates depending on the proportion of their conſtituents, which, from their ſpecific gravities, are commonly diſtinguiſhed into heavy and light hydro-carbonates.

225. The light hydro-carbonates are obtained by the diſtillation of wet charcoal, or by tranſmitting the vapour of alcohol through an ignited tube: ſpecific gravity 0.00059 to 0.00064. The heavy hydro-carbonates are obtained, by diſtillation from camphor, ether, animal and vegetable ſubſtances, and by collecting the gas of marſhes: ſpecific gravity 0.00080 to 0.00082. The latter contain more carbon, require more oxygen for their decompoſition, and furniſh a larger proportion of carbonic acid gas, and leſs water than the former.

226. *Alcohol* is a tranſparent colourleſs liquid, of an agreeable penetrating ſmell, and pungent burning taſte: ſpecific gravity 0.8 It remains fluid in the greateſt natural or artificial cold. It boils at 176°, and in vacuum at 56°, and it is ſoluble in air.

227. Alcohol unites with water in every proportion. During the combination, caloric is evolved, and the ſpecific gravity of the compound is greater than the mean of thoſe of the components.

228. Alcohol diſſolves about 60 of ſulphur, when they are preſented to each other in the ſtate of vapour. It alſo diſſolves a little phoſphorus. Theſe ſolutions are decompoſed by water. It diſſolves the boracic and carbonic acids, ammonia, ſoda and potaſs, and is the means employed to obtain the two laſt in a ſtate of

purity.

purity. Its action on the salts is various. It dissolves the volatile oils, resins, soaps, balsams, camphor, sugar, tannin, extractive, and in part the gummy resins.

229. Alcohol is very inflammable, and when kindled it burns entirely away with a blue flame without smoke. The products of its combustion are carbonic acid and water. It is also decomposed by being transmitted in the state of vapour through a red-hot porcelain tube; by being heated with the fixed alkalies; and by the action of the sulphuric, nitric, oxy-muriatic and acetic acids.

230. From Lavoisier's experiment on the combustion of alcohol, it was found by calculation to consist of 51.72 oxygen, 29.88 charcoal, and 18.40 hydrogen; but by correcting the calculation according to Morveau's experiments, proving the composition of charcoal, from the same experiment alcohol would seem to consist of 65.05 oxygen, 18.22 carbon, and 16.73 hydrogen.

231. *Ether* is a transparent colourless fluid, of a very fragrant odour, and hot pungent taste: specific gravity 0.758. It freezes and crystallizes at —46°. It boils at 98°, and in vacuum at —20°. It is very soluble in air, and during its evaporation it produces an intense degree of cold.

232. It is soluble in ten parts of water, and in alcohol in every proportion. It dissolves a small portion of phosphorus, and the solution is decomposed by alcohol. It absorbs nitrous gas, combines with ammonia, and dissolves the volatile oils, resins, and caoutchouc.

233. Ether is extremely inflammable, and burns with a white flame. Its vapour explodes when kindled in contact with oxygen gas. It is decomposed by sulphuric acid, oxy-muriatic acid gas, and by being transmitted through a red-hot porcelain tube. Its constituents are oxygen, carbon and hydrogen, the proportion of the last of which seems to be greater, and of the first less than in alcohol.

234. *Fixed oils* are transparent, more or less coloured, somewhat viscid, inodorous fluids, having a mild taste and unctuous feel. In the different species the specific gravity varies from 0.9403 to 0.9153. The point of congelation also differs considerably, but in general it is within the range of the ordinary temperatures of the atmosphere. Their boiling point exceeds 600°, and by being converted into vapour, they become empyreumatic.

235. Fixed oils do not seem capable of combining with charcoal, but are freed from impurities, by being filtered through hot charcoal. When assisted by heat, they dissolve sulphur and phosphorus. They may be blended with sugar and gum by trituration as in emulsions, and they dissolve the volatile oils, and resins, and gummy resins. With the alkalies and earths they form soaps,

and with metallic oxides plasters. They are not soluble in water or in alcohol.

236. They unite readily with oxygen, which renders them concrescible. Those oils which dry without losing their transparency, as linseed oil, are termed drying oils, in contradistinction to the fat oils which from exposure become white, opaque and thick, and remain greasy, such as oil of olives or of almonds. When they become rancid, they undergo a farther degree of decomposition, and are found to contain sebacic acid.

237. Oil in the state of vapour is inflammable, and burns with a white flame. When the combustion is complete, the products are carbonic acid gas and water, but in general soot is deposited.

238. The sulphuric acid renders the fixed oils brown and thick, and converts them into water and charcoal. The nitric acid oxygenizes them. The oxygenized muriatic acid blanches them, and renders them concrete like tallow or wax. The oils oxidize several of the metals, and are oxidized by several of their oxides.

239. From Lavoisier's experiment on the combustion of olive oil, its constituent principles were estimated at 79 charcoal and 21 hydrogen; but by correction they appear to be 50.39 carbon, 20.23 hydrogen, and 29.38 oxygen.

240. *Fat* and *tallow* scarcely differ from the fixed oils, except in being more concrete and more disposed to rancidity. Fat melts between 92° and 127°. Tallow is still less fusible. They cannot be converted into vapour without suffering decomposition, and, when melted, leave, like oil, a greasy stain on paper.

241. *Wax* is a solid, of considerable consistence, granulated and crystalline in its fracture, of a white colour, and without any remarkable odour or taste. It softens and becomes plastic when very slightly heated; at 45° it melts; at a higher temperature it is in part vaporized and decomposed, and its vapour is inflammable. It resists in a remarkable degree the action of the acids; but in most of its other properties it resembles the fixed oils. From its combustion it appears to consist of carbon 53.12, hydrogen 16.91, and oxygen 29.97; or, according to the former calculation, of 82.28 charcoal, and 17.72 hydrogen.

242. *Spermaceti* may be obtained crystallized in white argentine plates, of an unctuous feel and taste, and a vapid smell. It melts between 92° and 95°, and at a higher temperature may be sublimed almost unchanged. Its vapour is inflammable, and its flame is bright, clear and without smell. By exposure to air it becomes rancid. It is soluble, especially by the assistance of heat, in alcohol and in ether. In its other properties it agrees with the fixed oils, with which it unites very readily by fusion. Muscular flesh by long maceration in water is converted into a substance very analogous to spermaceti, but more fusible, melting at 82°; and biliary calculi often consist of another, which is much less fusible,

sible, requiring a heat of 192° for its fusion. For all these varieties, Fourcroy has proposed the generic name *Adipocere*.

243. *Soaps* are combinations of the fluid or concrete fixed oils with alkalies, earths, or metallic oxides.

244. The alkaline soaps have an unpleasant taste and peculiar smell, form a milky solution with water, and a transparent one with alcohol, and are powerfully detergent. White soap is made of soda and olive oil or tallow. Brown soap contains also resin. Soft soap consists of potass and whale oil: The white spots in it are from the addition of a little tallow. The volatile liniment of the pharmacopeias is a soap of ammonia and olive oil.

245. The alkaline soaps are decomposed by all the earthy salts. The alkali of the soap combines with the acid of the salts, and an earthy soap is formed from the union of the earth and oil. The earthy soaps are insoluble in water.

246. The alkaline soaps are decomposed in the same way by the metallic salts. The metallic soaps are also insoluble in water: many of them are soluble in oil, and some of them in alcohol.

247. *Plasters* are also combinations of oil with metallic oxides. They are prepared by their immediate action on each other. Olive oil and litharge are most commonly employed.

248. *Volatile oils* differ from the fixed oils most remarkably in being vaporized unchanged by a heat under 212°; by evaporating completely without leaving a stain on paper; by being sapid, often pungent and odorous; and by being soluble in alcohol, and to a certain degree in water.

249. They are more inflammable than the fixed oils, and burn with a large white flame, emit a great deal of smoke, and require more oxygen for their combustion. By exposure to air they become coloured and thick, and are at last converted into an almost inodorous resin. The acids act on them with great violence, and are even capable of inflaming them. On the other hand, they resist considerably the action of the alkalies. In their other general properties they agree with the fixed oils, from which they seem to differ in composition, only in containing a larger proportion of hydrogen.

250. In other respects, these oils are infinitely varied, especially in their taste and odour. Some are as limpid as water, others are viscid, others congeal on a slight diminution of temperature, and are even naturally concrete, and others are capable of forming crystallizations. Their predominant colours are the different shades of yellow and red, but there are also blue, green and glaucous essential oils. Their specific gravity varies from 0.8697 to 1.0439.

251. *Resins* are concrete substances, possessing a certain degree of transparency, and are generally of an amber or brownish red colour. Their texture is homogeneous, and their fracture vi-

treous. They are eafily reduced to powder, which readily agglutinates. Their fpecific gravity varies from 1.0452 to 1.2289. They have little tafte or fmell They are electrics. Expofed to a certain degree of heat, they melt without fuffering alteration, but they are decompofed when converted into vapour. Their vapour is inflammable, and burns with a large ftrong flame and a great deal of foot

252. Refins unite by fufion with fulphur, difficultly with phofphorus. They are foluble in alcohol, the fixed and the volatile oils. They are infoluble in water, and are not acted upon by the acids, alkalies, metals or metallic oxides.

253. *Camphor* is a concrete friable fubftance, of a white colour, with a confiderable degree of tranfparency, and a cryftalline appearance, fpecific gravity 0.9887. Its tafte is bitter and acrid, and its fmell penetrating and peculiar. It is evaporated unchanged by a heat of 145°, but may be melted by fuddenly expofing it to 302°. The vapour when condenfed cryftallizes in hexagonal plates. Its vapour is exceedingly inflammable, and when kindled it burns with a very white flame and a great deal of fmoke, and leaves no refiduum. The products of its combuftion are carbonic acid gas, charcoal and water.

254. Camphor is foluble in alcohol and in the acids. From thefe folutions it is precipitated by water. It is alfo foluble in hot oils, both volatile and fixed, but on cooling feparates from them in plumofe cryftals. It is infoluble in water, and is not acted on by the alkalies, metals or metallic oxides. By repeated diftillation with nitric acid, it is converted into a peculiar acid. It exifts in many vegetables, but is chiefly procured from the laurus camphora.

255. *Starch* is a fine white powder, generally concreted in friable hexagonal columns, fmooth to the feel, and emitting a particular found when compreffed. It has neither tafte nor fmell. It is decompofed by heat. It is not foluble in cold water or in alcohol. Warm water converts it into a kind of pafte, which on cooling affumes a gelatinous form. This jelly when dried by heat becomes tranfparent and brittle like gum, but is not foluble in cold water. Starch, after being thus diffolved in hot water, cannot be reduced to its original ftate.

256. *Sugar* is a hard, but brittle fubftance, of a white colour, difpofed to form femi-tranfparent cryftallizations, of a fweet tafte; and without fmell. When heated fufficiently it melts, is decompofed, emits a peculiar fmell (caromel), and becomes inflamed.

257. Sugar at 40° is foluble in its own weight of water, and in ftill lefs at 212°. It is alfo foluble in about four parts of boiling alcohol. It combines with volatile oils, and renders them mifcible with water. It alfo unites with potafs and lime. It is decompofed

compoſed by the concentrated ſulphuric and nitric acids. According to Lavoiſier's experiments, it conſiſts of 71.76 oxygen, 17.89 carbon, and 10.35 hydrogen; or, according to the original calculation, of 64 oxygen, 28 charcoal, and 8 hydrogen.

258. Saccharine matter is contained in the juices of many plants, but is principally obtained from the ſugar-cane, ſugar-maple and beet-root. Manna and honey conſiſt chiefly of ſugar.

259. *Jelly* is contained in the juices of acid fruits. It is depoſited from them in the form of a ſoft tremulous maſs, almoſt colourleſs, and agreeable to the taſte. It is ſcarcely ſoluble in cold water, but very ſoluble in hot water; and when the ſolution cools, it again aſſumes a gelatinous form. With ſugar its combination is well known. By long boiling it loſes this property of congealing. When dried, it becomes tranſparent, hard, and brittle, reſembling gum. It combines with the alkalies, and is converted by the nitric acid into oxalic acid.

260. *Tannin*, when completely dried, is a brittle ſubſtance, of a black colour, and vitreous fracture; it is ſoluble in alcohol; it is much more ſoluble in hot than in cold water: The ſolution has a dark-brown colour, aſtringent taſte, and peculiar ſmell; it is precipitated by acids, in the form of a viſcid fluid, like pitch; it is alſo precipitated by carbonate of potaſs in yellow flakes; it forms an inſoluble elaſtic precipitate with gelatin, and dark blue or black precipitates with iron.

Quaternary Oxides, (222).

261. *Gum*, when pure, is tranſparent and colourleſs, eaſily reduced to powder; without ſmell, and of a ſlightly ſweetiſh taſte. It is very ſoluble in water. The ſolution of gum in water conſtitutes mucilage; it is thick and adheſive, and ſoon dries when expoſed to the air. Gum is alſo ſoluble in the weak acids; but is totally inſoluble in alcohol, which even precipitates it from mucilage. When triturated with a ſmall quantity of oil or reſin, it renders them miſcible with water. Gum is very little diſpoſed to ſpontaneous decompoſition: even mucilage may be kept for many years without change; but it is decompoſed by the ſtrong acids, and forms precipitates with ſome metallic ſolutions. By oxygenizement with nitric acid, it forms ſucceſſively, mucous, malic and oxalic acid; with oxy muriatic acid it forms citric acid; When expoſed to heat, it does not melt, but ſoftens, ſwells, and becomes charred and incinerated. Its products are carbonic acid, and carburetted hydrogen gas, empyreumatic oil, and a conſiderable quantity of acetous acid, combined with a little ammonia. Fourcroy and Vauquelin ſay it conſiſts of 65.38 oxygen, 23.08 carbon, and 11.54 hydrogen. Cruickſhanks has however demonſtrated, that it contains nitrogen and lime, and has rendered it

probable that it differs from sugar in containing more carbon and less oxygen.

262. *Extract* is soluble in water, especially when hot, and in alcohol; it is also soluble in the weak acids, but is insoluble in ether. It attracts moisture from the atmosphere; and when dissolved in water, it absorbs oxygen, and becomes insoluble in water; it is also altered and precipitated by oxy-muriatic acid; it has a strong affinity for alumina, and decomposes several metallic salts. It is found in many plants, but can scarcely be procured separate.

263. *Caoutchouc*, when smoke has not been employed in drying it, is of a white colour, soft, pliable, extremely elastic, and difficultly torn; specific gravity 0.9335; inalterable by exposure to air; insoluble in water, but softened, so that its edges may be made to adhere to each other; insoluble in alcohol; soluble, without alteration, in ether washed with water, and in rectified petroleum; soluble in volatile oils; and fusible by heat, but altered, so that it remains glutinous after evaporation and cooling; inflammable; insoluble in alkalies, and decomposed by the strong acids. Its decomposition proves that it consists of carbon, hydrogen, nitrogen, and oxygen. It is obtained principally from Hævea caoutchouc and Jatropha elastica in South America, and the Ficus Indica, Artocarpus integrifolia, and Urceola elastica in the East Indies.

264. *Suber* constitutes the epidermis of all vegetables. On the quercus suber it is thickened by art in a surprising degree, and forms common cork. It is a light, elastic substance, very inflammable, burning with a bright white flame, and leaving a very spongy charcoal; it is not soluble in any menstruum; it is decomposed by nitric acid, and is converted into a peculiar acid, and an unctuous substance.

265. *Wood*, (Lignin?), when separated from all the other matters with which it is combined in vegetables, is a pulverulent, fibrous, or lamellated body, more or less coloured, of considerable weight, without taste or smell, and insoluble in water or alcohol. When exposed to sufficient heat, it is decomposed without melting or swelling, and is converted into charcoal without any change of form. Its products, by combustion, are carbonic acid, and carburetted hydrogen gas, water, empyreumatic oil, and acetous acid. By nitric acid, it is changed into the malic, oxalic, and acetous acids. It forms, as it were, the skeleton of all vegetables.

266. *Gelatin*, when exsiccated, is a hard, elastic, semi-transparent substance, resembling horn, having a vitreous fracture; inalterable in the air, soluble in boiling water, and forming with it a gelatinous mass on cooling; it is also soluble, but less readily, in cold water. It is completely insoluble in alcohol, and is even precipitated by it from its solution in water; it is soluble in acids,

acids, even when much diluted, and also in the alkalies; but its most characteristic property is its affinity for tannin, with which it forms a thick, yellow precipitate, which soon concretes into an adhesive, elastic mass, readily drying in the air, and forming a brittle substance, of a resinous appearance, exactly resembling over-tanned leather. The solution of gelatin in water, first becomes acid, and afterwards putrid. When decomposed by nitric acid or heat, its products shew that it contains only a small proportion of nitrogen.

267. It is principally contained in the cellular, membranous, and tendinous parts of animals, and forms an important article of nourishment. Glue and isinglas, which are much employed in the arts, are almost pure gelatin.

268. *Albumen* is a brittle, transparent substance, of a pale yellow colour, and glutinous taste, without smell, readily soluble in cold water, insoluble in boiling water, but softened and rendered opaque and white when thrown into it; insoluble, and retaining its transparency in alcohol; swelling; becoming brown, and decrepitating when suddenly exposed to heat.

269. It generally exists in the form of a viscid, transparent fluid, having little taste or smell, and readily soluble in cold water. When exposed to a temperature of 165°, it coagulates into a white opaque mass, of considerable consistency; it is also coagulated by alcohol and acids. Albumen forms with tannin a yellow precipitate, insoluble in water.

270. Coagulated albumen is not soluble either in cold or in boiling water. It is soluble, but with decomposition, in the alkalies and alkaline earths. It is also soluble in the acids, greatly diluted, but may be precipitated from them by tannin. When slowly dried, it becomes brittle, transparent, and of a yellow colour, resembling amber. When decomposed by nitric acid or heat, it is found to contain more nitrogen than gelatin does.

271. White of egg consists of albumen, combined with a very little soda, sulphur, and phosphate of lime. Albumen also forms a large proportion of the serum of the blood, and is found in the sap of vegetables. It is highly nutritious.

272. *Fibrin* is of a white colour, without taste or smell, tough and elastic, but when dried, hard and almost brittle. It is not soluble in water or in alcohol. The concentrated caustic alkalies form with it a kind of fluid viscid soap. It is dissolved even by the weak and diluted acids; but it undergoes some change, by which it acquires the properties of jellying, and being soluble in hot water. By maceration in water, it becomes putrid, and is converted into adipocere (242.). By long boiling in water, it is rendered tough and corneous. When decomposed by heat or nitric acid, it is found to contain a large proportion of nitrogen.

273. It forms the bafis of the mufcular fibre, and is contained in fmall quantity in the blood. The gluten of wheat does not feem to differ from it in any important property. It is eminently nutritious.

274. *Urea* is obtained in the form of brilliant micaceous cryftals, in groups, forming a mafs of a yellowifh white colour, adhering to the veffel containing it; difficult to cut or break; hard and granulated in its centre, gradually becoming foft, and of the confiftence of honey on its furface; of a ftrong, difgufting, alliaceous odour; of an acrid, pungent, difagreeable tafte. It is deliquefcent; its folution caufes a fenfible diminution of temperature; it is alfo foluble in alcohol, efpecially when affifted by heat. On cooling, the alcoholic folution depofites cryftals of pure urea.

275. By the application of heat it melts, fwells rapidly, and at the fame time begins to be decompofed; emitting an infupportably fetid odour, and is converted into carbonate of ammonia, and carburetted hydrogen gas. Urea is charred by concentrated fulphuric acid; diluted fulphuric acid aided by heat, is capable of converting it entirely into acetous acid and ammonia; concentrated nitrous acid decompofes it with rapidity; diluted nitric acid aided by heat, changes it almoft entirely into carbonic acid gas and nitrogen gas; muriatic acid diffolves and preferves it; oxy-muriatic acid converts it into ammonia and carbonic acid; potafs aided by heat, converts it into the carbonate and acetate of ammonia. It influences the form of the cryftallization of the muriates of ammonia and foda.

276. The folution of urea in water varies in colour from a deep brown to pale yellow, according to its quantity. With eight parts of water it is perfectly fluid; it fcarcely undergoes fpontaneous decompofition when pure, but the addition of fome albumen occafions it to putrefy rapidly. By repeated diftillation it is completely converted into carbonate of ammonia. With nitric acid it forms a pearly cryftalline precipitate; it alfo forms precipitates with the nitrates of lead, mercury, and filver. It is not precipitated by tannin or gallic acid.

277. Urea is only obtained from urine by evaporating the folution of a thick extract of urine in alcohol.

Compound Acids.

278. The compound acids poffefs the properties of acids in general (179.); but they are diftinguifhed from the acids with fimple bafes, by their great alterability.

279. The ternary acids coincide nearly with the vegetable acids, and are characterized by their being converted entirely into water and carbonic acid when completely decompofed by oxygen.

They

They consist of various proportions of carbon, hydrogen, and oxygen.

280. The quaternary acids coincide nearly with the animal acids; and are characterized by their furnishing ammonia as well as water and carbonic acid when decomposed.

Ternary Acids.

281. *Acetous acid* is a transparent and colourless fluid, of an acid taste, and peculiar pleasant odour; specific gravity 1.0005. It reddens vegetable blues; at —22° it congeals and crystallizes; it is converted into vapour about 212°; it combines with water in every proportion; it combines with sugar, mucilage, volatile oils, alcohol; it dissolves boracic acid, and absorbs carbonic acid gas; it is formed by the acidification of sugar, and by the decomposition of some other ternary and quaternary compounds by heat or acids.

282. It is decomposed by the sulphuric and nitric acids, and by heat. The proportions of its constituents are not ascertained.

283. *Acetites* are very soluble in water; are decomposed by heat, by exposure of their solutions to the air, and by the stronger acids.

284. *Acetic acid* is transparent and colourless, of an extremely pungent and acrid smell, capable of reddening and blistering the skin. It is very volatile, and its vapour is highly inflammable. It seems to differ from acetous acid, in containing more oxygen and less carbon.

285. *Acetates* are scarcely known.

286. *Oxalic acid* is obtained in quadrangular crystals, transparent and colourless, of a very acid taste. They are soluble in their own weight of water at 212°, and in about two waters at 65°. It reddens the vegetable blues readily. Boiling alcohol dissolves somewhat more than half its weight, and at an ordinary temperature a little more than one-third. It is soluble in the muriatic and acetous acids.

287. It is decomposed by heat, sulphuric acid, and nitric acid. According to Fourcroy, it consists of 77 oxygen, 13 carbon, and 10 hydrogen.

288. *Oxalates* are decomposed by heat; form a white precipitate with lime water, which is soluble in acetous acid after being exposed to a red heat. The earthy oxalates are very sparingly soluble in water; the alkaline oxalates are capable of combining with excess of acid, and become less soluble.

289. *Tartarous acid* varies in the form of its crystals; its specific gravity is 1.5962; it is permanent in the air; it is decomposed by heat; it dissolves readily in water, and the solution is not decomposed by exposure, unless very dilute; it may be changed

changed by nitric acid into oxalic acid. According to Fourcroy it conſiſts of 70.5 oxygen, 19.0 carbon, and 10.5 hydrogen.

290. *Tartrites,* by a red heat, are converted into carbonates. The earthy tartrites are ſcarcely ſoluble in water: the alkaline tartrites are ſoluble; but when combined with exceſs of acid, they become much leſs ſoluble. The tartarous acid is capable of combining at the ſame time with two baſes. When tartrites are digeſted in ſulphuric acid, the tartarous acid is ſeparated, and is recognized by forming a gritty precipitate with a ſolution of potaſs.

291. *Citric acid* cryſtallizes in rhomboidal priſms, which ſuffer no change from expoſure to the air, and have an exceedingly acid taſte. When ſufficiently heated, they melt, ſwell, and emit fumes, and are partly ſublimed unchanged, and partly decompoſed. Water, at ordinary temperatures, diſſolves $\frac{1}{4}$ of its weight of theſe cryſtals, and at 212° twice its weight. The ſolution undergoes ſpontaneous decompoſition very ſlowly. Sulphuric acid chars it, and forms vinegar. Nitric acid converts it into oxalic and acetous acids.

292. *Citrates* are decompoſed by the ſtronger mineral acids, and alſo by the oxalic and tartarous, which form an inſoluble precipitate in their ſolutions. The alkaline citrates are decompoſed by a ſolution of barytes.

293. *Malic acid* is a viſcid fluid, incapable of cryſtallization, of a reddiſh-brown colour, and very acid taſte. It exiſts in the juice of apples, and combined with lime in that of the common houſeleek. It forms precipitates in the ſolution of the nitrates of mercury, lead, and ſilver.

294. *Malates* having alkalies for their baſe, are deliqueſcent. The acidulous malate of lime is ſoluble in cold water.

295. *Lactic acid* is incapable of cryſtallizing, and is deliqueſcent.

296. *Lactates* are deliqueſcent, and ſoluble in alcohol.

297. *Gallic acid* cryſtallizes in brilliant colourleſs plates, of an acid and ſomewhat auſtere taſte, and of a peculiar odour when heated. It may be ſublimed without alteration, although a ſtrong heat decompoſes it in part. It is not altered by expoſure to the air, is ſoluble in $1\frac{1}{2}$ of water at 212°, and in 12 waters at 60°, and in four times its weight of alcohol. It has a ſtrong affinity for metallic oxides, eſpecially iron. It precipitates gold, copper, and ſilver brown, mercury orange, iron black, biſmuth yellow, and lead white. It exiſts in nut-galls, and in moſt aſtringent vegetable ſubſtances.

298. *Gallates* have not been examined.

299. *Mucous acid* is a white gritty powder, of a ſlightly acid taſte, ſoluble in 80 times its weight of boiling water.

300. *Mucites*

300. *Mucites* of potass and soda are crystallizable. Mucites with earthy and metallic bases are nearly insoluble.

301. *Benzoic acid* crystallizes in compressed prisms of a pungent taste and aromatic smell. It is fusible, and evaporates by heat, for the most part, without change. When brought in contact with flame, it catches fire, and leaves no residuum. It is permanent in the air. It is very sparingly soluble in cold water; but at 212° it dissolves in about 24 waters. It is also soluble in hot acetous acid. It is soluble, without change, in alcohol, in concentrated sulphuric and nitric acids, and is separated from them by water.

302. *Benzoates*, little known, but generally forming feather-shaped crystals, and soluble in water.

303. *Succinic acid* crystallizes in transparent white triangular prisms; may be melted and sublimed, but suffers partial decomposition; more soluble in hot than in cold water; soluble in hot alcohol.

304. *Succinates* little known.

305. *Camphoric acid* crystallizes in white parallelopipeds of a slightly acid bitter taste, and smell of saffron, efflorescing in the air; sparingly soluble in cold water; more soluble in hot water; soluble in alcohol, the mineral acids, volatile and unctuous oils; melting and subliming by heat.

306. *Camphorates* have commonly a bitter taste, burn with a blue flame before the blowpipe, and are decomposed by heat, the acid subliming.

307. *Suberic acid* is not crystallizable, but is obtained either in the form of thin pellicles, or of a powder. At 60° it requires 140 times its weight of water for its solution; at 212° only twice its weight. When heated, it first melts, then becomes pulverulent, and at last sublimes. It changes the blue colour of a solution of indigo in sulphuric acid, of the nitrate of copper, and of the sulphate of copper to green, and gives a yellow colour to the green sulphate of iron, and to the sulphate of zinc.

308. *Suberates* have in general a bitter taste, and are decomposed by heat.

309. *Laccic acid* is obtained in the form of a reddish liquor, having a slightly bitter saltish taste, and the smell of new bread, by expression from the white lac of Madras; but on evaporation it assumes the form of acicular crystals. It rises in distillation. It decomposes with efflorescence the carbonates of lime and soda. It renders the nitrate and muriate of barytes turbid. It assumes a green colour with lime water, and a purplish colour with sulphate of iron; and precipitates sulphuret of lime white, tincture of galls green, acetite of lead reddish, nitrate of mercury whitish, and tartrite of potass in the same way as tartarous acid does, except that the precipitate is not soluble in potass.

310. *Laccate* of lime bitterish, of soda deliquescent.

311. *Sebacic*

311. *Sebacic acid* has no ſmell, and a ſlightly acid taſte It is cryſtallizable, melts like fat, and is not volatile. It is ſo ſoluble in hot water as to become ſolid on refrigeration. It is alſo very ſoluble in alcohol. It precipitates the nitrates of lead, ſilver, and mercury, and the acetites of lead and mercury. It does not precipitate the waters of lime, baryta, or ſtrontia.

312. *Sebates* are ſoluble ſalts.

Quaternary Acids.

313. *Pruſſic acid* is a colourleſs fluid, of a ſtrong ſmell, like that of peach flowers or bitter almonds, and a ſweetiſh pungent taſte. It does not redden vegetable blues, and unites difficultly with the alkalies and earths. It is eaſily decompoſed by light, heat, or oxygenized muriatic acid. It does not act upon the metals, but forms coloured and generally inſoluble combinations with their oxides. It has a great tendency to form triple ſalts with alkaline and metallic baſes. It is obtained from animal ſubſtances by the action of heat, nitric acid, fixed alkalies, and putrefaction.

314. *Pruſſiates* of alkalies are eaſily decompoſed even by carbonic acid. They form variouſly-coloured precipitates in the ſolutions of the metallic ſalts, except thoſe of platinum.

315. *Zoonic acid* has an auſtere taſte, and reddens paper tinged with turnſol, and is volatilized at 212°. It forms a white precipitate in the ſolutions of acetite of lead, and nitrate of mercury. It is obtained by diſtilling animal ſubſtances. Thenard ſays it is only impure acetous acid.

316. *Zoonates* are not cryſtallizable, and are little known.

317. *Amnic acid* is obtained in white, brilliant, acicular cryſtals, of an acid taſte, reddening the tincture of turnſol, ſparingly ſoluble in cold water, but ſomewhat more ſoluble in hot water. It is ſoluble in alcohol. It is decompoſed by heat.

318. *Amnates.* Very ſoluble in water, and the acid is precipitated from them in the form of a white cryſtalline powder, by the other acids.

319. *Uric acid* is obtained in the form of acicular brilliant cryſtals, of a pale yellow colour, almoſt inſoluble in cold, and very ſparingly ſoluble in boiling water, but becoming very ſoluble when combined with an exceſs of potaſs or ſoda. It is decompoſed at a high temperature, and furniſhes carbonate of ammonia, and carbonic acid, with very little oil or water, and leaves a charcoal which contains neither lime nor alkali. It is alſo decompoſed by the nitric and oxygenized muriatic acids.

320. The *urates* are almoſt inſoluble in water. The ſub-urates of ſoda and potaſs are very ſoluble, and the uric acid is precipitated from their ſolutions even by the carbonic acid.

SECT.

SECT. II.

PHARMACEUTICAL OPERATIONS.

Collection and Preservation of Simples.

1. EACH of the kingdoms of nature furnishes articles which are employed in medicine, either in their natural state, or after they have been prepared by the art of pharmacy.

2. In collecting these, attention must be paid to select such as are most sound and perfect, to separate from them whatever is injured or decayed, and to free them from all foreign matters adhering to them.

3. Those precautions must be taken which are best fitted for preserving them. They must in general be defended from the effects of moisture, too great heat, or cold, and confined air.

4. When their activity depends on volatile principles, they must be preserved from the contact of the air as much as possible.

5. As the vegetable kingdom presents us with the greatest number of simples, and the substances belonging to it are the least constant in their properties, and most subject to decay, it becomes necessary to give a few general rules for their collection and preservation.

6. Vegetable matters should be collected in the countries where they are indigenous; and those which grow wild, in dry soils, and high situations, fully exposed to the air and sun, are in general to be preferred to those which are cultivated, or which grow in moist, low, shady, or confined places.

7. Roots which are annual, should be collected before they shoot out their stalks or flowers; biennial roots in the harvest of the first, or spring of the second year; perennial roots either in spring before the sap has begun to mount, or in harvest, after it has returned.

8. Those which are worm-eaten or decayed are to be rejected. The others are immediately to be cleaned with a brush and cold water, letting them lie in it as short time as possible; and the fibres and little roots, when not essential, are to be cut away.

9. Roots

9. Roots which consist principally of fibres, and have but a small tap, may be immediately dried. If they be juicy, and not aromatic, this may be done by heat, not exceeding 100° of Fahrenheit; but if aromatic, by simply exposing them, and frequently turning them in a current of cold, dry, air: if very thick and strong, they are to be split or cut into slices, and strung upon threads; if covered with a tough bark, they may be peeled fresh, and then dried. Such as lose their virtues by drying, or are directed to be preserved in a fresh state, are to be kept buried in dry sand.

10. No very general rule can be given for the collection of herbs and leaves, some of them acquiring activity from their age, and others, as the mucilaginous leaves, from the same cause, losing the property for which they are officinal. Aromatics are to be collected after the flower buds are formed; annuals, not aromatic, when they are about to flower, or when in flower; biennials, before they shoot; and perennials, before they flower, especially if their fibres become woody.

11. They are to be gathered in dry weather, after the dew is off them, or in the evening before it falls, and are to be freed from decayed, withered, or foreign leaves. They are usually tied in bundles, and hung up in a shady, warm, and airy place; or spread upon the floor, and frequently turned. If very juicy, they are laid upon a sieve, and dried by a gentle degree of artificial warmth.

12. Sprouts are collected before the buds open; and stalks are gathered in autumn.

13. Barks and woods are collected when the most active part of the vegetables are concentrated in them, which happens in spring and in autumn. Spring is preferred for resinous barks, and autumn for the others, which are not resinous, but rather gummy. Barks should be taken from young trees, and freed from decayed parts, and all impurities.

14. The same rules direct the collection of woods; but they must not be taken from very young trees. Among the resinous woods, the heaviest, which sink in water, are selected. The alburnum is to be rejected.

15. Flowers are collected in clear dry weather, before noon, but after the dew is off: either when they are just about to open, or immediately after they have opened. Of some the petals only are preserved, and the colourless claws are even cut away; of others, whose calyx is odorous, the whole flower is kept. Flowers which are too small to be pulled singly, are dried with part of the stalk: These are called heads or tops.

16. Flowers are to be dried nearly as leaves, but more quickly, and with more attention. As they must not be exposed to the sun, it is best done by a slight degree of artificial warmth.

17. Seeds and fruits, unlefs when otherwife directed, are to be gathered when ripe, but before they fall fpontaneoufly. Some pulpy fruits are freed from their core and feeds, ftrung upon threads, and dried artificially. They are in general beft preferved in their natural coverings, although fome, as the colocynth, are peeled, and others, as the tamarind, preferved frefh. Many of thefe are apt to fpoil, or become rancid; and as they are then no longer fit for medical ufe, no very large quantity of them fhould be collected at a time.

18. The proper drying of vegetable fubftances is of the greateft importance. It is often directed to be done in the fhade and flowly, that the volatile and active particles may not be diffipated by too great heat; but this is an error, for they always lofe infinitely more by flow than by quick drying. When, on account of the colour, they cannot be expofed to the fun, and the warmth of the atmofphere is infufficient, they fhould be dried by an artificial warmth, lefs than 100° Fahrenheit, and well expofed to a current of air. When perfectly dry and friable, they have little fmell; but after being kept fome time, they attract moifture from the air, and regain their proper odour.

19. The boxes and drawers in which vegetable matters are kept, fhould not impart to them any fmell or tafte; and more certainly to avoid this, they fhould be lined with paper. Such as are volatile, of a delicate texture, or fubject to fuffer from infects, muft be kept in well covered glaffes. Fruits and oily feeds, which are apt to become rancid, muft be kept in a cool and dry, but by no means in a warm or moift place

20. Oily feeds, odorous plants, and thofe containing volatile principles, muft be collected frefh every year. Others, whofe properties are more permanent, and not fubject to decay, will keep for feveral years.

21. Vegetables collected in a moift and rainy feafon, are in general more watery and apt to fpoil. In a dry feafon, on the contrary, they contain more oily and refinous particles, and keep much better.

Mechanical Operations of Pharmacy.

a. The determination of the weight and bulk of bodies.
b. The divifion of bodies into more minute particles.
c. The feparation of their integrant parts by mechanical means.
d. Their mixture, when not attended by any chemical action.

22. The quantities of fubftances employed in pharmaceutical operations are moft accurately determined by the procefs called weighing. For this purpofe, there fhould be fets of beams and

ſcales of different ſizes; and it would be adviſable to have a double ſet, one for ordinary uſe, and another for occaſions when greater accuracy is neceſſary. A good beam ſhould remain in equilibrium without the ſcales, and when the ſcales are changed; and it ſhould turn ſenſibly with a very ſmall proportion of the weight with which it is loaded. Balances ſhould be defended as much as poſſible from acid and other corroſive vapours, and ſhould not be left ſuſpended longer than is neceſſary, as it impairs their delicacy very much. For the ſame reaſon, balances ſhould never be overloaded.

23. The want of uniformity of weights and meaſures is attended with many inconveniencies. In this country, druggiſts and grocers ſell by averdupois weight; and apothecaries are directed to ſell by troy weight, although, in fact, they ſeldom uſe the troy weight for more than two drachms. Hence ariſe numerous and culpable errors, the troy pound being leſs than the averdupois, and the ounce and drachm being greater. Comparative tables of the value of the troy, averdupois, and new French decimal weights, are given in the Appendix.

24. The errors ariſing from the promiſcuous uſe of weights and meaſures, have induced the Edinburgh and Dublin Colleges to reject the uſe of meaſures entirely, and to direct, that the quantities of every thing fluid, as well as ſolid, ſhall be determined by troy weight: But as the London College have given their ſanction to the uſe of meaſures, and as, from the much greater facility of their employment, apothecaries will always uſe them, tables of meaſures are alſo inſerted in the Appendix.

25. For meaſuring fluids, the graduated glaſs meaſures are always to be preferred: They ſhould be of different ſizes, according to the quantities they are intended to meaſure. Elaſtic fluids are alſo meaſured in glaſs tubes, graduated by inches and their decimals.

26. Specific gravity is the weight of a determinate bulk of any body. As a ſtandard of compariſon, diſtilled water has been aſſumed as unity. The ſpecific gravity of ſolids is aſcertained, by comparing the weight of the body in the air with its weight when ſuſpended in water. The quotient obtained by dividing its weight in air, by the difference between its weight in air and its weight in water, is its ſpecific gravity. The ſpecific gravity of fluids may be aſcertained by comparing the weight of a ſolid body, ſuch as a piece of cryſtal, when immerſed in diſtilled water, with its weight when immerſed in the fluid we wiſh to examine; by dividing its weight in the water by its weight in the fluid, the quotient is the ſpecific gravity of the fluid: Or a ſmall phial, containing a known weight of diſtilled water, may be filled with the fluid to be examined and weighed, and by dividing the weight

weight of the water by the weight of the fluid, the specific gravity is ascertained.

27. Although these are the only general principles by which specific gravities are ascertained, yet as the result is always influenced by the state of the thermometer and barometer at the time of the experiments, and as the manipulation is a work of great nicety, various ingenious instruments have been contrived to render the process and calculation easy. Of all these, the gravimeter of Morveau seems to deserve the preference *.

Mechanical Division.

28. By mechanical division, substances are reduced to a form better adapted for medical purposes; and by the increase of their surface, their action is promoted, both as medical and chemical agents.

29. It is performed by cutting, bruising, grinding, grating, rasping, filing, pulverization, trituration, and granulation, by means of machinery or of proper instruments.

30. *Pulverization* is the first of these operations that is commonly employed in the apothecary's shop. It is performed by means of pestles and mortars. The bottom of the mortars should be concave; and their sides should neither be so inclined as not to allow the substances operated on to fall to the bottom between each stroke of the pestle, nor so perpendicular as to collect it too much together, and to retard the operation. The materials of which the pestles and mortars are formed, should resist both the mechanical and chemical action of the substances for which they are used. Wood, iron, marble, siliceous stones, porcelain, and glass, are all employed; but copper, and metals containing copper, are to be avoided.

31. They should be provided with covers, to prevent the finest and lightest parts from escaping, and to defend the operator from the effects of disagreeable or noxious substances. But these ends are more completely attained by tying a piece of pliable leather round the pestle and round the mouth of the mortar. It must be closely applied, and at the same time so large, as to permit the free motion of the pestle.

32. In some instances, it will be even necessary for the operator to cover his mouth and nostrils with a wet cloth, and to stand with his back to a current of air, that the very acrid particles which arise may be carried from him.

33. The addition of a little water or spirit of wine, or of a few almonds, to very light and dry substances, will prevent their flying off. But almonds are apt to induce rancidity, and powders are always injured by the drying which is necessary when they

* See Nicholson's Journal, Vol. I.

have been moiftened. Water muft never be added to fubftances which abforb it, or are rendered cohefive by it.

34. Too great a quantity of any fubftance muft never be put into the mortar at a time, as it very much retards the operation.

35. All vegetable fubftances muft be previoufly dried. Refins and gummy refins, which become foft in fummer, muft be powdered in very cold weather. Wood, roots, barks, horn, bone, ivory, &c. muft be previoufly cut, fplit, chipped, or rafped. Some fubftances will even require to be moiftened with mucilage of tragacanth, or of ftarch, and then dried before they can be powdered. Camphor may be conveniently powdered by the addition of a little fpirit of wine, or almond oil.

36. All impurities and inert parts having been previoufly feparated, the operation muft be continued and repeated upon vegetable fubftances, till no refiduum is left. The powders obtained at different times muft then be intimately mixed together, fo as to bring the whole to a ftate of perfect uniformity.

37. Very hard ftony fubftances muft be repeatedly heated to a red heat, and then fuddenly quenched in cold water, until they become fufficiently friable. Some metals may be powdered hot in a heated iron mortar, or may be rendered brittle by alloying them with a little mercury.

38. *Trituration* is intended for the ftill more minute divifion of bodies. It is performed in flat mortars of glafs, agate, or other hard materials, by giving a rotatory motion to the peftle; or on a levigating ftone, which is generally of porphyry, by means of a muller of the fame fubftance. On large quantities it is performed by rollers of hard ftone, turning horizontally upon each other, or by one vertical roller turning on a flat ftone.

39. The fubftances fubjected to this operation are generally previoufly powdered or ground.

40. *Levigation* differs from trituration only in the addition of water or fpirit of wine to the powder operated upon, fo as to form the whole mafs into a kind of pafte, which is rubbed until it be of fufficient fmoothnefs or finenefs. Earths, and fome metallic fubftances, are levigated.

41. *Granulation* is employed for the mechanical divifion of fome metals. It is performed, either by ftirring the melted metal with an iron-rod until it cools, or by pouring it into water, and ftirring it continually as before, or by pouring it into a covered box, previoufly well rubbed with chalk, and fhaking it until the metal cools, when the rolling motion will be converted into a rattling one. The adhering chalk is then to be wafhed away.

42. *Sifting*. From dry fubftances, which are reduced to the due degree of minutenefs, the coarfer particles are to be feparated by fieves of iron wire, hair-cloth or gauze, or by being dufted through bags of fine linen. For very light and valuable pow-

ders,

ders, or acrid ſubſtances, compound ſieves, having a cloſe lid and receiver muſt be uſed. The particles which are not of ſufficient fineneſs to paſs through the interſtices of the ſieve, may be again powdered.

43. *Elutriation* is confined to mineral ſubſtances, on which water has no action. It is performed for ſeparating them from foreign particles and impurities, of a different ſpecific gravity, in which caſe they are ſaid to be waſhed; or for ſeparating the impalpable powders, obtained by trituration and levigation from the coarſer particles. This proceſs depends upon the property that very fine or light powders have of remaining for ſome time ſuſpended in water; and is performed by diffuſing the powder or paſte formed by levigation through plenty of water, letting it ſtand a ſufficient time, until the coarſer particles ſettle at the bottom, and then pouring off the liquid in which the finer or lighter particles are ſuſpended. Freſh water may be poured on the reſiduum, and the operation repeated; or the coarſer particles, which fall to the bottom, may be previouſly levigated a ſecond time.

44. *Decantation.* The fine powder which is waſhed over with the water, is ſeparated from it, by allowing it to ſubſide completely, and by either decanting off the water very carefully, or by drawing it off by a ſyringe or ſyphon. Theſe proceſſes are very frequently made uſe of for ſeparating fluids from ſolids which are ſpecifically heavier, eſpecially when the quantity is very large, or the ſolid ſo ſubtile as to paſs through the pores of moſt ſubſtances employed for filtration, or the liquid ſo acrid as to corrode them.

45. *Filtration.* For the ſame purpoſe of ſeparating fluids from ſolids, ſtraining and filtration are often uſed. Theſe differ only in degree, and are employed when the powder either does not ſubſide at all, or too ſlowly and imperfectly for decantation.

46. The inſtruments for this purpoſe are of various materials, and muſt in no inſtance be acted upon by the ſubſtances for which they are employed. Fats, reſins, wax and oils, are ſtrained through hemp or flax ſpread evenly over a piece of wire-cloth or net ſtretched in a frame. For ſaccharine and mucilaginous liquors, fine flannel may be uſed; for ſome ſaline ſolutions, linen. Where theſe are not fine enough, unſized paper is employed; and very acrid liquors, ſuch as acids, are filtered by means of a glaſs-funnel, filled with powdered quartz, a few of the larger pieces being put in the neck, ſmaller pieces over theſe, and the finer powder placed over all. The poroſity of this laſt filter retains much of the liquor; but it may be obtained by gently pouring on it as much diſtilled water; the liquor will then paſs through, and the water be retained in its place.

47. Water may be filtered in large quantities through basins of porous stone, or artificial basins of nearly equal parts of fine clay and coarse sand. Mr Collier of Southwark has lately obtained a patent for a very ingenious combination of hydrostatic pressure, with the mode of filtering *per ascensum;* thereby procuring the new and peculiar advantage, that the fluid and its sediment take opposite directions.

48. The size of the filters depends on the quantity of matter to be strained. When large, the flannel or linen is formed into a conical bag, and suspended from a hoop or frame; the paper is either spread on the inside of these bags, or folded into a conical form, and suspended by a funnel. It is of advantage to introduce glass rods or quill-barrels between the paper and funnel, to prevent them from adhering too closely.

49. What passes first is seldom fine enough, and must be poured back again, until by the swelling of the fibres of the filter, or filling up of its pores, the fluid acquires the requisite degree of limpidity. The filter is sometimes covered with charcoal powder, which is a useful addition to muddy and deep-coloured liquors. The filtration of some viscid substances is much assisted by heat.

50. *Expression* is a species of filtration, assisted by mechanical force. It is principally employed to obtain the juices of fresh vegetables, and the unctuous vegetable oils. It is performed by means of a screw press with plates of wood, iron or tin. The subject of the operation is previously beaten, ground or bruised. It is then inclosed in a bag, which must not be too much filled, and introduced between the plates of the press. The bags should be of hair-cloth, or canvass inclosed in hair-cloth. Hempen and woollen bags are apt to give vegetable juices a disagreeable taste. The pressure should be gentle at first, and increased gradually.

51. Vegetables intended for this operation should be perfectly fresh and freed from all impurities. In general they should be expressed as soon as they are bruised, for they are apt to ferment; but subacid fruits give a larger quantity of juice and of finer quality, when they are allowed to stand some days in a wooden or earthen vessel after they are bruised. To some vegetables which are not juicy enough of themselves, the addition of a little water is necessary. Lemons and oranges must be peeled, as their skins contain a great deal of essential oil, which would mix with the juice. The oil itself may be obtained separately, by expression with the fingers against a plate of glass.

52. For unctuous seeds iron-plates are used; and it is customary not only to heat the plates, but to warm the bruised seeds in a kettle over the fire, after they have been sprinkled with some water, as by these means the product is increased, and the oil obtained is more limpid. But as their disposition to rancidity is increased

fed by it, if possible this practice should be laid aside, or confined to exposing the bruised seeds, inclosed in a bag, to the steam of hot water.

53. *Despumation* is generally practised on thick and clammy liquors, which contain much slimy and other impurities, not easily separable by filtration. The scum arises either by simply heating the liquor, or by *clarifying* it, which is done by mixing with the liquor, when cold, the white of egg well beaten, with a little water, which on being heated coagulates, and entangling the impurities of the liquor, rises with them to the surface, and may be easily removed by a perforated ladle. Or the liquor may now be filtered with ease. Spirituous liquors are clarified by means of isinglass dissolved in water, or any albuminous fluid, such as milk, which coagulates by the action of the alcohol without the assistance of heat.

54. Fluids can only be separated from each other, when they have no tendency to combine, and when they differ in specific gravity. The separation may be effected, by skimming off the lighter fluid with a silver or glass spoon; or by drawing it off by a syringe or syphon; or by means of a glass separatory, which is an instrument having a projecting tube, terminating in a very slender point, through which the heavier fluid alone is permitted to run; or by means of the capillary attraction of a spongy woollen thread; for no fluid will enter a substance whose pores are filled by another, for which it has no attraction; and, lastly, upon the same principle by means of a filter of unsized paper, previously soaked in one of the fluids, which in this way readily passes through it while the other remains behind.

55. *Mechanical mixture* is performed by agitation, trituration, or kneading; but these will be best considered in treating of the forms in which medicines are exhibited.

Apparatus.

56. Before entering on the chemical operations, it will be necessary to make a few remarks on the instruments employed in performing them. They may be divided into

a. The vessels in which the effects are performed.
b. The means of producing heat; or fuel; and
c. The means of applying and regulating the heat; or lamps and furnaces.

Vessels.

57. The vessels, according to the purposes for which they are intended, vary

a. In form, and
b. In materials.

58. The different forms will be beft defcribed when treating of the particular operations.

59. No fubftance poffeffes properties which would render it proper to be employed as a material in every inftance. We are therefore obliged to felect thofe fubftances which poffefs the properties more efpecially required in the particular operations for which they are intended.

60. The properties moft generally required, are

a. The power of refifting chemical agents.
b. Tranfparency.
c. Compactnefs.
d. Strength.
e. Fixity and infufibility.
f. And the power of bearing fudden variations of temperature without breaking.

61. The metals in general poffefs the four laft properties in confiderable perfection, but they are all opaque. Iron and copper are apt to be corroded by chemical agents, and the ufe of the latter is often attended by dangerous confequences. Thefe defects are in fome meafure, but not entirely, remedied by tinning them. Tin and lead are too fufible. Platinum, gold and filver refift moft of the chemical agents, but their expence is an infurmountable objection to their general ufe.

62. Good earthen-ware refifts the greateft intenfity of heat, but is deficient in all the other properties. The bafis of all kinds of earthen ware is clay, which poffeffes the valuable quality of being very plaftic when wrought with water, and of becoming extremely hard when burnt with an intenfe heat. But it contracts fo much by heat, that it is extremely apt to crack and fplit on being expofed to fudden changes of temperature; it is therefore neceffary to add fome fubftance which may counteract this property. Siliceous fand, clay reduced to powder, and then burnt with a very intenfe heat, and plumbago, are occafionally ufed. Thefe additions, however, are attended with other inconveniencies; plumbago efpecially is liable to combuftion, and fand diminifhes the compactnefs; fo that when not glazed, they are porous, and when glazed they are acted upon by chemical agents. The chemical veffels, manufactured by Meffrs Wedgewood, are the beft of this defcription, except porcelain, which is too expenfive.

63. Glafs poffeffes the three firft qualities in an eminent degree, and may be heated red-hot without melting. Its greateft inconvenience is its difpofition to crack or break in pieces when fuddenly heated or cooled. As this is occafioned by its unequal expanfion or contraction, it is beft remedied by forming the veffels very thin, and giving them in general a rounded form. Glafs-veffels fhould alfo be well annealed, that is, cooled very flowly, after

after being blown, by placing them immediately in an oven while they are yet in a soft state. When ill annealed, or cooled suddenly, glass is apt to fly in pieces on the slightest change of temperature, or touch of a sharp point. We may sometimes take advantage of this imperfection; for by means of a red-hot wire, glass-vessels may be cut into any shape. When there is not a crack already in the glass, the point of the wire is applied near the edge, a crack is formed, which is afterwards easily led in any direction we wish.

64. Reaumeur's porcelain, on the contrary, is glass, which by surrounding it with hot sand, is made to cool so slowly, that it assumes a crystalline texture, which destroys its transparency, but imparts to it every other quality wished for in chemical vessels. The coarser kinds of glass are commonly used in making it; but as there is no manufacture of this valuable substance, its employment is still very limited.

Lutes.

65. Lutes also form a necessary part of chemical apparatus. They are compositions of various substances intended

a. To close the joinings of vessels.
b. To coat glass-vessels.
c. To line furnaces.

66. Lutes of the first description are commonly employed to confine elastic vapours. They should therefore possess the following properties,

a. Compactness.
b. The power of resisting acrid vapours.
c. The power of resisting a certain intensity of heat.
d. Facility of removal after the operation.

67. Viscid substances, as flour, starch, and gum, possess the first and last properties in a sufficient degree; they are therefore employed when the heat is moderate, and the vapour not corrosive. They are mixed with water, and spread upon slips of paper or linen, which are wrapped round the joinings of the vessels, and, if necessary, secured with thread. Slips of bladder macerated in water, and applied with the inside next the vessels, are employed in the same circumstances; but from their great contraction on drying, they are apt to break weak vessels. A paste formed of almond or linseed meal, and water, or mucilage, forms a very close and plastic lute, which is easily removed.

68. Quicklime well incorporated with a sixth part of muriate of soda, or with white of egg diluted with water, applied on slips of linen, dries easily, and becomes very hard. It is used for the distillation

lation of the concentrated acids; but for this purpose burnt gypsum and water is preferable. Both these lutes must be used as soon as they are prepared, as they harden very quickly.

69. Chalk and oil, or glaziers putty, is a very compact lute. As it becomes so hard as not to be easily removed, it is principally used for luting tubes into vessels for pneumatic purposes.

70. A paste of powdered clay and drying oil, or what is still better, amber varnish, is very close, adhesive, and plastic, and is easily removed; but as it softens with heat, it must be secured by slips of linen and thread, and will not adhere to the vessels unless they be perfectly dry.

71. Clay and sand, in the proportion of one to four, form an excellent lute, capable of resisting very high temperatures, and the greatest number of corrosive substances.

72. Eight parts of yellow wax melted with one of oil of turpentine, with or without the addition of some resinous substances, according to the degree of pliability and consistence required, form a very close and compact lute, through which the most subtile corrosive vapours will not escape. But it is softened and liquefied by heat, therefore cannot be used for purposes where high temperatures are required.

73. The lute employed for the coating of glass-vessels, with the intention of making them stronger and capable of resisting violent heats, without softening, consists of four parts of sand and one of clay, made into a very thin mass, and applied in successive layers, taking care that each coat be perfectly dry before another be laid on.

74. The lutes for lining furnaces will be described when treating of furnaces.

75. The junctures of vessels which are to be luted to each other, must previously be accurately and firmly fitted, by introducing between them, when necessary, short bits of wood or cork, or, if the disproportion be very great, by means of a cork fitted to the one vessel, having a circular hole bored through it, through which the neck of the other vessel or tube passes.

76. After being thus fitted, the lute is rolled and worked between the fingers till it be softened, and is then formed into small cylinders, which are successively applied to the junctures, taking care that each piece be made to adhere firmly and perfectly close in every part before another is put on. Lastly, the whole is secured by the slips of linen or bladder.

77. In many cases, to permit the escape of elastic vapours, a small hole is made through the lute with a pin, or the lute is perforated by a small quill, fitted with a stopper.

HEAT

Heat and Fuel.

78. As caloric is an agent of the moſt extenſive utility in the chemical operations of pharmacy, it is neceſſary that we ſhould be acquainted with the means of employing it in the moſt economical and efficient manner.

79. The rays of the ſun are uſed in the drying of many vegetable ſubſtances, and the only attentions neceſſary are to expoſe as large a ſurface as poſſible, and to turn them frequently, that every part may be dried alike. They are alſo ſometimes uſed for promoting ſpontaneous evaporations.

80. The combuſtion of different ſubſtances is a much more powerful and certain ſource of heat. Alcohol, oil, tallow, wood, turf, coal, charcoal, and coke, are all occaſionally employed.

81. Alcohol, oil, and melted tallow, are burnt in lamps of various conſtructions. Theſe afford a very uniform, though not very high temperature. Alcohol has the great advantage of burning without ſmoke. But oil burnt upon a cylindrical wick, ſo contrived that the air has free acceſs both to the outſide and to the inſide of the cylinder, as in Argand's lamp, may be made to produce a conſiderable temperature of great uniformity, and without the inconvenience of ſmoke.

82. Wood, turf, coal, charcoal, and coke, are burnt in grates and furnaces. Wood has the advantage of kindling readily, but affords a very unſteady temperature, is inconvenient from its flame, ſmoke, and ſoot, and requires much attention. The heavy and denſe woods give the greateſt heat, burn longeſt, and leave a denſe charcoal.

83. Dry turf gives a permanent heat, and does not require ſo much attention as wood; but its ſmoke is copious and penetrating, and the empyreumatic ſmell which it imparts to every thing it comes in contact with, adheres to them with great obſtinacy. The heavy turf of marſhes is preferable to the light ſuperficial turf.

84. Coal is the fuel moſt commonly uſed in this country. Its heat is conſiderable and ſufficiently permanent, but it produces much flame and ſmoke.

85. Charcoal, eſpecially of the denſe woods, is a very convenient and excellent fuel. It burns without flame or ſmoke, and gives a ſtrong, uniform, and permanent heat, which may be eaſily regulated, eſpecially when it is not in too large pieces, and is a little damp.

86. Coke, or charred coal, poſſeſſes ſimilar properties to charcoal. It is leſs eaſily kindled, but is capable of producing a higher temperature.

87. When an open grate is ufed for chemical purpofes, it fhould be provided with cranes to fupport the veffels operated in, that they may not be overturned by the burning away of the fuel.

Furnaces.

88. In all furnaces, th eprincipal objects are, to produce a fufficient degree of heat, with little confumption of fuel, and to be able to regulate the degree of heat.

89. An unneceffary expenditure of fuel is prevented by forming the fides of the furnace of very imperfect conductors of caloric, and by conftructing it fo that the fubject operated on may be expofed to the full action of the fire.

90. The degree of heat is regulated by the quantity of air which comes in contact with the burning fuel. The quantity of air is in the compound ratio of the fize of the aperture through which it enters and its velocity. The velocity itfelf is increafed by mechanical means, as by bellows, or by increafing the height and width of the chimney.

91. The fize and form of furnaces, and the materials of which they are conftructed, are various, according to the purpofes for which they are intended.

92. The effential parts of a furnace are,

a. A body for the fuel to burn in.
b. A grate for it to burn upon.
c. An afh-pit to admit air and receive the afhes.
d. A chimney for carrying off the fmoke and vapours.

93. The afh-pit fhould be perfectly clofe, and furnifhed with a door and regifter-plate, to regulate the quantity of air admitted.

94. The bars of the grate fhould be triangular, and placed with an angle pointed downwards, and not above half an inch diftant. The grate fhould be fixed on the outfide of the body.

95. The body may be cylindrical or elliptical, and it muft have apertures for introducing the fuel and the fubjects of the operation, and for conveying away the fmoke and vapours.

96. When the combuftion is fupported by the current of air naturally excited by the burning of the fuel, it is called a wind-furnace; when it is accelerated by increafing the velocity of the current by bellows, it forms a blaft-furnace; and when the body of the furnace is covered with a dome, which terminates in the chimney, it conftitutes a reverberatory furnace.

97. Furnaces are either fixed, and built of fire-brick, or portable, and fabricated of plate-iron. When of iron, they muft be li-

ned

ned with some badly conducting and refractory substance, both to prevent the dissipation of heat, and to defend the iron against the action of the fire. A mixture of scales of iron and powdered titles worked up with blood, hair, and clay, is much recommended; and Professor Hagen says, that it is less apt to split and crack when exposed at once to a violent heat, than when dried gradually, according to the common directions. Dr Black employed two different coatings. Next to the iron he applied a composition of three parts by weight of charcoal, and one of fine clay. These are first mixed in the state of fine powder, and then worked up with as much water as will permit the mass to be formed into balls, which are applied to the sides of the furnace, and beat very firm and compact with the face of a broad hammer, to the thickness of about one inch and a half in general, but so as to give an elliptical form to the cavity. Over this, another lute, composed of six or seven parts of sand, and one of clay, is to be applied in the same manner, to the thickness of about half an inch. These lutes must be allowed to become perfectly dry before the furnace is heated, which should at first be done gradually.

98. Heat may be applied to vessels employed in chemical operations,

a. Directly, as in the open fire and reverberatory furnace.
b. Or through the medium of sand; the sand-bath.
c. Of water; the water-bath.
d. Of steam; the vapour bath.
e. Of air, as in the muffle.

Chemical Operations.

99. In all chemical operations, combination takes place, and there are very few of them in which decomposition does not also occur. For the sake of method, we shall consider them as principally intended to produce

a. A change in the form of aggregation.
b. Combination.
c. Decomposition.

100. The form of aggregation may be altered by

a. Fusion.
b. Vaporization.
c. Condensation.
d. Congelation.
e. Coagulation.

101. *Fusion* is the conversion of a solid into a liquid by the sole agency of caloric. Substances differ very much in the degrees of

of their fusibility; some, as water and mercury, existing as fluids in the ordinary temperatures of the atmosphere; while others, as the pure earths, cannot be melted by any heat we can produce.

102. *Liquefaction* is commonly employed to express the melting of substances, as tallow, wax, resin, &c. which pass through intermediate states of softness, before they become fluid. Fusion is the melting of substances which pass immediately from the solid to the fluid state, as the salts and metals, except iron and platinum.

103. When, in consequence of fusion, the substances operated on acquire a greater or less degree of transparency, a dense uniform texture, and great brittleness, and exhibit a conchoidal fracture, with a specular surface, and the edges of the fragments very sharp, it is termed *vitrification.*

104. In general, simple substances are less fusible than compounds; for example, the simple earths cannot be melted singly, but when mixed are easily fused. The additions which are sometimes made to refractory substances to promote their fusion, are termed *fluxes.*

105. An open fire is sufficient to melt some substances, others require the heat of a furnace.

106. The vessels in which fusion is performed, must resist the heat necessary for the operation. In some instances, an iron or copper ladle or pot may be used, but most commonly crucibles are employed. Crucibles are of various sizes. The large crucibles are generally conical, with a small spout for the convenience of pouring out; the small ones are truncated triangular pyramids, and are commonly sold in nests.

107. The Hessian crucibles are composed of clay and sand, and when good, will withstand an intense heat for many hours, without softening or melting; but they are disposed to crack when suddenly heated or cooled. This inconvenience may be on many occasions avoided, by using a double crucible, and filling up the interstice with sand, or by covering the crucible with a lute of clay and sand, by which means the heat is transmitted more gradually and equally. Those which ring clearly when struck, and are of an uniform thickness, and have a reddish brown colour, without black spots, are reckoned the best.

108. Wedgewood's crucibles are made of clay mixed with baked clay finely pounded, and are in every respect superior to the Hessian, but they are very expensive.

109. The black-lead crucibles, formed of clay and plumbago, are very durable, resist sudden changes of temperature, and may be repeatedly used, but they are destroyed when saline substances are melted in them, and suffer combustion when exposed red-hot to a current of air.

110. When placed in a furnace, crucibles should never be set upon the bars of the grate, but always upon a support. They may be

be covered, to prevent the fuel or ashes from falling into them, with a lid of the same materials, or with another crucible inverted over them.

111. When the fusion is completed, the substance may be either permitted to cool in the crucible, or may be poured into a heated mould anointed with tallow, never with oil, or what is still better, covered with a thin coating of chalk, which is applied by laying it over with a mixture of chalk diffused in water, and then evaporating the water completely by heat. To prevent the crucible from being broken by cooling too rapidly, it is to be either replaced in the furnace, to cool gradually with it, or covered with some vessel to prevent its being exposed immediately to the air.

112. Fusion is performed with the intentions,

a. Of weakening the attraction of aggregation.
1. To facilitate mechanical division.
2. To promote chemical action.

b. Of separating from each other, substances of different degrees of fusibility.

113. *Vaporization* is the conversion of a solid or fluid into vapour by the agency of caloric. Although vaporability be merely a relative term, substances are said to be permanently elastic, volatile, or fixed. The permanently elastic fluids or gases are those which cannot be condensed into a fluid or solid form by any abstraction of caloric we are capable of producing. Fixed substances, on the contrary, are those which cannot be converted into vapour by great increase of temperature. The pressure of the atmosphere has very considerable effect in varying the degree at which substances are converted into vapour. Some solids, unless subjected to very great pressure, are at once converted into vapour, although most of them pass through the intermediate state of fluidity.

114. Vaporization is employed

a. To separate substances differing in volatility.
b. To promote chemical action.

115. When employed with either of these views,

a. No regard is paid to the substances volatilized,
1. From solids, as in ustulation and charring.
2. From fluids, as in evaporation.

b. Or the substances vaporized are condensed in proper vessels,
1. In a liquid form, as in distillation.
2. In a solid form as in sublimation.

c. Or the substances vaporized are collected in their gaseous form, in a pneumatic apparatus.

116. *Ustulation* is almost entirely a metallurgic operation, and is employed to expel the sulphur and arsenic contained in some metallic ores. It is performed on small quantities in tests placed within

within a muffle. Tefts are fhallow veffels made of bone afhes or baked clay. Muffles are veffels of baked clay, of a femi-cylindrical form, the flat fide forming the floor, and the arched portion the roof and fides. The end and fides are perforated with holes for the free tranfmiffion of air, and the open extremity is placed at the door of the furnace, for the infpection and manipulation of the procefs. The reverberatory furnace is commonly employed for roafting, and the heat is at firft very gentle, and flowly raifed to rednefs. It is accelerated by expofing as large a furface of the fubftance to be roafted as poffible, and by ftirring it frequently, fo as to prevent any agglutination, and to bring every part in fucceffion to the furface.

117. *Charring* may be performed on any of the compound oxides, by fubjecting them to a degree of heat fufficient to expel all their hydrogene, nitrogene, and fuperabundant oxygene, while the carbon, being a fixed principle, remains behind in the ftate of charcoal. The temperature neceffary for the operation may be produced either by the combuftion of other fubftances or by the partial combuftion of the fubftance to be charred. In the former cafe, the operation may be performed in any veffel which excludes the accefs of air, while it permits the efcape of the vapours formed. In the latter, the accefs of air muft be regulated in fuch a manner, that it may be fuppreffed whenever the combuftion has reached the requifite degree; for if continued to be admitted, the charcoal itfelf would be diffipated in the form of carbonic acid gas, and nothing would remain but the alkaline and earthy matter, which thefe fubftances always contain. When combuftion is carried this length, the procefs is termed *incineration*. The vapours which arife in the operation of charring, are fometimes condenfed, as in the manufacture of tar.

118. *Evaporation* is the converfion of a fluid into vapour, by its combination with caloric. In this procefs, the atmofphere is not a neceffary agent, but rather a hindrance, by its preffure. This forms a criterion between evaporation and fpontaneous evaporation, which is merely the folution of a fluid in air.

119. It is performed in open, fhallow, or hemifpherical veffels of filver, tinned copper or iron, earthen-ware or glafs. The neceffary caloric may be furnifhed by means of an open fire, a lamp, or a furnace, either immediately, or with the intervention of fand, water, or vapour. The degree of heat muft be regulated by the nature of the fubftance operated on. In general, it fhould not be greater than what is abfolutely neceffary.

120. Evaporation may be,

a. Partial.

1. From faline fluids, concentration.
2. From vifcid fluids, infpiffation.

b. Total, exficcation.

121. *Concentration*

121. *Concentration* is employed,

a. To lessen the quantity of diluting fluids, dephlegmation.
b. To prepare for crystallization.

122. *Inspissation* is almost confined to animal and vegetable substances; and as these are apt to be partially decomposed by heat, or to become empyreumatic, it should always be performed, especially towards the end of the process, in a water or vapour bath.

123. *Exsiccation* is here taken in a very limited sense; for the term is also with propriety used to express the drying of vegetables by a gentle heat, the efflorescence of salts, and the abstraction of moisture from mixtures of insoluble powders with water, by means of chalk-stones or powdered chalk pressed into a smooth mass. At present, we limit its meaning to the total expulsion of moisture from any body by means of caloric.

124. The exsiccation of compound oxides should always be performed in the water-bath.

125. Salts are deprived of their water of crystallization by exposing them to the action of heat in a glass vessel or iron ladle. Sometimes they first dissolve in their water of crystallization, or undergo what is called the *watery fusion*, and are afterwards converted into a dry mass by its total expulsion; as in the calcination of borax or burning of alum.

126. When exsiccation is attended with a crackling noise, and splitting of the salt, as in muriate of soda, it is termed *decrepitation*, and is performed by throwing into a heated iron vessel, small quantities of the salt at a time, covering it up, and waiting until the decrepitation be over, before a fresh quantity is thrown in.

127. Exsiccation is performed on saline bodies, to render them more acrid or pulverulent, or to prepare them for chemical operations. Animal and vegetable substances are exsiccated to give them a solid form, and to prevent their fermentation.

128. *Condensation* is the reverse of expansion, and is produced either,

a. By mechanical pressure forcing out the caloric in a sensible form, as water is squeezed out of a sponge, or,
b. By the chemical abstraction of caloric, which is followed by an approximation of the particles of the substance.

129. The latter species of condensation only is the object of our investigation at present. In this way we may be supposed to condense,

a. Substances existing naturally as gases or vapours.
b. Substances, naturally solid or fluid, converted into vapours by adventitious circumstances.

130. The former inſtance is almoſt ſuppoſititious: for we are not able, by any diminution of temperature, to reduce the permanently elaſtic fluids, to a fluid or ſolid ſtate.

131. The latter inſtance is always preceded by vaporization, and comprehends thoſe operations in which the ſubſtances vaporized are condenſed in proper veſſels. When the product is a fluid, it is termed diſtillation; when ſolid, ſublimation.

132. *Diſtillation* is ſaid to be performed,

a. *Viâ humidâ*, when fluids are the ſubjects of the operation.

b. *Viâ ſiccâ*, when ſolids are ſubjected to the operation, and the fluid product ariſes from decompoſition, and a new arrangement of the conſtituent principles.

133. The objects of diſtillation are,

a. To ſeparate more volatile fluids from leſs volatile fluids or ſolids.

b. To promote the union of different ſubſtances.

c. To generate new products by the action of fire.

134. In all diſtillations, the heat applied ſhould not be greater than what is neceſſary for the formation of the vapour, and even to this degree it ſhould be gradually raiſed. The veſſels alſo in which the diſtillation is performed, ſhould never be filled above one-half, and ſometimes not above one-fourth, leſt the ſubſtance contained in them ſhould boil over.

135. As diſtillation is a combination of evaporation and condenſation, the apparatus conſiſts of two principal parts:

a. The veſſels in which the vapours are formed.

b. The veſſels in which they are condenſed.

136. The veſſels employed for both purpoſes are very various in their ſhapes, according to the manner in which the operation is conducted. The firſt difference depends on the direction of the vapour after its formation. It either,

a. Deſcends; diſtillation *per deſcenſum.*

b. Aſcends; diſtillation *per aſcenſum.*

c. Or paſſes off by the ſide; diſtillation *per latus.*

137. In the diſtillation *per deſcenſum*, a perforated plate of tinned iron, or other materials, is fixed within any convenient veſſel, ſo as to leave a ſpace beneath it. On this the ſubject of the operation is laid, and over it is placed another plate, accurately cloſing the mouth of the veſſel, and ſufficiently ſtrong to ſupport the fuel. Thus the heat is applied from above and the vapour is forced to deſcend into the inferior cavity, where it is condenſed. In this way the oil of cloves is prepared, tar is manufactured, and mercury and zinc ſeparated from their ores.

138. In

138. In the diſtillation *per aſcenſum*, the vapour is allowed to ariſe to ſome height, and then is conveyed away to be condenſed. The veſſel moſt commonly employed for this purpoſe is the common copper ſtill, which conſiſts of a body for containing the materials, and a head into which the vapour aſcends. From the middle of the head a tube riſes for a ſhort way, and is then reflected downwards, through which the ſteam paſſes to be condenſed. Another kind of head, riſing to a great height before it is reflected, is ſometimes uſed for ſeparating fluids, which differ little in volatility, as it was ſuppoſed that the leſs volatile vapours would be condenſed and fall back into the ſtill, while only the more volatile vapours would ariſe to the top, ſo as to paſs to the refrigeratory. The ſame object may be more conveniently attained by managing the fire with caution and addreſs. The greater the ſurface expoſed, and the leſs the height the vapours have to aſcend, the more rapidly does the diſtillation proceed; and ſo well are theſe principles underſtood by the Scotch diſtillers, that they do not take more than three minutes to diſcharge a ſtill containing 50 gallons of waſh.

139. The condenſing apparatus uſed with the common ſtill is very ſimple. The tube in which the head terminates, is inſerted into the upper end of a pipe, which is kept cool by paſſing through a veſſel filled with water, called the Refrigeratory. This pipe is commonly made of a ſerpentine form; but as this renders it difficult to be cleaned, Dr Black recommends a ſigmoid pipe. The refrigeratory may be furniſhed with a ſtop-cock, that when the water it contains becomes too hot, and does not condenſe all the vapour produced, it may be changed for cold water. From the lower end of the pipe, the product of the diſtillation drops into the veſſel deſtined to receive it; and we may obſerve, that when any vapour iſſues along with it, we ſhould either diminiſh the power of the fire, or change the water in the refrigeratory.

140. *Circulation* was a proceſs formerly in uſe. It conſiſted in arranging the apparatus, ſo that the vapours were no ſooner condenſed into a fluid form, than this fluid returned back into the diſtilling veſſels, to be again vaporized; and was effected by diſtilling in a glaſs veſſel, with ſo long a neck that the vapours were condenſed before they eſcaped at the upper extremity, or by inverting one matraſs within another.

141. When corroſive ſubſtances are diſtilled in this way, the cucurbit and alembic are uſed; but theſe ſubſtances are more conveniently diſtilled *per latus*.

142. The diſtillation *per latus* is performed in a retort or pear-ſhaped veſſel, having the neck bent to one ſide. The body of a good retort is well rounded, uniform in its appearance, and of an equal thickneſs, and the neck is ſufficiently bent to allow the vapours, when condenſed, to run freely away, but not ſo much as

to render the application of the receiver inconvenient, or to bring it too near the furnace. The paſſage from the body into the neck muſt be perfectly free and ſufficiently wide, otherwiſe the vapours produced in the retort only circulate in its body, without paſſing over into the receiver. For introducing liquors into the retort without ſoiling its neck, which would injure the product, a bent funnel is neceſſary. It muſt be ſufficiently long to introduce the liquor directly into the body of the retort; and in withdrawing it, we muſt carefully keep it applied to the upper part of the retort, that the drop hanging from it may not touch the inſide of the neck. In ſome caſes, where a mixture of different ſubſtances is to be diſtilled, it is convenient and neceſſary to have the whole apparatus properly adjuſted before the mixture is made, and we muſt therefore employ a tubulated retort, or a retort furniſhed with an aperture, accurately cloſed with a ground ſtopper.

143. The tubulature ſhould be placed on the upper convex part of the retort before it bends to form the neck, ſo that a fluid poured through it may fall directly into the body without ſoiling the neck.

144. Retorts are made of various materials. Flint-glaſs is commonly uſed when the heat is not ſo great as to melt it. For diſtillations which require exceſſive degrees of heat, retorts of earthern-ware, or coated (73. Sect. 2.) glaſs-retorts are employed. Quick-ſilver is diſtilled in iron-retorts.

145. The ſimpleſt condenſing apparatus uſed with the retort, is the common glaſs-receiver; which is a veſſel of a conical or globular form, having a neck ſufficiently wide to admit of the neck of the retort being introduced within it. To prevent the loſs and diſſipation of the vapours to be condenſed, the retort and receiver may be accurately ground to each other, or ſecured by ſome proper lute. To prevent the receiver from being heated by the caloric evolved during the condenſation of vapours in it, we muſt employ ſome means to keep it cool. It is either immerſed in cold water, or covered with ſnow, or pounded ice, or a conſtant evaporation is ſupported from its ſurface, by covering it with a cloth, which is kept moiſt by means of the deſcent of water, from a veſſel placed above it, through minute ſyphons or ſpongy worſted threads. But as, during the proceſs of diſtillation, permanently elaſtic fluids are often produced, which would endanger the breaking of the veſſels, theſe are permitted to eſcape either through a tubulature, or hole in the ſide of the receiver, or rather through a hole made in the luting (77. S. 2.). Receivers having a ſpout iſſuing from their ſide, are uſed when we wiſh to keep ſeparate the products obtained at different periods of any diſtillation. For condenſing very volatile vapours, a ſeries of receivers, communicating with each other, termed Adopters, were formerly uſed;

used; but these are now entirely superseded by Woulfe's apparatus.

146. This apparatus consists of a tubulated retort, adapted to a tubulated receiver. With the tubulature of the receiver, a three-necked bottle is connected by means of a bent tube, the further extremity of which is immersed, one or more inches, in some fluid contained in the bottle. A series of two or three similar bottles are connected with this first bottle in the same way. In the middle tubulature of each bottle, a glass tube is fixed, having its lower extremity immersed about a quarter of an inch in the fluid. The height of the tube above the surface of the fluid must be greater than the sum of the columns of fluid standing over the further extremities of the connecting tubes, in all the bottles or vessels more remote from the retort. Tubes so adjusted are termed Tubes of Safety, for they prevent that reflux of fluid from the more remote into the nearer bottles, and into the receiver itself, which would otherwise inevitably happen, on any condensation of vapour taking place in the retort, receiver, or nearer bottles. Different contrivances for the same purpose have been described by Messrs Welter and Burkitt; and a very ingenious mode of connecting the vessels without lute, has been invented by Citizen Girard, but they would not be easily understood without plates. The further tubulature of the last bottle is commonly connected with a pneumatic apparatus, by means of a bent tube. When the whole is properly adjusted, air blown into the retort should pass through the receiver, rise in bubbles through the fluids contained in each of the bottles, and at last escape by the bent tube. In the receiver, those products of distillation are collected, which are condensable by cold alone. The first bottle is commonly filled with water, and the others with alkaline solutions, or other active fluids; and as the permanently elastic fluids produced, are successively subjected to the action of all of these, only those gases will escape by the bent tube which are not absorbable by any of them.

Pneumatic Apparatus.

147. The great importance of the elastic fluids in modern chemistry, has rendered an acquaintance with the means of collecting and preserving them indispensable.

148. When a gas is produced by any means, it may be received either,

a. Into vessels absolutely empty; or,
b. Into inverted vessels, filled with some fluid, on which it exerts no action.

149. The first mode (148. *a.*) of collecting gases, may be fulfilled by means of a bladder, moistened sufficiently to make it perfectly

 pliable,

pliable, and then compreſſed ſo as to preſs out every particle of air from its cavity. In this ſtate it may be eaſily filled with any gas. An oiled ſilk bag will anſwer the ſame purpoſe, and is more convenient in ſome reſpects, as it may be made of any ſize or form.

150. Glaſs or metallic veſſels, ſuch as balloons, may alſo be emptied for the purpoſe of receiving gaſes, by fitting them with a ſtop-cock, and exhauſting the air from them by means of an air-pump.

151. But the ſecond mode of collecting gaſes is the moſt convenient and common. It conſiſts in conducting the ſtream of gas into an inverted glaſs-jar, or any other veſſel filled with water or mercury. The gas aſcends to the upper part of the veſſel, and diſplaces the fluid. In this way gas may be kept a very long time, provided a ſmall quantity of the fluid be left in the veſſels, which prevents both the eſcape of the gas, and the admiſſion of atmoſpheric air.

152. The veſſels may be of various ſhapes; but the moſt commonly employed are cylindrical. They may either be open only at one extremity, or furniſhed at the other with a ſtop-cock.

153. The manner of filling theſe veſſels with fluid, is to immerſe them completely in it, with the open extremity directed a little upwards, ſo that the whole air may eſcape from them, and then inverting them with their mouths downwards.

154. For filling them with convenience, a trough or ciſtern is commonly uſed. This either ſhould be hollowed out of a ſolid block of wood or marble; or, if it be conſtructed of wood ſimply, it muſt be lined with lead or tinned copper. Its ſize may vary very much; but it muſt contain a ſufficient depth of fluid to cover the largeſt tranſverſe diameter of the veſſels to be filled in it. At one end or ſide, there ſhould be a ſhelf for holding the veſſels after they are filled. This ſhelf ſhould be placed about an inch and a half below the ſurface of the fluid, and ſhould be perforated with ſeveral holes, forming the apices of correſponding conical excavations on the lower ſide, through which, as through inverted funnels, gaſeous fluids may be more eaſily introduced into the veſſels placed over them.

155. In general, the veſſels uſed with a mercurial apparatus ſhould be ſtronger and ſmaller than thoſe for a water-ciſtern, and we muſt have a variety of glaſs and elaſtic tubes for conveying the gaſes from the veſſels in which they are formed to the funnels under the ſhelf.

156. *Rectification* is the repeated diſtillation of any fluid. When it renders the fluid ſtronger, or abſtracts water from it, it is termed Dephlegmation. When a fluid is diſtilled off from any ſubſtance, it is called Abſtraction; and if the product be rediſtilled from the ſame ſubſtance, or a freſh quantity of the ſame ſubſtance, it is denominated Cohobation.

157. *Sublimation*

157. *Sublimation* differs from diſtillation only in the form of the product. When it is compact, it is termed a Sublimate; when looſe and ſpongy, it formerly had the improper appellation of Flowers. Sublimation is ſometimes performed in a crucible, and the vapours are condenſed in a paper cone, or in another crucible inverted over it; ſometimes in the lower part of a glaſs flaſk, cucurbit or phial, and the condenſation is effected in the upper part or capital, and ſometimes in a retort with a very ſhort and wide neck, to which a conical receiver is fitted. The heat is moſt commonly applied through the medium of a ſand-bath; and the degree of heat, and the depth to which the veſſel is inſerted in it, are regulated by the nature of the ſublimation.

158. *Congelation* is the reduction of a fluid to a ſolid form, in conſequence of the abſtraction of caloric. The means employed for abſtracting the caloric, are the evaporation of volatile fluids, the ſolution of ſolids, and the contact of cold bodies.

159. *Coagulation* is the converſion of a fluid into a ſolid of greater or leſs conſiſtence, merely in conſequence of a new arrangement of its particles, as during the proceſs there is no ſeparation of caloric or any other ſubſtance. The means of producing coagulation, are increaſe of temperature, and the addition of certain ſubſtances, as acids and runnets.

Combination.

160. Chemical combination is the intimate union of the particles of at leaſt two heterogenous bodies. It is the effect reſulting from the exertion of the attraction of affinity, and is therefore ſubjected to all the laws of affinity (13.).

161. To produce the chemical union of any bodies, it is neceſſary,

1. That they poſſeſs affinity for each other.
2. That their particles come into actual contact.
3. That the ſtrength of the affinity be greater than any counteracting cauſes which may be preſent.

162. The principal counteracting cauſes are,

1. The attraction of aggregation.
2. Affinities for other ſubſtances.

163. The means to be employed for overcoming the action of other affinities (15.) will be treated of under Decompoſition.

164. The attraction of aggregation is overcome by means of

1. Mechanical diviſion (28. S. 2.).
2. The action of caloric (22.).

165. Combination is facilitated by increafing the points of actual contact,

1. By mechanical agitation.
2. By condenfation; compreffion.

166. The proceffes employed for producing combination, may be confidered,

1. With regard to the nature of the fubftances combined; and,
2. To the nature of the compound produced.

Gafes

1. Combine with gafes;
2. And diffolve fluids or folids;
3. Or are abforbed by them.

Fluids,

1. Are diffolved in gafes;
2. Or abforb them.
3. Combine with fluids,
4. And diffolve folids;
5. Or are rendered folid by them.

Solids,

1. Are diffolved in fluids and in gafes; or
2. Abforb gafes,
3. And folidify fluids.

167. The combination of gafes with each other, in fome inftances, takes place when fimply mixed together: Thus nitrous and oxygen gafes combine as foon as they come into contact; in other inftances, it is neceffary to elevate their temperature to a degree fufficient for their inflammation, either by means of the electric fpark, or the contact of an ignited body, as in the combination of oxygen gas with hydrogen or nitrogen gas.

168. When gafes combine with each other, there is always a confiderable diminution of bulk, and not unfrequently they are condenfed into a liquid or folid form. Hydrogen and oxygen gafes form water; muriatic acid and ammonia gafes form folid muriate of ammonia. But when the combination is effected by ignition, a violent expanfion, which endangers the burfting of the veffels, previoufly takes place, in confequence of the increafe of temperature.

169. *Solution* is the diminution of aggregation in any folid or fluid fubftance, in confequence of its entering into chemical combination. The fubftance, whether folid or fluid, whofe aggregation is leffened, is termed the Solvend; and the fubftance, by whofe agency the folution is effected, is often called the Menftruum or Solvent.

170. Solution is faid to be performed *viá humidá*, when the natural form of the folvent is fluid; but when the agency of heat is neceffary

neceſſary to give the ſolvent its fluid form, the ſolution is ſaid to be performed *viâ ſiccâ*.

171. The diſſolving power of each menſtruum is limited, and is determinate with regard to each ſolvend. The ſolubility of bodies is alſo limited and determinate with regard to each menſtruum.

172. When any menſtruum has diſſolved the greateſt poſſible quantity of any ſolvend, it is ſaid to be ſaturated with it. But, in ſome caſes, although ſaturated with one ſubſtance, it is ſtill capable of diſſolving others: Thus a ſaturated ſolution of muriate of ſoda will diſſolve a certain quantity of nitrate of potaſs, and after that a portion of muriate of ammonia.

173. The diſſolving power of ſolvents, and conſequently the ſolubility of ſolvends, are generally increaſed by increaſe of temperature: and converſely, this power is diminiſhed by diminution of temperature; ſo that, from a ſaturated ſolution, a ſeparation of a portion of the ſolvend generally takes place on any reduction of temperature. This property becomes extremely uſeful in many chemical operations, eſpecially in cryſtallization.

174. Particular terms have been applied to particular caſes of ſolution.

175. The ſolution of a fluid in the atmoſphere is termed *ſpontaneous evaporation*. It is promoted by expoſing a large ſurface, by frequently renewing the air in contact with the ſurface, and by increaſe of temperature.

176. Some ſolids have ſo ſtrong an affinity for water, that they attract it from the atmoſphere in ſufficient quantity to diſſolve them. Theſe are ſaid to *deliqueſce*. Others, on the contrary, retain their water of cryſtallization with ſo weak a force, that the atmoſphere attracts it from them, ſo that they crumble into powder. Theſe are ſaid to *effloreſce*. Both operations are promoted by expoſing large ſurfaces, and by a current of air; but the latter is facilitated by a warm dry air, and the former by a cold humid atmoſphere.

177. Solution is alſo employed to ſeparate ſubſtances, (for example, ſaline bodies), which are ſoluble in the menſtruum, from others which are not. When our object is to obtain the ſoluble ſubſtance in a ſtate of purity, the operation is termed *lixiviation*, and as ſmall a quantity of the menſtruum as is poſſible is uſed. When, however, it is employed to free an inſoluble ſubſtance from ſoluble impurities, it is termed *edulcoration*, which is beſt performed by uſing a very large quantity of the menſtruum.

178. Organic products being generally compoſed of heterogeneous ſubſtances, are only partially ſoluble in the different menſtrua. To the ſolution of any of theſe ſubſtances, while the others remain undiſſolved, the term *extraction* is applied; and when, by evaporation, the ſubſtance extracted is reduced to a ſolid form, it

is

is termed an Extract, which is hard or soft, watery or spirituous, according to the degree of consistency it acquires, and the nature of the menstruum employed.

179. *Infusion* is employed to extract the virtues of aromatic and volatile substances, which would be dissipated by decoction, and destroyed by maceration, and to separate substances of easy solution from others which are less soluble. The process consists in pouring upon the substance to be infused, placed in a proper vessel, the menstruum, either hot or cold, according to the direction, covering it up, agitating it frequently, and after a due time straining or decanting off the liquor, which is now termed the Infusion.

180. *Maceration* differs from infusion, in being continued for a longer time, and can only be employed for substances which do not easily ferment or spoil.

181. *Digestion*, on the other hand, differs from maceration only in the activity of the menstruum being promoted by a gentle degree of heat. It is commonly performed in a glass matrass, which should only be filled one-third, and covered with a piece of wet bladder, pierced with one or more small holes, so that the evaporation of the menstruum may be prevented as much as possible, without risk of bursting the vessel. The vessel may be heated, either by means of the sun's rays, of a common fire, or of the sand-bath; and when the last is employed, the vessel should not be sunk deeper in the sand than the portion that is filled. Sometimes when the menstruum employed is valuable, a distilling apparatus is used to prevent any waste of it. At other times, a blind capital is luted on the matrass, or a smaller matrass is inverted within a larger one; and as the vapour which arises is condensed in it, and runs back into the larger, the process in this form has got the name of *Circulation.*

182. *Decoction* is performed by subjecting the substances operated on to a degree of heat which is sufficient to convert the menstruum into vapour, and can only be employed with advantage for extracting principles which are not volatile, and from substances whose texture is so dense and compact as to resist the less active methods of solution. When the menstruum is valuable, that portion of it which is converted into vapour, is generally saved by condensing it in a distilling apparatus (136. S. 2.).

183. Solutions in alcohol are termed Tinctures, and in vinegar or wine, Medicated vinegars or wines. The solution of metals in mercury is termed Amalgamation. The combinations of other metals with each other form Alloys.

184. *Absorption* is the condensation of a gas into a fluid or solid form, in consequence of its combination with a fluid or solid. It is facilitated by increase of surface and agitation; and the power of absorption in fluids is much increased by compression and

and diminution of temperature, although in every inftance it be limited and determinate. Dr Nooth invented an ingenious apparatus for combining gafes with fluids, and Meffrs Schweppe, Paul and Cuthbertfon have very advantageoufly employed compreffion.

185. Fluids often become folid by entering into combination with folids, and this change is always accompanied by confiderable increafe of temperature, as in the flaking of lime.

Decomposition.

186. *Decompofition* is the feparation of bodies which were chemically combined.

187. It can only be effected by the agency of fubftances poffeffing a ftronger affinity for one or more of the conftituents of the compound, than thefe poffefs for each other (16.).

188. Decompofition has acquired various appellations according to the phenomena which accompany it.

189. *Diffolution* differs from folution in being accompanied by the decompofition, or a change in the nature of the fubftance diffolved. Thus we correctly fay, a folution of lime in muriatic acid, and a diffolution of chalk in muriatic acid.

190. Sometimes a gas is feparated during the action of bodies on each other. When this efcapes with confiderable violence and agitation of the fluid, it is termed *effervefcence*. The gas is very frequently allowed to efcape into the atmofphere, but at other times is either collected in a pneumatic apparatus, or made to enter into fome new combination. The veffels in which an effervefcing mixture is made, fhould be high and fufficiently large, to prevent any lofs of the materials from their running over, and in fome cafes the mixture muft be made flowly and gradually.

191. *Precipitation* is the reverfe of folution. It comprehends all thofe proceffes in which a folid is obtained by the decompofition of a folution. The fubftance feparated is termed a Precipitate, if it fink to the bottom of the fluid; or a Cream, if it fwim above it. Precipitation, like folution, is performed either *viâ humidâ*, or *viâ ficcâ* (170. S. 2.).

192. Precipitation is effected,

1. By leffening the quantity of the folvent by evaporation.
2. By diminifhing its powers, as by reduction of temperature, or dilution.
3. Or by the addition of fome chemical agent, which from its more powerful affinities,
   a. Either combines with the folvent, and precipitates the folvend;
   b. Or forms itfelf an infoluble compound with fome conftituent of the folution.

193. The objects of precipitation are,

1. The

1. The ſeparation of ſubſtances from ſolutions in which they are contained.
2. The purification of ſolutions from precipitable impurities.
3. The formation of new combinations.

194. The two firſt means of precipitation have been already noticed (118. and 173, S. 2.).

195. In performing it in the laſt manner, we may obſerve the following rules:

1. The ſolution and precipitant muſt poſſeſs the requiſite degree of purity.
2. The ſolution ſhould be perfectly ſaturated, to avoid unneceſſary expenditure of the ſolvent or precipitant.
3. The one is to be added ſlowly and gradually to the other.
4. After each addition, they are to be thoroughly mixed by agitation.
5. We muſt allow the mixture to ſettle, after we think that enough of the precipitant has been added, and try a little of the clear ſolution, by adding to it ſome of the precipitant; if any precipitation takes place, we have not added enough of the precipitant. This is neceſſary, not only to avoid loſs, but in many inſtances, the precipitant, if added in exceſs, rediſſolves or combines with the precipitate.

196. After the precipitation is completed, the precipitate is to be ſeparated from the ſupernatant fluid by ſome of the means already noticed (44. 45. S. 2.).

197. When the precipitate is the chief object of our proceſs, and when it is not ſoluble in water, it is often adviſable to dilute, to a conſiderable degree, both the ſolution and precipitant, before performing the operation. When it is only difficultly ſoluble, we muſt content ourſelves with waſhing the precipitate, after it is ſeparated by filtration. In ſome caſes the ſeparation of the precipitate is much aſſiſted by a gentle heat.

198. *Cryſtallization* is a ſpecies of precipitation, in which the particles of the ſolvend, on ſeparating from the ſolution, aſſume certain determinate forms.

199. The conditions neceſſary for cryſtallization are,

1. That the integrant particles have a tendency to arrange themſelves in a determinate manner, when acted on by the attraction of aggregation.
2. That they be diſaggregated, at leaſt ſo far as to poſſeſs ſufficient mobility to aſſume their peculiar arrangement.
3. That the cauſes diſaggregating them be ſlowly and gradually removed.

200. Notwithſtanding the immenſe variety in the forms of cry-

ſtals,

ſtals, M. Hauy has rendered it probable, that there are only three forms of the integrant particles :

1. The parallelopiped.
2. The triangular priſm.
3. The tetrahedron.

201. But as theſe particles may unite in different ways, either by their faces or edges, they will compoſe cryſtals of various forms.

202. The primitive forms have been reduced to ſix :

1. The parallelopiped.
2. The regular tetrahedron.
3. The octahedron with triangular faces.
4. The ſix-ſided priſm.
5. The dodecahedron terminated by rhombs.
6. The dodecahedron with iſoſceles triangular faces.

203. Almoſt all ſubſtances, on cryſtallizing, retain a portion of water combined with them, which is eſſential to their exiſtence as cryſtals, and is therefore denominated Water of cryſtallization. Its quantity varies very much in different cryſtallized ſubſtances.

204. The means by which the particles of bodies are diſaggregated, ſo as to admit of cryſtallization, are ſolution (169. S. 2.), fuſion (101. S. 2.), vaporization (113. S. 2.), or mechanical diviſion and ſuſpenſion in a fluid medium.

205. The means by which the diſaggregating cauſes are removed, are, evaporation, reduction of temperature, and reſt.

206. When bodies are merely ſuſpended in a ſtate of extreme mechanical diviſion, nothing but reſt is neceſſary for their cryſtallization.

207. When they are diſaggregated by fuſion or vaporization, the regularity of their cryſtals depends on the ſlowneſs with which their temperature is reduced; for if cooled too quickly, their particles have not time to arrange themſelves, and are converted at once into a confuſed or unvaried ſolid maſs. Thus glaſs, which when cooled quickly, is ſo perfectly uniform in its appearance, when cooled ſlowly has a cryſtalline texture. But in order to obtain cryſtals by means of fuſion, it is often neceſſary, after the ſubſtance has begun to cryſtallize, to remove the part which remains fluid, for otherwiſe it would fill up the interſtices among the cryſtals firſt formed, and give the whole the appearance of one ſolid maſs. Thus, after a cruſt has formed on the top of melted ſulphur, by pouring off the ſtill fluid part, we obtain regular cryſtals.

208. The means by which bodies, which have been diſaggregated by ſolution, are made to cryſtallize moſt regularly, vary according to the habitudes of the bodies with their ſolvents and caloric.

209. Some

209. Some ſaline ſubſtances are much more ſoluble in hot than in cold water. Therefore, a boiling ſaturated ſolution of any of theſe will depoſite, on cooling, the exceſs of ſalt, which it is unable to diſſolve when cold. Theſe ſalts commonly contain much water of cryſtallization.

210. Other ſalts are ſcarcely, if at all, more ſoluble in hot than in cold water; and, therefore, their ſolutions muſt be evaporated either by heat or ſpontaneouſly. Theſe ſalts commonly contain little water of cryſtallization.

211. The beauty and ſize of the cryſtals depend upon the purity of the ſolution, its quantity, and the mode of conducting the evaporation, and cooling.

212. When the ſalt is not more ſoluble in hot than in cold water, by means of gentle evaporation a ſucceſſion of pellicles are formed on the top of the ſolution, which either are removed or permitted to ſink to the bottom by their own weight; and the evaporation is continued until the cryſtallization be completed.

213. But when the ſalt is capable of cryſtallizing on cooling, the evaporation is only continued until a drop of the ſolution, placed upon ſome cold body, ſhews a diſpoſition to cryſtallize, or at fartheſt only until the firſt appearance of a pellicle. The ſolution is then covered up, and ſet aſide to cool, and the more ſlowly it cools, the more regular are the cryſtals. The mother-water or ſolution, which remains after the cryſtals are formed, may be repeatedly treated in the ſame way as long as it is capable of furniſhing any more ſalt.

214. When very large and beautiful cryſtals are wanted, they may be obtained by laying well-formed cryſtals in a ſaturated ſolution of the ſame ſalt, and turning them every day. In this way their ſize may be conſiderably increaſed, though not without limitation, for after a certain time they grow ſmaller inſtead of larger.

215. Cryſtallization is employed,

1. To obtain cryſtallizable ſubſtances in a ſtate of purity.
2. To ſeparate them from each other, by taking advantage of their different ſolubility at different temperatures.

Oxygenizement.

216. The combination of oxygen is the object of many chemical and pharmaceutical proceſſes.

217. With regard to the manner of combination, the oxygenizement may take place, either

a. Without the production of heat and light, to expreſs which there is no other than the generic term *oxygenizement;* or

b. With the production of heat and light, *combuſtion*.

1. In ſubſtances which remain fixed at the temperature neceſſary for their combuſtion, there is no other more ſpecific term.

2. In

2. In substances which exist as gases, or are previously reduced to the state of vapour by the temperature necessary, it is termed *inflammation*; and if it proceed with very great violence and rapidity, *deflagration*.

218. Combustion and inflammation have been already (116.) described.

219. *Deflagration* from its violence must always be performed with caution. The common mode of conducting this process, is to introduce the substances to be deflagrated together into any convenient vessel, commonly an iron-pot, or crucible, heated to redness. But to obviate any inconvenience, and to ensure the success of the process, they are previously made perfectly dry, reduced to powder, and thoroughly mixed together, and they are deflagrated gradually, for example, by spoonfuls; but we must take care always to examine the spoon, lest a spark should adhere to it, which might set fire to the whole mass. During the process, the portion introduced should be frequently stirred.

220. The oxygen necessary for these processes, may be derived from the decomposition

a. Of oxygen gas or atmospheric air.
b. Of oxides, particularly water.
c. Of acids and their combinations, especially the oxygenized muriatic and nitric acids.

221. The different modes of oxygenizement are intended, either

a. To produce heat and light (78. S. 2.).
b. To obtain an oxygenized product:
 1. An oxide, when the process may be termed *Oxidizement.*
 2. An acid, *Acidification.*
c. To remove an oxygenizable substance.

222. Hydrogen, carbon, and nitrogen, are never, unless for experiment, oxygenized as simple substances.

223. Sulphur is converted into sulphuric acid by burning it in leaden chambers, or by deflagrating it with nitrate of potass; and phosphorus is acidified by inflammation in the atmosphere.

224. Of all the simple oxygenizable substances, the metals are most frequently combined with oxygen; and as, in consequence of this combination, they lose their metallic appearance, they were formerly said to be calcined or corroded.

225. Metals differ very much in the facility with which they are oxygenized by the contact of oxygen gas. For some, as iron and manganese, the ordinary temperature of the atmosphere is sufficient; others, as gold and platinum, scarcely undergo any change in the most violent heat. The operation is performed by

heating

heating them to the requiſite temperature, and expoſing them to the action of the air; and on the fuſible metals it is promoted by ſtirring them when melted.

226. Metals alſo differ in the mode of their action upon water. They are either capable of decompoſing water,

a. At ordinary temperatures, as iron, zinc, manganeſe, &c.
b. At elevated temperatures, as antimony and tin; or,
c. When acted upon at the ſame time by an acid or an alkali, as copper, lead, biſmuth; or, laſtly,
d. They are incapable of decompoſing it, as gold, ſilver, mercury, platinum.

227. The oxygenizement of metals by water is promoted by the action of air. Iron, for example, is more quickly ruſted by being merely moiſtened with water, than when totally immerſed in water.

228. But the acids are the moſt powerful agents in oxygenizing metals. They do it in two ways, either

1. By enabling them to decompoſe water (226. S. 2.).
2. By being decompoſed themſelves.

229. Sulphuric acid is decompoſed by very few metals, unleſs aſſiſted by conſiderable increaſe of temperature; but it powerfully promotes the decompoſition of water.

230. Nitric acid is decompoſed by many of them with very great violence, proceeding in ſome inſtances even to inflammation. It alſo oxygenizes them to the higheſt degree of which they are ſuſceptible. It ſeldom produces the decompoſition of water.

231. Muriatic acid is never decompoſed, and only acts on thoſe metals capable of decompoſing water.

232. Oxygenized muriatic acid reſembles the nitric, both in the violence of its action, and in the extent to which it carries the oxygenizement of the metals.

233. The metals are ſuſceptible of different degrees of oxygenizement, ſome of them even of acidification, and, in general, they are more oxygenized according to the rapidity of the proceſs. When proceeding too ſlowly, it may be accelerated by heat; when too violent, it muſt be checked by diminution of temperature, as by plunging the veſſel in which the operation is performing into cold water.

234. When the degree of oxygenizement is not very great, the oxide formed, generally enters into combination with the acid employed, and forms a metallic ſalt; but when carried to its higheſt degree, the oxide is often inſoluble.

DISOXY-

Disoxygenizement of Metallic Oxides and Acids.

235. This procefs was formerly termed *reduction*, from its reftoring them to their metallic fplendour; and is performed by caufing fome body to act upon them, which has a greater affinity for oxygen than they have. The different metals themfelves vary very much in the degree of this affinity, fo that they are reduced with very different degrees of facility. Gold, filver, platinum, and mercury, are reduced by merely expofing them to a fufficient degree of heat in clofe veffels. The oxygen at this temperature has a greater affinity for caloric than for the metals, and is therefore driven off in the form of very pure oxygen gas.

236. The other metallic oxides which refift the fimple action of heat, may be reduced by melting them in contact with charcoal, or fubftances which may be charred (117. S. 2.), fuch as oil, fat, rofin, pitch, &c. Befides the charcoal, different faline matters, fuch as alkalies, muriate of foda, fub-borate of foda, &c. are alfo added to facilitate the fufion of the oxide. Soap is therefore often ufed, and the black flux confifts of a mixture of potafs and charcoal, obtained by deflagrating two parts of tartar and one of nitrate of potafs.

237. The oxide to be reduced is mixed with a fufficient quantity of any of thefe fubftances, and placed in the bottom of a crucible, which is afterwards filled up with charcoal powder, to prevent entirely the accefs of the air, and expofed for a length of time to a fufficiently high temperature, when a button of the metal will commonly be found in the bottom of the crucible. Upon the volatile metals, fuch as arfenic and zinc, this operation muft be performed in a diftilling or fubliming apparatus. Some metallic oxides, fuch as thofe of platinum, columbium, &c. cannot be reduced, from our being unable to produce a degree of heat fufficient to melt them.

238. Metals may be alfo obtained from the metallic falts, by inferting in a folution of thefe a plate of another metal, poffeffing a ftronger affinity for oxygen and for the acid. Thus copper is precipitated by iron, and arfenic by zinc. We muft only take care that the two metals have no remarkable affinity for each other, as in that cafe an alloy is commonly produced. For example, when mercury is placed in a folution of filver, a cryftallized amalgam of filver is obtained, formerly called the Arbor Dianæ.

239. The compound oxides may be further oxygenized, by treating them with nitric acid. In this way various acids are formed, according to the nature of the oxide operated on, the quantity of the acid, and the mode of conducting the procefs.

240. They alſo undergo changes by gradually combining with the oxygen of the atmoſphere. In ſome caſes, this combination is attended with remarkable phenomena, which have been claſſed under the term *fermentation*.

241. There are ſeveral ſpecies of fermentation, which have been named from the products they afford.

1. The ſaccharine, which produces ſugar.
2. The vinous, which produces wine, beer, and ſimilar fluids.
3. The panary, which produces bread.
4. The acetous, which produces vinegar.
5. The putrefactive, which produces ammonia.

242. The ſame ſubſtances are ſometimes capable of undergoing the firſt, ſecond, fourth, and fifth; or third, fourth, and fifth, ſucceſſively, but never in a retrograde order.

243. The conditions neceſſary for all of them, are,

1. The preſence of a ſufficient quantity of fermentable matter.
2. The preſence of a certain proportion of water.
3. The contact of atmoſpheric air; and,
4. A certain temperature.

244. *The ſaccharine fermentation.*—The ſeeds of barley, when moiſtened with a certain quantity of water, and expoſed to the contact of the atmoſpheric air, at a temperature of not leſs than 50°, ſwell, and ſhew marks of incipient vegetation, by puſhing forth the radicle. If at this period the fermentation be checked, by expoſing them to a conſiderable degree of heat, and drying them thoroughly, the inſipid amylaceous matter, of which the ſeeds principally conſiſted, will be found to be changed in part into a ſweet ſaccharine ſubſtance. The oxygen of the air, in contact with the ſeeds, is at the ſame time converted into carbonic acid gas, by combining with part of the carbon of the ſeeds; and there is a conſiderable increaſe of temperature in the fermenting maſs, even to ſuch a degree as ſometimes to ſet it on fire. Similar phenomena occur in the maturation of fruits, in the cookery of ſome roots and fruits, and during the heating of hay, when put up too wet.

245. *The vinous fermentation.*—The conditions neceſſary for the vinous fermentation, are the preſence of proper proportions of ſugar, acid, extract, and water, and a temperature of about 70°. When theſe circumſtances exiſt, an inteſtine motion commences in the fluid; it becomes thick and muddy; its temperature increaſes, and carbonic acid gas is evolved. After a time the fermentation ceaſes; the feces riſe to the top, or ſubſide to the bottom; the liquor becomes clear; it has loſt its ſaccharine taſte, and aſſumed a new one, and its ſpecific gravity is diminiſhed. If the fermentation

tation has been complete, the sugar is entirely decomposed, and the fermented liquor consists of a large proportion of water, of alcohol, of malic acid, of extract, of essential oil, and colouring matter. The substances most commonly subjected to this fermentation, are, Must, which is the expressed juice of the grape, and which produces the best wines; the juice of the currant and gooseberry, which, with the addition of sugar, form our home-made wines; the juices of the apple and pear, which give cyder and perry; and an infusion of malt, which, when fermented with yeast, forms beer. The briskness and sparkling of some of these liquors, depends on their being put into close vessels before the fermentation is completed, by which means a portion of carbonic acid gas is retained.

246. *The acetous fermentation.*—All vinous liquors are susceptible of the acetous fermentation, provided they be exposed to the action of the atmosphere, in a temperature not less than 70°. An intestine motion and hissing noise sensibly take place in the fluid; it becomes turbid, with filaments floating in it, and its temperature increases; it exhales a pungent acid smell, without any disengagement of carbonic acid gas. Gradually these phenomena cease; the temperature decreases; the motion subsides, and the liquor becomes clear, having deposited a sediment and red glairy matter, which adheres to the sides of the vessel. During this process, the alcohol and malic acid disappear entirely, oxygen is absorbed, and acetous acid formed.

247. *The panary or colouring fermentation*—is less understood than those already described. A paste of wheat flour and water exposed at a temperature of 65°, swells, emits a small quantity of gas, and acquires new properties. The gluten disappears, and it acquires a sour disagreeable taste. If a just proportion of this fermented paste or leaven, or, what is still better, if some barm be formed into a paste with wheat-flour and water, the same fermentation is excited, without the disagreeable taste being produced; the gas evolved is prevented from escaping by the viscidity of the paste, which therefore swells, and, if baked, forms light, spongy bread.

248. *The putrefactive fermentation.*—Although vegetable substances, when they are destroyed by spontaneous decomposition, are said to putrify, we shall consider this fermentation as belonging exclusively to animal substances, or those which contain nitrogen as an elementary principle. The essential conditions of putrefaction are humidity, and a temperature between 45° and 110°. The presence of air, the diminution of pressure, and the addition of ferments, are not essential, but accelerate its progress. The smell is at first insipid and disagreeable, but afterwards insupportably fetid, although the fetor for a time is somewhat diminished by the mixture of an ammoniacal odour. Liquids become turbid

and flocculent. Soft fubftances melt down into a gelatinous mafs, in which there is a kind of gentle motion and fwelling up, from the flow and fcanty formation of elaftic fluids. Solids, befides the general foftening, exude a ferofity of various colours, and by degrees the whole mafs diffolves, the fwelling ceafes, the matter fettles, and its colour deepens; at laft its odour becomes fomewhat aromatic, its elements are finally diffipated, and there remains only a kind of fat, vifcid, and ftill fetid mould. The products of putrefaction are carburetted, fulphuretted, and phofphuretted hydrogen gafes, water, ammonia, and carbonic acid. Thefe are all diffipated in the form of gas or vapour. Zoonic acid, a fatty matter, a foap compofed of this fat and ammonia, and often the nitric acid, fixed by a falifiable bafe, are alfo produced; and the ultimate remains, befides falts, compofed of acid and earths, contain for a long time a portion of fat charry matter.

APPEN-

APPENDIX.

TABLES OF SIMPLE AFFINITY.

Oxygen.	Oxygen. *a*.	Carbon.	Nitrogen.
Carbon,	Titanium,	Oxygen,	Oxygen,
Charcoal?	Manganefe,	Iron,	Sulphur?
Manganefe,	Zinc,	Hydrogen.	Phofphorus,
Zinc,	Iron,		Hydrogen.
Iron,	Tin,		
Tin,	Uranium,		
Antimony,	Molybdenum,		
Hydrogen,	Tungften,		
Phofphorus,	Cobalt,		
Sulphur,	Antimony,		
Arfenic,	Nickel,		
Nitrogen,	Arfenic,		
Nickel,	Chromum,		
Cobalt,	Bifmuth,		
Copper,	Lead,		
Bifmuth,	Copper,		
Caloric?	Tellurium,		
Mercury,	Platinum,		
Silver,	Mercury,		
Oxide of arfenic,	Silver,		
Nitric oxide,	Gold.		
Gold,			
Platinum,			
Carbonic oxide?			
Muriatic acid,			
White oxide of Manganefe,			
White oxide of Lead.			

a. Vauquelin's Table of the affinity of the metals for oxygen, according to the difficulty with which their oxides are decompofed by heat.

TABLES *of* SIMPLE AFFINITY *continued.*

HYDROGEN.	SULPHUR. PHOSPHORUS?	POTASS, SODA, and AMMONIA.
Oxygen,	Potaſs,	*Acids.* Sulphuric,
Sulphur,	Soda,	—— Nitric,
Carbon,	Iron,	—— Muriatic,
Phoſphorus,	Copper,	—— Phoſphoric,
Nitrogen.	Tin,	—— Fluoric,
	Lead,	—— Oxalic,
	Silver,	—— Tartarous,
	Biſmuth,	—— Arſenic,
	Antimony,	—— Succinic,
	Mercury,	—— Citric,
	Arſenic,	—— Lactic,
	Molybdenum.	—— Benzoic,
		—— Sulphurous,
		—— Acetous,
		—— Mucous,
		—— Boracic,
		—— Nitrous,
		—— Carbonic,
		—— Pruſſic,
		Oil,
		Water,
		Sulphur.

TABLES

TABLES *of* SIMPLE AFFINITY *continued.*

BARYTA.	STRONTIA.	LIME.
Acids. Sulphuric,	*Acids.* Sulphuric.	*Acids.* Oxalic.
—— Oxalic,	—— Phoſphoric,	—— Sulphuric,
—— Succinic,	—— Oxalic,	—— Tartarous,
—— Fluoric,	—— Tartarous,	—— Succinic,
—— Phoſphoric,	—— Fluoric,	—— Phoſphoric,
—— Mucous,	—— Nitric,	—— Mucous,
—— Nitric,	—— Muriatic,	—— Nitric,
—— Muriatic,	—— Succinic,	—— Muriatic,
—— Suberic,	—— Acetous,	—— Suberic,
—— Citric,	—— Arſenic,	—— Fluoric,
—— Tartarous,	—— Boracic,	—— Arſenic,
—— Arſenic,	—— Carbonic.	—— Lactic,
—— Lactic,	Water.	—— Citric,
—— Benzoic,		—— Malic,
—— Acetous,		—— Benzoic,
—— Boracic,		—— Acetous,
—— Sulphurous,		—— Boracic,
—— Nitrous,		—— Sulphurous,
—— Carbonic,		—— Nitrous,
—— Pruſſic.		—— Carbonic,
Sulphur,		—— Pruſſic,
Phoſphorus,		Sulphur,
Water,		Phoſphorus,
Fixed oil.		Water,
		Fixed oil.

TABLES *of* SIMPLE AFFINITY *continued.*

MAGNESIA.	ALUMINA.	SILICA.
Acids. Oxalic.	*Acids.* Sulphuric,	Fluoric acid,
—— Phoſphoric,	—— Nitric,	Potaſs.
—— Sulphuric,	—— Muriatic,	
—— Fluoric,	—— Oxalic,	
—— Arſenic,	—— Arſenic,	
—— Mucous,	—— Fluoric,	
—— Succinic,	—— Tartarous,	
—— Nitric,	—— Succinic,	
—— Muriatic,	—— Mucous,	
—— Tartarous,	—— Citric,	
—— Citric,	—— Phoſphoric,	
—— Malic?	—— Lactic,	
—— Lactic,	—— Benzoic,	
—— Benzoic,	—— Acetous,	
—— Acetous,	—— Boracic,	
—— Boracic,	—— Sulphurous,	
—— Sulphurous,	—— Nitrous,	
—— Nitrous,	—— Carbonic,	
—— Carbonic,	—— Pruſſic.	
—— Pruſſic,		
Sulphur.		

TABLES *of* SIMPLE AFFINITY *continued.*

OXIDE OF PLATINUM. ——— GOLD. *a.*	OXIDE OF SILVER	OXIDE OF MERCURY.
Ether. Gallic acid,	Gallic acid,	Gallic acid,
Muriatic,	Muriatic,	Muriatic,
Nitric,	Oxalic,	Oxalic,
Sulphuric,	Sulphuric,	Succinic,
Arſenic,	Mucous	Arſenic,
Fluoric,	Phoſphoric,	Phoſphoric,
Tartarous,	Sulphurous,	Sulphuric,
Phoſphoric,	Nitric,	Mucous,
Oxalic,	Arſenic,	Tartarous,
Citric,	Fluoric,	Citric,
Acetous,	Tartarous,	Malic,
Succinic,	Citric,	Sulphurous,
Pruſſic,	Lactic,	Nitric,
Carbonic.	Succinic,	Fluoric,
———	Acetous,	Acetous,
Ammonia.	Pruſſic,	Benzoic,
	Carbonic,	Boracic,
	———	Pruſſic,
	Ammonia.	Carbonic,

TABLES

a. Omitting the oxalic, citric, ſuccinic, and carbonic, and adding ſulphuretted hydrogen after ammonia.

TABLES *of* SIMPLE AFFINITY *continued.*

OXIDE OF LEAD.	OXIDE OF COPPER.	OXIDE OF ARSENIC.
Gallic,	Gallic,	Gallic,
Sulphuric,	Oxalic,	Muriatic,
Mucous,	Tartarous,	Oxalic,
Oxalic,	Muriatic,	Sulphuric,
Arſenic,	Sulphuric,	Nitric,
Tartarous,	Mucous,	Tartarous,
Phoſphoric,	Nitric,	Phoſphoric,
Muriatic,	Arſenic,	Fluoric,
Sulphurous,	Phoſphoric,	Succinic,
Suberic,	Succinic,	Citric,
Nitric,	Fluoric,	Acetous,
Fluoric,	Citric,	Pruſſic,
Citric,	Lactic,	Fixed alkalies,
Malic,	Acetous,	Ammonia,
Succinic,	Boracic,	Fixed oils,
Lactic,	Pruſſic,	Water.
Acetous,	Carbonic,	
Benzoic,	Fixed alkalies,	
Boracic,	Ammonia,	
Pruſſic,	Fixed oils.	
Carbonic,		
Fixed oils,		
Ammonia.		

TABLES

TABLES *of* SIMPLE AFFINITY *continued.*

OXIDE OF IRON.	OXIDE OF TIN *a*.	OXIDE OF ZINC.	OX. OF ANTIMONY.
Ether. Gallic,	Gallic,	Gallic,	Gallic,
Oxalic,	Muriatic,	Oxalic,	Muriatic,
Tartarous,	Sulphuric,	Sulphuric,	Benzoic,
Camphoric,	Oxalic,	Muriatic,	Oxalic,
Sulphuric,	Tartarous,	Mucous,	Sulphuric,
Mucous,	Arſenic,	Nitric,	Nitric,
Muriatic,	Phoſphoric,	Tartarous,	Tartarous,
Nitric,	Nitric,	Phoſphoric,	Mucous,
Phoſphoric,	Succinic,	Citric,	Phoſphoric,
Arſenic,	Fluoric,	Succinic,	Citric,
Fluoric,	Mucous,	Fluoric,	Succinic,
Succinic,	Citric,	Arſenic,	Fluoric,
Citric,	Lactic,	Lactic,	Arſenic,
Lactic,	Acetous,	Acetous,	Lactic,
Acetous,	Boracic,	Boracic,	Acetous,
Boracic,	Pruſſic,	Pruſſic,	Boracic,
Pruſſic,		Carbonic,	Pruſſic,
Carbonic.	Ammonia.		
		Fixed alkalies,	Fixed alkalies,
		Ammonia.	Ammonia.

TABLES

a. Bergman places the tartarous before the muriatic.

TABLES *of* SIMPLE AFFINITY *continued.*

SULPHURIC ACID. PRUSSIC. *a.*	SULPHUROUS ACID. SUCCINIC. *b.*	PHOSPHORIC ACID. CARBONIC. *c.*	PHOSPHOROUS ACID.
Baryta,	Baryta,	Baryta,	Lime,
Strontia,	Lime,	Strontia,	Baryta,
Potafs,	Potafs,	Lime,	Strontia,
Soda,	Soda,	Potafs,	Potafs,
Lime,	Strontia,	Soda,	Soda,
Magnefia,	Magnefia,	Ammonia,	Ammonia,
Ammonia,	Ammonia,	Magnefia,	Glucina,
Glucina,	Glucina,	Glucina,	Alumina,
Gadolina,	Alumina,	Alumina,	Zirconia,
Alumina,	Zirconia,	Zirconia,	Metallic oxides.
Zirconia,	Metallic oxides.	Metallic oxides,	
Metallic oxides.		Silica.	

TABLES

a. With the omiffion of all after ammonia.

b. Ammonia fhould come before magnefia, and ftrontia, glucina and zirconia fhould be omitted.

c. Magnefia fhould ftand above ammonia, and alumina and filica fhould be omitted.

TABLES *of* SIMPLE AFFINITY *continued.*

NITRIC ACID. MURIATIC —— *a.*	FLUORIC ACID. BORACIC —— *b.* ARSENIC —— *c.* TUNGSTIC ——	ACETOUS ACID. LACTIC —— SUBERIC —— *d.*	OXALIC ACID. TARTAROUS —— CITRIC —— *e.*
Baryta,	Lime,	Baryta,	Lime,
Potaſs,	Baryta,	Potaſs,	Baryta,
Soda,	Strontia,	Soda,	Strontia,
Strontia,	Magneſia,	Strontia,	Magneſia,
Lime,	Potaſs,	Lime,	Potaſs,
Magneſia,	Soda,	Ammonia,	Soda,
Ammonia,	Ammonia,	Magneſia,	Ammonia,
Glucina,	Glucina,	Metallic oxides,	Alumina,
Alumina.	Alumina,	Glucina,	Metallic oxides,
Zirconia,	Zirconia,	Alumina,	Water,
Metallic oxides.	Silica.	Zirconia.	Alcohol.

TABLES

a. Ammonia ſhould ſtand above magneſia.

b. Silica ſhould be omitted, and inſtead of it water and alcohol be inſerted.

c. Except ſilica.

d. With the omiſſion of ſtrontia, metallic oxides, glucina and zirconia.

e. Zirconia after alumina.

TABLES *of* SIMPLE AFFINITY *continued.*

BENZOIC ACID.	CAMPHORIC ACID.	FIXED OIL.	ALCOHOL.	SULPHURETTED HYDROGEN.
White oxide of Arſenic,	Lime,	Lime,	Water,	Baryta,
Potaſs,	Potaſs,	Baryta,	Ether,	Potaſs,
Soda,	Soda,	Potaſs,	Volatile oil,	Soda,
Ammonia,	Baryta,	Soda,	Alkal. Sulphurets.	Lime,
Baryta,	Ammonia,	Magneſia,		Ammonia,
Lime,	Alumina,	Oxide of Mercury,		Magneſia,
Magneſia,	Magneſia.	Other metallic Oxides,		Zirconia.
Alumina.		Alumina.		

CASES

Cases of Mutual Decomposition.

1. From Simple Affinity (14. *a*.).

Sulphate of Potafs,	with	Muriate of Baryta.
Soda,	—	Nitrate of Potafs.
Ammonia,	—	Muriate of Soda.
Magnefia,	—	Carbonate of Potafs,
Super-fulphate of Alumina,	—	Muriate of Lime.
Nitrate of Potafs,	—	Baryta.
Ammonia,	—	Phofphate of Soda.
Muriate of Baryta,	—	All the Sulphates and Ni-trates.
Soda,	—	Carbonate of Potafs.
Lime,	—	Sub-borate of Soda.
Ammonia,	—	Carbonate of Potafs.
Phofphate of Soda,	—	Muriate of Ammonia.
Sub-borate of Soda,	—	Carbonate of Potafs.
Nitrate of Silver,	—	Muriate of Soda.
Acetite of Lead,	—	Citrate of Potafs.
Sulphate of Mercury,	—	Muriate of Soda.
Soap of Potafs,	—	Muriate of Soda.
Soap of Soda,	—	Sulphate of Lime.

2. From Compound Affinity (14. *b*.).

Sulphate of Baryta,	with	Carbonate of Potafs.
Sulphate of Baryta,	—	Soda.
Potafs,	—	Muriate of Lime.
Soda,	—	Muriate of Lime.
Muriate of Baryta,	—	Phofphate of Soda.
	—	Sub-borate of Soda.
	—	Carbonate of Potafs.
	—	Soda.
	—	Ammonia.
Muriate of Lime,	—	Carbonate of Ammonia.
Phofphate of Soda,	—	Lime.
Acetite of Lead,	—	Sulphate of Zinc.
Acetite of Lead,	—	Nitrate of Mercury.

Cases of Disposing Affinity (14. *c.*).

The formation of water by the action of the ſulphuric acid on the compound oxides.

The oxidation of metals by water, in conſequence of the preſence of an acid.

Thermometers.

Fahrenheit's thermometer is univerſally uſed in this kingdom. In it the range between the freezing and boiling points of water is divided into 180 degrees; and as the greateſt poſſible degree of cold was ſuppoſed to be that produced by mixing ſnow and muriate of ſoda, it was made the zero, and the freezing point became 32°, and the boiling point 212°.

The Centigrade thermometer of Revolutionized France, places the zero at the freezing point, and divides the range between it and the boiling point into 100°. This has long been uſed in Sweden under the title of Celſius's thermometer.

Reaumeur's thermometer, which was formerly uſed in France, divides the ſpace between the freezing and boiling of water into 80°, and places the zero at the freezing point.

Wedgewood's pyrometer is only intended to meaſure very high temperatures. Its zero correſponds with 1077° of Fahrenheit's, and each degree of Wedgewood is equal to 130 of Fahrenheit.

Therefore 180° F. = 100° C. = 80° R. = 150° D = $\frac{18}{13}$ W.

Or to reduce centrigrade degrees to thoſe of Fahrenheit, multiply by 9 and divide by 5, and to the quotient add 32, that is, $\frac{9\,C.}{5} + 32 = F.$

To reduce Reaumeur's to Fahrenheit's, we have the following formula, $\frac{9\,R.}{4} + 32 = F.$

To reduce Wedgewood's degrees to thoſe of Fahrenheit, we have 130 W. + 1077 = F., or inverſely,

$$\frac{5\,F. - 32}{9} = C.$$

$$\frac{4\,F. - 32}{9} = R.$$

$$\frac{F. - 1077}{130} = W.$$

Table

TABLE *of the Degrees of different Thermometers, omitting Fractions, at which some remarkable Chemical Phenomena occur.*

REAU.	FAHR.	CENT.	
— 35	— 46	— 43	Ether freezes.
— 34	— 45	— 42	Ammonia exists in a liquid form.
— 32	— 39	— 39	Mercury freezes.
— 24	— 22	— 30	Acetous acid freezes.
— 14	0	— 18	Cold, produced by mixing equal parts of snow and muriate of soda.
0	32	0	Ice melts.
5	43	6	Phosphorus burns slowly.
6	45	7	Wax melts.
22	82	28	The adipocere of muscle melts.
27	92	33	Fat begins to melt.
28	95	35	Spermaceti melts.
29	98	36	Ether boils.
30	99	37	Phosphorus melts.
33	106	41	Resin of bile melts.
40	122	50	Phosphorus burns vividly.
42	127	53	Fat is perfectly fluid.
44	130	54	Ammonia is separated from water.
50	145	63	Camphor sublimes.
59	165	74	Albumen coagulates.
61	170	77	Sulphur evaporates, (Kirwan).
64	176	80	Alcohol boils.
68	185	85	Sulphur melts, (Kirwan).
71	192	89	Adipocere of biliary calculi melts.
80	212	100	Water and volatile oils boil.
80	212 +	100	Sulphur melts, (Fourcroy).
83	219	104	Phosphorus evaporates?
96	248	120	Nitric acid boils.
112	283	140	White oxide of arsenic sublimes.
120	303	150	Sulphur burns slowly, and camphor melts.
150	370	188	Charcoal burns.
164	400	205	Arsenic melts?
168	410	210	Tin melts.
190	460	238	Bismuth melts.
226	540	282	Lead melts, (Newton); arsenic sublimes.
226	540 +	282	Tellurium melts.
228	546	285	Sulphuric acid boils, (540° Bergman).

TABLE *of Degrees of Thermometers continued.*

REAU.	FAHR.	CENT.	WEDG.	
232	554	290		Phosphorus boils?
299	570	239		Sulphur burns vividly.
250	594	312		Lead melts, (Morveau).
252	600	315		Mercury boils, linseed oil boils, Sulphur sublimes, (Davy).
297	700	371		Zinc melts.
341	800	427		Hydrogen gas burns.
345	809	432		Antimony melts.
564	1300 +	705	1.7	Azotic gas burns.
1451	3297	1814	14	Diamond burns, (Sir G. Mackenzie).
2024	4587	2530	27	Copper melts.
2082	4717	2602	28	Silver melts.
2313	5237	2992	32	Gold melts.
797[illegible]	17977	9969	130	Cobalt melts.
9[illegible]3[illegible]	20577	11414	150	Nickel melts.
9602	21637	12001	158	Iron melts.
970[illegible]	21877	121[illegible]6	160	Manganese melts.
10286	23177	12858	170 +	Platinum, tungsten, molybdenum, uranium, and titanium melt.

TABLE

TABLE OF FREEZING MIXTURES.

DURING the folution of many faline bodies, a very confiderable reduction of temperature takes place. We fhall extract from Mr Walker's paper a few of the moft convenient mixtures employed for this purpofe.

A mixture of]		[*reduces the temperature*
Muriate of ammonia, Nitrate of potafs, Water,	5 parts. 5 16	from 50° to 10°.
Sulphate of foda, Muriatic acid,	8 5	from 50° to 0°.
Snow, Muriate of foda,	1 1	from 32° to 0°.
Snow, Muriate of foda,	2 1	from 0° to—5°.
Snow, Muriate of foda, Muriate of ammonia, and Nitrate of potafs,	1 5 5	from—5° to—18°.
Snow, Muriate of foda, Nitrate of ammonia,	12 5 5	from—18° to—25°.
Snow, Diluted fulphuric acid,	1 1	from 20° to—60°.
Snow, Muriate of lime,	2 3	from 32° to—50°.
Snow, Muriate of lime,	1 3	from—40° to—73°.
Snow, Diluted fulphuric acid,	8 10	from—68° to—91°.

The falts ought to be recently cryftallized, and reduced to a very fine powder, and the mixture fhould be made as quickly as poffible. To produce a very great degree of cold, the materials muft be previoufly cooled down by means of other mixtures.

Table of ſome Galvanic Circles, compoſed of two Perfect Conductors, and one Imperfect Conductor, (Davy).

More oxygenizable ſubſtances.	Leſs oxygenizable ſubſtances.	Oxygenizing fluids.
Zinc,	with gold, charcoal, ſilver, copper, tin, iron, mercury.	Solutions of nitric acid in water, of muriatic acid, ſulphuric acid, &c. Water, holding in ſolution oxygen, atmoſpheric air.
Iron,	—— gold, charcoal, ſilver, copper, tin.	
Tin,	—— gold, ſilver, charcoal.	
Lead,	—— gold, ſilver.	
Copper,	—— gold, ſilver.	Solution of nitrate, of ſilver, and mercury. Nitric acid, acetous acid. Nitric acid.
Silver,	—— gold.	

Table of ſome Galvanic Circles, compoſed of two Imperfect Conductors, and one Perfect Conductor.

Perfect Conductors.	Imperfect Conductors.	Imperfect Conductors.
Charcoal, Copper, Silver, Lead, Tin, Iron, Zinc.	Solutions of hydroguretted alkaline ſulphurets, capable of acting on the firſt three metals, but not on the laſt three.	Solutions of nitrous acid, oxygenized muriatic acid, &c. capable of acting on all the metals.

Weights

Weights and Measures.

"To employ, as the fundamental unity of all meaſures, a type "taken from nature itſelf, a type as unchangeable as the globe "on which we dwell,—to propoſe a metrical ſyſtem, of which "all the parts are intimately connected together, and of which "the multiples and ſubdiviſions follow a natural progreſſion, "which is ſimple, eaſy to comprehend:—this is moſt aſſuredly a "beautiful, great, and ſublime idea, worthy of the enlightened "age in which we live."

Such were the ideas which influenced the French National Inſtitute, when they choſe as the baſe of the whole metrical ſyſtem, the fourth part of the terreſtrial meridian between the equator and the north pole. They adopted the ten millionth part of this arc for the unity of meaſure, which they denominated *metre*, and applied it equally to ſuperficial and ſolid meaſures, taking for the unity of the former the ſquare of the decuple, and for that of the latter the cube of the tenth part of the metre. They choſe for the unity of weight, the quantity of diſtilled water which the ſame cube contains when reduced to a conſtant ſtate preſented by nature itſelf; and, laſtly, they decided, that the multiples and ſub-multiples of each kind of meaſure, whether of weight, capacity, ſurface, or length, ſhould be always taken in the decimal progreſſion, as being the moſt ſimple, the moſt natural, and the moſt eaſy for calculation, according to the ſyſtem of numeration which all Europe has employed for centuries.

By a careful meaſurement of the arc between Dunkirk and Mountjouy, they found the length of the metre to be equal to 443.296 lines of the toiſe of Peru. The cubic decimetre of diſtilled water, taken at its maximum of denſity and weight *in vacuō*, that is the unity of weight, was found to be 18827.15 grains of the pile of Charlemagne. By actual compariſon, the metre was found to be equal to 39.371 Engliſh inches at 62°, the temperature univerſally employed in the compariſon of Engliſh ſtandards: and upon theſe data the following tables have been conſtructed.

Tables of Weights and Measures.

Troy Weight.

Pound.		Ounces.		Drachms.		Scruples.		Grains.		Grammes.
1	=	12	=	96	=	288	=	5760	=	372.96
		1	=	8	=	24	=	480	=	31.08
				1	=	3	=	60	=	3.885
						1	=	20	=	1.295
								1	=	0.06475

Averdupois Weight.

Pound.		Ounces.		Drachms.		Grains.		Grammes.
1	=	16	=	256	=	7000	=	453.25
		1	=	16	=	437.5	=	28.32
				1	=	27.975	=	1.81

Measures.

Gallon.		Pints.		Ounces.		Drachms.		Cub. Inch.		Litres.
1	=	8	=	128	=	1024	=	231	=	3.78515
		1	=	16	=	128	=	28.875	=	0.47398
				1	=	8	=	1.8047	=	0.02957
						1	=	0.2256	=	0.00369

Measures

Measures of Length; the Metre being at 32°, and the Foot at 62°.

		English Inches.		Mil.	Fur.	Yds.	Feet.	Inch.
Millimetre	=	.03937						
Centimetre	=	.39371						
Decimetre	=	3.93710						
Metre	=	39.37100						
Decametre	=	393.71000	=	0	0	10	2	9.7
Hecatometre	=	3937.10000	=	0	0	109	1	1
Chiliometre	=	39371.00000	=	0	4	213	1	10.2
Myriometre	=	393710.00000	=	6	1	156	0	6

Measures of Capacity.

		Cubic Inches.		English.			
				Tons.	Hogs.	Wine Gall.	Pints.
Millilitre	=	.06103					
Centilitre	=	.61028					
Decilitre	=	6.10280					
Litre	=	61.02800	=	0	0	0.	2.1133
Decalitre	=	610.28000	=	0	0	2.	5.1352
Hecatolitre	=	6102.80000	=	0	0	26.419	
Chiliolitre	=	61028.00000	=	1	0	12.19	
Myriolitre	=	610280.00000	=	10	1	58.9	

Measures of Weight.

		English Grains.		Averdupois.		
				Poun.	Oun.	Drams.
Milligramme	=	.0154				
Centigramme	=	.1544				
Decigramme	=	1.5444				
Gramme	=	15.4440				
Decagramme	=	154.4402	=	0	0	5.65
Hecatogramme	=	1544.4023	=	0	3	8.5
Chiliogramme	=	15444.0234	=	2	3	5
Myriogramme	=	154440.2344	=	22	1	2

Table of Specific Gravities, at a Medium Temperature.

Diſtilled water,	1.0	
GASES.		
Oxygen,	0.0013562	L.
———	0.00133929	B.
Hydrogen,	0.0001	K.
———	0.00009911	B.
———	0.000094671	L.
Sulphuretted hydrogen,	0.00135	K.
Carburetted hydrogen,	0.000804	C.
———	0.000787	C.
Light do.	0.00063	C.
———	0.000554	C.
Nitrogen,	0.0012	K.
———	0.00119048	B.
———	0.001189	L.
Atmoſpheric air,	0.0012308	L.
———	0.00123609	B.
Nitrous oxide,	0.00197	D.
Nitric oxide,	0.001343	D.
———	0.00130179	B.
———	0.0014631	K.
Carbonic oxide,	0.001167	C.
——— acid,	0.00186161	B.
———	0.0018454	L.
Sulphurous acid,	0.00253929	B.
———	0.0018856	K.
Muriatic acid,	0.00213482	B.
Ammonia,	0.00065357	B.
———	0.00073539	K.

Oxygenized muriatic acid gas, and fluoric acid gas, unknown.

L. Lavoiſier. B. Briſſon. K. Kirwan. C. Cruikſhank. D. Davy.

Solids.

Diamond,	3.5212
Native sulphur,	2.0332
Melted do.	1.9907
Phosphorus,	1.7140
Platinum fused,	19.5000
Gold do	19.2581
Mercury,	13.5681
Lead,	11.3523
Silver,	10.4743
Bismuth,	9.8227
Cobalt,	7.8227
Copper,	7.7880
Nickel,	7.3806
Tin,	7.2914
Cast iron,	7.2070
Zinc,	7.1908
Manganese,	6.8500
Antimony,	6.7021
Tungsten,	6.6785
Tellurium,	6.1150
Molybdenum,	6. nearly.
Arsenic,	5.7633
Uranium, titanium, chrome, and columbium, unknown,	
Potass,	4.6215
Baryta,	4.
Magnesia,	2.3298
Lime,	2.3908
Alumina,	2.
Zirconia,	4.3
Silica,	2.66
Soda, strontia, gadolina, glucina, unknown.	
Tallow,	0.9419
Hogs lard,	0.9478
Yellow wax,	0.9648
White do.	0.9686
Spermaceti,	0.9433
Rosin,	0.0727
Sandarac,	1.0920
Mastich,	1.0742
Copal,	1.0452
Elemi,	1.0682
Labdanum,	1.1862
Resin of Guaiac,	1.2289
Resin of jalap,	1.2185
Dragons blood,	1.2045
Tacamahaca,	1.0463
Benzoin,	1.0924
Storax,	1.1098
Gum ammoniac,	1.2071
Gamboge,	1.2216
Olibanum,	1.1732
Myrrh,	1.3600
Scammony,	1.2354
Galbanum,	1.2120
Assa fœtida,	2.3275
Hepatic aloes,	1.3586
Socotorine aloes,	1.3795
Opium,	1.3366
Gum arabic,	1.4523
—— tragacanth,	1.3161
Extract of liquorice,	1.7228
——— catechu,	1.4573
Camphor,	0.9887
Caoutchouc,	0.9335
Cork,	0.2400

Fluids.

Water,	1.0000
Sulphuric acid,	2.1250
Nitric acid,	1.5800
Muriatic acid,	1.1940
Acetous do.	1.0135
Acetic do.	1.0626
Water saturated with ammonia,	0.8970
Alcohol,	0.8293
Sulphuric ether,	0.7394
Oil of turpentine,	0.8697
—— olives,	0.9153
—— almonds,	0.9170
Linseed oil,	0.9403
Whale oil,	0.9233

TABLE

TABLE *of the* SOLUBILITY *of Saline and other Substances in* 100 *parts of Water, at the Temperature of* 60° *and* 212°

	60°	212°
Acids.		
Sulphuric, - -	unlimited.	unlimited.
Nitric, - -	do.	do.
Acetous, - -	do.	do.
Pruſſic, - - -	do.	do.
Phoſphoric, Acetic, Tartarous, Malic, Lactic, Laccic, } very ſoluble, proportion not determined.		
Arſenic, - -	150	
Citric, - -	133	200
Oxalic, - -	50	100
Gallic, - -	8.3	66
Boracic, - - -		2
Mucous, - -	0.84	1.25
Succinic, - -	{ 4 / 1.04	50
Suberic, - -	0.69	50
Camphoric, - -	1.04	8.3
Benzoic, - -	0.208	4.17
Molybdic, - - -		0.1
Chromic, unknown.		
Tungſtic, inſoluble.		
Salifiable Baſes.		
Potaſs, Soda, } very ſoluble, proportion not known.		50
Baryta, - -	5	
——— cryſtalized, -	57	any quantity.
Strontia, - -	0.006	
——— cryſtallized, -	1.9	50
Lime, - -	0.2	
Salts.		
Sulphate of potaſs, -	6.25	20
Super-ſulphate of potaſs, -	50	100 +
Sulphate of ſoda, -	37.4	125
——— ammonia, -	50	100

Sulphate

Temperatures,	60°	212°
Sulphate of magneſia, -	100	133
——— alumina, very ſoluble, proportion unknown.		
Super-ſulphate of alumina and potaſs, } ——— ammonia, }	alum, 5	133
Nitrate of baryta, - -	8	25
——— potaſs, -	14.25	100
——— ſoda, - -	33	100 +
——— ſtrontia, - .	100	200
——— lime, -	400	any quantity.
——— ammonia, -	50	200
——— magneſia, -	100	100 +
Muriate of baryta, - -	20	
——— potaſs, - -	33	
——— ſoda, - -	35.42	36.16
——— ſtrontia, -	150	any quantity.
——— lime, - -	200	
——— ammonia, -	33	
——— magneſia, -	100	
Oxy-muriate of potaſs, -	6	40
Phoſphate of potaſs very ſoluble.		
——— ſoda, - -	25	50
——— ammonia, -	25	25 +
——— magneſia, -	6.6	
Sub-borate of ſoda, - -	8.4	16.8
Carbonate of potaſs, - -	25	83.3
——— ſoda, - -	50	100 +
——— magneſia, -	2	
——— ammonia, -	50 +	100
Acetite of potaſs, -	100	
——— ſoda. - -	35	
——— ammonia very ſoluble.		
——— magneſia, do.		
——— ſtrontia, - -		40.8
Super-tartrite of potaſs, -	1.67	3.3
Tartrite of potaſs, -	25	
——— potaſs and ſoda, -	25	
Super-oxalate of potaſs, - -		10
Citrate of potaſs very ſoluble.		
Pruſſiate of potaſs and iron.		
Nitrate of ſilver very ſoluble.		
Oxymuriate of mercury (corroſive ſublimate)	5	50
Sulphate of copper, - -	25	50
Acetite of copper very ſoluble.		
Sulphate of iron, - -	50	133
Muriate of iron very ſoluble.		
Tartrite of iron and potaſs.		
Acetites of lead, and of mercury,		

Sulphate

Temperatures,	60°	212°.
Sulphate of zinc, - -	44	44 +
Acetite of zinc very ſoluble.		
Tartrite of antimony and potaſs, - -	1.25	2.5
Alkaline ſoaps very ſoluble.		
Sugar, - -	100	any quantity.
Gum very ſoluble.		
Starch, - -	0	very ſoluble.
Jelly, -	ſparingly,	abundantly.
Gelatin, - -	ſoluble,	more ſo.
Urea very ſoluble.		

Salts not ſoluble in 100 *times their weight of water.*

Sulphates of baryta, ſtrontia, and lime, and ſub-ſulphate of mercury.
Phoſphates of baryta, ſtrontia, lime, magneſia, and mercury.
Fluat of lime.
Carbonates of baryta, ſtrontia, and lime.
Muriates of lead, ſilver and mercury, (Calomel).
Sub-acetite of copper.

Solubility *of Saline and other Subſtances in* 100 *parts of Alcohol, at the Temperature of* - - 176°

All the Acids, except the ſulphuric, nitric, and oxy-muriatic, which decompoſe it and the phoſphoric and metallic acids.	
Potaſs, ſoda, and ammonia, very ſoluble.	
Red ſulphate of iron,	
Muriate of iron, - -	100
——— lime, - -	100
Nitrate of ammonia, - -	89.2
Oxy-muriate of mercury, - -	88.3
Nitrate of ſilver, - -	41.7
Refined ſugar, - -	24.6
Muriate of ammonia, - -	7.1
Arſeniate of potaſs, - -	3.75
Nitrate of potaſs, - -	2.9
Arſeniate of ſoda, - -	1.7
Muriate of ſoda (Mr Chenevix).	
Alkaline ſoaps.	
Magneſian do.	
Extract.	
Tannin.	
Volatile oils.	
Adipocere.	
Refins.	
Camphor.	
Urea.	

Subſtances

Subſtances Inſoluble in Alcohol.

Earths.
Phoſphoric and metallic acids.
Almoſt all the ſulphates and carbonates.
The nitrates of lead and mercury.
The muriates of lead, ſilver, and ſoda.
The ſub-borate of ſoda.
The tartrite of ſoda and potaſs, and the ſuper-tartrite of potaſs.
Fixed oils, wax, and ſtarch.
Gum, caoutchouc, ſuber, lignin, gelatin, albumen, and fibrin.

TABLE *of the Weight of the different* GASES *abſorbed by* 100 *parts of Water.*

Muriatic acid, - -	100.
Ammonia, - -	34.
Sulphurous acid, - -	3.96
Nitrous oxide, - -	0.27
Carbonic acid, - -	0.18
Nitric oxide, - -	0.16
Carbonic oxide,	unknown.
Oxygen,	unknown.
Hydrogen,	unknown.
Sulphuretted hydrogen,	unknown.
Carburetted hydrogen,	unknown.

EX-

EXPLANATION OF THE PLATES.

Fig. 1. 2. 3. Mortars of metal, marble and earthen ware, with their reſpective peſtles, (30. Sect. 2.).

Fig. 4. A levigating ſtone and muller.

a. The table of poliſhed porphyry or other ſiliceous ſtone.

b. The muller of the ſame ſubſtance.

Fig. 5. A compound ſieve.

a. The lid.

c. The body containing the ſieve.

b. The receiver.

Fig. 6. A funnel.

Fig. 7. A hooked glaſs-rod. Several of which may be hung round the edge of the funnel, to prevent the filtering ſubſtances from adhering too cloſely to its ſides.

Fig. 8. A compound ſyphon.

a. b. c. The ſyphon.

f. g. The mouth-piece.

d. e. A board for ſupporting it.

When we inſert the upper orifice *a.* into any liquid, and cloſe the lower orifice *c.* with the finger, by ſucking through *f.*, the fluid will riſe from *a.* to *b.*, and proceed to *g.* towards *f.* As ſoon as it has paſſed *g.*, the finger is to be removed, and the fluid will immediately flow through *c.*, and continue flowing as long as any remains above the orifice *a.* It is abſolutely neceſſary that the point *g.*, where the mouth-piece joins the ſyphon, be lower than *a.*

Fig. 9. A board perforated with holes for ſupporting funnels.

Fig. 10. A ſeparatory. The fluids to be ſeparated are introduced through the orifice A., which is then cloſed with a ſtopper. The one neck is then to be ſhut with the finger, and the phial is to be inclined to the other ſide. As ſoon as the fluids have ſeparated by means of their ſpecific gravity, the finger is to be removed, and the whole of the heavier fluid will run through the lower neck, before any of the lighter eſcapes.

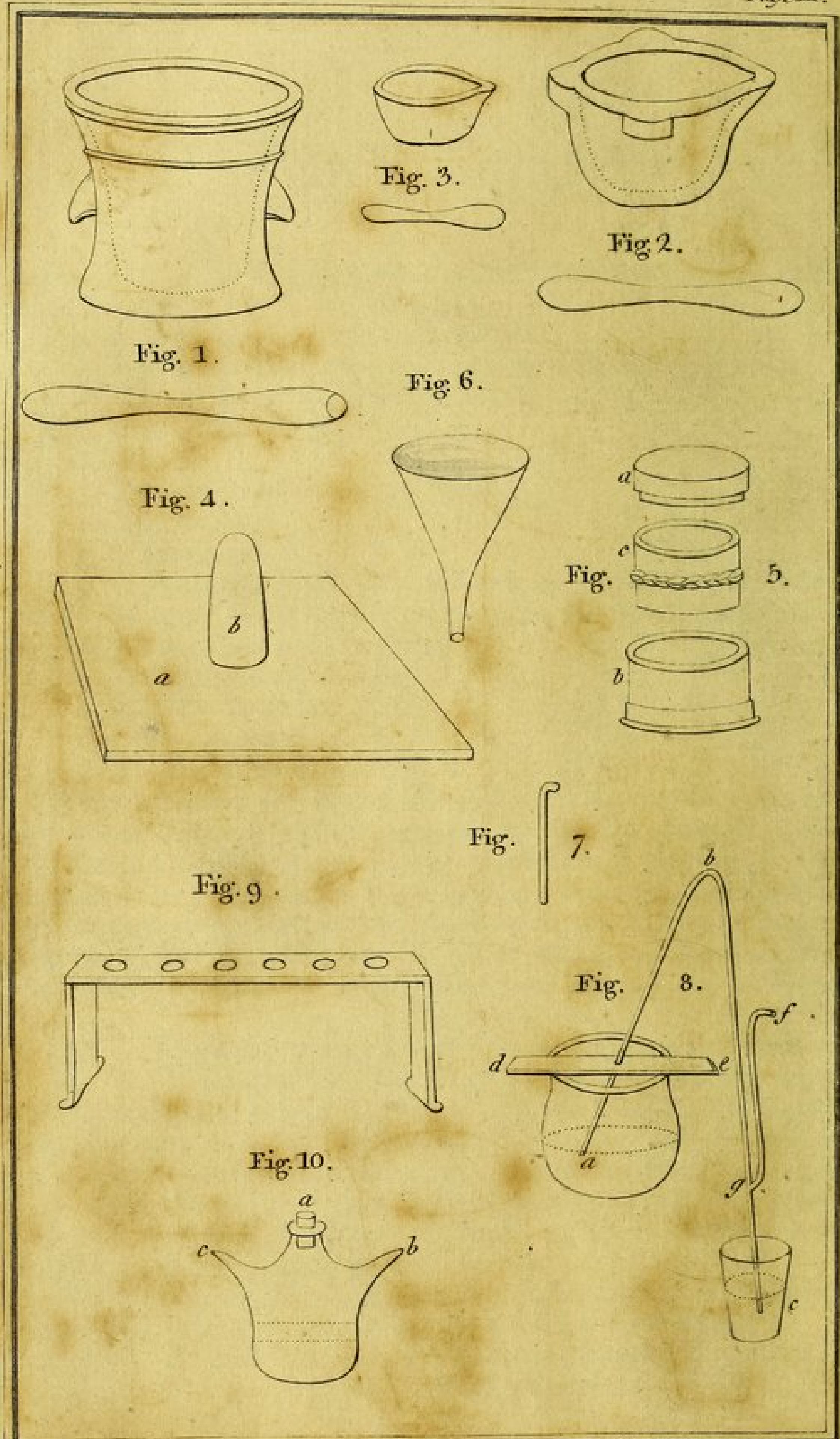
Fig. 11. and 12. Glaſs graduated meaſures. 11. A cylindrical one for large, 12. A conical one for ſmall quantities.

Fig. 13. A phial of a particular ſhape for keeping laudanum.

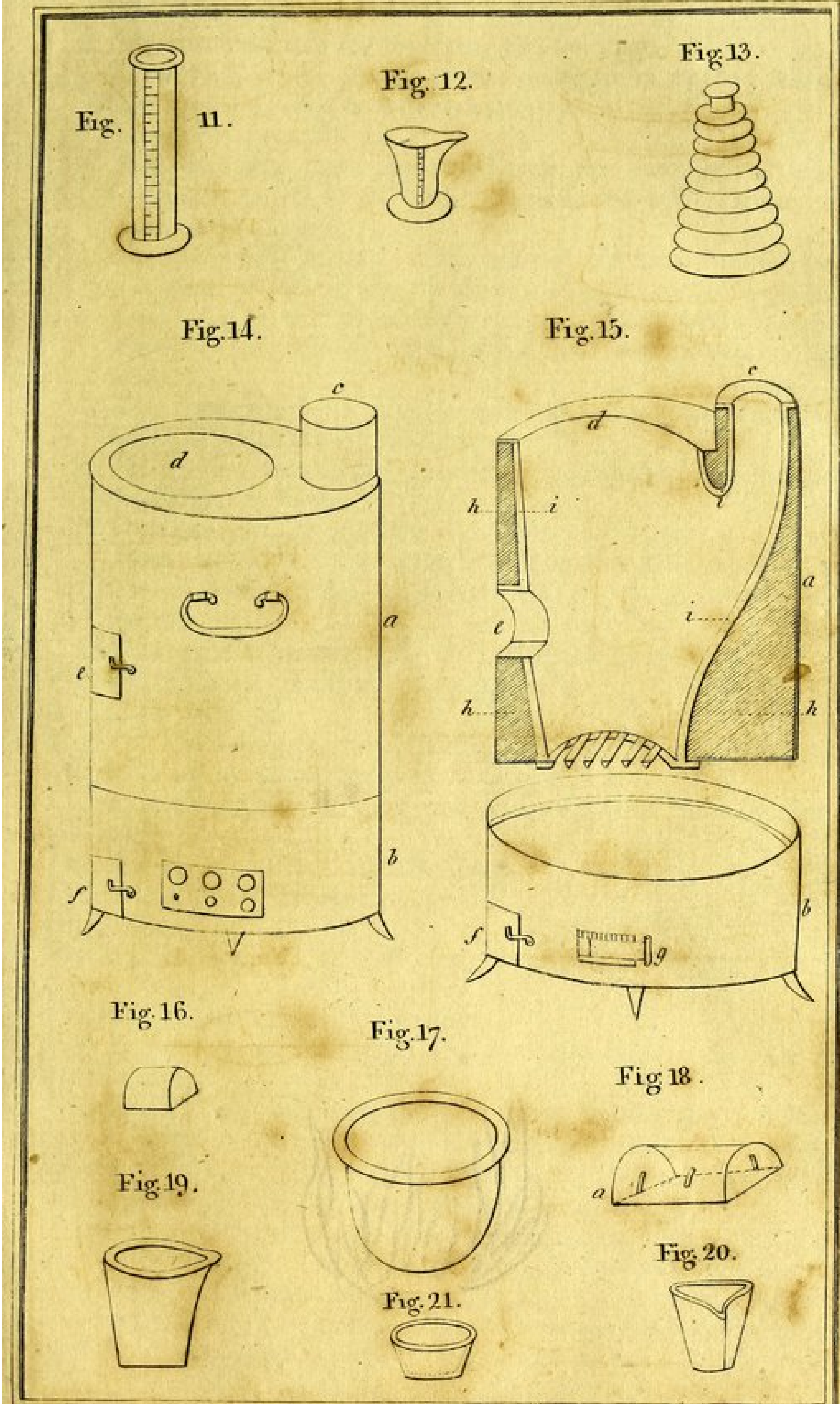
Fig. 14. External view of Dr Black's furnace.

a. The body.

b. The aſh-pit.



W. Lizars Sculpt



D.Lizars Sculpt.

c. The chimney.

d. The circular hole for receiving the ſand-pot.

e. A door about the center of the body, to be opened when the furnace is uſed as a reverberatory.

f. The door of the aſh-pit.

g. The damping plate for regulating the admiſſion of air, having ſix holes, fitted with ſtoppers, increaſing in ſize in a geometrical ratio.

Fig. 15. A vertical ſection of the body of the ſame furnace, to ſhew the manner of luting, and the form and poſition of the grate.

a.——*g.* As in the former figure, except the damping plate, which is here cloſed by a ſliding door with a graduated ſcale.

h. The form which is given to the lute of clay and charcoal which is applied next to the iron.

i. The form given to the lute of ſand and clay, with which the former is lined.

e. Is a ſemicircular aperture left unluted, to ſerve as a door when neceſſary. On other occaſions it is filled up with a ſemi-cylindrical piece of fire-brick, Fig. 16. accurately luted in.

k. The grate faſtened on the outſide of the body.

Fig. 16. A ſemicylindrical piece of fire-brick, for cloſing the door *e.* of the furnace.

Fig. 17. The ſand-pot, which is ſuſpended in the aperture *d.* of the furnace, by means of the projecting ring *a. b.*

Fig. 18. A muffle, *a. a.* apertures in its ſides for the admiſſion of the heated air.

Fig. 19. A large black-lead crucible.

Fig. 20. A ſmall Heſſian crucible.

Fig. 21. 22. Teſts.

Fig. 23. A ſmall ſupport of clay, to raiſe the crucible above the grate.

Fig. 24. A pair of crucible tongs.

Fig. 25. A ſupport for raiſing the muffle as high as the door *e.* of the furnace.

Fig. 26. A ring for ſuſpending a retort within the furnace, when we wiſh to expoſe it to the immediate action of the fire. The ring itſelf *a. b.* is ſuſpended within the aperture *d.* of the furnace, by means of the three-hooked branches *c. c. c.*

Fig. 27. Semicircular rings of plate-iron, for applying round the neck of a retort when ſuſpended within the furnace, in order to cloſe as much as poſſible the aperture *d.* Fig. 1. The largeſt pair *a.*, are firſt made to reſt upon the edge of the aperture *d.*, the next pair *b.* upon them, and ſo until they come in contact with the neck of the retort. The whole are then to be covered with aſhes or ſand,

ſand, to prevent the loſs of heat, and the eſcape of vapours, from the burning fuel.

Fig. 28. Circular rings *a. b.* to be applied in the ſame manner when we wiſh to evaporate with the naked fire. We muſt always take care that the fluid riſes higher than the portion of the evaporating veſſel introduced within the aperture of the ring; *c.* a circular piece of iron, which when applied with the rings *a. b.*, completely cloſes the aperture *d.* of the furnace.

Fig. 29. 30. 31. 32. Evaporating veſſels of different ſhapes.

Fig. 33. A long-necked matraſs.

Fig. 34. A jar.

Fig. 35. A phial or receiver.

Fig. 36. A cucurbit.

Fig. 37. A cucurbit with its capital.

Fig. 38. The arrangement of the apparatus for diſtilling *per deceнſum*. The ſubſtance to be diſtilled is laid on the metallic plate *a.*, which is perforated with holes. The burning-fuel is laid upon the upper plate *b.*, alſo of metal, but not perforated. On the application of heat the vapour deſcends into the cavity *a. c.*, where it is condenſed.

Fig. 39. A retort and receiver; *a.* the retort; *b.* the receiver.

Fig. 40. A retort funnel.

Fig. 41. A metallic ſtill.

c. d. e. f. The body.

a. b. e. f. The lower portion of the body, which hangs within the aperture *d.* of the furnace, by the projecting part *a. b.*

d. g. c. The head of the ſtill.

d. c. A gutter which goes round the bottom of the head, for conveying any vapours which may be condenſed there, into the ſpout *b.*, which conveys away the vapour and the fluid condenſed in the head into the refrigeratory.

Fig. 42. A refrigeratory.

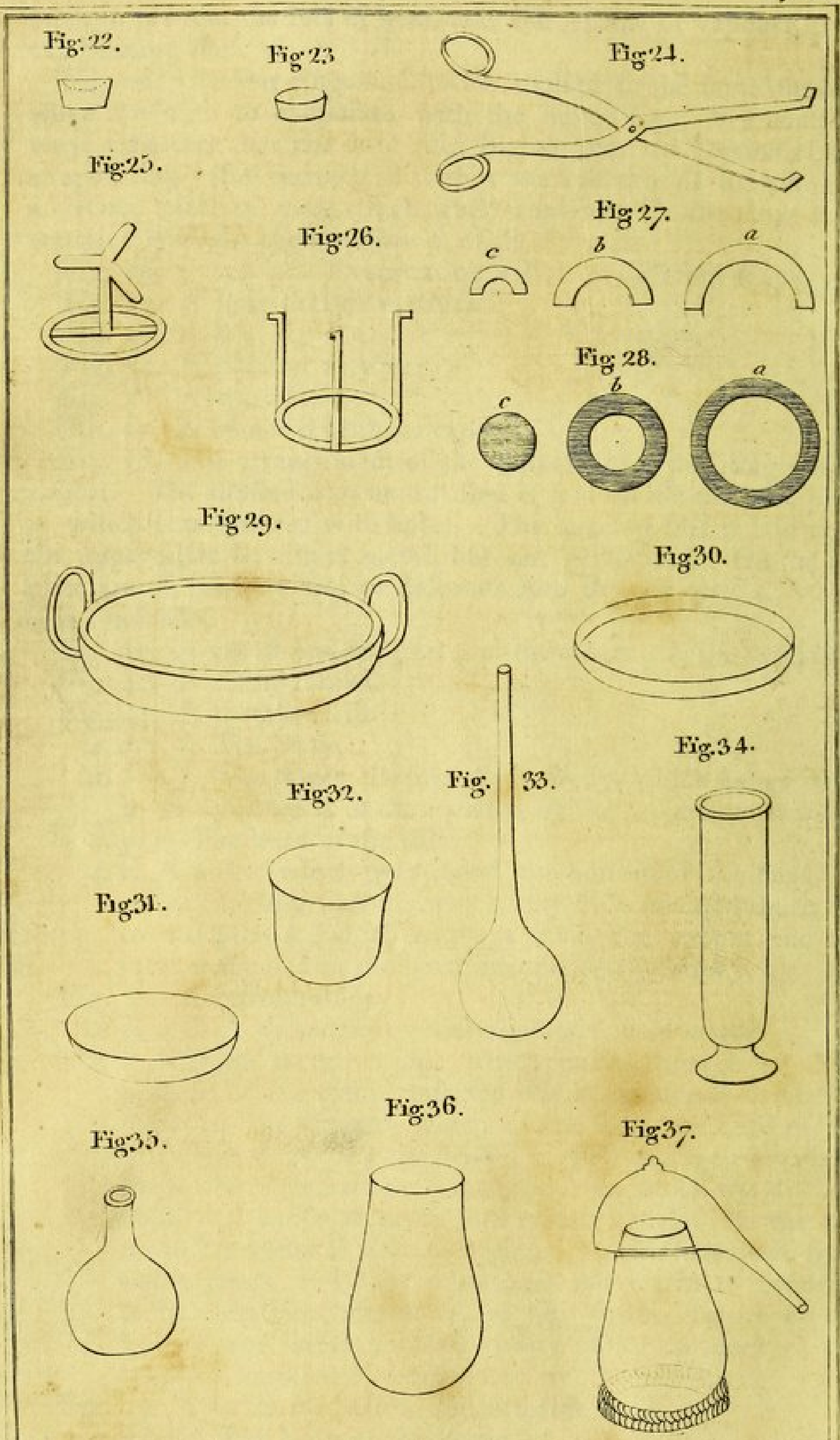
a. b. c. d. A cylindrical veſſel filled with cold water.

e. f. A ſpiral metallic pipe which paſſes through it. The point *b.* of the ſtill is inſerted within the upper orifice *e.*; therefore the vapours which eſcape from the head of the ſtill enter it, and are condenſed in their paſſage towards *f.*, the lower termination of the pipe from which the diſtilled fluid runs, and is received into proper veſſels. As the water in the veſſel *a. b. c. d.* continually abſtracts caloric from the vapours, it is apt to become too warm to condenſe them. As ſoon, therefore, as any ſteam eſcapes by the ſpout *f.*, the water muſt be drawn off by the cock *g.*, and its place ſupplied by cold water.

Fig. 43. A veſſel for boiling inflammable fluids.

a. b. c. d. The body of the kettle.

d. e. f. A



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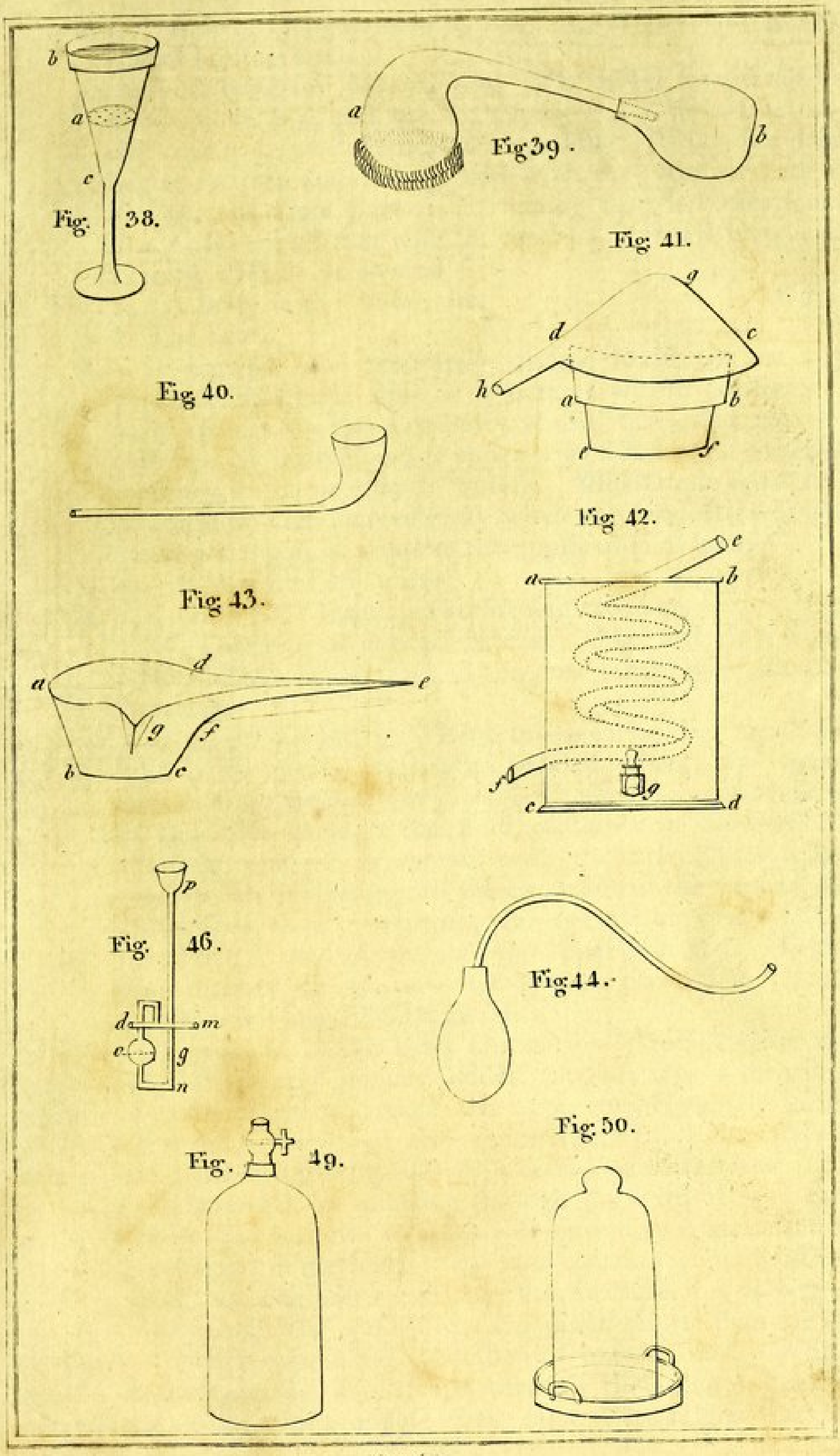


D. Lazars Sculp

d. e. f. A long ſpout proceeding from it, for preventing any riſk of boiling over.

g. A ſhort ſpout for pouring out. The veſſel ſhould not be filled above *h. f.*, and the long ſpout *d. e. f.* ſhould be placed ſo as to be as little heated as poſſible. When the fluid begins to ſwell and boil up, both from the great increaſe of ſurface, and from part of it running up the cooler ſpout *d. e. f.*, the ebullition will be checked, and all danger of running over be prevented.

Fig. 44. A body with a bent tube.

a. b. The body.

b. c. A ſigmoid tube accurately ground to it. When any permanently elaſtic fluid is generated within the body *a. b.*, it eſcapes by the extremity of the tube, and may be collected by introducing it under a jar filled with water or mercury in the pneumatic ciſtern. This ſimple apparatus can only be uſed conveniently when the production of the gas is not rapid, or requires the application of heat.

Fig. 45. A Woulfe's apparatus.

a. b. c. c. d. e. A tubulated retort and receiver.

f. f.' f.'' Three three-necked bottles. The firſt *f.* is commonly filled with water, and the two others with alkaline ſolutions.

d. g. d.' g.' d.'' g.'' d.''' g.''' Bent tubes connecting the different parts of the apparatus, ſo that when any vapour eſcapes from the receiver *c. d. e*, it paſſes along the tube *d. g.*, and riſes through the fluid contained in the bottle *f.*, where it remains in contact with the ſurface, and under conſiderable preſſure, until the expanſion of the vapour, not condenſible in *f.*, overcomes the column of fluid *h. g.'* in the bottle *f.'*, and eſcapes into the upper part of *f.'* In the ſame manner the uncondenſed vapours proceed to *f.''*, and at laſt to the pneumatic apparatus.

But, as in proceſſes of this kind, diminution of temperature and other cauſes, frequently produce ſudden condenſations of the gaſes, contained in the different parts of the apparatus, eſpecially in the retort and receiver, any ſuch occurrence would cauſe the fluids to move through the connecting tubes in a retrograde direction. This accident is prevented, by inſerting through the third neck of each bottle a ſmall tube *k. l.*, having its lower extremity *l.* immerſed in the fluid contained in the bottle. By this contrivance no fluid can poſſibly paſs from one bottle into another, becauſe the colums *g. m.*, &c. which reſiſt the abſorption, are much higher than the columns *h. l.*, which oppoſe the admiſſion of external air. While, on the contrary, no gas can eſcape through theſe tubes, becauſe the columns *h. k.*, which oppoſe their eſcape, are higher than the columns *g. h.*, which refift its progrefs to the next bottle. From their ufe thefe tubes have got the name of Tubes of Safety.

Another contrivance for the fame purpofe, the invention of C. Welter, feems now to be much ufed in France. It is fixed to the connecting tubes as at *n*.

Fig. 46. To explain it more fully, we have given a feparate view, taken in an oblique direction. When the apparatus is adjufted, a fmall quantity of water is poured through the funnel *p*. until it rifes to about the centre of the ball *o*. Now, on any abforption taking place, the fluid rifes in the ball *o*. until the column *g. n.* be annihilated, when a quantity of air will immediately rufh in through *p. g. n. o.*, &c., and the water will regain its former equilibrium. On the other hand, no gas can efcape by this tube, becaufe the whole fluid contained in the ball and tube muft previoufly enter the portion of the tube *n. p.* where it would form a column of fuch a height that its preffure could not be overcome.

Fig. 47. A vertical fection of a pneumatic ciftern.

a. b. c. d. The whole cavity of the ciftern.

e. f. A fhelf for holding the jars.

e. b. c. The well for filling the jars.

g. h. The furface of the fluid contained in the ciftern, which muft always be higher than the furface of the fhelf.

Fig. 48. 49. 50. 51. Pneumatic jars of different fhapes.

Fig. 48. A jar in the fituation in which it is filled with gas.

Fig. 49. A jar fitted with a ftop-cock.

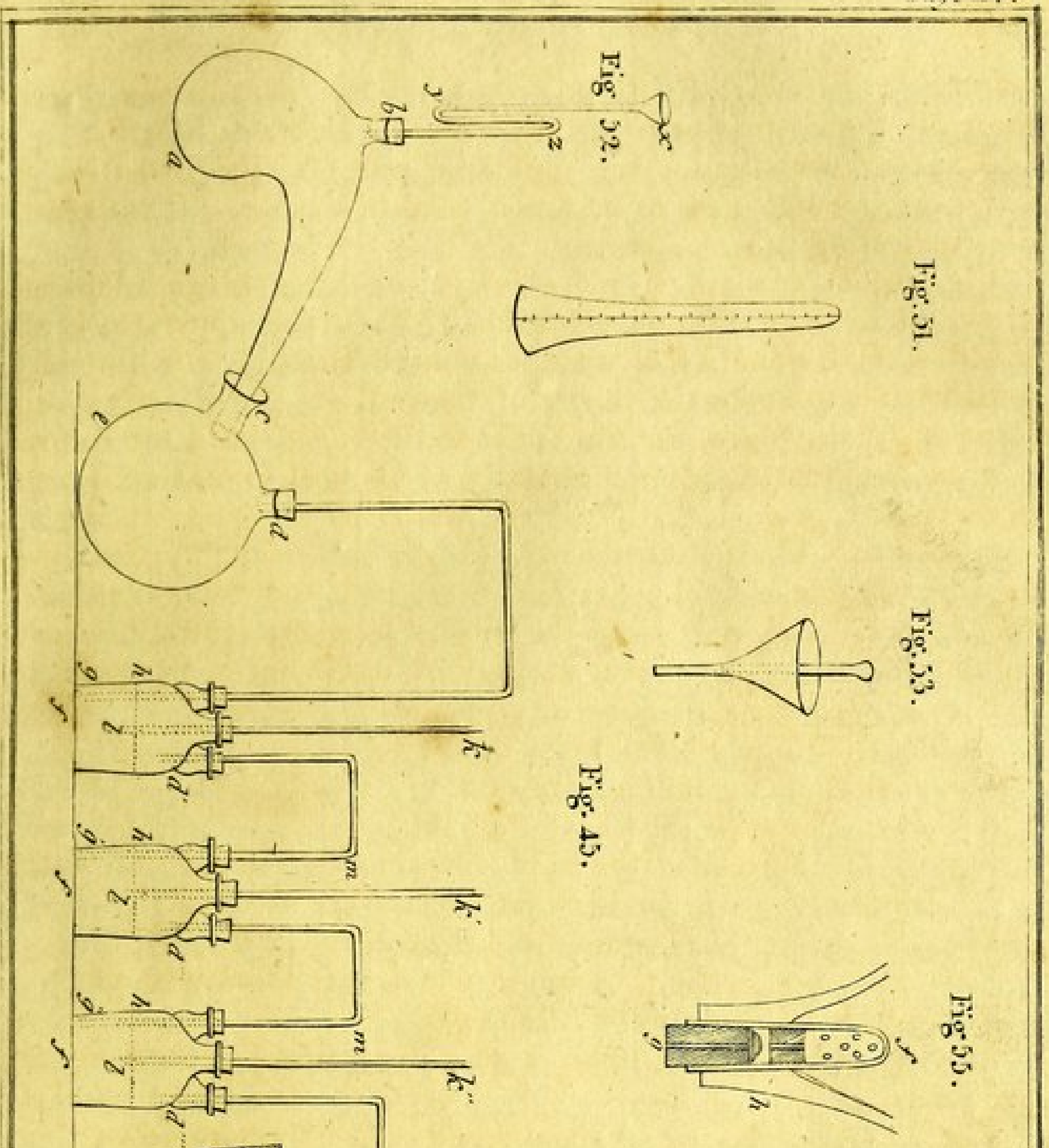
Fig. 50. A jar placed upon a tray for removing it from the pneumatic ciftern.

Fig. 51. A graduated jar, commonly called a Eudiometer.

Fig. 52. A hydroftatic funnel, for pouring fluids gradually into air-tight veffels, efpecially when attended with the formation of gas. It is evident, that any portion of fluid, poured into the funnel *x*., more than fufficient to fill the two firft parts of the bent tube up to the level *z*., will efcape by the lower extremity *b*. At the fame time, no gas can return through this funnel, unlefs its preffure be able to overcome the refiftance of a column of fluid of the height of *x. y*.

Fig. 53. Another contrivance for the fame purpofe. It confifts of a common funnel; in the throat of which is inferted a rod with a conical point, which regulates the paffage of the fluid through the funnel, according to the firmnefs with which it is fcrewed in.

Fig. 54. Nooth's apparatus for promoting the abforption of gafeous fluids by liquids. It confifts of three principal pieces; a lower piece *a. b.*, a middle piece *a. c.*, and an upper piece *d. e.*; all of which are accurately ground to each other. The fubftances from which the gas is to be extricated are put into the lower piece. The middle piece is filled with the fluid with which the gas is to be combined, and the upper piece is left empty. As foon as a



D. Lizars Sculp.

sufficient quantity of gas is formed to overcome the pressure, it passes through the valve *f. g.* and rises through the fluid to the upper part of the middle piece. At the same time it forces a quantity of fluid into the upper piece through its lower aperture *d.* As soon as so much of the fluid has been forced from the middle piece, as to bring its surface down to the level of the lower aperture of the upper piece, a portion of gas escapes into the upper piece, and the fluid rises a little in the middle piece. The upper piece is closed with a conical stopper *e.*, which yields, and permits the escape of a portion of gas, as soon as its pressure in the upper piece becomes considerable. *h.* is a glass cock for drawing off the fluid.

Fig. 55. The valve of Nooth's apparatus. It consists of an internal tube *g.* of small caliber, but pretty stout in substance, and ground into an external tube *f.*, closed at the upper end, but perforated with small holes, to allow the gas to pass. After the internal tube is fitted to the external, a portion of it is cut out as at *h.*, sufficient to receive a small hemisphere of glass, and to allow the hemisphere to rise a little in its chamber, but not to turn over in it. The upper piece of the internal tube is then thrust home into the place where it is to remain, and the glass hemisphere introduced with its plane recumbent on the upper end of the lower piece of the tube, which is ground perfectly flat, as is also the plane of the hemisphere. From this construction it is evident, that by the upward pressure of any gas, the glass hemisphere may be raised so as to allow it to pass, while nothing can pass downwards; for the stronger the pressure from above, the closer does the valve become. We have been more particular in our description of this valve, because it has been very ingeniously applied to distilling apparatuses by Mr Pepys *junior* and Mr Burkit.

Chemical Signs.

It is unnecessary here to point out the advantages which might result from a well-contrived system of chemical signs. About the same time that the French chemists introduced their methodical nomenclature, they also proposed a corresponding system of chemical signs, which they intended should speak a language to be understood by the learned of all nations. In our explanation of their system, we shall nearly follow what Mr Chenevix has said in his judicious remarks upon chemical nomenclature.

There are six simple radical signs, which may be considered as so many genera.

The first genus is the zig-zaz line, and is used to denote light. See Plate, No. 1.

The second genus is the straight line. It comprehends three species, characterized by its direction.

Sp. 1. A perpendicular line denotes caloric, 2.

Sp. 2. A horizontal line denotes oxygen, 3.

Sp. 3. An oblique line from right to left, nitrogen 4.

The third genus is a creſcent, which is the generic ſign of ſimple combuſtibles.

Sp. 1. With the horns inclined to the right, carbon, 5.

Sp. 2. The reverſe of the former, hydrogen, 6.

Sp. 3. With the points upwards, ſulphur, 7.

Sp. 4. The reverſe of the latter, phoſphorus, 8.

The fourth genus is a triangle. It comprehends the ſimple ſalifiable baſes.

Sp. 1. With the point upwards, and the baſe horizontal, 9., the alkalies.

Sp. 2. With the point downwards, 10., the earths.

Each of theſe ſpecies comprehends ſeveral individuals, which are diſtinguiſhed by inſerting within the triangle the firſt letter of its name in the Latin language, or, if two ſpecies begin with the ſame letter, the firſt letter of the ſecond ſyllable is added; thus, for potaſs P., ſoda S., baryta B., ſtrontia St., lime C., magneſia M., glucina Gc., gadolina Gd., alumina Al., zirconia Z., ſilica Sl.

The ſifth genus is a circle, 11. It comprehends the metals; and the individuals are diſtinguiſhed in the ſame manner as the former, by inſerting within it the primary letters of the firſt and ſecond ſyllables; thus, for gold Ar., platinum Pt., ſilver Ag., mercury H., copper Cp., iron Fr., lead Pb., tin Sn., zinc Z., antimony Sb., biſmuth B., cobalt Cb., nickel Nk., manganeſe Mg., uranium Ur., titanium Tt. tellurium Tl. chromium Cm., arſenic Aſ., molybdenum Ml., tungſten Ts., columbium Cl.

The ſixth genus is a ſquare: it comprehends all the unknown baſes of the acids, and the baſes of the compound oxides and acids.

Sp. 1. A ſquare with perpendicular ſides, 12. It contains the unknown and compound acidifiable baſes.

Sp. 2. A ſquare with inclined ſides, 13. It contains the compound oxides. The individuals of both ſpecies are diſtinguiſhed as before.

All compound bodies are expreſſed by combinations of theſe ſimple characters. But as ſimple bodies are capable of uniting in various proportions, it becomes neceſſary that theſe proportions ſhould be expreſſed; and relative poſition has appeared the moſt natural method of doing ſo. In general, when the proportion of any body in a compound is ſmall, its ſign is placed above, when large, below, as in 35., 36., 42., &c.

Caloric exiſts in all bodies: But according to its relative quantity, they exiſt as ſolids, fluids, or gaſes. To expreſs the firſt ſtate, it has not been thought neceſſary to introduce the ſign of caloric; to expreſs the ſecond, it is placed above; and to expreſs the third, below, as in the examples in the plate (22.—32.).

Oxygen

Oxygen alſo combines with many bodies, and in ſeveral proportions. The products reſulting from theſe combinations are either oxides or acids. The oxides may be characterized by affixing the ſign of oxygen to the left ſide of the ſign of the baſe, and the acids by affixing it to the right; and the greater or leſs degree of each may be marked by placing it above or below, as in the examples in the plate. In this we have deviated from all the tables of chemical ſigns which we have ſeen, and we truſt with propriety; for M. Chenevix has remarked of the ſyſtem, that "one of its chief defects is the impoſſibility of marking, by any "principles it points out, the difference of the metallic oxides. A "circle, with the mark of oxygen at the top, is the only method "of marking a metallic oxide; for if we put the mark of oxygen "lower, it will then have the force of an acid, and we muſt not "confound the ſituation of the ſigns to mark differences of ſtates, "or the whole ſyſtem will become confuſed." But the alteration we have propoſed enables us to mark no leſs than ſix ſtates of oxygenizement. When the ſign of oxygen is placed on the left, it implies that the compound is an oxide; if it be placed at top, it expreſſes the ſmalleſt degree of oxidizement; at bottom, the higheſt, and we have room for an intermediate one. The degrees of acidification are expreſſed in the ſame manner, except that the character of oxygen is placed to the right of the baſe. See 14,—21.

The other primary combinations are expreſſed in the ſame way. When they unite only in one proportion, or when the proportions are indifferent, the ſigns are placed indifferently, though it would be better to place them in one determinate way; but when either of them is in exceſs, its ſign is always placed below. Thus heavy carburetted hydrogen is expreſſed by placing the ſign of hydrogen above that of carbon, 36, light carburetted hydrogen by reverſing their poſition, 35. Glaſs is expreſſed by placing the ſigns of ſoda and ſilica ſide by ſide, 41; the liquor ſilicum, by placing the ſign of the alkali under that of the earth, and adding the ſign of fluidity above, 42.

The ſecondary compounds are expreſſed in a ſimilar manner. The baſis has been generally placed before the acid, to admit of the ſign of the degree of acidification being added to the acid; and the ſame poſition fortunately admits of the ſign of the degree of oxidizement being added to the oxide, when a metallic oxide forms the baſis of the ſalt. The exceſs of acid or baſe is marked as before, by placing the acid or baſe below. With regard to the metallic ſalts, Mr Chenevix has given ſome reaſons for not introducing the ſign of oxygen; but he himſelf has given the moſt powerful reaſon for introducing it, by proving, that the real difference between calomel and corroſive ſublimate is in the ſtate of oxidizement of the metal. The manner of marking the oxides propoſed above, enables us to expreſs this difference diſtinctly, when the degree of oxidizement is aſcertained.

Explanation *of the* Table *of* Signs.

Generic Signs.

No.

1. Light.	5. Carbon.	9. Alkalies.	11. Metals.	12. Acidifiable baſes, unknown or compound.
2. Oxygen.	6. Hydrogen	10. Earths.		
3. Caloric.	7. Sulphur.			
4. Nitrogen.	8. Phoſphorus.			13. Compound oxides.

Combinations of Oxygen.

No.		Oxides.			Acids.		
		1	2	3	1	2	3
14.	Nitrogen.	Atmoſpheric air.	Nitrous oxide.	Nitric oxide.	Nitrous.		Nitric.
15.	Carbon.	Incombuſtible coal.	Charcoal.	Carbonic oxide.			Carbonic.
16.	Hydrogen.			Water.			
17.	Sulphur.			Oxide of ſulphur.	Sulphurous.		Sulphuric
18.	Mercury.	Black oxide.	Yellow.	Red.			
19.	Iron.	Green oxide.		Red.			
20.	Arſenic.			White.			Arſenic.
21.	Muriatic, radical.				Muriatic.	Oxygenized muriatic	Hyper-oxygenized muriatic.

Combinations

D Lizars Sculp

Combinations of Caloric.

22. Oxygen. 23. Nitrogen. 24. Sulphur. 25. Potafs. 26. Acetic acid. 27. Ice. 28. Ammonia. 29. Sulphuric acid. 30. Mercury. 31. White oxide of arfenic. 32. Acetite of ammonia. The three columns reprefent the mode of characterizing the three ftates of aggregation of each of thefe fubftances.

Primary Compounds.

33. Ammonia. 34. Carburet of iron. 35. Light hydro-carbonate. 36. Heavy hydro-carbonate. 37. Sulphuretted phofphorus. 38. Phofphuretted fulphur. 39. Amalgam of gold. 40. Alloy of filver and copper. 41. Glafs. 42. Liquor filicum.

Secondary Compounds.

43. Sulphite of potafs. 44. Sulphate of potafs. 45. Super-fulphate of potafs. 46. Sulphate of alumina. 47. Super-fulphate of alumina and potafs, alum. 48. Nitrate of potafs. 49. Muriate of ammonia. 50. Hyper-oxygenized muriate of potafs. 51. Tartrite of foda and potafs. 52. Sub-borate of foda. 53. Muriate of mercury lefs oxidized, calomel. 54. Muriate of mercury more oxidized, corrofive fublimate. 55. Green fulphate of iron. 56. Brown fulphate of iron. 57. Tartrite of antimony and potafs. 58. Sub-acetite of copper. 59. Acetite of copper. 60. Soap of foda. 61. Soap of ammonia. 62. Hydroguretted fulphuret of potafs. 63. Litharge plafter. 64. Fulminating gold.

Materia Medica

PART II.

MATERIA MEDICA.

THE MATERIA MEDICA comprehends every ſubſtance, whether natural or artificial, which is employed in medicine. But in moſt Pharmacopœias the materia medica is confined to ſimples, and to thoſe preparations which are not ſuppoſed to be prepared by the apothecary himſelf, but to be purchaſed by him as articles of commerce from druggiſts and others.

Much pains has been beſtowed by the writers on the materia medica in attempting to form uſeful arrangements of theſe articles. Some have arranged them according to their natural affinities; others according to their active conſtituent parts; and others according to their real or ſuppoſed virtues. Each of theſe arrangements have their particular advantages. The firſt will probably be preferred by the natural hiſtorian, the ſecond by the chemiſt, and the laſt by the phyſiologiſt. But no arrangement has yet been propoſed which is not liable to numerous objections. Accordingly, in the Pharmacopœias publiſhed by the Colleges of Phyſicians of London, Dublin, and Edinburgh, the articles of the materia medica are arranged in alphabetical order; and the ſame plan is now alſo adopted in almoſt every Pharmacopœia of much eſtimation lately publiſhed on the Continent of Europe. We ſhall therefore follow the ſame plan, ſubjoining to the name of each article a ſhort view of its natural, medical, and pharmaceutical hiſtory. In forming our dictionary of materia medica, we ſhall adopt the nomenclature of the Edinburgh College, and ſhall include in it every article which is admitted by any one of the Britiſh colleges.

In an Appendix, we ſhall give a very conciſe account of ſuch other ſubſtances, as, from their poſſeſſing a place in ſome reſpectable foreign Pharmacopœias, or from their active properties, ſeem of ſufficient importance to be acquainted with. But to conjoin the advantages of other methods, to the hiſtory of the materia medica given in alphabetical order, we ſhall add ſome of thoſe arrangements which ſeem to us to be the moſt uſeful.

ABROTANUM. (*Lond.*) See ARTEMISIA.

ABSYNTHIUM MARITIMUM. (*Lond. Dub.*) See ARTEMISIA.

———————— VULGARE. (*Lond. Dub.*) See ARTEMISIA.

ACETOSA. (*Dub.*) ACETOSA PRATENSIS. (*Lond.*) See OXALIS.

ACETUM VINI. (*Dub.*) See ACIDUM ACETOSUM.

ACIDUM ACETOSUM IMPURUM. (*Ed.*) Syn. *Acetum Vini.* (*Dub.*)

Vinegar. Impure acetous acid.

VINEGAR, as obtained by the fermentation of vinous liquors, besides the pure acetous acid (281.) diluted with much water, contains tartarous acid, tartrite of potafs, mucilaginous matters, and sometimes phofphoric acid. The leaft impure is that prepared from white wine. It fhould be of a pale yellow colour, perfectly tranfparent, of a pleafant, fomewhat pungent, acid tafte, but without any acrimony. From the mucilaginous impurities which all vinegars contain, they are apt, on expofure to the air, to become turbid and ropy, and at laft vapid. This inconvenience is beft obviated by keeping it in bottles completely filled and well corked. It is faid to keep better if it be boiled a few minutes before it is corked.

Vinegar is fometimes adulterated with fulphuric acid. Its prefence is detected, if, on the addition of a folution of nitrate of baryta to the fufpected vinegar, a white precipitate is formed, which is infoluble in nitric acid, after having been burnt in the fire. With the fame intention of making the vinegar appear ftronger, different acrid vegetables are occafionally infufed in it. This fraud is difficult of detection; but when tafted with attention, the pungency of fuch vinegar will be found to depend rather on acrimony than acidity.

Vinegar poffeffes ftrong antifeptic powers on dead animal and vegetable matters. Hence its employment in pickling. The fine green colour fo much admired in fome vegetable pickles is often improperly given them by means of copper. This poifonous addition is eafily detected, on dropping fome carbonate of

ammonia

ammonia into the suspected vinegar, by the fine blue colour produced.

Its action on the living body is gently stimulant and astringent. It promotes transpiration and the discharge by urine; and used moderately as a condiment, it facilitates digestion.

Vinegar is employed as a useful addition to drink in inflammatory fevers. As a medicine, it is used in putrid diseases, in scurvy, and to counteract the effects of narcotic poisons and mephitic vapours. In the form of glyster, it is used in the same diseases, and in obstinate constipation. Externally, it is applied in fomentations and baths, as a stimulant and discutient; and its vapour is inhaled in putrid sore throat, and diffused through the chambers of the sick to correct the putrescency of the atmosphere.

ACIDUM SULPHURICUM. (*Ed.*)

SYN. *Acidum Vitriolicum.* (Lond. Dub.)

Sulphuric acid, *Oleum Vitrioli.*

The London and Edinburgh Colleges direct, that in the shops, its specific gravity should be to that of water as 1850 to 1000; the Dublin College as 1845 to 1000.

THE physical and chemical properties of this acid have been already (189.) enumerated. As it is prepared by the trading chemist, it is inserted among the materia medica. It is obtained in two ways; by distilling off the acid from sulphate of iron, previously deprived of its water of crystallization by heat, or by burning sulphur in large leaden chambers, with an eighth part of nitrate of potass to supply the necessary oxygen; and in the first way the strongest acid is obtained, but it is apt to contain iron or copper. By the second process it generally contains lead, which is easily detected by mixing a portion of the acid with three parts of distilled water, and if the acid be impure, a deposition will be formed. It may be rendered perfectly pure by distillation, filling a retort half full of the common acid, and distilling in a sand-bath, gradually heated as long as any acid comes over. The receiver should not be luted on. As its strength is apt to vary, the London College have directed, that, in the apothecary's shop, its specific gravity should be 1.850; the Irish College 1.845. This want of uniformity is to be regretted.

Sulphuric acid powerfully decomposes dead animal matter. It becomes diluted with water formed by the union of the hydrogen and oxygen; another portion of the hydrogen combines with the azote to form ammonia, and the carbon is separated in the state of black oxide. The affinities which regulate this action are so powerful, that it produces the same effects on the living solid, and therefore it acts upon them as a corrosive. But to its employment with this view, its fluidity is an objection, as it cannot be easily managed.

When

When ſufficiently diluted, it is an excellent tonic, checking fermentation, exciting appetite, promoting digeſtion, and quenching thirſt, and it is therefore uſed with ſucceſs in morbid acidity, weakneſs, and relaxation of the ſtomach. As an aſtringent, it is uſed in hæmorrhagies; and from its refrigerant and antiſeptic properties, it is a valuable medicine in many febrile diſeaſes, eſpecially thoſe called putrid. If taken in any conſiderable quantity, or for ſome time, it ſeems to paſs off undecompoſed by the kidneys or ſkin; and it is perhaps by its ſtimulant action on the latter, that it is advantageouſly employed internally, in pſora, and other cutaneous affections. The beſt mode of preſcribing it, is to order the quantity of acid to be uſed, and to direct it to be mixed with as much water as will render it palatable, to which ſome ſyrup or mucilage may be added. To prevent it from attacking the teeth, it may be conveniently ſucked through a quill, and the mouth ſhould be carefully waſhed after each doſe.

Externally it is uſed as a gargle, particularly in putrid ſore throats, and in aphthous mouths, and as a waſh in cutaneous eruptions, and ill-conditioned ulcers.

The combinations of this acid with alcohol, aromatics, &c. and the proceſſes in which it is employed, will be afterwards explained.

ACCIPENSER STURIO, the Sturgeon.
——————— STELLATUS, the Serruga.
——————— HUSO, the Iſinglaſs Fiſh, the Beluga, (*Lond.*)
——————— RUTHENUS, the Sterlet, *Lond.*

Fiſhes of the order *Branchioſtegi* of Cuvier.

The fleſh and roe, dried and ſalted (caviare), are alimentary. The ſound prepared, (iſinglas, ichthyocolla), is officinal. (*Lond. Dub.*)

The preparation of iſinglas is almoſt peculiar to Ruſſia. It is made in all places where the large ſpecies of ſturgeon are caught, as on the Dnieper, the Don, and eſpecially on the Caſpian Sea, alſo on the Volga, the Ural, the Oby, and the Irtyſh. That prepared from the ſturgeon is reckoned the beſt, and next to it that from the beluga. It alſo varies according to the mode of preparation. On the Volga and Ural, the ſounds are watered while freſh, and dried to a certain degree. The outer ſkin is next taken off, and the inner gloſſy white membrane is twiſted into proper ſhapes, and then completely dried. The beſt is uſually rolled into the form of a ſnake or heart; the ſecond folded in leaves, like a book; and the worſt is dried without any care. In other places, as at Gurief, fiſh-glue is extracted from the ſounds by boiling. This is cut into ſlabs or plates, is perfectly tranſparent, and has the colour of amber. On the Okka, where the ſterlet only is to be had, the ſounds are beat juſt as they are extracted from the fiſh, and dried into glue.

Good

Good iſinglas is white, in ſome degree tranſparent, dry, compoſed of membrane not too thick, and without any ſmell.

The properties of iſinglas depend entirely on the gelatine, of which it principally conſiſts. A nutritious jelly may be prepared from it. A watry ſolution of it is uſed as a teſt of the preſence of tannin, and for the clarification of ſpirituous liquors; and it is ſaid to be employed for the preparation of Engliſh court-plaſter. See *Emplaſt. ichthyocol.*

ACONITUM NEOMONTANUM. Radix.

Large blue Wolfsbane, Monk's-hood, Aconite. The root.

Linnæi Species Plantarum, edit. Willdenow, genus 1062. *ſpecies* 9. *Polyandria Trigynia.*—Nat. ord. *Multiſiliquæ.*

This is a perennial plant, found in the Alpine foreſts of Carinthia, Carniolia, and other mountainous countries in Germany, and cultivated in our gardens.

Synonimes.—*A. napellus* of Stoerk; London, Edin. Dub. and other pharmacopœias; *A. cammarum*, Haller, Moench, &c.; *A. tauricum*, Koelle.

The characters which diſtinguiſh the different ſpecies of aconite, are ſo obſcure as to have occaſioned conſiderable confuſion. Stoerk, who firſt employed aconite rationally as a medicine, uſed the *A. neomontanum*, and miſtook it for the *A. napellus*; other phyſicians, who ſaw his error, committed a ſimilar one, by ſuppoſing the aconite uſed in medicine to be the *A. cammarum*. The real *A. cammarum*, when it was ſometimes given, was alſo miſtaken for the *A. tauricum*. Theſe errors were however of little conſequence, as they regarded the names only, and not the article employed.

The freſh plant and root are very violent poiſons, producing remarkable debility, paralyſis of the limbs, convulſive motions of the face, bilious vomiting, and catharſis, vertigo, delirium, aſphyxia, death. The freſh leaves have very little ſmell, but when chewed have an acrid taſte, and excite lancinating pains, and ſwelling of the tongue. By drying, its acrimony is almoſt entirely deſtroyed.

For medical uſe the plant muſt be gathered before the ſtem ſhoots.

When properly adminiſtered, it acts as a penetrating ſtimulus, and generally excites ſweat, and ſometimes an increaſed diſcharge of urine.

On many occaſions, it has been found a very effectual remedy in glandular ſwellings, venereal nodes, anchyloſis, ſpina ventoſa, itch, amauroſis, gouty and rheumatic pains, intermittent fevers, and convulſive diſorders.

It is commonly uſed in the form of an inſpiſſated juice. As ſoon as the plant is gathered, the juice is expreſſed, and evaporated without any previous clarification, to the conſiſtence of an extract.

extract. It is an unfortunate circumſtance, that the powers of this medicine vary very much, according to its age and the heat employed in its preparation. When recently prepared, its action is often too violent, and when kept more than an year it becomes totally inept. It may therefore be laid down as a univerſal rule, in the employment of this and of many other ſimilar active medicines, to begin with very ſmall doſes, and to increaſe them gradually to the neceſſary degree; and whenever we have occaſion to begin a new parcel of the medicine, we ſhould again commence with the ſmalleſt doſe, and proceed with the ſame caution as at firſt.

We may begin by giving half a grain of this extract, either formed into a powder with ten grains of white ſugar, or made up with any convenient addition into a pill, twice or thrice a day, and gradually increaſe the doſe: Or a tincture of aconite may be prepared by digeſting one part of the dried leaves in ſix parts of ſpirit of wine; the doſe of which will be at firſt five or ten drops, and may be gradually increaſed to forty.

ACORUS CALAMUS.—(*Edin.*) *Radix.*
Calamus aromaticus. (*Lond. Dub.*)
Sweet flag. The root.
Willd. g. 663. *ſp.* 1.—*Hexandria Monogynia.*—Nat. ord. *Piperitæ.*

THIS plant is perennial, and grows plentifully in rivulets and marſhy places about Norwich and other parts of England, in the canals of Holland, in Switzerland, and in other countries of Europe. The ſhops have been uſually ſupplied from the Levant with dried roots, which do not appear to be ſuperior to thoſe of our own growth.

The root of acorus is full of joints, crooked, ſomewhat flatted on the ſides, internally of a white colour, and looſe ſpongy texture; its ſmell is ſtrong; the taſte warm, acrid, bitteriſh, and aromatic; both the ſmell and taſte are improved by exſiccation. This root is generally looked upon as a carminative and ſtomachic medicine, and as ſuch is ſometimes made uſe of in practice. It is ſaid by ſome to be ſuperior in aromatic flavour to any other vegetable that is produced in theſe northern climes; but this aſſertion is by no means ſtrictly true. It is, nevertheleſs, a ſufficiently elegant aromatic. The freſh root, candied after the manner directed for candying eryngo root, is ſaid to be employed at Conſtantinople as a preſervative againſt epidemic diſeaſes. The leaves of this plant have a ſweet flagrant ſmell, more agreeable, though weaker than that of the roots.

ADEPS ANSERINUS. (*Dub.*) See ANAS.

ADEPS SUILLUS. (*Dub.*) See SUS.

ÆRUGO.

ÆRUGO. (*Dub.*) See Sub-Acetis Cupri.

ÆSCULUS HIPPOCASTANUM. (*Ed.*) *Semen, Cortex.*

Horse chesnut. The fruit and bark.

Willd. g. 717. *sp.* 1. *Heptandria Monogynia.*—Nat. ord. *Tribilatæ.*

This is a very common and well-known tree. The fruit, which probably contains much amylaceous matter, has been used as food for domestic animals, and even for men in times of scarcity. But its introduction into the Edinburgh Pharmacopœia, was probably owing to its having been used and recommended as a sternutatory in some cases of ophthalmia and headach. With this view it was drawn up the nostrils in the form of an infusion or decoction.

The bark promises to become a much more valuable and important remedy, as an indigenous substitute for the very expensive and often adulterated Peruvian bark. Many successful experiments of its effects, when given internally in intermittent and typhus fever, and also when applied externally in gangrene, sufficiently warrant future trials. In powder it may be given to the extent of a scruple and a half, or a drachm for a dose. Buchholz prefers a solution of a drachm of the extract in an ounce of cinnamon water, of which sixty drops are to be given every three hours.

ALCOHOL. (*Ed.*)

Spiritus vinosus rectificatus, (*Lond.*) *Spiritus vini rectificatus,* (*Dub.*)

Alcohol. Rectified spirit of wine.

The spirit distilled from wine or other fermented liquors, perfectly free from any unpleasant smell, and of which the specific gravity is to that of water as 835 to 1000, such as may be easily procured. (*Ed.*) The London College order a spirit of the same specific gravity, and add, that it contains 95 parts of pure alcohol, and 5 of water. The Dublin College order it of the specific gravity 840.

Alcohol forms the true characteristic of vinous liquors, and arises from the decomposition of sugar, being always in proportion to its quantity. It is found in greatest quantity in the wines of warm countries, and in wines prepared from thoroughly ripened fruit. In the south of France, some wines yield a third of brandy. It is the proportion of alcohol which renders wines more or less generous, and prevents them from becoming sour. The richer a wine is in alcohol, the less malic acid it contains, and, therefore, the best wines give the best brandy, because they are free from the disagreeable taste which the malic acid imparts to them. Old wines give better brandy than new wines, but less of it.

Alcohol is procured from wine by distillation; in conducting which the following rules are to be observed:

1. To

1. To heat the whole maſs of fluid at once, and equally.
2. To remove all obſtacles to the aſcent of the vapour.
3. To condenſe the vapour as quickly as poſſible.

The diſtillation is continued until the liquor which comes over is not inflammable.

Diſtillers judge of the ſtrength of their ſpirits by the ſize and durability of the bubbles it forms, when poured from one veſſel into another, or on agitating it in a veſſel partly filled. Another proof is, by the combuſtion of gun-powder: Some of which is put in a ſpoon; it is then covered with the ſpirit to be tried, which is ſet on fire; if it kindle the gun-powder, it is ſuppoſed to be ſtrong, and *vice versâ.* But a ſmall quantity of ſpirits will always kindle gun-powder, and a large quantity never. Another proof is, by the carbonate of potaſs, which attracts the water, and diſſolves in it, while the alcohol ſwims above. But all theſe are uncertain; and dependence can only be put in the proof by hydrometers, or ſome ſuch contrivance, for aſcertaining the weight of a given quantity at a given temperature.

In this country, alcohol is procured from an infuſion of malt, and before its rectification is termed Whiſky. In the Eaſt Indies, arrack is diſtilled from rice; in the Weſt Indies, rum from the ſugar-cane; and in France and Spain, brandy from wine. Of all theſe the French brandy is the fineſt ſpirit; for the others are more or leſs impregnated with eſſential oils, of which it is almoſt impoſſible to free them entirely. When any ardent ſpirit is re-diſtilled to procure alcohol, the water-bath is commonly uſed, which gives a more equal and temperate heat, and improves the product. Gren ſays, that the addition of four pounds of well-burnt charcoal, and three or four ounces of ſulphuric acid, previous to this rectification, deſtroys entirely the peculiar taſte of malt ſpirit; and that a ſecond rectification with one pound of charcoal, and two ounces of ſulphuric acid, affords an alcohol of very great purity. But the affinity of alcohol for water is ſo very ſtrong, that it cannot be obtained entirely free from it by ſimple diſtillation. We muſt, therefore, abſtract the water by means of ſome ſubſtance which has a ſtronger affinity for it than alcohol has. Carbonate of potaſs was formerly employed; but muriate of lime is preferable, becauſe its affinity for water is not only very great, but by being ſoluble in alcohol, it comes in contact with every particle of the fluid. For this purpoſe, one part of muriate of potaſs, rendered perfectly dry by having been expoſed to a red-heat, and powdered after it becomes cold, is put into the ſtill. Over this three parts of highly rectified ſpirits are to be poured, and the mixture well agitated. By diſtillation with a very gentle heat, about two-thirds of the ſpirit will be obtained in the ſtate of perfectly pure alcohol.

The chemical properties of alcohol have been already mentioned, (226,—230.).

In pharmacy it is much employed as a menſtruum. Its application for this purpoſe will be mentioned in the proper place.

On the living body alcohol acts as a moſt violent ſtimulus. It coagulates all the albuminous and gelatinous fluids, and corrugates all the ſolids. Applied externally, it ſtrengthens the veſſels, and thus may reſtrain paſſive hæmorrhagies. It inſtantly contracts the extremities of the nerves it touches, and deprives them of ſenſe and motion; by this means eaſing them of pain, but at the ſame time deſtroying their uſe. Hence employing ſpirituous liquors in fomentations, notwithſtanding the ſpecious titles of vivifying, heating, reſtoring mobility, reſolving, diſſipating, and the like, uſually attributed to them, may ſometimes be attended with unhappy conſequences. Theſe liquors received undiluted into the ſtomach, produce the ſame effects, contracting all the ſolid parts which they touch, and deſtroying, at leaſt for a time, their uſe and office: if the quantity be conſiderable, a palſy or apoplexy follows, which ends in death. Taken in ſmall quantity, and duly diluted, they brace up the fibres, raiſe the ſpirits, and promote agility: if farther continued, the ſenſes are diſordered, voluntary motion deſtroyed, and at length the ſame inconveniences brought on as before. Vinous ſpirits, therefore, in ſmall doſes, and properly diluted, may be applied to uſeful purpoſes in the cure of diſeaſes; whilſt in larger ones they produce the moſt deleterious effects.

ALCOHOL DILUTUM. (*Ed.*)

Spiritus vinoſus tenuior. (*Lond.*) *Spiritus vini tenuior.* (*Dub.*)

Diluted alcohol. Spirit of wine. Proof ſpirit.

ALCOHOL mixed with an equal quantity of water, being ſomewhat weaker than proof ſpirit; its ſpecific gravity is to that of diſtilled water, as 935 to 1000. (*Ed.*) The London and Dublin Colleges order it of the ſpecific gravity of 930, which according to the former, contains 55 parts of pure alcohol, and 45 of water.

Although it be deſirable that diluted alcohol ſhould always be prepared, by mixing rectified ſpirit with water, inſtead of employing an impure ſpirit of the requiſite ſtrength, it is hardly to be expected that apothecaries will either be at the trouble or expence. The diluted alcohol of the Edinburgh College is ſomewhat weaker than that of the other two Colleges; but beſides that it is more convenient for their mode of preparing it, this will be attended with no diſadvantage, as it is ſtill ſufficiently ſtrong for any purpoſe to which it may be applied.

TABLE of the Specific Gravities of mixtures of Alcohol and Water at 60° Fahrenheit, according to Gilpin.

WATER.	ALCOHOL.	SPECIFIC GRAVITIES.
0	100	0.835
5	95	0.83887
10	90	0.85244
15	85	0.86414
20	80	0.87606
25	75	0.88762
30	70	0.89883
35	65	0.90941
40	60	0.91981
45	55	0.92961
50	50	0.93882
55	45	0.94726
60	40	0.95493
65	35	0.96158
70	30	0.96736
75	25	0.97239
80	20	0.97723
85	15	0.98213
90	10	0.98737
95	5	0.99327
100	0	1.00000

ALLIUM.

Willd. g. 626.—*Hexandria Monogynia.*—Nat. ord. *Liliaceæ.*

Sp. 14. ALLIUM SATIVUM. *Radix.* (*Ed.*)

Allium. Radix. (*Lond. Dub.*)

Garlic. The root.

THE garlic is a perennial bulbous-rooted plant, which grows wild in Sicily, and is cultivated in our gardens. The root consists of five or six small bulbs, called *cloves*, inclosed in one common membranous coat, but easily separable from each other. All the parts of this plant, but more especially the roots, have a strong offensive, very penetrating and diffusible, smell, and an acrimonious, almost caustic taste. The root is full of a limpid juice, of which it furnishes almost a fourth part of its weight by expression. The root loses about half its weight by drying, but scarcely any of its smell or taste. By decoction its virtues are entirely destroyed; and by distillation it furnishes a small quantity of a yellowish essential oil, heavier than water, which possesses the sensible qualities of the garlic in an eminent degree. Its peculiar virtues are also in some degree extracted by alcohol and acetous acid.

Applied externally, it acts fucceffively as a ftimulant, rubefacient, and blifter. Internally, from its very powerful and diffufible ftimulus, it is often ufeful in difeafes of languid circulation and interrupted fecretion. Hence, in cold leucophlegmatic habits, it proves a powerful expectorant, diuretic, and, if the patient be kept warm, fudorific; it has alfo been by fome fuppofed to be emmenagogue. For the fame reafon in cafes in which a phlogiftic diathefis, or other irritability prevails, large dofes of it may be very hurtful.

It is fometimes ufed by the lower claffes as a condiment, and alfo enters as an ingredient into many of the epicure's moft favourite fauces. Taken in moderation, it promotes digeftion; but in excefs, it is apt to produce headach, flatulence, thirft, febrile heat and inflammatory difeafes, and fometimes occafions a difcharge of blood from the hæmorrhoidal veffels.

In fevers of the typhoid type, and even in the plague itfelf, its virtues have been much celebrated.

Garlic is with fome alfo a favourite remedy in the cure of intermittents; and it has been faid to have fometimes fucceeded in obftinate quartans, after the Peruvian bark had failed. In catarrhous diforders of the breaft; afthma, both pituitous and fpafmodic; flatulent colics; hyfterical, and other difeafes proceeding from laxity of the folids, it has generally good effects: it has likewife been found ferviceable in fome hydropic cafes. Sydenham relates, that he has known the dropfy cured by the ufe of garlic alone; he recommends it chiefly as a warm ftrengthening medicine in the beginning of the difeafe.

It is much recommended by fome as an anthelmintic, and has been freqnently applied with fuccefs externally as a ftimulant to indolent tumors, in cafes of deafnefs proceeding from atony or rheumatifm, aud in retention of urine, arifing from debility of the bladder.

Garlic may be either exhibited in fubftance, and in this way feveral cloves may be taken at a time without inconvenience, or the cloves cut into flices may be fwallowed without chewing. This is the common mode of exhibiting it for the cure of intermittents.

The expreffed juice, when given internally, muft be rendered as palatable as poffible, by the addition of fugar and lemon juice. In deafnefs, cotton moiftened with the juice is introduced within the ear, and the application renewed five or fix times in one day.

Infufions in fpirit, wine, vinegar and water, although containing the whole of its virtues, are fo acrimonious, as to be unfit for general ufe; and yet an infufion of an ounce of bruifed garlic in a pound of milk, was the mode in which Rozenftein exhibited it to children afflicted with worms.

But by far the moſt commodious form for adminiſtering garlic, is that of a pill or bolus conjoined with ſome powder, correſponding with the intention of giving the garlic. In dropſy, calomel forms a moſt uſeful addition. It may alſo ſometimes be exhibited with advantage in the form of a clyſter.

Garlic made into an ointment with oils, &c. and applied externally, is ſaid to reſolve and diſcuſs indolent tumors, and has been by ſome greatly eſteemed in cutaneous diſeaſes. It has likewiſe ſometimes been employed as a repellient. When applied under the form of a poultice to the pubis, it has ſometimes proved effectual in producing a diſcharge of urine, when retention has ariſen from a want of due action of the bladder. Sydenham aſſures us, that among all the ſubſtances which occaſion a derivation or revulſion from the head, none operates more powerfully than garlic applied to the ſoles of the feet: he was led to make uſe of it in the confluent ſmall pox: about the eighth day, after the face began to ſwell, the root cut in pieces, and tied in a linen cloth, was applied to the ſoles, and renewed once a-day till all danger was over.

Sp. 43. Allium Cepa.
Cepa. Radix. (*Dub.*)
Onion. The root.

This is alſo a perennial bulbous-rooted plant. The root is a ſimple bulb, formed of concentric circles. It poſſeſſes in general the ſame properties as the garlic, but in a much weaker degree. Onions are, therefore, conſidered rather as articles of food than of medicine: they are ſuppoſed to afford little or no nouriſhment, and when eaten liberally produce flatulencies, occaſion thirſt, headachs, and turbulent dreams: in cold phlegmatic habits, where viſcid mucus abounds, they doubtleſs have their uſe; as by their ſtimulating quality they tend to excite appetite, and promote the ſecretions: by ſome they are ſtrongly recommended in ſuppreſſions of urine and in dropſies. The chief medicinal uſe of onions in the preſent practice is in external applications, as a cataplaſm for ſuppurating tumours, &c.

ALOE PERFOLIATA. *Gummi-Reſina.* (*Ed.*)
a. *Aloe Barbadenſis.* (*Lond. Dub.*) *A. hepatica.* (*Ed.*)
b. *Aloe Socotorina.* (*Lond. Dub. Ed.*)
Barbadoes, or hepatic, and ſocotorine aloes. A gum-reſin.
Willd. g. 659. *ſp.* 3.—*Hexandria Monogynia.*—Nat. ord. *Liliaceae.*

A perennial plant, of which there are many varieties which grow in the ſouth of Europe, Aſia, Africa and America. But Thunberg ſays, that the fineſt aloes are prepared from the *Aloe ſpicata*, the ſecond ſpecies of Willdenow, which grows at the Cape of Good Hope.

1. Socotorine Aloes.

This article is brought, wrapt in ſkins, from the iſland of Socotora in the Indian ocean. This ſort is the pureſt of the three in uſe: it is of a gloſſy ſurface, clear, and in ſome degree pellucid: in the lump, of a yellowiſh red colour, with a purple caſt; when reduced to powder, of a bright golden colour. It is hard and friable in the winter, ſomewhat pliable in ſummer, and grows ſoft between the fingers. Its taſte is bitter, accompanied with an aromatic flavour, but inſufficient to prevent its being diſagreeable; the ſmell is not very unpleaſant, and ſomewhat reſembles that of myrrh.

It is prepared by pulling off the leaves in July, from which the juice is expreſſed, and afterwards boiled and ſkimmed. It is then preſerved in ſkins, and dried in Auguſt in the ſun. According to others, the leaves are cut off cloſe to the ſtem and hung up. The juice which drops from them without any expreſſion, is afterwards dried in the ſun.

2. Barbadoes, or Hepatic Aloes.

Hepatic aloes is not ſo clear and bright as the foregoing ſort; it is alſo of a darker colour, more compact texture, and for the moſt part drier. Its ſmell is much ſtronger and more diſagreeable: the taſte intenſely bitter and nauſeous, with little or nothing of the fine aromatic flavour of the ſocotorine. The beſt hepatic aloes comes from Barbadoes in large gourd ſhells, and an inferior ſort of it, which is generally ſoft and clammy, is brought over in caſks. In Barbadoes the plant is pulled up by the roots, and carefully cleaned from the earth and other impurities. It is then ſliced and cut in pieces into ſmall hand-baſkets and nets. Theſe nets or baſkets are put into large iron boilers or cauldrons with water, and boiled for ten minutes, when they are taken out, and freſh parcels ſupplied till the liquor is ſtrong and black.

At this period the liquor is thrown through a ſtrainer into a deep vat, narrow at bottom, where it is left to cool and to depoſite its feculent parts. Next day the clear liquor is drawn off by a cock, and again committed to a large iron veſſel. At firſt it is boiled briſkly, but towards the end the evaporation is ſlow, and requires conſtant ſtirring to prevent burning. When it becomes of the conſiſtence of honey, it is poured into gourds or calubaſhes for ſale, and hardens by age.

3. Fetid, Caballine or Horse Aloes.

This ſort is eaſily diſtinguiſhed from both the foregoing, by its ſtrong rank ſmell; although, in other reſpects, it agrees pretty much with the hepatic, and is not unfrequently ſold in its ſtead. Sometimes the caballine aloes is prepared ſo pure and bright, as not to be diſtinguiſhable by the eye even from the ſocotorine;

but its offenſive ſmell, of which it cannot be diveſted, readily betrays it. It has not now a place in the liſt of almoſt any modern pharmacopœia, and is employed chiefly by farriers.

The component parts of aloes are reſin and extractive. They therefore diſſolve in alcohol, proof-ſpirit, and proof-ſpirit diluted with half its weight of water; the impurities only being left. They diſſolve alſo by the aſſiſtance of heat in water alone; but as the liquor cools, the reſinous part ſubſides, the extractive remaining united with the water. The hepatic aloes is found to contain more reſin and leſs extractive than the ſocotorine, and this leſs than the caballine. The reſins of all the ſorts, purified by ſpirit of wine, have little ſmell; that obtained from the ſocotorine has ſcarce any perceptible taſte; that of the hepatic, a ſlight bitteriſh reliſh; and the reſin of the caballine, a little more of the aloetic flavour. The extractive obtained ſeparately from any of the kinds, is leſs diſagreeable than the crude aloes: the extractive of ſocotorine aloes has very little ſmell, and is in taſte not unpleaſant; that of the hepatic has a ſomewhat ſtronger ſmell, but is rather more agreeable in taſte than the extract of the ſocotorine: the extractive of the caballine retains a conſiderable ſhare of the peculiar rank ſmell of this ſort of aloes, but its taſte is not much more unpleaſant than that of the extractive obtained from the two other ſorts.

Aloes is a bitter ſtimulating purgative. Its purgative effect ſeems chiefly to depend on its proving a ſtimulus to the rectum. In ſmall doſes it empties the large inteſtines, without making the ſtools thin; and likewiſe warms the habit, quickens the circulation, and promotes the uterine and hæmorrhoidal fluxes. If given in ſo large a doſe as to purge effectually, it often occaſions an irritation about the anus, and ſometimes a diſcharge of blood.

Aloes is much leſs frequently uſed to operate as a purgative than merely to obviate coſtiveneſs; and indeed its purgative effect is not increaſed in proportion to the quantity that is taken.

It is frequently employed in caſes of ſuppreſſion of the menſes, or of the hæmorrhoidal diſcharge; but it is particularly ſerviceable in habitual coſtiveneſs, to perſons of a phlegmatic temperament and ſedentary life, and where the ſtomach is oppreſſed and weakened. Perhaps the chief objection to aloes, in caſes of habitual coſtiveneſs, is the tendency which it has to induce and augment hæmorrhoidal affections: And with thoſe, liable to ſuch complaints, it can ſeldom be employed. In dry bilious habits aloes proves injurious, immoderately heating the body, and inflaming the bowels.

Some are of opinion, that the purgative virtue of aloes reſides entirely in its reſin; but experience has ſhewn, that the pure reſin has little or no purgative quality, and that the extractive part ſeperated from the reſinous, acts more powerfully than the crude

 aloes,

aloes. If the aloes indeed be made to undergo long coction in the preparation of the gummy extract, its cathartic power will be considerably lessened, not from the separation of the resin, but from an alteration made in the extractive itself by the action of the heat and air. The strongest vegetable cathartics become mild by a like treatment, without any remarkable separation of their parts.

Socotorine aloes, as already observed, contains more extractive than the hepatic; and hence is likewise found to purge more, and with greater irritation. The first sort, therefore, is most proper where a stimulus is required, as for promoting or exciting the menstrual flux; whilst the latter is better calculated to act as a common purge.

Aloes are administered either

a. Simply, or
b. In composition:
1. With purgatives. Soap, scammony, colocynth, rhubarb.
2. With aromatics. Canella.
3. With bitters. Gentian.
4. With emmenagogues. Iron, myrrh.

They are exhibited in the form of

a. Powder; too nauseous for general use.
b. Pill; the most convenient form.
c. Solution in wine or diluted alcohol.

ALTHÆA OFFICINALIS. *Radix, Folia.* (*Ed.*)
Althæa. Radix, Folium. (*Lond.*)
Marsh-mallow. The root and leaves.
Willd. g. 1289. *sp.* 1.—*Monadelphia Polyandria.*—Nat. ord. *Columnaceæ.*

THE marsh-mallow is a perennial, indigenous plant, which is found commonly on the banks of rivers, and in salt marshes.

The whole plant, but especially the root, abounds with a pure mucilage, free from smell or taste. The roots are about the thickness of a finger, long and fibrous. They are peeled and dried, and then are perfectly white.

It is used as an emollient and demulcent, in diseases attended with irritation and pain, as in various pulmonary complaints, and in affections of the alimentary canal and urinary organs; and it is applied externally in emollient fomentations, gargles and clysters.

ALUMEN. (*Lond. Dub.*) See SUPER-SULPHAS ALUMINÆ et POTASSÆ.

AMMONIACUM. *Gummi-Resina.* (*Lond. Dub. Ed.*)
Ammoniacum. A gum-resin.

AMMONIACUM

Ammoniacum is a concrete, gummy-reſinous juice, brought from the Eaſt Indies, uſually in large maſſes, compoſed of little lumps or tears, of a milky colour, but ſoon changing, upon being expoſed to the air, to a yellowiſh hue. We have no certain account of the plant which affords this juice; the ſeeds uſually found among the tears reſemble thoſe of the umbelliferous claſs. It has been alſo alleged, and not without ſome degree of probability, that it is an exudation from a ſpecies of the ferula, another ſpecies of which produces the aſſafœtida. The plant producing it is ſaid to grow in Nubia, Abyſſinia, and the interior parts of Egypt. Such tears as are large, dry, free from little ſtones, ſeeds, or other impurities, ſhould be picked out and preferred for internal uſe; the coarſer kind is purified by ſolution, colature, and careful inſpiſſation; but unleſs this be artfully managed, the gum will loſe a conſiderable deal of its more volatile parts. There is often vended in the ſhops, under the name of ſtrained gum ammoniacum, a compoſition of ingredients much inferior in virtue.

Ammoniacum has a nauſeous ſweet taſte, followed by a bitter one; and a peculiar ſmell, ſomewhat like that of galbanum, but more grateful: it ſoftens in the mouth, and grows of a white colour upon being chewed. It is not fuſible; but when thrown upon live coals, it burns away in flame; it is in ſome degree ſoluble in water and in vinegar, with which it aſſumes the appearance of milk; but the reſinous part, amounting to about one-half, ſubſides on ſtanding.

About one-half of pure ammoniac is ſoluble in alcohol, and the ſolution is tranſparent; but on the addition of water becomes milky. Water diſtilled from gum-ammoniac is ſtrongly impregnated with its flavour. It therefore ſeems to be gummy-reſin, combined with an eſſential oil.

The general action of gum-ammoniac is ſtimulant. On many occaſions it proves a valuable antiſpaſmodic, deobſtruent, or expectorant. In large doſes it purges gently, excites perſpiration, and increaſes the flow of urine.

It is uſed with advantage to promote expectoration in ſome pulmonary diſeaſes; in dropſical affections, to augment the flow of urine, and to ſupport the ſalivation in ſmall-pox. It is alſo an uſeful deobſtruent; and is frequently preſcribed for opening obſtructions of the abdominal viſcera, and in hyſterical diſorders occaſioned by a deficiency of the menſtrual evacuations. In long and obſtinate colics, proceeding from viſcid matter lodged in the inteſtines, this gummy-reſin has produced happy effects, after purges and the common carminatives had been uſed in vain. Externally, it is ſuppoſed to ſoften and ripen hard tumours. A ſolution of it in vinegar has been recommended by ſome for reſolving even ſcirrhous ſwellings.

It

It is exhibited internally,

a. In solution, combined with vinegar, vinegar of squills, assafœtida, &c.

b. In pills, with bitter extracts, myrrh, assafœtida.

c. And externally, combined with vinegar, turpentine, common plaster, &c.

AMOMUM.

Willd. g. 4.—*Monandria Monogynia.*—Nat. ord. *Scitamineæ.*

Sp. 1. AMOMUM ZINGIBER. *Radix siccata, et radix condita ex India alla a.* (*Ed.*)

Zingiber. Radix. (*Lond.*) *Radix, Radix condita.* (*Dub.*)

Ginger. The root, and the candied root brought from India.

GINGER is a perennial plant, indigenous in the East Indies, but now cultivated in the West India islands. It is cultivated there very much in the same manner as potatoes are here, and is fit for digging once a year, unless for preserving in syrup, when it should be dug at the end of three or four months, at which time it is tender and full of sap.

Ginger is distinguished into two sorts, the black and the white. The former is rendered fit for preservation by means of boiling water, the latter by insolation; and as it is necessary to select the fairest and roundest sorts for exposure to the sun, white ginger is commonly one-third dearer than black.

Black ginger consists of thick and knotty roots, internally of an orange or brownish colour, externally of a yellow-grey. White ginger is less thick and knotty, internally of a reddish yellow, and externally of a whitish-grey or yellow. It is firm and resinous, and more pungent than the black. Pieces which are worm-eaten, light, friable, or soft, and very fibrous, are to be rejected.

Candied ginger should be prepared in India from the young and succulent roots. When genuine, it is almost transparent. That manufactured in Europe is opaque and fibrous.

Ginger has a fragrant smell, and a hot, biting, aromatic taste. Rectified spirit extracts its virtues by infusion, in much greater perfection than aqueous liquors; the latter elevate its whole flavour in distillation, the former little or nothing. Ginger is a very useful spice in cold flatulent colics, and in laxity and debility of the intestines: it does not heat so much as those of the pepper kind, but its effects are more durable.

It may also be applied externally as a rubefacient.

Sp. 3. AMOMUM ZEDOARIA. *Radix.* (*Dub.*)

Long Zedoary. The root.

THE Zedoary is perennial, and grows in Ceylon and Malabar. The roots come to us in pieces, some inches in length, and about a finger thick. Externally they are wrinkled, and of an ash-grey colour,

colour, but internally are browniſh-red. The beſt kind comes from Ceylon, and ſhould be firm, heavy, of a dark colour within, and neither worm-eaten nor very fibrous. It has an agreeably fragrant ſmell, and a warm, bitteriſh, aromatic taſte.

In diſtillation with water, it yields an eſſential oil, poſſeſſing the ſmell and flavour of the zedoary in an eminent degree; the remaining decoction is almoſt ſimply bitter. Spirit likewiſe brings over ſome ſmall ſhare of its flavour: nevertheleſs the ſpirituous extract is conſiderably more grateful than the zedoary itſelf.

Sp. 7. AMOMUM CARDAMOMUM.
Sp. 10. ——— REPENS. *Semen.* (*Ed.*)
Cardamomum minus. Semina. (*Dub. Lond.*)
Leſſer cardamom ſeeds.

THE London and Edinburgh Colleges, on the authority of Sonnerat, have ſuppoſed theſe ſeeds to be the product of the latter ſpecies, while the Dublin College, with Murray, Willdenow, and all the foreign pharmaceutical writers, aſcribe them to the former. Both ſpecies are natives of India.

Cardamom ſeeds are a very warm, grateful, pungent aromatic, and frequently employed as ſuch in practice: they are ſaid to have this advantage, that notwithſtanding their pungency, they do not, like thoſe of the pepper kind, immoderately heat or inflame the bowels. Both water and rectified ſpirit extract their virtues by infuſion, and elevate them in diſtillation; with this difference, that the tincture and diſtilled ſpirit are conſiderably more grateful than the infuſion and diſtilled water: the watery infuſion appears turbid and mucilaginous; the tincture made in ſpirit, limpid and tranſparent. The huſks of the ſeeds, which have very little ſmell or taſte, may be commodiouſly ſeparated, by committing the whole to the mortar, when the ſeeds will readily pulverize, ſo as to be freed from the ſhell by the ſieve: this ſhould not be done till juſt before uſing them; for if kept without the huſks, they ſoon loſe conſiderably of their flavour.—The officinal preparations of theſe ſeeds are ſpirituous tinctures, ſimple and compound: they are employed alſo as an aromatic in ſeveral of the officinal compoſitions.

AMYGDALUS COMMUNIS. *Nucleus.* (*Ed.*)
a. *Amygdalus dulcis.* (*Ed.*)
Amygdalæ dulces. (*Lond. Dub.*)
b. ——— *amaræ.* (*Lond.*)
The almond tree. The kernel of the fruit.
Willd. g. 981. *ſp.* 2. *Icoſandria Monogynia.*—Nat. ord. *Pomaceæ.*

THE fruit which affords theſe kernels, is the produce of a tree nearly reſembling the peach. It originally came from Syria and Barbary; but is now much cultivated in the ſouth of Europe.

The

The eye diſtinguiſhes no difference betwixt the trees which produce the ſweet and bitter, or betwixt the kernels themſelves; it is ſaid that the ſame tree has, by a difference in culture, afforded both.

The almond is a flattiſh kernel, of a white colour, and of a ſoft ſweet taſte, or a diſagreeable bitter one. The ſkins of both ſorts are thin, browniſh, unpleaſant, and covered with an acrid powdery ſubſtance. They are very apt to become rancid on keeping, and to be preyed on by a kind of inſect, which eats out the internal part, leaving the almond to appearance entire. To theſe circumſtances regard ought to be had in the choice of them.

Sweet almonds are of greater uſe in food than as medicine, but they are reckoned to afford little nouriſhment; and when eaten in ſubſtance, are not eaſy of digeſtion, unleſs thoroughly comminuted. They are ſuppoſed, on account of their unctuous quality, to obtund acrimonious juices in the primæ viæ: peeled ſweet almonds, eaten ſix or eight at a time, ſometimes give preſent relief in the heartburn.

Bitter almonds have been found poiſonous to dogs and ſome other animals; and a water diſtilled from them, when made of a certain degree of ſtrength, has had the ſame effects. Nevertheleſs, when eaten, they appear innocent to moſt men, and have been not unfrequently uſed as medicines: Boerhaave recommends them, in ſubſtance, as diuretics which heat but moderately, and which may therefore be ventured upon in acute diſeaſes. The only officinal preparations of almonds are, the expreſſed oil and emulſion.

Both ſorts of almonds yield, on expreſſion, a large quantity of oil, which ſeparates likewiſe upon boiling the almonds in water, and is gradually collected on the ſurface.

The oils obtained by expreſſion from both ſorts of almonds are in their ſenſible qualities the ſame. They ſhould be perfectly free from ſmell and taſte, and poſſeſs the other properties of fixed oils, (234.).

The general virtues of theſe oils are, to blunt acrimonious humours, and to ſoften and relax the ſolids: hence their uſe internally, in tickling coughs, heat of urine, pains and inflammations; and externally, in tenſion and rigidity of particular parts. On triturating almonds with water, the oil and water unite together, by the mediation of the other matter of the kernel, and form an unctuous milky liquor.

The milky ſolutions of almonds in watery liquors, commonly called emulſions, contain the oil of the ſubject, and participate in ſome degree of its emollient virtue; but have this advantage above the pure oil, that they may be given in acute or inflammatory diſorders, without danger of the ill effects which the oil might ſometimes produce; ſince emulſions do not turn rancid or acri-

monious

monious by heat, as all the oils of this kind in a little time do. As the bitter almond imparts its peculiar taſte when treated in this way, the ſweet almonds are employed in making emulſions.

Several unctuous and reſinous ſubſtances, of themſelves not miſcible with water, may by trituration with almonds be eaſily mixed with it into the form of an emulſion; and are thus excellently fitted for medicinal uſe. In this form, camphor and the reſinous purgatives may be commodiouſly taken.

AMYLUM *ex tritico præparatum.*

Wheat ſtarch.

The Edinburgh College have inſerted ſtarch as a ſeparate ſubſtance in their catalogue of the Materia Medica, probably conſidering it to be a general principle common to many vegetables, although they point out the particular ſpecies which they wiſh to be employed.

The general properties of ſtarch have been already (255.) enumerated.

As a conſtituent of many vegetable ſubſtances, it forms a moſt important alimentary ſubſtance. In a medical point of view, it is to be conſidered as a demulcent; and accordingly it forms the principal ingredient of an officinal lozenge, and a mucilage prepared from it often produces excellent effects, both taken by the mouth, and in the form of a clyſter in dyſentery and diarrhœa from irritation of the inteſtines.

Starch is found in many vegetables, combined with different ſubſtances. Fourcroy accordingly makes various ſpecies of it as combined,

1. With gluten or fibrine, as in wheat, rye, and other ſimilar ſeeds.
2. With extractive, as in beans, peaſe, lupins, &c.
3. With mucilaginous matters, as in the potato and many other roots, in unripe corn.
4. With ſaccharine matter, in moſt roots, and in corn after it has begun to germinate.
5. With oil, in the emulſive ſeeds, almonds, &c.
6. With an acrid principle, as in the root of the burdock, jatropha manihot, arum, aſarum, and other tuberous roots.

AMYRIS.

Willd. g. 755. *Octandria Monogynia.*—Nat. ord. *Dumoſæ.*

Sp. 2. AMYRIS ELEMIFERA.

Elemi. Reſina. (*Lond. Dub.*)

Elemi. A reſin.

THE tree which furniſhes elemi grows in Carolina and Spaniſh America. In dry weather, and eſpecially at full moon, inciſions

are

are made in the bark, from which a resinous juice flows, and is left to harden in the sun. It is brought to us in long roundish cakes, generally wrapped up in flag leaves. The best sort is softish, somewhat transparent, of a pale whitish yellow colour, inclining a little to green, of a strong not unpleasant smell, resembling somewhat that of fennel.

It almost totally dissolves in pure spirit, and sends over some part of its fragrance along with this menstruum in distillation: distilled with water, it yields a considerable quantity of pale-coloured, thin, fragrant, essential oil. Its only constituents, therefore, are resin and essential oil. It gives name to one of the officinal unguents, and is at present scarce any otherwise made use of; though it is certainly preferable for internal purposes to some others which are held in greater esteem.

Sp. 18. Amyris Zeylanica.

The elemi which comes from the East Indies is said to be the produce of this species.

Sp. 6. Amyris Gileadensis. *Resina.* (*Ed.*)

Balsamum Gileadense.

Balsam of Gilead. A resin.

This article, which has also had the name of Balsamum Judaicum, Syriacum, de Mecca, Opobalsamum, &c. is a resinous juice, obtained from an evergreen tree, growing spontaneously, particularly near to Mecca, on the Asiatic side of the Red Sea. The best sort of it is a spontaneous exudation from the tree; and is held in so high esteem by the Turks, who are in possession of the country where it is produced, that it is rarely, if ever, to be met with genuine among us. From the high price set upon it, many adulterations are practised. The true opobalsamum, according to Alpinus, is at first turbid and white, of a very strong pungent smell, like that of turpentine, but much sweeter; and of a bitter, acrid, astringent taste: upon being kept for some time, it becomes thin, limpid, of a greenish hue, then of a gold yellow, and at length of the colour of honey.

This balsam is in high esteem among the eastern nations, both as a medicine, and as an odoriferous unguent and cosmetic. It has been recommended in a variety of complaints. But in Europe it is never obtained genuine; and as all the signs of its goodness are fallacious, it has been very rarely employed. Nor need we regret it; for any of the other resinous fluids, such as the balsam of Canada or Capaiba will answer every purpose full as well.

The dried berries of this tree were formerly kept under the title of Carpo-balsamum, and the dried twigs under that of Xylo-balsamum. Although Willdenow has inserted the amyris opobalsamum as a distinct species, he thinks they are the same.

ANAS

ANAS ANSER.

Adeps Anserinus. (*Dub.*)

The goose. The fat.

The specific properties of the different kinds of fat are now very generally disbelieved; and therefore almost the only kinds in use are those of the domestic animals, which are easily procured. Goose fat is soft and very greasy. It is very rarely used in medicine, as it possesses no advantage over axunge.

ANCHUSA TINCTORIA. *Radix.* (*Ed.*)

Anchusa. Radix. (*Dub.*)

Alkanet. The root.

Willd. g. 277. *sp.* 7. *Pentandria Monogynia.*—Nat. ord. *Asperifoliae.*

This plant is a native of Europe: it is sometimes cultivated in our gardens; but the greatest quantities are raised in Germany or France, particularly about Montpelier, from whence the dried roots are usually imported to us. The alkanet root produced in England is much inferior in colour to that brought from abroad; the English being only lightly reddish, the others of a deep purplish-red; and it has been suspected, but without sufficient foundation, that the foreign roots owe part of their colour to art. The cortical part of the root is of a dusky red, and imparts an elegant deep red to oils, wax, and all unctuous substances, but not to watery liquors.

Alkanet root has little or no smell; when recent, it has a bitterish astringent taste; but when dried, scarcely any. As to its virtues, the present practice expects not any from it. Its chief use is for colouring oils, ointments, and plasters. As the colour is confined to the cortical part, the small roots are best, having proportionally more bark than the large.

ANETHUM.

Willd. g. 560. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

Sp. 1. Anethum Graveolens. *Semen.* (*Lond.*)

Dill. The seed.

Dill is an annual umbelliferous plant, cultivated in gardens, as well for culinary as medical use. The seeds are of a pale yellowish colour, in shape nearly oval, convex on one side, and flat on the other. Their taste is moderately warm and pungent; their smell aromatic, but not of the most agreeable kind. These seeds are recommended as a carminative in flatulent colics. The most efficacious preparations of them, are, the distilled oil, and a tincture or extract made with rectified spirit.

Sp. 3. Anethum Fœniculum. *Radix, Semen.* (*Ed.*)

Fœniculum dulce. Semen. (*Lond. Dub.*)

Sweet

Sweet Fennel. The root and ſeeds.

This is a biennial plant, of which there are four varieties. One of theſe, the common fennel, is indigenous to England. The ſweet fennel, the variety which is officinal, grows wild in Italy, but is alſo cultivated in our gardens.

The ſweet fennel is ſmaller in all its parts than the common, except the ſeeds, which are conſiderably larger. The ſeeds of the two ſorts differ likewiſe in ſhape and colour: thoſe of the common are roundiſh, oblong, flattiſh on one ſide, and protuberant on the other, of a dark almoſt blackiſh colour; thoſe of the ſweet are longer, narrower, not ſo flat, generally crooked, and of a whitiſh or pale yellowiſh colour.

The ſeeds of both the fennels have an aromatic ſmell, and a moderately warm, pungent taſte: thoſe of the *fœniculum dulce* are in flavour moſt agreeable, and have alſo a conſiderable degree of ſweetneſs.

ANGELICA ARCHANGELICA. *Radix, Folia, Semen.* (*Ed.*)

Angelica. Radix, Caulis, Folia, Semen. (*Lond.*) *Caules, Folia, emina.* (*Dub.*)

ANGELICA. The root, ſtalk, leaves, and ſeeds.

Willd. g. 543. *ſp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

ANGELICA is a large biennial umbelliferous plant. It grows ſpontaneouſly on the banks of rivers in Alpine countries; but for the uſe of the ſhops, it is cultivated in gardens in different parts of Europe.

All the parts of Angelica, eſpecially the roots, have a fragrant aromatic ſmell; and a pleaſant bitteriſh warm taſte, glowing upon the lips and palate for a long time after they have been chewed. The flavour of the ſeeds and leaves is very periſhable; particularly that of the latter, which, on being barely dried, loſe the greateſt part of their taſte and ſmell: the roots are more tenacious of their flavour, though they loſe part of it with keeping. The freſh root, wounded early in the ſpring, yields an odorous yellow juice; which, ſlowly exſiccated, proves an elegant gummy reſin, very rich in the virtues of the angelica. On drying the root, this juice concretes into diſtinct moleculæ, which, on cutting it longitudinally, appear diſtributed in little veins; in this ſtate, they are extracted by pure ſpirit, but not by watery liquors. Angelica roots are apt to grow mouldy, and to be preyed on by inſects, unleſs thoroughly dried, kept in a dry place, and frequently aired. We apprehend, that the roots which are ſubject to this inconvenience, might be preſerved, by dipping them in boiling ſpirit, or expoſing them to its ſteam, after they are dried.

Angelica is one of the moſt elegant aromatics of European growth, though little regarded in the preſent practice. The root, which

which is the moſt efficacious part, is uſed in the aromatic tincture. The ſtalks make an agreeable ſweetmeat.

ANGUSTURA. *Cortex.* (*Ed. Dub.*)

THE natural hiſtory of this bark is hitherto unknown. Willdenow ſuſpects that it is the bark of the magnolia Plumieri. The firſt parcel of it that was imported came from Dominica in July 1788, with an account, " that it had been found ſuperior to the " Peruvian bark in the cure of fevers." Subſequent importations from the Spaniſh Weſt Indies, either immediately or through the medium of Spain, give reaſon to ſuppoſe, that it is the produce of South America. Now that the iſland of Trinidad, from which it is commonly imported into Europe, belongs to the Engliſh, we may expect to get further information reſpecting its natural hiſtory.

Its appearance is various, owing to its having been taken from larger or ſmaller branches. The outer ſurface of it is more or leſs wrinkled, and covered with a greyiſh coat, below which it is of a yellowiſh brown: the inner ſurface is of a dull brown. It breaks ſhort and reſinous. The taſte is intenſely bitter, and ſlightly aromatic, leaving a ſtrong ſenſe of heat and pungency in the throat and fauces. The odour is peculiar. The powder is yellow.

Its predominant conſtituent principles are bitter extractive matter, with mucilage and a peculiar reſin. It is ſlightly aromatic, and not at all aſtringent. The extractive is very ſoluble in water, and the reſin in alcohol.

As an aromatic bitter, it has been found to be a tonic and ſtimulant of the organs of digeſtion. It increaſes the appetite for food, removes flatulence and acidity, ariſing from dyſpepſia, and is a very effectual remedy in diarrhœa, from weakneſs of the bowels, and in dyſentery; and it poſſeſſes the ſingular advantage of not oppreſſing the ſtomach, as Peruvian bark is apt to do. It does not cure intermittents..

It is exhibited, 1. In powder, in doſes of from 5 to 20 grains, either alone, or with rhubarb, magneſia, or carbonate of lime.

2. In infuſion. The infuſion of one drachm in four ounces of water may be uſed daily.

3. In tincture.

4. In watery extract.

ANISUM. (*Lond. Dub.*) See PIMPINELLA.

ANTHEMIS.

Syngeneſia Polygamia ſuperflua.—Nat. ord. *Compoſitæ radiatæ.*

Sp. ANTHEMIS NOBILIS. *Herba et flores.* (*Ed.*)

Chamæmelum. Flores. (*Dub.*) *Flos Simplex.* (*Lond.*)

Chamomile. The herb and flowers.

Chamomile is a perennial plant, indigenous to the South of England, but cultivated in our gardens for the purpofes of medicine. The flowers have a ftrong not ungrateful aromatic fmell, and a very bitter naufeous tafte.

Their active conftituents are bitter extractive, and effential oil. To the latter is to be afcribed their antifpafmodic, carminative, cordial, and diaphoretic effects; to the former their influence in promoting digeftion.

Chamomile flowers are a very common and excellent remedy, which is often ufed with advantage in fpafmodic difeafes, in hyfteria, in fpafmodic and flatulent colics, in fuppreffion of the menftrual difcharge, in the vomiting of puerperal women, in the after-pains, in gout, in podagra, in intermittents, and in typhus.

As chamomile excites the periftaltic motion, it is ufeful in dyfentery, but is not admiffible in all cafes of diarrhœa. From its ftimulating and fomewhat unpleafant effential oil, chamomile is alfo capable of exciting vomiting, efpecially when given in warm infufion; and in this way is often ufed to affift the action of other emetics.

Externally, chamomile flowers are applied as a difcutient and emollient, in the form of clyfter or embrocation, in colic, dyfentery, and ftrangulated hernia, &c.

Chamomile flowers are exhibited,

1. In fubftance, in the form of powder, or rather of electuary, in dofes of from half a drachm to two drachms, either alone, or combined with Peruvian bark, as for the cure of intermittent fevers.

2. In infufion, in the form of tea. This may either be drunk warm, for promoting the action of emetics, or cold, as a ftomachic.

3. In decoction or extract. Thefe forms contain only the extractive, and therefore may be confidered as fimple bitters.

4. The effential oil may be obtained by diftillation. This poffeffes the antifpafmodic powers in a higher degree than the fimple flowers, but on the contrary does not poffefs the virtues depending on the prefence of the bitter extractive.

Sp. Anthemis Pyrethrum. *Radix.* (*Ed.*)
Pyrethrum. Radix. (*Lond. Dub.*)
Pellitory of Spain. The root.

This plant, though a native of warm climates, as Barbary, bears the ordinary winters of this country, and often flowers fucceffively from Chriftmas to May: the roots alfo grow larger with us than thofe with which the fhops are ufually fupplied from abroad.

Pellitory root has no fenfible fmell; its tafte is very hot and acrid, but lefs fo than that of arum; the juice expreffed from it has fcarce any acrimony, nor is the root itfelf fo pungent when frefh fresh as after it has been dried. Water, assisted by heat, extracts some share of its taste; rectified spirit, the whole; neither of them elevate any thing in distillation. Its acrimony is therefore derived from a resin. The principal use of pyrethrum in the present practice is as a masticatory, for promoting the salival flux, and evacuating the viscid humours from the head and neighbouring parts; by this means it often relieves the toothach, some kinds of pains of the head, and lethargic complaints. A vinous infusion is also useful in debility of the tongue.

ANTIMONIUM.
Stibium.
Antimony.

THE physical and chemical properties of this metal have been already described (167.)

Antimony is found,

I. In its metallic state,

1. Alloyed with three or four *per cent.* of arsenic.

II. Oxidized,

2. Volatile oxide of antimony. Mongez.

III. Mineralized,

3. Grey ore of antimony, (74 antimony, 26 sulphur). Bergman.

a. Compact.
b. Foliated.
c. Striated.

4. Plumose ore, (antimony, arsenic, silver, sulphur). Bergman.

5. Red ore, (hydroguretted sulphuretted antimony).

6. White ore, (muriated antimony.) Hacquet.

The grey ore of antimony (III. 3.) is the state in which it is officinal, and also that in which it is most commonly found.

SULPHURETUM ANTIMONII. (*Ed.*)
Antimonium. (*Lond.*)
Stibium. (*Dub.*)
Sulphuret of antimony.

Whatever opinion may be formed of the nomenclature adopted by the Edinburgh College in general, the propriety of the change which they have introduced in this and similar instances cannot be disputed: For while chemists, according to rational principles, designated simple substances by simple names, the same names continued to be given by pharmaceutical writers to compound states of these bodies. To have established, therefore, an uniformity of nomenclature in sciences so intimately allied, cannot fail to be considered as an improvement of the greatest importance.

Although sulphuretted antimony be a natural production, yet it is commonly sold in the form of loaves, which have been separated from the stoney and other impurities of the ore by fusion, and a species of filtration. For the ore is melted in conical well-baked earthen pots, having one or more small holes in their apices. The fire is applied around and above these pots; and as soon as the sulphuretted antimony melts, it drops through the holes into vessels placed beneath to receive it, while the stoney and other impurities remain behind. As antimony is very volatile, the mouths and joinings of the pots must be closed and luted. The upper part of the loaves thus obtained is more spongy, lighter, and impure than the lower, which is therefore always to be preferred. These loaves have a dark grey colour externally, but on being broken, they appear to be composed of radiated striæ, of a metallic lustre, having the colour of lead. The goodness of the loaves is estimated from their compactness and weight, from the largeness and distinctness of the striæ, and from their being entirely vaporizable by heat. Lead has been sold for antimony; but its texture is rather foliated than striated, and it is not vaporizable. The presence of arsenic, which renders the antimony useless for medical purposes, is known by its emitting the smell of garlic when thrown upon live coals, and by other tests mentioned under Arsenic. The presence of manganese or iron is known by their not being volatilized by a red heat.

Antimony is obtained from its ores by gradually detonating in a large crucible four parts of sulphuretted antimony, three of crude tartar, and one and a half of dry nitrate of potass; reduced to a fine powder, and intimately mixed. The detonated mass is then to be fused and poured into a heated mould, greased with a little fat, in which it is allowed to consolidate. It is then turned out, and the scoriæ are separated from the antimony, which will weigh about one-fourth part of the sulphuret employed. The scoriæ are a mixture of sulphuret of potass and of antimony, and may be preserved for other purposes.

Another method of obtaining antimony, is by melting three parts of sulphuretted antimony with one of iron. The sulphur quits the antimony, and combines with the iron.

Formerly antimony was given internally; but as its action depended entirely on the acid it met with in the stomach, its effects were very uncertain, and often violent. Cups were also made of antimony, which imparted to wine that stood in them for some time an emetic quality. But both these improper exhibitions of this metal are now laid aside.

Sulphuretted antimony was employed by the ancients in collyria against inflammations of the eyes; and for staining the eyebrows black. Its internal use does not seem to have been established till towards the end of the fifteenth century; and even at that

that time it was by many looked upon as poiſonous. But experience has now fully evinced, that it has no noxious quality, being often uſed, particularly in chronic eruptions; that ſome of the preparations of it are medicines of great efficacy; and that though many of them are moſt violently emetic and cathartic, yet even theſe, by a ſlight alteration or addition, loſe their virulence, and become mild in their operation.

Antimony is at preſent the baſis of many officinal preparations, to be afterwards mentioned. But beſides thoſe ſtill retained, many others have been formerly in uſe, and are ſtill employed by different practitioners. We ſhall here, therefore, ſubjoin a table, drawn up by Dr Black, exhibiting a diſtinct view of the whole.

Dr Black's Table of the Preparations of Antimony.

Medicines are prepared either from crude antimony, or from the pure metallic part of it, called regulus.

From Crude Antimony.

I. By trituration.
  Antimonium præparatum. Ed. et Lond.

II. By the action of heat and air.
  Flores antimonii ſine addito.
  Vitrum antimonii. Ed.
  Antimonium vitrificatum. Lond.
  Vitrum antimonii ceratum. Ed.
  Antimonium calcareo-phoſphoratum, ſive pulvis antimonialis. Ed.
  Pulvis antimonialis. Lond.

III. By the action of alkalies.
  Hepar antimonii mitiſſimum.
  Regulus antimonii medicinalis.
  Hepar ad kermes minerale. *Geoffroi.*
  Hepar ad tinct. antimonii.
  Kermes minerale.
  Sulphur antimonii præcipitatum. Ed. et Lond.

IV. By the action of nitre.
  Crocus antimonii mitiſſimus, *vulgo, Regulus antimonii medicinalis.*
  Crocus antimonii. Ed. et Lond.
  Antimonii emeticum mitius. Boerh.
  Antimonium uſtum cum nitro, *vulgo,* Calx antimonii nitrata. Ed.
  Antimonium calcinatum. Lond. *vulgo, Antimonium diaphoret.*

V. By the action of acids.
Antim. vitriolat. Klaunig.
Antim. cathartic. Wilson.
Antimonium muriatum, *vulgo*, Butyrum antim. Ed.
Antimonium muriatum. Lond.
Pulvis algarothi, five *Mercurius Vitæ.*
Bezoardicum minerale.
Antimonium tartarifatum, *vulgo* Tartarus emeticus. Ed.
Antimonium tartarifatum. Lond.
Vinum antimonii tartarifati. Ed. et Lond.
Vinum antimonii. Lond.

From the REGULUS.

This metal, feparated from the fulphur by different proceffes, is called *Regulus antimonii fimplex, Regulus martialis, Regulus jovialis,* &c. From it were prepared,

I. By the action of heat and air,
Flores argentei, five nix antim.

II. By the action of nitre,
Ceruffa antimonii.
Stomachicum Poterii.
Antihecticum Poterii.
Cardiacum Poterii.

PREPARATIONS which have their name from ANTIMONY, but fcarcely contain any of it.
Cinnabaris antimonii.
Tinctura ammonii.

To this table of Dr Black's, which we have left unaltered, we fhall add another, not taken from the mode of preparation, but from the nature of the product.

ANTIMONY has been exhibited,

I. In its metallic ftate.
a. Antimonium. Regulus antimonii.
b. Alloyed,
1. With iron. Regulus antimonii martialis.
2. With tin. Regulus antimonii jovialis.
3. With tin and copper. Regulus metallorum.
c. Combined with fulphur.
1. Sulphuretum antimonii. (Ed.) Antimonium. (Lond.) Stibium. (Dub.)
2. Regulus antimonii medicinalis. (Maët.) Febrifugum Craanii.
d. Combined with fulphuret of potafs. Hepar antimonii.

II. Oxidized,

II. Oxidized,

a. In a ſmaller degree.

1. Calx antimonii *per ſe.* Cinis antimonii.
2. Flores antimonii argentini.
3. Pulvis algarothi.
4. Vitrum antimonii.

Combined with wax. Vitrum antimonii ceratum.

b. Combined with a little ſulphur. Crocus antimonii. Crocus metallorum.

c. Combined with ſulphuretted hydrogen. Sulphur auratum antimonii.

d. With hydroguretted ſulphur. Kermes Minerale.

e. With muriatic acid. Butyrum antimonii.

f. With tartarous acid and potaſs. Tartarus emeticus. Diſſolved in wine. Vinum antimoniale.

g. With phoſphoric acid and phoſphate of lime. James's powders.

h. Oxidized in a greater degree. Antimonium calcinatum. Lond.

These are the principal preparations of antimony. In eſtimating their comparative value, we may attend to the following obſervations. All the metallic preparations are uncertain, as it entirely depends on the ſtate of the ſtomach, whether they have no action at all, or operate with dangerous violence. The ſulphuret is expoſed, though in a leſs degree, to the ſame objections.

The preparations in which antimony is oxidized to the maximum, are perfectly inſoluble in any vegetable or animal acid, and are alſo found to be perfectly inert when taken into the ſtomach.

The remaining preparations of antimony, or thoſe in which it is oxidized in a ſmaller degree, are readily ſoluble in the juices of the ſtomach, and act in very minute doſes. Of its ſaline preparations, only thoſe can be uſed internally which contain a vegetable acid; for its ſoluble combinations with the ſimple acids are very acrid and corroſive. In general, the ſureſt and beſt preparations of antimony are thoſe which contain a known quantity of the metal in its ſtate of leſs oxidizement.

The general effects of antimonials are, in ſmall doſes, diaphoreſis, nauſea; in large doſes, full vomiting and purging. Some allege that antimonials are of moſt uſe in fevers when they do not produce any ſenſible evacuation, as is ſaid to be the caſe ſometimes with James's powder. They therefore prefer it in typhus, and emetic tartar in ſynochus, in which there is the appearance at firſt of more activity in the ſyſtem, and more apparent cauſe for evacuation.

APIUM PETROSELINUM. *Radix.* (*Ed.*)
Petroselinum. Radix, Semen. (*Lond.*)
Parsley. The root. (*Ed.*) The root and seed. (*Lond.*)
Willd. g. 563. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

Parsley is a biennial plant, and a native of the South of Europe. It is very generally cultivated in this country for culinary purposes. The seeds have an aromatic flavour, and are occasionally made use of as carminatives. The taste of the root is somewhat sweetish, with a light degree of warmth and aromatic flavour, and it possesses gentle diuretic properties.

ARABICUM GUMMI. (*Lond.*) See Mimosa.

ARBUTUS UVA URSI. *Folia.* (*Ed.*)
Uva Ursi. Folia. (*Lond. Dub.*)
Whortleberry. The leaves.
Willd. g. 871. *sp.* 7.—*Decandria Monogynia.*—Nat. ord. *Bicornes.*

The uva ursi is a low shrub, somewhat resembling the myrtle, It seems first to have been employed in medicine in Spain and the South of France: it is an indigenous vegetable of these countries, but it grows also in northern climates, particularly in Sweden, and on the hills of Scotland. The leaves have a bitterish astringent taste; and their latter quality is so considerable, that in certain places, particularly in some of the provinces of Russia, they are used for tanning leather. A watery infusion of the leaves immediately strikes a very black colour with chalybeates.

The uva ursi seems first to have been employed in medicine with a view to its astringent power. With this intention, it was used under the form of decoction, for restraining an immoderate flow of the menses, against other hæmorrhagies, in cases of diarrhœa and dysentery, and for the cure of cutaneous eruptions. But it had fallen much into disuse till its employment was again revived by Dr de Haen of Vienna. He bestowed very high encomiums on it, against ulcerations of the kidneys, bladder, and urinary passages. He represents it as capable of curing almost every case of that kind: and even asserts, that in cases of calculus much benefit is derived from its use: patients after the employment of it passing their water easily and without pain. It has, however, by no means answered the expectations, which, on these grounds, other practitioners formed of it: But in many affections of the urinary organs, it has proved to be a remedy of some use; and it has been particularly serviceable in alleviating dyspeptic symptoms in nephritic and calculous cases. It has also been serviceable in cystirrhœa or catarrhus vesicæ; and it has been thought to be sometimes productive of advantage in diabetes. It is sometimes used in the form of decoction, but most frequently in that of powder,

der, from a fcruple to a drachm for a dofe, repeated twice or thrice a-day.

ARCTIUM LAPPA. *Radix.* (*Ed.*)
Bardana. Radix. (*Lond. Dub.*)
Burdock. The root.
Syngenefia Polygamia æqualis.—Nat. ord. *Compofitæ Capitatæ.*

This is a perennial plant, which grows wild in uncultivated places. The feeds have a bitterifh fubacrid tafte: they are recommended as very efficacious diuretics, given either in the form of emulfion, or in powder, to the quantity of a drachm. The roots tafte fweetifh, with a light aufterity and bitterifhnefs: they are efteemed aperient, diuretic, and fudorific; and are faid to act without irritation, fo as to be fafely ventured upon in acute diforders. Decoctions of them have of late been ufed in rheumatic, gouty, venereal, and other diforders: and are preferred by fome to thofe of farfaparilla.

ARGENTUM. (*Ed. Lond.*)
Argentum in laminas extenfum. (*Dub.*)
Silver. Silver leaf.

The chemical and phyfical properties of filver have been already enumerated (157.)

Silver is found,

1. In its metallic ftate:
   1. Pure.
   2. Alloyed with gold.
   3. ——— antimony.
   4. ——— iron and arfenic.
2. Combined with fulphur:
   1. Sulphuretted filver.
   2. ——— with antimony, iron, arfenic, and copper.
   3. ——— with copper.
   4. ——— with lead and antimony.
3. Oxidized:
   1. Combined with carbonic acid and antimony.
   2. ——— with muriatic acid.
   3. ——— with fulphur and oxide of antimony.

Silver is admitted into the lift of Materia Medica, only as being the bafis of a preparation to be mentioned afterwards.

ARISTOLOCHIA SERPENTARIA. *Radix.* (*Ed.*)
Serpentaria Virginiana. Radix. (*Lond. Dub.*)
Virginian Snake-root. The root.

Gynandria

Gynandria Hexandria.—Nat. ord. *Sarmentosæ.*

THIS is a ſmall, light, buſhy root, conſiſting of a number of ſtrings or fibres matted together, iſſuing from one common head; of a browniſh colour on the outſide, and paler or yellowiſh within. It has an aromatic ſmell, like that of valerian, but more agreeable: and a warm, bitteriſh, pungent taſte, very much reſembling that of camphor. Its virtues are principally owing to the eſſential oil with which it abounds. Its general action is heating and ſtimulant; its particular effects, to promote the diſcharge by the ſkin and urine. In its effects it therefore coincides with camphor, but ſeems to be a more permanent ſtimulus.

It is recommended,

1. In intermittent fevers, eſpecially when the paroxyſms do not terminate by ſweating, and to aſſiſt the action of Peruvian bark in obſtinate caſes.
2. In typhus, and in putrid diſeaſes, to ſupport the *vis vitæ*, and to excite gentle diaphoreſis.
3. In exanthematous diſeaſes, when the fever is of the typhoid type, to ſupport the action of the ſkin, and keep out the eruption.
4. In gangrene. Externally it is uſed as a gargle in the putrid ſore throat.

It is exhibited,

1. In powder, which is the beſt form, in doſes of twenty or thirty grains.
2. In infuſion with wine or water. By decoction its powers are entirely deſtroyed.

It is often combined with Peruvian bark, or with camphor.

ARNICA MONTANA. *Flores, Radix.* (*Ed. Dub.*) *Herba, Flos, Radix.* (*Lond.*)

German Leopard's-bane. The flower, herb, and root.

Syngeneſia Polygamia ſuperflua.—Nat. ord. *Compoſitæ radiatæ.*

LEOPARD'S BANE is a very common perennial plant in the Alpine parts of Germany, Sweden, Lapland, and Switzerland. The flowers, which are of a yellow colour and compound, conſiſting entirely of tubular florets, are diſtinguiſhed from ſimilar flowers, with which they are often mixed from ignorance or fraud, by the common calyx, which is ſhorter than the florets, and conſiſts entirely of lancet-ſhaped ſcales, lying parallel and cloſe to each other, of a green colour, with purple points. The calyx of the different ſpecies of Inula are compoſed of briſtle-ſhaped ſcales, reflected at the points, and beſet with hairs. The florets of the genus Hypochæris are ſtrap-ſhaped.

These

These flowers have a weak bitteriſh taſte, evidently combined with a degre of acrimony, and, when rubbed with the fingers, have a ſomewhat aromatic ſmell. Their active conſtituents are not ſufficiently aſcertained. They evidently contain a great deal of reſin, and ſome eſſential oil. In their effects they are ſtimulating, and ſuppoſed to be diſcutient.

In ſmall doſes, and properly adminiſtered, they poſſeſs very beneficial effects, in raiſing the pulſe, in exciting the action of the whole ſanguiferous ſyſtem, in checking diarrhœas, in promoting expectoration, and, moſt particularly, in removing paralytic affections of the voluntary muſcles; but their uſe is frequently attended with no ſenſible operation, except that in ſome caſes of paralyſis, the cure is ſaid to be preceded by a peculiar prickling, and by ſhooting pains in the affected parts. When given improperly or in too large doſes, they excite an inſupportable degree of anxiety, ſhooting and burning pains, and even dangerous hæmorrhagies, vomiting, vertigo, and coma. For theſe dangerous ſymptoms, vinegar is ſaid to be the beſt remedy.

They have been recommended,

1. In paralytic diſorders, in chronic rheumatiſm, in retention of the urine, from paralyſis of the bladder, in amauroſis.
2. In intermittent fevers, combined with Peruvian bark.
3. In dyſentery and diarrhœa, but in ſome caſes they have had bad effects.
4. In putrid diſeaſes.
5. In typhoid inflammations.
6. To promote the uterine diſcharge.
7. And in internal pains, and congeſtions from bruiſes. In the countries where they are indigenous, the flowers of the leopard's-bane have long been a popular remedy in theſe accidents.

They are contra-indicated by an inflammatory diatheſis, a prediſpoſition to hæmorrhagies, and internal congeſtions.

They are beſt exhibited in the form of infuſion. One or two ſcruples may be infuſed with half a pound of water, and drunk at proper intervals. The flowers ſhould be wrapt up in a piece of linen, as otherwiſe their down is apt to be diffuſed in the liquid, and to cauſe violent irritation of the throat.

The dried root of this plant is about the thickneſs of a ſmall quill, and ſends out fibres along one ſide. Externally it is rough, and of a red brown colour, internally of a dirty white. Its taſte is acrid, and ſlightly bitter. It is exhibited in the ſame manner and circumſtances as the flowers, but it is more apt to excite vomiting. In powder its doſe is from five to ten grains.

ARSENICUM.

ARSENICUM.

Arſenic.

The general properties of this metal have been already enumerated.

Arſenic is found,

1. In its metallic ſtate :
   1. Alloyed with iron.
   2. ———— iron and gold.
   3. ———— cobalt.
2. Oxidized :
   1. Uncombined. White oxide of arſenic.
   2. Combined with ſulphur :
      - *a.* Oxide of arſenic 90, ſulphur 10, Orpiment. Yellow ſulphuretted arſenic.
      - *b.* Oxide of arſenic 84, ſulphur 16, Realgar. Red ſulphuretted arſenic.
3. Acidified and combined :
   1. With lime.
   2. With copper.
   3. With iron.
   4. With lead.
   5. With nickel.
   6. With cobalt.

Oxidum Arsenici. (*Ed.*)

Oxide of arſenic. Arſenious acid, (Fourcroy.) (195.)

This ſubſtance, which was formerly named improperly arſenic, is moſt generally obtained in the proceſs of roaſting the ores of cobalt in Saxony. The roaſting is performed in a kind of reverberatory furnace, with which a very long chimney is connected, lying in a horizontal direction. The oxide of arſenic is condenſed in it in the form of a looſe grey powder, which, by a ſecond ſublimation with a little potaſs, and in a great degree of heat, coaleſces into a firm vitreous ſublimate, which gradually becomes opaque by expoſure to the air. In this ſtate it is the white arſenic of commerce, or, as it ſhould be termed, the white oxide of arſenic. For internal uſe, the lumps of a ſhining appearance and dazzling whiteneſs ſhould be choſen ; but it is generally offered to ſale in the form of powder, which is very often mixed with chalk or gypſum. The fraud is eaſily detected by expoſing it to heat. The oxide of arſenic is entirely ſublimed, and the additions remain behind.

As this ſubſtance is one of the moſt virulent poiſons, we ſhall give a full account of its properties. It is white, compact, brittle, and of a glaſſy appearance. Its taſte is ſweetiſh, but acrid and ſlow in manifeſting itſelf. It ſublimes entirely when expoſed

expoſed to 283° Fahrenheit. When the operation is performed in cloſe veſſels, the oxide of arſenic aſſumes a glaſſy appearance, which it ſoon loſes on expoſure to the air. In open veſſels it ſublimes in denſe white fumes, ſmelling ſtrongly of garlic. If a plate of copper be expoſed to the fumes, it is whitened. Oxide of arſenic is ſoluble in 80 parts of water at 60°, and in 15 at 212°. This ſolution has an acrid taſte, and reddens vegetable blues. It is alſo ſoluble in 80 parts of boiling alcohol. From either ſolution it may be obtained regularly cryſtallized in tetrahedrons. From its ſolutions a glaſs-green precipitate is ſeparated by a ſolution of ſulphate of iron, a white precipitate by lime-water, and a yellow precipitate by any of the combinations of an alkali with ſulphur, or with ſulphur and hydrogen. All theſe precipitates, when expoſed to a ſufficient temperature, ſublime entirely, and emit the ſmell of garlic.

When treated with nitric acid, the white oxide of arſenic is converted into arſenic acid (197).

But by far the ſureſt teſt of the preſence of arſenic, is its reduction by carbonaceous ſubſtances.

With this view, a ſmall quantity of any ſuſpected ſubſtance may be mixed with ſome fatty or oily matter, and introduced within a tube cloſed at the bottom, and expoſed to a red heat; if arſenic be preſent in any ſtate, it will be ſublimed in the form of brilliant metallic ſcales.

Oxide of arſenic is uſed by the dyers, as a flux in glaſs-making, in docimaſtic works, and in ſome glazes. Its ſulphurets are much uſed by painters, but theſe advantages are not able to compenſate for its bad effects. In mines, it cauſes the deſtruction of numbers who explore them; being very volatile, it forms a duſt, which affects and deſtroys the lungs, and the unhappy miners, after a languiſhing life of a few years, all periſh ſooner or later. The property which it poſſeſſes of being ſoluble in water, increaſes and facilitates its deſtructive power; and it ought to be proſcribed in commerce, by the ſtrict law which prohibits the ſale of poiſons to unknown perſons. Oxide of arſenic is every day the inſtrument by which victims are ſacrificed, either by the hand of wickedneſs or imprudence. It is often miſtaken for ſugar; and theſe miſtakes are attended with the moſt dreadful conſequences. The ſymptoms which characterize this poiſon are a great conſtriction of the throat, the teeth ſet on edge, and the mouth ſtrongly heated, an involuntary ſpitting, with extreme pains in the ſtomach, vomiting of glairous and bloody matter, with cold ſweats and convulſions.

On diſſection, the ſtomach and bowels are found to be inflamed, gangrenous and corroded, and the blood is fluid. Soon after death, livid ſpots appear on the ſurface of the body, the nails become blue, and often fall off along with the hair, the epidermis ſeparates, and the whole body becomes very ſpeedily putrid.

When

When the quantity is fo very fmall as not to prove fatal, tremors, palfies, and lingering hectics fucceed.

Mucilaginous drinks have been long ago given to perfons poifoned by arfenic. Milk, fat, oils and butter, have been fuccesfeffively employed. M. Navier has propofed a more direct counterpoifon. He prefcribes one drachm of fulphuret of potafs to be diffolved in a pint of water, which the patient is directed to drink at feveral draughts: the fulphur unites to the arfenic, and deftroys its caufticity and effects. When the firft fymptoms are diffipated, he advifes the ufe of fulphureous mineral waters. He likewife approves the ufe of milk, but condemns oils. Vinegar which diffolves arfenic, has been recommended by M. Sage, but upon what grounds we know not.

According to Hahneman a folution of foap is the beft remedy. One pound of foap may be diffolved in four pounds of water, and a cupful of this folution may be drunk lukewarm every three or four minutes.

Notwithftanding, however, the very violent effects of oxide of arfenic, it has been employed in the cure of difeafes, both as applied externally and as taken internally. Externally it has been chiefly employed in cafes of cancer; and as ufed in this way, it is fuppofed that its good effects depend on its acting as a peculiar corrofive: and it is imagined, that oxide of arfenic is the bafis of a remedy long celebrated in cancer, which, however, is ftill kept a fecret by a family of the name of Plunket in Ireland. According to the beft conjectures, their application confifts of the powder of fome vegetables, particularly the ranunculus flammula and cotula fœtida, with a confiderable portion of oxide of arfenic and fublimed fulphur intimately mixed together. This powder, made into a pafte with the white of an egg, is applied to the cancerous part which it is intended to corrode; and being covered with a piece of thin bladder, fmeared alfo with the white of an egg, it is fuffered to lie on from twenty-four to forty-eight hours; and afterwards the efchar is to be treated with foftening digeftive, as in other cafes. This application, whether it be precifely the fame with Plunket's remedy or not, and likewife arfenic in mere fimple forms, have in fome inftances been productive of good effects.

Juftamond ufed an ointment compofed of four grains of white oxide of arfenic, ten grains of opium, and a drachm of cerate, and fpread very thin upon linen. But its action is tedious. He alfo fumigated cancerous fores with a fulphuret of arfenic, with a view to deftroy their intolerable fetor, with great fuccefs. Le Febure wafhed cancerous fores frequently, in the courfe of the day, with a folution of four grains of oxide of arfenic in two pounds of water. Arneman recommends an ointment of one drachm of arfenic, the fame quantity of fulphur, an ounce of diftilled vinegar, and an ounce of ointment of white oxide of lead, in cancerous, and obſtinate, ill-conditioned ſores, and in ſuppurated ſcrofulous glands. The oxide of arſenic has even been applied in ſubſtance, ſprinkled upon the ulcer. But this mode of uſing it is exceſſively painful, and extremely dangerous. There have been even fatal effects produced from its abſorption.

The principal thing to be attended to in arſenical applications, is to diminiſh their activity to a certain degree. They then cauſe little irritation or pain, but rather excite a gentle degree of inflammation, which cauſes the diſeaſed parts to ſlough off; and it has the peculiar advantage of not extending its operation laterally.

No other eſcharotic poſſeſſes equal powers in cancerous affections; but unfortunately its good effects often do not go beyond a certain length, and if in ſome caſes it effects a cure, in others it muſt be allowed it does harm. While it has occaſioned very conſiderable pain, it has given the parts no diſpoſition to heal, the progreſs of the ulceration becoming even more rapid than before.

White oxide of arſenic has alſo been recommended as a remedy for cancer when taken internally. With this intention, four grains of oxide of arſenic, of a clear white ſhining appearance, and in ſmall cryſtals, is directed to be diſſolved in a pint of diſtilled water; and of this ſolution the patient is to take a table-ſpoonful, with an equal quantity of milk, and a little ſyrup of white poppies, every morning faſting, taking care to taſte nothing for an hour after it. After this has been continued for about eight days, the quantity is to be encreaſed, and the doſes more frequently repeated, till the ſolution be taken, by an adult, to the extent of ſix table-ſpoonfuls in the courſe of a day. Mr Le Febure, who is, we believe, the introducer of this practice, affirms that he has uſed it in more than two hundred inſtances without any bad effect, and with evident proofs of its efficacy. But when employed by others, it has by no means been found equally efficacious.

Of all the diſeaſes in which white oxide of arſenic has been uſed internally, there is no one in which it has been ſo frequently and ſo ſucceſsfully employed as in the cure of intermittent fevers. Prepared in different ways, it has long been uſed in Lincolnſhire, and ſome other of the fenny countries, under the name of the *Arſenic drop*: And it is conjectured, that an article, which has had a very extenſive ſale, under the title of the *Taſteleſs ague-drop*, the form of preparing which, however, is ſtill kept a ſecret, is nothing elſe but a ſolution of oxide of arſenic. But whether this be the caſe or not, we have now the moſt ſatisfactory information concerning this article, in the Medical Reports of the effects of Arſenic in the cure of Agues, Remitting Fevers, and Periodic Headachs, by Dr Fowler of Stafford. The medicine he employed was the arſenite of potaſs. He directs, that ſixty-four grains of oxide

of

of arſenic, reduced to a very fine powder, and mixed with as much carbonate of potaſs, ſhould be added to half a pound of diſtilled water, in a Florence flaſk; that it ſhould then be placed in a ſand heat, and gently boiled till the oxide of arſenic be completely diſſolved; that after the ſolution is cold, half an ounce of compound ſpirit of lavender be added to it, and as much diſtilled water as to make the whole ſolution amount to a pound. This ſolution is taken in doſes, regulated according to the age, ſtrength, and other circumſtances of the patient, from two to twelve drops, once, twice, or oftener in the courſe of the day. And in the diſeaſes mentioned above, particularly in intermittents, it has been found to be a ſafe and very efficacious remedy, both by Dr Fowler and by other practitioners: but in ſome inſtances, even when given in very ſmall doſes, we have found it excite violent vomiting, and beſides this, it has alſo been alleged by ſome, that thoſe cured of intermittents by arſenic, are very liable to become phthiſical.

If arſenic ſhall ever be extenſively employed internally, it will probably be moſt certain and moſt ſafe in its operation, when brought to the ſtate of a ſalt readily ſoluble in water. Mr Macquer tells us, that it may be brought to the ſtate of a true neutral ſalt in the following manner: Mix well together equal quantities of nitrate of potaſs, and of pure oxide of arſenic; put them into a retort, and diſtil at firſt with a gentle heat, but afterwards with ſo ſtrong a heat as to redden the bottom of the retort. In this proceſs the nitric acid is partly decompoſed, and paſſes over into the receiver in the ſtate of nitrous acid. The oxide of arſenic is at the ſame time acidified, and combines with the potaſs. The product, which is arſeniate of potaſs, is found in the bottom of the retort, which may be obtained in the form of cryſtals of a priſmatic figure, by diſſolving it in diſtilled water, filtering the ſolution through paper, evaporating and cryſtallizing.

Oxide of arſenic, in ſubſtance, to the extent of an eighth of a grain for a doſe, combined with a little of the flowers of ſulphur, has been ſaid to be employed internally in ſome very obſtinate caſes of cutaneous diſeaſes, and with the beſt effect. But of this we have no experience.

ARTEMISIA.—*Syngeneſia Polygamia ſuperflua.*—Nat. ord. *Compoſitæ diſcoideæ.*

Sp. ARTEMISIA ABROTANUM.

Abrotanum. Folium. (*Lond.*)

Southernwood. The leaves.

THIS is a perennial ſhrub, which grows readily in our gardens, though a native of the ſouth of Europe.

Southernwood has a ſtrong ſmell, which, to moſt people, is not diſagreeable; it has a pungent, bitter, and ſomewhat nauſeous taſte.

taſte. Theſe qualities are very completely extracted by rectified ſpirit, and the tincture thus formed is of a beautiful green colour. They are leſs perfectly extracted by watery liquors, the infuſion being of a light brown colour.

Southernwood, as well as ſome other ſpecies of the ſame genus, particularly the abſinthium and ſantonica, has been recommended as an anthelmintic; and it has alſo been ſometimes uſed as a ſtimulant, detergent, and ſudorific. It has likewiſe been employed externally in diſcutient and antiſeptic fomentations. It has alſo been uſed under the form of lotion and ointment for cutaneous eruptions, and for preventing the hair from falling off. But although it ſtill retains a place in the pharmacopœia of London, it is at preſent very little employed in practice.

Sp. Artemisia Maritima.
Abſinthium Maritimum. Cacumina. (Lond. Dub.)
Sea Wormwood. The tops.

This ſpecies of artemiſia is perennial and herbaceous. It grows wild in ſalt marſhes, and in ſeveral parts about the ſea-coaſts. In taſte and ſmell it is weaker and leſs unpleaſant than the common wormwood. The tops of ſea wormwood formerly entered ſome of the compound diſtilled waters; but they are now rejected from theſe, and are very little employed in practice.

Sp. Artemisia Santonica. *Cacumen. (Ed.)*
Santonicum. Cacumen. (Lond.) Semina. (Dub.)
Wormſeed. The tops. The ſeeds.

All the Britiſh Colleges have given this ſpecies as the plant which produces theſe ſeeds, but it is by no means aſcertained. They have been aſcribed by different writers to other ſpecies of the ſame genus, the Judaica, the Contra, and the Auſtriaca, and are even ſaid by Saunders to be the produce of a ſpecies of Chenopodium.

The ſeeds themſelves are ſmall, oblong, ſmooth, and of a greeniſh or greyiſh yellow colour. As the whole head is gathered after the ſeeds are ripe, they are mixed with the ſcales of the calices and bits of ſtalks. Their taſte is bitter and ſomewhat acrid, their ſmell ſtrong and diſagreeable. Thoſe which come from Aleppo are eſteemed the beſt, and thoſe from Barbary the worſt. When they have no ſmell, and a leſs intenſely bitter taſte, and are diſcoloured, and mixed with a longer kind of ſeed, they are to be rejected. They are alſo adulterated with the ſeeds of tanſy and wormwood. The latter are eaſily known, by having a light yellow colour, and reſembling powdered hay more than ſeeds.

Wormſeed is one of the oldeſt and moſt common anthelmintics, eſpecially in the lumbrici of children. On account of their eſſential oil, they are heating and ſtimulating.

They are given to children

1. In ſubſtance, to the extent of ten grains, or half a drachm, finely powdered, and ſtrewed on bread and butter; or made into an electuary with honey or treacle; or candied with ſugar; or diffuſed through milk, and taken in the morning when the ſtomach is empty.
2. In infuſion or decoction, but to theſe forms their bitterneſs is a ſtrong objection.

After they have been uſed for ſome days, it is cuſtomary to give a cathartic, or they are combined from the beginning with rhubarb, jalap, calomel, ſulphate of iron, or muriate of ammonia.

Sp. ARTEMISIA ABSINTHIUM. *Folia et ſummitates florentes.* (*Ed.*)

Abſinthium vulgare. Herba. (*Lond.*) *Folia, cacumina.* (*Dub.*)

Common wormwood. The herb, leaves, and flowering heads.

THIS perennial herb grows by the road-ſides and on rubbiſh in many parts of Britain; and about London it is cultivated for medical uſe. Its ſmell is ſtrong and diſagreeable; its taſte intenſely bitter. Its active conſtituents are bitter extractive and eſſential oil. It is uſed in ſtomach complaints, and is of great ſervice to hypochondriſts. It is alſo employed in intermittent fevers, in cachectic and hydropic affections, in jaundice, and againſt worms. Many perſons cannot ſuffer the diſagreeable ſmell of wormwood, which is apt to occaſion headach, but it may be freed from it in a great meaſure by decoction. The extract is a pure and ſimple bitter. The eſſential oil is ſtimulating, and is ſuppoſed to be a powerful antiſpaſmodic and anthelmintic. It was formerly much uſed for the preparation of medicated wines and ales.

ARUM MACULATUM.

Arum. Radix recens. (*Lond. Dub.*)

Wake-robin. The recent root.

Gynandria Polyandria.—Nat. ord. *Piperitæ*.

THIS is a perennial ſolid bulbous-rooted plant, which grows wild in ſhady ſituations, and by the ſides of banks, in many parts of Britain. The root is knotty, roundiſh and white. When collected in ſpring before the leaves ſhoot, or in autumn after flowering, it contains a milky juice of very great acrimony. Applied to the tongue, it cauſes a burning heat, which laſts for many hours, and excites conſiderable thirſt. Theſe diſagreeable ſymptoms may be relieved by butter-milk or oily fluids. Rubbed between the fingers, it bliſters and excoriates them; it is therefore a corroſive vegetable poiſon. By drying, it loſes its acrimony entirely, and becomes ſimply amylaceous. It is alſo rendered perfectly mild by frequent waſhing with water. Its acrimony is therefore volatile, and eafily deftructible; and as it doe not arife from the prefence of an effential oil, it depends upon a vegetable principle, different from all others, and not well underftood. It is the fame upon which the virtues of the fquill, hellebore, &c. depend. Gren has diftinguifhed it by the name of the Acrid Principle.

In the recent root, the degree of acrimony is fo very uncertain, and often fo exceffive, that its effects, as an internal remedy, cannot be depended on. The dried root is perfectly inert; but the roots may be kept frefh for a year, by burying them in a cellar in fand.

ASAFOETIDA. (*Lond. Dub.*) See FERULA.

ASARUM EUROPÆUM.

Afarum. Folia. (*Dub. Lond.*)

Afarabacca. The leaves.

Willd. g. 925. *fp.* 1.—*Dodecandria Monogynia.*—Nat. ord. *Sarmentaceæ.*

THIS is a perennial plant, which is a native of fome places of England, although the dried roots are generally brought from the Levant.

It grows in moift and fhady fituations. It produces only two leaves, which are uniform and very obtufe. The root is fibrous, of a grey-brown colour externally, but white within.

Both the roots and leaves have a naufeous, bitter, acrimonious, hot tafte; their fmell is ftrong, and not very difagreeable.

Afarabacca contains, befides its odorous principle, which is probably camphor, a portion of the fame acrid principle which we have noticed when fpeaking of arum. Upon this its virtues depend; and as this principle is volatile, we find accordingly that afarabacca lofes much of its activity by decoction and long keeping.

Given in fubftance from half a drachm to a drachm, it evacuates powerfully both upwards and downwards. It is faid, that tinctures made in fpirituous menftrua, poffefs both the emetic and cathartic virtues of the plant: that the extract obtained by infpiffating thefe tinctures, acts only by vomiting, and with great mildnefs: that an infufion in water proves cathartic, rarely emetic: that aqueous decoctions made by long boiling, and the watery extract, have no purgative or emetic quality, but prove good diaphoretics, diuretics, and emmenagogues.

The principal ufe of this plant among us is as a fternutatory. The root of afarum is perhaps the ftrongeft of all the vegetable errhines, white hellebore itfelf not excepted. Snuffed up the nofe, in the quantity of a grain or two, it occafions a large evacuation of mucus, and raifes a plentiful fpitting. The leaves are confiderably milder, and may be ufed to the quantity of three, four, or five grains. Geoffroy relates, that after fnuffing up a dofe of this errhine at night, he has frequently obferved the difcharge from the nofe to continue for three days together; and that he has known a paralyfis of the mouth and tongue cured by one dofe. He recommends this medicine in ftubborn diforders of the head, proceeding from vifcid tenacious matter, in palfies, and in foporific diftempers.

ASTRAGALUS TRAGACANTHA. *Gummi.* (*Ed.*)
Aftragalus Creticus. (*Lamarck.*)
Tragacantha Gummi. (*Lond. Dub.*)
Gum-Tragacanth.
Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

GUM-TRAGACANTH is the produce of a very thorny fhrub, which grows on the Ifland of Candia, and other places in the Levant.

About the end of June a fluid exudes from the ftem and larger branches, which dries in the fun, and is collected by the fhepherds on Mount Ida, from whence it is fent to Europe, under the title of Tragacanth.

It confifts of whitifh femi-tranfparent vermiform pieces, fcarcely a line in thicknefs, without tafte or fmell.

There is alfo a dirty yellow, or brownifh kind, which is not fit for medical purpofes.

Tragacanth is a true gum, and is principally employed as a demulcent to blunt acrimonies, and as a pharmaceutical agent.

ATROPA BELLADONNA. *Folia.* (*Ed.*)
Belladonna. Folia. (*Dub.*)
Deadly Nightfhade. The leaves.
Willd. g. 381. *fp.* 2.—*Pentandria Monogynia.*—Nat. ord. *Solonaceæ.*

THE Deadly Nightfhade is a perennial plant, with a herbaceous ftem, which is indigenous both in mountainous and woody fituations in this country, and often cultivated in gardens. The whole plant is poifonous, and the berries, from their beautiful appearance, have fometimes proved fatal to children. The fymptoms excited are, a drynefs of the mouth; a trembling of the tongue; a very diftreffing thirft; a difficulty of fwallowing; fruitlefs efforts to vomit; and great anxiety about the præcordia. Delirium then comes on, with gnafhing of the teeth and convulfions. The pupil remains dilated, and is not fenfible even to the ftimulus of light. The face becomes tumid, and of a dark red colour. The jaws are frequently locked. Inflammation attacks the œfophagus, ftomach and inteftines, fometimes extending to the mefentery, lungs and liver, accompanied with violent pains in the abdomen. The ftomach is is very infenfible to ftimulus, and the periftaltic motion of the inteftines is deftroyed. General relaxation, palfy efpecially, of the lower extremities, convulfions, vertigo, blindnefs, coma, and death, fucceed. The body foon putrifies, fwells, and becomes marked with livid fpots; blood flows from the nofe, mouth and ears, and the ftench is infufferable. On diffection, the blood is found to be fluid, the inteftines are inflated and inflamed, or eroded and gangrenous. The beft method of cure is to excite vomiting as foon as poffible, by emetics and tickling the fauces; to evacuate the bowels by purgatives and glyfters; and to give, largely, vinegar, honey, milk and oil. In fome children who recovered by this treatment, the delirium was fucceeded by profound fopor, accompanied with fubfultus tendinum; the face and hands became pale and cold, and the pulfe fmall, hard and quick. Their recovery was flow, and the blindnefs continued a confiderable time, but at laft went off.

Yet this virulent poifon, under proper management, may become an excellent remedy. Befides a very remarkable narcotic power, it poffeffes confiderable influence in promoting all the excretions, particularly by fweat, urine, and it is alfo faid by faliva; but its exhibition requires the greateft caution; for it is apt when continued for any length of time, even in fmall dofes, to caufe drynefs and tenfion of the throat and neighbouring parts, vertigo, dimnefs of fight, and even temporary blindnefs. When any of thefe fymptoms occur, its ufe muft be fufpended for fome time, and afterwards refumed in fmaller dofes.

Deadly nightfhade has been exhibited

1. In feveral febrile difeafes; in obftinate intermittents; and in the plague.
2. In inflammations; the gout.
3. In comatofe difeafes; in palfy and lofs of fpeech from apoplexy.
4. In fpafmodic difeafes; in chorea; epilepfy; chincough; hydrophobia; melancholy, and mania.
5. In cachectic affections; in dropfies and obftinate jaundice.
6. In local difeafes; in amaurofis; in fcirrhus, and cancer.

Deadly nightfhade is beft exhibited in fubftance, beginning with a very fmall dofe of the powdered leaves or root, fuch as the fourth or eighth part of a grain for children, and one grain for adults, to be repeated daily, and gradually increafed. In hydrophobia, Münch gave the powdered root every fecond morning, to the extent of from one to five grains to children, and fourteen or fifteen grains to adults.

The watery infufion is alfo a powerful remedy. One fcruple of the dried leaves are infufed in ten ouuces of warm water, and ftrained after cooling. At firft two ounces of this may be given daily to adults, and gradually increafed until the tenfion of the throat fhews that it would be imprudent to go farther.

The watery extract is not a judicious preparation.

Externally, the powdered leaves are applied as a narcotic to diminifh pain, and to cancerous and ill-conditioned fores. From its effect in permanently dilating the pupil, Profeffor Reimarus propofed, and tried with fuccefs, the dropping a little of the infufion into the eye, a few hours before performing the operation for the cataract, with the view of facilitating the operation.

AURANTIUM HISPALENSE. (*Lond. Dub.*) See CITRUS.

AVENA SATIVA. *Semen.* (*Ed.*)
Avena. Semen. (*Lond.*)
Oats. The feed.
Willd. g. 142. *fp.* 13.—*Triandria Digynia.*—Nat. ord. *Gramina.*

THIS is a well-known annual plant, which is very generally cultivated in northern countries, and in many places furnifhes their principal fubfiftence. When fimply freed from the hufks, this grain gets the name of groats, but it is more frequently ground into meal. Groats are made into broths. Meal is baked with falt and water into cakes, or with the fame additions, is boiled to form porridge. An infufion of the hufks in water, allowed to remain till it become acidulous, is boiled down to a jelly, which is called fowins. In all thefe forms it is nutritious, and eafy of digeftion.

Gruels or decoctions, either of groats or oatmeal, either plain or acidified, or fweetened, form an excellent drink in febrile difeafes, diarrhœa, dyfentery, &c. and from their demulcent properties, prove ufeful in inflammatory diforders, coughs, hoarfenefs, roughnefs, and exulcerations of the fauces.

BALSAMUM CANADENSE. (*Lond. Dub.*) See PINUS BALSAMEA.

BALSAMUM COPAIBA. (*Dub.*) *Balfamum copaiva.* (*Lond.*) See COPAIFERA OFFICINALIS.

BALSAMUM PERUVIANUM. (*Lond. Dub.*) See MYROXYLON PERUIFERUM.

BALSAMUM TOLUTANUM. (*Lond. Dub.*) See TOLUIFERA BALSAMUM.

BARDANA. (*Lond. Dub.*) See ARCTIUM LAPPA.

BARILLA. (*Lond. Dub.*) See CARBONAS SODÆ.

BECABUNGA. (*Dub.*) *Beccabunga.* (*Lond.*) See VERONICA BECCABUNGA.

BELLADONNA. (*Dub.*) See ATROPA BELLADONNA.

BENZOE. (*Lond.*) *Benzoinum.* (*Dub.*) See STYRAX BENZOIN.

BERBERIS VULGARIS.
Berberis. Fructus. (*Dub.*)
Barberry. The fruit.
Willd. g. 677. *sp.* 1.—*Hexandria Monogynia.*—Nat. ord. *Tribilatæ.*

THE barberry is a ſmall tree, or rather a large buſh, covered with an aſh-coloured bark, under which is contained another of a deep yellow: the berries are of an elegant red colour, and contain each two hard brown ſeeds. It grows wild on chalky hills in ſeveral parts of England; and is frequently planted in hedges and in gardens.

The outward bark of the branches and the leaves have an aſtringent acid taſte; the inner yellow bark, a bitter one. This laſt is ſaid to be ſerviceable in the jaundice; and by ſome to be an uſeful purgative.

The berries contain a very acid red juice, which conſiſts chiefly of malic acid. In warm countries it forms a uſeful and pleaſant addition to antiphlogiſtic drinks in fluxes and in malignant fevers, for abating heat, quenching thirſt, raiſing the ſtrength, and preventing putrefaction.

They alſo form a very elegant ſyrup or preſerve, which may be employed with advantage in the ſame diſeaſes.

BETULA ALBA. *Succus.* (*Dub.*)
The birch tree. The juice.
Monoecia Tetrandria.—Nat. ord. *Amentaceæ.*

THIS tree grows wild in moſt woods: its bark is aſtringent.

Upon deeply wounding or boring the trunk of the tree in the beginning of ſpring, a ſweetiſh juice iſſues forth, ſometimes, it is ſaid, in ſo large quantity, as to equal in weight the whole tree and root: one branch will bleed a gallon or more in a day. This juice is chiefly recommended in ſcorbutic and ſimilar diſorders: its moſt ſenſible effect is to promote the urinary diſcharge.

BISTORTA. (*Lond. Dub.*) See POLYGONUM BISTORTA.

BITUMEN PETROLEUM. (*Ed.*)
Petroleum. (*Lond.*)
Petroleum Barbadenſe, Reſina. (*Dub.*)

Rock oil. Barbadoes tar.

Bitumen is now employed as the generic name for ſeveral inflammable bodies of different degrees of conſiſtency, from perfect fluidity to that of a brittle but very fuſible ſolid, and of little ſpecific gravity. They are inſoluble in alcohol or in water, combine with eſſential oils and ſulphur, decompoſe only a ſmall proportion of nitrate of potaſs by deflagration, and on inflammation leave little or no reſiduum.

Sp. 1. Naphtha. It is nearly as colourleſs, tranſparent, and fluid as water. Specific gravity 0.729 to 0.847, of a highly penetrating, yet not diſagreeable ſmell, ſomewhat like that of rectified oil of amber, very volatile, and remaining fluid at 0° Fahrenheit.

Sp. 2. Petroleum. Not ſo fluid, tranſparent, or colourleſs, as the former; ſmell leſs pleaſant. Specific gravity 0.878.

Sp. 3. Mineral Tar. Viſcid; of a dark colour; ſmell ſometimes ſtrong, but often faint. Specific gravity 1.1.

Sp. 4. Mineral Pitch; maltha. Brittle in cold weather; of a dark colour; opaque. Specific gravity probably 1.07.

Sp. 5. Asphaltum. Very brittle; fracture conchoidal; glaſſy luſtre; no ſmell unleſs when melted or heated. Specific gravity 1.07 to 1.165. Fuſible and inflammable.

According to Mr Kirwan and Mr Hatchett, the firſt ſpecies, by expoſure to the air, and gradual decompoſition, paſſes ſucceſſively through the intermediate ſtates, till at laſt it is converted into aſphaltum. When partially decompoſed, the remaining naphtha may be ſeparated by diſtillation from the ſuperabundant charcoal.

From the different pharmacopœias having been publiſhed before the ſpecific characters were properly aſcertained, there is ſome confuſion with regard to the ſpecies which is officinal. The London College name the ſecond, and the Dublin College the third; but the latter err greatly in calling it a reſin; while the Edinburgh College incorrectly give petroleum Barbadenſe, which belongs to the third ſpecies, as a ſynonime of bitumen petroleum, which is the ſecond. The firſt ſpecies is found abundantly in Perſia; but what we receive comes from the dutchy of Modena in Italy. It is very rarely met with in the ſhops; the ſecond, mixed with a little of the third and ſome ſubtile oil, is uſually ſent us inſtead of it.

Petroleum is at preſent very rarely employed as a medicine, though if the finer kinds could be procured genuine, they ſeem to deſerve ſome notice: they are more agreeable than the oil of amber, and milder than that of turpentine; of the virtues of both of which they participate. They are principally recommended by authors for external purpoſes, againſt pains and aches, in paralytic complaints, and for preventing chilblains. For theſe intentions, ſome of the more common mineral oils have been made uſe of with good ſucceſs; an oil extracted from a kind of ſtone-

coal

coal has been extolled among the common people, under the name of Britiſh oil, for rheumatic pains, &c.; even this is often counterfeited by a ſmall portion of oil of amber added to the common expreſſed oils.

The Barbadoes tar is found in ſeveral of the Weſt India iſlands, where it is eſteemed by the inhabitants of great ſervice as a ſudorific, and in diſorders of the breaſt and lungs; though in caſes of this kind, attended with inflammation, it is certainly improper; they likewiſe apply it externally as a diſcutient, and for preventing paralytic diſorders.

BOLETUS IGNIARIUS. (*Ed.*)

Agaricus chirurgorum. *Off.*

Female agaric, or agaric of the oak, called, from its being very eaſily inflammable, Touchwood, or Spunk.

Cryptogamia Fungi.—Nat. ord. *Fungi.*

THIS fungus is frequently met with, on different kinds of trees, in Britain, eſpecially the cherry and plumb; and is ſaid to have been ſometimes brought into the ſhops mixed with the true agaric of the larch: from this it is eaſily diſtinguiſhable by its greater weight, duſky colour, and mucilaginous taſte void of bitterneſs. The medullary part of this fungus, beaten ſoft, and applied externally, has been much celebrated as a ſtyptic; and ſaid to reſtrain not only venal but arterial hæmorrhagies, without the uſe of ligatures. It does not appear, however, to have any real ſtyptic power, or to act any otherwiſe than dry lint, ſponge, or other ſoft fungous applications. It is beſt when gathered in Auguſt or September.

BORAS SODÆ. (*Ed.*) See SUB-BORAS SODÆ.

BOLUS GALLICUS. (*Lond.*)

French bole.

BOLES are earthy aggregates, conſiſting chiefly of ſiliceous and argillaceous earths. They are leſs coherent and more friable than pure clay, more eaſily diffuſed through water, and more freely ſubſiding from it. They feel greaſy to the touch, adhere ſlightly to the tongue, and break down in the mouth, impreſſing a light ſenſe of aſtringency. A great variety of theſe ſubſtances were formerly uſed in medicine, but the French bole alone is now retained in the London Pharmacopœia. It is of a pale red colour, variegated with irregular ſpecks or veins of white and yellow.

Theſe earths have been recommended as aſtringent, ſudorific, and alexipharmic; and they have been uſed in diarrhœas, dyſenteries, hæmorrhagies, and in malignant and peſtilential diſtempers. In inteſtinal fluxes, and complaints in the firſt paſſages, from thin acrimonious humours, they may doubtleſs be of ſome uſe: but the

the virtues aſcribed to them in the other caſes appear to have no foundation.

BORAX. (*Dub. Lond.*) See Sub-Boras Sodæ.

BRYONIA ALBA. (*B. dioica, Jacquin, Withering.*)
Bryoniæ. Radix. (*Dub.*)
Bryony; Wild vine. The root.
Monoecia Syngeneſia.—Nat. ord. *Cucurbitaceæ.*

This is an indigenous perennial plant, growing on dry banks under hedges, and climbing upon the buſhes. The roots are large, ſometimes as thick as a man's thigh; their ſmell, when freſh, is ſtrong and diſagreeable; the taſte nauſeouſly bitter, acrid, and biting; the juice is ſo ſharp as in a little time to excoriate the ſkin: in drying they loſe great part of their acrimony, and almoſt the whole of their ſmell.

Byrony root is a ſtrong irritating cathartic; and as ſuch has ſometimes been ſucceſsfully exhibited in maniacal caſes, in ſome kinds of dropſies, and in ſeveral chronical diſorders. An extract prepared by water acts more mildly and with greater ſafety than the root in ſubſtance; given from half a drachm to a drachm, it is ſaid to prove a gentle purgative, and likewiſe to operate powerfully by urine. The freſh root, applied externally, is ſaid to be a powerful diſcutient in œdematous ſwellings. Beſides the acrid principle on which the activity of theſe roots depends, they contain a great deal of ſtarch, which was formerly uſed under the title of *Fæcula radicis bryoniæ.*

BUBON GALBANUM. *Gummi-reſina.* (*Ed.*)
Galbanum. Gummi-reſina. (*Lond. Dub.*)
Galbanum. A gum-reſin.
Willd. g. 546. *ſp.* 2. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

This plant is perennial, and grows in Africa. It abounds with a milky juice, which ſometimes exudes from the joints of the old plants, but is more frequently obtained by cutting them acroſs ſome inches above the root. The juice which flows from the wound ſoon hardens, and is the galbanum which is brought to us from Syria and the Levant.

The beſt ſort of galbanum conſiſts of pale-coloured pieces, about the ſize of a hazel-nut, which on being broken appear to be compoſed of clear white tears, of a bitteriſh acrid taſte, and a ſtrong peculiar ſmell. But it moſt commonly occurs in agglutinated maſſes, compoſed of yellowiſh or reddiſh and clear white tears, which may be eaſily torn aſunder, mixed with ſeeds and leaves, of the conſiſtence of firm wax, ſoftening by heat, and becoming brittle by cold. What is mixed with ſand, earth, and other impurities, and is of a brown or blackiſh colour, interſperſed with no white

white grains, of a weak ſmell, and of a conſiſtence always ſoft, is bad.

Galbanum is almoſt entirely ſoluble in water, but the ſolution is milky; neither do wine or vinegar diſſolve it perfectly. Alcohol has very little action upon it. It is not fuſible; but furniſhes a conſiderable proportion of eſſential oil when diſtilled with water. It is therefore principally compoſed of gum and eſſential oil.

Galbanum agrees in virtue with gum ammoniacum; but is generally accounted leſs proper in aſthmas, and more ſo in hyſterical complaints.

It is exhibited in the form of pills or emulſion, to the extent of about a drachm.

Applied externally, it is ſuppoſed to reſolve and diſcuſs tumours, and to promote ſuppuration.

CALAMUS AROMATICUS. (*Lond.*) See Acorus.

CALX. (*Lond.*)
Calx viva. (*Ed.*)
a. Ex lapide calcareo.
b. Ex teſtis conchyliorum.
Calx, recèns uſta. (*Dub.*)
Quicklime, recently burnt.

Lime is a ſimple ſubſtance, the properties of which have been already enumerated (101). It is ſcarcely found in nature uncombined, but is eaſily prepared from any of its carbonates, either mineral or animal, by the action of fire, which firſt expels the water, and then deſtroys any animal matters which may be preſent, and, laſtly, expels the carbonic acid. This proceſs is improperly termed the burning of lime. The product is lime, or, as it is commonly called, quicklime.

If about half its weight of water be poured upon lime, a great increaſe of temperature takes place, ſteam is produced, and the lime crumbles down into a dry powder, ſomewhat increaſed in weight by the preſence of part of the water, which has been ſolidified by the lime: and to the caloric of fluidity, which is expelled during the converſion of the water into a ſolid, the great increaſe of the temperature is owing. Lime in this ſtate is ſaid to be ſlaked. If more water be poured upon ſlaked lime, there is no new evolution of caloric; but if the water amount to 700 times the weight of the lime, the lime is completely diſſolved. This ſolution is termed Lime-water.

As lime quickly attracts moiſture and carbonic acid from the atmoſphere, it ſhould be always recently prepared; and when kept, it ſhould be preſerved in very cloſe bottles. Lime ſhould not effervesce with acids, and ſhould be entirely ſoluble in water.

On

On the living body lime acts as an escharotic, and as such it was formerly applied to ill-conditioned and obstinate sores. But it is now principally used in pharmacy for the purpose of forming lime-water, and as a chemical agent in several preparations.

CAMPHORA. (*Lond. Dub.*) See Laurus.

CANCER. *Chelæ.* (*Lond.*) *Calculi oculi dicti; Chelæ.* (*Dub.*) The crab. A genus of crustaceous insects.

Sp. Cancer Astacus. *Lapilli. Ed.*

The craw-fish. Crab's stones, vulgarly called Crab's eyes.

Crab's stones are generally about the size of peas, or larger; of a spherical shape, but a little flatted on one side; of a white colour; but sometimes with a reddish or bluish cast, and internally of a laminated structure.

These concretions are found in the stomach, one on each side, at the time when the crab changes its shell, and also renews the inner membrane of the stomach, which commonly happens in the month of August. They afterwards gradually disappear, and no stones are found after the new shell has acquired its full degree of firmness. They therefore seem to furnish the materials for the induration of the new shell. They are brought in great numbers from Poland and Russia, especially from the province of Astracan, where the craw-fish are either bruised with wooden mallets, or laid up in heaps to putrefy, when the flesh is washed away with water, and the stones picked out.

They consist of carbonate of lime, combined with a little phosphate of lime and gelatine. The quantity of the two last is too small, and their action on the living body too inconsiderable, to make any considerable difference in medical properties, between these concretions and soft carbonate of lime, as it occurs in the mineral kingdom.

Crabs stones are said by most writers on the materia medica to be frequently counterfeited with tobacco-pipe clay, or compositions of chalk with mucilaginous substances. This piece of fraud, if really practised, may be very easily discovered; the counterfeits wanting the leafy texture which is observed upon breaking the genuine; more readily imbibing water; adhering to the tongue; and dissolving in vinegar, or the stronger acids, diluted with water, either entirely, or not at all, or by piecemeal; whilst the true crabs stones, digested in these liquors, become soft and transparent, their original form remaining the same, as the organization of the gelatine is not altered by the acid.

Sp. Cancer Pagurus. *Chelæ.* (*Ed.*)

The black-clawed crab. The claws.

This

This ſpecies of crab inhabits the ſea, and is found eſpecially in the North Sea. Its claws are yellow, tipt with black, and in every reſpect they reſemble the former article.

CANELLA ALBA. *Cortex.* (*Lond. Ed. Dub.*)

Canella alba. The bark.

Willd. g. 942. *ſp.* 1. *Dodecandria Monogynia.*—Nat. ord. *Oleraceæ.*

The Canella alba, or, as the Dublin College name it, the Winterania Canella, is a tall tree, which is very common in Jamaica and other Weſt India iſlands.

The canella is the interior bark, freed from an outward thin rough one, and dried in the ſhade. The ſhops diſtinguiſh two ſorts of canella, differing from each other in the length and thickneſs of the quills: they are both the bark of the ſame tree, the thicker being taken from the trunk, and the thinner from the branches.

It is brought to us rolled up in long quills, thicker than cinnamon, and both outwardly and inwardly of a whitiſh colour, lightly inclining to yellow. It is a warm pungent aromatic, not of the moſt agreeable kind: nor are any of the preparations of it very grateful. Infuſions of it in water are of a yellowiſh colour, and ſmell of the canella; but they are rather bitter than aromatic. Tinctures in rectified ſpirit have the warmth of the bark, but little of its ſmell. Proof ſpirit diſſolves the aromatic as well as the bitter matter of the canella, and is therefore the beſt menſtruum.

Canella alba is often employed where a warm ſtimulant to the ſtomach is neceſſary, and as a corrigent of other articles. It is uſeful as covering the taſte of ſome other articles.

It muſt not be confounded with the bark of the Wintera aromatica.

CANTHARIDES. (*Lond. Dub.*) See Meloe.

CAPSICUM ANNUUM. *Fructus.* (*Ed.*)

Piper Indicum. *Capſulæ.* (*Lond. Dub.*)

Cockſpur pepper. The pod.

Willd. g. 384. *ſp.* 1. *Pentandria Monogynia.*—Nat. ord. *Solonaceæ.*

This is an annual plant, a native of South America, but cultivated in large quantities in our Weſt India iſlands; and it will even ripen its fruit in this climate.

The pods of this ſpecies are long, pointed and pendulous, at firſt of a green colour, and afterwards of a bright orange red. They are filled with a dry looſe pulp, and contain many ſmall, flat, kidney-ſhaped ſeeds. The taſte of capſicum is extremely pungent and acrimonious, ſetting the mouth as it were on fire.

Its

Its pungency is not owing to the presence either of the acrid principle, (See ALLIUM), or of an essential oil, both of which are volatile, but to a fixed resinous substance; for it is not diminished by drying, and may be extracted by alcohol.

Cayenne pepper is an indiscriminate mixture of the powder of the dried pods of many species of capsicum, but especially of the capsicum frutescens or bird pepper, which is the hottest of all.

These peppers have been chiefly used as a condiment. They prevent flatulence from vegetable food, and have a warm and kindly effect in the stomach, possessing all the virtues of the oriental spices, without, according to Dr Wright, producing those complaints of the head which the latter are apt to occasion. An abuse of them, however, gives rise to visceral obstructions, especially of the liver. But of late they have been employed also in the practice of medicine. There can be little doubt that they furnish us with one of the purest and strongest stimulants which can be introduced into the stomach; while at the same time they have nothing of the narcotic effects of ardent spirit. Dr Adair Makitrick, who was perhaps the first that employed them as a medicine, directs their being given to the extent of six or eight grains under the form of pills, or under the form of tincture made by infusing half an ounce in a pound of rectified spirit, and giving of this from one to three drachms diluted for a dose. He has found them useful in a variety of affections, particularly in that morbid disposition which he calls the *Cachexia Africana*, and which he considers as a most frequent and fatal predisposition to disease among the slaves.

Dr Wright says, that in dropsical and other complaints, where chalybeates are indicated, a minute portion of powdered capsicum forms an excellent addition, and recommends its use in lethargic affections. This pepper has also been successfully employed in a species of cynanche maligna, which proved very fatal in the West Indies, resisting the use of Peruvian bark, wine, and the other remedies commonly employed.

In tropical fevers, coma and delirium are common attendants; and in such cases, cataplasms of capsicum have a speedy and happy effect. They redden the parts, but seldom blister, unless kept on too long. In ophthalmia from relaxation, the diluted juice of capsicum is a sovereign remedy.

CARBONAS.

CARBONATE is a generic name for the combinations of the carbonic acid with earths, alkalies, and metallic oxides.

The nature of these substances was totally unknown, until the year 1756, when the genius of Dr BLACK at once removed the veil, and displayed to his contemporaries a new and immense field, in which the most important discoveries might be made; and to their

ardour

ardour in cultivating it, we are indebted for the preſent ſtate of chemical knowledge.

Before the brilliant epoch we have mentioned, the carbonates were ſuppoſed to be ſimple bodies; and the fact of their acquiring new and cauſtic properties by the action of fire, was attempted to be explained, by ſuppoſing that the particles of the fire combined with them. Dr Black, however, demonſtrated by proofs which carried univerſal conviction along with them, that theſe bodies in their cauſtic ſtate are ſimple, and that their mildneſs is owing to their being combined with an acid, to which the name of carbonic is now given.

The moſt general character of the carbonates, is their effervescing violently when any of the ſtronger acids is poured upon them. This phenomenon is owing to theſe acids diſplacing, by their greater affinity, the carbonic acid, which flies off in the form of a gas.

The carbonates may be alſo deprived of their carbonic acid, either by the action of heat alone, or by heating them when mixed with charcoal, which decompoſes the carbonic acid by combining with part of its oxygen, ſo that both the acid and the charcoal are converted into carbonic oxide gas.

The carbonates may be divided into three great families, the alkaline, the earthy, and the metallic.

Family 1. The alkaline carbonates have a urinous taſte, tinge vegetable blues green, and are ſoluble in water, and inſoluble in alcohol.

Family 2. The earthy carbonates are inſipid, and inſoluble in water, but ſoluble in water ſaturated with carbonic acid.

Family 3. The metallic carbonates ſcarcely differ in appearance from the metallic oxides.

We ſhall have immediately occaſion to notice ſome individuals of each of theſe families.

CARBONAS BARYTÆ. (*Ed.*)

Carbonate of baryta.

Carbonated Baryta is rarely found in nature, and as it was firſt diſcovered by Dr Withering, Mr Werner gave it the name of Witherite. Its colour is greyiſh-white, ſometimes inclining to milk-white, and ſometimes with a ſlight tinge of yellow, from a mixture of iron, ſeldom greeniſh, often inveſted with a red ochry cruſt. It is found in ſolid maſſes, ſometimes filling an entire vein, ſometimes interſperſed with ſulphated baryta, frequently rounded or affecting that form, ſeldom cryſtallized. Texture, fibrous; fracture, conchoidal; fragments, long ſplinters; ſpecific gravity, 4.3 to 4.338. Although it has no ſenſible taſte, it is poiſonous. In medicine it is only uſed for preparing the muriate of baryta.

baryta. It is found at Anglesark in Lancashire, at Alstoon-moor in Cumberland, in Scotland and in Sweden, but is not common.

According to different analyses its constituents are,

	Acid.		Baryta.		Water.
Withering,	20	+	80		
Pelletier,	22	+	62	+	16
Kirwan,	22	+	78		
Fourcroy,	10	+	90		

CARBONAS CALCIS. (*Ed.*)

Creta. (*Lond. Dub.*)

Carbonated lime. Chalk.

THIS is the most common of all minerals, is found under a great variety of forms, and has various names, as chalk, limestone, marble, spar. In form it is either amorphous, stalactical, or crystallized. When amorphous, its texture is either foliated, striated, granular, or earthy. The primitive form of its crystals is a rhomboidal parallelopided. Hardness, lustre, and transparency various; when transparent, it causes double refraction; specific gravity from 2.315 to 2.78; colour when pure, white; effervesces violently with muriatic acid, and dissolves entirely or nearly so in it, forming a colourless solution.

Its different varieties may be arranged under,

1. Soft carbonate of lime.
2. Indurated carbonate of lime.

They contain about 45 parts of carbonic acid, and 55 of lime.

In medicine it is given to correct acidity in the primæ viæ, especially when accompanied with looseness. Powdered chalk has been externally applied with success to scalds and burns.

In pharmacy it is employed for the preparation of carbonic acid gas, and of the muriate of lime.

CARBONAS POTASSÆ IMPURUS. (*Ed.*)

Cineres clavellati. (*Lond. Dub.*)

Pearl ashes. Potashes. Impure carbonate of potass.

THE potashes of commerce are sent to us from the shores of the Baltic and from America. They are prepared by lixiviating the ashes of vegetables in barrels, first with cold and then with hot water, filtering the ley, and evaporating it to dryness in an iron pot. In this state they still contain some vegetable matter, not perfectly incinerated, which gives them a brown or black colour. To destroy this, and render their colour purer, they are again burnt in a reverberatory furnace. They now get the name of pearl ashes; but even yet they are very impure, and often contain the sulphates of potass and of lime, and the muriate of potass. They are also frequently adulterated with vegetable ashes, sand,

and

and ſulphate of potaſs. The aſhes are detected by their difficult and imperfect ſolution; the ſand, by the precipitation of ſilica in a gelatinous form by the addition of an acid, and the ſulphate of potaſs by its cryſtallization. All vegetables which grow at a diſtance from the ſea afford potaſhes by incineration; herbs give the largeſt proportion, then the leaves of trees, then ſhrubs, and woods the leaſt. It formerly had the name of Fixed Vegetable Alkali, but it is alſo found, though much more ſparingly, both in the animal and mineral kingdoms.

Vauquelin has given a table of the quantity of pure potaſs, and of heterogeneous matters, contained in 1152 parts of the different potaſhes of commerce.

	Potaſs.	Sulphate of potaſs.	Muriate of potaſs.	Inſoluble reſiduum.	Carb. acid and water.
Ruſſian potaſhes,	772	65	5	56	254
American do.	857	154	20	2	119
Pearl aſhes,	754	80	4	6	308
Potaſhes of Treves,	720	165	44	24	199
Dantzig aſhes,	603	152	14	79	304
Potaſhes of Voſges,	444	148	510	34	304

The potaſs was eſtimated by the quantity of diluted nitrous acid ſaturated by it; the ſulphate of potaſs by the precipitate formed with nitrate of baryta; and the muriate of potaſs by that formed with nitrate of ſilver.

All theſe different potaſhes, except the laſt, may be purified ſufficiently for pharmaceutical purpoſes, by lixiviating them with a ſmall proportion of cold water, and evaporating the ley to dryneſs in an iron-pot.

Carbonate of potaſs is uſed in form of lotion, in rachitic and ſome cutaneous diſeaſes, and as a ſtimulant to the inactive ſtate of the veſſels in certain ulcers. It is uſed internally as a diaphoretic or diuretic, and of late in calculous complaints; but its continued uſe ſeldom fails to injure the conſtitution, or the inteſtinal canal.

CARBONAS SODÆ IMPURUS. (*Ed.*)

Barilla. (*Lond. Dub.*)

Impure carbonate of ſoda. Barilla. Fixed mineral alkali.

Soda is a very common mineral production. It is the baſis of ſea ſalt; and combined with carbonic acid, it is found on the ſurface of the earth in Egypt, Syria, Barbary, Hungary, &c. and is obtained by the incineration of marine vegetables, eſpecially the ſalſola ſoda and kali, the ſalicornia herbacea, &c. The Spaniards even cultivate theſe in ſalt marſhes for the ſake of the ſoda. After being cut down, they are dried like hay. A deep pit is then prepared, and a bundle or two of the dried vegetables ſet on fire are thrown into it. When well kindled, other bundles are thrown in until the pit is filled. When the incineration is completed, the ſoda is found in the bottom, caked into a ſolid maſs, which is worked like a ſtoney ſubſtance. When good, it is firm, hard, heavy, dry, ſonorous, ſpongy, and internally of a blue colour, mixed with white ſpots, does not deliqueſce, emits no unpleaſant ſmell on ſolution, and does not leave a large proportion of inſoluble matter. Incinerated ſoda is mixed with potaſh, muriate of ſoda, and other ſaline matters; mineral ſoda with clay and other earthy ſubſtances. The Egyptian ſoda was reckoned the beſt; then the Spaniſh (Barilla); afterwards the Carthagenian; and that prepared from different ſpecies of fuci (Kelp), is the worſt.

But all theſe carbonated ſodas are inferior in purity to thoſe now manufactured in Britain, by decompoſing the ſulphate of ſoda.

That commonly uſed, is obtained by the bleachers as a reſiduum in their method of preparing oxygenized muriatic acid, by decompoſing muriate of ſoda with ſulphuric acid and the black oxide of manganeſe.

The ſulphate of ſoda is decompoſed,

1. By carbonate of potaſs. Mr Accum has deſcribed the manipulations of this mode. A boiling concentrated ſolution of about 560 pounds of American potaſhes is ladled into a boiling ſolution of 500 pounds of ſulphate of ſoda, agitated together, and the whole quickly heated to ebullition. It is then drawn off into leaden ciſterns, lined with thick ſheet-lead, and allowed to cool in a temperature which ſhould not exceed 55°.

   The fluid is then drawn off, and the maſs of ſalt waſhed with cold water, to free it from impurities, and again put into the boiler with clean water. This ſecond ſolution is alſo evaporated at a low heat, as long as any pellicles of ſulphate of potaſs form on its ſurface, and fall to the bottom of the fluid. The fire is then withdrawn, and the fluid ladled out into the ciſtern to cryſtallize. Unleſs the fluid be allowed to cool pretty low before it is removed to cryſtallize, the ſalt obtained will contain ſulphate of potaſs.
2. By acetite of lime. The acetous acid for this purpoſe is obtained by diſtillation from wood, during its converſion into charcoal.
3. By litharge or acetite of lead. Very pure carbonate of ſoda is prepared by this proceſs in the vicinity of Edinburgh.
4. By decompoſing the ſulphuric acid by charcoal. About 500 cwt. of ſulphate of magneſia, and 100 cwt. of charcoal are ground together, and the mixture expoſed in a reverberatory

verberatory furnace until it becomes pafty. It is then transferred into large cafks and lixiviated. The ley is afterwards evaporated and cryftallized. By this or a fimilar procefs, very pure carbonate of foda is manufactured in the weft of Scotland.

On the Continent, muriate of foda is fometimes decompofed by potafs, and fometimes by lime.

Carbonate of foda is an article of the greateft importance in many manufactures.

In medicine it poffeffes fimilar virtues with the carbonate of potafs; and from its cryftallizability and efflorefcence when expofed to the air, it is preferable to it, becaufe its dofe may be more accurately afcertained, and it may be given either in the form of powder, or made up into pills.

CARBONAS ZINCI IMPURUS. (*Ed.*) See ZINCI CARBONAS.

CARDAMINE PRATENSIS. *Petala, folia.* (*Ed.*)
Cardamine. Flos. (*Lond.*)
Ladies fmock. The petals and leaves.
Willd. g. 1257. *fp.* 19. *Tetradynamia Siliquofa.*—Nat. ord. *Siliquofæ.*

THE cardamine is a perennial plant, which grows in meadow-grounds, fends forth purplifh flowers in the fpring; and in its fenfible qualities refembles the *fifymbrium nafturtium.* Long ago it was employed as a diuretic; and of late it has been introduced in nervous difeafes, as epilepfy, hyfteria, choræa, afthma, &c. A drachm or two of the powder is given twice or thrice a day. It has little fenfible operation, except that it fometimes fweats.

CARDAMOMUM MINUS. (*Lond. Dub.*) See AMOMUM REPENS.

CARDUUS BENEDICTUS. (*Lond. Dub.*) See CENTAUREA.

CARICA. (*Lond. Dub.*) See FICUS.

CARUM CARUI. *Semen.* (*Ed.*)
Carui. Semina. (*Dub.*)
Caruon. Semen. (*Lond.*)
Caraway. The feeds.
Willd. g. 561. *fp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

CARAWAY is a biennial umbelliferous plant, cultivated with us in gardens, both for culinary and medicinal ufe. The feeds have an aromatic fmell, and warm pungent tafte.

They are employed as a ftomachic and carminative in flatulent colics, and the like.

CARYOPHYLLA AROMATICA. (*Dub.*)
Caryophyllus aromaticus. (*Ed. Lond.*) See EUGENIA.

CARYOPHYLLUM RUBRUM. (*Lond. Dub.*) See DIANTHUS.

CASCARILLA. (*Lond. Dub.*) See CROTON.

CASSIA.
Willd. g. 813. *Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

Sp. 18. CASSIA FISTULA. *Fructus.* (*Ed.*)
Caſſia fiſtularis. Fructus. (*Lond.*) *Fructus, pulpa.* (*Dub.*)
Caſſia tree. The fruit.

THIS tree is indigenous in India and Egypt, and is cultivated in Jamaica. It riſes to about thirty feet high, and has long flower ſpikes, with yellow papilionaceous bloſſoms.

Its fruit is a cylindrical pod, ſcarcely an inch in diameter; a foot or more in length: the outſide is a hard brown bark; the inſide is divided by thin, tranſverſe, woody plates, covered with a ſoft black pulp, of a ſweetiſh taſte, with ſome degree of acrimony. There are two ſorts of this drug in the ſhops; one brought from the Eaſt Indies, the other from the Weſt, (Caſſia Javanica?); the canes or pods of the latter are generally large, rough, thick-rinded, and the pulp nauſeous; thoſe of the former are leſs, ſmoother, the pulp blacker, and of a ſweeter taſte; this ſort is preferred to the other. Such pods ſhould be choſen as are weighty, new, and do not make a rattling noiſe (from the ſeeds being looſe within them) when ſhaken. The pulp ſhould be of a bright, ſhining, black colour, and have a ſweet taſte, neither harſh, which happens from the fruit being gathered before it has grown fully ripe, nor ſouriſh, which it is apt to become upon keeping, nor at all mouldy, which, from its being kept in damp cellars, or moiſtened in order to increaſe its weight, it is very ſubject to be. Greateſt part of the pulp diſſolves both in water and in rectified ſpirit; and may be extracted from the pod by either. The ſhops employ water, boiling the bruiſed pod therein, and afterwards evaporating the ſolution to a due conſiſtence.

The pulp of caſſia, from its ſaccharine and mucilaginous conſtituents, is a gentle laxative medicine, and frequently given, in a doſe of ſome drachms, in coſtive habits. Some direct a doſe of two ounces or more as a cathartic, in inflammatory caſes, where the more acrid purgatives have no place; but in theſe large quantities it generally excites nauſea, produces flatulencies, and ſometimes gripings of the bowels, eſpecially if the caſſia be not of a very good kind: theſe effects may be prevented by the addition of aromatics, and by exhibiting it in a liquid form.

Sp. 24. CASSIA SENNA. *Folia.* (*Ed.*)
Senna. Folia. (*Lond. Dub.*)
Senna. The leaves.

THIS ſpecies of caſſia is annual, although in its mode of growth it reſembles a ſhrub, and ſends out hollow, woody ſtems to the height of four feet. It grows principally in Upper Egypt, from whence the leaves are brought, dried and picked from the ſtalks, to Alexandria in Egypt, and thence imported into Europe. They are of an oblong figure, ſharp-pointed at the ends, about a quarter of an inch broad, and not a full inch in length, of a lively yellowiſh, green colour, a faint, not very diſagreeable ſmell, and a ſubacrid, bitteriſh, nauſeous taſte. Some inferior ſorts are brought from other places: theſe may eaſily be diſtinguiſhed by their being either narrower, longer, and ſharper pointed, from Mocha; or larger, broader, and round pointed, with ſmall prominent veins, from Italy; or large and obtuſe, of a freſh green colour, without any yellow caſt, from Tripoli.

It has been cuſtomary to reject the pedicles of the leaves of ſenna as cauſing gripes and pains in the bowels; but this is a mere prejudice, for both leaves and pedicles act in the very ſame way.

Senna is a very uſeful cathartic, operating mildly, and yet effectually; and, if judiciouſly doſed and managed, rarely occaſioning the ill conſequences which too frequently follow the exhibition of the ſtronger purges. The only inconveniences complained of in this drug are, its being apt to gripe, and its nauſeous flavour.

Theſe are beſt obviated by adding to the ſenna ſome aromatic ſubſtance, as ginger, cinnamon, &c. and by facilitating its operation by drinking plentifully of any mild diluent.

Senna may be given in ſubſtance to the extent of about a drachm, but it is rather too bulky, and it is therefore better to divide it into two doſes, and to take the one half at night and the other in the morning. It is more conveniently given in the form of infuſion, which is generally made by pouring about ſix ounces of boiling water upon from two to ſix drachms of ſenna leaves in a tea-pot, and letting it ſtand about an hour. Senna ought never to be ordered in decoction, Amemann ſays, becauſe it always gripes ſeverely, from too many reſinous particles being diſſolved; Gren ſays, becauſe it becomes perfectly inert from the total diſſipation of the nauſeous and volatile principle on which its purgative and griping effects depend. The tincture, on account of the menſtruum, cannot be given in doſes large enough to purge.

CASTOR FIBER. *Materia in folliculis prope anum collecta.* (*Ed.*)

Caſtoreum Roſſicum. (*Dub.*) *Materia in folliculo prope anum ſito collecta.* (*Lond.*)

 The

The Beaver. Caſtor. The ſubſtance collected in the follicles near the anus.—*Mammalia rodentia*, Cuvier.

The beaver is ſtrongly characterized by its flat, horizontal, ſcaly tail. It is an amphibious animal, and is found in the northern parts of Europe, Aſia and America, on the banks of lakes and rivers. In inhabited countries it is a ſolitary ſlothful animal, but in deſert regions it lives in ſociety; the remarkable manners of which, and the immenſe works effected by the united labours of all the individuals of their republic, have rendered the natural hiſtory of this animal familiar to every one. In both ſexes, between the anus and pudendum, there are four follicles of an oblong ſhape, ſmaller above and larger below, formed of a tough membrane, almoſt reſembling leather. The two largeſt and undermoſt of theſe, which are alſo connected, and lie parallel and cloſe to each other, contain an oily fluid ſecretion, which is the ſubſtance known by the name of caſtor. It is preſerved by cutting out the entire bags, and drying them in the ſmoke.

The beſt caſtor comes from Ruſſia, Pruſſia, and Poland. The cods ſhould be dry, gibbous, roundiſh, heavy, ſolid, and filled with a ſolid ſubſtance, contained in membranous cells, ſomewhat tough, but brittle, of a dark brown colour, of a peculiar diſagreeable, narcotic ſmell, and a nauſeous, bitter, acrid taſte. The Canadian caſtor is of an inferior quality; the cods are ſmaller, thin, oblong, and much corrugated, and the caſtor itſelf has much leſs ſmell and taſte. What is very old, quite black, and almoſt deſtitute of ſmell and taſte is unfit for uſe, as well as the counterfeited caſtor, which is a mixture of various gummy reſins and other ſubſtances, with a little real caſtor, artificially interſperſed with membranes, and ſtuffed into the ſcrotum of a goat. This impoſition is eaſily detected by the weaker degree of its ſmell and taſte, by chemical analyſis, and even by mere external examination; for to the real bags, the two ſmaller and upper follicles, filled with a fatty matter, are always attached.

The predominant or really active conſtituent of caſtor, is of a volatile nature, though not properly an eſſential oil. Water diſtilled from it ſmells ſtrongly of caſtor, and has an aromatic taſte, but does not afford any eſſential oil, and the reſiduum ſtill preſerves a ſtrong ſmell and taſte of caſtor. Water extracts from it about 0.10 of gelatine, and alcohol 0.25 of reſin. The reſiduum now conſiſts of fibrous matters. To preſerve caſtor, it ſhould be kept wrapt up in bladder or oiled paper.

Caſtor is an excellent antiſpaſmodic. It is very little heating, and acts particularly upon the uterine ſyſtem.

It is given with advantage,

1. In typhoid fevers.
2. In ſpaſmodic diſeaſes, eſpecially in hyſteria and epilepſy, and in caſes of difficult parturition, from a ſpaſmodic contraction

traction of the mouth of the uterus after the membranes have burſt.

3. In amenorrhœa.

It is exhibited moſt advantageouſly in the form of powder, in doſes of from 10 to 20 grains, and in clyſters to a drachm. Diluted alcohol extracts its virtues; therefore it may be alſo given in the form of tincture. But its exhibition in the form of extract or decoction is improper.

CATECHU. (*Lond. Dub.*) See MIMOSA.

CENTAUREA BENEDICTA. *Herba.* (*Ed.*)
Carduus Benedictus. Herba. (*Lond.*) *Folia.* (*Dub.*)
Bleſſed Thiſtle. The leaves or plant.
Syngeneſia Polygamia fruſtranea.—Nat. ord. *Compoſitæ capitatæ.*

THIS is an annual plant, indigenous in the Grecian iſlands, and cultivated in gardens: it flowers in June and July, and perfects its ſeeds in the autumn. The herb ſhould be gathered when in flower, quickly dried, and kept in a very dry airy place, to prevent its rotting or growing mouldy, which it is very apt to do. The leaves have a penetrating bitter taſte, not very ſtrong or very durable, accompanied with an ungrateful flavour, from which they are in a great meaſure freed by keeping. Water extracts, in a little time, even without heat, the lighter and more grateful parts of this plant; if the digeſtion be continued for ſome hours, the diſagreeable parts are taken up. A ſtrong decoction is very nauſeous and offenſive to the ſtomach. Rectified ſpirit gains a very pleaſant bitter taſte, which remains uninjured in the extract.

The virtues of this plant ſeem to be little known in the preſent practice. The nauſeous decoction is ſometimes uſed to provoke vomiting; and a ſtrong infuſion to promote the operation of other emetics. But this elegant bitter, when freed from the offenſive parts of the herb, may be advantageouſly applied to other purpoſes. We have frequently experienced excellent effects from a ſlight infuſion of carduus in loſs of appetite, where the ſtomach was injured by irregularities. A ſtronger infuſion made in cold or warm water, if drunk freely, and the patient kept warm, occaſions a plentiful ſweat, and promotes the ſecretions in general.

The extract prepared, by evaporating the expreſſed juice, with the addition of a little alcohol to prevent it from becoming mouldy, has been ſtrongly recommended in the catarrh of children.

The ſeeds of this plant are alſo conſiderably bitter, and have been ſometimes uſed with the ſame intention as the leaves.

CENTAUREUM MINUS. (*Lond. Dub.*) See GENTIANA CENTAUREUM.

CEPA. (*Dub.*) See ALLIUM CEPA.

CEPHAËLIS IPECACUANHA.

Ipecacuanha. Radix. (*Lond. Ed. Dub.*)

Ipecacuan. The root.

Willd. g. 357. *species nova.—Pentandria Monogynia.*—Nat ord. *Aggregatæ.*

THIS plant is perennial, and grows in Brazil in moiſt woody ſituations. Notwithſtanding the root has been ſo long in general uſe, the plant to which it belonged was not ſatisfactorily aſcertained until very lately, when a complete monography of it, and an excellent plate were publiſhed in the ſixth volume of the Tranſactions of the Linnæan Society, by Profeſſor Brotero, who calls it the Callicocca Ipecacuanha; but the genus Callicocca has been united by Willdenow with that of Cephaëlis, to which we have therefore referred it.

The plate of Brotero correſponds with that publiſhed in Woodville's Medical Botany, vol. 3. from a plant ſent in ſpirits from Brazil by Governor Philips to Sir Joſeph Banks, but which unfortunately was not in flower, and alſo with the rude draught of Piſo, who firſt examined it. It likewiſe agrees in many eſſential characters, though not in all, with the deſcription given of the Pſychotria Emetica of Dr Mutis. Indeed, the genera of Pſychotria and Cephaëlis are not ſufficiently diſtinguiſhed.

The root is brought from Spaniſh America. It is divided into two ſorts, Peruvian and Brazilian: but the eye diſtinguiſhes three, aſh-coloured or grey, brown, and white. The aſh-coloured, or Peruvian ipecacuan of the ſhops, is a ſmall wrinkled root, bent and contorted into a great variety of figures, brought over in ſhort pieces full of wrinkles, and deep circular fiſſures, quite down to a ſmall white woody fibre that runs in the middle of each piece: the cortical part is compact, brittle, looks ſmooth and reſinous upon breaking: it has very little ſmell; the taſte is bitteriſh and ſubacrid, covering the tongue as it were with a kind of mucilage. The brown ipecacuan is ſmall, and ſomewhat more wrinkled than the foregoing; its bark is of a brown or blackiſh colour without, and white within; this is brought from Brazil, and is the root of the cephaëlis. The white ſort is woody, has no wrinkles, and no perceptible bitterneſs in taſte. It is probably the root of a viola. The firſt ſort, the aſh-coloured or grey ipecacuan, is that uſually preferred for medicinal uſe. The brown has been ſometimes obſerved, even in a ſmall doſe, to produce violent effects. The white, though taken in a large one, has ſcarce any effect at all.

Ipecacuan was firſt brought into Europe about the middle of laſt century, and an account of it publiſhed about the ſame time by Piſo; but it did not come into general uſe till about the year 1686, when Helvetius, under the patronage of Lewis XIV., introduced

troduced it into practice. This root is one of the mildeſt and ſafeſt emetics with which we are acquainted; and has this peculiar advantage, that when it does not operate by vomiting, it páſſes off by other emunctories.

Many ingenious experiments were made on the ſubject of ipecacuan by Dr Irvine, for which he obtained the prize-medal of the Harveian Society at Edinburgh in 1784. He aſcertained that this root contains a gummy-reſinous matter; that the gummy exiſts in a much greater proportion than the reſinous part; that the gummy part is much more powerfully emetic than the reſinous; that the cortical is more active than the ligneous part; and that the whole root poſſeſſes conſiderable influence, both as an antiſeptic and aſtringent; that the diſtilled water has very little influence; but that the decoction which remained in the ſtill, operated violently as an emetic, produced rigours, cold ſweats, and other alarming ſymptoms; that by long-continued boiling, the activity of the root is almoſt totally deſtroyed; that the emetic property of ipecacuan was moſt effectually counteracted by means of the acetous acid, inſomuch that thirty grains of the powder taken in two ounces of vinegar, produced only ſome looſe ſtools.

From theſe experiments it evidently appears, that the active conſtituents of ipecacuan are a ſpecies of extractive and a reſin, and that its emetic property depends upon the former. Others have found, that the latter or reſinous part is more apt to act upon the inteſtinal canal, and to operate by ſtool.

The primary effect of ipecacuan is that of ſtimulating the ſtomach. If the doſe be ſufficiently large, it excites vomiting, by inverting the periſtaltic motion of the ſtomach and duodenum; in a ſmaller doſe, it only produces nauſea, and operates by ſtool; and in ſtill ſmaller doſes, it gently ſtimulates the ſtomach, increaſes the appetite, and facilitates digeſtion. Its ſecondary effects depend on the ſympathy of other parts with the ſtomach; and in this way only can we explain its action as an antiſpaſmodic, diaphoretic, expectorant, and in checking hæmorrhagies. Its beneficial effects in ſome caſes alſo ſeem to be owing to the general concuſſion given to the whole ſyſtem during the action of vomiting.

Ipecacuan, properly adminiſtered, often proves ſerviceable,

1. In intermittent fevers. It has frequently ſucceeded in ſtopping theſe, when given about an hour before an acceſſion was expected, and alſo when given ſo as to produce vomiting at the time of an acceſſion, or at the end of the cold ſtage
2. In continued fevers. We have never ſeen more decidedly beneficial effects from the uſe of any medicine whatever, than from the exhibition of ipecacuan in the commencent of typhus fever. An emetic, ſucceeded by a diaphoretic regimen, when adminiſtered ſufficiently early

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in this diseafe, very frequently cuts it ſhort at once, and when it fails in this deſirable object, it always has a beneficial influence on the progreſs of the fever.

3. In inflammatory diſeaſes, rheumatiſm, bubo, ſwelled teſticle.
4. In exanthematous diſeaſes, when the eruption is diſpoſed to recede.
5. In hæmorrhagies, when given in nauſeating doſes.
6. In profluvia, eſpecially in dyſentery, ſo much ſo, that it was formerly eſteemed a ſpecific againſt that diſeaſe. But Cullen attributes its good effects in this inſtance, to its producing a ſteady determination of the periſtaltic motion of the inteſtines downwards, when given in repeated ſmall doſes.
7. In many ſpaſmodic diſeaſes; in epilepſy; aſthma; dyſpnœa; pertuſſis; chronic diarrhœa; hyſteria; melancholia; mania.
8. In cachectic diſeaſes, as in ſome kinds of dropſy.
9. In impetiginous diſeaſes; in jaundice.
10. In local diſeaſes; in amauroſis, and ſeveral of the dyſorexiæ.
11. Laſtly, in every inſtance when we wiſh to evacuate the ſtomach, as when it is overloaded with food, or when poiſon, eſpecially opium, has been ſwallowed.

The uſe of ipecacuan, as an emetic, is contra-indicated,

1. Where there is a diſpoſition to hæmorrhagy.
2. Where there is an increaſed flow of blood towards the head.
3. In very irritable ſubjects.
4. In pregnant women, and perſons afflicted with hernia.

Ipecacuan is exhibited

1. In ſubſtance; in powder. Full vomiting will generally be produced in an adult by a ſcruple or half a drachm, and though leſs might anſwer the purpoſe, fortunately an over-doſe is ſcarcely attended with any inconvenience, as the whole of it is vomited with the contents of the ſtomach as ſoon as it operates. The vomiting is promoted and facilitated by drinking copiouſly of warm watery fluids. On the contrary, when vomiting is not intended, liquids muſt be rather drunk ſparingly, and the doſe muſt be diminiſhed to a grain or leſs. In ſuch ſmall doſes it is conveniently combined with any proper adjunct, in the form of powder, pill or bolus.
2. In infuſion. One drachm may be infuſed in four ounces of water, and taken in repeated doſes till it operate.
3. Infuſed in wine. See Vinum Ipecacuanhæ.

Ipecacuan not only checks the narcotic effects of opium, and is therefore one of the best antidotes for its poison, but reciprocally the emetic powers of ipecacuan are checked by the addition of opium, and the combination operates by increasing the cuticular discharge. See PULVIS IPECACUANHÆ et OPII.

CERA FLAVA. (*Ed. Lond. Dub.*)
Yellow wax.

FOR this useful substance we are indebted to the common honey-bee, (*apis mellifica*), an insect belonging to the class of *Hymenoptera mellita* of Cuvier. It is, however, a vegetable production, and is collected by the bees from the surface of leaves, and the antheræ of flowers. They employ it to form the combs in which the honey and larvæ are deposited.

It is found in the shops in round cakes, which are formed by melting the combs, after all the honey has been expressed from them, in hot water. The wax swims above, and the impurities either sink to the bottom, or are dissolved in the water. When recent, it is tenacious, but brittle, of a yellow colour, and sweet honey-like smell; dry, not greasy, to the feel; insoluble in water, alcohol and ether; soluble in the fat oils and alkalies; fusible and inflammable. In selecting it, we should observe that the cakes be brittle, have a pleasant yellow colour, an agreeable smell, no taste, do not adhere to the teeth when chewed, and burn entirely away. When adulterated with resin, the fraud is detected by its taste, and the action of alcohol, which dissolves the resin. When mixed with pease-meal or earthy substances, it is more brittle, of a paler colour, and may be separated from them by liquefaction and straining. When combined with tallow, it becomes less brittle, but at the same time softer, and has an unpleasant smell.

CERA ALBA. (*Lond. Dub. Ed.*)
White wax.

THE yellow colour of bees wax, and its peculiar smell, may be destroyed by the combined action of water, air, and the sun's rays. In the process for bleaching wax, we, therefore, extend its surface as much as possible, by melting it and forming it into thin plates, which are fully exposed to the sun's rays, upon linen stretched in frames, and repeatedly moistened, until they acquire the whiteness desired. It is then usually melted into thin discs. White wax is more brittle, less fusible, and heavier than yellow wax. It is sometimes mixed with white oxide of lead, or with tallow. For medical use, it has no advantage over yellow wax.

When taken internally, wax agrees in its effects with the fat oils, and though less frequently prescribed in this way, it is preferable, in being less apt to become rancid. Poerner recommends it as an excellent remedy in diseases of the intestines, attended with pain, excoriation, and obſtinate diarrhœa. He gave a ſcruple or half a drachm of wax, three or four times a-day, in the form of an emulſion, by melting it firſt with ſome fixed oil, and then mixing it with a decoction of groats by trituration with the yolk of an egg. But by far its principal uſe is for the formation of cerates, ointments, plaſters, &c.

CERUSSA. See PLUMBI OXIDUM ALBUM.

CERVUS ELAPHUS. *Cornu.* (*Ed.*)
Cornu Cervinum. (*Dub.*)
Cervus. Cornu. (*Lond.*)
The ſtag or hart. The horns.

THIS animal belongs to the claſs *mammalia*, order *ruminantia*. The male has two round ſolid horns on his forehead, with ſeveral conical branches, the number of which aſcertain the age of the animal to which they belong. Theſe horns fall off and are renewed every year. When firſt reproduced, they are ſoft, full of blood-veſſels, and covered with a velvety ſkin, but they ſoon loſe their covering, and become hard, compact, and bony.

In their nature, they do not ſeem to differ from bone except in containing a larger proportion of cartilage. They afford a very conſiderable quantity of gelatine by decoction with water, and hartſhorn ſhavings are ſtill employed in domeſtic economy for furniſhing a nutritious and demulcent jelly. By the action of fire, their products are the ſame with thoſe of animal ſubſtances in general; and they were formerly ſo much uſed for the preparation of ammonia, that it was commonly called Hartſhorn. By burning they are totally converted into phoſphate of lime.

CHAMÆMELUM. (*Lond. Dub.*) See ANTHEMIS.

CHIRONIA CENTAUREUM.
Gentiana Centaureum. Summitates florentes. (*Ed.*)
Centaureum minus. Summitates florentes. (*Dub.*) *Cacumen.* (*Lond.*)
Smaller Centaury. The flowering heads.
Willd. g. 394. *ſp.* 9. *Pentandria Monogynia.*—Nat. ord. *Rotaceæ.*

THIS plant is annual, and grows wild in many parts of England on barren paſtures. It flowers between June and Auguſt. The corolla is ſaid to have no taſte; and therefore the herb, which is intenſely bitter, ſhould be preferred to the flowering tops, which derive their virtues only from the ſtalks connected with them. It agrees in every reſpect with other pure bitters.

CICUTA. (*Lond. Dub.*) See CONIUM.

CINARA. (*Lond. Dub. Ed.*) See CYNARA.

CINCHONA.

CINCHONA.

Willd. g. 346. *Pentandria Monogynia.*—Nat. ord. *Contortæ.*

Sp. 1. CINCHONA OFFICINALIS. *Cortex.* (*Ed.*)
Cinchona. Cortex. (*Lond.*)
Cortex Peruvianus. (*Dub.*)

Officinal Cinchona. The bark, commonly called Peruvian bark, of which the Edinburgh College enumerates three varieties,

a. The common,
b. The yellow,
c. The red.

It is, however, by no means aſcertained, that the two laſt are the bark of the cinchona officinalis, but have been merely claſſed under it until we are better acquainted with their botanical hiſtory.

THE cinchona officinalis grows in the neighbourhood of Loxa, a city in the province of Quito, in the kingdom of Peru. It is a mountainous tree, and is never found in the plains. It grows to a great height, and formerly its trunk was often thicker than a man's body. But ſince its bark has come into ſuch general uſe, few trees are to be ſeen thicker than a man's arm. Indeed, there is reaſon to fear that it will become ſtill more ſcarce, as no attention is paid to its cultivation, and the trees always die after being ſtripped of their bark. This operation is performed in the dry ſeaſon, from September to November. The bark is then carefully dried in the ſun, and packed in ſkins, which contain from 100 to 150 pounds, and are called by the Spaniards zeronne. In theſe, coarſe and fine pieces of the ſame kind of bark are promiſcuouſly mixed, but they are afterwards ſorted.

1. Common pale bark.

In commerce we find ſeveral varieties of the common pale bark, the moſt remarkable of which come from Loxa, the quilled bark, and from Guanaco, the flat bark.

The bark which comes from Loxa conſiſts of thin ſingly or doubly rolled pieces, a finger's length or more, and ſcarcely a line in thickneſs; externally rough, of a greyiſh brown colour, and generally covered with a kind of lichen; internally of a cinnamon colour. Its fracture ſhould not be fibrous or powdery, but even and ſhining. It has a peculiar aromatic ſmell, and a pleaſant, bitter, aſtringent taſte.

The bark which comes from Guanaco conſiſts of much thicker, coarſer, and flatter pieces; externally of a dark brown or almoſt black colour, but internally it has the ſame cinnamon colour, and in its reſinous fracture, ſmell, and taſte, it exactly reſembles the former. When genuine, both varieties are excellent remedies, although the former be generally preferred on the Continent, and the latter in Britain.

The great price of Peruvian bark has ſometimes tempted diſhoneſt men to adulterate it with other ſimilar and leſs powerful barks,

barks, and, what is ſtill more blameable, with genuine bark, from which the active conſtituents have been entirely extracted by decoction with water.

In ſelecting Peruvian bark, we muſt therefore ſee, that, beſides the characteriſtics already noticed, it be denſe, heavy, and dry, not muſty or ſpoiled by moiſture, and that a decoction made of it have a reddiſh colour when warm, but when cold become paler, and depoſite a browniſh red ſediment. Thoſe pieces whoſe taſte is ſimply intenſely bitter or very aſtringent, or nauſeous, or merely mucilaginous, whoſe ſurface is ſmooth or poliſhed, of a dark colour or pale yellow or red, which are tough or ſpongy, whoſe fracture is fibrous, woody, or powdery, and their internal colour white or grey, are to be rejected.

The predominant conſtituents of Peruvian bark are, bitter extractive, tannin, and gallic acid, combined with ſome mucilage and reſin. Its aroma depends upon the preſence of ſome eſſential oil, which, however, is not conſiderable.

On dead animal matter it acts as an antiſeptic, and on the living body it acts moreover as a ſtimulant, tonic, and antiſpaſmodic. The diſcovery of its medical virtues was, in all probability, the reſult of accident; and in fact, according to ſome, the Peruvians learned the uſe of the bark by obſerving certain animals affected with intermittents inſtinctively led to it; while others ſay, that a Peruvian having an ague, was cured by happening to drink of a pool which, from ſome trees having fallen into it, taſted of cinchona; and its uſe in gangrene is ſaid to have originated from its curing one in an aguiſh patient. About the year 1640, the lady of the Spaniſh viceroy, the Comitiſſa del Cinchon, was cured by the bark, which has therefore been called Cortex or Pulvis Comitiſſæ, Cinchona, Chinachina or Cinchina, Kinakina or Kinkina, Quinaquina or Quinquina; and from the intereſt which Cardinal de Lugo and the Jeſuit fathers took in its diſtribution, it has been called Cortex or Pulvis Cardinalis de Lugo, Jeſuiticus, Patrum, &c. or ſimply, from its pre-eminence, Bark.

On its firſt introduction into Europe, it was reprobated by many eminent phyſicians; and at different periods long after, it was conſidered a dangerous remedy; but its character, in proceſs of time, became very univerſally eſtabliſhed.

Practitioners have differed much with regard to the mode of operation of the Peruvian bark. Some have aſcribed its virtues entirely to a ſtimulant power. But while the ſtrongeſt and moſt permanent ſtimuli have by no means the ſame effect with bark in the cure of diſeaſes, the bark itſelf ſhows hardly any ſtimulant power, either from its action on the ſtomach, or on other ſenſible parts to which it is applied. From its action on dead animal fibres, there can be no doubt of its being a powerful aſtringent; and from its good effects in certain caſes of diſeaſe, there is reaſon

to

to preſume that it is a ſtill more powerful tonic. To this tonic power ſome think that its action as an antiſeptic is to be entirely attributed: but that, independently of this, it has a very powerful effect in reſiſting the ſeptic progreſs to which animal ſubſtances are naturally ſubjected, appears beyond all diſpute, from its effects in reſiſting putrefaction, not only in dead animal ſolids, but even in animal fluids, when entirely detached from the living body.

But although it be admitted that the Peruvian bark acts powerfully as an aſtringent, as a tonic, and as an antiſeptic, yet theſe principles will by no means explain all the effects derived from it in the cure of diſeaſes. And accordingly, from no artificial combination in which theſe powers are combined, or in which they exiſt even to higher degree, can the good conſequences reſulting from Peruvian bark be obtained. Many practitioners, therefore, are diſpoſed to view it as a ſpecific. If by a ſpecific we mean an infallible remedy, it cannot indeed be conſidered as entitled to that appellation; but in as far as it is a very powerful remedy, of the operation of which no ſatisfactory explanation has yet been given, it may with great propriety be denominated a ſpecific. But whatever its mode of operation may be, there can be no doubt that it is daily employed with ſucceſs in a great variety of different diſeaſes.

It was firſt introduced, as has already been ſaid, for the cure of intermittent fevers; and in theſe, when properly exhibited, it rarely fails of ſucceſs. Practitioners, however, have differed with regard to the beſt mode of exhibition; ſome prefer giving it juſt before the fit, ſome during the fit, others immediately after it. Some, again, order it in the quantity of an ounce between the fits; the doſe being the more frequent and larger according to the frequency of the fits; and this mode of exhibition, although it may perhaps ſometimes lead to the employment of more bark than is neceſſary, we conſider as upon the whole preferable, from being beſt ſuited to moſt ſtomachs. The requiſite quantity is very different in different caſes; and in many vernal intermittents it ſeems even hardly neceſſary.

It is now given, from the very commencement of the diſeaſe, without previous evacuations, which, with the delay of the bark, or under doſes of it, by retarding the cure, often ſeem to induce abdominal inflammations, ſcirrhus, jaundice, hectic, dropſy, &c. ſymptoms formerly imputed to the premature or intemperate uſe of the bark, but which are beſt obviated by its early and liberal uſe. It is to be continued not only till the paroxyſms ceaſe, but till the natural appetite, ſtrength, and complexion return. Its uſe is then to be gradually left off, and repeated at proper intervals to ſecure againſt a relapſe; to which, however unaccountable, there often

often ſeems to be a peculiar diſpoſition; and eſpecially when the wind blows from the eaſt. Although, however, moſt evacuants conjoined with the Peruvian bark in intermittents are rather prejudicial than otherwiſe, yet it is of advantage, previous to its uſe, to empty the alimentary canal, particularly the ſtomach; and on this account good effects are often obtained from premiſing an emetic.

It is a medicine which ſeems not only ſuited to both formed and latent intermittents, but to that ſtate of fibre on which all rigidly periodical diſeaſes ſeem to depend; as periodical pain, inflammation, hæmorrhagy, ſpaſm, cough, loſs of external ſenſe, &c.

Bark is now uſed by ſome in all continued fevers; at the ſame time attention is paid to keep the bowels clean, and to promote when neceſſary the evacuation of redundant bile, always, however, ſo as to weaken the patient as little as poſſible.

In confluent ſmall-pox, it promotes languid eruption and ſuppuration, diminiſhes the fever through the whole courſe of it, and prevents or corrects putreſcence and gangrene.

In gangrenous ſore throats it is much uſed, as it is externally and internally in every ſpecies of gangrene.

In contagious dyſentery, after due evacuation, it has been uſed, taken internally and by injection, with and without opium.

In all thoſe hæmorrhagies called paſſive, and which it is allowed all hæmorrhagies are very apt to become, and likewiſe in other increaſed diſcharges, it is much uſed; and in certain undefined caſes of hæmoptyſis, ſome allege that it is remarkably effectual when joined with an abſorbent.

It is uſed for obviating the diſpoſition to nervous and convulſive diſeaſes; and ſome have great confidence in it, joined with ſulphuric acid, in caſes of phthiſis, ſcrofula, ill-conditioned ulcers, rickets, ſcurvy, and in ſtates of convaleſcence.

In theſe caſes, notwithſtanding the uſe of the acid, it is proper to conjoin it with a milk diet.

In dropſy, not depending on any particular local affection, it is often alternated or conjoined with diuretics or other evacuants, and by its early exhibition after the water is once drawn off, or even begins to be freely diſcharged, a freſh accumulation is prevented, and a radical cure obtained.

Mr Pearſon of the Lock Hoſpital praiſes very highly the powers of this remedy in different forms of the venereal diſeaſe; in reducing incipient bubo, in cleanſing and healing ulcers of the tonſils, and in curing gangrenous ulcers from a venereal cauſe. But in all theſe caſes mercury muſt alſo be given to eradicate the venereal virus from the ſyſtem.

Peruvian bark may be exhibited,

1. In ſubſtance.

The

The beſt form of exhibiting this valuable remedy is in the ſtate of a very fine powder, in doſes of from ten grains to two drachms and upwards. As it cannot be ſwallowed in the form of a dry powder, it muſt either be diffuſed in ſome liquid, as water, wine, or milk, or mixed with ſome viſcid ſubſtance, as currant jelly. Its taſte, which is diſagreeable to many people, is beſt avoided by taking it immediately after it is mixed up; for by ſtanding any time, it is communicated to the vehicle. In this reſpect, therefore, it is better for the patients to mix it up themſelves, than to receive it from the apothecary already made up into a draught with ſome ſimple diſtilled water, or into an electuary with a ſyrup. A much more important objection to this form of giving Peruvian bark is, that ſome ſtomachs will not bear it, from the oppreſſion and even vomiting which in theſe caſes it excites. We muſt endeavour to obviate this inconvenience by the addition of ſome aromatic, and by giving it in ſmall doſes more frequently repeated. If we are unable to ſucceed by theſe means, we muſt extract the moſt active conſtituents of the bark by means of ſome menſtruum. It has therefore long been a pharmaceutical problem to diſcover which menſtruum extracts the virtues of Peruvian bark moſt completely. But the active conſtituents of this remedy, according to the beſt and lateſt analyſis, are bitter extractive, tannin, and gallic acid, combined with ſome mucilage and reſin. Of theſe the two laſt are not ſoluble in any one menſtruum; but they moſt probably contribute very little to the powers of the medicine. The three other conſtituents, on the contrary, on which all its activity depends, taken ſingly, are all of them very ſoluble, both in water and in alcohol, and in every mixture of theſe. But it would be contrary to analogy to ſuppoſe, that theſe ſubſtances ſhould exiſt ſo intimately mixed as they muſt be in an organic body, without exerting upon each other ſome degree of chemical affinity, and forming combinations poſſeſſed of new properties. Accordingly we find, whether it ariſe from this cauſe, or merely from the ſtate of aggregation, that neither water nor alcohol extract theſe conſtituents from Peruvian bark in the ſame quantity in which they are able to diſſolve them ſeparately, and that we muſt have recourſe to direct experiment to determine the degree of action poſſeſſed by each menſtruum upon it. With this view many experiments have been made, and by very able chemiſts. But moſt of them were performed when the ſcience of chemiſtry was but in its infancy; and even at this time that branch of it which relates to theſe ſubſtances is ſo little underſtood, that the reſults of the lateſt experiments are far from concluſive.

2. In infuſion.

To thoſe whoſe ſtomachs will not bear the powder, this is the beſt form of exhibiting Peruvian bark. Water, at a given temperature, ſeems capable of diſſolving only a certain quantity, and therefore we are not able to increafe the ftrength of an infufion, either by employing a larger quantity of the bark, or allowing them to remain longer in contact. One part of bark is fufficient to faturate fixteen of water in the courfe of an hour or two. To accelerate the action of the water, it is ufual to pour it boiling hot upon the bark, to cover it up, and allow it to cool flowly. After ftanding a fufficient length of time, the infufion is decanted off for ufe. The infufion in water is however liable to one very great objection, that it cannot be kept even a very fhort time without being decompofed and fpoiled. Therefore, in fome inftances, we prepare the infufion with wine; and it fortunately happens that very often the ufe of the menftruum is as much indicated as that of the folvend.

3. In tincture.

The great activity of the menftruum in this preparation, prevents the bark from being given in fufficiently large dofes to exert its peculiar virtues. It is, however, a powerful ftimulant.

4. In decoction.

Water of the temperature of 212° is capable of diffolving a much larger proportion of the foluble parts of Peruvian bark than water at 60°. But the folvent powers even of boiling water have their limits, and by protracting the decoction we do not increafe its ftrength, but rather, by diminifhing the quantity of the menftruum, we leffen the quantity of matter diffolved. Befides, at a boiling temperature, extractive abforbs oxygen rapidly from the atmofphere and is converted into what feems to be an infoluble and inert refinous fubftance.

5. In extract.

In this preparation we expect to poffefs the virtues of Peruvian bark in a very concentrated ftate. The principal objections to its ufe are its great expence, and the decompofition and deftruction of the active conftituents of the bark during the preparation, when not properly conducted. It is convenient for the formation of pills and bolufes, but we would always prefer a frefh infufion or decoction to any mixture in which the extract is rediffolved.

Externally, Peruvian bark is ufed in fubftance, as an application to ill conditioned, carious, or gangrenous ulcers.

In the form of clyfter, it may be given in fubftance, decoction, or extract. The powder is ufed as a tooth-powder for fpongy and bleeding gums, and the decoction is an excellent aftringent gargle or wafh.

To increafe the power of Peruvian bark, or to direct its efficacy to a particular purpofe, or to correct fome inconveniences occafionally produced by it, it is frequently combined with other remedies. When it produces vomiting, carbonic acid forms a ufeful addition; when it purges, opium; when it oppreffes the ftomach, aromatics; and when it induces coftivenefs, rhubarb. It may be alfo combined with other vegetable aftringent or bitter remedies, without impairing its powers. But we are afraid

fraid that many additions are made, chiefly saline substances, of which the effects are not at all understood. Sulphuric acid, supersulphate of alumina and potass (alum), muriate of ammonia, carbonate of potass, tartrite of potass, tartrite of antimony and potass (tartar emetic), iron, lime-water, &c. have been frequently prescribed with it; but we know that in many of these mixtures decomposition occurs, which renders the whole either inactive, or completely deceives us with regard to the expected effects.

2. Yellow Peruvian bark.

This kind of bark has only been introduced since 1790, and we are still uncertain, both with regard to the tree which produces it, and the place of its growth. It consists of pieces about six inches in length, thicker, and less rolled up than the common bark. Its internal surface is of a deeper red. It sometimes wants the epidermis, which is often as thick as the bark itself. It is lighter and more friable than the former variety; its fracture is fibrous; and when reduced to powder, its colour is paler. Its taste is much more bitter, astringent, and stronger, but its smell is weaker. Its decoction when hot is redder, but when cold, paler. Its solutions strike a deeper colour with sulphate of iron. It contains more bitter extractive, and more tannin and gallic acid, than either of the others, but less gum than the common, and less resin than the red. It also produces the same effects in much smaller doses. The epidermis should always be removed before it is powdered.

3. Red Peruvian bark occurs generally in much larger, thicker, flatter pieces, but sometimes also in the form of quills. It is heavy, firm, sound, and dry; friable between the teeth; does not separate into fibres; and breaks, not shivery, but short, close, and smooth. It has three layers: the outer is thin, rugged, of a reddish brown colour, but frequently covered with mossy matter; the middle is thicker, more compact, darker coloured, very resinous, brittle, and yields first to the pestle: the inmost is more woody, fibrous, and of a brighter red. Its powder is reddish, like that of Armenian bole.

Its astringency and bitterness are more intense, and it contains more resin than the pale bark. It also produces its effects in smaller doses. It is said to be more frequently adulterated.

S . 4. CINCHONA CARIBÆA. *Cortex.* (*Ed.*)

Cinchona of the Caribæan islands. The bark.

This tree is found in the Caribæan islands. It grows to a very large size. Dr Wright, to whom we are indebted for all our knowledge of it, found some in the parish of St James's, Jamaica, fifty feet high, and proportionally thick. The wood is hard, clouded, and takes a fine polish. The bark of the large trees is rough, the cuticle thick and inert, and the inner bark thinner than that of the young trees, but more fibrous. The bark is brought to us in pieces about a ſpan in length, rolled together, and a line or half a line in thickneſs, of a brown colour on the ſurface, which is moſt commonly covered with white lichens: internally it is of a dark brown colour, and very fibrous in its fracture. It has at firſt a ſweetiſh taſte, but after being chewed ſome time it becomes extremely nauſeous and bitter. Dr Wright ſays he made uſe of this bark in all caſes where Peruvian bark was indicated, and with the greateſt ſucceſs. It has often been confounded with the cinchona floribunda, (Willdenow's 7th ſpecies), ſo excellently analyzed by Fourcroy under the title of the Cinchona of St Domingo, and which taken internally is apt to excite vomiting and purging.

CINERES CLAVELLATI. (*Lond. Dub.*) See CARBONAS POTASSÆ IMPURUS.

CINNAMOMUM. (*Lond. Dub.*) See LAURUS CINNAMOMUM.

CISSAMPELOS PAREIRA.

Pareira Brava. Radix. (*Lond. Dub.*)

Pareira brava. The root.

Dioecia Monadelphia.—Nat. ord. *Sarmentaceæ.*

THIS is a perennial climbing plant. which grows in the Weſt India iſlands and in South America. The root, which is officinal, is brought to us from Brazil, in pieces of different ſizes, ſome no bigger than one's finger, others as large as a child's arm; it is crooked, and variouſly wrinkled on the ſurface; outwardly of a dark colour, internally of a dull yellowiſh, and interwoven with woody fibres; ſo that, upon a tranſverſe ſection, a number of concentric circles appear, croſſed with fibres, which run from the centre to the circumference: It has no ſmell; the taſte is a little bitteriſh, blended with a ſweetneſs like that of liquorice. This root is highly extolled by the Brazilians and Portugueſe, in a great variety of diſeaſes, particularly againſt ſuppreſſions of urine, nephritic pains, and calculus. Geoffroy alſo found it uſeful in nephritic diſorders, in ulcers of the kidneys and bladder, in humoral aſthmas, and in ſome ſpecies of jaundice. The common people of Jamaica uſe a decoction of the roots for pains and weakneſs of the ſtomach, proceeding from relaxation. The doſe of the root in ſubſtance is from twelve grains to half a drachm; in decoction to two or three drachms.

CISTUS CRETICUS.

Ladanum. Reſina. (*Lond.*)

Cretan

Cretan Ciſtus. Ladanum. A reſin.
Willd. g. 1048. *ſp.* 13.—Nat. ord. *Aſcyroideæ.*

THIS is a perennial ſhrub which grows in Syria, and more eſpecially in the Grecian iſlands.

This reſin is ſaid to have been formerly collected from the beards of goats who browſed the leaves of the ciſtus: at preſent, a kind of rake, with ſeveral ſtraps or thongs of ſkins fixed to it, is drawn lightly over the ſhrub, ſo as to take up the unctuous juice, which is afterwards ſcraped off with knives. It is rarely met with pure, even in the places where it is produced; the duſt, blown upon the plant by the wind, mingling with the viſcid juice, and the inhabitants alſo being ſaid to mix it with a certain black ſand. In the ſhops two ſorts are met with: the beſt (which is very rare) is in dark-coloured almoſt black maſſes, of the conſiſtence of a ſoft plaſter, which grows ſtill ſofter upon being handled; of a very agreeable ſmell, and of a light pungent bitteriſh taſte: the other ſort is harder, not ſo dark-coloured, in long rolls coiled up: this is of a much weaker ſmell than the firſt, and has a large admixture of a fine ſand, which in the ladanum examined by the French Academy, made up three-fourths of the maſs. Rectified ſpirit of wine almoſt entirely diſſolves pure ladanum, leaving only a ſmall portion of gummy matter which has no taſte or ſmell.

CITRUS.

Polyadelphia Icoſandria.—Nat. ord. *Pomaceæ.*

Sp. CITRUS AURANTIUM. *Folia, flores, aqua ſtillatitia et oleum volatile florum, fructûs ſuccus, fructus immaturus, et cortex exterior.* (*Ed.*)

Aurantium Hiſpalenſe. Folium, flos, fructûs ſuccus, et cortex exterior. (*Lond.*) *Fructûs ſuccus et cortex exterior, fructus immaturus, florum aqua ſtillatitia.* (*Dub.*)

Seville orange. The leaves, flowers, diſtilled water and eſſential oil of the flowers, the juice and outer rind of the fruit, and the unripe fruit.

THE orange tree is a beautiful evergreen, a native of Aſia, but now abundantly cultivated in the ſouthern parts of Europe and in the Weſt India iſlands. There are ſeveral varieties of this ſpecies, but they may be all referred to the bitter or Seville orange, and the ſweet or China orange.

The leaves are neither ſo aromatic nor ſo bitter as the rind of the fruit, yet they have been celebrated by eminent phyſicians as a powerful antiſpaſmodic in convulſive diſorders, and eſpecially in epilepſy; with others they have entirely failed.

The flowers (flores naphæ) are highly odoriferous, and have been for ſome time paſt in great eſteem as a perfume: their taſte is ſomewhat warm, accompanied with a degree of bitterneſs. They yield their flavour by infufion to rectified fpirit, and in diftillation both to fpirit and water, (aqua florum naphæ): the bitter matter is diffolved by water, and, on evaporating the decoction, remains entire in the extract.

A very fragrant red-coloured oil, diftilled from thefe flowers, is brought from Italy under the name of *oleum* or *effentia neroli*; but oil of behen, in which orange flowers have been digefted, is frequently fubftituted for it. The fraud, however, is eafily detected, as the real oil is entirely volatile, and the adulterated is not.

Orange flowers were at one time faid to be an ufeful remedy in convulfive and epileptic cafes; but experience has not confirmed the virtues attributed to them. As by drying they lofe their virtues, they may be preferved for this purpofe by packing them clofely in earthen veffels, with half their weight of muriate of foda.

The juice of oranges is a grateful acid liquor, confifting principally of citric acid, fyrup, extractive, and mucilage; of confiderable ufe in febrile or inflammatory diftempers, for allaying heat, quenching thirft, and promoting the falutary excretions: it is likewife of ufe in genuine fcorbutus, or fea-fcurvy.—Although the Seville, or *bitter orange* as it is called, has alone a place in our pharmacopœias, yet the juice of the China, or fweet orange, is much more employed. It is more mild, and lefs acid; and it is employed in its moft fimple ftate with great advantage, both as a cooling medicine, and as an ufeful antifeptic in fevers of the worft kinds, as well as in many other acute difeafes, being highly beneficial as alleviating thirft. Dr Wright applied the roafted pulp of oranges as a poultice to fetid fores in the Weft Indies, with very great fuccefs.

The outer yellow rind of the fruit is a grateful aromatic bitter; and proves an excellent ftomachic and carminative, promoting appetite, warming the habit, and ftrengthening the tone of the vifcera. Orange peel appears to be confiderably warmer than that of lemons, and to abound more with effential oil: to this circumftance, therefore, due regard ought to be had in the ufe of thefe medicines. The flavour of the firft is likewife fuppofed to be lefs perifhable than that of the other: hence the London College employ orange-peel in the fpirituous bitter tincture which is defigned for keeping; whilft in the bitter watery infufion, lemon peel is preferred. A fyrup and diftilled water are for the fame reafon prepared from the rind of oranges in preference to that of lemons.

The outer rind of the orange is the bafis of a conferve both in the Edinburgh and London pharmacopœias; and this is perhaps one of the moft elegant and convenient forms of exhibiting it.

The

The unripe fruit dried are called Curaçoa oranges. They vary in ſize from that of a pea to that of a cherry. They are bitterer than the rind of ripe oranges, but not ſo aromatic, and are uſed as a ſtomachic.

Sp. Citrus Medica. *Fructus, cortex fructûs, et ejus oleum volatile.* (*Ed.*)

Limon. Succus, cortex exterior, et oleum eſſentia dictum. (*Lond.*) *Succus, cortex exterior, ejuſdemque oleum eſſentiale.* (*Dub.*)

Lemon tree. The juice and outer rind, and its eſſential oil, of the fruit.

The juice of lemons is ſimilar in quality to that of oranges, from which it differs little otherwiſe than in containing more citric acid and leſs ſyrup. The quantity of the former is indeed ſo great, that the acid has been named from this fruit, Acid of Lemons, and is commonly prepared from it. The ſimple expreſſed juice will not keep, on account of the ſyrup, extractive and mucilage, and quantity of water which it contains, which cauſes it to ferment.

It was therefore extremely deſirable that an eaſy method ſhould be diſcovered of reducing it to ſuch a ſtate that it would not ſpoil by keeping, and would be leſs bulky.

Various means have been propoſed and practiſed with this view. The juice has been evaporated to the conſiſtence of rob; but this always gives an empyreumatic taſte, and does not ſeparate the extractive or mucilage, ſo that it is ſtill apt to ferment when agitated on board of ſhip in tropical climates. It has been expoſed to froſt, and part of the water been removed under the form of ice; but this is liable to all the former objections, and beſides, where the lemons are produced in ſufficient quantity, there is not a ſufficient degree of cold. The addition of a quantity of alcohol to the inſpiſſated juice ſeparates the mucilage, but not the extractive or ſugar. By means, however, of Scheele's proceſs, as reduced to determinate quantities by Prouſt, we can obtain the acid perfectly pure and cryſtallized.

To 94 parts of lemon juice, 4 parts of carbonate of lime are to be added: the carbonic acid is ſeparated by effervefcence, and a quantity of inſoluble citrate of lime is precipitated. By evaporating the ſupernatant liquor, another portion of citrite of lime is obtained. Theſe added together amount to about $7\frac{1}{2}$ parts, and require 20 parts of ſulphuric acid, of the ſpecific gravity of 1,15 to decompoſe them. The ſulphate of lime being nearly inſoluble is precipitated, and the citric acid remains in ſolution, and is to be ſeparated by waſhing, and cryſtallized by evaporation. If too much ſulphuric acid be added, when the liquor is much concentrated, it reacts upon the citric acid, and chars a portion of it. When this is the caſe, a little chalk muſt be added.

By this, or fome fimilar procefs, it is now manufactured in this country in large quantities, and fold under the name of Coxwell's Concrete Salt of Lemons.

Citric acid is a powerful and agreeable antifeptic. Its powers are much increafed, according to Dr Wright, by faturating it with muriate of foda. The mixture he recommends as poffeffing very great efficacy in dyfentery, remittent fever, the belly-ach, putrid fore throat, and as being perfectly fpecific in diabetes and lienteria. Citric acid is often ufed with great fuccefs for allaying vomiting: with this intention it is mixed with carbonate of potafs, from which it expels the carbonic acid with effervefcence. This mixture fhould be drunk as foon as it is made: or, the carbonic acid gas, on which actually the anti-emetic powers of this mixture depends, may be extricated in the ftomach itfelf, by firft fwallowing the carbonate of potafs diffolved in water, and drinking immediately afterwards the citric acid properly fweetened. The dofes are about a fcruple of the carbonate diffolved in eight or ten drachms of water, and an ounce of lemon juice, or an equivalent quantity of citric acid.

Lemon juice is alfo an ingredient in many pleafant refrigerant drinks, which are of very great ufe in allaying febrile heat and thirft. Of thefe the moft generally ufeful is lemonade, or diluted lemon-juice, properly fweetened. Lemonade, with the addition of a certain quantity of any good ardent fpirit, forms the well-known beverage Punch, which is fometimes given as a cordial to the fick. The German writers order it to be made with arrack, as rum and brandy, they fay, are apt to occafion headach. But the fact is directly the reverfe, for of all fpirits arrack is moft apt to produce headach. The lighteft and fafeft fpirits are thofe which contain leaft effential oil, or other foreign matters, and which have been kept the longeft time after their diftillation.

The yellow peel is an elegant aromatic, and is frequently employed in ftomachic tinctures and infufions: it is confiderably lefs hot than orange-peel, and yields in diftillation with water a lefs quantity of effential oil: its flavour is neverthelefs more perifhable, yet does not arife fo readily with fpirit of wine; for a fpirituous extract made from lemon-peel poffeffes the aromatic tafte and fmell of the fubject in much greater perfection than an extract prepared in the fame manner from the peels of oranges. In the fhops, a fyrup is prepared from the juice, and the peel is candied; the peel is an ingredient in the bitter infufions and wines; the effential oil enters the volatile aromatic fpirit, or fpiritus ammoniæ compofitus, as it is now called, and fome other formulæ.

COCCUS CACTI. (*Ed.*)
Coccinella. (*Lond.*)
Cochineal.

Cochineal is the dried body of the female of a hemipterous insect. It is found only in Mexico, and is nourished entirely on the leaves of the opuntia or nopal, (cactus coccinelliferus). The wild cochineal, which is covered with a silky envelop, is less valuable than the cultivated cochineal, which is without that covering, but grows to a larger size, and furnishes a finer and more permanent colour. The Spaniards endeavour to confine both the insect and the plant on which it feeds to Mexico. But this attempt at monopoly will, we hope, be frustrated by the exertions of some gentlemen in the East Indies. The male only is furnished with wings, the female has none, and remains constantly attached to the leaf of the cactus. During winter, the Mexicans preserve these insects, with the succulent leaves to which they are attached, in their houses. In spring, after the rainy season is over, they are transferred to the living plants, and in a few days they lay innumerable eggs and die. They are collected three times in the year: first the dead mothers are gathered as soon as they have laid their eggs; in three or four months, the young which have grown to a sufficient size are collected; and in three or four months more, all the young are collected, large and small indiscriminately, except those which they preserve for breeding next year. They are killed by inclosing them in a bag and dipping them in hot water, and by exposing them on iron plates to the heat of the fire. 800,000 pounds are brought annually to Europe; and each pound contains at least 70,000 insects. From their appearance, when brought to us, they were long supposed to be the seed of some plant. They are small, irregular, roundish bodies, of a blackish-red colour on the outside, and a bright purple red within. Their taste is acrid, bitterish and astringent. They are used only for the sake of the fine colour which they produce, and they are principally consumed by the scarlet dyers. In pharmacy they are employed to give a beautiful red to some tinctures. Their colour is easily extracted, both by alcohol, water, and water of ammonia; and in the dried insect it is not impaired by keeping for any length of time.

COCHLEARIA.

Willd. g. 1228. *Tetradynamia Siliculosa.*—Nat. ord. *Siliquosæ.*

Sp. 1. Cochlearia Officinalis. *Herba.* (*Ed.*)
Cochlearia. Herba. (*Dub.*)
Cochlearia hortensis. Herba. (*Lond.*)
Garden scurvy-grass. The plant.

This is an annual plant, which grows on the sea-shore of the northern countries of Europe, and is sometimes cultivated in gardens. As long as it is fresh it has a peculiar smell, especially when bruised, and a kind of saline acrid taste, which it loses completely

pletely by drying, but which it imparts by diftillation to water or alcohol. It alfo furnifhes an effential oil, the fmell of which is fo ftrong as to make the eyes water.

The frefh plant is a gentle ftimulant and diuretic, and is chiefly ufed for the cure of fea-fcurvy. It is employed externally as a gargle in fore throat, and fcorbutic affections of the gums and mouth. It may be eaten in fubftance in any quantity, or the juice may be expreffed from it, or it may be infufed in wine or water, or its virtues may be extracted by diftillation.

Sp. 8. COCHLEARIA ARMORACIA. *Radix.* (*Ed.*)
Raphanus rufticanus. Radix. (*Lond. Dub.*)
Horfe-radifh. The root.

THIS perennial plant is fometimes found wild about river-fides, and other moift places: for medicinal and culinary ufes, it is cultivated in gardens; it flowers in June, but rarely perfects its feeds in this country. Horfe-radifh root has a quick pungent fmell, and a penetrating acrid tafte; it neverthelefs contains in certain veffels a fweet juice, which fometimes exudes upon the furface. By drying, it lofes all its acrimony, becoming firft fweetifh, and afterwards almoft infipid: if kept in a cool place, covered with fand, it retains its qualities for a confiderable time. The medical effects of this root are, to ftimulate the folids, and promote the fluid fecretions; it feems to extend its action through the whole habit, and affect the minuteft glands. It has frequently done fervice in fome kinds of fcurvies and other chronic diforders, proceeding from a vifcidity of the juices, or obftructions of the excretory ducts. Sydenham recommends it likewife in dropfies, particularly thofe which fometimes follow intermittent fevers. Both water and rectified fpirit extract the virtues of this root by infufion, and elevate them in diftillation: along with the aqueous fluid, an effential oil arifes, poffeffing the whole tafte and pungency of the horfe-radifh.

COCOS BUTYRACEA. *Oleum nucis fixum.* (*Ed.*)
The mackaw tree. The fixed oil of the nut, commonly called Palm Oil.

Palmæ.—Nat. ord. *Palmæ.*

THIS tree is a native of South America. The fruit is triangular, yellow, and as big as a plumb. The nut or kernel by decoction yields the oleum palmæ of the fhops. This oil has the confiftence of butter, a golden yellow colour, the fmell of violets, and a fweetifh tafte. When well preferved, it keeps feveral years without becoming rancid. When fpoiled, it lofes its yellow colour and pleafant fmell. It is faid to be often imitated with axunge, coloured with turmeric, and fcented with Florentine

iris

iris root. It is rarely uſed in medicine, and only externally as an emollient ointment.

COLCHICUM AUTUMNALE. *Radix.* (*Ed.*)
Colchicum. Radix. (*Lond. Dub.*)
Meadow ſaffron.
Willd. g. 707. *ſp.* 1. *Hexandria Trigynia.*—Nat. ord. *Liliaceæ.*

MEADOW SAFFRON is a perennial, bulbous-rooted plant, which grows in wet meadows in the temperate countries of Europe. It flowers in the beginning of autumn, at which time the old bulb begins to decay, and a new bulb to be formed. In the following May the new bulb is perfected, and the old one waſted and corrugated. They are dug for medical uſe in the beginning of ſummer.

The ſenſible qualities of the freſh root are very various, according to the place of growth, and ſeaſon of the year. In autumn it is inert; in the beginning of ſummer highly acrid: ſome have found it to be a corroſive poiſon, others have eaten it in conſiderable quantity without experiencing any effect. When it is poſſeſſed of acrimony, this is of the ſame nature with the acrimony of garlic, and is entirely deſtroyed by drying. Störk, Collin and Plenk have celebrated its virtues as a diuretic in hydrothorax and other dropſies. But it is at beſt a very uncertain remedy. The expreſſed juice is uſed in Alſace to deſtroy vermin in the hair.

COLOCYNTHIS. (*Lond. Dub.*) See CUCUMIS.

COLOMBA. (*Lond. Ed.*)
Columbo. (*Dub.*)
Colomba. The root.

THIS is the root of an unknown plant, which, however, is conjectured by Willdenow to be a ſpecies of bryonia. It was ſuppoſed to have its name from a city in Ceylon, from which it is ſent over all India. But more recent accounts ſay, that it is produced in Africa, in the country of the Caffres, and that it forms an important article of commerce with the Portugueſe at Mozambique, in the province of Tranquebar. It is generally brought in tranſverſe ſections, from half an inch to three inches in diameter, rarely divided horizontally. This is evidently done to facilitate its drying, for the large pieces are all perforated with holes. The bark is wrinkled and thick, of a dark brown colour on the outſide, and bright yellow within. The pith in the centre is ſpongy, yellowiſh, and ſlightly ſtriped. Its ſmell is ſlightly aromatic, and readily loſt when not preſerved in cloſe veſſels; its taſte is unpleaſant, bitter, and ſomewhat acrid; the bark has the ſtrongeſt taſte; the pith is almoſt mucilaginous. Its eſſential conſtituents are bitter extractive, and a great deal of mucilage. It is accordingly ly more ſoluble in water than in alcohol. In India it is much uſed in diſeaſes attended with bilious ſymptoms, particularly in cholera; and it is ſaid to be ſometimes very effectual in other caſes of vomiting. Some conſider it as very uſeful in dyſpepſia. Half a drachm of the powder is given repeatedly in the day. Its uſe in medicine has been particularly recommended to the attention of practitioners by Dr Percival of Mancheſter in his Experimental Eſſays; and it has in general been found to anſwer expectation: but it is to be regretted, that it is not ſo regularly imported as to admit of our ſhops being ſupplied with it of good quality. Hence, when preſcribed, it is often exhibited in a very decayed ſtate.

CONIUM MACULATUM. *Folia, Semen.* (*Ed.*)

Cicuta. Herba, flos, ſemen. (*Lond.*) *Herba, ſemina nondum matura.* (*Dub.*)

Hemlock. The leaf, flower, and ſeed.

Willd. g. 533. *ſp.* 1.—*Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

THIS is a large biennial umbelliferous plant, which grows very commonly about the ſides of fields, under hedges, and in moiſt ſhady places. As it may eaſily be confounded with other plants of the ſame natural order, which are either more virulent or leſs active, we ſhall give a full deſcription of its botanical characters. The root is white, long, of the thickneſs of a finger, contains when it is young a milky juice, and reſembles both in ſize and form the carrot. In ſpring it is very poiſonous, in harveſt leſs ſo. The ſtalk is often three, four, and even ſix feet high, hollow, ſmooth, not beſet with hairs, and marked with red or brown ſpots. The leaves are large, and have long and thick foot-ſtalks, which, at the lower end, aſſume the form of a groove, and ſurround the ſtem. From each ſide of the foot-ſtalk other foot-ſtalks ariſe, and from theſe a ſtill ſmaller order, on which there are ſeſſile, dark green, ſhining, lancet-ſhaped, notched leafits. The umbels are terminal and compound. The flowers conſiſt of five white heart-ſhaped leaves. The ſeeds are flat on the one ſide, and hemiſpherical on the other, with five ſerrated ribs. This laſt circumſtance, with the ſpots on the ſtalks, and the peculiar very nauſeous ſmell of the plant, ſomewhat reſembling the urine of a cat, ſerve to diſtinguiſh it from all other plants. We muſt not be miſled by its officinal name Cicuta, to confound it with the Cicuta viroſa of Linnæus, which is one of the moſt virulent plants produced in this country, and readily diſtinguiſhable from the conium, by having its roots always immerſed in water, which thoſe of the conium never are. The poſſibility of this miſtake ſhews the propriety of denominating all vegetables by their ſyſtematic names, as the Edinburgh College now do. The other plants which have been miſtaken for the conium maculatum are, the æthuſa cynapium,

caucalis

caucalis anthriſcus, and ſeveral ſpecies of chærophyllum, eſpecially the bulboſum, which, however, is not a native of this country.

Hemlock ſhould not be gathered unleſs its peculiar ſmell be ſtrong. The leaves ſhould be collected in the month of June, when the plant is in flower. The leafits are to be picked off, and the foot-ſtalks thrown away. The leafits are then to be dried quickly in a hot ſun, or rather on tin-plates before a fire, and preſerved in bags of ſtrong brown paper, or powdered and kept in cloſe veſſels, excluded from the light; for the light ſoon diſſipates their green colour, and with it the virtues of the medicine.

Freſh hemlock contains not only the narcotic, but alſo the acrid principle; of the latter much, and of the former little, is loſt by drying. The whole plant is a virulent poiſon, but varying very much in ſtrength according to circumſtances. When taken in an over-doſe, it produces vertigo, dimneſs of ſight, difficulty of ſpeech, nauſea, putrid eructations, anxiety, tremors, and paralyſis of the limbs. But Dr Störk found, that in ſmall doſes it may be taken with great ſafety; and that, without at all diſordering the conſtitution, or even producing any ſenſible operation, it ſometimes proves a powerful reſolvent in many obſtinate diſorders. In ſcirrhus, the internal and external uſe of hemlock has been found uſeful, but then mercury has been generally uſed at the ſame time. In open cancer, it often abates the pains, and is free from the conſtipating effects of opium. It is likewiſe uſed in ſcrofulous tumors and ulcers, and in other ulcers that are only defined by the term ill-conditioned. It is alſo recommended by ſome in chincough, and various other diſeaſes. Its moſt common, and beſt form, is that of the powdered leaves, in the doſe at firſt of two or three grains a-day, which in ſome caſes has been gradually increaſed to upwards of two ounces a-day, without producing giddineſs. An extract from the ſeeds is ſaid to produce giddineſs ſooner than that from the leaves.

CONTRAYERVA. (*Lond. Dub.*) See Dorstenia.

CONVOLVULUS.

Willd. g. 323.—*Pentandria Monogynia*—Nat. ord. *Campanaceæ.*

Sp. 4. Convolvulus Scammonia. *Gummi-reſina.* (*Ed.*)
Scammonium. Gummi-reſina. (*Lond. Dub.*)
Scammony. The gum-reſin.

The ſcammony convolvulus is a climbing perennial plant, which grows in Syria, Myſia and Cappadocia. The roots, which are very long and thick, when freſh contain a milky juice. To obtain this, the earth is removed from the upper part of the roots, and the tops of theſe cut obliquely off. The milky juice which flows out, is collected in a ſmall veſſel, ſunk in the earth at the lower

lower end of the cut. Each root furniſhes only a few drachms, but it is collected from ſeveral veſſels, and dried in the ſun. This is the true and unadulterated ſcammony. It is light, of a dark grey colour, but becomes of a whitiſh yellow when touched with the wet finger, is ſhining in its fracture, has a peculiar nauſeous ſmell, and bitter acrid taſte, and forms with water a greeniſh milky fluid, without any remarkable ſediment. In this ſtate of purity it ſeldoms reaches us, but is commonly mixed with the expreſſed juice of the root, and even of the ſtalks and leaves, and often with flour, ſand or earth. The beſt to be met with in the ſhops comes from Aleppo, in light ſpongy maſſes, eaſily friable, of a ſhining aſh colour verging to black; when powdered, of a light grey or whitiſh colour. An inferior ſort is brought from Smyrna in more compact ponderous pieces, of a darker colour, and full of ſand and other impurities.

Reſin is the principal conſtituent of ſcammony. Sixteen ounces of good Aleppo ſcammony, give eleven ounces of reſin, and three and a half of watery extract.

Scammony is an efficacious and ſtrong purgative. Some have condemned it as unſafe, and laid ſundry ill qualities to its charge; the principal of which is, that its operation is uncertain, a full doſe proving ſometimes ineffectual, whilſt at others a much ſmaller one occaſions dangerous hypercatharſis. This difference, however, is owing entirely to the different circumſtances of the patient, and not to any ill quality, or irregularity of operation, of the medicine: where the inteſtines are lined with an exceſſive load of mucus, the ſcammony paſſes through, without exerting itſelf upon them; where the natural mucus is deficient, a ſmall doſe of this or any other reſinous cathartic, irritates and inflames. Many have endeavoured to abate the force of this drug, and to correct its imaginary virulence, by expoſing it to the fumes of ſulphur, diſſolving it in acids, and the like: but theſe only deſtroy a part of the medicine, without making any alteration in the reſt. Scammony in ſubſtance, judiciouſly managed, ſtands not in need of any corrector: if triturated with ſugar or with almonds, it becomes ſufficiently ſafe and mild in its operation. It may likewiſe be conveniently diſſolved, by trituration, in a ſtrong decoction of liquorice, and then poured off from the feces. The common doſe of ſcammony is from three to twelve grains.

Sp. 61. Convolvulus Jalapa. *Radix.* (*Ed.*)
Jalapium. Radix. (*Lond.*) *Jalapa. Radix.* (*Dub.*)
Jalap. The root.

Jalap is another climbing perennial ſpecies of convolvulus. It is an inhabitant of Mexico and Vera Cruz. It is brought to us in thin tranſverſe ſlices, which are covered with a blackiſh wrinkled bark, and are of a dark grey colour internally, marked with darker

darker or blackiſh ſtripes. It has a nauſeous ſmell and taſte, and when ſwallowed it affects the throat with a ſenſe of heat, and occaſions a plentiful diſcharge of ſaliva. When powdered it has a yellowiſh grey colour.

Such pieces ſhould be choſen as are moſt compact, hard, weighty, dark-coloured, and abound moſt with black circular ſtriæ and ſhining points: the light, whitiſh, friable, worm-eaten pieces muſt be rejected.

Slices of bryony root are ſaid to be ſometimes mixed with thoſe of jalap: theſe may be eaſily diſtinguiſhed by their whiter colour, and leſs compact texture.

Its active conſtituent is a reſinous ſubſtance, of which the root furniſhes about one-tenth of its weight.

Jalap in ſubſtance, taken in a doſe of about half a drachm (leſs or more, according to the circumſtances of the patient) in plethoric, or cold phlegmatic habits, proves an effectual, and in general a ſafe purgative, performing its office mildly, ſeldom occaſioning nauſea or gripes, which too frequently accompany the other ſtrong cathartics. In hyphochondriacal diſorders, and hot bilious temperaments, it gripes violently, if the jalap be good; but rarely takes due effect as a purge. An extract made by water purges almoſt univerſally, but weakly; and at the ſame time has a conſiderable effect by urine: the root remaining after this proceſs gripes violently. The pure reſin, prepared by ſpirit of wine, occaſions moſt violent gripings, and other diſtreſſing ſymptoms, but ſcarce proves at all cathartic: triturated with ſugar, or with almonds, into the form of an emulſion, or diſſolved in ſpirit, and mixed with ſyrups, it purges plentifully in a ſmall doſe, without occaſioning much diſorder: the part of the jalap remaining after the ſeparation of the reſin, yields to water an extract, which has no effect as a cathartic, but operates powerfully by urine. Its officinal preparations are an extract made with water and ſpirit, a ſimple tincture, and a compound powder.

COPAIFERA OFFICINALIS. *Reſina.* (*Ed.*)

Balſamum Copaiva. (*Lond.*) *Balſamum Copaiba.* (*Dub.*)

Copaiva tree. The reſin.

Willd. g. 880. *ſp.* 1. *Decandria Monogynia.*—Nat. ord. *Dumoſæ.*

THE tree which produces this reſin is a native of the Spaniſh Weſt India iſlands, and of ſome parts of the continent of South America. It grows to a large ſize, and the reſinous juice flows in conſiderable quantities from inciſions made in the trunk.

The juice is clear and tranſparent, of a whitiſh or pale yellowiſh colour, an agreeable ſmell, and a bitteriſh pungent taſte. It is uſually about the conſiſtence of oil or a little thicker; when long kept, it becomes nearly as thick as honey, retaining its clearneſs; but has not been obſerved to grow dry or ſolid, as moſt of the

the other resinous juices do. The best resin of copaiva comes from Brazil; but we sometimes meet with a thick sort which is not at all transparent, or much less so than the foregoing, and, generally, has a portion of turbid watery liquor at the bottom. This is probably either adulterated by the mixture of other substances, or has been extracted by decoction from the bark and branches of the tree: its smell and taste are much less pleasant than those of the genuine resin.

Pure resin of copaiva dissolves entirely in alcohol: the solution has a very fragrant smell. Distilled with water it yields a large quantity of a limpid essential oil, but no benzoic acid: it is therefore not a balsam, but a combination of resin and essential oil.

The resin of copaiva is an useful corroborating detergent medicine, accompanied with a degree of irritation. It strengthens the nervous system, tends to loosen the belly; in large doses proves purgative, promotes urine, and cleans and heals exulcerations in the urinary passages, which it is supposed to perform more effectually than any of the other resinous fluids. Fuller observes, that it gives the urine an intensely bitter taste, but not a violet smell as the turpentines do.

This resin has been principally celebrated in gleets and the fluor albus, and externally as a vulnerary.

The dose of this medicine rarely exceeds twenty or thirty drops, though some authors direct sixty or upwards. It may be conveniently taken in the form of an oleosaccharum, or in that of an emulsion, into which it may be reduced, by triturating it with almonds, with a thick mucilage of gum Arabic, or with the yolk of eggs, till they are well incorporated, and then gradually adding a proper quantity of water.

CORALLIUM RUBRUM. (*Lond.*) See Isis.

CORIANDRUM SATIVUM. *Semen.* (*Ed.*)

Coriandrum. Semen. (*Lond. Dub.*)

Coriander. The seeds.

Willd. g. 552. *sp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

Coriander is an annual, umbelliferous plant, a native of the south of Europe, differing from all the others of that class in producing *spherical* seeds. These, when fresh, have a strong disagreeable smell, which improves by drying, and becomes sufficiently grateful; they are recommended as carminative and stomachic.

CORNU CERVINUM. (*Dub.*) See Cervus.

CORTEX PERUVIANUS. (*Dub.*) See Cinchona.

CRETA. (*Lond. Dub.*) See CARBONAS CALCIS.

CROCUS SATIVUS. *Floris ftigmata.* (*Ed.*)
Crocus. Floris ftigma. (*Lond.*) *Filamenta.* (*Dub.*)
Common faffron. The fummits of the piftils.
Willd. g. 92. *fp.* 1. *Triandria Monogynia.*—Nat. ord. *Liliaceæ.*

CROCUS is a bulbous-rooted perennial plant, probably a native of the Eaft, although it is now found wild in England, and other temperate countries of Europe. It is very generally cultivated as an ornament to our gardens, and in fome places for the faffron, which is formed of the dried fummits of the piftil, and not of the filaments, as ftated by the Dublin College. Each flower has one piftil, the fummit of which is deeply divided into three flips, which are of a dark orange red colour, verging to white at the bafe, and are fmooth and fhining. Their fmell is pleafant and aromatic, but narcotic; their tafte a fine aromatic bitter, and they immediately give a deep yellow colour to the faliva when chewed. The flowers are gathered early in the morning, juft before they open; the fummits of the piftils are picked out, very carefully dried by the heat of a ftove, and compreffed into firm cakes. In this ifland the Englifh faffron is fuperior to what is imported from other countries, and may be diftinguifhed by its blades being broader.

On the Continent they reckon the Auftrian and the French from Gatinois the beft. The Spanifh is rendered ufelefs, by being dipt in oil, with the intention of preferving it. Saffron fhould be chofen frefh, not above a year old, in clofe cakes, neither dry, nor yet very moift; tough and firm in tearing; difficultly pulverizable; of a fiery, orange-red colour; of the fame colour within as without; of a ftrong, acrid, diffufive fmell; and capable of colouring a very large proportion of water or alcohol. Saffron which does not colour the fingers when rubbed between them, or ftains them with oil, has little fmell or tafte, or a mufty or foreign flavour, is too tender, and has a whitifh, yellow, or blackifh colour, is bad. It is faid that it is fometimes adulterated with the fibres of fmoked beef, and with the flowers of the carthamus tinctorius, calendula officinalis, &c. The impofition may be detected by the abfence of the white ends, which may be obferved in the real faffron, by the inferior colouring power, and by the want of fmell, or bad fmell when thrown on live coals.

By diftillation with water, faffron furnifhes a fmall proportion of effential oil, of a golden yellow colour, heavier than water, and poffeffing the characteriftic fmell in an eminent degree. Its other principal conftituent is extractive, and it is the fubftance from which Hermbftädt obtained it in the ftate of greateft purity.

On account of the great volatility of the aromatic part of the ſaffron, it ſhould be wrapt up in bladder, and preſerved in a box or tin caſe. Saffron imparts the whole of its virtue and colour to rectified ſpirit, proof ſpirit, wine, vinegar, and water: a tincture drawn with vinegar, loſes greatly of its colour in keeping: the watery and vinous tinctures are apt to grow ſour, and then loſe their colour alſo: that made in pure ſpirit keeps in perfection for many years.

Saffron is a very elegant aromatic: beſides the virtues which it has in common with all the bodies of that claſs, it has been alleged that it remarkably exhilarates, raiſes the ſpirits, and is deſervedly accounted one of the higheſt cordials: taken in large doſes, it is ſaid to occaſion immoderate mirth, involuntary laughter, and the ill effects which follow from the abuſe of ſpirituous liquors. The medicine is alſo ſaid to be particularly ſerviceable in hyſteric depreſſions, or obſtruction of the uterine ſecretions, where other aromatics, even thoſe of the more generous kind, have little effect. But ſome experiments made by Dr Alexander ſerve to ſhew that it is much leſs powerful than was once imagined: and it was given in the Edinburgh Infirmary by Dr Henry Cullen, even to the extent of half an ounce a day, in ſeveral hyſterical caſes, without any ſenſible effect whatever; ſo that of late the eſtimation in which it was held as a medicine has been on the decline.

CROTON ELEUTHERIA. *Cortex.* (*Ed.*) *Swartz. Prod.*
Caſcarilla. Cortex. (*Lond. Dub.*)
Eleutheria or Caſcarilla. The bark.
Monoecea Adelphia.—Nat. ord. *Tricoccæ.*

THIS bark is imported into Europe from the Bahama Iſlands, and particularly from one of them of the name of Eleutheria; from which circumſtance it was long known by the title of Eleutheria. But Dr Wright alſo found the tree on the ſea-ſhore in Jamaica, where it is common, and riſes to about twenty feet. It is the Clutia eluteria of Linnæus: the bark of whoſe Croton caſcarilla has none of the ſenſible qualities of the caſcarilla of the ſhops.

The caſcarilla is in general brought to us either in curled pieces, or rolled up into ſhort quills, about an inch in width, ſomewhat reſembling in appearance the Peruvian bark. It is covered on the outſide with a rough whitiſh matter; and in the inſide it is of a browniſh caſt. When broken, it exhibits a ſmooth, cloſe, dark brown ſurface.

This bark, when freed from the outer whitiſh coat, which is inſipid and inodorous, has a light agreeable ſmell, and a moderately bitter taſte, accompanied with a conſiderable aromatic warmth. It is eaſily inflammable, and yields, when burning, a very fragrant

grant ſmell, reſembling that of muſk; a property which diſtinguiſhes the caſcarilla from all other barks.

Its active conſtituents are aromatic eſſential oil and bitter extractive.

Its virtues are partially extracted by water, and totally by rectified ſpirit; but it is moſt effectual when given in ſubſtance.

It produces a ſenſe of heat, and excites the action of the ſtomach; and it is therefore a good and pleaſant ſtomachic, and may be employed with advantage in flatulent colics, internal hæmorrhagies, dyſenteries, diarrhœas, and ſimilar diſorders.

As the eſſential oil is diſſipated in making the extract, this preparation acts as a ſimple bitter. It was much employed by the Stahlians in intermittent fever, from their fear of uſing Cinchona bark, to which, however, it is much inferior in efficacy.

CUBEBA. (*Lond.*) See Piper.

CUCUMIS AGRESTIS. (*Lond. Dub.*) See Momordica.

CUCUMIS COLOCYNTHIS. *Fructus, cortice ſeminibusque abjectis.* (*Ed.*)

Colocynthis. Fructûs medulla. (*Lond. Dub.*)

Coloquintida or bitter apple. The medullary part of the fruit.

Monoecia Syngeneſia.—Nat. ord. *Cucurbitaceæ.*

This is an annual plant of the gourd kind, growing in Turkey. The fruit is about the ſize of an orange; its medullary part, freed from the rind and ſeeds, is alone made uſe of in medicine: this is very light, white, ſpongy, compoſed of membranous leaves, of an extremely bitter, nauſeous, acrimonious taſte.

It is not yet known on what chemical principle its activity depends; but its virtues are more completely extracted by water than by alcohol.

Colocynth is one of the moſt powerful and moſt violent cathartics. Many eminent phyſicians condemn it as dangerous, and even deleterious: others recommend it not only as an efficacious purgative, but likewiſe as an alterative in obſtinate chronical diſorders. This much is certain, that colocynth, in the doſe of a few grains, acts with great vehemence, diſorders the body, and ſometimes occaſions a diſcharge of blood. Many attempts have been made to correct its virulence by the addition of acids, aſtringents, and the like: theſe may leſſen the force of the colocynth, but no otherwiſe than might be equally done by a reduction of the doſe. The beſt method of abating its virulence, without diminiſhing its purgative virtue, ſeems to be by triturating it with gummy farinaceous ſubſtances, or the oily ſeeds, which, without making any alteration in the colocynth itſelf, prevents its reſinous particles from cohering, and ſticking upon the inteſtines, ſo as to irritate,

 inflame,

inflame, or corrode them. It is an ingredient in ſome of the purgative pills, and the cathartic extracts of the ſhops.

CUMINUM CYMINUM.

Cuminum. Semen. (*Lond.*)

Cummin. The ſeeds.

Willd. g. 547. *ſp.* 1.—*Pentandria Monogynia.*—Nat. ord. *Umbellatæ.*

THE cummin is an annual umbelliferous plant, in appearance reſembling fennel, but much ſmaller. It is a native of Egypt; but the ſeeds uſed in Britain are brought chiefly from Sicily and Malta. Cummin ſeeds have a bitteriſh, warm taſte, accompanied with an aromatic flavour, not of the moſt agreeable kind. An eſſential oil is obtained from them by diſtillation, in which their activity is concentrated; and they are not unfrequently uſed externally, giving name both to a plaſter and cataplaſm.

CUPRUM. (*Lond. Dub. Ed.*)

Copper.

COPPER is found in many countries,

a. In its metallic ſtate:

1. Cryſtallized.
2. Alloyed with arſenic and iron.
3. Sulphuretted.

b. Oxidized:

4. Uncombined.
5. Combined with carbonic acid.
6. ——————— ſulphuric acid.
7. ——————— arſenic acid.

The general properties of copper have been already (158.) enumerated.

Copper has a more perceptible ſmell and taſte than almoſt any other metal. Its effects when taken into the ſtomach are highly deleterious, and often fatal. It particularly affects the primæ viæ, exciting exceſſive nauſea, vomiting, colic pains, and purging, ſometimes of blood, or, though more rarely, obſtinate conſtipation. It alſo produces agitation of the mind, headach, vertigo, delirium; renders the pulſe ſmall and weak, the countenance pale, and cauſes fainting, convulſions, paralyſis, and apoplexy. When any of theſe ſymptoms occur, we muſt endeavour to obviate the action of the poiſon by large and copious draughts of oily and mucilaginous liquors, or to deſtroy its virulence by ſolutions of potaſs, or ſulphuret of potaſs.

Poiſoning from copper is moſt commonly the effect of ignorance, accident, or careleſſneſs; and too many examples are met with of fatal conſequences enſuing upon eating food which had been

been dreſſed in copper veſſels not well cleaned from the ruſt which they had contracted by lying in the air; or pickles, to which a beautiful green colour had been given, according to the murderous directions of the moſt popular cookery books, by boiling them with halfpence, or allowing them to ſtand in a braſs pan until a ſufficient quantity of verdegris was formed.

Great care ought to be taken that acid liquors, or even water, deſigned for internal uſe, be not ſuffered to ſtand long in veſſels made of copper; otherwiſe they will diſſolve ſo much of the metal as will give them dangerous properties. But the radical preventive of theſe accidents is to baniſh copper utenſils from the kitchen and laboratory. The preſence of copper in any ſuſpected liquor is eaſily detected by inſerting into it a piece of poliſhed ſteel, which will ſoon be coated with copper, or by dropping into it ſome carbonate of ammonia, which will produce a beautiful blue colour if any copper be preſent.

But although copper be thus dangerous, ſome preparations of it are in certain caſes uſed with great advantage both externally and internally.

The chief of theſe are,

1. The ſub-acetite of copper.
2. The ſulphate of copper.
3. The ſub-ſulphate of copper and ammonia.
4. The muriate of copper and ammonia.
5. A ſolution of the ſulphate of copper, and ſuper-ſulphate of alumina in ſulphuric acid.

As the two firſt of theſe are never prepared by the apothecary, but bought by him from the manufacturer, they are inſerted in the liſt of Materia Medica.

SUB-ACETIS CUPRI. (*Ed.*)
Ærugo. (*Lond. Dub.*)
Sub-acetite of Copper. Verdegris.

THE preparation of this ſubſtance was almoſt confined to Montpelier in France, owing chiefly to an excellent regulation which exiſted, that no verdegris could be ſold until it had been examined and found of ſufficiently good quality. For ſince that regulation has been aboliſhed, Chaptal informs us, that ſo many abuſes have crept into the manufacture, that the Montpelier verdegris has loſt its decided ſuperiority of character. It is prepared by ſtratifying copper plates with the huſks and ſtalks of the grape, which have been made to ferment after the wine has been expreſſed from them. In from ten to twenty days, when the huſks become white, the plates of copper are taken out, and their ſurfaces are found to be covered with detached and ſilky cryſtals. They are now placed on edge, with their ſurfaces in contact, in the corner of a cellar, and alternately dipt in water, and replaced to dry every ſeven or eight days, for ſix or eight times. By this management, the plates ſwell, and are every where covered with a coat of verdegris, which is eaſily ſeparated with a knife. In this ſtate it is only a paſte, and is ſold by the manufacturers to commiſſioners, who beat it well with wooden mallets, and pack it up in bags of white leather, a foot high and ten inches wide, in which it is dried by expoſing it to the air and ſun, until the loaf of verdegris cannot be pierced with the point of a knife.

Sub-acetite of copper ſhould be of a blueiſh-green colour, dry and difficult to break, and ſhould neither deliqueſce, have a ſalt taſte, contain any black or white ſpots, nor be adulterated with earth or gypſum. Its purity may be tried by diluted ſulphuric acid, in which the ſub-acetite diſſolves entirely, and the impurities remain behind.

Verdegris, as it comes to us, is generally mingled with ſtalks of the grape; they may be ſeparated, in pulverization, by diſcontinuing the operation as ſoon as what remains ſeems to be almoſt entirely compoſed of them.

Verdegris is never or rarely uſed internally. Some writers highly extol it as an emetic, and ſay, that a grain or two act as ſoon as received into the ſtomach; but its uſe has been too often followed by dangerous conſequences to allow of its employment. Verdegris applied externally, proves a gentle detergent and eſcharotic, and is employed to deſtroy callous edges, or fungous fleſh in wounds. It is alſo advantageouſly applied to ſcorbutic ulcers of the mouth, tongue, or fauces, and deſerves to be carefully tried in cancerous ſores. With theſe intentions it is an ingredient in different officinal compoſitions.

Sulphas Cupri. (*Ed.*)
Cuprum vitriolatum (*Dub.*) *Vitriolum cæruleum* (*Lond.*)
Sulphate of copper. Blue vitriol.

This metallic ſalt is rarely formed by combining directly its component parts; but it is obtained, either by evaporating mineral waters which contain it, or by acidifying native ſulphuretted copper, by expoſing it to the action of air and moiſture, or by burning its ſulphur.

When pure it has a deep blue colour, and is cryſtallized generally in long rhomboids. It effloreſces ſlightly in the air, is ſoluble in four parts of water at 60°, and in two at 212°, and is inſoluble in alcohol. By heat it loſes, firſt its water of cryſtallization, and afterwards all its acid. It is decompoſed by the alkalies and earths, and ſome of the metals, the alkaline carbonates, borates and phoſphates, and ſome metallic ſalts.

It

It is compofed of,

Copper,	24	42 hydro-oxide of copper.	
Oxygen,	8		
Water,	10		
		33	fulphuric acid.
		25	water of cryftallization.
		100	

The fulphate of copper has a ftrong, ftyptic, metallic tafte, and is chiefly ufed externally as an efcharotic for deftroying warts, callous edges, and fungous excrefcences, as a ftimulant application to ill-conditioned ulcers, and as a ftyptic to bleeding furfaces. Taken internally, it operates, in very fmall dofes, as a very powerful emetic. It has, however, been exhibited in incipient phthifis pulmonalis, intermittent fever, and epilepfy; but its ufe is not free from danger.

CURCUMA LONGA.

Curcuma. Radix. (*Lond.*)

Turmeric. The root.

Willd. g. 11. *fp.* 2. *Monandria Monogynia.*—Nat. ord. *Scitamineæ.*

Turmeric is a perennial plant, a native of the Eaft Indies. The roots are tuberous, knotty, and long, wrinkled, externally of a pale yellow colour, and internally of a fhining faffron brown. They have a weak aromatic fmell, and a flightly bitter aromatic tafte. They contain a very little effential oil, but their chief conftituent may be extracted by water, and is an aromatic bitter.

Turmeric, when taken internally, tinges the urine of a deep yellow colour, and acts as a gentle ftimulant. It has been celebrated in difeafes of the liver, jaundice, cachexy, dropfy, intermittent fevers, &c. But its internal ufe in this country is almoft confined to its being a principal ingredient in the compofition of curry powder, in which form it is ufed in immenfe quantities in the Eaft Indies. It is alfo a valuable dye-ftuff, and an excellent chemical teft of the prefence of uncombined alkalies; for the yellow colour of turmeric is changed by them to a reddifh brown.

CYDONIA MALUS. (*Lond.*) See Pyrus.

CYNARA SCOLYMUS.

Cinara. Folium. (*Lond.*) *Cinara Scolymus. Folia.* (*Ed.*) *Cinara Hortenfis. Folia.* (*Dub.*)

Artichoke. The leaves.

Syngenefia Polygamia æqualis.—Nat. ord. *Compofitæ capitatæ.*

The artichoke is a perennial plant, indigenous in the fouth of Europe, but very frequently cultivated in our gardens for culinary purpofes.

The leaves are bitter, and afford by expreſſion a conſiderable quantity of juice, which is ſaid to be diuretic, and to have been ſucceſsfully uſed in dropſy.

CYNOSBATUS (*Lond.*) Sea ROSA CANINA.

DAPHNE MEZEREUM. *Radicis Cortex.* (*Ed.*)

Mezereum. Radicis Cortex. (*Lond.*) *Mezereon. Radix, Cortex.* (*Dub.*)

Mezereon, or ſpurge laurel. The bark of the root.

Willd. g. 773. *ſp.* 1. *Octandria Monogynia.*—Nat. ord. *Veprecule.*

MEZEREON is a ſhrub which grows in woody ſituations in the northern parts of Europe, and is admitted into our gardens from its flowering in winter. The bark, which is taken from the trunk, larger branches, and root, is thin, ſtriped reddiſh, commonly covered with a brown cuticle, has no ſmell, and when chewed excites an inſupportable ſenſation of burning in the mouth and throat. When applied to the ſkin in its recent ſtate, or infuſed in vinegar, it raiſes bliſters.

The root was long uſed in the Liſbon diet-drink, for venereal complaints, particularly nodes and other ſymptoms reſiſting the uſe of mercury. The bark of the root contains moſt acrimony, though ſome prefer the woody part. Mezereon has alſo been uſed with good effects in tumours and cutaneous eruptions not venereal.

Dr Cullen ſays that it acts upon the urine, ſometimes giving it a filamentous appearance, and upon the perſpiration, without diminiſhing the ſtrength remarkably; and that in irritable habits it quickens the pulſe, and increaſes the heat of the whole body. But Mr Pearſon of the Lock Hoſpital ſays, that excepting a caſe or two of lepra, in which a decoction of this plant conferred temporary benefit, he very ſeldom found it poſſeſſed of medicinal virtues, either in ſyphilis, or in the ſequelæ of that diſeaſe. In ſcrofula, or in cutaneous affections, it is employed chiefly under the form of decoction; and it enters the decoctum ſarſaparillæ compoſitum of the London College; but it has alſo been uſed in powder, combined with ſome inactive one, as that of liquorice root. It is apt to occaſion vomiting and purging; ſo muſt be begun in grain-doſes, and gradually increaſed. It is often combined with mercury.

The berries are ſtill more acrid than the bark, and they have even been known to produce fatal effects on children, who have been tempted by their beauty to eat them. It is ſaid that they are ſometimes infuſed in vinegar, to make it more pungent, and appear ſtronger.

DATURA STRAMONIUM. *Herba.* (*Ed.*)
Stramonium officinale.
Thorn-apple. The plant.
Willd. g. 377. *ſp.* 2. *Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

The thorn-apple is an annual plant, a native of America, but now growing wild on dry hills and uncultivated places in England and other parts of Europe. The leaves are dark green, ſeſſile, large, egg-ſhaped, pointed, angular, and deeply indented, of a diſagreeable ſmell and nauſeous taſte. Every part of the plant is a ſtrong narcotic poiſon, producing vertigo, torpor, death. The beſt antidote to its effects is ſaid to be vinegar.

Dr Störk firſt tried it as a remedy in mania and melancholy with conſiderable ſucceſs. Several caſes of the ſame diſeaſes were alſo cured or relieved by it, under the direction of different Swediſh phyſicians; and although in other experiments it frequently failed, we think that it deſerves the attention of practitioners, and well merits a trial, in affections often incurable by other means.

Beſides maniacal caſes, the ſtramonium has been alſo employed, and ſometimes with advantage, in convulſive and epileptic affections. It is not only taken internally, but has alſo been uſed externally. An ointment prepared from the leaves of the ſtramonium has been ſaid to give eaſe in external inflammations and hæmorrhoids.

The inſpiſſated juice of the leaves has been commonly uſed, but its exhibition requires the greateſt caution. At firſt, one-fourth of a grain is a ſufficient doſe.

The powder of the leaves or ſeeds promiſes to furniſh a more certain or convenient formula than the inſpiſſated juice.

DAUCUS CAROTA. *Semen.* (*Ed.*)
Daucus ſylveſtris. *Semen.* (*Lond. Dub.*)
Wild Carrot. The ſeed.
Willd. g. 530. *ſp.* 1. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

This is a biennial plant, which grows wild in Britain, and is cultivated in great quantities as an article of food. The ſeeds, eſpecially of the wild variety, have a moderately warm pungent taſte, and an agreeable aromatic ſmell. They are carminative, and are ſaid to be diuretic. The roots, eſpecially of the cultivated variety, contain much mucilaginous and ſaccharine matter, and are therefore highly nutritious and emollient. When beaten to a pulp, they form an excellent application to carcinomatous and ill-conditioned ulcers, allaying the pain, checking the ſuppuration and fetid ſmell, and ſoftening the callous edges.

DELPHINIUM STAPHISAGRIA.
Staphiſagria. *Semen.* (*Lond. Dub.*)
Staveſacre. The ſeed.

Willd.

Willd. g. 1061. *ſp.* 13. *Polyandria Trigynia.*—Nat. ord. *Multiſiliquæ.*

STAVESACRE is a biennial plant, a native of the ſouth of Europe. The ſeeds are uſually brought from Italy. They are large and rough, of an irregular triangular figure, of a blackiſh colour on the outſide, and yellowiſh or whitiſh within; they have a diſagreeable ſmell, and a very nauſeous, bitteriſh, burning taſte. Staveſacre was employed by the ancients as a cathartic; but it operates with ſo much violence, both upwards and downwards, that its internal uſe has been, among the generality of practitioners, for ſome time laid aſide. It is chiefly employed in external applications for ſome kinds of cutaneous eruptions, and for deſtroying lice and other inſects; inſomuch, that from this virtue it has received its name, in different languages.

DIANTHUS CARYOPHYLLUS. *Flores.* (*Ed.*)
Caryophillum rubrum. *Flos.* (*Lond. Dub.*)
Clove Gilly-flowers. The flowers.
Willd. g. 893. *ſp.* 9. *Decandria Digynia.*—Nat. ord. *Caryophilleæ.*

THIS ſpecies of dianthus is a native of Italy, and is perennial. By cultivation, its varieties have increaſed to a very great number, and they form one of the greateſt ornaments of our gardens. Moſt of theſe are termed Carnations, but the variety which is officinal ſurpaſſes all the others in the richneſs of its ſmell, and is alſo diſtinguiſhed by its colour, being of an uniform deep crimſon. Their only uſe in pharmacy is to give a pleaſant flavour and beautiful colour to an officinal ſyrup.

DIGITALIS PURPUREA. *Folia.* (*Ed.*)
Digitalis. *Folium.* (*Lond. Dub.*)
Foxglove. The leaves.
Willd. g. 1155. *ſp.* 1. *Didynamia Angioſpermia.*—Nat. ord. *Solanaceæ.*

THIS is an indigenous biennial plant, very common on hedge-banks, and ſides of hills, in dry, gravelly, or ſandy ſoils, and the beauty of its appearance has gained it a place in our gardens and ſhrubberies. The leaves are large, oblong, egg-ſhaped, ſoft, covered with hairs, and ſerrated. They have a bitter, very nauſeous taſte, with ſome acrimony.

Its effects when ſwallowed are,

1. To diminiſh the frequency of the pulſe.
2. To diminiſh the irritability of the ſyſtem.
3. To increaſe the action of the abſorbents.
4. To increaſe the diſcharge by urine.

In exceſſive doſes, it produces vomiting, purging, dimneſs of ſight, vertigo, delirium, hiccough, convulſions, collapſe, death. For theſe ſymptoms the beſt remedies are cordials and ſtimulants.

Internally

Internally, digitalis has been recommended,

1. In inflammatory diseases, from its very remarkable power of diminishing the velocity of the circulation.

2. In active hæmorrhagies, in phthisis.

3. In some spasmodic affections, as in spasmodic asthma, palpitation, &c.

4. In mania from effusion on the brain.

5. In anasarcous and dropsical effusions.

6. In scrofulous tumours.

7. In aneurism of the aorta, we have seen it alleviate the most distressing symptoms.

Externally it has been applied to scrofulous tumours.

It may be exhibited,

1. In substance, either by itself, or conjoined with some aromatic, or made into pills with soap or gum ammoniac. Withering directs the leaves to be gathered after the flowering stem has shot up, and about the time when the blossoms are coming forth. He rejects the leaf-stalk, and middle rib of the leaves, and dries the remaining part either in sunshine or before the fire. In this state they are easily reduced to a beautiful green powder, of which we may give at first one grain twice a-day, and gradually increase the dose until it act upon the kidneys, stomach, pulse, and bowels, when its use must be laid aside or suspended.

2. In infusion. The same author directs a drachm of the dried leaves to be infused for four hours in eight ounces of boiling water, and that there be added to the strained liquor an ounce of any spirituous water, for its preservation. Half an ounce or an ounce of this infusion may be given twice a-day.

3. In decoction. Darwin directs that four ounces of the fresh leaves be boiled from two pounds of water to one, and half an ounce of the strained decoction be taken every two hours, for four or more doses.

4. In tincture. Put one ounce of the dried leaves coarsely powdered into four ounces of diluted alcohol; let the mixture stand by the fire-side twenty-four hours, frequently shaking the bottle; and the saturated tincture, as Darwin calls it, must then be separated from the residuum by straining or decantation. Twenty drops of this tincture may be taken twice or thrice a-day. The Edinburgh College use eight ounces of diluted alcohol to one of the powder, but let it digest seven days.

5. The expressed juice and extract are not proper forms of exhibiting this very active remedy.

When the digitalis is disposed to excite looseness, opium may be advantageously conjoined with it; and when the bowels are tardy, jalap may be given at the same time, without interfering with its diuretic effects. During its operation in this way, the patient should drink very freely.

DOLICHOS

DOLICHOS PRURIENS. *Pubes leguminis rigida.* (*Ed.*)
Dolichos. Setæ leguminum. (*Dub.*)
Cow-itch. The ſtiff hairs which cover the pods.
Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

The dolichos is a climbing plant growing in great abundance in warm climates, particularly in the Weſt Indies. The pods are about four inches long, round, and as thick as a man's finger. The outſide of the pods is thickly beſet with ſtiff brown hairs, which, when applied to the ſkin, occaſion a moſt intolerable itching. The ripe pods are dipped in ſyrup, which is again ſcraped off with the knife. When the ſyrup is rendered by the hairs as thick as honey, it is fit for uſe. It acts mechanically as an anthelmintic, occaſions no uneaſineſs in the primæ viæ, which are defended by mucus, and may be ſafely taken from a tea-ſpoonful to a table-ſpoonful in the morning faſting. The worms are ſaid to appear with the ſecond or third doſe; and by means of a purge in ſome caſes, the ſtools have conſiſted entirely of worms.

DORSTENIA CONTRAJERVA. *Radix.* (*Ed.*)
Contrayerva. Radix. (*Dub. Lond.*)
Contrayerva. The root.
Willd. g. 244. *ſp.* 5. *Tetrandria Monogynia.*—Nat. ord. *Scabridæ.*

This plant is perennial, and grows in South America, and ſome of the Caribæan iſlands.

The root is knotty, an inch or two long, and about half an inch thick, of a reddiſh brown colour externally, and pale within: long, rough, ſlender fibres ſhoot out from all ſides of it, and are generally loaded with ſmall round knots. It has a peculiar kind of aromatic ſmell, and a ſomewhat aſtringent, warm, bitteriſh taſte, with a light and ſweetiſh kind of acrimony, when long chewed: the fibres have little taſte or ſmell; the tuberous part, therefore, ſhould be alone choſen.

This root contains ſo much mucilage, that a decoction of it will not paſs through the filter. Alcohol does not extract half as much as water, but the ſenſible qualities of the alcoholic extract are ſtronger. Neither of them are blackened by ſulphate of iron.

Contrayerva is a gentle ſtimulant and diaphoretic, and is ſometimes given in exanthematous diſeaſes, typhus, and dyſentery. Its doſe is about half a drachm.

DULCAMARA. (*Dub.*) See Solanum.

ELEMI. (*Lond. Dub.*) See Amyris.

ENULA CAMPANA. (*Lond. Dub.*) See Inula.

ERYNGIUM

ERYNGIUM MARITIMUM.

Eryngium. Radix. (*Lond. Dub.*)

Eryngo. The root.

Willd. g. 518. *sp.* 6. *Pentandria Monogynia.*—Nat. ord. *Umbellatæ.*

This plant grows plentifully on ſome of our ſandy and gravelly ſhores: the roots are ſlender, and very long; of a pleaſant ſweetiſh taſte, which, on chewing them for ſome time, is followed by a light degree of aromatic warmth and acrimony. They are accounted aperient and diuretic, and have alſo been celebrated as aphrodiſiac; their virtues, however, are too weak to admit them under the head of medicines.

EUGENIA CARYOPHYLLATA.

Caryophyllus Aromaticus. Floris germen, et oleum ejus volatile. (*Ed.*) *Caryophylla aromatica, et oleum eorundem eſſentiale.* (*Dub.*) *Caryophyllus aromatica. Pericarpium immaturum, et oleum ejus eſſentiale.* (*Lond.*)

The clove tree. The flower-bud and its eſſential oil.

Willd. g. 972. *sp.* 24. *Icoſandria Monogynia.*—Nat. ord. *Heſperideæ.*

This is a beautiful tall tree, a native of the Molucca Iſlands. The Dutch, from the deſire of monopolizing the valuable ſpice produced by it, deſtroyed all the trees except in Amboyna, where it is carefully cultivated. But their ſcheme has been fruſtrated, and the clove is now thriving in the Iſle of France and other places. Every part of this tree is highly aromatic, but eſpecially the leaf-ſtalk. Cloves are the flower-buds, which are gathered in October and November, before they open, and when they are ſtill green, and which are expoſed to ſmoke for ſome days, and then dried in the ſun.

Cloves have ſomewhat the form of a nail, conſiſting of a globular head, formed of the four petals of the corolla, and four leaves of the calyx not yet expanded; but this part is often wanting, being eaſily broken off; and a germen ſituated below, nearly round, but ſomewhat narrower towards the bottom; ſcarcely an inch in length, and covered with another thicker calyx, divided above into four parts. Their colour ſhould be of a deep brown, their ſmell ſtrong, peculiar, and grateful; their taſte acrid, aromatic, and permanent. The beſt cloves are alſo large, heavy, brittle, and when preſſed with the nail, exude a little oil. When light, ſoft, wrinkled, dirty, pale, and without ſmell or taſte, they are to be rejected.

The Dutch, from whom we have this ſpice, frequently mix it with cloves from which the oil has been diſtilled. Theſe, though in time they regain from the others a conſiderable ſhare both of

taſte

taſte and ſmell, are eaſily diſtinguiſhable by their weaker flavour and lighter colour.

The characteriſtic conſtituents of cloves are an eſſential oil, and a reſinous matter, in which their acrimony principally reſides.

Cloves, conſidered as medicines, are very hot ſtimulating aromatics, and poſſeſs in an eminent degree the general virtues of ſubſtances of this claſs.

The eſſential oil of cloves is obtained by diſtillation. It has a ſtraw colour, is tranſparent, and ſinks in water. It is alſo got from the Dutch, who commonly adulterate it with tincture of cloves, which gives it a brown colour, and renders its taſte more pungent and acrid.

FERRUM.

IRON is the moſt common of all metals. It ſeems even to be a conſtituent of organic ſubſtances, and is the only metal which, when taken into the body, exerts no deleterious action upon it. The numerous ores of it which are found in every part of the globe, may be reduced to the following genera.

1. Native iron. Immenſe iſolated maſſes of this have been found in Siberia and in South America. Their origin is ſtill perfectly problematical.
2. Carburetted iron. Plumbago.
3. Sulphuretted iron. Pyrites.
4. Oxidized iron.
    - *a.* Leſs oxidized. Magnetic iron ore; colour black or grey.
    - *b.* More oxidized. Not magnetic; colour red or brown.
    - *c.* Carbonated.
    - *d.* Arſeniated.
    - *e.* Tungſtated.

The properties of iron, when obtained from any of theſe ores by the uſual proceſſes of fuſion, &c. have been already (159.) deſcribed. As its mechanical diviſion is extremely difficult, it is directed to be kept in the ſhops in the ſtate of filings or wire, and the ſcales of black oxide, which are found around the ſmith's anvil. Soft malleable iron is the only kind fit for internal uſe, as ſteel and caſt-iron always contain impurities, and often arſenic.

The general virtues of this metal, and the ſeveral preparations of it, are, to conſtringe the fibres, to quicken the circulation, to promote the deficient ſecretions in the remoter parts, and at the ſame time to repreſs inordinate diſcharges into the inteſtinal tube. After the uſe of them, if they take effect, the pulſe is very ſenſibly raiſed; the colour of the face, though before pale, changes to a florid red; the alvine, urinary, and cuticular excretions, are increaſed. Fetid eructations, and the fæces voided of a black colour, are marks of their taking due effect.

When

When given improperly or to excefs, iron produces headach, anxiety, heats the body, and often caufes hæmorrhagies, or even vomiting, pains in the ftomach, and fpafms and pains of the bowels.

Iron is given in moft cafes of debility and relaxation,

1. In paffive hæmorrhagies.
2. In dyfpepfia, hyfteria, and chlorofis.
3. In moft of the cachexiæ.
4. In general debility produced by difeafe, or exceffive hæmorrhage.

Where either a preternatural difcharge, or fuppreffion of natural fecretions, proceed from a languor and fluggifhnefs of the fluids, and weaknefs of the folids; this metal, by increafing the motion of the former, and the ftrength of the latter, will fupprefs the flux, or remove the fuppreffion; but where the circulation is already too quick, the folids too tenfe and rigid, where there is any ftricture or fpafmodic contraction of the veffels; iron, and all the preparations of it, will aggravate both diftempers.

Iron is prefcribed

I. In its metallic ftate. *Limatura ferri.*

II. Oxidized.

a. Lefs oxidized. *Squamæ ferri. Ferri oxidum nigrum.*

1. Combined with excefs of carbonic acid, as in the chalybeate mineral waters.
2. ———————— fulphuric acid. *Sulphas ferri.*
3. ———————— tartrite of potafs. *Tartris ferri et potaffæ.*

b. More oxidized. *Ferri oxidum rubrum.*

1. Combined with carbonic acid. *Carbonas ferri ruber.*
2. ———————— muriatic acid. *Murias ferri ferrugineus.*
3. ———————— muriate of ammonia. *Murias ammoniæ et ferri.*

FERRUM. (*Lond.*) *Ferri limaturæ.* (*Ed.*) *Ferrum in fila deductum.* (*Dub.*)

Iron. Iron-filings. Iron-wire.

IRON probably has no action on the body when taken into the ftomach, unlefs it be oxidized. But during its oxidizement, hydrogen gas is evolved; and accordingly we find that fetid eructations are confidered as a proof of the medicine having taken effect. It can only be exhibited internally in the ftate of filings, which may be given in dofes of from five to twenty grains, either in the form of powder, with fome aromatic, or made into an electuary or bolus or pills with any bitter extract. Iron-wire is to be preferred for pharmaceutical preparations, both becaufe it is

the

the moſt convenient form, and becauſe it is always made of the pureſt iron.

FERRI OXIDUM NIGRUM.
Ferri ſquamæ. (*Ed.*)
The ſcales of iron.

WHEN iron is heated to redneſs in the ſmith's forge, to render it more malleable, its ſurface becomes oxidized by the action of the atmoſpheric air; and as the oxide formed does not adhere to the iron, it is eaſily ſeparated by percuſſion on the anvil, and flies off in the ſtate of ſparks, which, on cooling, conſtitute the ſcales of iron. In theſe the iron is oxidized to that degree in which it is ſoluble in acids, without the production of hydrogen gas; therefore, when taken into the ſtomach, they do not produce the diſtention and flatulence occaſioned by the uſe of the filings.

SULPHAS FERRI.
Ferrum vitriolatum. (*Dub.*)
Sulphate of iron. Green vitriol. Copperas.

THE ſulphate of iron of commerce is commonly obtained by the ſpontaneous oxidizement of ſulphuretted iron, and ſubſequent lixiviation and cryſtallization. It is never pure, and often contains zinc or copper. The copper may be ſeparated by adding ſome metallic iron to the ſolution, but we have no means of ſeparating the zinc; therefore we muſt prepare it by diſſolving iron in diluted ſulphuric acid, in order to obtain it in a ſtate of purity. Its cryſtals are tranſparent rhomboidal priſms, of a fine green colour. They are ſoluble in two parts of cold, and in leſs than their own weight of boiling water. They are inſoluble in alcohol.

They are compoſed of

$$\left.\begin{array}{ll}\text{Black oxide of iron,} & 28\\ \text{Water of compoſition,} & 8\end{array}\right\}\ 36\ \text{Green hydro-oxide of iron.}$$

26 Sulphuric acid.
38 Water of cryſtallization.
———
100

Green ſulphate of iron is decompoſed by all the earths and alkalies, and by thoſe ſalts whoſe baſe forms an inſoluble compound with ſulphuric acid. It is alſo decompoſed by expoſure to the air, eſpecially when in ſolution, and by all ſubſtances which part readily with their oxygen. The oxide of iron abſorbs oxygen, and paſſes to the ſtate of red oxide, which forms a red ſulphate, poſſeſſing properties very different from thoſe of the green ſulphate.

Taken into the ſtomach, the green ſulphate is apt to excite pain in the ſtomach, and ſpaſms in the bowels, and in large doſes it

cauſes

causes vomiting. In small doses, however, of from one to three grains, it is sometimes given as a tonic, astringent, or anthelmintic.

FERULA ASSA FOETIDA. *Gummi-resina.* (*Ed.*)

Assa fœtida. Gummi-resina. (*Lond. Dub.*)

Assa fœtida. A gum-resin.

Willd. g. 539. *sp.* 11.—*Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

THE plant which furnishes assa fœtida is perennial, and a native of Persia. It has, however, borne fertile seeds in the open air in the Botanical Garden of Edinburgh. The gum-resin is procured from the roots of plants which are at least four years old. When the leaves begin to decay, the stalk is twisted off, and the earth removed from about their large tapering roots. The top of the root is sometimes afterwards cut off transversely; and forty-eight hours afterwards the juice, which has exuded, is scraped off, and a second transverse section is made. This operation is repeated until the root be entirely exhausted of juice. After being scraped off, the juice is exposed to the sun to harden.

It is brought to us in large irregular masses, composed of various little shining lumps or grains, which are partly of a whitish colour, partly reddish, and partly of a violet hue. Those masses are accounted the best which are clear, of a pale reddish colour, and variegated with a great number of elegant white tears.

This drug has a strong fetid smell, somewhat like that of garlic; and a bitter, acrid, biting taste. It loses some of its smell and strength by keeping; a circumstance to be particularly regarded in its exhibition.

Assa fœtida contains more gum than resin, but its predominant constituent is essential oil.

It is the most powerful of all the fetid gums, and is a most valuable remedy. It acts as a stimulant, antispasmodic, expectorant, emmenagogue and anthelmintic. Its action is quick and penetrating.

It is often serviceable,

1. In croup.
2. In dyspepsia, amenorrhœa and chlorosis.
3. In asthma, dyspnœa and hysteria.
4. In tympanites and worms.

It is exhibited,

1. In substance, in the form of pills; in doses of from five to twenty grains, either alone, or combined with bitter extracts or purgatives.
2. Dissolved in some simple distilled water.
3. Dissolved in alcohol.
4. In the form of clyster, to the extent of about two drachms.

FICUS CARICA. *Fructus.* (*Ed.*)
Carica. Fructus. (*Lond. Dub.*)
The fig-tree. The fruit.
Polygamia Triœcia.—Nat. ord. *Scabridæ.*

THIS tree is probably a native of Asia, but grows plentifully in the south of Europe. As the fruit is very pulpy, it is dried when it is to be preserved. To this country they are chiefly brought from the Levant. They consist almost entirely of sugar and mucilage, and are therefore demulcent. They are also esteemed by some as suppuratives; and they are sometimes applied by themselves, heated as warm as they can easily be borne, to promote the suppuration of a phlegmon, particularly when so situated that other cataplasms cannot easily be kept applied.

FILIX MAS. (*Lond. Dub.*) See POLYPODIUM.

FOENICULUM DULCE. (*Lond. Dub.*) See ANETHUM.

FOENUM GRÆCUM. (*Lond.*) See TRIGONELLA.

FRAXINUS ORNUS. *Succus concretus.* (*Ed.*)
Manna. (*Lond. Dub.*)
Manna-ash. The concrete juice. Manna.
Polygamia Diœcia.—Nat. ord. *Ascyroideæ.*

MANNA is obtained from other species of fraxinus besides the ornus, and especially from the rotundifolia. It is principally collected in Calabria, Apulia and Sicily. In the warmest season of the year, from the middle of June to the end of July, a clear juice exudes from the stem and branches of these trees, which, when naturally concreted on the plants and scraped off, is called Manna in the tear; but if allowed to exude on straws, or chips of wood fastened to the tree, it is called Canulated or flaky manna. The common, or fat manna, is got by incisions made after the spontaneous exudation is over, and is in larger masses and of a redder colour. The best Calabrian manna is in oblong, light, friable pieces or flakes, of a whitish or pale yellow colour, and somewhat transparent. The inferior kinds are moist, unctuous, and dark coloured. Manna is said to be sometimes counterfeited by a composition of sugar and honey, mixed with a little scammony: there is also a factitious manna, which is white and dry, said to be composed of sugar, manna, and some purgative ingredient, boiled to a proper consistence: this may be distinguished by its weight, solidity, untransparent whiteness, and by its taste, which is different from that of manna.

Manna is a mild, agreeable laxative, and may be given with safety to children and pregnant women: nevertheless in some particular constitutions, it acts very unkindly, producing flatulency and diſtention of the viſcera; theſe inconveniences may be prevented by the addition of any grateful warm aromatic. Manna operates ſo weakly as not to produce the full effect of a cathartic, unleſs taken in large doſes; and hence it is rarely given with this intention by itſelf. It may be commodiouſly diſſolved in the purging mineral waters, or joined to the cathartic ſalts, ſenna, rhubarb, or the like.

FULIGO LIGNI COMBUSTI. (*Dub.*)
Wood-ſoot.

THIS ſubſtance is inflammable, of a ſhining black colour, a diſagreeable ſmell, and an empyreumatic, bitter nauſeous taſte.

It varies ſomewhat according to the nature of the ſubſtance, and the ſtrength of the fire employed in its production. But it conſiſts principally of charcoal, empyreumatic oil, and acetous acid. It ſometimes contains ammonia, and the other alkalies and earths. Its medical properties are to be aſcribed ſolely to the empyreumatic oil it contains.

FUMARIA OFFICINALIS.
Fumaria. Herba. (*Dub.*)
Common fumitory. The plant.
Diadelphia Hexandria.—Nat. ord. *Lomentaceæ.*

THIS is a common annual weed in ſhady cultivated grounds. It is very juicy, of a bitter taſte, without any remarkable ſmell. The alleged medical effects of this herb are, to ſtrengthen the tone of the bowels, gently looſen the belly, and promote the urinary and other natural ſecretions. It is principally recommended in melancholic, ſcorbutic, and cutaneous diſorders.

GALBANUM. (*Lond. Dub.*) See BUBON.

GALLA. (*Lond. Dub.*) See QUERCUS CERRIS.

GAMBOGIA. (*Ed. Lond. Dub.*) See STALAGMITIS.

GENISTA. (*Lond. Dub.*) See SPARTIUM.

GENTIANA LUTEA. *Radix.* (*Ed.*)
Gentiana. Radix. (*Lond. Dub.*)
Gentian. The root.
Willd. g. 512. *ſp.* 1.—*Pentandria Digynia.*—Nat ord. *Rotaceæ.*

GENTIAN is a perennial plant, which grows upon the Alps, Pyrenees, Appenines and other mountainous ſituations in the temperate parts of Europe.

The roots are long, thick, externally of a brown colour and wrinkled; internally ſpongy and of a yellow colour, without any remarkable ſmell, but ſurpaſſing in bitterneſs all other European vegetables. Alcohol diſſolves only the bitter extractive, water both the extractive and mucilage.

Gentian poſſeſſes the general virtues of bitters in an eminent degree, and it is totally devoid of aſtringency. On dead animal matter it acts as an antiſeptic. Taken into the ſtomach, it proves a powerful tonic, and in large doſes it evacuates the inteſtines. It is uſeful in debility of the ſtomach, in general debility, and in gout. Combined with an aſtringent, it cures intermittents. Externally it is applied to putrid ulcers.

It is rarely given in ſubſtance, becauſe the heat neceſſary to be applied to render it pulverizable is ſaid to injure its virtues. It is therefore exhibited in infuſion, tincture or extract, all of which will be noticed hereafter.

GEOFFRÆA INERMIS. *Cortex.* (*Ed.*)
Geoffroea. Cortex. (*Dub.*)
Cabbage bark-tree. The bark.
Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

The bark of this tree, which grows in the low ſavannahs of Jamaica, is of a grey colour externally, but black and furrowed on the inſide. The powder looks like jalap, but is not ſo heavy. It has a mucilaginous and ſweetiſh taſte, and a diſagreeable ſmell. But its medical effects are much greater than its ſenſible qualities would lead us to expect.

It is given in caſes of worms, in form of powder, decoction, ſyrup, and extract. The decoction is preferred; and is made by ſlowly boiling an ounce of the freſh dried bark in a quart of water, till it aſſume the colour of Madeira wine. This ſweetened is the ſyrup; evaporated, it forms an extract. It commonly produces ſome ſickneſs and purging; ſometimes violent effects, as vomiting, delirium, and fever. Theſe laſt are ſaid to be owing to an over-doſe, or to drinking cold water; and are relieved by the uſe of warm water, caſtor oil, or a vegetable acid. It ſhould always be begun in ſmall doſes; and when properly and cautiouſly adminiſtered, it operates as a very powerful anthelmintic, particularly for the expulſion of the lumbrici, which are a very common cauſe of diſeaſe in the Weſt India iſlands; and there it is very frequently employed.

GINSENG. (*Lond.*) See Panax.

GLYCYRRHIZA GLABRA. *Radix. Extractum.* (*Ed.*)
Glycyrrhiza. Radix. (*Lond. Dub.*)
Liquorice. The root and the extract.
Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

Liquorice is a perennial plant, and a native of the ſouth of Europe, but it is cultivated in conſiderable quantities in England for

for medical purpofes; and the roots which are raifed in this country, are preferred to thofe imported from abroad, which are very frequently mouldy and fpoiled, which this root is extremely apt to be when not well preferved in a perfectly dry place. The roots are very long, about an inch thick, flexible, fibrous, externally of a brown colour, internally yellow, and, when frefh, juicy. Their tafte is very fweet, combined with a flight degree of bitter, when long kept in the mouth. They are prepared for ufe by peeling them, cutting away all the fibres and fpoiled or mouldy parts.

The powder of liquorice ufually fold is often mingled with flower, and perhaps alfo with fubftances not quite fo wholefome: the beft fort is of a brownifh yellow colour, the fine pale yellow being generally fophifticated, and it is of a very rich fweet tafte, much more agreeable than that of the frefh root. Its predominant conftituents are faccharine and mucilaginous matter. Its only action is, therefore, that of a mild demulcent, and as fuch it is frequently ufed in catarrh, and in fome ftomach-complaints, which feem to arife from a deficiency of the natural mucus, which fhould defend the ftomach againft the acrimony of the food, and the fluids fecreted into it.

On account of its bulk it is rarely exhibited in fubftance, but more frequently in infufion or decoction.

Extractum Glycyrrhizæ Glabræ. (*Ed.*)

As this extract is never prepared by the apothecary, but commonly imported from other countries, the Edinburgh College have inferted it in their lift of Materia Medica. It is imported in cylindrical rolls, covered with bay-leaves. It fhould be perfectly black, brittle when cold, and break with a fmooth and gloffy fracture, have a fweet tafte, without empyreuma, and be entirely foluble in water. It is prepared from the frefh roots by expreffion, decoction and infpiffation.

The beft foreign extract of liquorice is prepared in Catalonia, but it is not fo pure or fo agreeable as the refined liquorice fold in the fhops in fmall cylindrical pieces, not thicker than a goofe-quill.

The extract poffeffes the fame properties with the root, and is ufed for the formation of feveral kinds of troches.

GRANATUM. (*Lond. Dub.*) See Punica.

GRATIOLA OFFICINALIS. *Herba.* (*Ed.*)

Gratiola. Herba. (*Lond.*

Hedge-hyffop. The plant.

Willd. g. 49. *fp.* 1.—*Diandria Monogynia*—Nat. ord. *Perfonatæ.*

This is a perennial plant, a native of marſhy ſituations in the ſouth of Europe. It is gathered for uſe when in flower. It has no ſmell, but a very bitter ſomewhat nauſeous taſte. It is a draſtic purgative and emetic, and a very powerful anthelmintic, but its uſe requires caution. In ſubſtance it may be given to the extent of half a drachm, and in infuſion to three drachms.

GUAJACUM OFFICINALE. *Lignum, Gummi-reſina.* (*Ed.*) *Guaiacum. Lignum. Cortex. Gummi-reſina.* (*Lond.*) *Lignum. Gummi-reſina.* (*Dub.*)

Guaiac. The wood, bark and gum-reſin.

Willd. g. 819. *ſp.* 2.—*Decandria Monogynia.*—Nat. ord. *Gruinales.*

This tree is a native of the Weſt Indies, where it grows to a middling ſize. The wood is heavier than water, very hard, reſinous, and of a greeniſh-black colour. Its taſte is bitteriſh, and when kindled it gives out a pleaſant ſmell. It is brought either in pieces, which are ſometimes covered with a pale yellow alburnum, or already raſped, when by diviſion its colour appears greeniſh, brown or yellow. The bark is thin, of an aſh-grey or blackiſh colour, and apparently compoſed of ſeveral laminæ. It is leſs reſinous than the wood. The reſin exudes ſpontaneouſly in tears, but is principally obtained by ſawing the wood into billets about three feet long, which are then bored with an augre longitudinally. One end of theſe is laid upon a fire, ſo that a calabaſh may receive the melted reſin, which runs through the hole as the wood burns. It may be alſo obtained by boiling the chips or ſawings of the wood in water and muriate of ſoda. The reſin ſwims at the top, and may be ſkimmed off. This reſin has a browniſh yellow colour externally; when held againſt the light is tranſparent, breaks with a uniform ſmooth ſhining fracture, of a bluiſh-green colour, pulverizable, powder of a white colour, gradually becoming bluiſh-green, fuſible in a moderate heat, but not ſoftened by the heat of the fingers, ſoluble in alcohol, inſoluble in water, without proper ſmell or taſte, but when thrown on hot coals diffuſing an agreeable odour, and when ſwallowed in a ſtate of minute diviſion, cauſing an inſufferable burning and prickling in the throat. It therefore is not a gummy-reſin, but a pure reſin. It is ſometimes adulterated with colophony or common reſin, but the fraud is eaſily detected by the ſmell of turpentine which they emit when thrown on live coals.

Taken internally, guaiac commonly excites a ſenſe of warmth in the ſtomach, a dryneſs of the mouth, with thirſt. It increaſes the heat of the body, and quickens the circulation. If the patient be kept warm, it produces diaphoreſis; if expoſed freely to the air, an increaſed flow of urine. In large doſes it is purgative.

Guaiac

Guaiac is a uſeful remedy,

1. In rheumatiſm and gout.
2. In certain venereal ſymptoms, as in foul indolent ulcers, and a thickened ſtate of the ligaments or perioſteum, remaining after the body is reduced by a mercurial courſe. Guaiac will alſo ſuſpend the progreſs of ſome of the ſecondary ſymptoms, but it is totally incapable of eradicating the diſeaſe.
3. In cutaneous diſeaſes.
4. In ozæna and ſcrofulous affections of the membranes and ligaments.

The wood is always exhibited in decoction, from the reſinous nature of the active conſtituent of this ſubſtance. This cannot be a very active preparation, as the menſtruum is totally incapable of diſſolving, though it may ſuſpend a little of the reſin The decoction of an ounce may be drunk in cupfuls in the courſe of a day.

The reſin may be exhibited,

1. In ſubſtance, either made into pills, or ſuſpended in water in the form of an emulſion. In this way from 10 to 30 grains of the reſin may be taken in the day.
2. In ſolution; in alcohol. About half an ounce of the tincture, with three ounces of water, is a ſudorific doſe for an adult, if he attend to keeping himſelf warm.
3. Combined with an alkali.

GUMMI ARABICUM. (*Dub.*) See MIMOSA.

GUMMI TRAGACANTHA. (*Dub.*) See ASTRAGALUS.

HÆMATOXYLON CAMPECHIANUM. *Lignum.* (*Ed.*)
Hæmatoxylum. Lignum. (*Lond. Dub.*)
Logwood-tree. The wood.
Willd. g. 830. *ſp.* 1.—*Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

THIS tree was introduced from the Honduras into Jamaica, where it is now very common. The wood is firm, heavy, and of a dark red colour. Its taſte is aſtringent, with a perceptible degree of ſweetneſs. It is principally uſed as a dye-wood, but alſo with conſiderable advantage in medicine.

Its extract is a very powerful aſtringent, combined with mucilage, and perhaps ſugar; and is, therefore, uſeful in obſtinate diarrhœas, and in chronic dyſentery.

HELLEBORASTER. See HELLEBORUS FOETIDUS.

HELLEBORUS.

Willd. g 1089.—*Polyandria Polygynia.*—Nat. ord. *Multisiliquæ.*

Sp. 2. HELLEBORUS NIGER. *Radix.* (*Ed. Lond. Dub.*)
Melampodium.
Black Hellebore. The root.

THIS plant is perennial, and grows wild in the mountainous parts of Auſtria, and on the Pyrennees and Appenines: the ear linefs of its flowers, which ſometimes appear in December, has gained it a place in our gardens.

The roots conſiſt of a black furrowed roundiſh head, about the ſize of a nutmeg, from which ſhort articulated branches ariſe, ſending out numerous corrugated fibres, about the thickneſs of a ſtraw, from a ſpan to a foot in length, deep brown on the outſide, white, or yellowiſh-white within, and of an acrid, nauſeous and bitteriſh taſte, exciting a ſenſe of heat and numbneſs in the tongue, and of a nauſeous acrid ſmell. Theſe fibres only are uſed in medicine, and the head and decayed parts are rejected. For the roots of the real black hellebore, the roots of the Adonis vernalis, Trollius Europæus, Actæa ſpicata, Aſtrantia major, Helleborus viridis fœtidus, Veratrum album, and Aconitum neomontanum, are often ſubſtituted. The laſt is a moſt virulent poiſon, and may be diſtinguiſhed by its roots being fuſiform, or nearly globular, ſending out numerous very brittle fibres, of a greyiſh black or brown colour, as thick as a man's finger, and repeatedly divided. But the ſureſt way to avoid miſtakes, is by the apothecary cultivating the plant itſelf in his own garden.

In large doſes, hellebore is a draſtic purgative; in ſmaller doſes it is diuretic and emmenagogue. Its active conſtituent ſeems to be of a volatile nature; for it loſes its virtues by keeping, and water diſtilled from it has an acrid taſte.

It is principally uſed as a purgative in caſes of mania, melancholy, coma, dropſy, worms and pſora, and as an emmenagogue. But its uſe requires very great caution, for its effects are very uncertain, and affected by many circumſtances.

It is commonly exhibited in the form of extract, although its activity be much diſſipated by the preparation. An infuſion or tincture certainly promiſe to be medicines of more uniform powers. Willdenow ſays, that the black hellebore of the ancients is his fifth ſpecies, the Helleborus orientalis.

Sp. 6. HELLEBORUS FOETIDUS.
Helleboraſter. *Folium.* (*Lond.*)
Bears-foot. The leaves.

THIS ſpecies is native of England. It is perennial, and grows in ſhady places, and under hedges. The leaves have an acrid, bitter, nauſeous taſte, and unpleaſant ſmell, eſpecially when they

are

are fresh. When dried, they are frequently given as a domestic medicine to destroy worms; but they must be used sparingly, being so violent in their operation that instances of their fatal effects are recorded.

HORDEUM DISTICHON. *Semen omni cortice nudatum.* (*Ed.*)

Hordeum distichum. Semina. (*Dub.*) *Hordeum. Semen.* (*Lond.*)

Barley. The seed. Pearl barley.

Willd. g. 151. *sp.* 3. *Triandria Dygynia.*—Nat. ord. *Gramina.*

Barley is an annual plant, cultivated in almost every country of Europe. Linnæus says that it is a native of Tartary, but without adducing sufficient proof.

Pearl barley is prepared by grinding off the husk of rough barley, and forming the grain into little round granules, which appear of a kind of pearly whiteness. In this state barley consists almost solely of amylaceous matter, and when boiled forms an excellent article of nourishment; while a decoction of it, properly acidulated, is one of the best beverages in acute diseases.

HYDRARGYRUM. (*Dub.*)

Hydrargyrus. (*Lond. Ed.*)

Mercury. Quicksilver.

The general, chemical, and physical properties of this metal, have been already (165.) enumerated. We shall now treat of it more minutely, as forming an important article in the Materia Medica.

It is found,

I. In its metallic state:
- *a.* Uncombined.
- *b.* Alloyed with silver.
- *c.* Alloyed with copper.
- *d.* Combined with sulphur, (Cinnabar).
- *e* Combined with hydroguretted sulphur, (Æthiops minerale).

II. Oxidized:
- *a.* Combined with muriatic acid.
- *b.* ——————— sulphuric acid.

There are considerable mines of mercury in Hungary and in Spain; and what is employed in England is principally imported from the former country.

Mercury taken into the stomach in its metallic state has no action on the body, except what arises from its weight or bulk. It is not poisonous as was vulgarly supposed, but perfectly inert.

But in its various states of combination, it produces certain sensible effects. It quickens the circulation, and increases all the secretions

cretions and excretions. According to circumſtances, the habit of the body of the patient, the temperature in which he is kept, the nature of the preparation, and the quantity in which it is exhibited, its effects are indeed various; it ſometimes increaſes one ſecretion more particularly, ſometimes another, but its moſt characteriſtic effect is the increaſed flow of ſaliva, which it generally excites if given in ſufficient quantity. Its particular effects, and means of producing each of them, will be noticed hereafter.

From many motives, both laudable and culpable, mercury has been tortured into a greater variety of forms than any other article of the Materia Medica. Of theſe Swediaur has given a complete table in the late edition of his works on the venereal diſeaſe. It is too long for inſertion in this place: we ſhall therefore give a ſyſtematic view of thoſe mercurial preparations only which enter at leaſt one of the Britiſh Pharmacopœias.

Mercury is exhibited,

I. Purified by diſtillation.
 Hydrargyrum purificatum. (*Dub. Lond.*)

II. Oxidized in a ſmaller degree.
 a. By precipitation from its ſolution in nitrous acid, by ammonia.
  Oxidum hydrargyri cinereum. (*Ed.*)
  Pulvis hydrargyri cinereus. (*Dub.*)
 b. By trituration:
  1. With unctuous ſubſtances.
   Unguentum hydrargyri. (*Ed.*)
   ———————— fortius. (*Lond. Dub.*)
   ———————— mitius. (*Lond. Dub.*)
   Emplaſtrum ammoniaci cum hydrargyro. (*Lond.*)
   ———— lithargyri cum hydrargyro. (*Lond.*)
   ———— hydrargyri. (*Ed.*)
  2. With ſaccharine ſubſtances.
   Pilulæ hydrargyri. (*Lond. Dub. Ed.*)
  3. With carbonate of lime.
   Pulvis hydrargyri cum creta. (*Lond.*)

III. Oxidized in a greater degree:
 1. By the action of heat and air.
  Hydrargyrum calcinatum. (*Lond. Dub.*)
 2. By the action of nitrous acid.
  Oxidum hydrargyri rubrum per oxidum nitricum. (*Ed.*)
  Hydrargyrum ſub-nitratum. (*Dub.*)
  Hydrargyrus nitratus ruber. (*Lond.*)
  Unguentum oxidi hydrargyri rubri. (*Ed.*)

IV. Oxidized and combined with acids:
 A. Oxidized in a ſmaller degree.

1. With nitrous acid:
   Unguentum hydrargyri nitrati. (*Lond. Dub. Ed.*)
2. With sulphuric acid:
   Sub-sulphas hydrargyri. (*Ed.*)
   Hydrargyrum sub-vitriolatum. (*Dub.*)
   Hydrargyrus vitriolatus. (*Lond.*)
3. With muriatic acid:
   a. By sublimation.
   Sub-murias hydrargyri. (*Ed.*)
   Hydrargyrum muriatum mite sublimatum. (*Dub.*)
   Calomelas. (*Lond.*)
   b. By precipitation.
   Sub-murias hydrargyri præcipitatus. (*Ed.*)
   Hydrargyrum muriatum mite præcipitatum. (*Dub.*)
   Hydrargyrus muriatus mitis. (*Lond.*)
4. With acetous acid:
   Acetis hydrargyri. (*Ed.*)
   Hydrargyrum acetatum. (*Lond. Dub.*)

B. Oxidized in a greater degree.
1. Muriate.
   Murias hydrargyri. (*Ed.*)
   Hydrargyrus muriatus. (*Lond.*)
   Hydrargyrum muriatum corrosive. (*Dub.*)
2. Sub-muriate with ammonia.
   Calx hydrargyri alba. (*Lond.*)

V. Combined with sulphur:
1. By trituration.
   Sulphuretum hydrargyri nigrum. (*Ed.*)
   Hydrargyrum sulphuratum nigrum. (*Lond. Dub.*)
2. By sublimation.
   Hydrargyrum sulphuratum rubrum. (*Lond. Dub.*)

Mercury, or some of its preparations, is exhibited,
1. As an errhine. The sub-sulphate of mercury.
2. As a sialogogue. Mercury in almost any form.
3. As a cathartic. The sub-muriate of mercury, (calomel.)
4. As a diuretic. The oxides, the muriate, and the sub-muriate, combined with other diuretics.
5. As a sudorific. Calomel conjoined with a sudorific regimen.
6. As an emmenagogue.
7. As an astringent. Muriate of mercury.
8. As a stimulant. Muriate of mercury.
9. As an antispasmodic.
10. As an anthelmintic.

With some of these views, mercury is frequently exhibited,
1. In febrile diseases; in obstinate agues.

2. In

2. In inflammatory diseases; in indolent and chronic inflammations, especially of the glandular viscera, as the liver, spleen, &c.
3. In exanthematous diseases; variola.
4. In profluvia; in dysentery.
5. In spasmodic diseases; tetanus, trismus, hydrophobia, &c.
6. In cachectic diseases; anasarca, ascites, hydrothorax, hydrocephalus, &c.
7. In impetigines; scrofula, syphilis, lepra, icterus, &c.
8. In local diseases; in caligo corneæ, amaurosis, gonorrhœa, obstipatio, amenorrhœa suppressionis, tumors of various kinds, herpes, tinea, psora, &c.

Mercury occasionally attacks the bowels, and causes violent purging, even of blood. This effect is remedied by intermitting the use of the medicine, and by exhibiting opium.

At other times it is suddenly determined to the mouth, and produces inflammation, ulceration, and an excessive flow of saliva. In this case, too, the use of the mercury must be discontinued for a time; while, according to Mr Pearson's advice, the patient should be freely exposed to a dry cold air, with the occasional use of cathartics, Peruvian bark, and mineral acids, and the assiduous application of astringent gargles. On the other hand, the sudden suppression of ptyalism is not without danger. It is most frequently caused by cold liquids being taken into the stomach, or exposure to cold and moisture, while under the influence of mercury. The danger is to be obviated by the quick introduction of mercury, so as to affect the gums, with the occasional use of the warm-bath.

Sometimes also a morbid condition of the system occurs during a mercurial course, and which tends to a fatal issue. Mr Pearson has termed it Erethismus. It is characterized by great depressions of strength; a sense of anxiety about the præcordia; frequent sighing; trembling, partial or universal; a small, quick pulse; sometimes vomiting; a pale contracted countenance; a sense of coldness, while the tongue is seldom furred, or the vital or natural functions much disordered. In this state a sudden or violent exertion of muscular power will sometimes prove fatal. To prevent dangerous consequences, the mercury must be discontinued, whatever may be the stage, extent, or violence of the disease for which it has been exhibited, and the patient must expose himself freely to a dry and cool air, in such a manner as shall be attended with the least fatigue; and in the course of ten or fourteen days, he will sometimes be so far recovered that he may safely resume the use of mercury.

HYOSCYAMUS NIGER. *Herba. Semen.* (*Ed.*)
Hyoscyamus. Herba. Semen. (*Dub.*)
Black henbane. The herb and seeds.

Willd.

Willd. g. 378. *ſp.* 1.—*Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

Henbane is a biennial plant, which grows in great abundance in moſt parts of Britain.

The ſmell of the hyoſcyamus is ſtrong and peculiar; and the leaves when bruiſed emit ſomewhat of the odour of tobacco. This ſmell is ſtill ſtronger when the leaves are burnt; and on burning they ſparkle with a deflagration ſomewhat reſembling that of nitre: but to the taſte they ſhew no evident ſaline impregnation. When chewed, they are inſipid, mild, and mucilaginous: yet when taken to any great extent, they produce the moſt alarming effects. They give the appearances of intoxication, attended with wild delirium, remarkable dilatation of the pupils of the eyes, and convulſions. It often produces ſweat, and ſometimes an eruption of puſtules over the ſurface, and generally ſound ſleep, ſucceeded by ſerenity of mind, and recruited vigour of the body: but like the other narcotics, inſtead of theſe, it ſometimes gives riſe to vertigo, headach, and general uneaſineſs. With particular individuals it occaſions vomiting, colic pains, a copious flow of urine, and ſometimes purging. Upon the whole, like opium, it is a powerful anodyne; and like cicuta, it is free from any conſtipating effect, having rather a tendency to move the belly.

From theſe effects, it is not ſurpriſing that hyoſcyamus ſhould have been introduced into the practice of medicine; and accordingly, it appears to have been uſed both externally and internally for a variety of purpoſes. Several different ſpecies of the hyoſcyamus were formerly employed, as appears from the writings of Dioſcorides and others. Celſus, in particular, was very fond of this medicine; he uſed it externally as a collyrium in caſes of ophthalmia; he employed it topically for allaying the pain of toothach; and he gave it internally, both with the view of mitigating other pains, and of producing quiet ſleep.

For a conſiderable length of time, however, hyoſcyamus fell almoſt into diſuſe; but the employment of it has of late been revived by Dr Störk of Vienna; and it has been uſed both by him, and by many other practitioners in thoſe caſes where an anodyne is requiſite, and where an objection occurs to the uſe of opium. It is employed for reſolving ſwelling, and allaying pain in caſes of ſcirrhus, under the form of cataplaſm of the leaves, or of a plaſter made from the oil of the ſeeds and powder of the herb, with wax, turpentine, and other articles; or of ointment made of the powder of the leaves with hogs lard. In open ulcers, the powder of the leaves, ſprinkled on the part, has often a good effect.

An extract from the leaves, or from the ſeeds, is the form in which it is given internally; but contrary to what happens with cicuta, the former appears to be the moſt powerful. This extract has been given with advantage in a variety of nervous affections,

as

as mania, melancholia, epilepſy, hyſteria, &c.; in glandular ſwellings, in obſtinate ulcerations; and in every caſe where it is neceſſary either to allay inordinate action, or mitigate pain. In accompliſhing theſe ends, it is often no leſs uſeful than opium; and it frequently ſucceeds where opium produces very diſagreeable effects. The doſe of this extract muſt be accommodated to the circumſtances of the caſe and of the patient; and it has been increaſed from half a grain to half a drachm in the day; for like opium, its influence is very much diminiſhed by habit.

HYPERICUM PERFORATUM.
Hypericum. Flos. (*Lond.*)
Common St John's wort. The flower.
Polyadelphia Polyandria.—Nat. ord. *Aſcyroideæ.*

THIS plant is perennial, and grows wild in woods and uncultivated places in Britain. Its taſte is rough and bitteriſh, and its ſmell diſagreeable. It abounds with an eſſential oil, which is contained in ſmall veſicles in the growing plant. Theſe veſicles, when viewed, by holding the plant between the eye and the light, reſemble perforations; and the eſſential oil itſelf may be ſeparated in conſiderable quantity by diſtillation. The flowering tops tinge expreſſed oils of a red colour, which very few vegetable ſubſtances do.

HYSSOPUS OFFICINALIS. *Herba.* (*Edin.*)
Hyſſopus. Folia. (*Dub.*)
Hyſſop. The herb.
Willd. g. 1096. *ſp.* 1.—*Didynamia Gymnoſpermia.*—Nat. ord. *Verticillatæ.*

HYSSOP is a perennial herb, which grows wild in Germany.

The leaves of hyſſop have an aromatic ſmell, and a warm pungent taſte. Beſides the general virtues of aromatics, they were formerly recommended in humoral aſthmas, coughs, and other diſorders of the breaſt and lungs, and were ſaid to promote expectoration.

ICHTHYOCOLLA. (*Lond. Dub.*) See ACCIPENSER.

INULA HELENIUM.
Enula campana. Radix. (*Dub. Lond.*)
Elecampane. The root.
Syngeneſia Superflua.—*Compoſitæ radiatæ.*

THIS is a very large downy perennial plant, ſometimes found wild in moiſt rich ſoils. The root, eſpecially when dry, has an agreeable aromatic ſmell: its taſte, on firſt chewing, is glutinous, and as it were ſomewhat rancid; in a little time it diſcovers an

aromatic

aromatic bitterneſs, which by degrees becomes conſiderably acrid and pungent.

Its predominant conſtituents are eſſential oil, mucilage, and a little bitter extractive; and it is therefore a gently ſtimulating medicine, nearly ſimilar in its action to angelica. The extract is merely a ſlight bitter, as the eſſential oil is totally diſſipated in the preparation.

IPECACUANHA. (*Lond. Dub. Ed.*) See CEPHAËLIS.

IRIS.

Willd. g. 97. *Triandria Monogynia.*—Nat. ord. *Enſatæ.*

Sp. 7. IRIS FLORENTINA. *Radix.* (*Ed.*)

Iris. Radix. (*Lond.*)

Florentine Oris. The root.

THIS is a perennial plant, a native of the ſouth of Europe. The dried roots are imported from Italy. They are white, flattiſh, knotty, and have a very ſlightly bitter taſte, and an agreeable ſmell, reſembling that of violets. They are only uſed as a perfume.

Sp. 24. IRIS PSEUDACORUS.

Iris. Radix. (*Dub.*)

Water-flag. The root.

THIS plant is perennial, and grows in great abundance by the brinks of rivers, and in other watery places: the root has an acrid taſte; and when freſh, is ſtrongly cathartic. The expreſſed juice, given to the quantity of ſixty or eighty drops every hour or two, and occaſionally increaſed, has been productive of very copious evacuations, after jalap, gamboge, and other ſtrong purgatives had proved ineffectual; and it is in this form only that it is uſed; for by drying, it entirely loſes its purgative effects.

We have here another proof of the neceſſity of denominating the officinal vegetables by their ſyſtematic names; for in England, *Radix Iridis* is a pleaſant perfume, in Ireland a draſtic purgative; and as conſultations are not unfrequently ſent from the one country to the other, ignorance of this circumſtance might give riſe to unpleaſant conſequences.

ISIS NOBILIS.

Corallium Rubrum. (*Lond.*)

Red coral.

THIS is the axis of a zoophyte of the order of ceratophyta. It is found only in the Mediterranean Sea, and the ſentient fleſh is rubbed off by means of pumice-ſtone. The coral thus prepared is of a ſcarlet or pale red colour, and ſuſceptible of a high poliſh.

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As an article in medicine, it is to be regarded merely as an indurated carbonate of lime.

JALAPA. (*Dub.*) JALAPIUM. (*Lond.*) See CONVOLVULUS.

JUGLANS REGIA.

Juglans. Fructus Immaturus. (*Lond.*)

The walnut-tree. The unripe fruit.

Monoecia Polyandria.—Nat. ord. *Amentaceæ.*

THIS beautiful tree, although a native of Perfia, grows to a very large fize, and produces ripe fruit in moft parts of England. The fruit confifts of a thick, flefhy, green, fmooth rind, which incloses the proper nut. When unripe, they have a peculiar fmell, and a bitterifh aftringent tafte. They have been fuppofed to poffefs tonic and anthelmintic virtues. The green rind has been celebrated as a powerful anti-venereal remedy; but it poffeffes no real anti-fyphilitic virtues, although it forms a very ufeful addition to the compound decoction of farfaparilla, where pains of the limbs and indurations of the membranes remain after the venereal difeafe has been cured by mercury, and in many of thofe cutaneous difeafes which are attended with aridity of the fkin. A decoction of the green rind has alfo been recommended as a ufeful application to old ulcers.

JUNIPERUS.

Dioecia Monadelphia.—Nat. ord. *Coniferæ.*

Sp. JUNIPERUS COMMUNIS. *Baccæ.* (*Ed.*)

Juniperus. Bacca, Cacumen. (*Lond.*) *Bacca.* (*Dub.*)

Juniper. The berries and tops.

THIS is an ever-green fhrub, growing on heaths and hilly grounds in all parts of Europe: the berries are brought from Holland and from Italy. The Italian berries are in general reckoned the beft.

Juniper berries have a ftrong not difagreeable fmell, and a warm pungent fweet tafte, which if they are long chewed, or previoufly well bruifed, is followed by a bitterifh one.

Their predominant conftituents are effential oil, and a fweet mucilaginous matter. To the former of thefe they are indebted for their ftimulating, carminative, diaphoretic, and diuretic properties. They are moft commonly ufed in the form of infufion, as a diuretic drink in dropfy. The effential oil may be feparated by diftillation. It poffeffes the fame properties in a higher degree, and imparts them to ardent fpirits. The peculiar flavour, and well known diuretic effects of Hollands, are owing to the oil of juniper.

The decoction and extract are very inert preparations.

Every

Every part of the plant contains the ſame eſſential oil; therefore an infuſion of the tops is likewiſe diuretic. The wood, alſo, was formerly officinal.

In warm countries a reſin exudes from the juniper-tree. It is called ſandarac, and is often mixed with maſtich.

Sp. JUNIPERUS LYCIA. *Gummi-reſina.* (*Ed.*)
Olibanum. *Gummi-reſina.* (*Lond. Dub.*)
Olibanum. A gum-reſin.

OLIBANUM is principally collected in Arabia, and brought from Mecca to Cairo, from whence it is imported into Europe. It conſiſts of tranſparent brittle grains of different ſizes, not larger than a cheſnut, of a red or yellow colour, having little taſte, and a peculiar aromatic ſmell. It is entirely ſoluble in alcohol, forms a milky fluid when triturated with water, is not fuſible, but inflammable, and burns with an agreeable ſmell. It is the frankincenſe of the ancients; and the diffuſion of its vapour around the altar ſtill forms part of the ceremonies of the Greek and Roman Catholic churches.

Sp. JUNIPERUS SABINA. *Folia.* (*Ed.*)
Sabina. *Folium.* (*Lond. Dub.*)
Savine. The leaf.

THIS is an evergreen ſhrub, a native of Siberia and Tartary, but not unfrequent in our gardens. The leaves have a bitter, acrid, biting taſte, and a ſtrong diſagreeable ſmell: diſtilled with water, they yield an eſſential oil, in conſiderable quantity.

Savine is a warm ſtimulating medicine, capable of producing diaphoreſis, and increaſing all the ſecretions, but apt to excite hæmorrhagy, eſpecially from the uterus. It is alſo recommended as an anthelmintic, and ſaid to be very efficient in the cure of gout.

Internally, a conſerve of the freſh leaves is exhibited in doſes of from half a drachm to a drachm.

Externally, the leaves are applied in the form of powder or infuſion, to warts, carious bones, and old ulcers; and in caſes of gangrene, pſora, and tinea. The eſſential oil is a very active remedy.

KÆMPFERIA ROTUNDA.

Zedoaria. *Radix.* (*Lond.*)
Round Zedoary. The root.
Willd. g. 12. *ſp.* 2. *Monandria Monogynia.*—Nat. ord. *Scitamineæ.*

THIS is a perennial plant, a native of India. The roots are about an inch long, ſomewhat rough on the ſurface, and often terminate in a point. They correſpond in ſenſible qualities with the roots of the amomum zedoaria, but are not ſo ſtrong. By ſome, indeed, they are ſuppoſed to be produced from the ſame plant, and that the round zedoary is the upper, and the long zedoary the under part of the root.

KINO. *Gummi-reſina.* (*Ed.*) *Reſina.* (*Lond. Dub.*)
Gummi rubrum aſtringens Gambienſe.

Kino is brought to us from Africa, in amorphous pieces of various ſizes, to which the leaves of ſome arundinaceous plant are often found adhering on the outſide. It is of a dark red colour, hard, but ſo brittle, that it may be eaſily rubbed to powder between the fingers. Its fracture is ſhining, and its texture often cellular. It has no ſmell: when chewed, it firſt crackles between the teeth, then ſticks to them, and is afterwards diſſolved in the ſaliva, to which it gives a reddiſh black colour. Its taſte is then perceived to be very aſtringent, with a ſlight degree of ſubſequent ſweetneſs. It does not melt, and it burns with difficulty. It is very ſoluble both in water and in alcohol. The ſolutions are coloured and tranſparent, ſtrike an intenſely black colour with ſulphate of iron, and form a white tenacious precipitate in a ſolution of iſinglaſs. Its powder has a deep red colour.

From its ſolubility in water, it is evident that the London and Dublin Colleges err in denominating it a reſin; and we apprehend that the Edinburgh College is not correct in calling it gum-reſin. The exact nature of the gum-reſins is not perfectly underſtood, but they ſeem in general to poſſeſs the following properties: Their ſmell is often powerful, and their taſte never aſtringent; they are either fuſible, or ſoftened by heat, and burn readily; they are partially ſoluble in alcohol and in water; their watery ſolution is opaque; their alcoholic ſolution, on the contrary, is tranſparent, but it is decompoſed, and rendered milky, by mixing it with water, although there is no precipitation, or it takes place very ſlowly. Theſe ſolutions neither ſtrike a black colour with ſulphate of iron, nor precipitate gelatine. On diſtillation they afford eſſential oil. The gum-reſins all derive their origin from the natural juices of the vegetables which afford them. They either exude ſpontaneouſly from them, by burſting the veſſels in which they are contained, or flow from inciſions made intentionally into them, and afterwards harden by expoſure to the ſun and air. They, therefore, generally have a rounded form, whence they are often called Tears; and their fracture is compact, and never cellular.

From the total diſſimilarity of character, therefore, it appears evident to us, that this is not a gum-reſin; but we will venture a ſtep farther, and ſay, that it is an aſtringent extract, obtained by decoction and evaporation. We ground this opinion upon the coincidence of the chemical properties of kino, with thoſe of other aſtringent extracts; upon the fact, that part of the kino of commerce,

merce, not diſtinguiſhable from the African kino, is imported from Jamaica, and is known to be the extract of an aſtringent bark; upon the very ſtriking reſemblance of this in every particular with the extract of Swietenia febrifuga, ſent by Dr Roxburgh from the Eaſt Indies; and upon the cellular texture of kino, which it could only acquire by the action of heat. All theſe proofs, however ſtrong, would be overturned, if Dr Fothergill's account of the origin of kino, which has been adopted by all the writers on materia medica ſince his time, were correct. But there is no evidence whatever, that the gum-dragon, mentioned by Moor as obtained by inciſions made into the pau de ſangue, is the ſame with kino; while, on the contrary, the very imperfect deſcription he gives of his gum-dragon, renders it almoſt certain that it is not kino.

Kino, therefore, in our opinion, ſhould be conſidered as an extract, from the probable manner of its preparation. In its chemical properties, it is almoſt pure tannin (260.), and in its medical properties, it is a ſimple aſtringent.

It is a powerful remedy in obſtinate chronic diarrhœas and dyſenteries; in all paſſive hæmorrhagies, eſpecially from the uterus; in fluor albus; and in diſeaſes ariſing from laxity of the ſolids.

It is exhibited internally, in doſes of from ten to thirty grains, in ſubſtance, or diſſolved in diluted alcohol.

Externally, it is applied as a ſtyptic, to check hæmorrhagies from wounds or ulcers, and to diminiſh the diſcharge of ſanious or ichorous matter from ill-conditioned ulcers.

LACTUCA VIROSA. *Folia.* (*Ed.*)

Strong-ſcented or wild lettuce. The leaves.

Syngeneſia æqualis.—Nat. ord. *Compoſitæ ſemifloſculoſæ.*

This plant is biennial, and grows wild on rubbiſh and rough banks, in many places in this country.

It ſmells ſtrongly of opium, and reſembles it in ſome of its effects; and its narcotic power, like that of the poppy heads, reſides in its milky juice. An extract, prepared from the expreſſed juice of the leaves of the plant, gathered when in flower, is recommended in ſmall doſes in dropſy. In dropſies of long ſtanding, proceeding from viſceral obſtructions, it has been given to the extent of half an ounce a-day. It is ſaid to agree with the ſtomach, to quench thirſt, to be gently laxative, powerfully diuretic, and ſomewhat diaphoretic. Plentiful dilution is allowed during its operation. Dr Collin of Vienna aſſerts, that out of twenty-four dropſical patients, all but one were cured by this medicine.

LADANUM. (*Lond.*) See Cistus.

LAPIS CALAMINARIS. (*Dub.*) See Zincum.

LAURUS.

Willd. g. 798. *Enneandria Monogynia.*—Nat. ord. *Oleraceæ.*

Sp. 1. LAURUS CINNAMOMUM. *Cortex.* (*Ed.*)

Cinnamomum. Cortex et ejus oleum eſſentiale. (*Lond. Dub.*)

The cinnamon tree. The bark and its eſſential oil.

THIS beautiful and valuable tree is native in Ceylon, where it was guarded with unremitting jealouſy by the Dutch, that they might monopolize the commerce of its productions. They failed, however, in the attempt; and cinnamon trees are found, not only in other parts of the Eaſt Indies, but alſo in Jamaica, and other iſlands of the Weſt Indies.

Cinnamon is the inner bark of this tree. It is of a reddiſh colour, light, very thin, rolled up in long quills of a fragrant delightful ſmell, and an aromatic pungent taſte, with ſome aſtringency. Its fracture is ſplintery. The Dutch were accuſed of deteriorating their cinnamon by mixing it with a proportion of real cinnamon, but which had been deprived of its eſſential oil by diſtillation. This fraud could only be detected by the weaker ſmell and taſte. It is alſo often mixed with caſſia bark. This laſt is eaſily diſtinguiſhable by its breaking over ſmooth, and by its ſlimy mucilaginous taſte, without any thing of the roughneſs of the true cinnamon. Cinnamon is a very elegant and uſeful aromatic, more grateful both to the palate and ſtomach than moſt other ſubſtances of this claſs.

Like other aromatics, its effects are ſtimulating, heating, ſtomachic, carminative, and tonic; but it is rather uſed as an adjunct to other remedies, than as a remedy itſelf.

The eſſential oil of cinnamon has a whitiſh yellow colour, a pungent burning taſte, and the peculiar fine flavour of cinnamon in a very great degree. It ſhould ſink in water, and be entirely ſoluble in alcohol. It is principally prepared in Ceylon.

It is one of the moſt powerful ſtimulants we poſſeſs, and is ſometimes uſed as a cordial in cramps of the ſtomach and in ſyncope; or as a ſtimulant in paralyſis of the tongue, or to deaden the nerve in toothach. But it is principally uſed as an aromatic, to cover the leſs agreeable taſte of other drugs.

Sp. 2. LAURUS CASSIA. *Cortex. Flores nondum expliciti.* (*Ed.*)

Caſſia Lignea. Cortex. (*Dub.*)

The caſſia tree. The bark and flower-buds gathered before they open.

THIS tree is very ſimilar to the former. The bark, which is imported from different parts of the Eaſt Indies and from China, has a very exact reſemblance to the cinnamon. It is diſtinguiſhable from the cinnamon, by being of a thicker and coarſer appearance,

pearance, and by its breaking ſhort and ſmooth, while the cinnamon breaks fibrous and ſhivery.

It reſembles cinnamon ſtill more exactly in its aromatic flavour than in its external appearance, and ſeems only to differ from it in being ſomewhat weaker, in abounding more with a mucilaginous matter, and in being leſs aſtringent.

Caſſia buds are the flower-buds which are gathered and dried before they expand. They have the appearance of a nail, conſiſting of a round head, about the ſize of a pepper-corn, ſurrounded with the imperfect hexangular corolla, which gradually terminates in a point. They have a brown colour, and the ſmell and taſte of cinnamon.

Both the bark and buds of caſſia poſſeſs the ſame properties with cinnamon, though in an inferior degree.

The bark is very frequently, and ſometimes unintentionally, ſubſtituted for the more expenſive cinnamon; and the products obtained from caſſia bark and buds by diſtillation, are in no reſpect inferior to thoſe prepared from cinnamon.

Sp. 3. Laurus Camphora. *Camphora.* (*Ed.*)
Camphora. (*Lond.*) *Reſina.* (*Dub.*)
Camphor tree. Camphor.

The camphor laurel grows in great abundance, and to a very conſiderable ſize, in the foreſts of Japan. It is not uncommon in green-houſes in England. Every part of the tree ſmells ſtrongly of camphor, which is obtained from the trunk, branches, and root by diſtillation. They are cut down into ſmall pieces, and put into a ſtill with a quantity of water. After the water has been kept boiling forty-eight hours, the camphor is found adhering to the ſtraw with which the head of the ſtill is lined. In this ſtate it is imported by the Dutch, and is called crude camphor. It is very impure, conſiſting of ſmall browniſh or dirty-grey grains, mixed with ſtraw, wood, hair, and other impurities. From theſe it is purified in Holland, by a ſecond ſublimation in glaſs-veſſels; being previouſly mixed with quicklime, to combine with and prevent any empyreumatic oil with which it may be contaminated from ſubliming, while the camphor concretes in the upper part of the veſſel into cakes, convex on the one ſide, and concave on the other, about two or three inches thick, thinner at the edges, and generally perforated in the middle.

Pure camphor is lighter than water, very white, pellucid, ſomewhat unctuous to the touch, brittle, yet tough and elaſtic, ſo as to be ſcarcely pulverizable; ſhining in its fracture, and cryſtalline in its texture; of a bitteriſh, aromatic, pungent taſte, yet accompanied with a ſenſe of coolneſs; of a ſtrong and very penetrating ſmell; very volatile, inflammable, burning entirely away without leaving any coal or aſhes; capable of combining with the fixed and volatile oils, refins, and balfams; foluble in alcohol, ether, and the concentrated fulphuric, nitric, and acetic acids; feparable from thefe alcoholic and acid folutions by water; infoluble in water, alkalies, and the weaker acids; decompofable by heat; when mixed with alumina being converted into an effential oil and charcoal, and by treating it with nitric acid, which acidifies it, producing camphoric acid.

But the production of camphor is not confined to the laurus camphora, although it furnifhes almoft all the camphor of commerce; it is found in very great purity in interftices among the woody fibres of an unknown tree in Borneo; it is alfo contained in the roots of the laurus cinnamomum and caffia, Alpinia galanga, amomum zedoaria, &c.; in the feeds of the amomum cardamomum, piper cubeba, &c.; and in many indigenous plants, as in the thymus ferpyllum and vulgaris, juniperus communis, rofmarinus officinalis, falvia officinalis, mentha piperita, &c. and may be feparated from the effential oils of rofemary, lavender, marjoram, and fage. It is therefore now univerfally confidered as a peculiar principle of vegetables, and not as a refin, as ftated by the Dublin College.

Camphor is a very active fubftance when taken into the ftomach. It increafes the heat of the body confiderably, and gives a tendency to diaphorefis, but without quickening the pulfe. At firft it raifes the fpirits, but produces a fubfequent depreffion; and it facilitates voluntary motion. In exceffive dofes it caufes fyncope, anxiety, retchings, convulfions, and delirium. Thefe violent effects of camphor are moft effectually counteracted by opium.

In a morbid ftate of the body, camphor allays inordinate actions. When the pulfe is hard and contracted, it renders it fuller and fofter. It removes fpafms, and flitting pains arifing from fpafms; and in delirium, when opium fails of procuring fleep, camphor will often fucceed. It is alfo faid to correct the bad effects of opium, mezereon, cantharides, and the draftic purgatives and diuretics.

The moft general indication for the ufe of camphor, is the languor or oppreffion of the *vis vitæ*. It may therefore be given with advantage,

1. In all febrile difeafes of the typhoid type, efpecially when attended with delirium.
2. In inflammations with typhoid fever, as in fome cafes of peripneumonia and rheumatifm.
3. In eruptive difeafes, to favour the eruption, or to bring it back to the fkin, if from any caufe it has fuddenly receded, as in fmallpox, meafles, &c.
4. In many fpafmodic difeafes, efpecially mania, melancholy, epilepfy, hyfteria, chorea, hiccough, &c.

5. In indolent local inflammations, not depending upon an internal cauſe, to excite action in the part.

As from its great lightneſs it is apt to ſwim upon the contents of the ſtomach, and to occaſion pain at its upper orifice, it is neceſſary that it be always exhibited in a ſtate of minute diviſion. In order to reduce it to powder, it muſt be previouſly moiſtened with a little alcohol. It may then be given,

1. In powder, with ſugar, magneſia, and nitrate of potaſs.
2. In pills, with the fetid gums and mucilage.
3. In ſolution, in alcohol, oil, or acetic acid.
4. Suſpended in the form of an emulſion, by means of mucilage, ſugar, yolk of egg, almonds, vinegar, &c.

Internally it may be given in ſmall doſes, of from one to five grains, repeated at ſhort intervals, as its effects are very tranſient, or in large doſes, not under twenty grains.

Sp. 10. Laurus Nobilis. *Folia. Baccæ. Baccarum oleum fixum.* (*Ed.*)

Laurus. Folium. Bacca. (*Lond.*)

Bay tree. The leaves, berries, and expreſſed oil of the berries.

This tree is a native of the ſouth of Europe, but bears the winters of this climate perfectly well. Both leaves and berries contain a conſiderable quantity of eſſential oil, which renders them aromatic, ſtimulating ſubſtances.

The berries are generally brought from the Mediterranean, and are more pungent than the leaves. In Spain and Italy a conſiderable quantity of oil is obtained by expreſſion from the freſh berries. It has a green colour, and ſtrong aromatic taſte and ſmell. As it therefore is not a fixed oil, but a mixture of fixed and eſſential oil, and as its peculiar properties depend entirely on the preſence of the latter, it is incorrectly ſtated to be a fixed oil by the Edinburgh College. It ſhould rather have been denominated, from the mode of its preparation, an expreſſed oil.

It is only uſed externally as a ſtimulant.

Sp. 34. Laurus Sassafras. *Lignum, radix, ejusque cortex.* (*Ed.*)

Saſſafras. Lignum, radix ejusque cortex. (*Lond.*) *Lignum, radix eorumque cortex.* (*Dub.*)

Saſſafras. The wood, root and bark.

This tree is a native of North America, and is cultivated in Jamaica. It is the root which is commonly employed. It is brought to us in long branched pieces. It is ſoft, light, and of a ſpongy texture; of a ruſty white colour; of a ſtrong pleaſant ſmell, reſembling that of fennel; and a ſweetiſh, aromatic, ſubacrid taſte. The bark is rough, of a brown-aſh colour on the outſide, and ferrugineous colour within; ſpongy and diviſible into layers, and of a ſtronger taſte and ſmell than the wood.

Saſſafras contains much eſſential oil, and is therefore a gently ſtimulating, heating, ſudorific, and diuretic remedy.

It is beſt given in infuſion. The decoction and extract are mere bitters, as the oil is diſſipated by the preparation.

The eſſential oil may be obtained ſeparate by diſtillation. It is of a whitiſh, yellow colour, and ſinks in water. It is highly ſtimulating and heating, and muſt be given only in very ſmall doſes.

LAVANDULA SPICA. *Spicæ florentes.* (*Ed.*)
Lavendula. *Flos.* (*Lond.*) *Lavandula.* *Flores.* (*Dub.*)
Lavender. The flowering ſpikes.
Willd. g. 1099. *ſp.* 1. *Didynamia Gymnoſpermia.*—Nat. ord. *Verticillatæ.*

LAVENDER is a well-known ſmall, ſhrubby, perennial plant, a native of the ſouth of Europe, but frequently cultivated in our gardens for the ſake of its perfume. There are two varieties. The flowers of both have a fragrant, agreeable ſmell, and a warm, pungent, bitteriſh taſte; the broad-leaved ſort is the ſtrongeſt in both reſpects, and yields in diſtillation thrice as much eſſential oil as the other; its oil is alſo hotter and ſpecifically heavier: hence, in the ſouthern parts of France, where both kinds grow wild, this only is uſed for the diſtillation of what is called Oil of Spike. The narrow-leaved is the ſort commonly met with in our gardens.

Lavender is a warm ſtimulating aromatic. It is principally uſed as a perfume.

LEONTODON TARAXACUM. *Herba.* *Radix.* (*Ed.*)
Taraxacum. *Radix.* *Herba.* (*Lond.*) *Radix.* *Folia.* (*Dub.*)
Dandelion. The root and leaves.
Syngeneſia Æqualis.—Nat. ord. *Compoſitæ ſemiſloſculoſæ.*

THIS perennial plant is very common in graſs fields and uncultivated places. The whole plant contains a bitter, milky juice, which, however, is moſt abundant in the roots before the flower-ſtem ſhoots. The bitterneſs is deſtroyed by drying, and, therefore, the recent roots only ſhould be uſed. Its vulgar name Piſs-a-bed, ſhews a popular belief of its poſſeſſing diuretic properties; and it was lately a very faſhionable remedy in Germany, and given in the form of an expreſſed juice or decoction, or extract prepared from either of them. To us it ſeems merely a mucilaginous bitter.

LILIUM CANDIDUM.
Lilium album. *Radix.* (*Dub.*)
The white lily. The root.

Willd.

Willd. g. 127. *ſp.* 3. *Hexandria Monogynia.*—Nat. ord. *Liliaceæ.*

THE white lily is a perennial, bulbous-rooted plant, a native of the ſouth of Europe, and cultivated in our gardens for the beauty of its flowers. The mucilaginous root is ſometimes uſed as a poultice; but it poſſeſſes no advantage over the poultices formed of any vegetable farina.

LIMON. (*Lond. Dub.*) See CITRUS.

LINUM.

Willd. g. 590. *Pentandria Pentagynia.*—Nat. ord. *Gruinales.*

Sp. 1. LINUM USITATISSIMUM. *Semen, ejusque oleum fixum.* (*Ed.*)

Linum. Semen. (*Lond. Ed.*)

Common flax. The ſeed, and oil expreſſed from the ſeed. Linſeed, and linſeed oil.

THIS valuable annual plant, is ſaid to have come originally from thoſe parts of Egypt which are expoſed to the inundations of the Nile. It now grows wild among our fields, in the ſouth of England, and many other parts of Europe, and is cultivated in large quantities.

Linſeed contains about one-fifth of mucilage, and one-ſixth of fixed oil. They are therefore conſidered as emollient, and demulcent. The entire ſeeds are only uſed in cataplaſms.

The mucilage reſides entirely in the ſkin, and is ſeparated by infuſion or decoction. The infuſion is uſed as a pectoral drink, and in ardor urinæ, nephritic pains, and during the exhibition of corroſive ſublimate.

The oil is ſeparated by expreſſion. It is one of the cheapeſt fixed oils; but is generally rancid and nauſeous, and unfit for internal uſe.

The cake which remains after the expreſſion of the oil, contains the farinaceous and mucilaginous part of the ſeed, and is uſed in fattening cattle, under the name of Oil-cake.

Sp. 26. LINUM CATHARTICUM. *Herba.* (*Dub.*)

Purging flax.

This is an annual plant, found wild on dry meadows and paſtures in Britain. Its virtue is expreſſed in its title: an infuſion in water or whey of a handful of the freſh herb, or a dram of them in ſubſtance when dried, are ſaid to purge without inconvenience.

LITHARGYRUS. (*Dub.*) See PLUMBUM.

LOBELIA SYPHILITICA. *Radix.* (*Ed.*)

Lobelia. The root.

Syngenesia Monogamia.—Nat. ord. *Campanaceæ.*

THIS plant grows in moist places in Virginia, and bears our winters. It is perennial, has an erect stalk three or four feet high, blue flowers, a milky juice, and a rank smell. The root consists of white fibres about two inches long, resembles tobacco in taste, which remains on the tongue, and is apt to excite vomiting.

Dr Barton says, that it is considerably diuretic, and Mr Pearson found, that it generally disagreed with the stomach, and seldom failed of affecting the bowels as a strong cathartic. It certainly possesses no power of curing syphilis; even the Indians, when they have the disease, are glad of an opportunity of applying to the whites.

LUJULA. (*Lond.*) See OXALIS.

MAGNESIA VITRIOLATA. (*Lond. Dub.*) See SULPHAS MAGNESIÆ.

MAJORANA. (*Lond. Dub.*) See ORIGANUM.

MALVA SYLVESTRIS. *Herba. Flores.* (*Ed.*)

Malva. Folium. Flos. (*Lond.*)

Willd. g. 1290. *sp.* 43. *Monadelphia Polyandria.*—Nat. ord. *Columniferæ.*

Common Mallow. The leaves and flowers.

THIS is an annual plant, common in Britain, under hedges, near footpaths, and among rubbish.

The whole plant abounds with mucilage. The leaves were formerly of some esteem, in food, for loosening the belly; at present, decoctions of them are sometimes employed in dysenteries, heat, and sharpness of urine, and in general for obtunding acrimonious humours; their principal use is in emollient glysters, cataplasms, and fomentations.

MANNA. See FRAXINUS.

MARRUBIUM VULGARE. *Herba.* (*Ed. Lond.*) *Folia.* (*Dub.*)

White horehound. The leaves.

Willd. g. 1111. *sp.* 8. *Didynamia Gymnospermia.*—Nat. ord. *Verticillatæ.*

THIS is a perennial plant, which grows wild on road sides, and among rubbish. The leaves have a very strong, not disagreeable smell, and a roughish, very bitter taste. They promote the fluid secretions in general, and, liberally taken, loosen the belly.

MARUM SYRIACUM. (*Lond. Dub.*) See Teucrium.

MASTICHE. See Pistacia.

MEL. (*Lond. Dub. Ed.*)
Honey.

This is a well-known ſubſtance, and although it is moſt probably of vegetable origin, we do not procure it in any quantity except as an animal excretion, from the bee, (apis mellifica). This induſtrious inſect, in the ſummer time flies from flower to flower to collect the ſweet juice ſecreted in them. When ſufficiently loaded, it returns to its hive, where it depoſites it, as a winter's ſupply, in the cells of the comb it had prepared of wax to receive it. What change it undergoes in the body of the inſect is unknown; but it is certain, that honey varies very much, according to the nature of the plants from which it is collected. In ſome ſituations, where poiſonous plants abound, it it even deleterious.

The beſt honey is that which is freeſt from colour, and contains the largeſt grains when it concretes. For medical uſe, it ſhould alſo be as free of flavour as poſſible. That obtained from young bees, and which flows ſpontaneouſly from the combs, is the pureſt and fineſt, and is known by the name of Virgin honey. When ſeparated from the wax by expreſſion, it is leſs pure; and there is another ſort ſtill inferior, obtained by heating the combs before they are put into the preſs.

Honey conſiſts principally of ſugar, but it alſo probably contains mucilage and an acid, and is often impregnated with the eſſential oil of the flowers from which the bees have gathered it.

From the earlieſt ages it has been employed as a medicine. Beſides the general properties of ſaccharine bodies, it poſſeſſes others peculiar to itſelf, probably depending on the preſence of an acid. For internal uſe, ſugar is always to be preferred, as honey in ſome conſtitutions produces gripes and colic pains. From its ſtimulus, however, it forms an excellent gargle, and facilitates the expectoration of viſcid phlegm, and is ſometimes employed as an emollient application to abſceſſes, and as a detergent to ulcers.

MELALEUCA LEUCADENDRON. *Oleum volatile.* (*Ed.*)
Cajeputa officinarum.
The Cajeput tree. The eſſential oil.
Polyadelphia Polyandria.—Nat. ord. *Heſperideæ.*

The tree which furniſhes the cajeput oil is frequent on the mountains of Amboyna, and other Molucca Iſlands. It is obtained by diſtillation from the died leaves of the ſmaller of two varieties. It is prepared in great quantities, eſpecially in the Iſland of Banda, and ſent to Holland in copper flaſks. As it comes to

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us it is of a green colour, very limpid, lighter than water, of a ſtrong ſmell, reſembling camphor, and a ſtrong, pungent taſte, like that of cardamons. It burns entirely away, without leaving any reſiduum. It is often adulterated with other eſſential oils, coloured with the reſin of milfoil. In the genuine oil, the green colour depends on the preſence of copper; for when rectified it is colourleſs.

Like other aromatic oils it is highly ſtimulating, and is principally recommended in hyſteria, epilepſy, flatulent colic, and paralyſis of the tongue. The doſe is from one to four drops on a lump of ſugar.

It is applied externally where a warm and peculiar ſtimulus is requiſite: it is employed for reſtoring vigour after luxations and ſprains, and for eaſing violent pain in gouty and rheumatic caſes, in toothach, and ſimilar affections.

MELISSA OFFICINALIS. *Folia.* (*Ed.*)
Meliſſa. Herba. (*Lond.*)
Balm. The leaves.
Willd. g. 1118. *ſp* 1. *Didynamia Gymnoſpermia.*—Nat. ord. *Verticillatæ.*

BALM is a perennial plant, which grows wild on the Alps and Pyrennees, and is frequently cultivated in our gardens. It has a pleaſant ſmell, ſomewhat of the lemon kind; and a weak, roughiſh, aromatic taſte. The young ſhoots have the ſtrongeſt flavour; the flowers, and the herb itſelf when old, or produced in very moiſt rich ſoils or rainy ſeaſons, are much weaker both in ſmell and taſte.

It is principally uſed in the form of a watery infuſion, which is drunk in the manner of tea.

MELOË VESICATORIUS. (*Ed.*)
Cantharis. (*Lond.*) *Cantharides.* (*Dub.*)
Inſecta, Coleoptera, Veſicantia. Lytta viſicatoria, Fabricii.

THESE inſects have a longiſh, green and gold ſhining body, with flexible green-ſtriped elytra, which cover the whole back of the body, and under which are their brown membranous wings. On their head they have two black articulated feelers. They are found on the fraxinus, ſambucus, ſalix, liguſtrum, &c. in Spain, Italy, France and Germany. The largeſt come from Italy, but the Spaniſh cantharides are preferred. They are gathered by ſhaking the trees on which they are found, and catching them on a cloth ſpread beneath it. They are then killed by the fumes of vinegar, and dried carefully in a ſtove. The Melolontha vitis is ſometimes found mixed in conſiderable numbers with the cantharides. They are eaſily diſtinguiſhed by their almoſt ſquare

ſquare body, and as probably they do not ſtimulate the ſkin, they ſhould be picked out before the cantharides are powdered.

Cantharides have a peculiar nauſeous ſmell, and an extremely acrid, burning taſte. Taken internally, they often occaſion a diſcharge of blood by urine, with exquiſite pain: if the doſe be conſiderable, they ſeem to inflame and exulcerate the whole inteſtinal canal; the ſtools become mucous and purulent; the breath fetid and cadaverous; intenſe pains are felt in the lower belly: the patient faints, grows giddy, delirious, and dies. Applied to the ſkin, they firſt inflame, and afterwards excoriate the part, raiſing a more perfect bliſter than any of the vegetable acrids, and occaſioning a more plentiful diſcharge of ſerum. But even the external application of cantharides is often followed by a ſtrangury, accompanied with thirſt and feveriſh heat.

The inconveniences ariſing from the uſe of cantharides, whether taken internally, or applied externally, are beſt obviated by drinking plentifully of bland emollient liquids, ſuch as milk, emulſions, &c. The ſpecific property of counteracting cantharides aſcribed to camphor, has no foundation.

The active conſtituent of cantharides is not well aſcertained. It is not diſſipated by keeping for any length of time, and does not riſe in diſtillation. It is ſoluble in alcohol and in water. Gren and Hagen, both great authorities, ſay, indeed, that it is inſoluble in water; but both the London, Dublin, and Edinburgh Colleges prepare an ointment from the watery infuſion.

The internal uſe of cantharides is at all times doubtful, and requires the moſt prudent management. They have, however, been ſometimes employed with ſucceſs in dropſy, and in diſeaſes of the urinary organs, ariſing from debility. They are given in ſubſtance in very ſmall doſes, or in tincture.

Applied externally, they are one of our beſt and moſt powerful remedies. By proper management, they may be regulated ſo as to act as a gentle ſtimulus, as a rubefacient, or as a bliſter.

Bliſters are applied,

1. To increaſe the activity of the ſyſtem in general, by means of their irritation.
2. To increaſe the activity of a particular organ.
3. To diminiſh morbid action in particular organs, by means of the irritation they excite in the parts to which they are applied.

They may be employed with advantage in almoſt all diſeaſes accompanied with typhus fever, eſpecially if any important viſcus as the brains, lungs, or liver, be at the ſame time particularly affected. In theſe caſes the bliſters are not applied to the diſeaſed organs themſelves, but as near them as may be convenient.

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When we wiſh to excite action in any organ, the bliſters are, if poſſible, applied directly to the diſeaſed organ.

Cantharides are employed externally, either in ſubſtance, mixed up with wax and reſin, ſo as to form a plaſter or ointment, or in the form of tincture.

MENTHA.

Willd. g. 1102. *Didynamia Gymnoſpermia.*—Nat. ord. *Verticillatæ.*

Sp. 7. MENTHA VIRIDIS.

Mentha ſativa. Herba. (*Lond. Dub.*)

Spearmint. The plant.

SPEARMINT is perennial, and a native of Britain. The leaves have a warm, roughiſh, ſomewhat bitteriſh taſte; and a ſtrong, not unpleaſant, aromatic ſmell. Their virtues are ſtomachic and carminative.

Sp. 13. MENTHA PIPERITA. *Herba.* (*Ed.*)

Mentha piperitis. Herba. (*Lond. Dub.*)

Peppermint. The plant.

THIS ſpecies of mint is alſo perennial, and a native of Britain, where it is cultivated in very great quantities for the ſake of its eſſential oil. The leaves have a ſtrong, rather agreeable ſmell, and an intenſely pungent, aromatic taſte, reſembling that of pepper, and accompanied with a peculiar ſenſation of coldneſs.

Its predominant conſtituents are eſſential oil and camphor, both of which riſe in diſtillation, and are combined in what is called Oil of Peppermint.

Peppermint is principally uſed as a carminative and antiſpaſmodic. The diſtilled water is a domeſtic remedy for flatulent colic, and the eſſential oil is often given with advantage in doſes of a few drops in cramps of the ſtomach.

Sp. 20. MENTHA PULEGIUM. *Herba.* (*Ed.*)

Pulegium. Herba Flos. (*Lond.*) *Herba.* (*Dub.*)

Penny-royal. The herb and flower.

THIS is alſo perennial, and a native of Britain. In its ſenſible qualities, it is warm, pungent, and aromatic, ſomewhat ſimilar to ſpearmint, but leſs agreeable. It is ſeldom uſed.

MENYANTHES TRIFOLIATA. *Folia.* (*Ed.*)

Trifolium paludoſum. Herba. (*Lond.*) *Folia.* (*Dub.*)

Marſh trefoil. The leaves.

Willd. g. 299. *ſp.* 4. *Pentandria Monogynia.*—Nat. ord. *Rotaceæ.*

THIS perennial plant is very common in marſhy ſituations, and is one of the moſt beautiful of our native flowers.

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The leaves grow by threes on footſtalks. They are exceſſively bitter, and their bitterneſs is extracted by infuſion. They are ſaid to be ſometimes uſed in brewing ale, and that one ounce will go as far as half a pound of hops.

A drachm of them in powder purges and vomits. In infuſion or extract they have been recommended in intermittents, in ſeveral cachectic and cutaneous diſeaſes. The doſe of the extract is from ten to twenty grains.

MEZEREON. (*Lond. Dub.*) See DAPHNE.

MILLEPEDA. (*Lond. Dub.*) See ONISCUS.

MIMOSA.
Polygamia Monoecia.—Nat. ord. *Lomentaceæ.*

Sp. MIMOSA CATECHU. *Extractum ligni.* (*Ed.*)
Catechu. Succus ſpiſſatus. (*Lond. Dub.*)
Catechu. The extract of the wood.

THIS tree is a native of Hindoſtan. The extract of catechu, which was formerly termed, with peculiar impropriety, Japan earth, is principally prepared from the internal coloured part of the wood by decoction, evaporation, and exſiccation in the ſun. But catechu is alſo prepared in India from ſeveral other ſpecies of mimoſa, and even from the woods, barks, and fruits of other genera.

The catechu of the ſhops conſiſts of dry, hard, brittle maſſes, of a reddiſh-brown colour, differing conſiderably in ſhade and intenſity in different ſpecimens; ſometimes of a lamellar texture, of a more or leſs ſhining fracture, of no ſmell, and an aſtringent ſomewhat bitteriſh taſte, ſucceeded by a peculiar ſweetneſs, which laſts a conſiderable time in the mouth. It is not fuſible; and when burnt leaves little reſiduum. It is almoſt entirely ſoluble in water and in alcohol. Theſe ſolutions ſtrike a black colour with ſulphate of iron, and form a precipitate with gelatine. It therefore ſeems to contain a large proportion of tannin. The bitterneſs would lead us to ſuſpect the preſence of extractive; and it alſo very probably contains gum; for gum exudes ſpontaneouſly from many of the ſpecies of mimoſa, and other trees, which, by decoction, furniſh aſtringent extracts.

It may be uſefully employed for moſt purpoſes where an aſtringent is indicated; and it is particularly uſeful in alvine fluxes. Beſides this, it is employed alſo in uterine profluvia, in laxity and debility of the viſcera in general, in catarrhal affections, and various other diſeaſes where aſtringents are indicated. It is often ſuffered to diſſolve leiſurely in the mouth, as a topical aſtringent for laxities and exulcerations of the gums, for aphthous ulcers in the

the mouth, and similar affections: And it is in some other cases applied externally, both under the form of solution and of ointment.

Sp. MIMOSA NILOTICA. *Gummi.* (*Ed.*)
Gummi Arabicum. (*Lond. Dub.*)
Gum Arabic.

THIS species of mimosa grows in Arabia Petræa and Egypt. The greatest quantity of pure gum, commonly called Gum-Arabic, is furnished by this tree, from which it exudes either spontaneously, or from incisions made into the bark, and afterwards hardens in the air. But a perfectly similar gum may be obtained from all the species of mimosa, and from many other trees, such as the Swietenia febrifuga, Melia azadirachta, and the different species of Terminalia. It is remarkable that the barks of all the trees which furnish this bland mucilaginous substance, are highly astringent; that of the mimosa nilotica itself is used in India for tanning; and in our own country, the cherry and plumb trees, which sometimes yield a little gum, have very astringent barks.

Gum Arabic consists of roundish transparent tears, of a yellowish colour, shining fracture, without smell or taste, and perfectly soluble in water. The pieces which are most transparent and have least colour are reckoned the best.

It possesses the powers of a mucilaginous demulcent in a high degree; and is frequently exhibited in diarrhœa, dysentery, chincough, hoarseness, strangury, &c.; and is an extremely useful article, for giving form to some remedies, and for correcting the acrimony of others.

MOMORDICA ELATERIUM. *Fructus recens submaturus.* (*Ed.*)
Cucumis Agrestis. Fructus recens. (*Lond.*) *Fructus.* (*Dub.*)
Wild cucumber. The fresh fruit, when almost ripe.
Monoecia Syngenesia.—Nat. ord. *Cucurbitaceæ.*

THIS plant is a native of the south of Europe, and is perennial. When cultivated in this country, it does not survive the winter. The fruit is oblong, about an inch and a half long, and an inch in diameter. It is of a green colour, and beset with stiff hairs. When nearly ripe, it bursts on a slight touch, separates from its stalk, and sheds its seeds with great violence. From which circumstance it was named by the Greeks *Elaterium*, which name was also applied to the fæcula of the juice of the fruit, the only preparation used in medicine. In a few grains it operates as a drastic purgative, and is sometimes used in dropsies.

MORUS NIGRA.
Morus. Fructus. (*Lond.*)

Mulberry

Mulberry tree. The fruit.

Monoecia Tetrandria.—Nat. ord. *Scabridæ.*

This tree, which is ſuppoſed to have come originally from Perſia, bears the cold of our winters, and ripens its fruit in England. The fruit has the ſame properties with other ſubacid fruits. Its juice contains tartarous acid.

MOSCHUS MOSCHIFERUS. *Materia in folliculo prope umbilicum collecta.* (*Ed.*)

Moſchus. (*Dub.*) *Materia in folliculo prope umbilicum ſito collecta.* (*Lond.*)

The muſk-deer. Muſk. The ſubſtance contained in a follicle ſituated near the navel.

The muſk animal is an inhabitant of the moſt elevated region of Aſia, particularly of the Altayan Alps, and the mountains which divide Thibet from China. It is a gentle and timid animal, and its chaſe is difficult and dangerous. Its general form reſembles the deer tribe, and it is about three feet in length. In the male, behind the navel and before the prepuce, there is ſituated an oval bag, flat on one ſide and convex on the other, about three inches long and two broad, projecting about an inch, and having a ſmall open orifice, beſet with ſhort hairs, which is empty in the young animal, but in the adult is filled with a ſecreted matter, known by the name of muſk. When the bag becomes too full, the animal expreſſes part of its contents by rubbing itſelf againſt ſtones or trees. The muſk expreſſed in this manner is ſaid to be the pureſt, but none of it probably reaches this country. The beſt muſk is brought from Tonquin, an inferior ſort from Agria and Bengal, and a ſtill worſe from Ruſſia.

Fine muſk comes to us in round thin bladders; which are generally about the ſize of a pigeon's egg, covered with ſhort brown hairs, lined with a thin brown membrane, well filled, and without any appearance of having been opened. The muſk itſelf is dry, with a kind of unctuoſity, of a dark reddiſh brown, or ruſty blackiſh colour, in ſmall round grains, with very few hard black clots, and perfectly free from ſandy or other viſible foreign matter. If chewed, and rubbed with a knife on paper, it looks ſmooth, bright, yellowiſh, and is free from grittineſs. Laid on a red-hot iron, it catches flame, and burns almoſt entirely away, leaving only an exceeding ſmall quantity of light greyiſh aſhes. The largeſt and fulleſt bag ſcarcely contains more than two drachms of muſk.

The very great price of muſk has given riſe to many modes of adulterating it. To increaſe its weight, ſand, and even particles of lead, are introduced through very ſmall openings into the bags. The real muſk is frequently abſtracted from the bag, and its place ſupplied with dried and coarſely powdered blood, or ſome mixture with afphaltum. Thefe adulterations are to be detected by difcovering that the bag has been opened. The prefence of blood is alfo known by the fetid fmell it emits when heated fufficiently, and by the formation of ammonia when rubbed with potafs. Afphaltum is known by its fhining fracture and melting on hot iron, while mufk is converted into charcoal. But there are even artificial bags filled with a compofition containing fome real mufk. Thefe are in general thicker, and covered with longer hair, and want the internal brown membrane which lines the real mufk-bag.

The characteriftic conftituent of mufk feems to be of the nature of an effential oil. It rifes in diftillation, and is foluble in alcohol. The reft of it feems to confift of a fatty refinous matter.

Mufk is a medicine of very great efficacy, and for which, in fome cafes, there is hardly any fubftitute. When properly adminiftered, it fometimes fucceeds in the moft defperate circumftances. It raifes the pulfe, without heating much; it allays fpafms, and operates remarkably on the brain, increafing the powers of thought, fenfation, and voluntary motion.

It may be employed in every inftance of typhous fever, efpecially when attended with delirium, or fpafmodic affection of any particular organ, or of the whole fyftem, or fubfultus tendinum, &c. It is alfo ufed with the greateft benefit in exanthematous and phlegmonic difeafes, accompanied with typhoid fever; and in many fpafmodic affections, as chincough, epilepfy, trifmus, &c.

It is moft conveniently given in fubftance in powder, in dofes of three grains or upwards, repeated every one or two hours. Its beft preparation is the tincture.

MURIAS.

Muriate is the generic term for thofe fecondary compounds which contain muriatic acid. Their general properties have been already mentioned (210.)

The muriates may be divided into three families:

1. Alkaline muriates,—foluble in water, fufible, and vaporizable without decompofition, forming no precipitate with alkaline carbonates.

2. Earthy muriates,—foluble in water in general, decompofable by heat, forming a white precipitate with alkaline carbonates.

3. Metalline muriates.—The muriatic acid is capable of combining with many metals, in two ftates of oxidizement. The muriates which contain the metal more oxidized are in general very acrid, and foluble both in water and alcohol. The muriates which contain the metal lefs oxidized are often infoluble, have a white colour, and contain an excefs of bafe, or are fub-muriates. The

muriate

muriates are alfo the moft volatile metalline falts, and often rife undecompofed in fublimation or diftillation.

MURIAS AMMONIÆ. (*Ed.*)
Sal Ammoniacus. (*Lond. Dub.*)

Muriate of ammonia is found native efpecially in the neighbourhood of volcanoes. It was firft prepared in Egypt from the foot of camel dung by fublimation. But the greateft part of that now ufed is manufactured in Europe, either by combining directly ammonia with muriatic acid, or by decompofing the fulphate of ammonia by means of muriate of foda, or the muriates of lime and magnefia by means of ammonia.

In commerce, muriate of ammonia occurs either fublimed in firm, round, elaftic, concavo-convex cakes, or cryftallized in conical maffes. The latter commonly contain other falts, efpecially muriate of lime, which renders them deliquefcent; and therefore the fublimed muriate of ammonia is to be preferred for the purpofes of medicine.

Muriate of ammonia has an acrid, pungent, urinous tafte. It is foluble in about three times its weight of water at 60°, and in an equal weight at 212°. During its folution, it produces 32 degrees of cold. It is alfo foluble in about 4.5 parts of alcohol. It is permanent in the ordinary ftate of the atmofphere. By a gentle heat, it may be deprived of its water of cryftallization, and reduced to the form of a white powder. At a higher temperature it fublimes unchanged. Its cryftals are either fix-fided pyramids, aggregated in a plumofe form, or ftill more commonly four-fided pyramids. It confifts of 42.75 muriatic acid, 25.00 ammonia, and 32.25 water. It is decompofed by the fulphuric and nitric acids, by baryta, potafs, foda, ftrontia, and lime; by feveral fecondary falts, containing thefe acids or bafes; and by thofe metalline falts whofe bafes form with muriatic acid an infoluble compound.

Muriate of ammonia is now feldom ufed internally. It was formerly fuppofed to be a powerful aperient and attenuant of vifcid humours.

Externally applied, it is a valuable remedy. It may act in two ways,

1. By the cold produced during its folution.

It is from this caufe that fomentations of muriate of ammonia probably prove beneficial in mania, apoplexy from plethora, lefions of the head, and in violent headachs. When ufed with this intention, the folution fhould be applied as foon as it is made.

2. By the ftimulus of the falt.

On this principle we may explain its action as a difcutient in indolent tumours of all kinds, contufions, gangrene, pfora, ophthalmia, cynanche, and in ftimulating clyfters. In fome cafes, as in chilblains and other indolent inflammations, both modes of action may be serviceable. When first applied, the coldness of the solution will diminish the sense of heat and uneasiness of the part, and the subsequent stimulus will excite a more healthy action in the vessels.

MURIAS SODÆ. (*Ed.*)
Sal Muriaticus. (*Lond.*) *Sal Communis.* (*Dub.*)
Muriate of soda. Common sea-salt.

This is the most common of all the neutral salts. It is not only found in immense masses on, under, and above the earth's surface, and contained in great quantities in many salt springs, but it is the cause of the saltness of the sea.

Native muriate of soda presents two varieties, the lamellar and fibrous. It is found in Poland, Hungary, Spain, England, &c. When not perfectly pure, it is purified by solution and crystallization.

Salt springs occur in many parts of the world. The quantity of muriate of soda contained in these varies, from an inconsiderable quantity, even up to one third.

Sea-water also varies much in strength. It is said to contain most salt in warm climates, and at great depths.

Muriate of soda, as obtained from these natural solutions of it by evaporation and crystallization, is seldom pure, but commonly mixed with earthy muriates, which being deliquescent salts, dispose it to attract moisture from the atmosphere. It may, however, be purified by precipitating the earths by means of carbonate of soda, or by washing the crystallized salt with a saturated solution of muriate of soda, heated to ebullition. In this state it is not capable of dissolving any more muriate of soda, but will dissolve a considerable quantity of the earthy muriates.

Muriate of soda has a pure salt taste, is soluble in 2.8 times its weight of water at 60°, and in 2.76 at 212°. It is not soluble in alcohol. By the action of heat it first decrepitates, then melts, and lastly sublimes without decomposition. The primitive form of its crystals is cubic, and they are permanent in the atmosphere. According to Kirwan, they consist of 38.88 muriatic acid, 53. soda, and 8.12 water. It is decomposed by the sulphuric and nitric acids, by potass and baryta, by secondary salts containing these, and by metalline salts, whose base forms an insoluble compound with muriatic acid. It is also gradually decomposed by lime, iron, and litharge.

Muriate of soda is one of the most important articles in the arts, and in domestic economy. As a medicine, it is useful in some cases of dyspepsia; and in large doses it is said to check vomiting of blood. It is a common ingredient in stimulating clysters, and is sometimes applied externally as a fomentation to bruises,

or

or in the form of bath, as a gentle ftimulus to the whole furface of the body.

MYRISTICA MOSCHATA. *Fructûs nucleus*, Nux Mofchata *dictus*. *Macis*. *Hujus oleum fixum*, Oleum Macis *dictum*. *Oleum volatile*. (*Ed.*)

Myriftica. *Fructûs nucleus*, Nux Mofchata *dictus*. *Oleum effentiale*. *Oleum expreffum*, Oleum Macis *vulgo dictum*. *Macis*. (*Lond.*) *Nux Mofchata*. *Oleum effentiale*. *Oleum expreffum*. *Involucrum*, Macis *dictum*. (*Dub.*)

The nutmeg tree. The kernel of the fruit, commonly called Nutmeg. Its effential oil. Its expreffed oil, called Oil of Mace. The involucrum of the nut (mace).

Monoecia Monandria.—Nat. ord. *Oleraceæ*.

THE tree which furnifhes this elegant fpice is a native of the Molucca iflands. It is not, however, cultivated in any of them except Banda, from which all Europe has been hitherto fupplied with mace and nutmeg. The entire fruit is about the fize of a peach, and is marked with a longitudinal furrow. The external covering is fmooth, flefhy, and bitter. As the fruit ripens, this burfts and difclofes the mace, which is an oily membranous pulp, of a dark-red colour and aromatic flavour, divided into narrow branched flips. Within the mace is inclofed the nut, which confifts of a brown, thin hard fhell, and a fat parenchymatous kernel, of an oval fhape. The fruit is gathered three times a-year. The external covering is feparated on the fpot, and the mace and nut carried home, where they are carefully dried in the fun. After they are dried, the nutmegs are dipt in lime-water, and the mace is fprinkled with falt water, probably to preferve them from the attacks of infects.

By drying, mace acquires a reddifh-yellow colour. When good, it is flexible, thin, oily, of a deep colour, ftrong agreeable fmell, and an aromatic, bitterifh, acrid tafte. When brittle, divided into fewer flips, of a whitifh or pale yellow colour, and of little fmell or tafte, it is to be rejected.

Dried nutmegs are oval, flattened at both ends, of a grey-brown colour, and reticularly furrowed on the outfide, of a yellow colour within, variegated with brown undulating lines, folid, hard, unctuous to the feel, and eafily cut with a knife; and have a balfamic fmell, and agreeable aromatic tafte. The fmall round nutmegs are better than the large oval ones; and they fhould have a ftrong fmell and tafte, and fhould neither be worm-eaten, mufty, nor variegated with black lines.

Both mace and nutmegs are rather to be confidered as aromatic fpices than as articles of medicine. From the effential oil they contain they are heating and ftimulating, and they are added to other medicines for the fake of their agreeable flavour.

By diſtillation they yield a conſiderable quantity of eſſential oil, of a whitiſh-yellow colour, lighter than water, and poſſeſſing the aromatic taſte and ſmell in an eminent degree. In doſes of a few drops, it is a powerful carminative and ſtomachic.

Nutmegs alſo yield, by expreſſion, a conſiderable quantity of limpid yellow oil, which on cooling concretes into a ſebaceous conſiſtence.

They are previouſly beaten to a ſoft paſte in a warm mortar, then incloſed in a linen bag, expoſed to the vapour of hot water, and ſqueezed in a preſs, of which the plates have been heated.

In the ſhops we meet with three ſorts of unctuous ſubſtances, called Oil of Mace, though really expreſſed from the nutmeg. The beſt is brought from the Eaſt Indies, in ſtone jars; this is of a thick conſiſtence, of the colour of mace, and an agreeable fragrant ſmell: The ſecond ſort, which is paler coloured, and much inferior in quality, comes from Holland in ſolid maſſes, generally flat and of a ſquare figure: The third, which is the worſt of all, and uſually called Common Oil of Mace, is an artificial compoſition of ſuet, palm oil, and the like, flavoured with a little genuine oil of nutmeg.

The unctuous ſubſtance obtained from nutmegs by expreſſion, is a mixture of the volatile oil, on which their flavour depends, and of a fixed oil, of a white colour, without taſte or ſmell; and as the properties which characterize it, depend on the preſence of the volatile oil, the denomination of Fixed Oil, applied to it by the Edinburgh College, is leſs correct than that of Expreſſed Oil, given to it by the other Colleges, from the manner of its preparation.

MYROXYLON PERUIFERUM. *Balſamum.* (*Ed.*)
Balſamum Peruvianum. (*Lond. Dub.*)
Sweet-ſmelling balſam tree. Peruvian balſam.
Willd. g. 829. *ſp.* 1. *Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

THIS tree grows in the warmeſt provinces of South America, and is remarkable for its elegant appearance. Every part of it abounds with reſinous juice, even the leaves are full of tranſparent reſinous points, like thoſe of the orange tree.

The balſam as brought to us, is commonly of the conſiſtence of thin honey, of a reddiſh-brown colour, inclining to black, an agreeable aromatic ſmell, and a very hot, biting taſte.

It is very often adulterated, and ſometimes what is ſold for Peruvian balſam, is a ſpurious mixture of reſin and eſſential oil, flavoured with benzoin. Theſe frauds are not eaſily detected, and fortunately they are of little importance.

It

It is ſaid to be obtained by boiling the cuttings of the twigs in water, and ſkimming off with a ſpoon the balſam which ſwims on the top.

There is another ſort of balſam of Peru, of a *white* colour, and conſiderably more fragrant than the former. This is very rarely brought to us. It is ſaid to be the produce of the ſame plant which yields the common or *black* balſam; and to exude from inciſions made in the trunk. Beſides the white, there is alſo a third kind, commonly called the *red* or dry. This is ſuppoſed to differ from the white, merely in conſequence of the treatment to which it is ſubjected after it is got from the tree. In its fragrance it in ſome degree approaches to the balſam of Gilead, held in ſo high eſteem among the eaſtern nations; but it is very rarely in uſe in Britain, and almoſt never to be met with in our ſhops.

Peruvian balſam conſiſts of a volatile oil, reſin and benzoic acid. It is accordingly entirely ſoluble in alcohol, and in eſſential oils. Water diſſolves part of the benzoic acid, and fixed oil combines with the reſin. It may be ſuſpended in water by trituration with mucilage and yolk of eggs.

Balſam of Peru is a very warm, aromatic medicine, conſiderably hotter and more acrid than Copaiva. Its principal effects are, to warm the habit, and to ſtrengthen the nervous ſyſtem. Hence its uſe in ſome kinds of aſthmas, gonorrhœas, dyſenteries, ſuppreſſions of the uterine diſcharges, and other diſorders proceeding from a debility of the ſolids. It is alſo employed externally, for cleanſing and healing wounds and ulcers; and ſometimes againſt palſies and rheumatic pains.

MYRRHA. *Gummi-reſina.* (*Ed. Lond. Dub.*)

Myrrh. A gum-reſin.

THE tree which produces this gum-reſin is not yet aſcertained. Mr Bruce has given ſome reaſons for ſuppoſing that it is a mimoſa; but we may obſerve, that all the mimoſas with which we are ſufficiently acquainted, furniſh a pure gum, and not a gum-reſin. The beſt myrrh is brought from Troglodytitia, a province of Abyſſinia, on the borders of the Red Sea; but what we receive comes from the Eaſt Indies, and is produced on the eaſtern coaſt of Arabia Felix.

The beſt myrrh is in the form of tears. It ſhould be of a yellow or reddiſh-yellow colour, becoming redder when breathed on, light, brittle, of an unctuous feel, pellucid, ſhining; preſenting white ſemicircular ſtriæ in its fracture; of a very bitter, aromatic taſte, and a ſtrong, peculiar, not unpleaſant odour. It is not good if whitiſh, dark coloured, black, reſinous, ill ſmelled, or mixed with impurities, which is too commonly the caſe.

Myrrh is not fuſible, and is difficultly inflammable. It melts entirely in the mouth, and is much more ſoluble in water than in alcohol. The watery ſolution is yellow and opaque. The alcoholic ſolution is tranſparent, and when poured into water forms a yellow opaque fluid, but lets fall no precipitate. By diſtillation with water, myrrh furniſhes a portion of eſſential oil.

Myrrh is a heating, ſtimulating medicine. It frequently occaſions a mild diaphoreſis, and promotes the fluid ſecretions in general. Hence it proves ſerviceable in cachectic diſeaſes, ariſing from inactivity of the ſyſtem, and is ſuppoſed to act eſpecially upon the uterine ſyſtem, and to reſiſt putrefaction.

It is exhibited,

1. In ſubſtance; in the form of powder, or made up into pills, in doſes of ten to ſixty grains.
2. Diſſolved in water, as in Griffiths' famous but unchemical myrrh mixture.
3. Diſſolved in alcohol.

MYRTUS PIMENTA. *Fructus.* (*Ed.*)
Pimento. Bacca. (*Lond.*) *Semina.* (*Dub.*)
Pimento tree. The fruit, commonly called Jamaica Pepper.
Willd. g. 973. *ſp.* 28. *Icoſandria Monogynia.*—Nat. ord. *Heſperideæ.*

THIS is a native of Jamaica, and grows in all the woodlands on the north ſide. Soon after the trees have bloſſomed, the berries become fit for gathering; the fruit not being ſuffered to ripen, as in that ſtate it is moiſt and glutinous, and therefore difficult to cure, and when dried becomes black and taſteleſs. The berries are dried by ſpreading them on a terrace, expoſed to the ſun, for about ſeven days, during which time they gradually loſe their green colour, and become of a reddiſh-brown.

The ſmell of this ſpice reſembles a mixture of cinnamon, cloves, and nutmegs: its taſte approaches to that of cloves, or a mixture of the three foregoing; whence it has received the name of *all-ſpice.*

Pimento is a warm, aromatic ſtimulant, and is much uſed as a condiment in dreſſing food. As a medicine, it is advantageouſly ſubſtituted for the more coſtly ſpices, eſpecially in hoſpital practice.

NASTURTIUM AQUATICUM. (*Lond. Dub.*) See SISYMBRIUM.

NICOTIANA TABACUM. *Folia.* (*Ed.*)
Nicotiana. Folium. (*Lond. Dub.*)
Tobacco. The leaves.
Willd. g. 379. *ſp.* 1. *Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

This is an annual plant, a native of America, from whence it was firſt brought into Europe about the year 1560. It is now ſometimes cultivated for medicinal uſe in our gardens; but in general it is imported from America in large quantities. The leaves are about two feet long, of a pale green colour whilſt freſh, and when carefully dried of a lively yellowiſh caſt. They have a ſtrong, diſagreeable, narcotic ſmell, and a very acrid, burning taſte.

On the living body, whether taken into the ſtomach in ſubſtance or ſolution, or into the lungs in the form of ſmoke, or applied to abraded ſurfaces, tobacco is capable of producing deleterious effects. It often proves virulently cathartic or emetic, and occaſions intolerable cardialgia, anxiety and vertigo.

The ſyſtem becomes eaſily habituated to the action of tobacco; and many people uſe very large quantities of it in various ways as a luxury, without experiencing any other bad effect than what ariſes from their being unable to relinquiſh it after the habit is confirmed.

The active conſtituent of tobacco is an eſſential oil; for, by long boiling, the decoction and extract of tobacco become almoſt inert; and by diſtillation an oil is obtained from it, ſo active, that ſmall animals are almoſt inſtantly killed, when wounded by a needle dipped in it.

As a medicine it is exhibited in various forms:

1. In ſubſtance. When chewed it cauſes an increaſed flow of ſaliva, and ſometimes relieves the toothach; and reduced to powder, it proves an excellent errhine and ſternutatory, when ſnuffed up the noſtrils.
2. In infuſion in water or wine. Taken in ſuch ſmall doſes as to have little effect on the ſtomach, it proves powerfully diuretic, and was employed by Dr Fowler with very great ſucceſs in caſes of dropſy and dyſuria. It is alſo applied externally for the cure of pſora, tinea, and other cutaneous diſeaſes.
3. In the form of ſmoke, it is injected into the anus by means of bellows of a peculiar conſtruction. By acting as a ſtimulus to the rectum, it ſometimes ſucceeds in reviving the vital powers in ſome kinds of aſphyxia, and in evacuating the inteſtines in caſes of obſtinate conſtipation.

NITRAS.

Nitrate is the generic term for ſecondary compounds, which conſiſt of nitric acid, combined with any baſe. Their general characters have been already mentioned (186). There are three families of nitrates.

1. Alkaline

1. Alkaline nitrates;—ſoluble in water; ſolubility increaſed by increaſe of temperature; cryſtallizable; forming no precipitate with alkaline carbonates.

2. Earthy nitrates;—ſoluble in water; forming a white precipitate with alkaline carbonates.

3. Metallic nitrates;—generally ſoluble, both in water and in alcohol; decompoſable by heat, furniſhing nitric oxide gas, and leaving the metal oxidized to a maximum.

NITRAS POTASSÆ. (*Ed.*)
Nitrum. (*Lond. Dub.*)
Nitrate of potaſs. Nitre.

Nitrate of potaſs is annually produced on the ſurface of the earth in many countries. For this production, the preſence of a calcareous baſe, heat, and an open, but not too free communication with dry atmoſpheric air, is requiſite. The putrefaction of organic, eſpecially animal ſubſtances, is not neceſſary to, but accelerates the formation of this ſalt, by affording the azote in a ſtate in which it combines readily with the oxygen of the atmoſphere, and forms the nitric acid. Accordingly, in Germany and France, nitrate of potaſs is prepared, by expoſing mixtures of putrefying animal and vegetable ſubſtances, and calcareous earths, to the action of the atmoſphere. The ſalt is afterwards extracted by lixiviation and cryſtallization. The nitre uſed in this country is chiefly imported from the Eaſt Indies. As it occurs in commerce, it often contains a little muriate of potaſs and muriate of ſoda, from which it is eaſily purified by diſſolving it in boiling water, and filtering it; on cooling, the nitrate of potaſs cryſtallizes, and the other ſalts remain diſſolved.

Nitrate of potaſs has a ſharp, bitteriſh, cooling taſte. It ſhoots in pretty large cryſtals, which are generally ſix-ſided priſms, terminated by ſix-ſided pyramids; very brittle, and permanent in the atmoſphere; ſoluble in ſeven times their weight of water at 60°, and in an equal weight at 212°; melting when expoſed to a ſtrong heat, giving out at firſt oxygen, and afterwards nitrogen gas, until the whole acid be decompoſed, and the potaſs alone remain behind. It deflagrates more or leſs violently with all oxygenizable ſubſtances, oxidizing or acidifying them. When dried in a temperature of 70°, it conſiſts, according to Kirwan, of 44. nitric acid, 51.8 potaſs, and 4.2 water. It is decompoſed by the ſulphuric acid and baryta, by the muriate and acetite of baryta, and the ſulphates of ſoda, ammonia, magneſia, and alumina.

Taken to the extent of from a drachm to half an ounce in the courſe of a day, in repeated doſes, it diminiſhes the heat of the body, and the frequency of the pulſe, and operates by ſtool, and acts upon the ſecretion of urine, but is apt to produce pains in the ſtomach. In large doſes, ſuch as an ounce, taken at one time, it

produces

produces the moſt dreadful ſymptoms, conſtant vomiting, purging, mixed with blood, convulſions and death. Accidents of this kind have happened from its being ſold by miſtake for ſulphate of ſoda.

It is beſt given in ſmall doſes, as five to ten grains frequently repeated, and is only admiſſible in inflammatory diſeaſes. Externally it is uſed in gargles, for inflammatory ſore throats.

NUX MOSCHATA. (*Dub.*) See MYRISTICA.

OLEA EUROPÆA. *Fructûs oleum fixum.* : (*Ed.*)
Oliva et ejus oleum. (*Lond.*) *Oleum olivarum.* (*Dub.*)
The olive tree. The fruit, and oil expreſſed from the fruit.
Willd. g. 36. *ſp.* 1. *Diandria Monogynia.*—Nat. ord. *Sepiariæ.*

THIS tree is a native of the ſouth of Europe and north of Africa. It is cultivated in France, Spain, and Italy, for the ſake of its fruit, and the oil expreſſed from it. Olives, when freſh, have an acrid, bitter, extremely diſagreeable taſte; but they are only eaten when pickled. They are firſt ſteeped for ſeveral days in a ley of wood-aſhes, and then pickled in a ſtrong ſolution of muriate of ſoda.

They are principally valued for the oil they afford by expreſſion. For this purpoſe they are gathered when fully ripe, and immediately bruiſed and ſubjected to the preſs. The fineſt oil flows firſt, and a very bad oil is obtained by boiling the magma which remains after expreſſion, in water.

Good olive oil ſhould have a pale yellow colour, ſomewhat inclining to green, a bland taſte, without any rancidity, and no ſmell, and ſhould congeal at 38° Fahrenheit. In this country it is frequently rancid, and ſometimes adulterated.

Taken internally it operates as a gentle laxative, and is given in caſes of worms. It is alſo given in large quantities to mitigate the action of acrid ſubſtances taken into the ſtomach. It is uſed externally in frictions, in gargles, and in clyſters; but its principal employment is for the compoſition of ointments and plaſters.

OLIBANUM. (*Lond. Dub.*) See JUNIPERUS.

ONISCUS ASELLUS.
Millepeda. (*Lond.*) *Millepedæ, ſpiritûs vini vapore enecatæ.*
Slaters killed by the vapour of alcohol.
Inſecta aptera.

THESE inſects are found in cellars, under ſtones, and in cold moiſt places; in warm countries they are rarely met with. They have a faint diſagreeable ſmell, and a ſomewhat pungent, ſweetiſh, nauſeous taſte.

They

They have been analyzed by Thouvenel. Diſtilled without addition in the water-bath, they furniſhed a quantity of alkaline water, and loſt five-eighths of their weight. Treated afterwards with water and alcohol, they yielded a fourth of their weight of extractive and waxy ſubſtances.

The expreſſed juice of theſe inſects ſeemed alſo to contain muriate of potaſs and of lime.

Their medical virtues have been very much over-rated.

OPIUM. (*Lond. Dub.*) See PAPAVER.

OPOPONAX. (*Lond.*) See PASTINACA.

ORIGANUM.

Willd. g. 1116. *Didynamia Gymnoſpermia.*—Nat. ord. *Verticillatæ.*

Sp. 10. ORIGANUM VULGARE.

Origanum. Herba. (*Lond.*) *Folia.* (*Dub.*)

Wild marjoram. The herb.

THIS is a perennial plant, and is met with upon dry chalky hills, and in gravelly ſoils, in ſeveral parts of Britain. It has an agreeable ſmell, and a pungent taſte, warmer than that of the garden marjoram, and much reſembling thyme, with which it ſeems to agree in virtue. An eſſential oil diſtilled from it is kept in the ſhops, and is very acrid.

Sp. 15. ORIGANUM MAJORANA. *Herba.* (*Ed.*)

Majorana. Herba. (*Lond. Dub.*)

Sweet marjoram. The plant.

SWEET marjoram is an annual plant, which grows wild in Portugal, but is cultivated in our gardens, principally for culinary purpoſes.

It is a moderately warm aromatic, yielding its virtues both to aqueous and ſpirituous liquors by infuſion, and to water in diſtillation.

OSTREA EDULIS.

Oſtrea. Teſta. (*Lond.*) *Putamina.* (*Dub.*)

Oyſter. The ſhell.

Cl. *Vermes.* Ord. *Teſtacea.*

THE oyſter is a very nutritious article of diet, and in ſome diſeaſes not only admiſſible, but even advantageous. Their ſhells, which are officinal, are compoſed, like all the mother-of-pearl ſhells, of alternate layers of carbonate of lime, and a thin membranaceous ſubſtance, which exactly reſembles coagulated albumen in all its properties. By burning, the membrane is deſtroyed, and

and they are converted into lime, which, although very pure, poſſeſſes no advantage over that of the mineral kingdom.

OVIS ARIES. *Adeps.* (*Ed.*)
Ovis Sevum. (*Lond.*) *Sevum ovillum.* (*Dub.*)
The ſheep. Mutton-ſuet.
Cl. *Mammalia.* Ord. *Ruminantia.*

Mutton is a highly nutritious and wholeſome food. Ewe-milk is thick and heavy, and contains much cream and little whey. The cheeſe made from it has a bitter biting taſte, eſpecially when old, and is ſuppoſed to be ſtomachic. Mutton-ſuet is officinal, for the purpoſe of giving conſiſtency to ointments and plaſters.

OVUM. (*Lond. Dub.*) See Phasianus.

OXALIS ACETOSELLA.
Lujula. Folium. (*Lond.*) *Acetoſella. Folia.* (*Dub.*)
Wood-ſorrel. The leaves.
Willd. g. 918. *ſp.* 25. *Decandria Pentagynia.*—Nat. ord. *Gruinales.*

This is a ſmall perennial plant, which grows wild in woods, and ſhady hedges. The leaves contain a conſiderable quantity of ſuper-oxalate of potaſs, and have an extremely pleaſant acid taſte. They poſſeſs the ſame powers with the vegetable acids in general, and may be given in infuſion, or beaten with ſugar into a conſerve, or boiled with milk to form an acid whey. The ſuper-oxalate of potaſs is extracted in large quantities from them, and ſold under the name of *Eſſential Salt of Lemons.*

OXIDUM ARSENICI. (*Ed.*) See Arsenicum.

OXIDUM PLUMBI ALBUM. (*Ed.*)

——————— RUBRUM. (*Ed.*)

——————— SEMIVITREUM. (*Ed.*) See Plumbum.

OXIDUM ZINCI IMPURUM. (*Ed.*) See Zincum.

PANAX QUINQUEFOLIUM.
Ginſeng. Radix. (*Lond.*)
Ginſeng. The root.
Polygamia Diœcia.—Nat. ord. *Hederaceæ.*

This is a perennial plant, which grows in Tartary and North America. The root is about the thickneſs of the little finger; an inch or two in length, often dividing into two branches; of a whitiſh-yellow colour; wrinkled on the ſurface; of a compact, almoſt

horny

horny texture; when broken, exhibiting a refinous circle in the middle, of a reddifh colour. It has no fmell, but a very fweet tafte, combined with a flight degree of aromatic bitternefs.

The Chinefe, probably on account of its fcarcity, have a very extraordinary opinion of the virtues of this root, fo that it fells for many times its weight of filver. The Americans, on the contrary, difregard it, becaufe it is found plentifully in their woods. In fact, it is a gentle and agreeable ftimulant.

PAPAVER.

Willd. g. 1015.—*Polyandria Monogynia.*—Nat. ord. *Rhœades.*

Sp. 5. Papaver Rhoeas.

Papaver erraticum. Flos. (*Lond.*)

Common rofe, or red poppy. The flower.

This fpecies of poppy is annual, and very common in our corn fields. The petals give out a fine red colour when infufed, and are fuppofed to poffefs flightly anodyne properties.

Sp. 7. Papaver Somniferum. *Capfula, et fuccus fpiffatus.* (*Ed.*)

Papaver album. Capfula, (*Lond. Dub.*) *Opium* (*Lond. Dub.*)

White poppy. The capfules and their infpiffated juice, commonly called Opium.

The white poppy is alfo an annual, and is fometimes found wild in this country, but it is probably originally a native of the warmer parts of Afia.

In this country it is frequently cultivated for the beauty of the varieties of its flowers, and for its feeds. Some attempts have been made to obtain opium from its capfules; and Mr Ball received a premium from the Society for Encouraging the Arts, for fpecimens of Britifh opium, in no refpect inferior to the beft eaftern opium. But we apprehend that the climate of this country is an infuperable obftacle to its becoming a profitable branch of agriculture. For, fetting afide the chance of a total failure of the crop from a few days rain, how could the produce of our pigmy poppies ever come in competition with that of the gigantic plants of the eaft, rifing, as we are told by travellers, to the height of forty feet, and bearing capfules thirty five ounces in weight!

The leaves, ftalks and capfules of the poppy, abound with a milky juice, which may be collected in confiderable quantity, by flightly wounding them when almoft ripe: this juice, expofed for a few days to the air, thikens into a ftiff tenacious mafs, which in fact is opium. By decoction this juice is partially extracted, together with a confiderable quantity of mucilage. The liquor ftrongly preffed out, fuffered to fettle, clarified with whites of eggs, and evaporated to a due confiftence, yields about one-fifth, or one-fixth

the

the weight of the heads, of extract. This poſſeſſes the virtues of opium but in a very inferior degree. A ſtrong decoction of the dried heads, mixed with as much ſugar as is ſufficient to reduce it into the conſiſtence of a ſyrup, becomes fit for keeping in a liquid form; and is the only officinal preparation of the poppy. It is, however, a very unequal preparation, as the real quantity of opium it contains is very uncertain, and by no means equal to ſyrup, to which a certain quantity of ſolution of opium is added.

The ſeeds of the poppy are ſimply emulſive, and contain none of the narcotic principle. They yield a conſiderable quantity of oil by expreſſion.

In the province of Bahar in the Eaſt Indies, it is ſaid the poppy ſeeds are ſown in October or November, at about eight inches diſtance; and are well watered till the plants are about half a foot high, when a compoſt of nitrous earth, dung and aſhes, is ſpread over the areas; and a little before the flowers appear, they are again watered profuſely till the capſules are half grown: and then the opium is collected; for when fully ripe, they yield little juice. Two longitudinal inciſions, from below upwards, without penetrating the cavity, are made at ſunſet for three or four ſucceſſive evenings. In the morning the juice is ſcraped off with an iron ſcoop, and worked in an earthen pot in the ſun's heat till it be of a conſiſtence to be formed into thick cakes, of about four pounds weight, which are covered over with the leaves of poppy or tobacco, and dried.

Opium is a ſolid compact ſubſtance, poſſeſſing a conſiderable degree of tenacity; when broken, having a ſhining fracture and uniform appearance; of a dark brown colour; when moiſtened, marking on paper a light brown interrupted ſtreak, and becoming yellow when reduced to powder; ſcarcely colouring the ſaliva when chewed, exciting at firſt a nauſeous bitter taſte, which ſoon becomes acrid, with ſome degree of warmth; and having a peculiar heavy diſagreeable ſmell. It is bad if it be ſoft, friable, mixed with any impurities, have an intenſely dark or blackiſh colour, a weak or empyreumatic ſmell, a ſweetiſh taſte, or draw upon paper a brown continuous ſtreak.

Opium is not fuſible, but is ſoftened even by the heat of the fingers. It is highly inflammable. It is partially ſoluble, both in alcohol and in water. The ſolutions are tranſparent, and have a dark brown colour. The watery ſolution is not decompoſed by alcohol. A ſmall quantity of reſin is ſeparated from the alcoholic ſolution by water. Alcohol, or water diſtilled from opium, are impregnated with its narcotic virtues, which by long boiling, roaſting, or great age, are diminiſhed, or entirely diſſipated. The part of opium which is inſoluble either in water or in alcohol is albumen according to Gren, caoutchouc according to Buchholtz, a virulent glutinous ſubſtance according to Joſſe; and Prouſt

ſays

ſays it contains wax. From experiments made ſome years ago, we concluded that it was perfectly ſimilar to the gluten of wheat-flour, or fibrine. Upon the whole, it appears that the active conſtituent of opium, though not perfectly underſtood, is of a volatile nature, but ſomewhat fixed by its combination with the other conſtituents; that it is ſoluble both in water and in alcohol; that it is diſſipated in the proceſſes recommended for purifying opium by ſolution and evaporation; and that the attempts, made by ſome pharmaceutiſts, to obtain a preparation of opium, which ſhould poſſeſs only its ſedative, without its narcotic effects, only ſucceeded in ſo far as they diminiſhed its activity.

The action of opium on the living ſyſtem, has been the ſubject of the keeneſt controverſy. Some have aſſerted that it is a direct ſedative, while others have aſſerted as ſtrongly, that it is a powerful ſtimulus, and that the ſedative effects, which it certainly produces, depend entirely on the previous excitement. We cannot here pretend to give even an abſtract of the arguments uſed by the ſupporters of each opinion. We regret ſtill more, that the contradictory reſults of their experiments render it difficult to aſcertain even its primary and viſible effects.

Opium, when taken into the ſtomach to ſuch an extent as to have any ſenſible effect, gives riſe to a pleaſant ſerenity of mind, in general proceeding to a certain degree of languor and drowſineſs. The action of the ſanguiferous ſyſtem is diminiſhed, the pulſe becoming for the moſt part ſofter, fuller, and ſlower than it was before.

By many, on the contrary, it is ſaid, in the firſt inſtance at leaſt, to increaſe the frequency of the pulſe, and the heat of the body. It diminiſhes all the ſecretions and excretions, except the cuticular diſcharge, which it frequently augments in a very ſenſible degree. It excites thirſt, and renders the mouth dry and parched.

Opium taken into the ſtomach in a larger doſe, gives riſe to confuſion of head and vertigo. The power of all ſtimulating cauſes of making impreſſions on the body, is diminiſhed; and even at times, and in ſituations when a perſon would naturally be awake, ſleep is irreſiſtibly induced. In ſtill larger doſes, it acts in the ſame manner as the narcotic poiſons, giving riſe to vertigo, headach, tremors, delirium, and convulſions; and theſe terminating in a ſtate of ſtupor, from which the perſon cannot be rouſed. This ſtupor is accompanied with ſlowneſs of the pulſe, and with ſtertor in breathing, and the ſcene is terminated in death, attended with the ſame appearances as take place in an apoplexy.

From theſe effects of opium in a ſtate of health, it is not wonderful that recourſe ſhould have been had to it in diſeaſe, as mitigating pain, inducing ſleep, allaying inordinate action, and diminiſhing morbid ſenſibility. That theſe effects reſult from it, is confirmed

confirmed by the daily experience of every obferver; and as anfwering one or other of thefe intentions, moft, if not all, of the good confequences derived from it in actual practice are to be explained. If, therefore, by a fedative medicine, we mean an article capable of allaying, affuaging, mitigating, and compofing, no fubftance can have a better title to the appellation of fedative than opium.

Some practitioners are averfe to its ufe where an active inflammation takes place; but others have recourfe to it in fuch cafes, even at an early period, efpecially after bloodletting; and where fuch affections are attended not only with pain and fpafm, but with watchfulnefs and cough, it is often productive of the greateft benefit. Opium combined with calomel has of late been extenfively employed in every form of active inflammation, and with the greateft fuccefs. It is found alfo to be of very great fervice in allaying the pain and preventing the fymptomatic fever liable to be induced by wounds, fractures, burns, or fimilar accidents.

In intermittents, it is faid to have been ufed with good effect before the fit, in the cold ftage, in the hot ftage, and during the interval. Given even in the hot ftage, it has been obferved to allay the heat, thirft, headach, and delirium, to induce fweat and fleep, to cure the difeafe with lefs bark, and without leaving abdominal obftructions or dropfy.

It is often of very great fervice in fevers of the typhoid type, when patients are diftreffed with watchfulnefs or diarrhœa. But where thefe or fimilar circumftances do not indicate its ufe, it is often diftreffing to patients by augmenting thirft and conftipation.

In fmall-pox, when the convulfions before eruption are frequent and confiderable, opium is liberally ufed. It is likewife given from the fifth day onwards; and is found to allay the pain of fuppuration, to promote the ptyalifm, and to be otherwife ufeful.

In dyfentery, after the ufe of gentle laxatives, or along with them, opium, independently of any effect it may have on the fever, is of confequence in allaying the tormina and tenefmus, and in obviating that laxity of bowels which fo frequently remains after that difeafe.

In diarrhœa, the difeafe itfelf generally carries off any acrimony that may be a caufe, and then opium is ufed with great effect. Even in the worft fymptomatic cafes, it feldom fails to alleviate.

In cholera and pyrofis, it is almoft the only thing trufted to.

In colic, it is employed with laxatives; and no doubt often prevents ileus and inflammation, by relieving the fpafm. Even in ileus and in incarcerated hernia, it is often found to allay the vomiting, the fpafms, the pain, and fometimes to diminifh the inflammation, and prevent the gangrene of the ftrangulated gut.

It is given to allay the pain and favour the defcent of calculi, and to relieve in jaundice and dyfuria proceeding from fpafm.

It is of acknowledged uſe in the different ſpecies of tetanus; affords relief to the various ſpaſmodic ſymptoms of dyſpepſia, hyſteria, hypochondriaſis, aſthma, rabies canina, &c., and has been found uſeful in ſome kinds of epilepſy.

In ſyphilis it is only uſeful in combating ſymptoms, and in counteracting the effects reſulting from the improper uſe of mercury, for it poſſeſſes no power of overcoming the venereal virus.

It is found uſeful in certain caſes of threatened abortion and lingering delivery, in convulſions during parturition, and in the after-pains and exceſſive flooding.

The only form perhaps neceſſary for opium is that of pill; and as it is ſo ſoluble in every menſtruum, there ſeems the leſs occaſion for the addition of either gum or ſoap. This form is more apt to ſit on the ſtomach than any liquid form, but requires rather more time to produce its effects. The adminiſtration of opium to the unaccuſtomed, is ſometimes very difficult. The requiſite quantity of opium is wonderfully different in different perſons, and in different ſtates of the ſame perſon. A quarter of a grain will in one adult produce effects which ten times the quantity will not do in another; and a doſe that might prove fatal in cholera or colic, would not be perceptible in many caſes of tetanus or mania. The loweſt fatal doſe to the unaccuſtomed, as mentioned by authors, ſeems to be four grains; but a dangerous doſe is ſo apt to puke, that it has ſeldom time to occaſion death. When given in too ſmall a doſe, it is apt to produce diſturbed ſleep, and other diſagreeable conſequences; and with ſome conſtitutions it ſeems not to agree in any doſe or form. Often, on the other hand, from a ſmall doſe ſound ſleep, and alleviation of pain will be produced, while a larger one gives riſe to vertigo and delirium. Some prefer the repetition of ſmall doſes, others the giving of a full doſe at once. In ſome it ſeems not to have its proper effect till after a conſiderable time. The operation of a moderate doſe is ſuppoſed to laſt in general about eight hours from the time of taking it.

PAREIRA BRAVA. (*Lond. Dub.*) See CISSAMPELOS.

PARIETARIA OFFICINALIS.

Parietaria. Herba. (*Lond.*)

Pellitory of the wall. The herb.

Polygamia Monœcia.—Nat. ord. *Scabridæ.*

THIS is a ſmall plant growing upon old walls; of an herbaceous ſubſaline taſte, without any ſmell.

PASTINACA OPOPONAX.

Opoponax. Gummi-reſina. (*Lond.*)

Opoponax. A gum-reſin.

Willd.

Willd. g. 558. *sp.* 3. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

THIS plant is perennial, and grows wild in the south of Europe; but the gum-resin which is said to be obtained by wounding the stalk or root, is brought from the Levant and East Indies, sometimes in round drops or tears, but more commonly in irregular lumps, of a reddish-yellow colour on the outside with specks of white, inwardly of a paler colour, and frequently var ga d with large white pieces. It has a peculiar strong smell, and a bitter, acrid, somewhat nauseous, taste.

It forms a milky solution with water, and yields a little essential oil on distillation. It is supposed to be emmenagogue, but is rarely used.

PENTAPHYLLUM. (*Lond.*) See POTENTILLA.

PETROLEUM. (*Lond.*) *Petroleum Barbadense.* (*Dub.*) See BITUMEN.

PETROSELINUM. (*Lond.*) See APIUM.

PHASIANUS GALLUS.
Ovum. (*Lond.*) *Ovum; putamen.* (*Dub.*)
The dunghil-fowl. The egg, and egg-shell.
Cl. *Aves.* Ord. *Gallinæ.*

FROM what country this useful bird originally came, is not ascertained. It is now domesticated almost every where, and furnishes one of the most wholesome and delicate articles of food.

The egg only is officinal. The shell consists principally of carbonate of lime, with a small quantity of phosphate of lime and animal matter. When burnt, the animal matter and carbonic acid are destroyed, and we obtain a lime, mixed with a little phosphate of lime.

The contents of the egg consists of two substances, the white, and the yolk. The white is albumen, combined with a little soda and sulphur. The yolk is also albuminous, but contains also a bland-oil, and some colouring matter. The latter is sometimes used in pharmacy for suspending oily and resinous substances in water. The former is used only for clarification (S. 2. 53.)

PHYSETER MACROCEPHALUS. *Sevum.* (*Ed.*)
Sperm. ceti. (*Lond.*) *Spermaceti.* (*Dub.*)
Spermaceti-whale. The suet. Spermaceti.
Cl. *Mammalia.* Ord. *Cetacea.*

THE spermaceti whale is characterized by his enormous head, great part of which is occupied by a triangular cavity of bone, covered only by the common integuments. In the living animal this cavity is filled with a white, fluid, oily substance, amounting ſometimes to many tons in weight. On the death of the whale, it congeals into a white unctuous maſs, from which a conſiderable quantity of very pure whale oil is obtained by expreſſion. The reſiduum, afterwards freed from impurities, by waſhing with water, melting, ſtraining, expreſſion through linen-bags, and, laſtly, waſhing in a weak ley of potaſs, is the peculiar ſubſtance well known by the name of Spermaceti. It is alſo contained in ſolution in the common whale and other fiſh-oils; for it is often found depoſited, by a ſpecies of cryſtallization, in the reſervoirs containing them.

The chemical properties of ſpermaceti have been already (242.) noticed. As a medicine, for internal uſe, it agrees with the fixed vegetable oils; and in the compoſition of ointments, &c. its place may be very well ſupplied by a mixture of oil and wax.

PIMENTO. (*Lond. Dub.*) See MYRTUS.

PIMPINELLA ANISUM. *Semen.* (*Ed.*)
Aniſum. Semen. (*Lond. Dub.*)
Aniſe. The ſeed.
Willd. g. 562. *ſp.* 8. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

ANISE is an annual umbelliferous plant, growing naturally in Crete, Syria, and other places of the eaſt. It is cultivated in ſome parts of France, Germany, and Spain, and may be raiſed alſo in England: the ſeeds brought from Spain, which are ſmaller than the others, are preferred.

Aniſeeds have an aromatic ſmell, and a pleaſant warm taſte, accompanied with a degree of ſweetneſs. Water extracts very little of their flavour; rectified ſpirit the whole.

PINUS.
Monœcia Adelphia.—Nat. ord. *Coniferæ.*

Sp. PINUS ABIES. *Reſina.* (*Ed.*)
Pix Burgundica. (*Lond. Dub.*)
Thus. Reſina. (*Lond.*)
Common ſpruce-fir. Burgundy-pitch. Common frankincenſe.

Sp. PINUS BALSAMEA. *Reſina.* (*Ed.*)
Balſamum Canadenſe. (*Lond. Dub.*)
Hemlock-fir. Balſam of Canada.

Sp. PINUS LARIX. *Reſina et Oleum volatile.* (*Ed.*)
Terebinthina Veneta. (*Lond. Dub.*)
The larch. Venice turpentine. Oil of turpentine.

Sp. PINUS

Sp. PINUS SYLVESTRIS. *Refina.* (*Ed.*)
Pix liquida. (*Lond. Dub.*)
Terebinthina vulgaris. (*Lond. Dub.*)
Scotch fir. Tar. Common turpentine.

THESE different fpecies of fir are all natives of fandy fituations. The laft only grows wild in this country. They all abound in every part with a refinous juice, which poffeffes the fame general qualities, but prefents fome varieties, according to the nature of the fpecies and mode of preparation.

We may arrange the products,

1. Into thofe which exude fpontaneoufly.
2. Into thofe procured by wounding the tree.
3. Into thofe procured by decoction. And
4. Into thofe which are procured by the action of fire.

From the pinus abies, and perhaps from the pinus fylveftris, in warm feafons and climates, a refinous juice exudes fpontaneoufly, which hardens into tears. It is the *Thus* of the London Pharmacopœia, or common frankincenfe.

The pinus larix exudes a fpecies of manna, called Briançon Manna, but which is not ufed; as, befides the faccharine matters, it evidently contains turpentine.

To obtain the products of the fecond kind, a feries of wounds are made through the bark, beginning at the bottom, and rifing gradually upwards, until a ftripe of the bark, about nine feet high, be removed, which is commonly effected in about four years. The fame operation is then repeated on the oppofite fide. The operation is then recommenced clofe to the edge of the former wound, which by this time is nearly clofed. A tree worked in this manner will furvive and furnifh turpentine for near a century. The juice which flows from thefe wounds during fummer, is collected in a fmall cavity, formed in the earth at the bottom of the incifions, from which it is occafionally removed into proper refervoirs previous to its purification. As the trees exude very little juice during cold weather, no new incifions are made in winter; but the old ones get covered with a foft refinous cruft, called *barras, galipot*, or white refin, which is fcraped off, and alfo collected for fubfequent purification.

Both thefe products are purified by liquefaction and filtration. They confift almoft entirely of an effential oil and a refin, and differ only in the proportions, the turpentine containing moft oil, and the galipot moft refin.

Turpentines have different appellations according to the fpecies of tree from which they are procured.

Balfam of Canada. *Pinus balfamea et Canadenfis.*
Cyprian turpentine. *Piftacia terebinthus.*
Strafburgh turpentine. *Pinus picea.*

Venice turpentine. *Pinus larix.*
Common turpentine. *Pinus ſylveſtris.*
Hungarian balſam. ———— *var. Mughos.*
Carpatian balſam. *Pinus cembra.*

None of theſe are properly balſams; which term is now uſed to expreſs thoſe oily reſinous ſubſtances only which contain benzoic acid. The Edinburgh College have denominated them reſins, but the proportion of eſſential oil which they contain is much too large to admit of the name, which ought to be confined to the other conſtituent, being applied to the compound with propriety. Therefore, until more attention ſhall be paid to this branch of nomenclature, we ſhall employ the common term of Turpentine.

The eſſential oil, commonly called Oil of Turpentine, may be procured from any of theſe by diſtillation.

The reſiduum of the diſtillation gets different names, according to ſome peculiarities in its treatment. When the diſtillation is performed without addition, and continued until the whole eſſential oil be driven off, and there appear ſome traces of empyreuma, the reſiduum is Common Reſin or Colophony; but if, while the maſs is ſtill fluid, a quantity of water be added, and thoroughly blended with the reſin by long and conſtant agitation, it is then called Yellow Reſin.

Although galipot contains eſſential oil, the quantity is ſo ſmall that it is never diſtilled from it. It is purified by melting it with a very gentle fire, and filtrating it. By this proceſs it ſtill contains eſſential oil, and is the ſubſtance known by the name of Burgundy Pitch. If boiling water be added to it after it is ſtrained, but while it is ſtill fluid, and they be agitated together till the maſs cools, we have a yellow reſin, which, from ſtill containing ſome eſſential oil, is preferred to that prepared by a ſimilar proceſs from common reſin.

A fluid extract prepared by decoction from the twigs of the pinus ſylveſtris, is the well-known eſſence of ſpruce, which, fermented with molaſſes, forms the faſhionable beverage of Spruce beer.

The laſt kind of products from the different ſpecies of fir are obtained by the action of fire. With this view, a conical cavity is dug out in the earth, communicating at the bottom with a reſervoir. Billets or thin laths of wood are then placed, ſo as not only to fill the cavity, but to form a conical pile over it, which is covered with turf, and kindled at the top. The admiſſion of air is ſo regulated, that it burns from above downwards, with a ſlow and ſmothered combuſtion. The ſmoke and vapours formed are obliged to deſcend into the excavation in the ground, where they are condenſed, and paſs along with the matters liquefied into the receiver. This mixture is denominated Tar; and the wood itſelf

itſelf is reduced to charcoal. By long boiling, tar is deprived of its volatile parts, and converted into pitch.

But the moſt remarkable production is that of a real gum, entirely ſoluble in water, from a tree ſo reſinous as the Pinus larix. It is prepared in the Ural larch foreſts; and exudes, according to Profeſſor Pallas, from the interior parts of the wood when it is burning.

We ſhall now proceed to notice more particularly, ſuch of theſe ſubſtances as are officinal.

TEREBINTHINA.
Balſamum Canadenſe. (*Lond. Dub.*)
Reſina pini balſameæ. (*Ed.*)
Terebinthina Chia. (*Lond.*)
——— *piſtaciæ lentiſci.*
Terebinthina Veneta. (*Lond. Dub.*)
Reſina pini laricis. (*Ed.*)
Terebinthina vulgaris. (*Lond. Dub.*)
——— *pini ſylveſtris.*

ALL theſe ſpecies of turpentine poſſeſs the ſame general properties. They are more or leſs fluid, with different degrees of tranſparency; of a whitiſh or yellowiſh colour; a penetrating ſmell, and a warm, pungent bitteriſh taſte. They are entirely ſoluble in alcohol; combine with fixed oil; and impart their flavour to water, but are not ſoluble in it. They are decompoſed by a moderate heat, being ſeparated into an eſſential oil and a reſin, and are exceedingly inflammable, burning with a large white flame, and much ſmoke.

Each ſpecies has ſome peculiarities. The Canadian is reckoned the beſt, and next to it the Chian. They are more tranſparent, and have a more agreeable flavour than the other ſorts. The common turpentine, as being the moſt offenſive, is rarely given internally; its principal uſe is in plaſters and ointments among farriers, and for the diſtillation of the eſſential oil.

Taken internally, they are active ſtimulants, increaſe the ſecretion of urine, to which they give the ſmell of violets, even though applied only externally, and open the bowels.

They are principally recommended in gleets, the fluor albus, and the like; and by ſome in calculous complaints: In all caſes accompanied with inflammation, they ought to be abſtained from, as this ſymptom is increaſed, and not unfrequently occaſioned, by them. Their doſe is from a ſcruple to a drachm and a half: they are moſt commodiouſly taken in the form of a bolus, or blended with watery liquors by the mediation of the yolk of an egg or mucilage.

But they are more frequently uſed externally as ſtimulants and diſcutients, and enter ſeveral officinal plaſters and ointments.

OLEUM TEREBINTHINÆ VOLATILE. (*Ed.*)

IN the Edinburgh Pharmacopœia, this essential oil is officinal: by the other Colleges directions are given for its preparation.

It is lighter than water, transparent, limpid, and volatile. It has a hot pungent taste, and a penetrating smell; is highly inflammable, and possesses all the other properties of essential oils, (248.)

As a medicine it is highly stimulating and penetrating. Internally it acts as a diuretic or sudorific in very small doses. It has, however, been given in much larger doses, especially when mixed with honey. Recourse has principally been had to such doses in cases of chronic rheumatism, particularly in those modifications of it which are styled *sciatica* and *lumbago*. But they have not been often successful, and sometimes they have had the effect of inducing bloody urine.

Externally it often produces excellent effects as a discutient in indolent tumours; as a stimulus in paralysis of the extremities, and in bruises; as an antispasmodic, and as a styptic, when applied as hot as the patient can bear it, on compresses directly to the bleeding mouths of the vessels.

RESINA.

Resina alba. (*Dub.*) *Thus.* (*Lond.*)

Resina pini abietis. (*Ed.*) *Pix Burgundica.* (*Dub.*)

THESE are not pure resins, as they still contain some essential oil. They are obtained from several species of fir indifferently. The first kind is a spontaneous exudation, which takes place in dry and warm weather, hardened by exposure; and the last is the crust, which collects in winter upon the wounds inflicted for obtaining the turpentines, simply purified by percolation.

The first is a solid, brittle resin, brought to us in little globes or masses of a brownish or yellowish colour on the outside; internally whitish, or variegated with whitish specks, of a bitterish, acrid, not agreeable taste, without any considerable smell.

The second is of a solid consistence, yet somewhat soft, of a reddish-brown colour, and not disagreeable smell.

They possess the general properties of resins (251.), and are only used externally in the composition of plasters.

PIX LIQUIDA. (*Lond. Dub.*)

Resina pini sylvestris. (*Ed.*)

TAR is a mixture of resin, empyreumatic oil, charcoal, and acetous acid. Its colour is derived from the charcoal; and the other properties in which it differs from a common resin, depend on the presence of acetous acid and empyreumatic oil.

The acid itself is not only soluble in water, but it also renders the empyreumatic oil soluble in larger quantities than it otherwise

would

would be. Tar water is a heating diuretic and ſudorific remedy, but by no means ſo powerful, or ſo generally admiſſible as it was repreſented by Biſhop Berkeley. Tar is applied externally in tinea capitis, and ſome other cutaneous diſeaſes.

PIPER INDICUM. (*Lond. Dub.*) See CAPSICUM.

PIPER.
Willd. g. 74. *Diandria Trigynia.*—Nat. ord. *Piperitæ.*

Sp. 1. PIPER NIGRUM. *Bacca.* (*Lond.*) *Fructus.* (*Ed.*) *Semina.* (*Dub.*)
Black pepper. The berry.

THE black pepper is the fruit of a ſhrubby, creeping plant, which grows wild in the Eaſt Indies, and is cultivated in Java and Malabar, by which means the fruit is much improved. The berries are gathered before they are ripe, and are dried in the ſun. They become black and corrugated on the ſurface; their taſte is hot and fiery, and their ſmell ſlightly aromatic.

White pepper is the fruit of the ſame plant, gathered after it is fully ripe, and freed of its external coat by maceration in water. It is ſmooth on the ſurface, and leſs pungent than the black pepper.

Sp. 3. PIPER CUBEBA.
Cubeba. (*Lond.*)
Cubebs.

CUBEBS are a fruit brought from Java. This fruit has a great reſemblance to pepper. The principal difference diſtinguiſhable by the eye, is, that each cubeb is furniſhed with a long ſlender ſtalk, whence they are called by ſome *piper caudatum.* In aromatic warmth and pungency, cubebs are far inferior to pepper.

Sp. 12. PIPER LONGUM. *Fructus.* (*Lond. Ed.*) *Semina.* (*Dub.*)
Long pepper. The fruit.

THE plant which bears the long pepper is alſo a ſarmentaceous climber. The berries are ſmall round grains, diſpoſed ſpirally in a long cylindrical head. They are gathered before they are ripe and dried, and are the hotteſt of all the peppers.

The warmth and pungency of theſe ſpices reſide entirely in a reſin; their aromatic odour in an eſſential oil. In medicine they are ſometimes employed as acrid ſtimulants; but their chief uſe is in cookery as condiments.

PISTACIA.
Dioecia Pentandria.—Nat. ord. *Amentaceæ.*

Sp. PISTACIA

Sp. PISTACIA TEREBINTHUS.
Terebinthina Chia. (*Lond.*)
Chian turpentine.

THE tree which yields this turpentine grows in India, the north of Africa, and ſouth of Europe, but the turpentine is principally collected in the iſlands of Chios and Cyprus, by wounding the tree. It does not differ in any thing material, except its price, from the other turpentines.—See PINUS.

Sp. PISTACIA LENTISCUS. *Reſina.* (*Ed.*)
Maſtiche. Reſina. (*Lond.*)
Maſtich. A reſin.

THIS ſpecies is a native of the ſame countries with the former. It is obtained principally in the iſland of Chios, by making tranſverſe inciſions in the tree, and allowing the juice to harden. It is brought in ſmall yellowiſh, ſemi-tranſparent, brittle grains; of a ſmooth and ſhining fracture, ſoftening when chewed, fuſible, burning with a pleaſant ſmell, and ſoluble in alcohol and fixed oils Its flavour is communicated to water. It is therefote a reſin, combined with a little eſſential oil. It is principally uſed by the Turkiſh women as a maſticatory, to preſerve the teeth, and give a pleaſant ſmell to the breath.

PIX BURGUNDICA. (*Lond. Dub.*);
PIX LIQUIDA. (*Lond. Dub.*) See PINUS.

PLUMBUM. (*Ed. Lond.*)
Lead.

THE general properties of lead have been already (192.) enumerated.

Lead is found,

I. Oxidized:
  1. Lead ochre of different colours.

II. Oxidized, and combined with acids:
  2. Carbonated lead. White lead ſpar.
  3. Murio-carbonated.
  4. Phoſphated lead. Green lead ore.
  5. Arſeniated lead.
  6. Arſenio-phoſphated lead.
  7. Molybdated lead.
  8. Sulphated lead.

III. Sulphuretted:
  9. Sulphuretted lead. Galena.
  10. Sulphuretted oxide of lead.

Lead is obtained by various proceſſes from theſe ores. In its metallic form it is ſcarcely an officinal article, as its different oxides

ides are purchafed from the manufacturers, and never prepared by the apothecary.

Its effects on the body are emaciation, violent colics, paralyfis, tremors and contractions of the limbs; and as they generally come on gradually, the caufe is fometimes overlooked till it be too late. Poifoning from lead is never intentional, but only accidental, either from liquors becoming impregnated with lead, by being improperly kept in veffels lined or glazed with lead, or to which lead has been criminally added to correct its acidity; or among manufacturers who work much with lead, as painters and plumbers, and who are not fufficiently attentive to avoid fwallowing any of it.

The prefence of lead in any fufpected liquor is detected by the hydro-fulphuret of potafs, which forms with it a brown precipitate, not foluble in diluted muriatic acid; and ftill more certainly by evaporating a portion of it to drynefs, and expofing the extract to a heat fufficient to reduce the lead.

Oxidum Plumbi album. (*Ed.*)
Ceruffa. (*Lond. Dub.*)
White oxide of lead. Ceruffe.

The white oxide of lead is manufactured in feveral countries. It is prepared by expofing lead to the vapour of vinegar. To accelerate the oxidizement, the lead is caft in thin plates, which are rolled up fpirally. A number of thefe are placed perpendicularly on a fupport, over a flat veffel containing vinegar, which is converted into vapour by a gentle heat, fuch as that of dung. The plates become flowly covered with a white cruft, which is in due time removed; and the remains of the plates again expofed to the vapour of vinegar, until they be entirely corroded.

White oxide of lead has a fcaly or foliated texture, is brittle, friable, heavy, of a fnowy whitenefs, and a fweet tafte. It is often adulterated with earthy fubftances, which may be difcovered by mixing it with oil, and reducing the lead in a crucible.

In pharmacy the white oxide of lead is only ufed in the compofition of ointments and plafters.

Oxidum Plumbi rubrum. (*Ed.*)
Minium. (*Lond.*)
Red oxide of lead.

The preparation of red-lead is fo troublefome and tedious, as fcarce ever to be attempted by the apothecary or chemift; nor indeed is this commodity expected to be made by them, the preparation of it being a diftinct branch of bufinefs. The makers melt large quantities of lead at once, upon the bottom of a reverberatory furnace built for this purpofe, and fo contrived, that the flame acts upon a large furface of the metal, which is continually changed by the means of iron-rakes drawn backwards and for-

wards,

wards, till the fluidity of the lead is deſtroyed; after which, the oxide is only now and then turned.

The red oxide of lead is obtained in the form of a very heavy powder, conſiſting of minute ſhining ſcales, of a bright ſcarlet, verging towards yellow, eſpecially if triturated. It is ſometimes adulterated with red oxide of iron, red bole, or powdered brick. Theſe frauds are detected by the inferiority of colour, by mixing it with oil, and ſubjecting it to the teſt of reduction; and by its forming a black precipitate with tincture of galls when diſſolved in nitrous acid.

Oxidum Plumbi semivitreum. (*Ed.*)
Lithargyrus. (*Lond. Dub.*)
Semi-vitrified oxide of lead. Litharge.

If oxidized lead be urged with a haſty fire, it melts into the appearance of oil, and on cooling concretes into litharge. Greateſt part of the litharge met with in the ſhops, is produced in the purification of ſilver from lead, and the refining of gold and ſilver by means of this metal. According to the degree of fire and other circumſtances, it proves of a pale or deep colour; the firſt has been commonly called Litharge of Silver, the other Litharge of Gold.

The oxides of lead diſſolve by heat, in expreſſed oils; theſe mixtures are the baſis of ſeveral officinal plaſters and ointments.

Lead and its oxides when undiſſolved, have no conſiderable effects as medicines. Diſſolved in oils, they are ſuppoſed to be (when externally applied) anti-inflammatory and deſiccative. Combined with vegetable acids, they are remarkably ſo; and taken internally, prove a powerful though dangerous ſtyptic.

POLYGALA SENEGA. *Radix.* (*Ed.*)
Seneka. *Radix.* (*Lond. Dub.*)
Seneka, or Rattleſnake Root.
Diadelphia Octandria.—Nat. ord. *Lomentaceæ.*

Seneka is a perennial plant, which grows wild in North America, particularly Virginia and Pennſylvania. This root is uſually about the thickneſs of the little finger, variouſly bent and contorted, and appears as if compoſed of joints, whence it is ſuppoſed to reſemble the tail of the animal whoſe name it bears; a kind of membranous margin runs on each ſide, the whole length of the root.

The bark is the active part of the root. Its taſte is at firſt acid, afterwards very hot and pungent. It has no ſmell.

Its acrimony reſides in a reſin; for it is entirely extracted by alcohol; does not riſe in diſtillation; and is not deſtroyed by keeping.

It

It is an active ſtimulus, and increaſes the force of the circulation, eſpecially of the pulmonary veſſels. It has therefore been found uſeful in typhoid inflammations of the lungs: but it is apt to diſorder the ſtomach, and to induce diarrhœa.

Some have likewiſe employed this root in hydropic caſes, and not without ſucceſs. There are examples of its occaſioning a plentiful evacuation by ſtool, urine, and perſpiration; and by this means removing the diſeaſe, after the common diuretics and hydragogues had failed.

The Senegaro Indians are ſaid to prevent the fatal effects of the bite of the rattleſnake, by giving it internally, and by applying it externally to the wound.

The uſual doſe of the powder is thirty grains or more.

Externally, it has been advantageouſly uſed as a ſtimulating gargle in croup.

POLYGONUM BISTORTA. *Radix.* (*Ed.*)
Biſtorta. Radix. (*Dub. Lond.*)
Great Biſtort, or Snakeweed. The root.
Willd. g. 785. *ſp.* 3. *Octandria Trigynia.*—Nat. ord. *Oleraceæ.*

This plant is perennial, and grows wild in moiſt meadows in ſeveral parts of Britain. The root is about the thickneſs of the little finger, of a blackiſh-brown colour on the outſide, and reddiſh within: it is writhed or bent vermicularly (whence the name of the plant) with a joint at each bending, and full of buſhy fibres; the root of the ſpecies here mentioned has, for the moſt part, only one or two bendings; others have three or more.

All the parts of biſtort have a rough auſtere taſte, particularly the root, which is one of the ſtrongeſt of the vegetable aſtringents. It is employed in all kinds of immoderate hæmorrhagies and other fluxes, both internally and externally, where aſtringency is the only indication. It is certainly a very powerful ſtyptic, and is to be looked on ſimply as ſuch. To the ſudorific, antipeſtilential, and other virtues attributed to it, it has no other claim than in conſequence of its aſtringency, and of the antiſeptic power which it has in common with other vegetable ſtyptics. The largeſt doſe of the root in powder is one drachm.

POLYPODIUM FILIX MAS. *Radix.* (*Ed.*)
Filix. Radix. (*Lond.*) *Filix Mas. Radix.* (*Dub.*)
Male fern. Male polypody. The root.
Cryptogamia. Filices.—Nat. ord. *Filices.*

This fern is perennial, and grows in great abundance in almoſt every part of Britain where the ground is not cultivated. The greateſt part of the root lies horizontally, and has a great number of appendages placed cloſe to each other in a vertical direction, while a number of ſmall fibres ſtrike downwards. The large root, together with its appendages, are to be reſerved for uſe. The two ends, however, are to be cut off, the one being too old and ſpongy, the other too new and green.

When chewed, its taſte is ſomewhat mucilaginous and ſweet, and afterwards ſlightly aſtringent and bitter. Its ſmell is alſo weak.

This root was uſed as an anthelmintic in the days of Dioſcorides. It gradually became neglected; but its uſe was again revived at different times by Madame Nuffer, Herrenſchwand, and others, who certainly frequently ſucceeded in killing and expelling the tænia, both lata and cucurbitina, by the exhibition of ſecret remedies, of which the fern-powder was, or rather was ſuppoſed to be, the principal ingredient; for there is much reaſon to believe, that the active purgatives with which it was always combined, were really the remedies which effected the cure.

The ſame, or nearly a ſimilar, ſecret, has been bought by different potentates, and publiſhed for the benefit of thoſe ſuffering under this obſtinate diſeaſe.

Even in 1799, a Berlin apothecary, Matthieu, was ſo fortunate as to find a purchaſer of his ſecret in the king of Pruſſia. The remedy was tried in three caſes, under the inſpection of the Medical College, and in all of them ſucceeded in expelling the worms, without pain or any other remarkable occurrence. His ſecret, and directions for their exhibition, was publiſhed by authority of the College.

For ſome days, the patient is to be confined to a ſpare diet, and to live principally on ſalted food, bread, ſoups, and light vegetables. He is then to take a tea-ſpoonful of the following electuary every two hours, for two or three days, until he perceive the motion of the worm:

℞. Limatur. ſtanni Angli pur. ℥i.
Pulv. rad. filic. maris, ʒvi.
—— ſemin. cynæ, ℥ſs.
—— radic. jalap. reſinoſæ,
—— ſal. polychreſt, ana ʒi. M.

Fiat, cum mellis communis ſufficiente quantitate, electuarium.

He is then to take, in the ſame manner, the following purgative electuary, until the worms be expelled; or if that ſhould not happen, he is to ſwallow two or three ſpoonfuls of freſh caſtor oil, or get a clyſter of the ſame.

℞. Pulv. rad. jalap. reſinoſ.
—— ſal. polychreſt, ana ℈ii.
—— ſcammon. Alep. ℈i.
—— gummi guttæ, gr. x. M.

Fiat, cum melle communi, electuarium.

The

The internal ſolid part of the root only is to be powdered, and the powder ſhould have a reddiſh colour; and as the doſe and exhibition of the remedy muſt be regulated according to the age, ſex, and conſtitution of the patient, it muſt be given always under the direction of an experienced practitioner.

POTENTILLA REPTANS.

Pentaphyllum. Radix. (*Lond.*)

Common cinquefoil.

Willd. g. 1000. *ſp.* 34. *Icoſandria Polygamia.*—Nat. ord. *Senticoſæ.*

THIS plant is perennial, and grows plentifully in hedges, and by road-ſides. The root is moderately aſtringent; and as ſuch is ſometimes given internally in diarrhœas and other fluxes, and employed in gargariſms for ſtrengthening the gums, &c. The cortical part of the root may be taken, in ſubſtance, to the quantity of a drachm: the internal part is conſiderably weaker, and requires to be given in double the doſe to produce the ſame effect; and as we poſſeſs many more powerful aſtringents, the cinquefoil is but little uſed.

PRUNUS.

Willd. g. 982. *Icoſandria Monogynia.*—Nat. ord. *Pomaceæ.*

Sp. 29. PRUNUS DOMESTICA. *Fructus.* (*Ed.*)

Prunus Gallica. Fructus, Prunum Gallicum *dictus.* (*Lond. Dub.*)

Plumb tree. The fruit. French prunes.

THIS tree is found wild in hedges in England, but has probably originated from the ſtones of the cultivated kinds being dropt there by accident. Great quantities of the dried fruit are imported from the Continent, but the French prunes are reckoned the beſt.

They contain much mucilaginous and ſaccharine matter, and their medical effects are, to abate heat, and gently looſen the belly: which they perform by lubricating the paſſages, and ſoftening the excrement. They are of conſiderable ſervice in coſtiveneſs, accompanied with heat or irritation, which the more ſtimulating cathartics would tend to aggravate: where prunes are not of themſelves ſufficient, their action may be promoted by joining with them a little rhubarb or the like; to which may be added ſome carminative ingredient to prevent their occaſioning flatulency.

Sp. 32. PRUNUS SPINOSA.

Prunus ſylveſtris. Fructus. (*Lond.*)

The ſloe-tree. The fruit.

THE

The floe alfo grows wild in Britain. The fruit has a very aftringent foürifh tafte. It contains malic acid. The infpiffated juice of the unripe fruit is very aftringent, aud is called *Acacia Germanica.* An infufion of a handful of the flowers is a fafe and eafy purge. The powdered bark will fometimes cure agues.

PTEROCARPUS.
Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

Sp. PTEROCARPUS SANTALINUS. *Lignum.* (*Ed.*)
Santalum rubrum. Lignum. (*Lond. Dub.*)
Red Saunders. The wood.

THIS tree grows in the Eaft Indies, and acquires a very large fize. The wood is brought in large billets, of a compact texture, a dull red, almoft blackifh colour on the outfide, and a deep brighter red within. It has no manifeft fmell, and little or no tafte. It communicates a deep red to rectified fpirit, but gives no tinge to aqueous liquors: a fmall quantity of the refin, extracted by means of fpirit, tinges a large one of frefh fpirit, of an elegant blood red.

The principal ufe of red faunders is as a colouring drug; with which intention it is employed in fome formulæ, particularly in the *tinctura lavandulæ compofita.*

Sp. PTEROCARPUS DRACO. *Refina.* (*Ed.*)
Sanguis Draconis. Refina. (*Lond.*)
Dragon's blood. A refin.

THIS is alfo a very large tree. It is a native of South America, and the refin which exudes from incifions made in its bark ufed to be frequently fent from Carthagena to Spain. It is however doubtful, if the dragon's blood of the fhops be produced from this tree, as many others furnifh a fimilar refin, as the Dracæna draco, Dalbergia monetaria, and efpecially the Calamus draco, which probably furnifhes all that is brought from the Eaft Indies.

The beft dragon's blood is not in cakes, but is brought in fmall maffes, of the fize of a nutmeg, wrapt up in the dried leaves of fome kind of reed, breaks fmooth, free from any vifible impurities, of a dark red colour, which changes, upon being powdered, into an elegant bright crimfon; readily melts and catches flame, and is not acted on by watery liquors. It totally diffolves in pure fpirit, and tinges a large quantity of the menftruum of a deep red colour: it is likewife foluble in expreffed oils, and gives them a red hue, lefs beautiful than that communicated by anchufa. This drug, in fubftance, has no fenfible fmell or tafte; when diffolved, it difcovers fome degree of warmth and pungency.

PULEGIUM,

PULEGIUM. (*Lond. Dub.*) See MENTHA.

PUNICA GRANATUM. *Cortex fructûs. Flores pleni*, Balaustia *dicti.* (*Ed.*)

Granatum. Floris petalum, Balaustium *dictum. Fructûs Cortex.* (*Lond.*) *Flores*, Balaustia *dicti. Pericarpii cortex.* (*Dub.*)

Pomegranate. The outer rind of the fruit. The double flowers, called Balaustine.

Willd. g. 980. *sp.* 1. *Icosandria Monogynia.*—Nat. ord. *Pomaceæ.*

THE pomegranate is a low tree, or rather shrub, growing wild in Italy and other countries in the south of Europe: it is sometimes met with in our gardens; but the fruit, for which it is chiefly valued, rarely comes to perfection. This fruit has the general qualities of the other sweet summer fruits, allaying heat, quenching thirst, and gently loosening the belly. The rind is a strong astringent, and as such is occasionally made use of. The flowers are of an elegant red colour, in appearance resembling a dried red rose. Their taste is bitterish and astringent. They are recommended in diarrhœas, dysenteries, and other cases where astringent medicines are proper.

PYRETHRUM. (*Lond. Dub.*) See ANTHEMIS.

PYRUS CYDONIA.

Cydonia Malus. Fructus, ejusque semen. (*Lond.*)

The quince. The fruit and seeds.

Willd. g. 992. *sp.* 17.—*Icosandria Pentagynia.*—Nat. ord. *Pomaceæ.*

THE quince is originally a native of Crete, but ripens its fruit perfectly in England.

Quinces have a very austere acid taste: taken in small quantity, they are supposed to restrain vomiting and alvine fluxes; and more liberally, to loosen the belly. The seeds abound with a mucilaginous substance of no particular taste, which they readily impart to watery liquors; an ounce will render three pints of water thick and ropy like the white of an egg.

QUASSIA.

Willd. g. 849. *Decandria Monogynia.*—Nat. ord. *Gruinales.*

Sp. 2. QUASSIA SIMARUBA. *Cortex.* (*Ed.*)

Simarouba. Cortex. (*Lond.*) *Cortex, lignum.* (*Dub.*)

Mountain or bitter damson. The bark.

THIS tree grows in Guiana and in Jamaica. The simarouba of the shops is the bark of the root of this tree, and not of the quassia amara, as stated by the Dublin College. It is brought to us in pieces ſome feet long, and ſome inches broad, folded lengthwiſe. It is light, fibrous, very tough; of a pale yellow on the inſide; darker coloured, rough, ſcaly, and warted on the outſide; has little ſmell, and a bitter not diſagreeable taſte. It gives out its bitterneſs both to alcohol and water.

It has been much celebrated in obſtinate diarrhœa, dyſentery, anorexia, indigeſtion, lienteria, and intermittent fevers; but it is doubtful that it is better than other bitters.

It is given in powder, in doſes of half a drachm or a whole drachm; but it is too bulky, and very difficultly pulverizable. It is beſt exhibited in decoction. Two drachms of the bark may be boiled in two pounds of water to one, and the decoction drunk in cupfuls in the courſe of the day.

Sp. 3. QUASSIA EXCELSA. *Lignum.* (*Ed.*)
Quaſſia. *Lignum, Cortex, Radix.* (*Lond.*)
Quaſſia. The wood, bark, and root.

THIS tree grows in Jamaica, and in the Caribæan iſlands. The quaſſia of the ſhops is the wood of its root, and not of the quaſſia amara, which is a very rare tree, but ſurpaſſes all others in bitterneſs.

This root is about the thickneſs of a man's arm: its wood is whitiſh, becoming yellowiſh by expoſure to the air. It has a thin, grey, fiſſured, brittle bark, which is deemed in Surinam more powerful than the wood. Quaſſia has no ſenſible odour, but is one of the moſt intenſe, durable, pure bitters known. Its infuſion, decoction, and tincture, are almoſt equally bitter and yellowiſh, and not blackened by chalybeates.

It is a very pure and ſimple bitter, and may be given in all caſes where bitters are proper. It has been exhibited in intermittent and bilious fevers, in ſtomachic complaints, in lienteria, in cachexy, dropſies, leucorrhœa, and gout. It is much uſed in this country to give the bitterneſs to malt liquors, though it ſubjects thoſe brewers who employ it to a very heavy penalty.

It can ſcarcely be reduced to a ſufficiently fine powder to be given in ſubſtance, and is therefore generally given in the form of infuſion, decoction, or extract.

QUERCUS.
Monoecia Polyandria.—Nat. ord. *Amentaceæ.*

Sp. QUERCUS ROBUR. *Cortex.* (*Ed.*)
Quercus. *Cortex.* (*Lond. Dub.*)
Oak. The bark.

THE oak grows wild in Britain. The ſuperior excellence of its wood for ſhip-building has rendered its cultivation an object of of national concern. Its ſaw-duſt is an uſeful dye-ſtuff, and its bark is the principal article uſed in tanning.

The bark is a ſtrong aſtringent; and is recommended in hæmorrhagies, alvine fluxes, and other preternatural or immoderate ſecretions. In theſe it is ſometimes attended with good effects. But it is by no means capable of being employed as a ſubſtitute, in every inſtance, for Peruvian bark, as ſome have aſſerted; and indeed it is ſo difficultly reduced to a ſufficiently fine powder, that it can ſcarcely be given internally in ſubſtance.

Sp. QUERCUS CERRIS. *Cyniphis nidus.* (*Ed.*)
Galla. (*Lond.*) *Gallæ, Cynipidum nidi.* (*Dub.*)
Oriental oak. The neſt of the cynips quercifolii.

This ſpecies of oak is a native of the Levant, and of the warmer countries of Europe.

The cynips quercifolii, a hymenopterous inſect, depoſites its eggs in the leaves and other tender parts of the tree. Around each puncture an excreſcence is preſently formed, within which the egg is hatched, and the inſect paſſes through all the ſtages of its metamorphoſis, until it become a perfect inſect, when it eats its way out of its priſon. Theſe excreſcences are called galls, or gall-nuts. They are of different ſizes, ſmooth or knotty on the ſurface, of a whitiſh, reddiſh, or blackiſh colour, and generally penetrated with a ſmall hole. Internally they conſiſt of a ſpongy, but hard, more or leſs brown ſubſtance, and they have a very rough aſtringent taſte. Good galls are of a blackiſh-grey or yellow colour, heavy, and tuberculated on the ſurface. They are the moſt powerful aſtringents we poſſeſs, but are ſeldom uſed in medicine.

RAPHANUS RUSTICANUS. (*Lond. Dub.*) See COCHLEARIA ARMORACIA.

RESINA ALBA. (*Dub.*) See PINUS.

RHABARBARUM. (*Lond. Dub.*) See RHEUM.

RHAMNUS CATHARTICUS. *Baccarum ſuccus.* (*Ed.*)
Spina Cervina. Bacca. (*Lond.*)
Purging buckthorn. The berry. The juice of the berries.
Willd. g. 405. *ſp.* 1. *Pentandria Monogynia.*—Nat. ord. *Dumoſæ.*

THIS tree, or buſh, is common in hedges: it flowers in June, and ripens its fruit in September or the beginning of October. In our markets, the fruit of ſome other trees, as the blackberry bearing alder, and the dog-berry tree, have of late been frequently mixed with or ſubſtituted for thoſe of buckthorn. This abuſe may be diſcovered by opening the berries: thoſe of buckthorn have almoſt always four ſeeds, the berries of the alder two, and thoſe of the dog-berry only one. Buckthorn berries, bruiſed on white paper, ſtain it of a green colour, which the others do not. Thoſe who ſell the juice to the apothecaries, are ſaid to mix it with a large proportion of water.

Buckthorn berries have a faint diſagreeable ſmell, and a nauſeous bitter taſte. They have long been in conſiderable eſteem as cathartics: and celebrated in dropſies, rheumatiſms, and even in the gout: though in theſe caſes they have no advantage above other purgatives, and are more offenſive, and operate more ſeverely, than many which the ſhops are furniſhed with: they generally occaſion gripes, ſickneſs, dry the mouth and throat, and leave a thirſt of long duration. The doſe is about twenty of the freſh berries in ſubſtance, and twice or thrice this number in decoction; an ounce of the expreſſed juice, or a drachm of the dried berries.

RHEUM PALMATUM. *Radix.* (*Ed.*)
Rhabarbarum. Radix. (*Lond. Dub.*)
Palmated rhubarb. The root.
Willd. g. 808. *ſp.* 5. *Enneandria Monogynia.*—Nat. ord. *Oleraceæ.*

THIS plant grows ſpontaneouſly in China, and endures the colds of our climate.

But it is not aſcertained that the Chineſe or Ruſſian rhubarb is the dried root of this plant. Pallas thinks that it is obtained indiſcriminately from the rheum undulatum, palmatum, and compactum, more eſpecially from the firſt; while Mr Sievers, an apothecary who was ſent by Catherine II. on purpoſe to obtain the true rhubarb plant, and travelled for ſeveral years in the countries contiguous to that whence the rhubarb is brought, is of opinion, that the botanical characters of the plant which furniſhes it are ſtill unknown, excepting that it is ſaid not to grow to a great ſize, and to have round leaves, which are toothed on the edges with almoſt ſpinous points.

All the rhubarb of commerce is brought from the Chineſe town Sini or Selim, by the Bucharians. It grows on the neighbouring chain of loſty mountains which ſtretches to the lake Koko Nor, between 35° and 40° north latitude. It is dug up by the poor peaſants, cleaned from the earth, cut in pieces, ſtrung with the bark on ſtrings, and expoſed to dry under cover in the ſhade for a whole year, before it is again cleaned and prepared for exportation.

There is a diſtinction made in commerce between the Ruſſian and Chineſe rhubarb, although they both come from the ſame country.

The

The Ruſſian is dearer, and always good, as very great attention is paid both in purchaſing and tranſporting it, by order of the government. In Kiachta, on the Ruſſian frontier, it is received from the Bucharians by a Ruſſian apothecary, who examines it. The bad is immediately burnt, and the good is freed from its bark, woody parts, and every impurity, in the moſt careful manner. It is then ſent to Moſcow and to Peterſburgh, where it is again examined.

It is commonly in round pieces, of a reddiſh or whitiſh-yellow colour, feels gritty between the teeth, and is often perforated with ſo large a hole, that many pieces have the appearance of a bark.

The Chineſe or Eaſt Indian rhubarb is brought by ſea from Canton. It is heavier, harder, and more compact than the other; ſeldom perforated with holes, and either in long pieces, or with two flat ſides, as if they had been compreſſed.

The general characters of good rhubarb are, its having a whitiſh or clear yellow colour, being dry, ſolid, and compact, moderately heavy; brittle; when recently broken appearing marked with yellow or reddiſh veins, mixed with white; being eaſily pulverizable; forming a powder of a fine bright yellow, having the peculiar, nauſeous, aromatic ſmell of rhubarb, and a ſubacrid, bitteriſh, ſomewhat aſtringent taſte, and when chewed feeling gritty under the teeth, ſpeedily colouring the ſaliva, and not appearing very mucilaginous. The ſize and form of the pieces are of little conſequence; only we muſt break the large ones, to ſee that they are not decayed or rotten within; and we muſt alſo obſerve, that they are not muſty or worm-eaten. This is the more neceſſary, as damaged pieces are frequently ſo artfully dreſſed up, and coloured with powdered rhubarb as to impoſe on the buyer.

The principal conſtituent of rhubarb is extractive matter, ſoluble both in alcohol and in water. By gentle decoction, it loſes above one-half its weight. Rhubarb alſo contains ſome volatile odorous matter, on which its peculiar nauſeous ſmell and its activity as a purge depend; for when diſſipated, either by age or any preparation to which the rhubarb has been ſubjected, the powers of the medicine are almoſt deſtroyed. It alſo contains ſome tannin, and about one-ſixth of its weight of oxalate of lime.

•Rhubarb is a mild cathartic, which operates without violence or irritation, and may be given with ſafety even to pregnant women, and to children In ſome people, however, it occaſions ſevere griping. Beſides its purgative quality, it is celebrated as an aſtringent, by which it ſtrengthens the tone of the ſtomach and inteſtines, and proves uſeful in diarrhœa and diſorders proceeding from laxity.

Rhubarb is exhibited,

1. In ſubſtance, in the form of powder. It operates more powerfully as a purgative in this form than in any other. The

dose for an adult, is about a scruple or upwards. On account of its great bulk, it is sometimes unpleasant to take, and its laxative effects are often increased by the addition of neutral salts, or other more active purgatives. In smaller doses it often proves an excellent stomachic.

2. In infusion. Rhubarb yields more of its purgative property to water than to alcohol. The infusion is, however, considerably weaker than the powder, and requires double the dose to produce the same effect. It is well adapted for children, but must be always fresh prepared.

3. In tincture. On account of the stimulating nature of the menstruum, this preparation frequently cannot be exhibited in doses large enough to operate as a purgative. Its principal use is as a tonic and stomachic.

The virtues of rhubarb are destroyed by roasting, boiling, and in forming the extract.

RHODODENDRON CHRYSANTHUM. *Folia.* (*Ed.*)

Yellow-flowered rhododendron. The leaves.

Willd. g. 867. *sp.* 7. *Decandria Monogynia.*—Nat. ord. *Bicornes.*

THIS small shrub grows in the coldest situations, and highest parts of the snow-covered mountains in East Siberia, and especially in Dauria. The leaves are oblong, rigid, reflected at the edges, rough on the upper surface, smooth and paler on the lower. When dried, they have no smell, but a rough, astringent, and bitterish taste. They also contain a stimulant, narcotic principle; for they increase the heat of the body, excite thirst, and produce diaphoresis, or an increased discharge of the other secretions or excretions; and in a larger dose, inebriation and delirium.

The Siberians use a decoction of it in rheumatism and gout. They put about two drachms of the dried shrub in an earthen pot, with about ten ounces of boiling water, keeping it near a boiling heat for a night, and this they take in the morning. Besides its other effects, it is said to produce a sensation of prickling or creeping in the pained parts; but in a few hours the pain and disagreeable symptoms are relieved, and two or three doses generally complete the cure. The use of liquids is not allowed during its operation, as this is apt to induce vomiting.

RHUS TOXICODENDRON. *Folia.* (*Ed.*)

Poison oak. The leaves.

Willd. g. 566. *sp.* 17. *Pentandria Trigynia.*—Nat. ord. *Dumosæ.*

THIS is a deciduous shrub of moderate growth, a native of North America. The leaves are alternate, and stand upon very long leaf-stalks. Each leaf consists of three leafits. It is said that its

its juice is ſo extremely acrid as to cauſe inflammation, and ſometimes even ſphacelation, in the parts touched with it. It was firſt tried as a medicine by Dr Alderſon of Hull, in imitation of the experiments of M. Freſnoi with the rhus radicans. He gave it in four caſes of paralyſis, in doſes of half a grain, or a grain, three times a-day, and all his patients recovered, to a certain degree, the uſe of their limbs. The firſt ſymptom of amendment was always an unpleaſant feeling of prickling or twitching in the paralytic limbs. We have given it in larger doſes without experiencing the ſame ſucceſs. It was not, however, inactive. In one caſe the patient diſcontinued its uſe on account of the diſagreeable prickling it occaſioned; and in general it operated as a gentle laxative, notwithſtanding the torpid ſtate of the bowels of ſuch patients.

RIBES.

Willd. g. 445. *Pentandria Monogynia*—Nat. ord. *Pomaceæ.*

Sp. 1. Ribes Rubrum. *Fructus.* (*Lond. Dub.*)

Red currant. The fruit.

This ſhrub grows wild in England, and is very generally cultivated for the ſake of its pleaſant ſubacid fruit. The juice of the fruit contains ſaccharine matter, malic, and citric acids, and a ſubſtance ſcarcely ſoluble in cold water, very ſoluble in hot water, and coagulating into the form of a jelly as it cools. By boiling currant juice with a ſufficient quantity of ſugar to abſorb the acid watery parts, the whole forms, on cooling, an uniform jelly, which is often uſed as an acid demulcent in ſore throats, and, diſſolved in water, forms a pleaſant cooling drink in feveriſh complaints.

Sp. 8. Ribes Nigrum. *Fructus.* (*Lond. Dub.*)

Black currant. The fruit.

This is alſo a native ſhrub, which is likewiſe frequently cultivated for the ſame purpoſes with the former variety, and indeed is preferred to it for medical uſe.

RICINUS COMMUNIS. *Semen, et ejus oleum fixum.* (*Ed.*) *Seminis oleum.* (*Lond.*) *Oleum è ſeminibus expreſſum.* (*Dub.*)

Monoecia Monadelphia.—Nat. ord. *Tricoccæ.*

Palma Chriſti. The ſeeds, and the fixed oil obtained from them.

This plant grows in both Indies, Africa, and the ſouth of Europe. It is of ſpeedy growth, and in one year arrives at its full height, which ſeldom exceeds twenty feet. The capſules are prickly and triangular, and contain, under a thin, dry, grey and black-marbled huſk, a white oily kernel. The ſkin is extremely acrid; and one or two of the feeds fwallowed entire, operates as a draftic purgative or emetic.

The kernels yield almoft a fourth part of their weight of a bland fixed oil, commonly called Caftor Oil. It is obtained from them either by expreffion, or by decoction with water. The former method is practifed in Europe, the latter in Jamaica. To increafe the product, it is common to parch the feeds over the fire before the oil is extracted from them; but the oil thus obtained is inferior to that prepared by cold expreffion or fimple decoction, and is apt to become rancid.

Genuine caftor oil is thick and vifcid, of a whitifh colour, infipid or fweetifh to the tafte, and without fmell.

As a medicine, it is a gentle and ufeful purgative: it in general produces its effects without griping, and may be given with fafety where acrid purgatives are improper, as in colic, calculus, gonorrhœa, &c.: fome likewife ufe it as a purgative in worm-cafes. Half an ounce or an ounce commonly anfwers with an adult, and a drachm or two with an infant.

With many, the averfion to oil is fo great, that this purgative cannot be taken without great reluctance; and accordingly different modes of taking it have been propofed. Some prefer taking it fwimming on a glafs of water or peppermint water, or in the form of emulfion, with mucilage, or with the addition of a little rum.

ROSA.

Willd. g. 997. *Icofandria Polygynia.*—Nat. ord. *Senticofæ.*

Sp. 16. Rosa Gallica. *Petala.* (*Ed.*)
Rofa rubra. Petala. (*Lond. Dub.*)
Red rofe. The petals.

This has not the fragrance of the fucceeding fpecies; but the beautiful colour of its petals, and their pleafant aftringency, have rendered them officinal.

Sp. 17. Rosa Damascena. *Petala.* (*Lond. Dub.*)
Rofa centifolia. Petala. (*Ed.*)
Damafk rofe. The petals.

The native country of this fhrub is unknown, but the delightful fragrance of its flowers has rendered it the favourite ornament of every garden. In the former editions of Linnæus, the damafk rofe was confidered as a variety only of the rofa centifolia; but Aiton, Du Roi and Willdenow have arranged it as a diftinct fpecies. It is however highly probable, that the petals of all the varieties of the rofa centifolia, or Dutch hundred-leaved rofe, Willdenow's 15th fpecies, are employed indifcriminately with thofe of the real damafk rofe in the diftillation of rofe water.

Sp. 31.

Sp. 31. Rosa Canina. *Fructus recens.* (*Ed.*)
Cynosbatus. *Fructus.* (*Lond.*)
Dog rose. The fruit called Heps.

This shrub is found in hedges throughout Britain. The pulp of the fruit, besides saccharine matter, contains citric acid, which gives it an acid taste. The seeds, and stiff hair with which they are surrounded, must be carefully removed from the pulp before it can be used.

ROSMARINUS OFFICINALIS. *Summitates florentes.* (*Ed.*)
Ros marinus. *Cacumen, flos.* (*Lond.*) *Rosmarinus.* *Herba.* (*Dub.*)
Rosemary. The herb and flowers.
Willd. g. 62. *sp.* 1. *Diandria Monogynia.*—Nat. ord. *Verticillatæ.*

Rosemary is a shrubby perennial, which grows wild in the south of Europe, and is cultivated in our gardens. It has a fragrant smell, and a warm pungent bitterish taste, approaching to those of lavender: the leaves and tender tops are strongest; next to these the cup of the flower; the flowers themselves are considerably the weakest, but most pleasant.

Its virtues depend entirely on its essential oil, which seems to be combined with camphor, not only from its peculiar taste, but from its possessing chemical properties, which depend on the presence of camphor; and from its depositing crystals of camphor when long kept.

RUBIA TINCTORUM. *Radix.* (*Ed.*)
Rubia. *Radix.* (*Lond. Dub.*)
Madder. The root.
Willd. g. 187. *sp.* 1. *Tetrandria Monogynia.*—Nat. ord. *Stellatæ.*

Madder is perennial, and grows wild in some parts of Britain, but the dyers are principally supplied with it from Zealand, where it is cultivated in large quantities.

The roots consist of articulated fibres, about the thickness of a quill, which are red throughout, have a weak smell, and a bitterish astringent taste. For the use of the dyers, they are first peeled and dried, then bruised and packed in barrels. Madder possesses the remarkable property of tinging the urine, milk and bones of animals which are fed with it, of a red colour.

It is said to be useful in the atrophy of children, and some believe in its reputed powers as an emmenagogue.

It is given in substance in doses of half a drachm, several times a day, or in decoction.

RUBUS IDÆUS. *Fructus.* (*Lond. Dub.*)
Rafpberry. The fruit.
Willd. g. 998. *fp.* 4. *Icofandria Polygynia.*—Nat. ord. *Senticofæ.*

THIS fhrub is found wild in Britain, and is much cultivated for the fake of its pleafant fub-acid fruit, which contains both citric and malic acids.

RUMEX ACETOSA. *Folia.* (*Ed.*)
Acetofa pratenfis. Folia. (*Lond.*) *Acetofa. Folia.* (*Dub.*)
Sorrel. The leaves.
Willd. g. 699. *fp.* 31. *Hexandria Trigynia.*—Nat. ord. *Oleraceæ.*

SORREL is a perennial plant, which grows wild in fields and meadows throughout Britain. The leaves have an aftringent acid tafte, without any fmell or particular flavour: their medical effects are, to cool, quench thirft, and promote the urinary difcharge: a decoction of them in whey affords an ufeful and agreeable drink in febrile or inflammatory diforders.

All thefe effects are to be afcribed entirely to the fuper-oxalate of potafs which they contain.

RUTA GRAVEOLENS. *Herba.* (*Ed.*)
Ruta. Herba. (*Lond.*) *Folia.* (*Dub.*)
Rue. The herb.
Willd. g. 927. *fp.* 1. *Decandria Monogynia.*—Nat. ord. *Multifiliquæ.*

THIS is a fmall fhrubby plant, a native of the fouth of Europe, and cultivated in our gardens.

Rue has a ftrong, ungrateful fmell, and a bitterifh, penetrating tafte: the leaves, when in full vigour, are extremely acrid, infomuch as to inflame and blifter the fkin, if much handled. With regard to their medical virtues, like other remedies, of which the active conftituent is an effential oil, they are heating and ftimulating, and hence fometimes are ferviceable in fpafmodic affections, and cafes of obftructed fecretions.

SABINA. (*Lond. Dub.*) See JUNIPERUS.

SACCHARUM OFFICINARUM.
a. *Saccharum non purificatum.* (*Lond. Ed.*) *Saccharum rubrum.* (*Dub.*)
b. *Saccharum purificatum.* (*Lond. Dub.*) *Saccharum purifsimum.* (*Ed.*)
c. *Sacchari rubri fyrupus.* (*Dub.*)

Sugar

Sugar cane. Raw or brown ſugar. Double refined ſugar. Molaſſes.

Willd. g. 122. *ſp.* 4. *Triandria Digynia.*—Nat. ord. *Gramina.*

THE ſugar cane grows wild in both Indies, and forms the principal object of cultivation in the Weſt Indies.

Sugar, of which we have already (256.) noticed the general properties, is principally obtained from this plant, by boiling down its expreſſed juice, with the addition of a certain proportion of lime or potaſs, until the greater part is diſpoſed to concrete into browniſh or yellowiſh cryſtalline grains. The lime or potaſs is added to ſaturate ſome malic acid, whoſe preſence impedes the cryſtallization.

The molaſſes, or that portion of the inſpiſſated juice which does not cryſtallize, is ſeparated from the raw ſugar, which is ſent to Europe to be refined. This is performed by diſſolving it in water, boiling the ſolution with lime-water, clarifying it with blood or white of eggs, and ſtraining it through woollen bags. The ſolution, after due evaporation, is permitted to cool to a certain degree, and then poured into conical forms of unglazed earthen ware, where it concretes into a maſs of irregular cryſtals. The ſyrup which has not cryſtallized is then permitted to run off through a hole in the apex of the cone. The upper or broad end of the cone is then covered with moiſt clay, the water of which gradually penetrates into the ſugar, and diſplaces a quantity of ſyrup, which would otherwiſe be retained in it, and diſcolour it. It is then carefully dried, and gets the name of loaf or lump ſugar. When the ſolution and other ſteps of the proceſs are repeated, the ſugar is ſaid to be double-refined.

Sugar is ſometimes made to aſſume a more regular form of cryſtallization, by carrying the evaporation only a certain length, and then permitting the ſyrup to cool ſlowly. In this form it is called Brown or White Sugar Candy, according to the degree of its purity.

Molaſſes or treacle is a very impure ſyrup. It is thick, viſcid, of a dark brown, almoſt black colour, and has a peculiar ſmell, and a ſweet, ſomewhat empyreumatic taſte. Treacle is applied to many domeſtic and economical purpoſes; and in hoſpital practice may ſuperſede the uſe of ſugar in many inſtances.

Raw ſugar varies very much in quality. It ſhould be dry, cryſtallized in large ſparkling grains, of a whitiſh or clear yellow colour, without ſmell, and of a ſweet taſte, without any peculiar flavour.

Refined ſugar ſhould have a brilliant white colour, and a cloſe compact texture. It ſhould be very hard, but brittle, and break with ſharp, ſemi-tranſparent, ſplintery fragments.

Sugar, from being a luxury, has now become one of the neceſſaries of life.

In

In Europe, fugar is almoft folely ufed as a condiment. But it is alfo a very wholefome and powerful article of nourifhment; for during crop-time, the negroes in the Weft Indies, notwithftanding their increafed labours, always grow fat. It is in this way alfo that its internal employment is ufeful in fome difeafes, as in fea fcurvy: for fugar produces no particular effect as a medicine, except that the coarfer and impure kinds are flightly purgative. Applied externally, it acts as an efcharotic in fpongy and unhealthy granulations; and to abraded or inflamed furfaces it proves gently ftimulant. In pharmacy it is principally employed to cover bad taftes, to give form, and to preferve more active fubftances. In ufing it for the laft purpofe, we muft always remember, that if the proportion of fugar employed be too fmall, it will promote inftead of retarding the fermentation of the articles it is intended to preferve.

SAGAPENUM. *Gummi-refina.* (*Lond. Dub. Ed.*)
Sagapenum. A gum-refin.

The plant which furnifhes this fubftance is not afcertained, but is conjectured by Willdenow to be the Ferula Perfica.

Sagapenum is a concrete juice brought from Alexandria, either in diftinct tears, or agglutinated in large maffes. It is outwardly of a yellowifh colour; internally, fomewhat paler, and clear like horn; it grows foft upon being handled, and fticks to the fingers; its tafte is hot, naufeous and bitterifh, and its fmell difagreeable and alliaceous.

It is not fufible; is fparingly foluble in alcohol; almoft entirely foluble in water; and affords a fetid effential oil by diftillation.

In medical virtues it holds a kind of middle place between affafœtida and galbanum, and may be employed in the fame manner, and under fimilar circumftances.

SAL-AMMONIACUS. (*Lond. Dub.*) See Murias Ammoniæ.

SAL-COMMUNIS. (*Dub.*) SAL-MURIATICUS. (*Lond.*) See Murias Sodæ.

SALIX FRAGILIS.
Salix. Cortex. (*Dub.*)
Crack-willow. The bark.
Dioecia Diandria.—Nat. ord. *Amentaceæ.*

This willow grows wild in England. The bark poffeffes a confiderable degree of bitternefs and aftringency. It has been recommended by fome as a fubftitute for the Peruvian bark; and of the indigenous barks which have been propofed, it is perhaps one

one of the moſt effectual. But in point of efficacy it is in no degree to be compared with the Peruvian bark.

SALVIA OFFICINALIS. *Folia.* (*Ed.*)
Salvia. Folium. (*Lond. Dub.*)
Sage. The leaves.
Willd. g. 63. *ſp.* 7. *Diandria Monogynia.*—Nat. ord. *Verticillatæ.*

SAGE is a perennial plant, a native of the ſouth of Europe, and cultivated in our gardens. There are ſeveral varieties of it, differing in ſize, or in the colour of its flower, but their properties are the ſame. They have a peculiar aromatic ſmell, and a warm, aromatic taſte, with ſome degree of bitterneſs and aſtringency.

In its effects ſage agrees with other aromatics. It is ſtimulant, carminative and tonic.

In cold phlegmatic habits, it excites appetite, and proves ſerviceable in debilities of the nervous ſyſtem. The beſt preparation for theſe purpoſes is an infuſion of the dry leaves, drunk as tea; or a tincture, or extract, made with rectified ſpirit, taken in proper doſes; theſe contain the whole virtues of the ſage; the diſtilled water and eſſential oil, only its warmth and aromatic quality, without any of its roughneſs or bitterneſs. Aqueous infuſions of the leaves, with the addition of a little lemon juice, prove an uſeful diluting drink in febrile diſorders, being ſufficiently agreeable to the palate.

SAMBUCUS NIGRA. *Flores, Baccæ, Cortex.* (*Ed.*)
Sambucus. Cortex interior, Flos, Bacca. (*Lond. Dub.*)
Common elder. The inner bark, flowers and berries.
Willd. g. 569. *ſp.* 3. *Pentandria Trigynia.*—Nat. ord. *Dumoſæ.*

THIS tree is frequent in hedges; it flowers in May, and ripens its fruit in September. The inner green bark of its trunk is gently cathartic. An infuſion of it in wine, or the expreſſed juice, in the doſe of half an ounce or an ounce, is ſaid to purge moderately, and in ſmall doſes to prove an efficacious deobſtruent, capable of promoting all the fluid ſecretions. The young buds, or rudiments of the leaves, are ſtrongly purgative, and act with ſo much violence as to be deſervedly accounted unſafe. The flowers are very different in quality: theſe have an agreeable aromatic flavour, which they yield in diſtillation with water, and impart by infuſion to vinous and ſpirituous liquors. The berries contain malic acid, and have a ſweetiſh, not unpleaſant taſte; nevertheleſs, eaten in ſubſtance, they offend the ſtomach: the expreſſed juice, inſpiſſated to the conſiſtence of a rob, proves an uſeful aperient medicine; it opens obſtructions of the viſcera, promotes the natural evacuations, and, if continued for a length of time, does conſiderable ſervice in ſundry chronical diſorders.

SANTALUM RUBRUM. (*Lond. Dub.*) See Pterocarpus Santalinus.

SANTONICUM. (*Lond. Dub.*) See Artemisia.

SAPO.

Sapo ex oleo olivarum et ſoda confectus. (*Ed.*) *Sapo ex oleo olivæ et natro confectus.* (*Lond.*) *Sapo durus Hiſpanicus.* (*Dub.*)

The general chemical properties of ſoap have been already noticed (243.). The only ſpecies which is officinal in our Pharmacopœias, is that compoſed of olive oil and ſoda. It is only prepared in the countries which produce the oil. For medicinal uſe we prefer the Spaniſh.

It ſhould be white and hard, diſſolve entirely in water and in alcohol, forming with the former a milky, and with the latter a tranſparent ſolution, the ſolutions ſhould froth freely on agitation. It ſhould not be variegated in its colour, feel greaſy or moiſt, or be covered with a ſaline eſſloreſcence; and the ſolutions ſhould not have a rancid ſmell or taſte. Some of the foreign diſpenſatories are ſo very particular about the nature of the ſoap uſed in medicine, as to direct it to be prepared by the apothecary, by ſimply triturating, without the aſſiſtance of heat, Provence oil, with half its weight of a ſolution of ſoda, of the ſpecific gravity of 1.375, until they unite.

Soap is decompoſed by all the acids, earths, and earthy and metalline ſalts. The acids combine with the alkali, and ſeparate the oil. The earths form an inſoluble earthy ſoap with the oil, and ſeparate the alkali, while with the ſalts there is a mutual decompoſition, the acid combines with the alkali, and earthy or metalline ſoaps are formed.

The detergent property of ſoap, or the power it poſſeſſes of rendering oily and reſinous ſubſtances miſcible with water, has given riſe to very erroneous notions of its medical virtues. It was ſuppoſed to render ſuch ſubſtances more readily ſoluble in the juices of the ſtomach, and in the fluids of the body, and to be well fitted for diſſolving ſuch oily or unctuous matters as it may meet with in the body, attenuating viſcid juices, opening obſtructions of the viſcera, and deterging all the veſſels it paſſes through. It has likewiſe been ſuppoſed a powerful menſtruum for the urinary calculus; and a ſolution of ſoap in lime-water, has been conſidered as one of the ſtrongeſt diſſolvents that can be taken with ſafety into the ſtomach: For the virtue of this compoſition has been thought conſiderably greater than the aggregate of the diſſolving powers of the ſoap and lime-water when unmixed.

How erroneous theſe ideas are, appears evidently, when we recollect the very eaſy decompoſition of ſoap, which renders it perfectly

perfectly impoffible that it fhould enter the circulating fyftem, or indeed come into contact with the fluids even of the mouth, without being decompofed. As to the folution of foap in lime-water, we may obferve, that it is only a clumfy way of exhibiting a folution of foda; for the foap is decompofed, an infoluble foap of lime is formed, and the foda remains in folution. The internal ufe of foap fhould therefore be confined, in our opinion, to the giving form to other fubftances which are not decompofed by it, and to decompofe metallic poifons when they have been taken into the ftomach. For this laft purpofe, a tea-cupful of a folution of foap, in four times its weight of water, may be drunk every three or four minutes, until a fufficient quantity be taken.

Applied externally, it is a very powerful detergent, and combines the ftimulating properties of the alkali with the lubricitating nature of the oil. In this way it often proves a powerful difcutient, and a ufeful application to fprains and bruifes.

SARCOCOLLA. *Gummi-refina.* (*Lond.*)
Sarcocolla.

THIS is a concrete juice, brought from Perfia and Arabia in fmall, whitifh, yellow grains, with a few of a reddifh, and fometimes of a deep red colour, mixed with them; the whiteft tears are preferred, as being the frefheft. It is fuppofed to be the product of the Penæa Sarcocolla, *Willd. g.* 218. *fp.* 1. *Tetrandria Monogynia.*—Nat. ord. *Conglomeratæ.* Its tafte is bitter, accompanied with a dull kind of fweetnefs. It diffolves in watery liquors, and appears to be chiefly of the gummy kind, with a fmall admixture of refinous matter.

SARSAPARILLA. (*Lond. Dub.*) See SMILAX.

SASSAFRAS. (*Lond. Dub.*) See LAURUS.

SCAMMONIUM. (*Lond. Dub.*) See CONVOLVULUS.

SCILLA MARITIMA. *Radix.* (*Ed.*)
Scilla. Radix. (*Lond. Dub.*)
Squill. The root.
Willd. g. 640. *fp.* 1. *Hexandria Monogynia.*—Nat. ord. *Liliaceæ.*

THE fquill is a perennial bulbous-rooted plant, which grows wild on the fandy fhores of Spain, Portugal, north of Africa, and the Levant.

The root is about the fize of the fift, pear-fhaped, with the apex upwards, and confifts of flefhy fcales, attenuated at both edges, furrounded by other fcales, which are arid, fhining, and fo thin that the root at firft fight feems to be tunicated. The recent roots

are

are full of a white viſcid juice, have ſcarcely any ſmell, but a very bitter, nauſeous and extremely acrid taſte. Rubbed on the ſkin, it inflames and bliſters.

It is more commonly met with in the ſhops, in the form of the dried ſcales, which ſhould be brittle, ſemipellucid, ſmooth, but marked with lines, and when chewed, ſhould feel tenacious, and taſte very bitter, without manifeſt acrimony.

The active conſtituent of the ſquill is the acrid principle; and, therefore, it becomes almoſt inert by two much drying, or by being kept too long in the form of powder. It alſo contains bitter extractive, much mucilage, albumen and ſtarch.

Given internally in large doſes, it produces purging and vomiting, ſometimes even ſtrangury, bloody urine, inflammation, and eroſion of the ſtomach. In ſmaller doſes it proves a uſeful expectorant and diuretic, and it is ſaid to leſſen the frequency of the pulſe.

Squill is ſometimes given as a general ſtimulant in typhus, eſpecially to cattle. But it is much more frequently exhibited as an expectorant where the lungs are loaded with viſcid matter, and as a diuretic in dropſical caſes, for which purpoſe it is commonly conjoined with calomel.

The doſe of ſquill is one or two grains three or four times a-day; and the moſt commodious form for the taking of ſquills, unleſs when deſigned as an emetic, is that of a bolus, or pill: liquid forms are to moſt people too offenſive, though theſe may be rendered leſs diſagreeable both to the palate and ſtomach by the addition of aromatic diſtilled waters.

SCORDIUM. (*Lond.*) See Teucrium.

SENNA. (*Lond. Dub.*) See Cassia.

SENEKA. (*Lond. Dub.*) See Polygala.

SERPENTARIA VIRGINIANA. (*Lond. Dub.*) See Aristolochia.

SEVUM OVILLUM. (*Dub.*) See Ovis.

SIMAROUBA. (*Lond. Dub.*) See Quassia.

SINAPIS.
Willd. g. 1246. *Tetradynamia Siliquoſa.*—Nat. ord. *Siliquoſæ.*

Sp. 4. Sinapis Alba. *Semen.* (*Ed.*)
Sinapis. Semina. (*Dub.*)
White muſtard. The ſeeds.

Sp. 5. SINAPIS NIGRA.
Sinapis. Semen. (*Lond.*)
Common muſtard. The ſeeds.

THESE plants are both annual, both grow wild in England, and poſſeſs ſimilar virtues.

They produce ſmall round compreſſed ſeeds, which have an acrid bitteriſh taſte, and a pungent ſmell when reduced to powder. The common muſtard has blackiſh ſeeds, and is more pungent than the white.

They impart their taſte and ſmell in perfection to aqueous liquors, whilſt rectified ſpirit extracts extremely little of either: the whole of the pungency ariſes with water in diſtillation. Committed to the preſs, they yield a conſiderable quantity of a ſoft inſipid oil, perfectly void of acrimony: the cake left after the expreſſion, is more pungent than the muſtard was at firſt.

Muſtard-ſeed is ſwallowed entire, to the quantity of a table-ſpoonful or more, to ſtimulate the ſtomach in ſome caſes of dyſpepſia, and to excite the periſtaltic motion of the inteſtines, eſpecially when they are torpid, as in paralyſis. The powder made into a paſte with water, is commonly uſed as a condiment with animal food; infuſed in water, it proves emetic when taken in conſiderable doſes, and in ſmaller ones, acts as a diuretic and aperient; but it is more frequently applied externally as a topical ſtimulus, made into a paſte or ſinapiſm with vinegar and bread-crumb.

SIUM NODIFLORUM.
Sium. Herba. (*Lond.*)
Creeping ſkerrit. The herb.
Willd. g. 544. *ſp.* 4. *Pentandria Digynia.*—Nat. ord. *Umbellatæ.*

THIS plant is perennial, and grows wild in rivers and ditches in England. It was formerly alleged to be not only a diuretic, but alſo an emmenagogue and lithontriptic. With theſe intentions, however, it is not now employed. Dr Withering mentions, that a young lady of ſix years old was cured of an obſtinate cutaneous diſeaſe by taking three large ſpoonfuls of the juice twice a-day; and he adds, that he has given repeatedly to adults three or four ounces every morning, in ſimilar complaints. In ſuch doſes it neither affects the head, ſtomach, nor bowels. Children take it readily when mixed with milk.

SISYMBRIUM NASTURTIUM. *Herba.* (*Ed.*)
Naſturtium aquaticum. Herba recens. (*Lond.*) *Herba.* (*Dub.*)
Common water-creſſes. The recent herb.
Willd. g. 1238. *ſp.* 1. *Tetradynamia Siliquoſa.*—Nat. ord. *Siliquoſæ.*

This plant is perennial, and grows wild in clear ſprings and rivulets throughout Britain. Its leaves remain green all the year, but are in greateſt perfection in the ſpring. They have a quick pungent ſmell (when rubbed betwixt the fingers), and an acrid taſte, ſimilar to that of ſcurvy-graſs, but weaker.

By drying or boiling, it loſes its ſenſible qualities entirely.

It acts as a gentle ſtimulant and diuretic: for theſe purpoſes, the expreſſed juice, which contains the peculiar taſte and pungency of the herb, may be taken in doſes of an ounce or two, and continued for a conſiderable time.

SMILAX SARSAPARILLA. *Radix.* (*Ed.*)
Sarſaparilla. Radix. (*Lond. Dub.*)
Sarſaparilla. The root.
Diœcia Hexandria.—Nat. ord. *Sarmentaceæ.*

This root is brought from the Spaniſh Weſt Indies. It conſiſts of a great number of long ſtrings hanging from one head: the long roots, the only part made uſe of, are about the thickneſs of a gooſe-quill, or thicker, flexible, compoſed of fibres running their whole length; ſo that they may be ſtript into pieces from one end to the other. They have a glutinous, bitteriſh, not ungrateful taſte, and no ſmell. It was firſt brought into Europe by the Spaniards, about the year 1563, with the character of a ſpecific for the cure of the lues venerea, a diſeaſe which made its appearance a little before that time, and likewiſe of ſeveral obſtinate chronic diſorders.

It is, however a very inert mucilaginous ſubſtance; and the diaphoreſis, which it is ſometimes ſuppoſed to produce, is entirely owing to the warm and diluent regimen employed at the ſame time.

SOLANUM DULCAMARA.
Dulcamara. Stipites. (*Dub.*)
Bitter-ſweet. The twigs.
Willd. g. 383. *ſp.* 15. *Pentandria Monogynia.*—Nat. ord. *Solanaceæ.*

This plant grows wild in moiſt hedges, and climbs on the buſhes with woody brittle ſtalks. The taſte of the twigs and roots, as the name of the plant expreſſes, is both bitter and ſweet; the bitterneſs being firſt perceived, and the ſweetneſs afterwards. The dulcamara was formerly much eſteemed as a powerful medicine. It is in general ſaid to occaſion ſome conſiderable evacuation by ſweat, urine, or ſtool particularly the latter. It has been recommended as a diſcutient and reſolvent medicine; and it has been ſaid to be attended with good effects in obſtinate cutaneous diſeaſes of the herpetic kind. It has alſo been uſed, and ſometimes with advantage, in caſes of rheumatiſm, jaundice, and obſtructed

menſtruation.

menſtruation. It has principally been employed under the form of watery infuſion, ſometimes under that of extract.

SOLIDAGO VIRGA AUREA.
Virga aurea. Flores. Folia. (*Dub.*)
Golden-rod. The flowers and leaves.
Syngeneſia Superflua.—Nat. ord. *Compoſitæ radiatæ.*

THIS plant is perennial, and is found wild on heaths and in woods, producing ſpikes of yellow flowers in Auguſt. The leaves have a moderately aſtringent bitter taſte; and hence prove ſerviceable in debility and laxity of the viſcera, and diſorders proceeding from that cauſe.

SPARTIUM SCOPARIUM. *Summitates.* (*Ed.*)
Geniſta. Semina. (*Dub.*) *Cacumen. Semen.* (*Lond.*)
Common broom. The tops and ſeeds.
Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

THIS is a very common ſhrub on dry paſtures.

The leaves have a very bitter taſte, and when given in decoctions prove conſiderably diuretic. The ſeeds have ſimilar properties.

SPERMACETI. (*Lond. Dub.*) See PHYSETER.

SPIGELIA MARILANDICA. *Radix.* (*Ed.*)
Spigelia. Radix. (*Lond. Dub.*)
Carolina pink. The root.
Willd. g. 308. *ſp.* 2. *Pentandria Monogynia.*—Nat. ord. *Stellatæ.*

THIS plant is perennial, and grows wild in the ſouthern parts of North America. The roots are celebrated as an anthelmintic, particularly for the expulſion of lumbrici from the alimentary canal. Some order it in doſes of ten or fifteen grains; and allege it is apt to occaſion nervous affections if given in large doſes; while others order it in drachm-doſes, alleging that the bad effects mentioned more readily happen from ſmall doſes, as the large ones often purge or puke; ſome prefer the form of infuſion. An emetic is generally premiſed; and its purgative effect aſſiſted by ſome ſuitable additions.

SPINA CERVINA. (*Lond.*) See RHAMNUS.

SPIRITUS VINI. (*Lond. Dub.*) See ALCOHOL.

SPONGIA OFFICINALIS. (*Ed.*)
Spongia. (*Lond. Dub.*)
Sponge.

 Cl. *Zoophyta.*

Cl. *Zoophyta.* Ord. *Spongia.*

Sponge is principally found in the Mediterranean and Red Seas. It was long ſuppoſed to be a vegetable production, but it is now univerſally allowed to belong to that remarkable claſs of animals called Zoophytes, which are negatively characterized by Cuvier, as having no vertebræ, no ſanguiferous veſſels, no ſpinal marrow, and no articulated limbs. The ſponges belong to that diviſion of the zoophytes, which are attached to a ſolid trunk, and are particularized by their baſe being ſpongy, friable or fibrous.

Sponge is a ſoft, light, very porous and compreſſible ſubſtance.

From its property of imbibing and diſtending by moiſture, it is ſometimes made uſe of as a tent for dilating wounds and ulcers.

To fit it for theſe intentions, the ſponge is immerſed in melted wax, and ſubjected to preſſure till cool: In this ſtate it may be eaſily formed into proper tents, ſo as to be introduced where neceſſary. And from the gradual melting of the wax in conſequence of the heat of the part, a dilatation of courſe takes place.

It adheres ſtrongly to the mouths of wounded veſſels; and when retained by proper compreſſion, it is preferable to agaric or puff-ball, for ſtopping hæmorrhagies.

Burnt ſponge is nothing elſe than charcoal mixed with a little muriate of ſoda and phoſphate of lime.

STALAGMITIS CAMBOGIOIDES.

Gambogia. Gummi-reſina. (*Ed. Lond. Dub.*)

The gum-reſin called Gamboge.

Polygamia Monœcia.—Nat. ord. *Tricoccæ.*

The tree which furniſhes the gamboge is of middling ſize, and grows wild in the kingdom of Siam and in Ceylon. In Siam the gum-reſin is obtained in drops by breaking the leaves and young ſhoots, hence probably its name Gummi-guttæ; but in Ceylon the juice is obtained in conſiderable quantities by wounding the bark, and is afterwards dried in the ſun. It is brought from the Eaſt Indies in large cakes or rolls. The beſt ſort is of a deep yellow or orange colour, breaks ſhining, and free from impurities. It has no ſmell, and very little taſte, unleſs kept in the mouth for ſome time, when it impreſſes a ſlight ſenſe of acrimony. It is almoſt entirely ſoluble in alcohol, and in ſpirit of ammonia, forming tranſparent ſolutions of a bright golden colour; and the reſiduum is totally ſoluble in water. The alcoholic ſolution is decompoſed by water, becoming yellow and opaque; but the ſubſtance ſeparated remains long ſuſpended, and cannot be ſeparated by common filtering paper. The ſolution in vinous ſpirit of ammonia is not decompoſed by water, but the addition of any acid immediately produces a copious yellow precipitate, which differs from reſin in being infuſible and difficultly combuſtible, and in having

having an earthy fracture when dried. The residuum, soluble in water, seems to be pure gum. Gamboge itself is almost totally diffusible in water, forming a turbid yellow liquor.

Gamboge evacuates powerfully both upwards and downwards; some condemn it as acting with too great violence, and occasioning dangerous hypercatharsis; while others are of a contrary opinion. Geoffroy seems particularly fond of this medicine, and informs us, that he has frequently given from two to four grains, without its proving at all emetic; that from four to eight grains both vomit and purge without violence; that its operation is soon over; and that if given in a liquid form, and sufficiently diluted, it does not need any corrector; that in the form of a bolus or pill, it is most apt to prove emetic, but very rarely has this effect if joined along with *Calomel.* He nevertheless cautions against its use where the patients cannot easily bear vomiting.

It has been used in dropsy with cream of tartar or jalap, or both, to quicken their operation. It is also recommended by some to the extent of fifteen grains, with an equal quantity of vegetable alkali, in cases of the tape-worm. This dose is ordered in the morning; and if the worm is not expelled in two or three hours, it is repeated even to the third time with safety and efficacy. It is asserted, that it has been given to this extent even in delicate habits.

It is an ingredient, and probably the active one, in most of the nostrums for expelling tæniæ.

STANNUM. (*Lond.*) *Limatura et pulvis.* (*Dub. Ed.*)

THE general properties of tin have been already mentioned (163.)

It is found,

1. Sulphuretted, and combined with copper. Tin-pyrites.
2. Oxidized.
   a. Combined with oxide of iron and silica. Common tinstone.
   b. Combined with oxide of iron and a little arsenic. Fibrous tinstone.

The best tin is found in Cornwall, or is brought from the East Indies. Its purity is estimated by its small specific gravity, and by the crackling noise it makes when bent.

It is now only used as an anthelmintic, especially in cases of tænia, and probably acts mechanically.

STAPHISAGRIA. (*Lond. Dub.*) See DELPHINIUM.

STIBIUM. (*Dub.*) See ANTIMONIUM.

STYRAX.

Willd. g. 874. *Decandria Monogynia.*—Nat. ord. *Bicornes.*

Sp. 1. Styrax Officinale. *Balſamum.* (*Ed.*)
Styrax. Reſina. (*Lond.*) *Styrax calamita. Reſina.* (*Dub.*)
Storax. A balſam.

This tree grows in the Levant, and in Italy and France. The ſtorax flows from wounds made in the bark, in countries where the heat is ſufficient, for neither in France nor in Italy does it furniſh any.

It is either in ſmall diſtinct tears, of a whitiſh or reddiſh colour, or in large maſſes compoſed of ſuch, or in maſſes of an uniform texture and yellowiſh red or browniſh colour; though ſometimes likewiſe interſperſed with a few whitiſh grains.

The *common ſtorax* of the ſhops is in large maſſes, conſiderably lighter and leſs compact than the foregoing: it appears on examination to be compoſed of a fine reſinous juice, mixed with a quantity of ſaw-duſt.

Storax has an agreeable ſmell, and an aromatic taſte. It is ſoluble in alcohol, and only imparts a little of its flavour to water. In diſtillation it yields benzoic acid. It is, therefore, a balſam, or natural combination of reſin with benzoic acid.

Sp. 3. Styrax Benzoin. *Balſamum.* (*Ed.*)
Benzoë. Reſina. (*Lond.*) *Benzoinum. Reſina.* (*Dub.*)
Benzoin, a balſam.

This ſpecies grows in Sumatra, and, like the former, alſo furniſhes a balſam on being wounded.

It is brought from the Eaſt Indies only; in large maſſes compoſed of white and light brown pieces, or yellowiſh ſpecks, breaking very eaſily betwixt the hands: ſuch as is whiteſt, and free from impurities, is moſt eſteemed.

In its properties it differs from ſtorax, only in containing a larger proportion of benzoic acid.

SUB-ACETIS CUPRI. (*Ed.*) See Cuprum.

SUB-BORAS SODÆ.

Boras Sodæ. (*Ed.*) *Borax.* (*Lond. Dub.*)
Sub-borate of ſoda. Borax.

Borax is found only in Thibet and Perſia. It exiſts in the water of ſome wells and lakes, and is extracted from them by evaporation In its impure ſtate it is called tincal, and is brought from the Eaſt Indies in great maſſes, compoſed of a few large cryſtals, but chiefly of ſmaller ones, partly white and partly green, joined together as it were by a greaſy yellow ſubſtance, intermixed with ſand, ſmall ſtones, and other impurities. By repeated ſolutions, filtrations, and cryſtallizations, it ſhoots into hexangular priſms, of of which two ſides are broader than the others, terminated by triangular pyramids, of a white colour, a ſtyptic and alkaline taſte, colouring vegetable blues green, ſoluble in eighteen parts of water at 60°, and in ſix at 212°, ſlightly efflorefcing in the air, and when heated, ſwelling, and, with the loſs of nearly half its weight, forming a porous friable maſs, which, in a greater heat, melts into a tranſparent glaſs ſoluble in water. Beſides the acids and alkalies which have a greater affinity for its acid or baſe than theſe have for each other, it is decompoſed by ſulphates, muriates, nitrates, phoſphates, and fluates of all the earths and of ammonia. It conſiſts of 39 boracic acid, 17 ſoda, and 44 water.

The medical virtues of borax have not been ſufficiently aſcertained by experience: it is ſuppoſed to be, in doſes of half a drachm or two ſcruples, diuretic, emmenagogue, and a promoter of delivery. Mr Biſſet, in an eſſay on the medical conſtitution of Great Britain, recommends a ſolution of this ſalt in water, as the moſt powerful diſſolvent yet known, of aphthous cruſts in the mouth and fauces of children. And for the ſame purpoſe alſo, a ſmall quantity of it is often applied in the form of powder mixed up with ſugar. There are ſtrong reaſons to believe, that the virtues of borax are much greater than they are in general ſuppoſed to be: and that it may be more extenſively uſed with advantage.

SUCCINUM. (*Ed. Lond. Dub.*)
Amber.

This is a ſolid, brittle, bituminous ſubſtance, dug out of the earth, or found upon the ſea-ſhores: the largeſt quantities are met with along the coaſts of Poliſh Pruſſia and Pomerania. It is of a white yellow, or brown colour, ſometimes opaque, and ſometimes very clear and tranſparent.

It emits an agreeable ſmell when heated or rubbed. By friction it becomes electric; and when heated it ſoftens, ſwells, and then melts and burns with a greeniſh or bluiſh flame, leaving a coaly reſiduum. By diſtillation it affords a little acetous acid, an eſſential oil, and a peculiar acid, named from it the Succinic (303.) It is not acted upon by water, alkalies, or diluted acids. It is imperfectly diſſolved in alcohol and ether; and perfectly in the expreſſed oils, and in boiling nitrous acid. In the laſt caſe, however, it is previouſly oxygenized and altered conſiderably in its nature.

It is only kept for the eſſential oil and acid obtained from it.

SULPHAS.

Sulphate is a generic term for the combination of ſulphuric acid with the alkalies, earths, and metallic oxides. Their generic characters have been already noticed (190). Like the other genera, they may be divided into three families.

Family 1. Alkaline ſulphates.—Theſe form no precipitate with alkaline carbonates.

Family 2. Earthy ſulphates.—Theſe are either inſoluble in water, or, if ſoluble, form a white precipitate with alkaline carbonates,

Family 3. Metalline ſulphates.—Theſe form precipitates, which are often coloured, with alkaline carbonates in general, with pruſſiate of potaſs and iron, and with gallic acid.

SUPER-SULPHAS ALUMINÆ ET POTASSÆ.

Sulphas Aluminæ. (*Ed.*) *Alumen.* (*Lond. Dub.*)

Super-ſulphate of alumina and potaſs. Alum.

Alum is obtained principally from ſchiſtoſe clays, which contain iron pyrites, by roaſting, expoſure, lixiviation, the addition of a proportion of potaſs ley, and cryſtallization.

The roaſting deſtroys the bituminous matters theſe clays commonly contain, the expoſure to the air acidifies the ſulphur of the pyrites, and the addition of alkali is abſolutely neceſſary for the conſtitution of alum, which is a triple ſalt, with exceſs of acid, conſiſting of ſulphuric acid, alumina, and potaſs, or ammonia, or a mixture of both. The properties of alum do not ſeem to be affected by the nature of the alkali.

Alum cryſtallizes in regular octohedrons, whoſe ſides are equilateral triangles. It has a ſweetiſh but very aſtringent taſte. It is ſoluble in 15 times its weight of water at 60°, and in three-fourths of its weight at 212°. It reddens vegetable blues. It effloreſces ſlightly in the air. By the action of heat it firſt undergoes the watery fuſion, then loſes its water of cryſtallization, and laſtly great part of its acid. It is decompoſed by baryta, potaſs, ſoda, ſtrontia, and all ſalts of which theſe are the baſes; by the nitrate, muriate, phoſphate, carbonate, borate, and fluate of ammonia; by the nitrate, muriate, phoſphate, and carbonate of magneſia; and by the nitrate, muriate, and carbonate of lime. It is alſo decompoſed by the gallic acid, by colouring matters, and by many animal and vegetable ſubſtances, in a manner not yet ſufficiently underſtood.

It commonly conſiſts, according to Vauquelin, of 49 ſulphate of alumina, 7 ſulphate of potaſs, and 44 of water.

Alum is a powerful aſtringent: it is reckoned particularly ſerviceable for reſtraining hæmorrhagies, and immoderate ſecretions from the blood; but leſs proper in inteſtinal fluxes. In violent hæmorrhagies, it may be given in doſes of fifteen or twenty grains, and repeated every hour or half-hour till the bleeding abates: in other caſes, ſmaller doſes are more adviſable; large ones being apt to nauſeate the ſtomach, and occaſion violent conſtipations of the bowels. It is uſed alſo externally, in aſtringent and repellent lotions and collyria. Burnt alum taken internally has been highly

highly extolled in cafes of colic. In fuch inftances, when taken to the extent of a fcruple for a dofe, it has been faid gently to move the belly, and give very great relief from the fevere pain.

SULPHAS BARYTÆ.

Sulphate of baryta. Ponderous fpar.

THIS falt has been omitted in the lift of the materia medica of the Edinburgh College; for they afterwards employ it for the preparation of the muriate of baryta.

It is found in great abundance in many countries, either in a loofe earthy form, or compact, or foliated, or ftriated, or acicular. The foliated is in general the pureft. Its fpecific gravity is from 4.4 to 4.865. It is infoluble in water. It is foluble in boiling concentrated fulphuric acid. It decrepitates when fuddenly heated. By being formed into a thin cake with flour and water, and being afterwards heated to rednefs, it becomes phofphorefcent. Heated to rednefs with charcoal, it is converted into a fulphuret, and it may be decompofed either by boiling, or in a crucible, with the carbonates of potafs and of foda. It contains about 84 of baryta, and 16 fulphuric acid and water.

SULPHAS CUPRI. (*Ed.*) See CUPRUM.

SULPHAS MAGNESIÆ. (*Ed.*)

Magnefia Vitriolata. (*Lond. Dub.*)

Sulphate of magnefia. Epfom falt.

THIS falt is contained in feveral mineral fprings, and alfo in fea water, from which it is obtained by evaporation. It cryftallizes in tetrahedral prifms. It has a very bitter tafte. It is foluble in its own weight of water at 60°, and three-fourths of its weight of boiling water. It effloreſces in the air, and falls to powder. By the action of heat it undergoes the watery fufion, and lofes its water of cryftallization, but does not part with its acid. It is decompofed by baryta, ftrontia, the alkalies, and all the falts formed by thefe falifiable bafes, excepting the alkaline muriates; and by the nitrate, muriate, and carbonate of lime.

It is a mild and gentle purgative operating with fufficient efficacy, and in general with eafe and fafety, rarely occafioning any gripes, ficknefs, or the other inconveniences which purgatives of the refinous kind are too often accompanied with. Six or eight drachms may be diffolved for a dofe in a proper quantity of common water; or four, five, or more, in a pint, or quart of the purging mineral waters. Thefe liquors may likewife be fo managed as to promote evacuation by the other emunctories: if the patient be kept warm, they increafe perfpiration; and by moderate exercife in the cool air, the urinary difcharge. Some allege this falt has a peculiar effect in allaying pain, as in colic, even independently of evacuation.

It

It is principally used for the preparation of the carbonate of magnesia.

SULPHUR SUBLIMATUM. (*Lond. Dub. Ed.*)

Sublimed sulphur.

We have already (136.) mentioned the properties of sulphur.

In the neighbourhood of volcanoes it is sometimes found perfectly pure and crystallized; but all the sulphur of commerce is extracted from pyrites by sublimation. It is usually brought to us in large irregular masses, which are afterwards melted and cast into cylindrical rolls, with the addition of some coarse resin, flour, or the like; whence the paler colour of the rolls.

Sulphur should be chosen of a bright yellow colour, should be very inflammable, and should burn with a bright pure blue flame. Sublimed sulphur is never prepared by the apothecary. It has the form of a very fine powder, having a beautiful yellow colour. It often is contaminated with a little sulphuric acid, formed during the process, from which it is easily freed by washing.

Pure sulphur loosens the belly, and promotes insensible perspiration: it seems to pass through the whole habit, and manifestly transpires through the pores of the skin, as appears from the sulphureous smell of persons who have taken it, and from silver being stained in their pockets of a blackish colour, which is the known effect of sulphureous fumes. It is a celebrated remedy against cutaneous diseases, both given internally, and externally applied. It has likewise been recommended in coughs, asthmas, and other disorders of the breast and lungs; and particularly in catarrhs of the chronic kind. But it is probable, that the benefit derived from it in these cases, is principally, if not entirely, to be attributed to its operation as a gentle laxative. And with this intention it is frequently used with great advantage in hæmorrhoidal affections, and many other diseases in which it is proper to keep the belly gently open.

SULPHURETUM ANTIMONII. (*Ed.*) See Antimonium.

SULPHURETUM HYDRARGYRI RUBRUM. (*Ed.*) See Hydrargyrum.

SUPER-TARTRIS POTASSÆ. (*Ed.*)

Tartari Crystalli. (*Lond.*) *Tartarum, crystalli et cremen dictum.* (*Dub.*)

Super-tartrite of potass, crystals of tartar, and cream of tartar.

Super-Tartris Potassæ impurus. (*Ed.*)

Tartarum. (*Lond.*)

Impure

Impure ſuper-tartrite of potaſs. Tartar.

TARTAR exiſts in verjuice and in muſt, and is depoſited on the ſides of the caſks by repoſe, from which it is ſcraped ſome time before the next vintage, to prepare the caſks to receive the new wine. The deepeſt coloured and coarſeſt wines generally give moſt tartar, and it gets the name of white or red tartar according to its colour.

It is purified by diſſolving it in boiling water, and ſeparating the earthy part by filtrating the boiling ſolution. On cooling the ſolution, it depoſites irregular cryſtals, containing the oily and colouring matters, which are ſeparated by boiling the maſs with a white clay. The tartar thus purified, when cryſtallized, or in powder, is called Cream of Tartar.

Its cryſtals are ſmall and irregular, and do not melt in the mouth, but feel gritty under the teeth. It has an acid harſh taſte. It is ſoluble in ſixty times its weight of water at 60°, and in thirty at 212°. It is decompoſed, and its acid is deſtroyed, by heat. It contains 23 parts of potaſs, according to Bergman, and 33, according to Thenard.

The virtues of tartar are thoſe of a mild, cooling, aperient, laxative medicine. It is much uſed in dropſy; and ſome allege that it has good effects as a deobſtruent, in dropſy from ſcirrhus. Taken from half an ounce to an ounce, it proves a gentle, though effectual purgative. Given in ſmaller doſes, and in ſolution, it often acts as a powerful diuretic.

SUS SCROFA. *Adeps.* (*Ed*)
Sus. Adeps. (*Lond.*) *Adeps ſuillus.* (*Dub.*)
The hog. The fat. Hogs lard.
Cl. *Mammalia.*—Ord. *Pachyderma.*

IN hogs-lard we have a very pure animal fat, almoſt entirely free from any peculiar impregnation, and of a ſoft conſiſtence. Hence it is a very uſeful emollient for relaxing thoſe parts to which it is applied; and it is alſo a very convenient article for giving the proper conſiſtence to ointments, plaſters, and liniments. Indeed this and the ſevum ovillum, or mutton-ſuet, are the only fats now retained by the London and Edinburgh Colleges, although formerly more than twenty different fats entered ſome liſts of materia medica. Each particular fat was then ſuppoſed to poſſeſs peculiar properties; but for this there is probably no foundation: even thoſe retained are now leſs employed than before, as it has been imagined that a proper conſiſtence of any kind may be more certainly obtained by determined proportions of wax and oil; but as theſe articles are more expenſive, hogs-lard and mutton-ſuet are often ſubſtituted for them by the apothecaries.

SWIETENIA.

Willd. g. 843. *Decandria Monogynia.*—Nat. ord. *Tribilatæ.*

Sp. 1. SWIETENIA MAHAGONI. *Cortex.* (*Ed.*)

Mahogany tree. The bark.

THIS majeſtic tree grows principally in Jamaica and in Spaniſh America. Its uſeful wood is univerſally known. Its bark is brown, rough, and ſcaly; on the branches grey and ſmoother. Its taſte is very aſtringent, and bitterer than that of Peruvian bark. Its ſmell weak and aromatic. In its properties and action on the living body, it coincides with Peruvian bark, and may be ſubſtituted for it in many ſituations.

Sp. 2. SWIETENIA FEBRIFUGA. *Cortex.* (*Ed.*)

Febrifuge Swietenia. The bark.

THIS ſpecies, which in many reſpects reſembles the former, is a native of the Eaſt Indies. Its bark is red, brittle, and compact, and covered with a rough grey cuticle. In its properties it agrees with the Mahogany bark, and forms a very valuable ſubſtitute for Peruvian bark in the Eaſt Indies, where this laſt is ſo dear and ſcarce, and the diſeaſes in which it is indicated ſo common. Dr Roxburgh ſent from India a quantity of the extract of this bark, which could not be diſtinguiſhed from the kino of the ſhops.

TAMARINDUS INDICA. *Fructus conditus.* (*Ed.*)

Tamarindus. Fructus. (*Lond. Dub.*)

Tamarind tree. The preſerved fruit.

Willd. g. 1250. *ſp.* 1. *Monadelphia Triandria.*—Nat. ord. *Lomentaceæ.*

THIS tree grows both in the Eaſt and Weſt Indies. The fruit is a broad aſh-coloured pod. The external covering is thin and brittle, and contains ſeveral hard ſeeds, enveloped in a ſoft brown pulp. Tamarinds are cured in two ways. The common way is to throw hot ſugar from the boilers on the ripe pulp; but a better method is to put alternate layers of tamarinds and powdered ſugar in a ſtone jar. By this means the tamarinds preſerve their colour, and taſte more agreeably.

Eaſt India tamarinds are longer than the Weſt India ſort; the former containing ſix or ſeven ſeeds each, the latter rarely above three or four.

Preſerved tamarinds ſhould be freſh and juicy, and ſhould have an agreeable acid taſte. They ſhould not have a muſty ſmell; the ſeeds ſhould not be ſoft and ſwollen, and the blade of a knife ſhould not get a coating of copper by being immerſed amongſt them.

Tamarinds contain ſugar, mucilage, citric acid, ſuper-tartrite of potaſs, tartarous acid, and malic acid.

The

The pulp of these fruits, taken in the quantity of from two or three drachms to an ounce or more, proves gently laxative and purgative; and at the same time, by its acidity, quenches thirst, and allays immoderate heat. It increases the action of the purgative sweets, cassia and manna, and weakens that of the resinous cathartics.

Salts, whose base is potass, form an improper addition to tamarind, for they are decomposed, and the tartarous acid of the fruit is precipitated in the form of super-tartrite of potass.

TANACETUM VULGARE. *Folia, Flores.* (*Ed.*)
Tanacetum. Folia. (*Dub.*) *Flos, Herba.* (*Lond.*)
Tansy. The flower and leaves.
Syngenesia superflua.—Nat. ord. *Compositæ discoideæ.*

TANSY is perennial, and grows wild by road-sides and the borders of fields, and is frequently also cultivated in gardens, both for culinary and medicinal uses: it flowers in June and July. Considered as a medicine, it is a moderately warm bitter, accompanied with a strong, not very disagreeable flavour. Some physicians have had a great opinion of it in hysteric disorders, particularly those proceeding from a deficiency or suppression of the uterine purgations. The leaves and seeds have been of considerable esteem as anthelmintics; the seeds are less bitter, and more acrid and aromatic than those of rue, to which they are reckoned similar; or of santonicum, for which they have been frequently substituted.

An infusion of tansy, drunk in a manner similar to tea, has been strongly recommended as a preventive of the return of gout.

TARAXACUM. (*Dub.*) See LEONTODON.

TARTARUM. (*Dub.*) See SUPER-TARTRIS POTASSÆ.

TEUCRIUM.
Willd. g. 1093. *Didynamia Gymnospermia.*—Nat. ord. *Verticillatæ.*

Sp. 12. TEUCRIUM MARUM.
Marum Syriacum. Herba. (*Lond. Dub.*)
Syrian herb mastich.

THIS is a small shrubby plant, growing spontaneously in Syria, Candy, and other warm climates, and cultivated with us in gardens. The leaves have an aromatic, bitterish taste; and, when rubbed betwixt the fingers, a quick pungent smell, like volatile alkali, which soon affects the head, and occasions sneezing: distilled with water, they yield a very acrid, penetrating essential oil, resembling that of scurvy-grass. These qualities sufficiently point out

out the uſes to which this plant might be applied; at preſent it is little otherwiſe employed than in cephalic ſnuffs.

Sp. 34. Teucrium Scordium.
Scordium. Herba. (*Lond.*)
Water germander. The herb.

This is a ſmall, ſomewhat hairy, perennial plant, growing wild in ſome parts of England, though not very common: the ſhops are generally ſupplied from gardens. It has a bitter taſte, and a ſtrong diſagreeable ſmell.

TEREBINTHINA. (*Lond. Dub.*)
THUS. (*Lond.*) See Pinus.

TOLUIFERA BALSAMUM. *Balſamum.* (*Ed.*)
Balſamum Tolutanum. (*Lond. Dub.*)
Balſam of Tolu.
Willd. g. 828. *ſp.* 1. *Decandria Monogynia.*—Nat. ord. *Lomentaceæ.*

This tree grows in Spaniſh America, and the balſam flows from inciſions made in its bark, during the hot ſeaſon, and is brought to us in little gourd ſhells. It is of a yellowiſh-brown colour, inclining to red: in conſiſtence thick and tenacious: by age it grows hard and brittle, without ſuffering any great loſs of its more valuable parts. The ſmell of this balſam is extremely fragrant, ſomewhat reſembling that of lemons; its taſte warm and ſweetiſh.

In its medicinal virtues it agrees with the other balſams.

TORMENTILLA ERECTA. *Radix.* (*Ed.*)
Tormentilla. Radix. (*Lond. Dub.*)
Septfoil. The root.
Willd. g. 1001. *ſp.* 1. *Icoſandria Polygynia.*—Nat. ord. *Senticoſæ.*

Tormentil is perennial, and found wild in woods and on commons: it has long ſlender ſtalks, with uſually ſeven long narrow leaves at a joint; the root is for the moſt part crooked and knotty, of a blackiſh colour on the outſide, and a reddiſh within. This root has an auſtere ſtyptic taſte, accompanied with a ſlight kind of aromatic flavour; it is one of the moſt agreeable and efficacious of the vegetable aſtringents, and is employed with good effect in all caſes where medicines of this claſs are proper.

TRAGACANTHA. (*Lond.*) See Astragalus.

TRIFOLIUM PALUDOSUM. (*Lond. Dub.*) See Menyanthes Trifoliata.

TRIGONELLA FOENUM GRÆCUM.

Foenum Græcum. Semen. (*Lond.*)

Fenugreek. The ſeeds.

Diadelphia Decandria.—Nat. ord. *Papilionaceæ.*

THIS plant is annual, and a native of the ſouth of France. In Poland it is cultivated in large quantities. The ſeeds have a yellowiſh colour, a rhomboidal figure, a diſagreeable ſtrong ſmell, and a mucilaginous taſte. Their principal uſe was in cataplaſms, fomentations, and the like, and in emollient glyſters.

TRITICUM.

Willd. g. 152. *Triandria Monogynia.*—Nat. ord. *Gramina.*

Sp. 1. TRITICUM ÆSTIVUM. *Seminum Farina. Amylum.* (*Dub.*)

Sp. 2. TRITICUM HYBERNUM. *Farina. Amylum.* (*Lond.*)

Wheat. Flour. Starch.

BY ſome theſe are conſidered only as varieties, not as diſtinct ſpecies. The latter, however, is the moſt productive, and is moſt commonly cultivated on that account; for there is no material difference between the grains they produce, which are indiſcriminately employed for every purpoſe.

Wheat-flour conſiſts principally of gluten, ſtarch, albumen, and a ſweet mucilage. Theſe may be ſeparated by forming the flour into a paſte with a little water, and waſhing this paſte with freſh quantities of water, until it runs from it colourleſs. What remains is the gluten: which, if not the ſame, is very analogous to the fibrine of animal ſubſtances (272.). From the water with which the paſte was waſhed, a white powder ſeparates on ſtanding. This is the ſtarch (255.) which we have already mentioned under the title Amylum. The albumen and ſweet mucilage remain diſſolved in the water. By evaporating it, the albumen firſt ſeparates in white flakes, and the ſweet mucilage may be got by total evaporation.

It is the preſence of gluten which characterizes wheat-flour; and on the due admixture of it with the other conſtituents, depends the ſuperiority of wheat-flour for baking bread.

Bread is made by working the flour into a paſte with water, a quantity of ſome ferment, ſuch as yeaſt, and a little muriate of ſoda to render it ſapid, allowing the paſte to ſtand until a certain degree of fermentation take place, and then baking it in an oven heated to about 488°. During the fermentation a quantity of gas is formed, and as it is prevented from eſcaping by the toughneſs of the paſte, and dilated by the heat of the oven, the bread is rendered light and ſpongy. In this proceſs the nature of the conſtituents of the flour is altered, for we are not able to obtain either gluten or ſtarch from bread.

Bread

Bread is not only one of the moſt important articles of nouriſhment, but is alſo employed in pharmacy for making cataplaſms, and giving form to more active articles. An infuſion of toaſted bread has a deep colour and pleaſant taſte, and is an excellent drink in febrile diſeaſes, and debility of the ſtomach. The change which bread undergoes by toaſting is not known; but it is probably very ſimilar to that produced in coffee by the ſame means. In raw coffee there is no tannin; in roaſted coffee it is abundant.

TUSSILAGO FARFARA. *Folia. Flores.* (*Ed.*)
Tuſſilago. Herba. (*Lond.*) *Folia.* (*Dub.*)
Colt's-foot. The herb and flowers.
Syngeneſia ſuperflua.—Nat. ord. *Compoſitæ radiatæ.*

THIS grows wild in moiſt ſituations, producing yellow flowers in February and March: theſe ſoon fall off, and are ſucceeded by large roundiſh leaves, hairy underneath: their taſte is herbaceous ſomewhat glutinous, and ſubacrid. Tuſſilago is recommended in coughs, phthiſis, and other diſorders of the breaſt and lungs, and ſome uſe it in ſcrofula. It is chiefly directed to be taken with milk; and upon this probably, more than on the tuſſilago itſelf, any benefit derived from it in practice is to be explained.

ULMUS CAMPESTRIS. *Cortex interior.* (*Ed.*)
Ulmus. Cortex interior. (*Lond. Dub.*)
Elm tree. The inner bark.
Willd. g. 505. *ſp.* 1. *Pentandria Digynia.*—Nat. ord. *Scabridæ.*

THIS tree grows wild in Britain. The inner bark has a yellowiſh colour, and a mucilaginous, bitter, aſtringent taſte, without ſmell.

A decoction formed from it, by boiling an ounce with a pound of water, to the conſumption of one-half, has been highly recommended in the lepra ichthyoſis, and has been ſaid to cure dropſies.

URTICA DIOICA.
Urtica. Herba. (*Lond.*)
Common nettle. The plant.
Monoecia Tetrandria.—Nat. ord. *Scabridæ.*

THIS is a well-known perennial weed. The leaves of the freſh plant ſtimulate, inflame, and raiſe bliſters on thoſe parts of the ſkin which they touch. Hence, when a powerful rubefacient is required, ſtinging with nettles has been recommended. It has been alleged to have ſometimes ſucceeded in reſtoring ſenſe and motion to paralytic limbs.

UVA URSI. (*Lond. Dub.*) See ARBUTUS.

UVÆ PASSÆ. (*Lond. Dub.*) See VITIS.

VALERIANA OFFICINALIS. *Radix.* (*Ed.*)
Valeriana ſylveſtris. *Radix.* (*Lond. Dub.*)
Wild valerian. The root.
Willd. g. 75. *ſp.* 6. *Triandria Monogynia.*—Nat. ord. *Aggregatæ.*

THIS plant is perennial, and grows wild in Britain. Like many other plants, it varies in its appearance and ſenſible qualities, according to the ſituation in which it grows. In marſhes and ſhadowy places its leaves are broader, on dry heaths and high paſtures they are narrower.

The roots produced in low watery grounds, have a remarkably faint ſmell in compariſon of the others, and ſometimes ſcarce any at all. The roots taken up in autumn or winter, have alſo much ſtronger ſenſible qualities than thoſe collected in ſpring and ſummer.

The root conſiſts of a number of ſtrings or fibres matted together, iſſuing from one common head; of a whitiſh or pale browniſh colour: its ſmell is ſtrong, like a mixture of aromatics with fetids; the taſte unpleaſantly warm, bitteriſh, and ſubacrid.

Wild valerian is a medicine of great uſe in nervous diſorders, and is particularly ſerviceable in epilepſies, proceeding from a debility of the nervous ſyſtem.

Some recommend it as uſeful in procuring ſleep, particularly in fever, even when opium fails: But it is principally uſeful in affections of the hyſterical kind.

The common doſe is from a ſcruple to a drachm in powder: and in infuſion, from one to two drachms. Its unpleaſant flavour is moſt effectually concealed by a ſuitable addition of mace.

As its virtues reſide entirely in an eſſential oil, the decoction and extract are improper forms for exhibiting it.

VERATRUM ALBUM. *Radix.* (*Ed.*)
Helleborus albus. *Radix.* (*Lond. Dub.*)
White hellebore. The root.
Polygamia Monoecia.—Nat. ord. *Liliaceæ.*

THIS plant grows ſpontaneouſly in Switzerland and the mountainous parts of Germany. The root has a nauſeous, bitteriſh, acrid taſte, burning the mouth and fauces: if wounded when freſh, it emits an extremely acrimonious juice, which mixed with the blood, by a wound, is ſaid to prove very dangerous: the powder of the dried root, applied to an iſſue, occaſions violent purging; ſnuffed up the noſe, it proves a ſtrong, and not always a ſafe ſternutatory. This root, taken internally, acts with extreme violence as an emetic; and has been obſerved, even in a ſmall doſe, to occaſion convulſions, and other terrible diſorders. The ancients ſometimes employed it in very obſtinate caſes, and always made this their laſt reſource. Modern practice ſeems to have almoſt entirely rejected its internal uſe, though ſome have ventured upon ſo large a doſe as a ſcruple, in maniacal caſes, and are ſaid to have experienced good effects from it.

VERONICA BECCABUNGA.

Beccabunga. Herba. (*Lond.*) *Folia.* (*Dub.*)

Brooklime. The herb.

Willd. g. 44. *ſp.* 30. *Diandria Monogynia.*—Nat. ord. *Perſonatæ.*

This is a low perennial plant, common in little rivulets and ditches of ſtanding water. The leaves remain all the winter, but are in greateſt perfection in the ſpring. Their prevailing taſte is an herbaceous one. accompanied with a very light bitterneſs.

If any good effects be expected from brooklime, it ſhould be uſed as food.

VINUM. (*Dub.*) See Vitis.

VIOLA ODORATA. *Flores.*

Viola. Flos recens. (*Lond.*) *Flores.* (*Dub.*)

March violet. The recent flower.

Willd. g. 446. *ſp.* 12. *Pentandria Monogynia.*—Nat. ord. *Campanaceæ.*

This plant is perennial, and is found wild under hedges and in ſhady places; but the ſhops are generally ſupplied from gardens. Its flowers are ſo remarkable for their delightful odour, and their peculiar richneſs of colour, that they have given a name to both.

In our markets we meet with the flowers of other ſpecies; theſe may be diſtinguiſhed from the foregoing by their being larger, of a pale colour, and of no ſmell.

They impart their colour and flavour to aqueous liquors: a ſyrup made from this infuſion has long maintained a place in the ſhops, and is ſaid to be an agreeable and uſeful laxative for children; but is chiefly valued as a delicate teſt of the preſence of uncombined acids or alkalies, the former changing its blue to a red, and the latter to a green colour.

VIRGA AUREA. (*Lond.*) See Solidago.

VITIS VINIFERA. *Fructus ſiccatus, ejusque ſuccus fermentatus.* (*Ed.*)

Vitis. Fructus. Uva paſſa, Vinum. Tartarum, Tartari cryſtalli. Acetum. (*Lond.*)

Uvæ paſſæ. Vinum album Hiſpanicum, album Rhenanum, rubrum Luſitanicum. (*Dub.*)

The vine. Grapes. Raiſins. Wine. Tartar. Cryſtals of tartar. Vinegar.

Willd.

Willd. g. 453. *ʃp.* 1. *Pentandria Monogynia.*—Nat. ord. *Hederaceæ.*

THE vine grows in temperate ſituations in many parts of the world, and is cultivated very generally for the ſake of its agreeable ſubacid fruit. Before they are ripe, grapes are extremely harſh and acid, and by expreſſion furniſh a liquor which is called Verjuice. It contains malic acid, ſuper-tartrite of potaſs, and extractive, and may be made to furniſh wine by the addition of ſugar. As the grape advances to maturity, the quantity of ſugar increaſes, while that of malic acid diminiſhes: it however never diſappears entirely. When thoroughly ripe, the grape is one of the moſt agreeable fruits. It is cooling, antiſeptic, and nutritious; and, when eaten in conſiderable quantity, diuretic, and gently laxative. In inflammatory diſeaſes, and all others where acids are indicated, they form an excellent article of diet.

Raiſins, *uvæ paſſæ*, are grapes which have been carefully dried. By this means not only the water they contained is diſſipated, but the quantity of acid ſeems to be diminiſhed. They become more ſaccharine, mucilaginous, and laxative, than the recent grape, but are leſs cooling.

Wine is the juice of the grape altered by fermentation (S. 2. 245.) The numerous varieties of wine depend principally on the proportion of ſugar contained in the muſt, and the manner of its fermentation. When the proportion of ſugar is ſufficient, and the fermentation complete, the wine is perfect and generous: If the quantity of ſugar be too large, part of it remains undecompoſed, as the fermentation is languid, and the wine is ſweet and luſcious; if, on the contrary, it be too ſmall, the wine is thin and weak; and if it be bottled before the fermentation be completed, it will proceed ſlowly in the bottle, and, on drawing the cork, the wine will froth and ſparkle in the glaſs, as for example Champaigne. When the muſt is ſeparated from the huſk of the grape before it is fermented, the wine has little or no colour: Theſe are called White wines. If, on the contrary, the huſks are allowed to remain in the muſt while the fermentation is going on, the alcohol diſſolves the colouring matter of the huſks, and the wine is coloured: Such are called Red wines. Beſides in theſe principal circumſtances, wines vary very much in flavour. The red wines moſt commonly drunk in this country are Port, which is ſtrong and auſtere, and Claret, which is thinner and higher flavoured. Our white wines are all ſtrong, Madeira, Sherry, Liſbon, Malaga, and Hock. Of theſe the laſt is the moſt acidulous, and Malaga the ſweeteſt.

Wine, taken in moderate quantities, acts as a beneficial ſtimulus to the whole ſyſtem. It promotes digeſtion, increaſes the action of the heart and arteries, raiſes the heat of the body, and exhilirates the ſpirits. Taken to exceſs, it produces inebriety and ſtupor, which are often ſucceeded by headach, ſtupor, nauſea and diarrhœa, which laſt for ſeveral days. Habitual exceſs in wine debilitates the ſtomach, produces inflammation of the liver, weakens the nervous ſyſtem, and gives riſe to dropſy, gout, apoplexy, tremors, and cutaneous affections.

To convaleſcents, and in all diſeaſes of general debility, and deficiency of the vital powers, wine is the remedy on which we muſt place our chief dependance; and when properly adminiſtered, its effects are often ſcarcely credible.

The uſe of wine, as an article of pharmacy, will be noticed hereafter.

VITRIOLUM ALBUM. (*Dub.*) See ZINCUM.

WINTERA AROMATICA. *Cortex.* (*Ed.*)

Winteranus. Cortex officinarum.

Winter's bark.

Willd. g. 1063. *Polyandria Tetragynia.*—Nat. ord. *Oleraceæ.*

THIS is the produce of a tree growing about the ſouthern promontory of America. It was firſt diſcovered on the coaſt of Magellan by Captain Winter, in the year 1567: the ſailors then employed the bark as a ſpice, and afterwards found it ſerviceable in the ſcurvy; for which purpoſe it is at preſent alſo ſometimes made uſe of in diet drinks. The true Winter's bark is not often met with in the ſhops, Canella alba being generally ſubſtituted for it, and by ſome they are reckoned to be the ſame: There is, however, a conſiderable difference betwixt them in appearance, and a greater in quality. The Winter's bark is in large pieces, of a more cinnamon colour than the canella, and taſtes much warmer and more pungent. Its ſmell reſembles that of Caſcarilla. Its virtues reſide in a very hot, ſtimulant, eſſential oil.

ZEDOARIA. (*Lond. Dub.*) See AMOMUM.

ZINCUM. (*Ed. Dub. Lond.*)

Zinc.

THE general properties of zinc have been already noticed (164.).

It is always found oxidized,

1. Combined with a greater or leſs proportion of carbonic acid. Calamine.
2. Combined with ſulphur. Blende.
3. Combined with ſulphuric acid, generally in ſolution.

The ores of zinc are rarely worked by themſelves, or with the ſole intention of extracting zinc, but are generally melted with the lead ores, particularly galena, which they commonly accompany.

pany. By this procefs the zinc is obtained in two forms; part of it is fublimed in the ftate of an oxide, and attaches itfelf to the chimney of the furnace in the form of a grey, granular, earthy-like incruftation, which is known by the name of Tutty or Cadmia; part of it is fublimed in its metallic form, and is condenfed in the throat of the chimney in fmall grains, which are afterwards melted in a crucible, and caft in ingots.

Zinc is officinal for the preparation of the white oxide and the fulphate.

Oxidum Zinci Impurum. (*Ed.*)

Tutia. (*Lond. Dub.*)

Impure oxide of zinc. Tutty.

It is moderately hard and ponderous; of a brownifh colour, and full of fmall protuberances on the outfide, fmooth and yellowifh within; fome pieces have a blueifh caft, from minute globules of zinc in its metallic form. Tutty is celebrated as an ophthalmic, and frequently employed as fuch in unguents and collyria.

Carbonas Zinci Impurus. (*Ed.*)

Lapis calaminaris. (*Dub. Lond.*)

Impure carbonate of zinc. Calamine.

This mineral is found plentifully in England, Germany, and other countries, either in diftinct mines, or intermingled with the ores of different metals. It is ufually of a greyifh, brownifh, yellowifh, or pale reddifh colour; without luftre, or tranfparency; fracture commonly uneven or earthy; confiderably hard, though not fufficiently fo as to ftrike fire with fteel; fpecific gravity 2.585, but fometimes much heavier. Before the blow-pipe it decrepitates, but does not melt, and becomes either whiter or yellow. It is partly foluble in acids, and often effervefces with them. In the latter cafe it lofes one-third of its weight by calcination. It almoft always contains a confiderable proportion of filica, fometimes even a third, and often a little oxide of iron.

Calamine is generally roafted before it comes into the fhops, to render it more eafily reducible into a fine powder. In this ftate it is employed in collyria, againft defluxions of thin acrid humours upon the eyes, for drying up moift, running ulcers, and healing excoriations.

Sulphas Zinci.

Vitriolum album. (*Lond. Dub.*)

Sulphate of zinc. White vitriol.

This is chiefly found native in the mines of Goflar, fometimes in tranfparent pieces, but more commonly in the form of white efflorefcences, which are diffolved in water, and afterwards reduced by evaporation and cryſtallization into large maſſes. We rarely meet with this ſort of vitriol pure: it is ordered therefore to be prepared.

White vitriol is ſometimes given, from five or ſix grains to half a drachm, as an emetic; it operates very quickly, and, if pure, without violence. Externally, it is employed as an ophthalmic, and often made the baſis of collyria, both in extemporaneous preſcription and in diſpenſatories.

ZINGIBER. (*Lond. Dub.*) See AMOMUM.

APPENDIX.

No. I.

LIST *of* SUBSTANCES *contained in ſome of the lateſt and moſt eſteemed Foreign Pharmacopœias, but not inſerted in the Materia Medica of any of the Britiſh Colleges.*

EXPLANATION OF THE ABBREVIATIONS.

R.—Pharmacopœia Roſſica. 8vo. Petropoli, 1798.

A. p.—Pharmacopœia Auſtriaco provincialis, emendata. 8vo. Viennæ, 1794.

A. c.—Pharmacopœia Auſtriaco-caſtrenſis. 8vo. Ticini, 1795.

B.—Pharmacopœia in uſum officinarum Reipublicæ Bremenſis conſcripta. 8vo. Bremæ, 1792.

ACHILLEA MILLEFOLIUM.
Millefolii herba, flores. R.—A. p.—B.
Smell ſomewhat aromatic; taſte ſlightly aſtringent and bitteriſh; virtues ſtomachic and tonic.

ACHILLEA NOBILIS.
Millefolii nobilis herba, flores. R.
Smell camphoraceous and aromatic, preferable in every reſpect to the preceding ſpecies.

ACHILLEA PTARMICA.
Ptarmicæ radix; Herba, cum floribus. R.
No ſmell; taſte acrid; virtues ſialogogue, ſternutatory.

ADIANTUM CAPPILUS VENERIS.
Capillus veneris. Herba. A. p.
Uſed for preparing the ſyrup called Capillaire.

AGARICUS MUSCARIUS. R.
Smell fetid; taſte acrid; virtues inebriating, and inducing delirium.

AGRIMONIA EUPATORIA.
Agrimonia. The herb. A. p.—B.
Slightly ſtyptic and aſtringent.

ALCEA ROSEA.
Malvæ arboreæ flores. R.—B.
No ſmell; taſte mucilaginous and ſubaſtringent; effects emollient and ſubaſtringent.

AMBRA AMBROSIACA GRYSEA.
Ambra gryſea. R.
Smell agreeable; taſte reſinous and aromatic; effects exciting and augmenting the nervous power.

AMOMUM GRANA PARADISI.
Grana paradiſi. B.
Smell ſlightly aromatic; taſte acrid; action ſtimulating.

AMYGDALUS NANA. *Nuclei.* R.
No ſmell; bitteriſh taſte; a ſubſtitute for ſweet almonds.

ANAGALLIS ARVENSIS.
Anagallis. Herba. A. p.—B.—R.
No ſmell; taſte, at firſt herbaceous, afterwards bitter and ſomewhat acrid.

ANEMONE

ANEMONE PRATENSIS.
Pulſatillæ nigricantis herba. R.—A. p.—B.
Smell ſlight; taſte acrid, cauſtic, durable; effects diuretic and ſtimulant.

ANEMONE NEMOROSA.
Ranunculi albi flores, et herba recens. R.
Smell ſlight; taſte acrid; effects rubefacient and bliſtering.

ANTIRRHINUM LINARIA.
Linaria A. p.—B.
Smell urinous; taſte bitteriſh; effects diuretic.

ARISTOLOCHIA CLEMATITIS.
Ariſtolochia vulgaris. Radix. R.
Smell fragrant, but heavy; taſte bitter, durable; effects diuretic, emmenagogue.

ARISTOLOCHIA ROTUNDA. *Radix.* B.
Smell, taſte and effects, ſimilar to thoſe of the preceding ſpecies.

ARISTOLOCHIA TRILOBATA. *Stipites. Radix.* R.
Smell fragrant, ſtrong; taſte bitteriſh, correſponding with the ſmell; effect diaphoretic.

ARTEMISIA PONTICA.
Abſynthium ponticum. Herba. A. p.
Similar to A. abſinthium, but weaker.

ASTRAGALUS EXSCAPUS. *Radix.* R.—A. p.—B.
No ſmell; taſte bitteriſh and ſubaſtringent; effects demulcent, and falſely ſuppoſed antiſyphilitic.

BELLIS PERENNIS. *Flos. Folium.* A. p.
No ſmell; taſte ſlightly acrid.

BETULA ALNUS.
Alni folia. R.
No ſmell; taſte aſtringent and bitteriſh; effects diſcutient and vulnerary.

BOLETUS LARICIS.
Agaricus albus, fungus decorticatus. A. p.
Agaricus chirurgorum. B.
Taſte nauſeous and bitter; effects emetic, cathartic, draſtic.

BOLUS ALBA. A. p.

BOLUS ARMENA. A. p.
No ſmell; adhere to the tongue; effects exſiccative.

BOS TAURUS.
Lac vaccinum. A. p.
Nutritious, demulcent.

Sevum Bovinum. R.—A. c.
Unctuous, emollient.

BRASSICA (ERUCA).
Erucæ ſemina. R.
Smell heavy; taſte acrid; effects ſtimulant.

CALENDULA OFFICINALIS.
Calendula. A. p.
Taſte bitteriſh.

CANNABIS SATIVA.
Cannabis. Semina. R.—B.
Smell weak; taſte mawkiſh; effects emollient, anodyne.

CARDUUS MARIANUS.
Carduus Mariæ. Semen. B.
Emulſive.

CAREX ARENARIA. *Radix.* R.
Smell agreeable, but not ſtrong; effects demulcent, reſolvent.

CERATONIA SILIQUA.
Siliqua dulcis. R.—A. p.—B.
No ſmell; taſte ſweet; effects edulcorant, expectorant.

CHELIDONIUM MAJUS. *Radix. Herba recens.* R.—A. p.—B.
Smell heavy; taſte acrid, bitteriſh, durable; effects acrid, purgative; when dried, aperient, diuretic.

CHENOPODIUM AMBROSIOIDES.
Chenopodii herba. B.
Smell ſtrong, fragrant; taſte acrid, aromatic; effects ſtimulant, carminative, anthelminthic.

CHENOPODIUM BOTRYS.
Botrys vulgaris. Herba. R.
Qualities and effects ſimilar to, but ſtronger than, thoſe of the preceding ſpecies.

CICHORIUM INTYBUS.
Cichorii radix, herba. R.—A. p. *et* c.—B.
No ſmell; taſte of the herb agreeably bitter, of the root intenſely bitter; effects aperient, tonic, diuretic.

CLEMATIS

CLEMATIS ERECTA.
Flammulæ Jovis folia, flores. R.—A. p.
Smell weak; taſte acrid, bliſtering; effects diuretic, ſudorific.

CONFERVA DICHOTOMA. *Fucus helminthocortos.*
Helminthocorton. R.—B.
Smell marine, fetid; taſte ſaline; effects purgative, anthelmintic.

CONVOLVULUS AMERICANUS.
Mechoacanna. Radix. B.
Taſte at firſt ſweetiſh, then ſubacrid; effect purgative.

CUCUMIS MELO.
Melo. Semen. A. p.
Emulſive.

CUCURBITA PEPO.
Pepo. Semen. A. p.
Emulſive.

CYCAS CIRCINALIS.
Sago grana. R.—B.
Amylaceous; nutritious.

CYNOMORIUM COCCINEUM.
Fungus Melitenſis. R.
No ſmell; taſte ſtyptic, bitteriſh, ſaline; effects roborant, aſtringent.

CYTINUS HYPOCISTIS.
Hypociſtis. Succus inſpiſſatus. A. p.
Taſte acid, auſtere; effect aſtringent.

DICTAMNUS ALBUS. *Radix.* A. p.—B.
Smell fragrant; taſte bitter, ſubaromatic; effects tonic, anthelmintic.

EPIDENDRUM VANILLA.
Vanillæ ſiliqua. R.
Smell fragrant, balſamic; taſte aromatic, ſubacid, unctuous; effects heating, diuretic.

EUPHORBIA OFFICINALIS.
Euphorbii gummi. R.—A. p.
No ſmell; taſte at firſt none, then pungent, burning; effects acrid, draſtic.

ERYSIMUM OFFICINALE.
Eryſimum. Herba. B.
Taſte acrid; effects aſtringent, diuretic.

FAGARA

FAGARA OCTANDRA.
Tacamahaca. Gummi-resina. R.
Smell fragrant like lavender; taste bitterish, nauseous; effects tonic, stimulant.

FICUS INDICA RELIGIOSA.
Laccæ gummi. R.—B.
Resinous.

FORMICA RUFA.
Formicæ cum acervo. R.—B.
Qualities and effects depend on the little acetous acid they contain.

GADUS LOTA.
Mustela fluviatilis. Liquamen hepatis. A. p.
Detergent; solvent.

GENTIANA PANNONICA.
Gentiana. Radix. A. p. *et* c.
Qualities and effects the same as those of the gentiana lutea.

GEUM RIVALE.
Gei palustris radix. R.
Smell weak; taste styptic, austere; effects tonic, astringent, febrifuge.

GEUM URBANUM.
Caryophyllatæ radix. R.—A. p.—B.
Smell caryophyllaceous, lost by drying; taste styptic, bitter; effects tonic, astringent, febrifuge; said to be an excellent substitute for Peruvian bark.

GLECOMA HEDERACEA.
Hedera terrestris. Herba. A. p.—B.
Taste bitterish, subacrid; effects expectorant, roborant.

HIRUDO MEDICINALIS.
Hirudo. Animal vivum. A. c.
Topical abstraction of blood.

HYPERICUM QUADRANGULARE.
Hypericum. Flores. B.
Smell agreeable; taste bitterish, subastringent, balsamic; effects vulnerary.

ILEX AQUIFOLIUM.
Aquifolii folia. R.
No smell; taste astringent; effects febrifuge, antiarthritic.

ILLICIUM ANISATUM.
Anisum stellatum. Fructus A. p.—B.—R.

Smell

Smell aromatic; taſte agreeable, like aniſe; effects pectoral, carminative, diuretic.

IMPERATORIA OSTRUTHIUM.
Imperatoriæ radix. R.—A. p.—L.
Smell aromatic; taſte warm, pungent, very durable; effects ſtimulant, carminative, ſudorific, diuretic.

JASMINUM OFFICINALE.
Jaſmini flores. R.—B.
Smell fragrant; taſte bitteriſh; uſed as a perfume.

LEDUM PALUSTRE.
Roriſmarini ſylveſtris herba. R.—A. p.
Smell heavy, ſubaromatic; taſte bitteriſh, ſubaſtringent; effects reſolvent, diuretic.

LICHEN ISLANDICUS. A. p. *et* c.—B.—R.
No ſmell; taſte bitteriſh, ſubaſtringent; effect nutritious.

LIGUSTICUM LEVISTICUM.
Leviſtici herba, radix, ſemen. R.—A. p.—B.
Smell unpleaſant; taſte warm, aromatic; effects ſtimulant, carminative, ſudorific.

LIQUIDAMBAR STYRACIFLUUM.
Styrax liquida. Balſamum. A. p.
Smell fragrant; taſte acrid, aromatic; effects ſtimulating, heating.

LONICERA DIERVILLA.
Diervillæ ſtipites. R.
Taſte and ſmell nauſeous; effects antivenereal.

LORANTHUS EUROPÆUS.
Viſcum quercinum. Lignum. A. p.
Smell nauſeous; taſte aſtringent, mucilaginous; effects tonic.

LYCOPERDON BOVISTA. R.
No taſte or ſmell; effects mechanical, ſuppreſſion of hæmorrhagy.

LYCOPODIUM CLAVATUM.
Lycopodii ſemen. R.—B.
No taſte or ſmell; effects abſorbent.

LYTHRUM SALICARIA.
Lyſimachia purpurea. Herba. B. *Salicaria.* A. p.
No ſmell; taſte ſubaſtringent; effects aſtringent, tonic.

MANGANESIUM.
Magneſia nigra. R. *Magneſia vitrariorum.* A. p.

Properties,

Properties, fee (169.); ufed for the production of oxygen gas, oxymuriatic acid, and fome other chemical preparations.

MARANTA GALANGA.
Galangæ radix. R.—A. p.—B.
Smell fragrant; tafte aromatic, pungent, biting; effects ftomachic, heating.

MATRICARIA CHAMOMILLA.
Chamomillæ vulgaris flores, herba. R.—A. p. *et* c.—B.
Smell ftrong; tafte bitter, warmifh; effects ftomachic, difcutient.

MATRICARIA PARTHENIUM.
Matricaria. Flos, herba. A. p.
Smell naufeous; tafte bitter; effects ftomachic.

MELOE PROSCARABÆUS. A. p.
Meloë majalis. B. *Vermis majalis.* R.
No fmell; tafte acrid; effects ftimulating, diuretic, cauftic.

MENTHA CRISPA. *Herba.* R.—A. p.—B.
Smell fragrant, ftrong; tafte warm, aromatic, flightly bitter; effects refolvent, ftomachic, carminative.

MENTHA AQUATICA.
Mentha rubra. Oleum deftillatum. A. c.
Similar to the former.

MIMOSA SENEGAL.
Arabicum gummi. B.
Suppofed to produce the fineft gum-arabic.

MYROBALANUS CITRINA. *Cortex fructuum pulverifatus.*
Terminaliæ fpecies? A. p.
Tafte aftringent; effects aftringent.

NIGELLA SATIVA.
Nigella. Semen. B.
Smell fragrant; tafte acrid, aromatic; effects ftimulating, errhine, fialogogue, anthelmintic.

ONONIS SPINOSA.
Ononis radix. A. p.
No fmell; tafte fweetifh; effects diuretic.

ONOPORDUM ACANTHIUM.
Cardui tomentofi herba recens. R.
No fmell; tafte bitterifh; effects fpecific, the cure of cancerous affections.

ORCHIS

ORCHIS MASCULA, MORIO, MILITARIS, MACULATA, PYRAMIDALIS, LATIFOLIA.
Salep. Satyrium. Radix. R.—A. p. *et* c.—B.
Tafte amylaceous ; effects nutritious.

ORIGANUM DICTAMNUS.
Dictamnus Creticus. Herba. B.
Smell flight, aromatic ; tafte aromatic ; effects ftimulant.

ORYZA SATIVA.
Oryzæ femen decorticatum. R.
Tafte farinaceous ; effects nutritious, aftringent.

PÆONIA OFFICINALIS.
Pæoniæ radix. R.—B.
Smell unpleafant ; tafte at firft fweetifh, then difagreeably bitter ; effects antifpafmodic.

PECHURIM FABA. *Ex Lauro quadam.* R.
Smell fragrant, durable ; tafte aromatic ; effects ftomachic, aftringent.

PHELLANDRIUM AQUATICUM. *Semen.* R.
Fœniculum aquaticum. B.
Smell heavy ; tafte aromatic, acrid ; effects ftimulating, refolvent.

PHYTOLACCA DECANDRA.
Phytolaccæ herba recens, radix. R.
No fmell ; tafte acrid, corrofive ; effects corrofive in cancer.

PIMPINELLA SAXIFRAGA.
Pimpinellæ albæ radix. R.—A. p.—B.
Smell fragrant ; tafte warm, acrid ; effects ftomachic, diaphoretic, diuretic.

PINUS PINEA.
Pinus fativa. Nuclei. A. p.
Tafte fweet, bland ; effects nutritious.

PLANTAGO MEDIA.
Plantago. Herba. A. p.
Tafte fubaftringent ; effects aftringent.

PLANTAGO PSYLLIUM.
Pfyllii femen. R.
Tafte naufeous, mucilaginous, then acrid ; effects relaxant.

POLYGALA AMARA. *Herba, radix.* R.—B.

No

No ſmell; taſte bitter, acidulous, mucilaginous; effects demulcent, roborant.

POLYGALA VULGARIS.
Polygala. Radix. A. p.
Taſte ſweetiſh, bitter; effects tonic, expectorant.

POLYPODIUM VULGARE.
Polypodii radix. R.—A. p.—B.
Taſte at firſt ſweet, then nauſeous, bitter and aſtringent; effects demulcent, reſolvent.

POPULUS BALSAMIFERA.
Tacamahaca. Gummi-reſina R.
Smell fragrant; taſte nauſeous, bitteriſh; effects ſtimulant, tonic.

PRUNUS CERASUS.
Ceraſorum rubrorum acidorum fructus. R.—B.
Ceraſorum nigrorum aqua. A. p.
Taſte acidulous, ſweetiſh; effects refrigerating, antiſeptic; water narcotic.

PRUNUS LAURO-CERASUS.
Lauro-ceraſi folia. R.—B.
Smell fragrant; taſte bitter like that of bitter almonds; effects highly deleterious, narcotic, reſolvent, diuretic.

PTERIS AQUILINA.
Filicis fœminæ radix. R.
Smell nauſeous; taſte viſcid, bitteriſh; effects anthelminthic.

RHEUM UNDULATUM.
Rhabarbari Sibirici radix. R.
Smell ſlight; taſte bitter and ſlightly aſtringent; effects ſtomachic, purgative.

RUBUS ARCTICUS. *Baccæ.* R.
Smell fragrant; taſte acidulous, vinous; effects refrigerant, antiſcorbutic. Similar properties are poſſeſſed by the fruits of the *rubus idæus, cæſius, fructicoſus, chamæmorus.*

RUMEX AQUATICUS.
Lapathi aquatici radix. R.
Taſte auſtere, bitter; effects tonic, antiſcorbutic.

RUMEX ACUTUS.
Lapathum acutum. Radix. A. p.—B.
Taſte bitteriſh, acidulous; effects aſtringent.

SALIX

SALIX ALBA, PENTANDRA, FRAGILIS, VITELLINA.
Salicis cortex. R.
Smell fragrant; taſte aſtringent, bitter; effects tonic, febrifuge.

SAMBUCUS EBULUS.
Ebulus. Radix. A. p.
Smell fetid; taſte nauſeous, bitter, acrid; effects draſtic, cathartic, emetic, narcotic.

SAPONARIA OFFICINALIS.
Saponariæ radix. R.—A. p. *et* c.—B.
No ſmell; taſte ſlightly ſweet, bitter and glutinous; effects detergent.

SCABIOSA ARVENSIS.
Scabioſa. Folium. A. p.
Taſte ſlightly bitter; effects expectorant, vulnerary.

SCANDIX CEREFOLIUM.
Cerefolii herba. Succus. B.—A. p.
Smell weak, balſamic; taſte aromatic, balſamic; effects aperient, pectoral, diuretic.

SCORZONERA HISPANICA.
Scorzonera. Radix. A. p.
Taſte ſweetiſh; effects aperient, demulcent.

SCROPHULARIA NODOSA.
Scrophularia. Folium. Radix. A. p.
Smell unpleaſant; taſte nauſeous, bitter; effects attenuant.

SECALE CEREALE.
Secalis farina. A. p.
Taſte farinaceous; effects nutritious.

SEMPERVIVUM TECTORUM.
Sedi majoris folia virentia. R.—A. p.—B.
Smell weak; taſte ſubacrid, ſlightly ſtyptic; effects refrigerant, aſtringent.

SEPIA OCTOPODA.
Sepiæ os. B.
A carbonate of lime agglutinated by animal mucilage.

SMILAX CHINA.
Chinæ radix. A. p.—B.
No ſmell; taſte mucilaginous; effects ſudorific, antivenereal.

SPIGELIA ANTHELMIA. *Herba cum radice.* R.—B.
Taſte and ſmell fetid; effects narcotic, purgative, anthelmintic.

STRYCHNOS NUX VOMICA.
Nux vomica.
No ſmell; taſte intenſely bitter; effects tonic, narcotic, deleterious.

SYMPHITUM OFFICINALE.
Symphiti radix. R. *Conſolida major.* A. p.—B.
No ſmell; taſte mucilaginous; effects emollient, inſpiſſant.

TEUCRIUM CHAMÆDRYS.
Chamædryos herba. R.—A. p.—B.
Smell ſlightly fragrant; taſte bitter; effects tonic, emmenagogue.

TEUCRIUM CHAMÆPITYS.
Chamæpityos herba. R.
Smell fragrant; taſte bitter and aromatic; effects tonic.

THEOBROMA CACAO.
Cacao. Nucleus. Oleum. R.—A. p.—B.
Little ſmell; taſte pleaſant and oily, very ſlightly aſtringent and bitteriſh; effects nutritious. Oil bland, ſweetiſh; effects emollient, lubricating.

THYMUS SERPYLLUM.
Serpylli herba. R.—A. p.—B.
Smell fragrant; taſte aromatic, bitteriſh; effects ſtimulant, diuretic, emmenagogue.

THYMUS VULGARIS.
Thymi herba. R.—B.
Smell fragrant; taſte warm, pungent, bitter; effects ſtimulant, diuretic, emmenagogue.

TRIFOLIUM MELILOTUS OFFICINALIS.
Meliloti herba cum floribus. R.—A. p.—B.
Smell fragrant; taſte herbaceous, bitteriſh; effects diſcutient.

TRITICUM REPENS.
Graminis radix. R.—A. p. *et* c.—B.
Smell herbaceous; taſte ſweetiſh; effects aperient, demulcent.

VACCINIUM MYRTILLUS.
Myrtilli baccæ. R.—A. p.
No ſmell; taſte acidulous, ſubaſtringent; effects refrigerant, aſtringent.

VACCINIUM OXYCOCCOS.
Oxycocci baccæ. R.
Taſte acidulous; effects refrigerant.

VACCINIUM

VACCINIUM VITIS IDÆA.
Vitis idææ baccæ, folia. R.
Taſte acidulous; effects refrigerant, antiſeptic.

VERATRUM SABADILLA.
Sabadillæ ſemen. R.—A. p. *et* c.—B.
Taſte very bitter, acrid and cauſtic; effects ſtimulant, draſtic, cathartic, anthelmintic, errhine.

VERBASCUM THAPSUS.
Verbaſci flores, folia. R.—A. p.—B.
Taſte of the leaves, herbaceous, bitteriſh; effects emollient, diſcutient. Smell of the flowers ſweet; taſte ſweet; effects pectoral.

VICIA FABA.
Faba. Semen. A. p.
Taſte farinaceous; effects nutritious.

VIOLA TRICOLOR. *Herba.* R.—A. p.
Jacea. Herba. B.
Smell agreeable; taſte mucilaginous, bitteriſh; effects anodyne.

VITIS VINIFERA APYRENA.
Papulæ minores. E.—B.
Taſte ſweet, acidulous; effects refrigerant, demulcent, lubricating.

No. II.

LIST *of* ANIMALS *which furniſh Articles of the Materia Medica, arranged according to* CUVIER'S *Syſtem.*

MAMMALIA.

RODENTIA. Caſtor fiber.
PACHYDERMATA. Sus ſcrofa.
RUMINANTIA. Moſchus moſchiferus. Cervus elaphus. Ovis aries. Bos taurus.
CETACEA. Phyſeter macrocephalus.

AVES.

GALLINÆ. Phaſianus gallus.
ANSERES. Anas anſer.

PISCES.

Chondropterygii. Acipenser sturio, stellatus, huso, ruthenus.

CRUSTACEA.

Canceres. Cancer pagurus, astacus.

INSECTA.

Coleoptera. Lytta vesicatoria. (*Meloe vesicatorius.*) Meloe proscarabæus.

Hymenoptera. Cyneps querci folii. Apis mellifera. Formica rufa.

Hemiptera. Coccus cacti.

Gnathaptera. Oniscus asellus.

MOLLUSCA.

Cephalopoda. Sepia officinalis.

Acephala. Ostrea edulis.

VERMES.

Hirudo medicinalis.

ZOOPHYTA.

Ceratophyta. Gorgonia nobilis. (*Isis nobilis.*)

Spongia. Spongia officinalis.

No. III.

List *of the* Genera *of Medicinal Plants, arranged according to the* Linnæan *System.*

Cl. I. MONANDRIA.

Ord. Monogynia.

Kæmpferia.
Amomum.
Curcuma.

Cl. II. DIANDRIA.

Ord. Monogynia.

Olea.
Gratiola.
Salvia.
Veronica.
Rosmarinus.

Cl. II.

Cl. II. DIANDRIA.
Ord. Trigynia.
Piper.

Cl. III. TRIANDRIA.
Ord. Monogynia.
Valeriana.
Iris.
Crocus.

Ord. Digynia.
Saccharum.
Secale.
Hordeum.
Avena.
Triticum.

Cl. IV. TETRANDRIA.
Ord. Monogynia.
Plantago.
Rubia.
Alchemilla.
Scabiosa.
Santalum.
Dorstenia.

Ord. Digynia.
Cuscuta.

Cl. V. PENTANDRIA.
Ord. Monogynia.
Anchusa.
Spigelia.
Datura.
Nicotiana.
Capsicum.
Atropa.
Lobelia.
Rhamnus.
Viola.
Menyanthes.
Convolvulus.
Hyosciamus.
Strychnos.
Solanum.
Cinchona.

Cl. V. PENTANDRIA.
Ord. Monogynia.
Cephaëlis.
Vitis.
Ribes.

Ord. Digynia.
Gentiana.
Eryngium.
Conium.
Cuminum.
Bubon.
Coriandrum.
Pastinaca.
Apium.
Ulmus.
Daucus.
Sium.
Ferula.
Angelica.
Carum.
Anethum.
Pimpinella.

Ord. Trigynia.
Sambucus.
Rhus.

Ord. Pentagynia.
Linum.

Cl. VI. HEXANDRIA.
Ord. Monogynia.
Allium.
Scilla.
Aloë.
Calamus.
Lilium.
Dracæna.
Acorus.
Berberis.

Ord. Trigynia.
Rumex.
Colchicum.

Cl. VII. HEPTANDRIA.

Ord. Monogynia.

Æſculus.

Cl. VIII. OCTANDRIA.

Ord. Monogynia.

Amyris.
Daphne.
Vaccinium.

Ord. Trigynia.

Polygonum.

Cl. IX. ENNEANDRIA.

Ord. Monogynia.

Laurus.

Ord. Trigynia.

Rheum.

Cl. X. DECANDRIA.

Ord. Monogynia.

Caſſia.
Guajacum.
Toluifera.
Swietenia.
Rhododendron.
Styrax.
Myroxylon.
Ruta.
Hæmatoxylon.
Quaſſia.
Arbutus.
Copaifera.

Ord. Digynia.

Dianthus.

Cl. XI. DODECANDRIA.

Ord. Monogynia.

Aſarum.
Canella.

Cl. XII. ICOSANDRIA.

Ord. Monogynia.

Cactus.
Myrtus.

Cl. XII. ICOSANDRIA.

Ord. Monogynia.

Amygdalus.
Eugenia.
Punica.
Prunus.

Ord. Pentagynia.

Pyrus.

Ord. Polygynia.

Roſa.
Tormentilla.
Geum.
Rubus.
Potentilla.

Cl. XIII. POLYANDRIA.

Ord. Monogynia.

Papaver.

Ord. Trigynia.

Delphinium.
Aconitum.

Ord. Tetragynia.

Wintera.

Ord. Polygynia.

Helleborus.

Cl. XIV. DIDYNAMIA.

Ord. Gymnospermia.

Hyſſopus.
Lavandula.
Marrubium.
Mentha.
Teucrium.
Meliſſa.

Ord. Angiospermia.

Digitalis.

Cl. XV. TETRADYNAMIA.

Ord. Siliculosæ.

Cochlearia.

Cl. XV. TETRADYNAMIA.

Ord. Siliquosæ.

Raphanus.
Sinapis.
Cardamine.
Sisymbrium.

Cl. XVI. MONADELPHIA.

Ord. Triandria.

Tamarindus.

Ord. Polyandria.

Malva.
Althæa.

Cl. XVII. DIADELPHIA.

Ord. Hexandria.

Fumaria.

Ord. Octandria.

Polygala.

Ord. Decandria.

Pterocarpus.
Dolichos.
Geoffroya.
Trigonella.
Spartium.
Glycyrrhiza.
Astragalus.

Cl. XVIII. POLYADELPHIA.

Ord. Icosandria.

Citrus.

Ord. Polyandria.

Melaleuca.
Hypericum.

Cl. XIX. SYNGENESIA.

Ord. Polygamia Æqualis.

Lactuca.
Arctium.
Leontodon.
Cynara.

Cl. XIX. SYNGENESIA.

Ord. Polygamia Superflua.

Tanacetum.
Tussilago.
Inula.
Matricaria.
Achillea.
Artemisia.
Solidago.
Arnica.
Anthemis.

O. Polygamia Frustranea.

Centaurea.

Ord. Monogamia.

Lobelia.
Viola.

Cl. XX. GYNANDRIA.

Ord. Diandria.

Orchis.

Ord. Hexandria.

Aristolochia.

Ord. Polyandria.

Arum.

Cl. XXI. MONOECIA.

Ord. Tetrandria.

Betula.
Morus.
Urtica.

Ord. Polyandria.

Quercus.
Juglans.

Ord. Monadelphia.

Pinus.
Ricinus.
Croton.

Ord. Syngenesia.

Momordica.

Cl. XXI. MONOECIA.
Ord. Syngenesia.
Cucumis.
Cucurbita.
Bryonia.

Cl. XXII. DIOECIA.
Ord. Diandria.
Salix.

Ord. Pentandria.
Piſtacia.

Ord. Hexandria.
Smilax.

Ord. Monadelphia.
Juniperus.
Ciſſampelos.

Cl. XXIII. POLYGAMIA.
Ord. Monoecia.
Veratum.

Cl. XXIII. POLYGAMIA.
Ord. Monoecia.
Mimoſa.
Parietaria.

Ord. Dioecia.
Fraxinus.
Panax.

Ord. Trioecia.
Ficus.

Cl. XXIV. CRYPTOGAMIA.
Ord. Filices.
Polypodium.

Ord. Fungi.
Boletus.

Cl. XXV. PALMÆ.
Cocos.

No. IV.

Liſt of Officinal Plants, arranged according to their Natural Orders, *by* Profeſſor Murray *of Göttingen.*

Ord. I. CONIFERÆ.
Pinus.
Juniperus.

Ord. II. AMENTACEÆ.
Salix.
Juglans.
Quercus.
Betula.
Piſtacia.

Ord. III. COMPOSITÆ.
a. Capitatæ.
Arctium.
Cynara.

Ord. III. COMPOSITÆ.
Centaurea.
b. Semiflosculosæ.
Leontodon.
Lactuca.
c. Discoideæ.
Artemiſia.
Tanacetum.
Tuſſilago.
d. Radiatæ.
Anthemis.
Inula.
Arnica.
Solidago.

Ord. IV.

Ord. IV. AGGREGATÆ.
Valeriana.
Cephaëlis.

Ord. V. CONGLOMERATÆ.
Penæa.

Ord. VI. UMBELLATÆ.
Eryngium.
Daucus.
Conium.
Ferula.
Angelica.
Sium.
Bubon.
Cuminum.
Coriandrum.
Paſtinaca.
Anethum.
Carum.
Pimpinella.
Apium.

Ord. VII. HEDERACEÆ.
Vitis.
Panax.

Ord. VIII. SARMENTACEÆ.
Smilax.
Ciſſampelos.
Ariſtolochia.
Aſarum.

Ord. IX. STELLATÆ.
Rubia.
Spigelia.

Ord. X. CYMOSÆ.

Ord. XI. CUCURBITACEÆ.
Cucumis.
Momordica.
Bryonia.

Ord. XII. SOLANACEÆ.
Solanum.

Ord. XII. SOLANACEÆ.
Atropa.
Hyoſciamus.
Datura.
Nicotiana.
Capſicum.
Digitalis.

Ord. XIII. CAMPANACEÆ.
Convolvulus.
Lobelia.
Viola.

Ord. XIV. CONTORTÆ.
Cinchona.

Ord. XV. ROTACEÆ.
Gentiana.
Menyanthes.

Ord. XVI. SEPIARIÆ.
Olea.

Ord. XVII. BICORNES.
Arbutus.
Rhododendron.
Styrax.

Ord. XVIII. ASPERIFOLIÆ.
Anchuſa.

Ord. XIX. VERTICILLATÆ.
Teucrium.
Meliſſa.
Hyſſopus.
Lavandula.
Origanum.
Mentha.
Marrubium.
Salvia.
Roſmarinus.

Ord. XX. PERSONATÆ.
Gratiola.
Veronica.

Ord. X.

Od. XXI. RHOEADEÆ.
Papaver.

Od. XXII. PUTAMINEÆ.

Od. XXIII. SILIQUOSÆ.
Sisymbrium.
Cardamine.
Raphanus.
Sinapis.
Cochlearia.

Ord. XXIV. PAPILIONACEÆ.
Dolichos.
Spartium.
Glycyrrhiza.
Astragalus.
Trigonella.
Pterocarpus.
Geoffroya.

Ord. XXV. LOMENTACEÆ.
Cassia.
Myroxylon.
Toluifera.
Mimosa.
Tamarindus.
Hæmatoxylon.
Polygala.
Fumaria.

rd. XXVI. MULTISILIQUÆ.
Aconitum.
Delphinium.
Helleborus.
Ruta.

d. XXVII. SENTICOSÆ.
Potentilla.
Tormentilla.
Rubus.
Rosa.

Ord. XXVIII. POMACEÆ.
Pyrus.
Prunus.
Amygdalus.
Punica.
Citrus.
Ribes.

Ord. XXIX. HESPERIDEÆ.
Myrtus.
Melaleuca.
Caryophyllus.

Ord. XXX. SUCCULENTÆ.

O. XXXI. COLUMNIFERÆ.
Althæa.
Malva.

Ord. XXXII. GRUINALES.
Guaiacum.
Quassia.
Linum.
Oxalis.

Ord. XXXIII. CARYOPHYLLÆ.
Dianthus.

Ord. XXXIV. CALYCANTHEMÆ.

Ord. XXXV. ASCYROIDEÆ.
Cistus.
Hypericum.
Fraxinus.

Ord. XXXVI. COADUNATÆ.

Ord. XXXVII. DUMOSÆ.
Rhamnus.
Sambucus.
Rhus.

Ord. XXXVII.

Ord. XXXVII. DUMOSÆ.
Amyris.
Copaifera.

Ord. XXXVIII. TRIHILATÆ.
Swietenia.
Æſculus.
Berberis.

Ord. XXXIX. TRICOCCÆ.
Stalagmitis.
Croton.
Ricinus.

Ord. XL. OLERACEÆ.
Rumex.
Rheum.
Polygonum.
Laurus.
Myriſtica.
Wintera.
Canella.

Ord. XLI. SCABRIDÆ.
Parietaria.
Dorſtenia.
Ficus.
Urtica.
Morus.
Ulma.

Ord. XLII. VEPRECULÆ.
Daphne.

Ord. XLIII. PALMÆ.
Cocos.

Ord. XLIV. PIPERITÆ.
Piper.
Acorus.
Arum.

Ord. XLV. SCITAMINEÆ.
Amomum.
Curcuma.
Kæmpferia.

Ord. XLVI. LILIACEÆ.
Lilium.
Scilla.
Allium.
Veratrum.
Colchicum.
Crocus.
Aloë.

Ord. XLVII. ENSATÆ.
Iris.

Ord. XLVIII. ORCHIDEÆ.
Orchis.

Ord. XLIX. TRIPETALOIDEÆ.
Calamus.

Ord. L. CALAMARIÆ.

Ord. LI. GRAMINA.
Triticum.
Hordeum.
Avena.
Saccharum.

Ord. LII. FILICES.
Polypodium.

Ord. LIII. MUSCI.

Ord. LIV. ALGÆ.

Ord. LV. FUNGI.
Boletus.

No. V.

List of Substances belonging to the MINERAL KINGDOM, *which are used in Medicine.*

EARTHS.

LIME.

Carbonate of lime.
 Chalk.
 Marble.

BARYTA.

Carbonate of baryta.
Sulphate of baryta.

ALUMINA.

Bole.

SALTS.

Sulphate of magnesia.
Super-sulphate of alumina and potass.
Sulphate of iron.
 of copper.

SALTS.

Sulphate of zinc.
Nitrate of potass.
Muriate of soda.

INFLAMMABLES.

Bitumen.
Amber.
Sulphur.

METALS.

Silver.
Copper.
Iron.
Tin.
Lead.
Mercury.
Zinc.
Antimony.
Arsenic.

PART

PART III.

PREPARATIONS AND COMPOSITIONS.

CHAP. I.

SULPHUR.

SULPHUR SUBLIMATUM LOTUM.
Edin.

FLORES SULPHURIS LOTI.
Lond.

Washed Sublimed Sulphur. Washed Flowers of Sulphur.

Take of
Sublimed sulphur, one pound;
Water, four pounds.

Boil the sulphur for a little in the water, then pour off this water, and wash away all the acid by affusions of cold water; and lastly, dry the sulphur.

SULPHUR SUBLIMATUM LOTUM.
Dub.

Washed Sublimed Sulphur.

Let warm water be poured upon sublimed sulphur, and the washing be repeated as long as the water, when poured off, is impregnated with acid.

When dried, it is to be kept in well-closed vessels.

As it is impossible to sublime sulphur in vessels perfectly void of air, a small portion of it is always acidified and converted into sulphurous or sulphuric acid. The presence of acid in sulphur, is always to be considered as an impurity, and must be removed by careful ablution. When thoroughly washed, sublimed sulphur is not acted upon by the atmofphere; there is therefore no particular reafon for preferving it from the action of the air; for if, on keeping, it become moift, it is becaufe the fulphuric acid has not been entirely wafhed away.

SULPHUR PRÆCIPITATUM.

Lond.

Precipitated Sulphur.

Take of

Sulphurated kali, fix ounces;

Diftilled water, one pound and an half;

Diluted vitriolic acid, as much as is fufficient.

Boil the fulphurated kali in the diftilled water until it be diffolved. Filter the liquor through paper, to which add the diluted vitriolic acid. Wafh the precipitated powder by repeated affufions of water till it become infipid.

Dub.

Take of

Sulphurated vegetable alkali, four ounces;

Boiling water, a pound and a half;

Diluted nitrous acid, as much as may be fufficient.

Diffolve the fulphurated vegetable alkali in the water, and add the acid to the filtered liquor as long as the liquor is rendered turbid by its addition. Wafh the precipitated powder well with warm water, and keep it after it is dried in well-clofed veffels.

We fhall have another opportunity of mentioning more particularly the action of potafs and fulphur on each other. When the fulphuretted potafs is thrown into water, it is entirely diffolved, but not without decompofition, for it is converted into fulphate of potafs, hydroguretted fulphuret of potafs, and fulphuretted hydroguret of potafs. The two laft compounds are again decompofed on the addition of any acid. The acid combines with the potafs, fulphuretted hydrogen flies off in the form of gas, while fulphur is precipitated. It is of little confequence what acid is employed to precipitate the fulphur. The London College order the fulphuric, probably becaufe a portion of it is already contained in the folution; while the Dublin College ufe nitrous acid, becaufe the nitrate of potafs formed, is more eafily wafhed away than the fulphate of potafs.

Precipitated fulphur does not differ from well-wafhed fublimed fulphur, except in being much dearer. Its paler colour is owing to its more minute divifion; but from this circumftance it derives no fuperiority to compenfate for the difagreeablenefs of the preparation.

CHAP.

CHAP. II.

A C I D S.

ACIDUM SULPHURICUM DILUTUM.

Edin.

Diluted Sulphuric Acid.

Take of
  Sulphuric acid, one part;
  Water, ſeven parts.
Mix them.

Acidum Vitriolicum Dilutum.

Lond.

Diluted or weak Vitriolic Acid.

Take of
  Vitriolic acid, one ounce;
  Diſtilled water, eight ounces.
Mix them by degrees.

Dub.

Take of
  Vitriolic acid, two ounces;
  Diſtilled water, fourteen ounces.
Having gradually mixed them, ſet them aſide to cool, and then pour off the clear liquor.

The moſt ſimple form in which ſulphuric acid can be advantageouſly employed internally, is that in which it is merely diluted with water: and it is highly proper that there ſhould be ſome fixed ſtandard in which the acid in this ſtate ſhould be kept. It is, however, much to be regretted, that the colleges have not adopted the ſame ſtandard with reſpect to ſtrength: For in the Edinburgh and Dublin Colleges, the ſtrong acid conſtitutes an eighth; and in the London, only a ninth of the mixture. The former proportion we are inclined to prefer, as it gives exactly a drachm of acid to the ounce; but the dilution by means of diſtilled water is preferable to ſpring water; which, even in its pureſt ſtate, is not free from impregnations affecting the acid.

Sulphuric acid has a very ſtrong attraction for water; and their bulk when combined is leſs than that of the water and acid ſeparately. At the ſame time, there is a very conſiderable increaſe of temperature produced, which is apt to crack glaſs-veſſels, unleſs the combination be very cautiouſly made; and for the ſame reaſon, the acid muſt be poured into the water, not the water into the acid.

ACIDUM

ACIDUM NITROSUM.

Edin.

Nitrous Acid.

Take o
Ver: pure nitrate of potaſs, two pounds;
Sulpuric acid, ſixteen ounces.

Havin; put the nitrate of potaſs into a glaſs-retort, pour upon it the ulphuric acid, and diſtil in a ſand-bath, with a heat gradualy increaſed, until the iron-pot begins to be red-hot.

The ſecific gravity of this acid is to that of diſtilled water as 155(to 1000.

Lond.

Take of
Puſfied nitre, by weight, ſixty ounces;
Viriolic acid, by weight, twenty-nine ounces.

Mix :nd diſtil.

The .pecific gravity of this is to the weight of diſtilled water as 1550 to 1000.

Dub.

Take of
Nitre, ſix pounds;
Vitriolic acid, three pounds.

Mix and diſtil, until the reſiduum becomes dry.

The ſpecific gravity of the acid is to the weight of diſtilled water as 1550 to 1000.

In this proceſs, the ſulphuric acid, by its ſuperior affinity, combines with the potaſs of the nitre to form ſulphate of potaſs, while the nitric acid is ſeparated, and is not only converted into vapour by the application of the heat to the retort, but is alſo partially decompoſed. A portion of oxygen eſcapes in a gaſeous form, and the nitric oxide gas combines with the nitric acid; ſo that the liquor condenſed in the receiver is nitrous and not nitric acid.

In performing this proceſs, we muſt take care, in pouring in the ſulphuric acid, not to ſoil the neck of the retort. The difference of the proportions of the ingredients directed by the different Colleges, has no effect on the quality of the acid obtained, but only affects the reſiduum. The London and Dublin Colleges uſe no more ſulphuric acid than what is neceſſary to expel all the nitric acid, and the reſiduum is a neutral ſulphate of potaſs, ſo inſoluble, that it cannot be got out without breaking the retort. The Edinburgh College order as much ſulphuric acid as renders the reſiduum, an acidulous ſulphate of potaſs, eaſily ſoluble in water.

Nitrous acid is frequently impure. Sulphuric acid is detected by the precipitate formed on dropping into it a little nitrate of baryta,

ryta, and is easily got rid of by redistilling the nitrous acid from a small quantity of nitrate of potass.

Muriatic acid is detected by the precipitate formed with nitrate of silver, and may be separated by dropping into the nitrous acid a solution of nitrate of silver, as long as it forms any precipitate, and drawing off the nitrous acid by distillation.

The general properties of nitrous acid have been already noticed (183.). Mr Davy has shewn that it is a compound of nitric acid and nitric oxide, and that by additional doses of the last constituent, its colour is successively changed, from yellow, to orange, olive green, and blue green, and its specific gravity is diminished. The specific gravity is probably stated too high by the Colleges; for although Rouelle makes that of the strongest nitric acid 1.583, yet Kirwan could produce it no stronger at 60° than 1.5543, and Mr Davy makes it only 1.504, and when saturated with nitric oxide only 1.475.

ACIDUM NITROSUM DILUTUM.

Lond. Dub. Edin.

Diluted Nitrous Acid.

Take of
Nitrous acid,
Water, equal weights.
Mix them, taking care to avoid the noxious vapours.

Nitrous acid has a great affinity for water, and attracts it from the atmosphere. During their combination there is an increase of temperature, part of the nitric oxide is dissipated in the form of noxious vapours, and the colour changes successively from orange to green, and to blue, according as the proportion of water is increased. A mixture of equal parts of Kirwan's standard acid of 1.5543 and water, has the specific gravity 1.1911.

ACIDUM NITRICUM.

Edin.

Nitric Acid.

Take of
Nitrous acid, any quantity.
Pour it into a retort, and having adapted a receiver, apply a very gentle heat, until the reddest portion shall have passed over, and the acid which remains in the retort shall have become nitric acid.

We have already stated, that nitrous acid is nitric acid combined with a variable proportion of nitric oxide. Now, by the application of a gentle heat, the whole of the nitric oxide is vaporized, and pure colourless nitric acid remains in the retort. The nitric oxide, however, carries over with it a portion of the acid, and condenfes with it in the receiver, in the form of a very high-coloured nitrous acid.

Richter has given the following manner of preparing nitric acid.

Take of

Purified nitrate of potafs, feven pounds;
Black oxide of manganefe, one pound two ounces;
Sulphuric acid, four pounds, four ounces, and fix drachms.

Into a retort capable of containing twenty-four pounds, introduce the nitre and manganefe, powdered and mixed, and pour upon them gradually, through a retort-funnel, the fulphuric acid. Lute on the receiver with flour and water, and conduct the diftillation with a gradually increafed heat. From thefe proportions, Richter got three pounds nine ounces of very flightly coloured nitric acid. The operation will be conducted with lefs hazard in a Woulfe's apparatus, or by interpofing between the retort and a receiver a tubulated adopter, furnifhed with a bent tube, of which the further extremity is immerfed in a veffel containing a fmall quantity of water.

These acids, the nitrous and nitric, have been long employed as powerful pharmaceutic agents. Their application in this way we fhall have many opportunities of illuftrating.

Lately, however, their ufe in medicine has been confiderably extended.

In the ftate of vapour they have been ufed to deftroy contagion in jails, hofpitals, fhips, and other places where the accumulation of animal effluvia is not eafily avoided. The fumigating fuch places with the vapour of nitrous acid has certainly been attended with fuccefs; but we have heard that fuccefs afcribed entirely to the ventilation employed at the fame time. Ventilation may certainly be carried fo far, that the contagious miafmata may be diluted to fuch a degree that they fhall not act on the body; but to us it appears no lefs certain, that thefe miafmata cannot come in contact with nitric acid or oxymuriatic acid vapour, without being entirely decompofed and completely deftroyed. It is, befides, applicable in fituations which do not admit of fufficient ventilation; and where it is, the previous diffufion of acid vapours is an excellent check upon the indolence and inattention of fervants and nurfes, as by the fmell we are enabled to judge whether they have been fufficiently attentive to the fucceeding ventilation. Nitric acid vapour, alfo, is not deleterious to life, and may be diffufed in the apartments of the fick, without occafioning to them any material inconvenience. The means of diffufing it are eafy. Half-an-ounce of powdered nitre is put into a faucer, which is placed in a pipkin of heated fand. On the nitre two drachms of

fulphuric

ſulphuric acid are then poured. The fumes of nitric acid immediately begin to riſe. This quantity will fill with vapour a cube of ten feet; and by employing a ſufficient number of pipkins, the fumes may be eaſily made to fill every part of a ward of any extent. After the fumigation, ventilation is to be carefully employed. For introducing this practice, Dr Carmichael Smyth has received from the Britiſh Parliament a reward of five thouſand pounds.

The internal uſe of theſe acids has alſo been lately much extended. In febrile diſeaſes, water acidulated with them forms one of the beſt antiphlogiſtic and antiſeptic drinks we are acquainted with. Hoffman and Eberhard long ago employed it with very great ſucceſs in malignant and petechial fevers; and in the low typhus, which frequently rages among the poor in the ſuburbs of Edinburgh, we have repeatedly given it with unequivocal advantage, before the contemptible quackery of Reich was ſo undeſervingly rewarded by the King of Pruſſia. In the liver-complaint of the Eaſt Indies, and in ſyphilis, nitric acid has alſo been extolled as a valuable remedy by Dr Scott, and the evident benefits reſulting from its uſe in theſe complaints, has given riſe to a theory, that mercury only acts by oxygenizing the ſyſtem. It is certain, that both the primary and ſecondary ſymptoms of ſyphilis have been removed by the uſe of theſe acids, and that the former ſymptoms have not returned, or been followed by any ſecondary ſymptoms. But in many inſtances they have failed, and it is doubtful if ever they effected a permanent cure, after the ſecondary ſymptoms appeared. Upon the whole, the opinions of Mr Pearſon on this ſubject, lately agitated with ſo much keenneſs, appear to us ſo candid and judicious, that we ſhall inſert them here. He does not think it eligible to rely on the nitrous acid in the treatment of any one form of the lues venerea; at the ſame time, he by no means wiſhes to ſee it exploded as a medicine altogether uſeleſs in that diſeaſe. When an impaired ſtate of the conſtitution renders the introduction of mercury into the ſyſtem inconvenient, or evidently improper, the nitrous acid will be found, he thinks, capable of reſtraining the progreſs of the diſeaſe, while at the ſame time it will improve the health and ſtrength of the patient. On ſome occaſions, this acid may be given in conjunction with a mercurial courſe, and it will be found to ſupport the tone of the ſtomach, to determine powerfully to the kidneys and to counteract in no inconſiderable degree the effects of mercury on the mouth and fauces.

ACIDUM MURIATICUM.

Edin.

Muriatic Acid.

Take of
 Muriate of ſoda, two pounds ;
 Sulphuric acid, ſixteen ounces ;
 Water, one pound.

Heat the muriate of ſoda for ſome time red hot in a pot, and after it has cooled, put it into a retort. Then pour upon the muriate of ſoda, the acid mixed with the water and allowed to cool. Laſtly, diſtil in a ſand-bath with a moderate fire, as long as any acid is produced.

The ſpecific gravity of this acid is to that of diſtilled water as 1170 to 1000.

Lond.

Take of
 Dried ſea-ſalt, ten pounds ;
 Vitriolic acid, ſix pounds ;
 Water, five pounds.

Add by degrees the vitriolic acid, firſt mixed with the water, to the ſalt ; then diſtil.

The ſpecific gravity of this acid is to that of diſtilled water as 1170 to 1000.

Dub.

Take of
 Common ſalt dried, five pounds ;
 Vitriolic acid,
 Water, each three pounds.

Add the acid, diluted with the water, after it has cooled, gradually to the ſalt, and then diſtil the liquor until the reſiduum become dry.

The ſpecific gravity of this acid is to that of diſtilled water, as 1160 to 1000.

In this proceſs the muriate of ſoda is decompoſed, and the muriatic acid diſengaged by the ſuperior affinity of the ſulphuric acid. But as muriatic acid in itſelf is a permanently elaſtic fluid, the addition of the water is abſolutely neceſſary for its exiſtence in a fluid form. Some operators put a portion of water into the receiver, for the purpoſe of abſorbing the muriatic acid gas, which is firſt diſengaged ; the Colleges, however, order the whole of the water to be previouſly mixed with the ſulphuric acid. This mixture muſt not be made in the retort itſelf ; for the heat produced is ſo great, that it would not only endanger the breaking of the veſſel, but occaſion conſiderable loſs and inconvenience by the ſudden diſengagement of muriatic acid gas.

The

The muriate of ſoda is directed to be heated to redneſs before it be introduced into the retort, that the whole of the water of cryſtallization may be expelled, which being variable in quantity, would otherwiſe affect the ſtrength of the acid produced; and beſides, without this precaution, the acid obtained is too high coloured.

Mr Accum, in Nicholſon's Journal, vol. ii. p. 120. has ſaid, that the quantity of ſulphuric acid preſcribed by the London College for obtaining this acid is much too large, and in p. 119. that the proportion of ſulphuric acid preſcribed for preparing the nitrous acid is much too ſmall; but in both criticiſms he has fallen into error.

If a common retort and receiver be employed for this diſtillation, they muſt not be luted perfectly cloſely; for if any portion of the gas ſhould not be abſorbed by the water employed, it muſt be allowed to eſcape; but the proceſs will be performed with greater economy, and perfect ſafety, in a Woulfe's or ſome ſimilar apparatus.

The reſiduum in the retort conſiſts principally of ſulphate of ſoda, which may be purified by ſolution and cryſtallization.

If properly prepared, the muriatic acid is perfectly colourleſs, and poſſeſſes the other properties already enumerated (209.); but in the ſhops it is very ſeldom found pure. It almoſt always contains iron, and very frequently ſulphuric acid or copper. The copper is detected by the blue colour produced by ſuper-ſaturating the acid with ammonia, the iron by the black or blue precipitate formed with tincture of galls or pruſſiate of potaſs. The ſulphuric acid is known by the white precipitate formed with muriate of baryta, and may be eaſily got rid of by rediſtilling the acid from a ſmall quantity of dried muriate of ſoda.

In its effects on the animal economy, and the mode of its employment, it coincides with the acids already mentioned, which almoſt proves that they do not act by oxygenizing the ſyſtem, as the muriatic acid cannot be diſoxygenized by any ſubſtance or proceſs with which we are acquainted.

Oxygenized Muriatic Acid.

THE vapours of this powerfully oxygenizing acid have been recommended by Morveau as the beſt means of deſtroying contagion. As, however, they are deleterious to animal life, they cannot be employed in every ſituation. Where applicable, they are eaſily diſengaged by mixing together ten parts of muriate of ſoda, and two parts of black oxide of manganeſe in powder, and pouring upon the mixture firſt four parts of water, and then ſix parts of ſulphuric acid. Fumes of oxygenized muriatic acid are immediately diſengaged.

ACIDUM ACETOSUM DESTILLATUM.

Edin.

Diftilled Acetous Acid.

Let eight pounds of acetous acid be diftilled in glafs-veffels, with a gentle heat. The two firft pounds which come over, being too watery, are to be fet afide; the next four pounds will be the diftilled acetous acid. The remainder furnifhes a ftill ftronger acid, but too much burnt by the fire.

ACETUM DESTILLATUM.

Dub.

Diftilled Vinegar.

Take of

Vinegar, ten pounds.

Draw off, with a gentle heat, fix pounds.

The fpecific gravity of this acid is to the weight of diftilled water as 1004 to 1000.

Lond.

Take of

Vinegar, five pounds.

Diftil with a gentle fire, in glafs-veffels, fo long as the drops fall free from empyreuma.

VINEGAR, when prepared from vinous liquors by fermentation, befides acetous acid and water, contains extractive, fuper-tartrite of potafs, and often citric or malic acid, alcohol, and a peculiar agreeable aroma. Thefe fubftances, particularly the extractive and fuper-tartrite of potafs, render it apt to fpoil, and unfit for pharmaceutic and chemical purpofes. By diftillation, however, the acetous acid is eafily feparated from fuch of thefe fubftances as are not volatile. But by diftillation it lofes its agreeable flavour, and becomes confiderably weaker; for water being rather more volatile than acetous acid, it comes over firft, while the laft and ftrongeft portion of the acid cannot be obtained free from empyreuma.

This procefs may be performed either in a common ftill or in a retort. The better kinds of wine-vinegar fhould be ufed: thofe prepared from malt liquors, however fine and clear they may feem to be, contain a large quantity of a vifcous fubftance, as appears from the fliminefs and ropinefs to which they are very fubject. This not only hinders the acid from rifing freely, but is apt to make the vinegar boil over into the recipient, and at the fame time difpofes it to receive a difagreeable impreffion from the fire. Indeed, with the beft kind of vinegar, if the diftillation be carried on to any great length, it is extremely difficult to avoid empyreuma. The beft method of preventing this inconvenience is, if a retort be ufed, to place the fand but a little way up its fides, and when fomewhat more than half the liquor is come over, to pour

pour on the remainder a quantity of fresh vinegar equal to the liquor drawn off. This may be repeated three or four times; the vinegar supplied at each time being previously heated. The addition of cold liquor would not only prolong the operation, but also endanger the breaking of the retort.

Lowitz recommends the addition of half an ounce of recently burnt and powdered charcoal to each pound of vinegar in the still, as the best means of avoiding empyreuma.

If the common still be employed, it should likewise be occasionally supplied with fresh vinegar, in proportion as the acid runs off; and this continued until the process can be conveniently carried no farther. The distilled acid must be rectified by a second distillation in a retort or glass alembic; for although the head and receiver be of glass or stone ware, the acid will contract a metallic taint from the pewter worm.

The residuum of this process is commonly thrown away as useless, although, if skilfully managed, it may be made turn to good account, the most acid parts of the vinegar still remaining in it. Mixed with about three times its weight of fine dry sand, and committed to distillation in a retort, with a well-regulated fire, it yields an exceedingly strong acid, together with an empyreumatic oil, which taints the acid with a disagreeable odour. This acid is nevertheless, without any rectification, better for some purposes, as being stronger, than the pure acid; particularly for making acetite of potass or soda: for then the empyreumatic oil, on which its ill flavour depends, is burnt out.

Distilled vinegar should be colourless and transparent; have a pungent smell, and purely acid taste, totally free from acrimony and empyreuma, and should be entirely volatile. It should not form a black precipitate on the addition of a solution of baryta, or of water saturated with sulphuretted hydrogen; or change its colour when super-saturated with ammonia. These circumstances shew, that it is adulterated with sulphuric acid, lead, copper, or tin.

Distilled acetous acid, in its effects on the animal economy, does not differ from vinegar, and as it is less pleasant to the taste, it is only used for pharmaceutical preparations.

ACIDUM ACETOSUM FORTE.

Edin.

Strong Acetous Acid.

Take of

Sulphate of iron dried, one pound;

Acetite of lead, ten ounces.

Having rubbed them together, put them into a retort, and distil in a sand-bath with a moderate heat, as long as any acid comes over.

ACIDUM ACETOSUM.
Lond.
Acetous Acid.

Take of

Verdegris, in coarse powder, two pounds.

Dry it perfectly by means of a water bath saturated with sea-salt; then distil in a sand-bath, and redistil the liquor obtained.

Its specific gravity is to that of distilled water as 1050 to 1000.

BY these processes, the acid we have before noticed under the title of acetic acid (284.) is prepared. It was formerly supposed that it did not differ from distilled vinegar, except in containing less water; and with this opinion the names given to it by the London and Edinburgh Colleges coincide. We are, however, inclined to believe, from the facts known with regard to its formation, its properties and its compounds, that it differs from acetous acid in other particulars than in strength, and that it contains less carbon and more oxygen. If this be the case, it is incorrectly named Acetous or Strong acetous acid; and must be considered as a peculiar acid, to which no proper name has been given, for it does not bear that relation to acetous acid which Acetic Acid would imply; and under the other opinion, that it differs from acetous acid only in strength, according to the principles of nomenclature, which gives simple names to simple substances, the strong acid should be acetous acid, and our present acetous acid should be weak or dilute acetous acid. But until this branch of nomenclature shall be more cultivated, we shall continue acetic acid as being most generally received and most convenient.

Many different processes have been proposed for preparing acetic acid, but they may be arranged in three classes. It may be prepared,

1. By decomposing metalline acetites by heat.
2. ———————— Acetites by sulphuric acid.
3. ———————— Acetites by sulphates.

The process of the London College is an example of the first kind. But the heat necessary is so great, that it decomposes part of the acetous acid itself, and gives the product an empyreumatic and unpleasant smell.

By the superior affinity of sulphuric acid, the acid may be easily expelled from every acetite, whether alkaline or metallic; but part of the sulphuric acid seems to be deprived of its oxygen, and to be converted into sulphurous acid, which renders the product impure.

The processes of the last kind are preferable to the others in many respects. They are both more economical, and they furnish a purer acid. Mr Lowitz directs one part of carefully dried acetite of soda to be triturated with three parts of super-sulphate of potass,

potaſs, and the diſtillation to be conducted in a glaſs-retort with a gentle heat. The proceſs of the Edinburgh College alſo belongs to this claſs, and was firſt propoſed by C. Badollier, apothecary at Chartres.

It is almoſt ſolely uſed as an analeptic remedy in ſyncope, aſphyxia, hyſteric affections, and headachs. Applied to the ſkin, it acts as a ſtimulant and rubefacient, but it is moſt frequently ſnuffed up the noſtrils in the ſtate of vapour.

ACIDUM BENZOICUM.

Edin.

Benzoic Acid.

Take any quantity of the balſam of the ſtyrax benzoin reduced to powder.

Put it into an earthen veſſel, to which, after having fitted its mouth with a paper cone, apply a gentle heat that the acid may ſublime. If this be diſcoloured with oil, let it be purified by ſolution in warm water and cryſtallization.

SAL BENZOINI.

Dub.

Salt of Benzoin.

Take of

Benzoin in coarſe powder, one pound.

Place it in an earthen pot ſurrounded with ſand, and let the matter which ſublimes, ariſing with a gentle heat, be received in a conical paper capital.

It may be purified by ſolution in water, and cryſtallization.

FLORES BENZOES.

Lond.

Flowers of Benzoin.

Take of

Benzoin, in powder, one pound.

Put it into an earthen pot placed in ſand; and, with a ſlow fire, ſublime the flowers into a paper cone fitted to the pot.

If the flowers be of a yellow colour, mix them with white clay, and ſublime them a ſecond time.

THE diſtinguiſhing character of balſams is their containing benzoic acid. It may be ſeparated from the reſin, which is their other principal conſtituent, either by ſublimation, or by combining it with a ſalifiable baſe. The manner of effecting it in the firſt way, is that preſcribed by the pharmacopœias. But even with the greateſt care it is almoſt impoſſible to manage the heat ſo as not to decompoſe part of the reſin, and thus give riſe to the formation of an empyreumatic oil, which deſtroys the product. Nor can it be freed completely from the empyreumatic oil by the ſolution and cryſtallization preſcribed by the Edinburgh and Dublin

Dublin Colleges, and ſtill leſs by the ſecond ſublimation with clay, directed by that of London.

The other method of ſeparating benzoic acid from reſin, by combining it with a ſalifiable baſe, both gives a larger product and of greater purity. It was firſt practiſed by Scheele, who employed lime-water; Göttling afterwards uſed carbonate of potaſs; and, laſtly, Gren uſed carbonate of ſoda.

Take of
Benzoin, in powder, one pound;
Carbonate of ſoda, four ounces;
Water, four pounds.

Diſſolve the carbonate in the water, and digeſt the benzoin in the ſolution for twenty-four hours with a gentle heat; then boil it for a quarter of an hour, and filter the ſolution while hot. After it cools drop into it ſulphuric acid as long as any precipitate is produced. Separate the precipitate by filtration, and waſh it with cold water. If it be deſirable to have the acid cryſtallized, the precipitate may be diſſolved by boiling it gently in twenty-four times its weight of water, filtering it as hot and quickly as poſſible, and ſetting it aſide to cryſtallize. But as the cryſtallized acid, on account of its lightneſs and elaſticity, is not eaſily reduced to powder, for moſt purpoſes it will be more convenient to keep it in the ſtate of a precipitate.

It may be alſo extracted from ſtorax, and all the other balſams, particularly theſe of Tolu or Peru; and from the urine of children, and of herbivorous animals.

The benzoic acid has an agreeable taſte, and a fragrant ſmell, eſpecially when heated. It is ſoluble in alcohol and in boiling water; but very ſparingly in cold water, although it may be ſuſpended in it by means of ſugar, ſo as to form an elegant balſamic ſyrup.

OLEUM SUCCINI ET ACIDUM SUCCINI.

Edin.

Oil of Amber and Succinic Acid.

Take of
Amber reduced to powder, and of pure ſand, equal parts.

Mix them, and put them into a glaſs-retort, of which the mixture may fill one-half: then adapt a large receiver, and diſtil in a ſand-bath, with a fire gradually increaſed. At firſt, a watery liquor will come over, with ſome yellow oil; then a yellow oil, with an acid ſalt; and, laſtly, a reddiſh and black coloured oil.

Pour the liquor out of the receiver, and ſeparate the oil from the water. Preſs the ſalt collected from the neck of the retort and ſides of the receiver between folds of blotting paper, to free it from the oil adhering to it; then purify it by ſolution in warm water and cryſtallization.

SAL

Sal Succini.
Dub.
Salt of Amber.

Take of
Amber,
Pure ſand, each one pound.
Diſtil, with a heat gradually increaſed, an acid liquor, an oil, and a ſalt diſcoloured with oil. Let the ſalt be diſſolved in boiling water, and cryſtals formed by ſlow cooling.

Sal et Oleum Succini.
Lond.
Salt and Oil of Amber.

Take of
Amber, two pounds.
Diſtil in a ſand heat gradually augmented; an acid liquor, oil, and ſalt loaded with oil, will aſcend.

Sal Succini Purificatus.
Lond.
Purified Salt of Amber.

Take of
Salt of amber, half a pound;
Diſtilled water, one pint.
Boil the ſalt in diſtilled water, and ſet aſide the ſolution to cryſtallize.

We are not acquainted with any experiments which determine, whether the ſuccinic acid exiſts as ſuch in the amber, or whether it be a product of the decompoſition of the amber by the action of heat, for in the proceſs employed for obtaining ſuccinic acid, the amber is completely decompoſed.

According to Göttling, this diſtillation ſhould be performed in a tubulated iron or earthen-ware retort, expoſed to the immediate action of the fire; for he ſays, that, in a ſand-bath, we cannot regulate the heat ſufficiently, and that a glaſs-retort is incapable of ſupporting the neceſſary temperature.

Beſides the ſuccinic acid collected from the neck of the retort, and ſides of the receiver, the oil waſhes down a portion of it into the receiver, and the watery liquor which comes over is ſaturated with it. But the whole of it may be obtained by agitating the oil with ſome boiling water, which will diſſolve the acid. This ſolution is then to be added to the acid liquor, and the acid they contain is eaſily obtained by evaporation and cryſtallization. The whole acid may then be purified by ſolution in boiling water and cryſtallization, according to the directions of the Colleges.

But

But even after repeated ſolutions and cryſtallizations, a portion of empyreumatic oil ſtill adheres to the acid, and renders it impure. Other methods of purifying it have been therefore attempted. Demachy ſaturated it with lime, ſeparated the lime by ſulphuric acid, and ſublimed the ſuccinic acid: Richter ſaturated ſuccinic acid with potaſs, decompoſed the ſalt formed with acetite of lead, and diſengaged the ſuccinic acid from the lead by means of diluted ſulphuric acid: Laſtly, Morveau aſſerts that he obtained it in a ſtate of perfect purity, by treating it with nitrous acid.

Succinic acid, although retained in our pharmacopœias, is never uſed in medicine.

AQUA AËRIS FIXI.
Dub.

ACIDUM CARBONICUM.
Water impregnated with Fixed Air.
Carbonic Acid.

Take of

White marble in powder, three ounces;

Diluted ſulphuric acid, mixed with an equal quantity of water, a pound and a half.

Mix them gradually in a Nooth's apparatus, and let the air evolved paſs through ſix pounds of pure ſpring-water, placed in the upper part of the apparatus; and let agitation be occaſionally employed until the water ſhall have acquired a ſubacid taſte.

In this proceſs the carbonic acid is ſeparated from the carbonate of lime by the ſuperior affinity of ſulphuric acid. As it is diſengaged, it aſſumes a gaſeous form, and would be diſſipated in the atmoſphere, if it were not made to paſs through water, which, at a medium temperature, is capable of abſorbing about an equal bulk of this gas, and, by the aſſiſtance of preſſure, a much greater proportion.

Various contrivances have been made for this purpoſe. Of theſe the moſt eaſily managed and moſt convenient for general uſe, is the apparatus of Nooth, already deſcribed (p. 114.); and for larger quantities that of Woulfe, deſcribed p. 113., or ſome modification of it. By the proper application of preſſure, M. Paul of Geneva, now of London, is able to impregnate water with no leſs than ſix times its bulk of carbonic acid gas.

Water impregnated with carbonic acid, ſparkles in the glaſs, has a pleaſant acidulous taſte, and forms an excellent beverage. It diminiſhes thirſt, leſſens the morbid heat of the body, and acts as a powerful diuretic. It is alſo an excellent remedy in increaſed irritability of the ſtomach, as in advanced pregnancy; and it is one of the beſt anti-emetics which we poſſeſs.

CHAP. III.

ALKALIES.

AQUA POTASSÆ; vulgo, LIXIVIUM CAUSTICUM.
Edin.
Water of Potaſs, commonly called *Cauſtic Ley.*

Take of
Freſh lime, eight ounces;
Carbonate of potaſs, ſix ounces.

Throw the lime into an iron or earthen veſſel, with twenty-eight ounces of warm water. After the ebullition is finiſhed, inſtantly add the ſalt; and having thoroughly mixed them, cover the veſſel till they cool. When the mixture has cooled, agitate it well, and pour it into a glaſs-funnel, whoſe throat muſt be ſtopt up with a piece of clean rag. Let the upper mouth of the funnel be covered, while the tube of it is inſerted into another glaſs-veſſel, ſo that the ſolution of potaſs may gradually drop through the rag into the lower veſſel. When it firſt gives over dropping, pour into the funnel ſome ounces of water; but cautiouſly, ſo that the water may ſwim above the matter. The ley will again begin to drop, and the affuſion of water is to be repeated in the ſame manner, until three pounds have dropped, which will happen in the ſpace of two or three days; then agitating the ſuperior and inferior parts of the ley together, mix them, and put them up in a well ſtopt phial.

AQUA KALI PURI.
Lond.
Water of pure Kali.

Take of
Prepared kali, four pounds;
Lime, ſix pounds;
Diſtilled water, four gallons.

Put four pints of water to the lime, and let them ſtand together for an hour; after which, add the kali and the reſt of the water; then boil for a quarter of an hour; ſuffer the liquor to cool, and ſtrain it. A pint of this liquor ought to weigh ſixteen ounces.

If the liquor effervеſce with any acid, add more lime, and boil the liquor and lime in a covered veſſel for five minutes. Laſtly, let it cool again, and ſtrain it.

LIXIVIUM

Lixivium Causticum.
Dub.
Caustic Ley.

Take of
Fresh burnt lime, eight ounces;
Mild vegetable alkali, six ounces.

Put the lime into an earthen vessel, and throw upon it thirty ounces of hot water. With the slaked lime immediately mix the salt, and cover the vessel. Pour the mixture as soon as it has cooled into a glass-funnel, whose throat is obstructed with bits of stone covered with sand. Having covered the funnel, let the ley drop into a vessel placed to receive it; water being from time to time poured into the funnel, until three pounds have passed through. Let the liquor be agitated, and kept in a glass-vessel well closed.

If the ley be rightly prepared, it will have neither colour nor smell, and will not effervesce when mixed with acids.

The specific gravity of this liquor is to that of distilled water as 1090 to 1000.

These processes do not differ materially. They are founded upon the stronger affinity of lime than that of potass for carbonic acid. Of course, when lime comes in contact with carbonate of potass, the carbonic acid quits the potass to unite with the lime, and the results of the mixture are potass and carbonate of lime. Now, as the carbonate of lime is insoluble in water, and the potass is very soluble, they may be separated by filtration. In doing this, however, we must take care to employ instruments on which the solution of potass does not act, and to prevent the free access of air, from which it would attract carbonic acid, and thus frustrate the whole operation. The latter object is attained by covering the upper or broad end of the funnel with a plate of glass, and inserting the lower end in the neck of a phial, which it fits pretty closely. The former object is attended with greater difficulties, and indeed scarcely to be effected, so powerful and general is the agency of potass. All animal substances are immediately attacked and destroyed by it; therefore, our filters cannot be made of silk, woollen, or paper which contains glue; and although neither vegetable matters nor silica entirely escape its action, linen and sand are, on the whole, the least objectionable. A filter of sand was used by Dr Black. He first dropt a rugged pebble into the tube of the funnel, in some part of which it formed itself a firm bed, while the inequalities on its surface afforded interstices of sufficient size for the passage of the filtering liquor. On the upper surface of this stone he put a thin layer of lint or clean tow; immediately above this, but not in contact with it, he dropped a stone similar to the former, and of a size proportioned

to

to the ſwell in the upper part of the tube of the funnel. The interſtices between this ſecond ſtone and the funnel were filled up with ſtones of a leſs dimenſion, and the gradation uniformly continued till pretty ſmall ſand was employed. Finally, this was covered with a layer of coarſer ſand and ſmall ſtones to ſuſtain the weight of the matter, and to prevent its being inviſcated in the minute interſtices of the fine ſand.

A filter of ſand being thus conſtructed in the funnel, it was waſhed perfectly clean by making clean water paſs through it, till it dropt from the lower extremity of the funnel perfectly clear and tranſparent; and before uſing it, it ſhould be allowed to ſtand for ſome days, that no water may remain among the interſtices of the ſand.

From the ſpongy nature of the reſiduum which remains upon the filter, and eſpecially if we uſe that of ſand, a conſiderable quantity of the ſolution of potaſs will be retained. It is, however, eaſily obtained, by pouring gently over it, ſo as to diſturb it as little as poſſible, a quantity of water; the ley immediately begins again to drop from the funnel, and as, from the difference of their ſpecific gravity, the water does not mix with it, but ſwims above it, the whole ley paſſes through before any of the water. By means of the taſte, we eaſily learn when the whole ley has paſſed.

As it is natural to ſuppoſe that the ſtrongeſt ſolution will paſs firſt, and the weakeſt laſt, we are directed to agitate the whole together, to render their ſtrength uniform.

If the ſolution of potaſs be pure, it will be colourleſs, and it will neither efferveſce with acids, nor form a precipitate with carbonate of potaſs. If it efferveſces, carbonic acid is preſent, and muſt be ſeparated by again boiling the ſolution with a little lime, or by dropping into it lime-water, as long as it produces any precipitate. If, on the contrary, it contain lime, from too much of it having been employed in the preparation, it may be ſeparated by dropping into the ley a ſolution of the carbonate of potaſs. When we have thus purified our ſolution of potaſs, it muſt be again filtered.

The ſolution of cauſtic potaſs, under various names, has at different times been celebrated as a lithontriptic, and as often fallen again into diſuſe. The very contradictory accounts of its effects as a ſolvent are now in ſome degree explicable, ſince it has been diſcovered that urinary calculi are very different in their natures, ſo that ſome of them are only ſoluble in acids, and others only in alkalies. Of the laſt deſcription are the calculi of uric acid, which are very frequent, and thoſe of urate of ammonia. On theſe, therefore, alkalies may be ſuppoſed to make ſome impreſſion; and that alkalies, or alkaline carbonates, taken by the mouth, have occaſionally relieved calculous complaints, is certain. It is however

however faid, that their continued ufe debilitates the ftomach; and M. Fourcroy has propofed applying the remedy immediately to the difeafe, by injecting into the bladder a tepid folution of potafs or foda, fo dilute that it can be held in the mouth. Before the alkaline folution be injected, the bladder is to be completely evacuated of urine, and wafhed out with an injection of tepid water. After the alkaline injection has remained in the bladder half-an-hour or more, it is to be evacuated, and allowed to fettle. If, on the addition of a little muriatic acid, a precipitate be formed, we fhall have reafon to conclude that the calculus contains uric acid, and that the alkali has acted on it.

Very dilute alkaline folutions may alfo be taken into the ftomach as antacids, but we poffefs others, which are preferable.

Externally, alkaline folutions have been more frequently ufed, either very dilute, fimply as a ftimulus, in rickets, gouty fwellings, gonorrhœa, and fpafmodic difeafes, or concentrated as a cauftic to deftroy the poifon of the viper, and of rabid animals.

POTASSA; olim, CAUSTICUM COMMUNE ACERRIMUM.
Edin.
Potafs; formerly, *Strongeft Common Cauftic.*

Take of

The folution of potafs, any quantity.

Evaporate it in a covered very clean iron-veffel, till, on the ebullition ceafing, the faline matter flows gently like oil, which happens before the veffel becomes red. Then pour it out on a fmooth iron-plate; let it be divided into fmall pieces before it hardens, and immediately placed in a well-ftopt phial.

KALI PURUM.
Lond.
Pure Kali.

Take of

Water of pure kali, one gallon.

Evaporate it to drynefs; after which let the falt melt on the fire and pour it out.

ALKALI VEGETABILE CAUSTICUM.
Dub.
Cauftic Vegetable Alkali.

Take of

Cauftic ley, any quantity.

Evaporate it over the fire in a very clean iron-veffel, until the ebullition having ceafed, the faline matters, on increafing the heat, remain almoft at reft. Let the liquefied falt be poured out upon an iron-plate, and while it is congealing, be cut into

proper

proper pieces, which are immediately to be ſhut up in very cloſe veſſels.

The principal thing to be attended to in this operation, is to conduct the evaporation ſo rapidly that the ley ſhall not abſorb any carbonic acid from the atmoſphere. As long as any water of ſolution remains, the ebullition is evident, and the evaporation is to be continued until it ceaſe. The heat is then to be increaſed a little, which renders the potaſs perfectly fluid, and gives it the appearance of an oil, when it is ready to be poured out, either on a ſlab, as directed by the Colleges, or into iron moulds, ſuch as are uſed for the melted nitrate of ſilver.

The potaſs prepared according to theſe directions is ſufficiently pure for medical uſe, but is not fit for chemical experiments. We can however obtain it perfectly white and cryſtallized, according to Berthollet, by adding to the ley, when evaporated ſo far that it would aſſume the conſiſtence of honey if permitted to cool, a quantity of alcohol equal to one third of the carbonate of potaſs operated on, mixing them together, and letting them boil a minute or two. The mixture is then to be poured into a glaſs veſſel, and corked up, when the impurities will gradually ſubſide, partly in a ſolid form, and partly diſſolved in water. The ſupernatant alcoholic ſolution is then to be evaporated rapidly, till its ſurface become covered with a black cruſt, which is to be removed, and the liquid below is to be poured into a porcelain veſſel, when it will concrete into a white ſubſtance, which is to be broken in pieces, and immediately excluded from the action of the air.

A leſs expenſive way of obtaining potaſs perfectly pure is that of Lowitz. Evaporate a ſolution of potaſs till a thick pellicle form on its ſurface; allow it to cool; ſeparate all the cryſtals formed, as they conſiſt of foreign ſalts; renew the evaporation in an iron or ſilver baſon; and remove the pellicles which form on the ſurface with an iron ſkimmer, as long as any appear. When the ebullition ceaſes, remove the veſſel from the fire, and agitate the fuſed ſalt with an iron ſpatula while it cools. Diſſolve the ſaline maſs in twice its weight of water, and evaporate in a ſilver baſon till it begins to cryſtallize. The cryſtals are pure potaſs. The fluid which ſwims over them has a dark-brown colour, and muſt be poured off; but if kept in a cloſe ſtopt phial, it will depoſite its colouring matter, and by evaporation will furniſh more cryſtals of potaſs.

Potaſs is only uſed as a cauſtic, or to form ſolutions of a known ſtrength; and even its uſe as a cauſtic is inconvenient, from its being ſo quickly affected by the air, and from its rapid deliqueſcence, which renders it apt to ſpread.

POTASSA CUM CALCE; olim, CAUSTICUM COMMUNE MITIUS. *Edin.*

Potass with Lime, formerly *Milder Common Caustic.*

Take of

Solution of potass, any quantity.

Evaporate in a covered iron-vessel till one-third remains; then mix with it as much new-slaked lime as will bring it to the consistence of pretty solid pap, which is to be kept in a vessel closely stopt.

CALX CUM KALI PURO.
Lond.
Lime with Pure Kali.

Take of

Quicklime, five pounds and four ounces;
Water of pure kali, sixteen pounds.

Boil away the water of pure kali to a fourth part; then sprinkle in the lime, reduced to powder by the affusion of water. Keep it in a vessel closely stopped.

CAUSTICUM MITIUS.
Dub.
Milder Caustic.

Evaporate caustic ley to one-third, then add powdered lime till it become thick, and form it into proper masses.

THE addition of the lime in these preparations renders them less apt to deliquesce, more easily managed, and milder in their operation.

CARBONAS POTASSÆ.
Edin.
Carbonate of Potass.

Let impure carbonate of potass, called in English *pearl ashes*, be put into a crucible, and brought to a low red-heat, that the oily impurities, if there be any, may be consumed: then triturate it with an equal weight of water, and mix them thoroughly by agitation. After the feces have subsided, pour the liquor into a very clean iron-pot, and boil to dryness, stirring the salt towards the end of the process, to prevent its sticking to the vessel.

KALI PRÆPARATUM.
Lond.
Prepared Kali.

Take of

Potashes, two pounds;
Boiling distilled water, three pints.

Dissolve

Diſſolve and filter through paper: evaporate the liquor till a pellicle appears on the ſurface; then ſet it aſide for twelve hours, that the neutral ſalts may cryſtallize: after which, pour out the liquor, and boil away, with a ſlow fire, the whole of the water, conſtantly ſtirring, leſt the ſalt ſhould adhere to the pot.

In like manner is purified impure kali from the aſhes of any kind of vegetable.

The ſame ſalt may be prepared from tartar, which ſhould be burnt till it becomes of an aſh colour.

ALKALI VEGETABILE MITE.
Dub.
Mild Vegetable Alkali.

Take of
Potaſhes,
Boiling water, each ſix pounds.

Mix them by agitation in a glaſs-veſſel, and digeſt them for three days. Then pour off the pure liquor, and evaporate it to dryneſs in a very clean iron-veſſel. Towards the end of the operation, ſtir the ſaline maſs conſtantly with an iron ſpatula. Then ſeparate, by means of a ſieve, the finer particles, which are to be kept in a glaſs-veſſel well ſtopped.

CARBONAS POTASSÆ PURISSIMUS; olim, SAL TARTARI.
Edin.
Pure Carbonate of Potaſs, formerly *Salt of Tartar.*

Take of
Impure ſuper-tartrite of potaſs, any quantity.

Burn it to a black maſs, by placing it among live coals, either wrapped up in moiſt bibulous paper, or contained in a crucible. Having reduced this maſs to powder, expoſe it in an open crucible to the action of a moderate fire, till it become white, or at leaſt of an aſh-grey colour, taking care that it do not melt. Then diſſolve it in warm water; ſtrain the liquor through a linen cloth, and evaporate it in a clean iron-veſſel, diligently ſtirring it towards the end of the proceſs with an iron ſpatula, to prevent it from ſticking to the bottom of the veſſel. A very white ſalt will remain, which is to be left a little longer on the fire, till the bottom of the veſſel becomes almoſt red. Laſtly, when the ſalt is grown cold, keep it in glaſs-veſſels well ſtopt.

THE potaſhes of commerce we have already ſhewn (p. 177.) to contain a conſiderable proportion of foreign ſalts. By the proceſs directed by the Colleges, it is purified from thoſe which are cryſtallizable; and although it ſtill contains muriate of potaſs and ſilica, it is ſufficiently pure for the purpoſes of medicine.

The pureſt carbonate of potaſs in common uſe is that obtained by incinerating the impure ſuper-tartrite of potaſs, as all the ſubſtances it contains, except the potaſs, are decompoſed by the heat. The tartarous acid and colouring matter are deſtroyed, and part of the carbonic acid, which is formed, unites with the potaſs.

The white and red ſorts of tartar are equally fit for the purpoſe; the only difference is, that the white affords a ſomewhat larger quantity than the other: from ſixteen ounces of this ſort, upwards of four ounces of carbonate of potaſs may be obtained. The uſe of the paper is to prevent the ſmaller pieces of the tartar from dropping down into the aſh-hole, through the interſtices of the coals, upon firſt injecting it into the furnace.

The calcination of the ſalt (if the tartar was ſufficiently burnt at firſt) does not increaſe its ſtrength ſo much as is ſuppoſed; nor is the greeniſh or blue colour any certain mark, either of its ſtrength, or of its having been, as was formerly ſuppoſed, long expoſed to a vehement fire: for if the crucible be perfectly clean, cloſe covered, and has ſtood the fire without cracking, the ſalt will turn out white, though kept melted, and reverberating ever ſo long; while, on the other hand, a ſlight crack happening in the crucible, or a ſpark of a coal falling in, will in a few minutes give the ſalt the colour admired. The colour, in fact, is a mark rather of its containing ſome inflammable matter, than of its ſtrength.

But this ſalts, in whatever way obtained, is not ſtrictly entitled to the appellation of carbonates; for it is not ſaturated with the acid, or rather it is a mixture of carbonate of potaſs and potaſs, in variable proportions. It is owing to the uncombined potaſs that it is ſtill deliqueſcent, and in ſome degree cauſtic. It may be eaſily ſaturated, however, with carbonic acid, by expoſing it in ſolution to the contact of the air for a conſiderable time, or by making a ſtream of carbonic acid gas paſs through a ſolution of it, or by diſtilling it with carbonate of ammonia. In this ſtate it is cryſtallizable, and its cryſtals are permanent. It conſiſts of about 43 acid, 40 potaſs, and 17 water. The ſaturation with carbonic acid is one of the beſt means of purifying it; for it always ſeparates ſilica from the uncombined alkali.

Carbonate of potaſs is frequently employed in medicine, in conjunction with other articles, particularly for the formation of ſaline neutral draughts and mixtures: But it is uſed alſo by itſelf in doſes from three or four grains to fifteen or twenty; and it frequently operates as a powerful diuretic, particularly when aided by proper dilution.

AQUA

AQUA KALI PRÆPARATI.

Lond.

Water of Prepared Kali.

Take of

Prepared kali, one pound.

Set it in a moist place till it deliquesce, and then strain it.

Lixivium Mite.

Dub.

Mild Ley.

Take of

Mild vegetable alkali, one pound.

Dissolve it in one pound of water.

The last of these preparations is a solution of the mixed or sub-carbonate of potass, in a fixed proportion of water; and the former is a solution of carbonate of potass, in a variable quantity of water. The Dublin solution contains the silica, and all the other impurities of the carbonate employed, while, according to the London process, the uncombined portion of the potass, at the same time that it deliquesces, becomes saturated with carbonic acid, and deposites the silica. It would, therefore, be a very considerable improvement of this preparation, to dissolve crystallized carbonate of potass in a determinate proportion of water.

AQUA SUPER CARBONATIS POTASSÆ.

Edin.

Solution of Super-carbonate of Potass.

Take of

Water, ten pounds;

Pure carbonate of potass, one ounce.

Dissolve and expose the solution to a stream of carbonic acid, arising from

Carbonate of lime in powder,

Sulphuric acid, each three ounces;

Water, three pounds, gradually and cautiously mixed.

The chemical apparatus invented by Dr Nooth, is well adapted to this preparation. But if a larger quantity of the liquor be required, the apparatus of Dr Woulfe is preferable.

Liquor Alkali Vegetabilis Mitissimi.

Dub.

Solution of Mildest Vegetable Alkali.

Take of

Mild vegetable alkali, an ounce and a half;

Water, six pounds.

Mix them, and transmit fixed air through the liquor, according to the formula for preparing fixed air (p. 374.), except that a double quantity of marble and acid muſt be employed to ſaturate the ſolution.

The colder the air is, and the greater the preſſure, the better is the liquor, which ſhould be kept in well-cloſed veſſels.

As ſoon as the preparation is finiſhed, the liquor ſhould be drawn off into pint bottles, which are to be well corked, and kept in a cool ſituation, with the head down, or laid on one ſide. It ſhould be perfectly tranſparent, and have an acidulous, not at all alkaline taſte; and when poured out of the bottles, it ſhould have a ſparkling appearance.

In this ſolution, carbonate of potaſs is combined with exceſs of carbonic acid, by which means it is better adapted for internal uſe, as it is rendered not only more pleaſant to the taſte, but is leſs apt to offend the ſtomach. Indeed, it is the only form in which we can exhibit potaſs in ſufficient doſes, and for a ſufficient length of time, to derive much benefit from its uſe in calculous complaints. It has certainly been frequently of advantage in theſe affections, but probably only in thoſe inſtances in which the ſtone conſiſts of uric acid, or urate of ammonia; for although ſuperſaturated with carbonic acid, yet the affinity of that acid for potaſs is ſo weak, that it really operates as an alkali.

Six or eight ounces may be taken two or three times a-day. It in general proves powerfully diuretic, and ſometimes produces inebriation. This laſt effect is aſcribed to the carbonic acid.

ACETIS POTASSÆ.

Edin.

Acetite of Potaſs.

Take of

Pure carbonate of potaſs, one pound.

Boil it with a very gentle heat, in four or five times its weight of diſtilled acetous acid; add more acid at different times, till, on the watery part of the preceding quantity being nearly diſſipated by evaporation, the new addition of acid ceaſes to raiſe any effervescence, which will happen, when about twenty pounds of the diſtilled acetous acid have been conſumed. It is then to be ſlowly dried. The impure ſalt remaining, is to be melted with a gentle heat, for a ſhort time; and afterwards diſſolved in water, and filtered through paper. If the liquefaction has been properly performed, the filtered liquor will be limpid; but if otherwiſe, of a brown colour. Afterwards evaporate this liquor with a very gentle heat in a very ſhallow glaſs-veſſel, occaſionally ſtirring the ſalt as it becomes dry, that its moiſture may be ſooner diſſipated. Laſtly, the Acetite of potaſs ought to be kept in a veſſel very cloſely ſtopt, to prevent it from deliqueſcing.

KALI ACETATUM.
Lond.
Acetated Kali.

Take of
Prepared kali, one pound.

Boil it, with a ſlow fire, in four or five times its quantity of diſtilled vinegar; and when the effervefcence ceaſes, add, at different times, more diſtilled vinegar, until one portion of vinegar being nearly evaporated, the addition of another will excite no effervefcence, which will happen when about twenty pounds of diſtilled vinegar are conſumed; afterwards let it be dried ſlowly. An impure ſalt will be left, which is to be melted for a little while with a ſlow fire; then diſſolved in water, and filtered through paper.

If the fuſion has been rightly performed, the ſtrained liquor will be colourleſs; if otherwiſe, of a brown colour.

Laſtly, evaporate this liquor with a ſlow fire, in a very ſhallow glaſs-veſſel; frequently ſtirring the maſs, that the ſalt may be more completely dried, which ſhould be kept in a veſſel cloſely ſtopt.

The ſalt ought to be very white, and diſſolve wholly, both in water and ſpirit of wine, without leaving any feces. If the ſalt, although white, ſhould depoſite any feces in ſpirit of wine, the ſolution ſhould be filtered through paper, and the ſalt again dried.

ALKALI VEGETABILI ACETATUM; olim, SAL DIURETICUS.
Dub.
Acetated Vegetable Alkali, formerly *Diuretic Salt.*

Take of
Mild vegetable alkali, any quantity.

Add to it, at different times, about five times its weight of diſtilled vinegar, at a moderate temperature. When the evaporation ceaſes, and the liquor is ſomewhat evaporated, add, at intervals, diſtilled vinegar, until the mixture ſhall entirely ceaſe to effervefce. Then evaporate to dryneſs; and having increaſed the fire a little, bring the ſaline maſs into a ſtate of fuſion. Diſſolve the ſalt, after it has cooled, in water; filter the ſolution, and evaporate, until, on cooling, it ſhall concrete into a cryſtalline maſs, which ſhould be very white. Put this, while ſtill warm, into veſſels accurately cloſed.

THIS is both a troubleſome and expenſive preparation, for when attempted to be made by ſimply evaporating to dryneſs, the ſalt has always a dark, unpleaſant colour, which cannot be removed by repeated ſolution and cryſtallization, or even by ſolution in alcohol. It is doubtful to what the colour is owing. It has been aſcribed by ſome to part of the acetous acid being decompoſed by heat during the exſiccation of the ſalt: they accordingly recommend the evaporation to be conducted very gently, and the pellicles to be skimmed from the surface of the liquor as fast as they are formed; and in this way, they say, they have procured at once a very white salt. Others ascribe it to some foreign matter which rises in distillation with the last portions of the acetous acid, and therefore direct, that only the first portions which come over should be used, or that the acetous acid should be distilled with charcoal: while others again ascribe it to accidental impurities contracted during the operation, and recommend the utmost attention to cleanliness, and the use of earthen vessels. To whatever cause it may be owing, and the second appears to us the most probable, the colour is most effectually destroyed by bringing the salt into fusion. The heat necessary to do this decomposes the colouring matter; and on dissolving the fused mass in water, and filtering the solution, we find a fine light charcoal on the filter. But this fusion is attended with considerable loss, for part of the acetous acid itself is decomposed.

The operator must be particularly careful, in melting it, not to use a greater heat, nor to keep it longer liquefied, than what is absolutely necessary: a little should be occasionally taken out, and put into water; and as soon as it begins to part freely with its black colour, the whole is to be removed from the fire.

The exsiccation of the solution of the salt, after it has been fused, must be conducted very carefully, as it is exceedingly apt to be decomposed, which would render a new solution and exsiccation necessary. The test of its purity, by dissolving it in alcohol, as directed by the London College, is to discover if any of the acetous acid itself has been decomposed in the operation; for the carbonate of potass, which is in that case formed, is insoluble in alcohol.

To spare trouble and expence, attempts have been made to prepare acetite of potass with undistilled vinegar, and even with the residuum of the distillation of acetous acid; and they have been to a certain degree successful: but as repeated fusion and crystallization are necessary to bring the salt to a sufficient degree of purity, it does not appear that they were more economical. But if to acetite of potass prepared with impure vinegar, we add a sufficient quantity of sulphuric acid, by distillation we obtain an acetous acid of great strength, which forms a beautiful acetite of potass without fusion. Lastly, this salt may be prepared by the decomposition of acetites; for example, of the acetite of lead by carbonate of potass, or still better by sulphate of potass.

Acetite of potass has a sharp, somewhat pungent taste. It is soluble at 60°, in about its own weight of water. It is also soluble in alcohol. It is deliquescent. It is decomposed by the stronger acids; by a decoction of tamarinds; by the sulphate of soda and magnesia; by muriate of ammonia; by the tartrite of

soda

ſoda and potaſs; and by ſome metalline ſalts. Its acid is deſtroyed by a high temperature.

Acetite of potaſs, which way ſoever prepared, provided it be properly made, is a medicine of great efficacy, and may be ſo doſed and managed as to prove either mildly cathartic, or powerfully diuretic: few of the ſaline deobſtruents equal it in virtue. The doſe is from half a ſcruple to a drachm or two. A bare mixture, however, of alkaline ſalt and vinegar, without exſiccation, is perhaps not inferior as a medicine to the more elaborate ſalt. Two drachms of the alkali, ſaturated with vinegar, have been known to occaſion, in hydropic caſes, ten or twelve ſtools, and a plentiful diſcharge of urine, without any inconvenience.

NITRUM PURIFICATUM.

Lond.

NITRAS POTASSÆ.

Nitrate of Potaſs. Purified Nitre.

Take of

Nitre, two pounds;

Diſtilled water, four pints.

Boil the nitre in the water, till it be diſſolved; ſtrain the ſolution, and ſet it aſide to cryſtallize.

COMMON nitre contains uſually a conſiderable portion of muriate of ſoda, which in this proceſs is ſeparated, for it remains diſſolved after the greateſt part of the nitrate of potaſs has cryſtallized. The cryſtals which ſhoot after the firſt evaporation, are large, regular and pure: but when the remaining liquor is further evaporated, and this repeated a ſecond or third time, the cryſtals prove at length ſmall, imperfect, and tipt with little cubical cryſtals of muriate of ſoda.

SULPHAS POTASSÆ; olim, TARTARUM VITRIOLATUM.

Edin.

Sulphate of Potaſs, formerly *Vitriolated Tartar*.

Take of

Sulphuric acid, diluted with ſix times its weight of water, any quantity.

Put it into a capacious glaſs-veſſel, and gradually drop into it, of pure carbonate of potaſs, diſſolved in ſix times its weight of water, as much as is ſufficient thoroughly to neutralize the acid. The effervеſcence being finiſhed, ſtrain the liquor through paper; and after evaporation, ſet it aſide to cryſtallize.

Sulphate of potaſs may be alſo conveniently prepared from the reſiduum of the diſtillation of nitrous acid, by diſſolving it in warm water, and ſaturating it with carbonate of potaſs.

KALI

KALI VITRIOLATUM.
Lond.
Vitriolated Kali.

Take of
The falt which remains after the diftillation of the nitrous acid, two pounds ;
Diftilled water, two gallons.

Burn out the fuperfluous acid with a ftrong fire, in an open veffel: then boil it a little while in the water; ftrain, and fet the liquor afide to cryftallize.

ALKALI VEGETABILE VITRIOLATUM.
Dub.
Vitriolated Vegetable Alkali.

Let the falt which remains after the diftillation of nitrous acid reduced to powder, be diffolved in a fufficient quantity of boiling water. Let the filtered liquor be evaporated with a very gentle heat, that it may cryftallize.

THIS falt is very feldom prepared on purpofe, as it may be obtained from the refiduum of many other preparations, by fimple folution and cryftallization. For fo ftrong is the affinity between fulphuric acid and potafs, that they fcarcely ever meet without combining to form this falt. All the fulphates, except that of baryta are decompofed by potafs and moft of its combinations; and reciprocally, all the compounds of potafs are decompofed by fulphuric acid and moft of its combinations; and in all thefe decompofitions, fulphate of potafs is one of the products.

The greateft part of the fulphate of potafs of commerce is obtained from the refiduum of the diftillation of fulphate of iron with nitrate of potafs, by lixiviating it, fuperfaturating the folution with carbonate of potafs, filtering it boiling hot, and allowing it to cryftallize. It is alfo got in confiderable quantities from the refiduum remaining in the retort, after the diftillation of nitrous acid; and all the colleges have given directions for obtaining it in this way. This refiduum generally contains an excefs of acid, which converts part of the fulphate into fuper-fulphate of potafs. The Dublin College allow this part to be loft. The London drive off the excefs of acid by intenfe heat, and thus get the whole of the fulphate; but at the fame time convert it into a very difficultly foluble mafs. While the Edinburgh College, more fcientifically economical than either, derive advantage from the excefs of acid, by fimply faturating it with carbonate of potafs.

As the refiduum of the diftillation of nitrous acid may not always be at hand, the Edinburgh College alfo give a receipt for making this falt, by directly combining its conftituents. It would have been more economical to have ufed a folution of fulphate

phate of iron, in place of sulphuric acid, by which means not only an equally pure sulphate of potass would have been procured at less expence, but also a very pure carbonate of iron.

Sulphate of potass forms small transparent very hard crystals, generally aggregated in crusts, and permanent in the air. It has a bitter taste, is slowly soluble in water, requiring 16 parts at 60°, and 4 at 212°. It is not soluble in alcohol. It decrepitates when thrown on live coals, and melts in a red heat. It consists of 45.2 acid, and 54.8 potass. It is decomposed by the barytic salts; by the nitrates and muriates of lime and of strontia; by the tartrites partially; and by the salts of mercury, silver and lead.

Sulphate of potass, in small doses, as a scruple or half a drachm, is an useful aperient; in larger ones, as four or five drachms, a mild cathartic, which does not pass off so hastily as the sulphate of soda, and seems to extend its action further.

SULPHAS POTASSÆ CUM SULPHURE; olim, SAL POLYCHRESTUS.

Edin.

Sulphate of Potass with Sulphur, formerly *Sal Polychrest.*

Take

Nitrate of potass in powder,
Sublimed sulphur, of each equal parts.

Mingle them well together, and inject the mixture, by little and little at a time, into a red hot crucible: the deflagration being over, let the salt cool, after which it is to be put up in a glass vessel well stopped.

In this process the nitric acid of the nitrate of potass is decomposed by the sulphur, which is in part acidified. But the quantity of oxygen contained in the nitric acid, is not sufficient to acidify the whole sulphur employed; therefore part of it remains in the state of sulphureous acid, which is probably chemically combined with part of the potass in the state of sulphate, for the whole saline mass formed, is more soluble in water than sulphate of potass, is crystallizable, and by exposure to the air, gradually attracts oxygen, and is converted into sulphate of potass. In its medical effects and exhibition, it agrees with sulphate of potass.

SULPHURETUM POTASSÆ; olim, HEPAR SULPHURIS.

Edin.

Sulphuret of Potass, formerly *Liver of Sulphur.*

Take of

Carbonate of potass,
Sublimed sulphur, each eight ounces.

Having ground them well together, put them into a large coated crucible; and having fitted a cover to it, and applied live coals cautiously around it, bring them at length to a state of fusion.

Having

Having broken the crucible as ſoon as it has grown cold, take out the ſulphuret, and keep it in a well-cloſed phial.

Kali Sulphuratum.
Lond.
Sulphurated Kali.

Take of
Flowers of ſulphur, one ounce;
Prepared kali, five ounces.

With the ſulphur melted with a gentle fire, mix the ſalt by conſtant agitation until they unite.

Alkali Vegetabile Sulphuratum.
Dub.
Sulphurated Vegetable Alkali.

Take of
Cauſtic vegetable alkali in powder,
Sublimed ſulphur, each two ounces.

To the ſulphur, melted by a gentle heat, add the alkali; covering the veſſel, if the mixture ſhall take fire.

There exiſts a very ſtrong affinity between ſulphur and potaſs but they muſt be united in a ſtate of perfect dryneſs; becauſe, if any moiſture be preſent, it is decompoſed, and alters the nature of the product. If potaſs be employed as directed by the Dublin College, it will unite with the ſulphur by ſimple trituration, and will render one-third of its weight of ſulphur ſoluble in water. If carbonate of potaſs be uſed as directed by the other colleges, it is neceſſary to bring the ſulphur into a ſtate of fuſion; it then acts upon the carbonate, and expels the carbonic acid. It is evident that to combine with the ſame quantity of ſulphur, a larger proportion of carbonate of potaſs than of potaſs is neceſſary; but the quantity ordered by the London College is certainly much too large, while that of the Edinburgh College is perhaps too ſmall. The Colleges alſo differ in the mode of conducting the proceſs. The London and Dublin Colleges direct the alkaline ſalt to be projected upon the melted ſulphur. The fault of this proceſs is, that there is a conſiderable loſs of ſulphur by ſublimation, which is avoided, if the ſubſtances be previouſly intimately mixed, and brought into fuſion by a very gradual and cautious application of heat, according to the proceſs of the Edinburgh College; but, if the fuſion be not very cautiouſly performed, the ſudden extrication of ſo large a quantity of carbonic acid gas, is apt to throw the melted matter out of the crucible, and may be attended with unpleaſant conſequences. If the heat be too great, and the crucible uncovered, the ſulphureous vapour is apt to inflame, but it is eaſily extinguiſhed by covering it up.

Sulphure

Sulphuret of potafs, properly prepared, is of a liver-brown colour, hard, brittle, and has a vitreous fracture. It has an acrid bitter tafte, and the fmell of fulphur. It is exceedingly prone to decompofition. It is deliquefcent in the air, and is decompofed. It is very fufible, but a ftrong heat feparates the fulphur by fublimation. The moment it comes in contact with water, there is a mutual decompofition. Part of the fulphur becomes acidified, deriving oxygen from the water, and forms fulphate of potafs. Part of the hydrogen of the water decompofed, combines with another portion of the fulphur, and efcapes in the form of fulphuretted hydrogen gas; another portion of the hydrogen combines with a third portion of the fulphur, and remains in folution, united with the alkali, in the ftate of hydroguretted fulphuret of potafs. By acids, fulphuret of potafs is immediately decompofed; the acid forms a neutral falt with the potafs, and the fulphur is feparated, (p. 360.)

TARTRIS POTASSÆ; olim, TARTARUM SOLUBILE. *Edin.*

Tartrite of Potafs, formerly *Soluble Tartar*.

Take of

Carbonate of potafs, one pound;

Super-tartrite of potafs, three pounds, or as much as may be fufficient;

Boiling water, fifteen pounds.

To the carbonate of potafs diffolved in the water, gradually add the fuper-tartrite of potafs in fine powder, as long as it raifes any effervefcence, which generally ceafes before three times the weight of the carbonate of potafs has been added; then ftrain the cooled liquor through paper, and after due evaporation fet it afide to cryftallize.

KALI TARTARISATUM. *Lond.*

Tartarifed Kali.

Take of

Prepared kali, one pound;

Cryftals of tartar, three pounds;

Diftilled water, boiling, one gallon.

To the falt, diffolved in the water, throw in gradually the cryftals of tartar powdered: filter the liquor, when cold, through paper; and, after due evaporation by a gentle heat, fet it apart to cryftallize.

ALKALI VEGETABILE TARTARISATUM. *Dub.*

Tartarifed Vegetable Alkali.

Take of

Mild vegetable alkali, one pound;

Cryſtals of tartar ground into very fine powder, two pounds and a half;

Boiling water, fifteen pounds.

Gradually add the tartar to the vegetable alkali diſſolved in the water; after the liquor has cooled, ſtrain it through paper, evaporate it and let it cryſtallize by cooling ſlowly.

THE tartarous acid is capable of uniting with potaſs in two proportions, forming in the one inſtance a neutral, and in the other an acidulous ſalt. The latter is an abundant production of nature, but it is eaſily converted into the former, by ſaturating it with potaſs, or by depriving it of its exceſs of acid. It is by the former method that the colleges direct tartrite of potaſs to be prepared, and the proceſs is ſo ſimple, that it requires little comment. For the ſake of economy, we ſhould come as near the point of ſaturation as poſſible; but any ſlight deviation from it will not be attended with much inconvenience. Indeed, it is perhaps adviſable to leave a ſlight exceſs of acid, which, forming a ſmall quantity of very inſoluble ſalt, leaves the remainder perfectly neutral. The evaporation muſt be conducted in an earthen veſſel, for iron diſcolours the ſalt. It is eaſily cryſtallized, and the cryſtals become moiſt in the air. It has an unpleaſant bitter taſte. It is ſoluble in four parts of cold water, and ſtill more ſoluble in boiling water, and it is alſo ſoluble in alcohol. It is totally or partially decompoſed by all acids. On this account it is improper to join it with tamarinds, or ſuch like acid fruits; which is too often done in the extemporaneous practice of thoſe phyſicians who are fond of mixing different cathartics together, and know little of chemiſtry. It is alſo totally decompoſed by lime, baryta, ſtrontia and magneſia, and partially by the ſulphates of potaſs, ſoda and magneſia, and by the muriate of ammonia.

In doſes of a ſcruple, half a drachm, or a drachm, this ſalt is a mild cooling aperient: two or three drachms commonly looſen the belly; and an ounce proves pretty ſtrongly purgative. It has been particularly recommended as a purgative for maniacal and melancholic patients. It is an uſeful addition to the purgatives of the reſinous kind, as it promotes their operation, and at the ſame time tends to correct their griping quality.

CARBONAS SODÆ; olim, SAL ALKALINUS FIXUS FOSSILIS PURIFICATUS.

Edin.

Carbonate of Soda, formerly *Purified Fixed Foſſil Alkaline Salt.*

Take of

Impure carbonate of ſoda, any quantity.

Bruiſe

Bruiſe it; then boil in water till all the ſalt be diſſolved. Strain the ſolution through paper, and evaporate it in an iron-veſſel, ſo that after it has cooled, the ſalt may cryſtallize.

NATRON PRÆPARATUM.
Lond.
Prepared Natron.

Take of
Barilla, powdered, two pounds;
Diſtilled water, one gallon.

Boil the barilla in four pints of water for half an hour, and ſtrain. Boil the reſiduum with the reſt of the water, and ſtrain. Evaporate the mixed liquors to two pints, and ſet them by for eight days; ſtrain this liquor again; and, after due boiling, ſet it aſide to cryſtallize. Diſſolve the cryſtals in diſtilled water; ſtrain the ſolution, boil, and ſet it aſide to cryſtallize.

ALKALI FOSSILE MITE.
Dub.
Mild Foſſil Alkali.

Take of
Barilla, in powder, ten pounds;
Water, forty pounds.

Boil the barilla in the water, in a covered veſſel, for two hours, agitating it from time to time. Evaporate the filtered ſolution in a wide iron-veſſel to dryneſs, taking care that the ſaline maſs remaining, be not liquefied by too great a degree of heat, and agitate it with an iron ſpatula, until its colour become white. Laſtly, diſſolve it in boiling water; evaporate, and let it cryſtallize by ſlow refrigeration.

If the ſalt be not pure, repeat the ſolution and cryſtallization.

Theſe directions are principally intended for the purification of the Spaniſh barilla, which is a fuſed maſs, conſiſting indeed principally of carbonate of ſoda, but alſo containing charcoal, earths, and other ſalts. From the two firſt cauſes of impurity it is eaſily ſeparated by ſolution and filtration, and the ſalts may be ſeparated by taking advantage of their different ſolubility in cold and in hot water. Frequently the ſoda does not cryſtallize freely, from not being ſaturated with carbonic acid, which is the reaſon why the London College order the ſolution to be expoſed to the atmoſphere for eight days, that it may abſorb carbonic acid, before they attempt the cryſtallization of the ſalts. But the preparation of carbonate of ſoda, by the decompoſition of ſulphate of ſoda, has now become a manufacture, and is carried to ſuch perfection, that its farther purification is almoſt unneceſſary for the purpoſes of the apothecary.

AQUA

AQUA SUPER-CARBONATIS SODÆ.
Edin.
Water of Super-Carbonate of Soda.

This is prepared from ten pounds of water, and two ounces of carbonate of soda, in the same manner as the water of super-carbonate of potass (p. 383.).

By super-saturating soda with carbonic acid, it is rendered more agreeable to the palate, and may be taken in larger quantities, without affecting the stomach.

PHOSPHAS SODÆ.
Edin.
Phosphate of Soda.

Take of
Bones burnt to whiteness, and powdered, ten pounds;
Sulphuric acid, six pounds;
Water, nine pounds.

Mix the powder with the sulphuric acid in an earthen vessel; then add the water, and mix again. Then place the vessel in a vapour bath, and digest for three days; after which dilute the mass with nine pounds more of boiling water, and strain the liquor through a strong linen cloth, pouring over it boiling water, in small quantities at a time, until the whole acid be washed out. Set by the strained liquor, that the impurities may subside, decant the clear solution, and evaporate it to nine pounds. To this liquor, poured from the impurities, add Carbonate of soda, dissolved in warm water, until the effervescence cease. Filter the neutralized liquor, and set it aside to crystallize. To the liquor that remains after the crystals are taken out, add a little carbonate of soda, if necessary, so as to saturate exactly the phosphoric acid, and dispose the liquor by evaporation to form crystals. Lastly, the crystals are to be kept in a well-closed vessel.

The first part of this process consists in destroying the gelatine of the bones by the action of heat. When burnt to perfect whiteness, they retain their form, but become friable, and consist of phosphate of lime, mixed with a very little carbonate of lime and carbonate of soda. In performing this part of the process, we must take care not to heat the bones to a bright red, as by it they undergo a kind of semi-fusion, and give out a phosphoric light. The complete combustion of the charcoal is facilitated by the free contact of the air; we must therefore bring every part in succession to the surface, and break the larger pieces.

In the second part of the process, the phosphate of lime is decomposed by the sulphuric acid. This decomposition is however only partial. The sulphuric acid combines with part of the lime, and forms insoluble sulphate of lime. The phosphoric acid separated

rated from that portion of lime, immediately combines with the rest of the phosphate of lime, and forms super-phosphate of lime, which is not farther decomposable by sulphuric acid.

The super-phosphate of lime, thus formed, is soluble in water; but as the sulphate of lime, with which it is mixed, concretes into a very solid mass, it is in some measure defended from the action of water. On this account the whole mass is directed to be digested for three days in vapour, by which means it is thoroughly penetrated and prepared for solution in the boiling water, which is afterwards poured on it. It is probably to render the subsequent solution easier, that Thenard directs the bone-ashes to be made into a thin paste (*bouillie*) with water, before the sulphuric acid is added to them.

Having thus got a solution of super-phosphate of lime, it is next decomposed by carbonate of soda, dissolved in water. This decomposition, likewise, is only partial, as it deprives the super-phosphate of lime of its excess of acid only, and reduces it to the state of phosphate. The phosphate of lime, being insoluble, is easily separated by filtration, and the phosphate of soda remains in solution. According to Thenard, the nicest point in the whole process, is the determination of the proper quantity of carbonate of soda to be added. As the phosphate of soda does not crystallize freely unless there be a slight excess of base, he directs that a little more carbonate of soda be added than what is merely sufficient to saturate the excess of acid in the super-phosphate of lime, but not to continue the addition until it cease to produce any precipitate. We must also take care not to carry the evaporation of a solution of phosphate of soda so far as to form a pellicle, for it then concretes into an irregular mass, and does not form beautiful crystals. After each crystallization, we must examine the liquor which remains, and if it be acid, or merely neutral, add to it a little of the solution of carbonate of soda. In this way Thenard got from 2100 parts of bone-ashes, 700 of sulphuric acid, and 667 of carbonate of soda, 885 of phosphate of soda. According to Fourcroy, phosphate of lime consists of 0.41 acid and 0.59 lime, and super-phosphate of lime of 0.54 acid and 0.46 lime; phosphate of lime, treated with sulphuric acid, is only deprived of 0.24 lime, and changed into 0.76 of super-phosphate, consisting of 0.59 phosphate of lime, and 0.17 phosphoric acid, and it is only with this portion of acid that we are able to combine soda. Fourcroy is also of opinion, that phosphate of lime requires only 0.4 of its weight of sulphuric acid to decompose it, whereas 0.6 are employed by the Edinburgh College, and others use even 0.7. This is not only, therefore, a waste of acid, but renders the product impure, by being mixed with sulphate of soda, which is sometimes actually the case in the phosphate of soda of commerce. Besides, as bone-ashes are of very little value, it is better that a portion of them ſhould eſcape undecompoſed, than that an exceſs of acid ſhould be added to them.

Phoſphate of ſoda cryſtallizes in rhomboidal priſms, terminated by three-ſided pyramids. Its taſte reſembles that of common ſalt. At 60° it is ſoluble in four parts of water, and at 212° in two. It effloreſces in the air. By heat it undergoes the watery fuſion, and at laſt melts into a white maſs. It conſiſts, according to Thenard, of 15 phoſphoric acid, 19 ſoda, and 66 water of cryſtallization. It is decompoſed by moſt of the ſalts having an earthy baſe.

Phoſphate of ſoda was introduced into the practice of phyſic by the ingenious Dr Pearſon of Leiceſter Square, London. It poſſeſſes the ſame medical qualities as ſulphate of ſoda, and the tartrite of potaſs and ſoda, being an excellent purge in the quantity of an ounce or ten drachms; and has the peculiar advantage over theſe two ſalts in being much leſs nauſeous than they are. Its taſte is extremely ſimilar to that of common ſalt; and when given in a baſon of water-gruel, or veal broth made without ſalt, it is ſcarcely perceptible by the palate, and conſequently is well adapted for patients whoſe ſtomachs are delicate, and who have an antipathy againſt the other ſalts. The only objection to its general uſe is the very great difference between its price and that of ſulphate of ſoda, a difference which might certainly be diminiſhed.

MURIAS SODÆ EXSICCATUS.

Edin.

SAL-COMMUNIS EXSICCATUS.

Dub.

Dried Common Salt.

Take of

Common ſalt, any quantity.

Roaſt it over the fire in a wide iron-veſſel, until it ceaſe to decrepitate, agitating it from time to time.

BY this proceſs the muriate of ſoda is reduced into the ſtate in which it is employed for the diſtillation of muriatic acid. It not only deprives it entirely of its water of cryſtallization, which, from being variable in quantity, would otherwiſe render the acid obtained unequal in ſtrength, but alſo deſtroys ſome colouring matter it contains; for if we prepare muriatic acid from cryſtallized muriate of ſoda, we obtain a coloured muriatic acid, while the dried muriate furniſhes a perfectly colourleſs one.

SULPHAS SODÆ; olim, SAL GLAUBERI.

Edin.

Sulphate of Soda; formerly, *Glauber's Salt.*

Diſſolve the acidulous ſalt which remains after the diſtillation of muriatic acid, in water; and having mixed chalk with it to remove

move the ſuperfluous acid, ſet it aſide until the ſediment ſubſides, then evaporate the liquor decanted from them, and ſtrain through paper, ſo that it may cryſtallize.

Natron Vitriolatum.
Lond.
Vitriolated Natron.

Take of
The ſalt which remains after the diſtillation of the muriatic acid, two pounds ;
Diſtilled water, two pints and an half.

Burn out the ſuperfluous acid with a ſtrong fire, in an open veſſel ; then boil it for a little in the water : ſtrain the ſolution, and ſet it by to cryſtallize.

Alkali Fossile Vitriolatum.
Dub.
Vitriolated Foſſil Alkali.

Diſſolve the ſalt, which remains after the diſtillation of muriatic acid, reduced to powder, in a ſufficient quantity of boiling water. Evaporate the filtered ſolution, and cryſtallize the ſalt by ſlow refrigeration.

The obſervations we made reſpecting the different methods followed by the Colleges, for extracting ſulphate of potaſs from the reſiduum of the diſtillation of nitrous acid, apply in the preſent inſtance, except that the Edinburgh College do not preſerve the ſuperabundant acid when preſent, by ſaturating it with carbonate of ſoda, but get rid of it by ſaturating it with carbonate of lime, with which it forms an inſoluble ſulphate of lime. In fact, the price of ſulphate of ſoda is ſo very ſmall, that it would be no economy to uſe carbonate of ſoda to ſaturate the ſuperabundant acid.

By far the greateſt part of the ſulphate of ſoda is obtained from manufacturers, as a reſult of proceſſes performed for the ſake of other ſubſtances, as in the preparation of muriate of ammonia, oxygenized muriatic acid, &c.

Sulphate of ſoda cryſtallizes in ſix-ſided priſms, terminated by dihedral ſummits. The cryſtals are often irregular, and their ſides are uſually channelled. Their taſte is at firſt ſalt, and afterwards diſagreeably bitter. They are ſoluble in 2.67 parts of water at 60°, and in 0.8 at 212°. In the air they effloreſce. They undergo the watery fuſion, and in a red heat melt. They conſiſt of 23.52 ſulphuric acid, 18.48 ſoda, and 58 water ; when dried at 700°, of 56 acid and 44 ſoda. It is decompoſed by baryta and potaſs, and ſalts containing theſe baſes, and by the ſalts of ſilver, mercury, and lead.

Taken from half an ounce to an ounce, or more, it proves a mild and uſeful purgative ; and in ſmaller doſes, largely diluted, a ſerviceable aperient and diuretic. It is commonly given in ſolution, but it may alſo be given in powder, after it has effloreſced. In this form the doſe muſt be reduced to one-half.

TARTRIS POTASSÆ ET SODÆ; olim, SAL RUPELLENSIS. *Edin.*

Tartrite of Potaſs and Soda, formerly *Rochelle Salt.*

It is prepared from the carbonate of ſoda and ſuper-tartrite of potaſs, in the ſame manner as the tartrite of potaſs.

NATRON TARTARISATUM. *Lond.* SAL RUPELLENSIS. *Dub.*
Tartariſed Natron. *Rochelle Salt.*

Take of
Natron, twenty ounces;
Cryſtals of tartar, powdered, two pounds;
Diſtilled water, boiling, ten pints.

Diſſolve the natron in the water, and gradually add the cryſtals of tartar: filter the liquor through paper; evaporate, and ſet it aſide to cryſtallize.

THE tartarous acid in ſeveral inſtances is capable of entering into combination at the ſame time with two baſes. In the preſent example, the ſuperabundant acid of the ſuper-tartrite of potaſs is neutralized with ſoda, and in place of a mixture of tartrite of potaſs and tartrite of ſoda, each poſſeſſing their own properties, there reſults a triple ſalt, having peculiar properties.

The tartrite of potaſs and ſoda forms large and very regular cryſtals, in the form of priſms with eight ſides nearly equal, which are often divided longitudinally, almoſt through their axis. It has a bitter taſte. It is ſoluble in about five parts of water, and effloreſces in the air It is decompoſed by the ſtrong acids, which combine with the ſoda, and ſeparate ſuper-tartrite of potaſs, and by baryta and lime. By heat its acid is deſtroyed. It conſiſts of 54 tartrite of potaſs, and 46 tartrite of ſoda.

It was introduced into medical practice by M. Seignette, an apothecary at Rochelle, whoſe name it long bore. It is ſtill frequently employed; and though leſs agreeable than the phoſphate of ſoda, it is much more ſo than the ſulphate of ſoda. It is leſs purgative than theſe, and muſt be given in larger doſes.

AQUA AMMONIÆ; olim, AQUA AMMONIÆ CAUSTICÆ. *Edin.*

Water of Ammonia, formerly *Water of Cauſtic Ammonia.*

Take of
Muriate of ammonia, ſixteen ounces;
Quicklime, freſh burnt, two pounds;
Water, ſix pounds.

Having

Having put one pound of the water into an iron or ſtoneware veſſel, add the quicklime, previouſly beat, and cover the veſſel for twenty-four hours, until the lime fall into a fine powder, which is to be put into a retort. Add to it the muriate of ammonia, diſſolved in five pounds of water; and, ſhutting the mouth of the retort, mix them together by agitation. Laſtly, diſtil into a refrigerated receiver with a very gentle heat, (ſo that the operator's hand can eaſily bear the heat of the retort), till twenty ounces of liquor are drawn off. In this diſtillation the veſſels are to be ſo luted as to confine effectually the vapours, which are very penetrating.

Aqua Ammoniæ Puræ.
Lond.
Water of Pure Ammonia.

Take of
Sal ammoniac, one pound;
Quicklime, two pounds;
Water, one gallon.

Add to the lime two pints of the water. Let them ſtand together an hour; then add the ſal ammoniac and the other ſix pints of water boiling, and immediately cover the veſſel. Pour out the liquor when cold, and diſtil off with a ſlow fire one pound.

Liquor Alkali Volatilis Caustici.
Dub.
Liquor of Cauſtic Volatile Alkali.

Take of
Sal ammoniac, ſixteen ounces;
Lime freſh burnt, two pounds;
Water, ſix pounds.

Sprinkle one pound of boiling water upon the lime, placed in a ſtoneware veſſel, and cover up the veſſel. Twenty-four hours afterwards, mix the ſalt with the lime, which will have crumbled to powder, taking care to avoid the vapours. Then put the mixture into a retort, and pour upon it five pounds of water. Having previouſly agitated them, draw off with a moderate heat twenty ounces of liquor into a refrigerated receiver, having luted carefully the joining of the veſſels.

The ſpecific gravity of this liquor is to that of diſtilled water, as 936 to 1000.

In this proceſs the muriate of ammonia is decompoſed by the lime, in conſequence of its having a ſtronger affinity for muriatic acid than ammonia has. It is abſolutely neceſſary that the lime employed be very recently burnt, as the preſence of carbonic acid would render the ammonia partially carbonated. This accident is alfo prevented by the great excefs of lime ufed, which having a greater affinity for carbonic acid than ammonia has, retains any fmall quantity of it which may be accidentally prefent. The lime is alfo to be flaked before it be added to the muriate of ammonia, becaufe the heat produced during its flaking would caufe a violent difengagement of ammonia gas, and be attended with great lofs. The addition of the water is effential to the exiftence of the ammonia in a liquid form, for in itfelf it is a permanently elaftic fluid. A much greater quantity of water, however, is ufed than what is fufficient to abforb all the ammonia : the reft is intended to render the decompofition flower and more manageable, and to keep the muriate of lime which remains in the retort in folution; for otherwife it would concrete into a folid mafs, adhering ftrongly to the bottom of the retort, very difficult to be wafhed out, and often endangering its breaking. As foon as the flaked lime and muriate of ammonia are mixed, they fhould be put into the retort, the water poured upon them, and the diftillation begun : for, by the London procefs, of adding the water boiling hot to the mixture, and letting it ftand to cool before it is introduced into the retort, there is a very great lofs of ammonia, and for no reafon whatever. A very fmall degree of heat is fufficient for the diftillation, and the whole ammonia rifes with the firft portion of water, or even before it. It is therefore neceffary that the veffels be very clofely luted to each other, to prevent it from efcaping. But this renders the utmoft care neceffary in the diftillation; for too fudden, or too great a heat, from the rapid difengagement of gas, or even the expanfion of the air contained in the veffels, would endanger their burfting.

Many variations of greater or lefs importance have been made in conducting this procefs, but the moft confiderable is that of Göttling. The peculiarity of his method confifts in difengaging the ammonia in the form of gas, and combining it afterwards with water with the affiftance of preffure. He ufes an earthen-ware cucurbit, with a tubulated capital. To the fpout of the capital, one end of a bent glafs-tube is accurately luted, while the other end is introduced to the bottom of a tall narrow-mouthed glafs phial, containing the requifite quantity of water. Into the cucurbit he puts two parts of finely-powdered lime, and one of muriate of ammonia, and then applies the heat. He does not fhut the tubulature until the fmell of ammonia becomes manifeft, and opens it again as foon as the procefs is finifhed, and before the veffels begin to cool, as otherwife the folution of ammonia would flow back into the cucurbit, and fpoil the whole operation. But this management of the tubulature requires very great attention, and, therefore, we think that this apparatus would be very much improved, by fubftituting for the tubulature one of Welter's tubes of of ſafety, by which even the poſſibility of ſuch an accident is precluded.

We have already (131.) mentioned the properties of ammonia in its gaſeous form, and its relation to the alkalies (105.). When combined with water, it imparts to it many of theſe properties, and leſſens its ſpecific gravity. Liquid ammonia, or water ſaturated with ammonia, contains 74.63 water, and 25.37 ammonia; and its ſpecific gravity is 0.9054. When it has the ſpecific gravity mentioned by the Dublin College 0.936, it contains about 83 of water, and 17 of ammonia. It aſſumes its elaſtic form, and ſeparates from the water, when heated to about 130°, and quickly attracts carbonic acid from the atmoſphere. It decompoſes many of the earthy and all the metalline ſalts, and is capable of diſſolving or combining with many of the metalline oxides, and even of oxidizing ſome of the metals. When pure, water of ammonia does not effervеſce with any of the acids, or form a precipitate with alcohol.

Water of ammonia is very rarely given internally, although it may be uſed in doſes of ten to twenty drops, largely diluted, as a powerful ſtimulant in aſphyxia, and ſimilar diſeaſes. Externally it is applied to the ſkin as a rubefacient, and in the form of gas to the noſtrils and to the eyes as a ſtimulant; in caſes of torpor, paralyſis, rheumatiſm, ſyncope, hyſteria, and chronic ophthalmia.

ALCOHOL AMMONIATUM, SIVE SPIRITUS AMMONIÆ. *Edin.*

Ammoniated Alcohol, or *Spirit of Ammonia.*

Take of
 Diluted alcohol, four pounds;
 Muriate of ammonia, four ounces;
 Carbonate of potaſs, ſix ounces.
Mix them, and draw off by diſtillation, with a gentle heat, two pounds.

SPIRITUS AMMONIÆ.
Lond.
Spirit of Ammonia.
SPIRITUS ALKALI VOLATILIS.
Dub.
Spirit of Volatile Alkali.

Take of
 Proof-ſpirit, three pints;
 Sal ammoniac, four ounces;
 Potaſhes, ſix ounces.
Mix, and diſtil with a ſlow fire, one pint and an half.

WHEN muriate of ammonia is decompoſed by carbonate of potaſs, the product is a mixture of carbonate of ammonia with a variable quantity of ammonia; for the carbonate of potafs is never faturated with carbonic acid. Again, as diluted alcohol is employed in this procefs, and one-half only is drawn off, it is evident that there is either a want of economy, or the whole alcohol comes over before any of the water. But if the latter fuppofition be true, there is alfo a want of economy, for the alcohol will diffolve only the ammonia, and leave the whole carbonate undiffolved. The fact is, that when we perform the procefs as directed by the Colleges, a very large proportion of carbonate of ammonia fublimes, which remains undiffolved in the diftilled liquor; but as this liquor (after the particles of carbonate of ammonia, which were diffufed through it, have feparated in the form of very regular cryftals, adhering to the fides of the veffel) effervefces with acids, the diftilled liquor cannot be pure alcohol, but muft contain a proportion of water capable of diffolving fome carbonate of ammonia. From both confiderations, it appears to us, that the procefs directed, if not unchemical, is at leaft uneconomical.

It is remarkable that the Edinburgh College, for what reafon we know not, fhould have adopted, in the two laft editions of their Pharmacopœia, this procefs from the London College, and relinquifhed one which to us appears unexceptionable, as it is not attended with the fmalleft lofs, either of alcohol or ammonia, and gives both a more active and a more uniform preparation. A ftrong proof of its fuperiority is, that the apothecaries ftill continue to follow it, although it has been rejected by the College. We fhall therefore infert it here without any alteration, except of the nomenclature.

Take of
- Quicklime, fixteen ounces;
- Muriate of ammonia, eight ounces;
- Alcohol, thirty-two ounces.

Having bruifed and mixed the quicklime and muriate of ammonia, put them into a glafs-retort; then add the alcohol, and diftil to drynefs, in the manner directed for the water of ammonia.

CARBONAS AMMONIÆ; olim, AMMONIA PRÆPARATA. *Edin.*

Carbonate of Ammonia, formerly *Prepared Ammonia.*

Take of
- Muriate of ammonia, one pound;
- Pure carbonate of lime, (commonly called chalk), dried, two pounds.

Having triturated them feparately, mix them thoroughly, and fublime from a retort into a refrigerated receiver.

AMMONIA

Ammonia Præparata.
Lond.
Prepared Ammonia.

Take of
Sal ammoniac, powdered, one pound;
Prepared chalk, two pounds.
Mix and ſublime.

Alkali Volatile Mite.
Dub.
Mild Volatile Alkali.

Take of
Sal ammoniac, in powder, one pound;
Prepared chalk, two pounds.
Dry them with the greateſt care; and having mixed them, introduce them into a retort. By means of heat ſublime the alkaline ſalt, which is to be received in a proper veſſel.

In this proceſs the two ſubſtances employed undergo a mutual decompoſition, the muriatic acid combining with the lime, and the carbonic acid with the ammonia. The proportion of carbonate of lime directed, is perhaps more than ſufficient to decompoſe the muriate of ammonia; but it is the ſafe ſide to err on; for it is only ſometimes inconvenient, from obliging us to make uſe of larger veſſels, whereas, if any portion of the muriate of ammonia were to remain undecompoſed, it would ſublime along with the carbonate, and render the product impure. Göttling uſes three parts of chalk to two of muriate of ammonia, but he dries his chalk before he weighs it. The chalk is always to be very thoroughly dried before it is uſed in this preparation, as the preſence of moiſture injures the product. The ingredients are to be thoroughly mixed by trituration, before they are introduced into the retort, that no part of the muriate of ammonia may eſcape decompoſition; and we are even ſometimes directed to cover the ſurface of the mixture, after they are in the retort, with powdered chalk. This, however, is unneceſſary. Carbonate of lime does not act on muriate of ammonia till a conſiderable heat be applied. Göttling ſays, that the ſublimation muſt be conducted in the open fire, and therefore uſes an earthen-ware cucurbit, with a tubulated capital. When a glaſs-retort is employed, it ſhould have a very wide neck; and the beſt form for the receiver is cylindrical, as it enables us to get out the carbonate of ammonia condenſed in it without breaking it. The reſiduum which remains in the retort, furniſhes muriate of lime by lixiviation and evaporation.

Sometimes carbonate of potaſs is employed for the preparation of carbonate of ammonia. The theory of the proceſs is the ſame, and the decompoſition is effected at a lower temperature. But as potaſs potafs is very rarely faturated with carbonic acid, part of the ammonia is evolved in the form of gas, which, if not permitted to efcape, will burft the veffels. To prevent this lofs, therefore, Mr Göttling ufes a cucurbit and capital, furnifhed with a bent tube, which is to be immerfed in a phial of water: By which contrivance, while the carbonate of ammonia is condenfed in the capital, the gafeous ammonia is abforbed by the water. When potafs is ufed, the refiduum contains muriate of potafs.

Carbonate of ammonia is obtained in the form of a white cryftallized mafs, of a fibrous texture, having the fmell and tafte of ammonia, but weaker. It is foluble in twice its weight of cold water, and is more foluble as the temperature of the water increafes; but when it approaches to a boiling heat, the carbonate is volatilized. It is infoluble in alcohol. It is permanent in the air, and is not decompofed, but is eafily vaporized by heat. It is faid to vary very much in its compofition, and to contain more ammonia, and lefs acid and water, in proportion to the high temperature employed in preparing it, the quantity of alkali varying from 50 to 20 *per cent.* It is decompofed by moft of the acids, and all the alkaline and fome of the earthy bafes; by the earthy fulphates, except thofe of baryta and ftrontia; by the earthy fulphites, muriates and fluates; by the nitrates of baryta, and fuperphofphate of lime.

Carbonate of ammonia exactly refembles ammonia in its action on the living body; but is weaker, and is principally ufed as fmelling falts in fyncope and hyfteria.

AQUA CARBONATIS AMMONIÆ; olim, AQUA AMMONIÆ. *Edin.*

Water of Carbonate of Ammonia, formerly *Water of Ammonia.*

Take of

Muriate of ammonia,

Carbonate of potafs, each fixteen ounces;

Water, two pounds.

Having mixed the falts, and put them into a glafs-retort, pour the water upon them, and diftil to drynefs in a fand-bath, gradually increafing the heat.

AQUA AMMONIÆ.

Lond.

Water of Ammonia.

Take of

Sal ammoniac, one pound;

Potafhes, one pound and a half;

Water, four pints.

Draw off two pints by diftillation, with a flow fire.

LIQUOR

LIQUOR ALKALI VOLATILIS MITIS.
Dub.
Liquor of Mild Volatile Alkali.

Take of
Mild vegetable alkali,
Muriate of ammonia, each ſixteen ounces;
Water, two pounds.
Draw off the liquor by diſtillation until the reſiduum become dry.
The ſpecific gravity of this liquor is to that of diſtilled water as 1110 to 1000.

THE product of this proceſs is a ſolution of carbonate of ammonia, while the reſiduum in the retort is muriate of potaſs. In this inſtance, the decompoſition of the muriate of ammonia cannot be effected by carbonate of lime, becauſe the addition of the water prevents the application of the neceſſary heat, whereas carbonate of potaſs acts at a moderate temperature. The directions of the London College differ from thoſe of the other Colleges in two particulars; in the quantity of water added, and in the proportion of carbonate of potaſs employed. The addition of more water than what is to be drawn off by diſtillation, muſt increaſe the ſize of the apparatus employed, an inconvenience always to be avoided, if poſſible. With regard to the quantity of carbonate of potaſs employed, from calculation, and the authority of the beſt writers, for we do not ſpeak from experience, we are diſpoſed to think the London College in the right: For the 42.75 parts of muriatic acid in 100 parts of muriate of ammonia, require 84.12 of potaſs to ſaturate them; but in 100 parts of carbonate of potaſs there are not above 50 parts of potaſs, ſo that carbonate of potaſs is not capable of decompoſing an equal weight of muriate of ammonia.

LIQUOR VOLATILIS, SAL, ET OLEUM CORNU CERVI. *Lond.*
The volatile Liquor, Salt, and Oil of Harts-horn.

Take of
Harts-horn, ten pounds.
Diſtil with a fire gradually increaſed. A volatile liquor, ſalt, and oil will aſcend.
The oil and ſalt being ſeparated, diſtil the liquor three times.
To the ſalt add an equal weight of prepared chalk, and ſublime thrice, or till it become white.
The ſame volatile liquor, ſalt, and oil, may be obtained from any animal ſubſtance except fat.

LIQUOR VOLATILIS CORNU CERVINI.
Dub.
Volatile Liquor of Harts-horn.

Take of
Harts-horn, any quantity.

Put it into a retort, and diftil with a gradually increafed heat, the volatile liquor, falt, and oil. Then repeat the diftillation of the volatile liquor until it become as limpid as water, feparating by filtration the oil and falt after each diftillation.

The fpecific gravity of this liquor is to that of diftilled water as 1110 to 1000.

If harts-horn cannot be had, the bones of any other animal may be fubftituted for them.

THE wholefale dealers have very large pots for this diftillation, with earthen heads, almoft like thofe of the common ftill; for receivers, they ufe a couple of oil jars, the mouths of which are luted together; the pipe that comes from the head, is connected by means of an adopter with the lower jar, which is alfo furnifhed with a cock for drawing off the fluids condenfed in it. The upper jar is entire, and in it is condenfed the folid carbonate of ammonia. When a large quantity of the fubject is to be diftilled, it is cuftomary to continue the operation for feveral days fucceffively; only unluting the head occafionally, to put in frefh materials. When the upper jar becomes entirely filled with carbonate of ammonia, it cracks. It is then to be removed, the falt to be taken out of it, and a frefh one fubftituted in its place.

When only a fmall quantity of fpirit or falt is wanted, a common iron-pot, fuch as is ufually fixed in fand furnaces, may be employed; an iron-head being fitted to it. The receiver ought to be large, and a glafs, or rather tin, adopter inferted between it and the pipe of the head.

The diftilling veffel being charged with pieces of horn, a moderate fire is applied, which is flowly increafed, and raifed at length almoft to the utmoft degree. At firft water arifes, which gradually acquires colour and fmell, from the admixture of empyreumatic oil and ammoniacal falts; carbonate of ammonia next arifes, which at firft diffolves, as it comes over, in the water, and thus forms what is called the *fpirit*. When the water is faturated, the remainder of the falt concretes in a folid form to the fides of the recipient. If it be required to have the whole of the falt folid, and undiffolved, the water fhould be removed as foon as the falt begins to arife, which may be known by the appearance of white fumes; and that this may be done the more commodioufly, the receiver fhould be left unluted, till this firft part of the procefs be finifhed. The white vapours which now arife, fometimes come over with fuch vehemence as to throw off or burft the receiver: to prevent this accident, it is convenient to have a fmall hole in the luting,

luting, which may be occaſionally ſtopped with a wooden peg, or opened, as the operator ſhall find proper. Laſtly, the oil ariſes, which acquires greater colour and conſiſtency as the operation advances. Carbonate of ammonia ſtill comes over, but it is partly diſſolved in the hot oily vapour. At the ſame time, there is a conſiderable diſengagement of gas, conſiſting of a mixture of carburetted hydrogen, often containing ſulphur and phoſphorus, and of carbonic acid.

All the liquid matters being poured out of the receiver, the ſalt which remains, adhering to its ſides, is to be waſhed out with a little water, and added to the reſt. It is convenient to let the whole ſtand for a few hours, that the oil may the better diſengage itſelf from the liquor, ſo as to be firſt ſeparated by a funnel, and afterwards more perfectly by filtration through wet paper.

None of theſe products, except perhaps a ſmall quantity of the water, exiſt ready formed in the matter ſubjected to the diſtillation, but are produced by a new arrangement of its conſtituents. For the production of ammonia, it is abſolutely neceſſary that it contain nitrogen, or be what we have called a quaternary oxide. Although ſome vegetable, and moſt animal ſubſtances, are of this kind, yet only the moſt ſolid parts of animals, ſuch as bone and horn, are employed for the production of ammonia; becauſe they furniſh it leſs mixed with other ſubſtances, are eaſily obtained, and at little expence, and are very manageable in the diſtillation. On the application of heat, as ſoon as all the water which they contained is expelled, their elements begin to act on each other, and to form binary, or at moſt ternary compounds. Water is formed of part of the oxygen and hydrogen, ammonia of nitrogen and hydrogen, carbonic acid of carbon and oxygen, then oil of hydrogen and charcoal, while the ſuperfluous carbon remains in the retort in the ſtate of charcoal. As the formation of theſe ſubſtances is ſimultaneous, or in immediate ſucceſſion, they are not obtained ſeparately, but are mixed with each other. The water is ſaturated with carbonate of ammonia, and impregnated with empyreumatic oil, while the carbonate of ammonia is diſcoloured with oil; and the oil contains carbonate of ammonia diſſolved in it. They may, however, be ſeparated from each other in a great meaſure, in the manner already deſcribed. But a ſmall portion of oil obſtinately adheres both to the ſalts and its ſolution, which conſtitutes the only difference between ſalt and ſpirit of hartshorn, as they are called, and the purer carbonate of ammonia, as obtained by the decompoſition of muriate of ammonia.

AQUA

AQUA ACETITIS AMMONIÆ; vulgo, SPIRITUS MINDERERI. *Edin.*

Water of Acetite of Ammonia, commonly called *Spirit of Mindererus.*

Take of

Carbonate of ammonia in powder, any quantity.

Pour upon it as much diftilled acetous acid as may be fufficient to faturate the ammonia exactly.

AQUA AMMONIÆ ACETATÆ.
Lond.
Water of Acetated Ammonia.

Take of

Ammonia, two ounces;

Diftilled vinegar, four pints, or what may be fufficient to faturate the ammonia.

Mix them.

LIQUOR ALKALI VOLATILIS ACETATI.
Dub.
Liquor of Acetated Volatile Alkali.

Take of

Mild volatile alkali, two ounces;

Diftilled vinegar, three pounds and a half, or as much as may be fufficient to faturate the volatile alkali.

Mix them gradually by agitating them well together.

By this procefs we obtain acetite of ammonia, diffolved in the water of the acetous acid; but as this is apt to vary in quantity, the folution alfo varies in ftrength, and the cryftallization of the falt is attended with too much difficulty to be practifed for pharmaceutical purpofes. Its cryftals are long, flender and flatted, of a pearly white colour, and of a cool fweetifh tafte, are very deliquefcent, melt at 170°, and fublime at 250°. It is decompofed by the acids, alkalies, and feveral of the earths, and metalline falts; and when in folution, its acid is decompofed fpontaneoufly, and by heat.

Different propofals have been made to get a folution of greater ftrength and uniformity, than that ftill retained by the Britifh Colleges. Mr Löwe faturates four ounces of carbonate of potafs with diftilled vinegar, and evaporates the folution to 36 ounces. He then mixes it with two ounces of muriate of ammonia, and diftils the mixture in a glafs-retort. Acetite of ammonia comes over. The laft edition of the Pruffian Pharmacopœia prepares it by faturating three ounces of carbonate of ammonia with a ftrong acetous acid, (obtained by diftillation from acetite of foda, diffolved in two parts of water, and decompofed by fulphuric acid), and diluting the folution with water, fo that it fhall weigh twenty four ty-four ounces. One ounce, therefore, contains the alkali of a drachm of carbonate of ammonia.

Acetite of ammonia, when assisted by a warm regimen, proves an excellent and powerful sudorific; and as it operates without quickening the circulation or increasing the heat of the body, it is admissible in febrile and inflammatory diseases, in which the use of stimulating sudorifics are attended with danger. Its action may likewise be determined to the kidneys, by walking about in a cool air. The common dose is half an ounce, either by itself, or along with other medicines adapted to the same intention.

HYDRO SULPHURETUM AMMONIÆ.

Edin.

Hydro-Sulphuret of Ammonia.

Take of

Water of ammonia, four ounces;

Subject it in a chemical apparatus to a stream of the gas, which arises from

Sulphuret of iron, four ounces,

Muriatic acid, eight ounces, previously diluted with two pounds and a half of water.

Sulphuret of Iron is conveniently prepared for this purpose, from

Purified filings of iron, three parts;

Sublimed sulphur, one part.

Mixed and exposed to a moderate degree of heat in a covered crucible, until they unite into a mass.

Sulphuretted hydrogen is capable of combining with different bases in the manner of an acid. In the present preparation, it is combined with ammonia. It is obtained by decomposing sulphuret of iron with muriatic acid. As soon as the acid, by its superior affinity, separates the iron from the sulphur, the latter immediately re-acts on the water, the oxygen of which forms with one portion of it sulphuric acid, while the hydrogen dissolves another portion, and forms sulphuretted hydrogen gas. The combination of this with ammonia is facilitated by reduction of temperature, and by making it pass through a column of the water of ammonia by means of an apparatus, such as Woulfe's or Nooth's. Trommsdorff has proposed, that the sulphuretted hydrogen gas should be obtained by the decomposition of sulphuret of potass; but in this way its formation is too rapid to be easily managed. Göttling says, that the acid should be added gradually, and that the whole must be constantly agitated. But these precautions are rendered unnecessary, by diluting the acid in the degree directed by the pharmacopœia. Mr Cruickshank, who first suggested the use of hydro sulphuret of ammonia in medicine, directs the sulphuret of iron to be prepared by heating a bar of iron to a white heat

heat in a ſmith's forge, and rubbing againſt the end of it a roll of ſulphur. The iron at this temperature immediately combines with the ſulphur, and forms globules of ſulphuretted iron, which ſhould be received in a veſſel filled with water. It is, however, more conveniently obtained in the manner directed by the College. Iron is capable of combining with two proportions of ſulphur. At a high temperature it combines with 60 *per cent.*, and has a dull blackiſh colour. In this ſtate it is fit for the production of ſulphuretted hydrogen gas. At a lower temperature it takes up 90 *per cent.* of ſulphur, acquires a greeniſh yellow colour, and in every reſpect reſembles native pyrites. This cannot be decompoſed by acids, and is therefore unfit for the production of gas; but it may be reduced to the ſtate of iron ſulphuretted to the minimum, by expoſing it to a ſufficiently high temperature, or by melting it with half its weight of iron-filings. It was probably from not attending to the different ſtates of ſulphuretted iron, that ſome of the German chemiſts failed in their attempts to procure from it ſulphuretted hydrogen gas, and had recourſe to ſulphuret of potaſs.

Hydro-ſulphuret of ammonia, or more correctly Sulphuretted hydroguret of ammonia, acts powerfully on the living ſyſtem. It induces vertigo, drowſineſs, nauſea and vomiting, and leſſens the action of the heart and arteries. It therefore ſeems to be a direct ſedative. According to the doctrine of the chemical phyſiologiſts, it is a powerful diſoxygenizing remedy. It has only been uſed in diabetes by Dr Rollo and others, under the name of Hepatized Ammonia, in doſes of five or ten drops twice or thrice a-day.

CHAP. IV.

EARTHS, AND EARTHY SALTS.

MURIAS BARYTÆ.

Edin.

Muriate of Baryta.

Take of

Sulphate of baryta, two pounds;

Charcoal of wood in powder, four ounces.

Roaſt the ſulphate with fire, that it may be more eaſily reduced to a very fine powder, with which the charcoal is to be intimately

mately mixed. Put the mixture into a crucible, and having fitted it with a cover, heat it with a ſtrong fire for ſix hours. Then triturate the matter well, and throw it into ſix pounds of water in an earthen or glaſs veſſel, and mix them by agitation, preventing as much as poſſible the action of the air.

Let the veſſel ſtand in a vapour bath until the part not diſſolved ſhall ſubſide, then pour off the liquor. On the undiſſolved part pour four pounds more of boiling water, which, after agitation and depoſition, are to be added to the former liquor. Into the liquor while ſtill warm, or, if it ſhall have cooled, again heated, drop muriatic acid as long as it excites any efferveſcence. Then ſtrain it and evaporate it ſo as to cryſtallize.

In the materia medica of the Edinburgh College, the carbonate of baryta is introduced, for the purpoſe of forming the muriate; but as that mineral is not very common, and ſometimes not to be procured, it became neceſſary to deſcribe the manner of preparing the muriate from the ſulphate. This is, however, attended with very conſiderable difficulties, on account of the very ſtrong attraction which ſubſiſts between the ſulphuric acid and baryta.

The ſulphate of baryta may be decompoſed,

1. By compound affinity; by means of carbonate of potaſs.
2. By decompoſing its acid; by means of charcoal.

Carbonate of potaſs is capable of effecting this decompoſition, either in the dry or humid way. Klaproth boils 16 ounces of finely powdered ſulphate of baryta with 32 ounces of purified carbonate of potaſs, and five pounds of water, for an hour in a tin-kettle, conſtantly agitating the mixture, and renewing the water as it evaporates. He then allows it to ſettle, pours off the fluid, which is a ſolution of ſulphate of potaſs, and edulcorates the precipitate with plenty of water. He next diſſolves the carbonate of baryta, which it contains, in muriatic acid. The portion of ſulphate which is not decompoſed, may be treated again in the ſame manner.

On the other hand, Van Mons mixes equal parts of ſulphate of baryta and carbonate of potaſs with one fourth of their weight of charcoal all in powder, and heats the mixture to redneſs in a crucible. When it cools he waſhes out the ſulphate and ſulphuret of potaſs with water, then boils the reſiduum with a little potaſs, and waſhes it again. The carbonate of baryta thus obtained, he diſſolves in muriatic acid

But by theſe methods of decompoſing the ſulphate of baryta, we do not get rid of the metallic ſubſtances which it often contains, and which often render the muriate thus prepared unfit for medical uſe. But the metalline muriates may be expelled according to Weſtrumb, by heating the ſalt to redneſs as long as any fumes ariſe. The pure muriate of baryta is then to be diſſolved in water and cryſtallized. Göttling, with the ſame intention of getting rid of metalline ſubſtances, chooſes ſulphate of baryta, perfectly colourleſs, and treats it with muriatic or nitro-muriatic acid before he proceeds to decompoſe it.

The acid of the ſulphate of baryta is decompoſed at a very high temperature by charcoal. At ſuch a temperature charcoal has a greater affinity for oxygen than ſulphur has; it therefore decompoſes ſulphuric acid, by depriving it of its oxygen, and flies off in the ſtate of carbonic oxide or acid gas, while the ſulphur combines with the baryta. On adding water to the ſulphuret thus formed, new combinations take place. A portion of ſulphate of baryta is regenerated, while hydroguretted ſulphuret and ſulphuretted hydroguret of baryta remain in ſolution. This ſolution is exceedingly prone to decompoſition, and muſt therefore be preſerved from the action of the air as much as poſſible. It alſo cryſtallizes by cooling, and therefore ſhould be kept at a boiling heat. On the addition of muriatic acid, there is a violent efferveſcence and diſengagement of ſulphuretted hydrogen gas, while very pure muriate of baryta remains in ſolution. When prepared in this way, it cannot be contaminated with any of the noxious metals, as their compounds with ſulphur and hydrogen are not ſoluble. On this account, therefore, it is the proceſs adopted by the Edinburgh College.

Muriate of baryta commonly cryſtallizes in tables. It has a diſagreeable bitter taſte; is ſoluble in five parts of water at 60°, and in leſs boiling water. It is ſcarcely ſoluble in alcohol; and its ſolution burns with a yellow flame. It cryſtallizes by evaporation; its cryſtals are permanent; and by the action of heat decrepitate, dry and melt. When cryſtallized it contains 20 acid, 64 baryta, and 16 water; when dried, 23.8 acid, and 76.2 baryta. It is decompoſed by the ſulphates, nitrates, and ſulphites; and by the alkaline phoſphates, borates and carbonates. When pure it has no colour; does not deliqueſce; does not burn with a red or purple flame when diſſolved in alcohol; and is not precipitated by gallic acid, pruſſiate of potaſs and iron, or hydro-ſulphuret of ammonia.

It is commonly given in ſolution.

SOLUTIO MURIATIS BARYTÆ.

Edin.

Solution of Muriate of Baryta.

Take of
  Muriate of baryta, one part;
  Diſtilled water, three parts. Diſſolve.

THE proportion of water directed here for the ſolution of muriate of baryta, is conſiderably leſs than what is ſtated to be neceſſary

ceſſary by the writers on chemiſtry. It is however ſufficient, even at the loweſt ordinary temperatures, a circumſtance which ſhould be attended to in making ſaturated ſolutions of ſaline bodies.

Muriate of baryta is generally ſaid by writers on the materia medica to be a *ſtimulant* deobſtruent; and yet Hufeland, one of its greateſt ſupporters, ſays, that it ſucceeds better in caſes attended with inflammation and increaſed irritability than with atony and torpor. When given in large doſes, it certainly produces nauſea, vomiting, diarrhœa, vertigo, and death.

Its effects on a morbid ſtate of the body are alſo diſputed. Some aſſert that it is of advantage in no diſeaſe; while others beſtow upon it the moſt unqualified praiſes. By the latter, it is principally celebrated,

1. In all caſes of ſcrofula.
2. In obſtructions and tumors.
3. In caſes of worms.
4. In cutaneous diſeaſes.

The doſe of the ſolution at firſt, is five or ten drops twice or thrice a-day, to be gradually and cautiouſly increaſed to as much as the patient can bear.

The ſolution is alſo uſed externally as a ſtimulating and gently eſcharotic application in cutaneous diſeaſes, fungous ulcers, and ſpecks upon the cornea.

AQUA CALCIS.

Edin.

Lime-water.

Take of

Freſh burnt lime, half a pound;

Put it into an earthen veſſel, and gradually ſprinkle on it four ounces of water, keeping the veſſel ſhut, while the lime grows hot, and falls into powder. Then pour on it twelve pounds of water, and mix the lime thoroughly with the water, by agitation. After the lime has ſubſided, repeat the agitation; and let this be done about ten times, always keeping the veſſel ſhut, that the free acceſs of the air may be prevented. Laſtly, let the water be filtered through paper, placed in a funnel, with glaſs rods interpoſed between them, that the water may paſs as quickly as poſſible. It muſt be kept in very cloſe bottles.

Lond.

Take of

Quicklime, half a pound;

Boiling diſtilled water, twelve pints.

Mix and ſet them aſide in a covered veſſel for an hour; then pour off the liquor, which is to be kept in a cloſe-ſtopt veſſel.

Dub.

Take of

Lime recently burnt;

Boiling water, each one pound.

Put the lime into an earthen veffel, and fprinkle the water upon it, keeping the veffel fhut while the lime grows warm and falls into powder; then pour upon it twelve pounds of water, and fhut the veffel, agitating it frequently for twenty-four hours; laftly, filter the water through paper, placed in a covered funnel, and keep it in well-clofed bottles.

We have already had occafion to fpeak of the properties of lime, (§ 100. and p. 171.), and fhall therefore now confine our remarks to the folution of it in water, commonly called Lime-water. In making this, we fhould firft add only fo much water as is fufficient to flake the lime, which reduces it to a fine powder, eafily diffufed through water; for if we add more water at firft, it forms a pafte with the external part of the lime, and defends the internal from the action of the water. During the whole procefs, the air muft be excluded as much as poffible; as lime has a very ftrong affinity for carbonic acid, and attracts it from the atmofphere. The proportion of water ufed is fcarcely able to diffolve one-tenth of the lime; but lime is of little value; and our object is to form a faturated folution quickly and eafily. Lime is not more foluble in hot water than in cold; therefore it is unneceffary to ufe boiling water. The London College decant their folution from the undiffolved lime; but in this way we are not fo fure of a perfectly tranfparent folution as by filtration, and if we ufe the precautions directed by the other colleges, it may be performed without the lime abforbing a perceptible quantity of carbonic acid. The bottles in which lime-water is kept, fhould be perfectly full, and well-corked.

Lime-water is tranfparent and colourlefs. It has an auftere acrid tafte, and affects vegetable colours as the alkalies do. It enters very readily into combination with all the acids, fulphur and phofphorus; and decompofes the alkaline carbonates, phofphates, fluates, borates, oxalates, tartrites, and citrates.

When applied to the living fibre, lime-water corrugates and fhortens it; it therefore poffeffes aftringent powers. It is alfo a powerful antacid, or at leaft it combines with and neutralizes acids when it comes in contact with them. It alfo diffolves mucus, and kills internal worms. From poffeffing thefe properties, it is ufed in medicine, in difeafes fuppofed to arife from laxity and debility of the folids, as diarrhœa, diabetes, leucorrhœa, fcrofula, and fcurvy; in affections of the ftomach accompanied with acidity and flatulence; when the inteftines are loaded with mucus; and in worms. Lime-water is fcarcely capable of diffolving, even out of the body, any of the fubftances of which urinary calculi confift;

fift; it has therefore no pretenfions to the character of a lithontriptic. It has been alfo recommended in crufta lactea, in cancer, and in chronic cutaneous difeafes. Externally it is applied to ill-conditioned ulcers, gangrenous fores; as a wafh in tinea capitis and pfora; and as an injection in gonnorhœa, fiftulas, and ulcers of the bladder.

When taken internally, its tafte is faid to be beft covered by lukewarm milk. Its dofe is commonly from two to four ounces, frequently repeated; but when long continued it weakens the organs of digeftion.

CARBONAS CALCIS PRÆPARATUS; olim, CRETA PRÆPARATA, ET CANCRORUM LAPILLI; vulgo, OCULI CANCRORUM PRÆPARATI.

Edin.

Prepared Carbonate of Lime; formerly *Prepared Chalk, and Crabs Stones, commonly called Crabs Eyes.*

CARBONATE of lime, whether the fofter variety commonly called Chalk, or the harder variety called Crabs Eyes and Crabs Stones, after having been triturated to powder in an iron mortar, and levigated on a porphyry ftone with a little water, is to be put into a large veffel, and water to be poured upon it, which after agitating the veffel repeatedly is to be again poured off, while loaded with minute powder. On allowing the water to fettle, a fubtile powder will fubfide, which is to be dried.

The coarfe powder which the water could not fufpend, may be levigated again and treated in the fame manner.

QUORUNDAM, AQUA NON SOLUBILIUM, PRÆPARATIO. *Lond.*

The Preparation of fome Subftances not foluble in Water.

Reduce thefe fubftances firft in a mortar to powder; and pouring on a little water, levigate it on a hard and polifhed, but not calcareous, ftone, that it may be made as fine as poffible. Dry this powder on blotting-paper laid on chalk, and fet it in a warm, or at leaft a dry, place, for fome days.

In this manner are to be prepared,

- Amber,
- Antimony,
- Calamine,
- Chalk,
- Coral,
- Crabs claws, firft broken into fmall pieces, and wafhed with boiling water,
- Oyfter-fhells, firft cleaned from impurities,
- Tutty,
- Verdigris.

CANCRORUM CHELÆ PRÆPARATÆ.

Dub.

Prepared Crabs Claws.

Wash the powdered claws in water mixed with about a sixth part of caustic ley, until the adhering saline and animal particles be entirely separated from the earthy particles, which are to be washed by frequently pouring upon them boiling water. With the addition of a little water, they are then to be ground in a stoneware mortar to powder, which is to be mixed by agitation with a sufficiently large quantity of water. After a short delay, that is, until the coarser particles subside, the liquor is to be poured off. The same process, by repeating the trituration, may be performed several times. Lastly, the very minute powder swimming in the water poured off, is to be collected after it has subsided, and dried upon paper placed on a bibulous stone.

Creta Præparata.	*Prepared Chalk.*
Ostrearum Testæ Præparatæ,	*Prepared Oyster-shells.*
Ovorum Testæ Præparatæ.	*Prepared Egg-shells.*

These are all to be prepared in the same way as crabs claws.

The preparation of these substances merely consists in reducing them to an impalpable powder; which is effected by trituration (§ 2.38.), and levigation (§ 2.49.); and the finer particles are separated from the coarser by elutriation (§ 2.43.); and afterwards from the water which suspended them, by subsidence and decantation (§ 2.41.) The solution of potass, is used by the Dublin College to dissolve the animal matter contained in the different shells; which is apt to keep the carbonate of lime too long suspended, and to give it a bad smell if not quickly dried. But these inconveniences are totally avoided by using chalk, which, as a medicine, is not inferior to the costly coral.

Carbonate of lime is commonly called an Absorbent Earth. It certainly is an antacid; that is, it combines with and neutralizes most acids, while its carbonic acid is expelled in the form of gas. It is therefore exhibited in affections of the stomach accompanied with acidity, especially when at the same time there is a tendency to diarrhœa. The fear of its forming concretions in the bowels, is probably imaginary; for it is not warranted either by theory or experience.

Applied externally, carbonate of lime may be considered as an absorbent in another point of view; for its beneficial action on burns and ulcers, probably arises entirely from its imbibing the moisture or ichorous matter, as a spunge would do, and thus preventing it from acting on the abraded surfaces, and excoriating the neighbouring parts.

SOLUTIO

SOLUTIO MURIATIS CALCIS.

Edin.

Solution of Muriate of Lime.

Take of
- Pure carbonate of lime, that is, white marble, broken into pieces, nine ounces;
- Muriatic acid, ſixteen ounces;
- Water, eight ounces.

Mix the acid with the water and gradually add the pieces of carbonate of lime. When the effervеſcence has ceaſed, digeſt them for an hour; pour off the liquor and evaporate it to dryneſs. Diſſolve the reſiduum in its weight and a half of water; and, laſtly, filter the ſolution.

From the difficulty of cryſtallizing this ſalt, it is directed to be evaporated to dryneſs, to the total expulſion of its water of cryſtallization, as being the ſureſt way of obtaining a ſolution of it of uniform ſtrength.

Its cryſtals are priſms of ſix ſmooth and equal ſides, but they are often ſo aggregated that they can only be termed acicular. Its taſte is pungent, bitter and diſagreeable. When heated, it melts, ſwells, and loſes its water of cryſtallization, and at a very high temperature a ſmall part of its acid. It is one of the moſt deliqueſcent ſalts that we know, and is ſo ſoluble in water, that that fluid ſeems capable of diſſolving twice its weight, or at leaſt forms with it a viſcid liquid; but as it is ſtill capable of attracting moiſture from the air, and of emitting caloric when farther diluted, it can ſcarcely be conſidered as a true ſolution. It is ſoluble in alcohol, and its ſolution burns with a crimſon flame. It is decompoſed by the ſulphuric, nitric, phoſphoric, fluoric and boracic acids; by baryta, potaſs, ſoda and ſtrontia; by moſt of the ſulphates, ſulphites, nitrates, phoſphates, fluates, borates, and the alkaline carbonates. Cryſtallized, it contains 31 acid, 44 lime, and 25 water; dried at a red heat 42 acid, 50 lime, and 8 water.

It was firſt propoſed as a medicine by Fourcroy, in ſcrofulous and glandular diſeaſes, and has been lately extolled with extravagant praiſes by Dr Beddoes in the ſame affections. A drachm diluted with an ounce of water he conſiders as a medium doſe. In an overdoſe it has produced qualms and ſickneſs; and three drachms and a half killed a dog, the ſtomach of which, upon diſſection, had its villous coat bloodſhot, and in many parts almoſt thick and converted into a gelatinous ſlime. The property of this ſalt, of producing intenſe cold during its ſolution, might alſo be applied to medical uſe. For this purpoſe, it might be economically prepared, by ſaturating with muriatic acid the reſiduum of the diſtillation of ammonia or of carbonate of ammonia.

PHOSPHAS CALCIS.

CORNU CERVI USTIO.

Lond.

CORNU CERVINUM USTUM.

Dub.

Phosphate of Lime. Burnt Hartshorn.

Burn pieces of hartshorn till they become perfectly white; then reduce them to a very fine powder.

THE pieces of horn generally employed in this operation, are those left after distillation.

In the burning of hartshorn, a strong fire and the free admission of air are necessary. The potter's furnace was formerly directed for the sake of convenience; but any common furnace or stove will do. If the pieces of horn be laid on some lighted charcoal, spread on the bottom of the grate, they will be burnt to whiteness, still retaining their original form.

According to the analysis of Merat Guillot, hartshorn was found to consist of 27. gelatine, 57.5 phosphate of lime, 1. carbonate of lime, and there was a loss of 14.5, probably water. Now, as the gelatine is destroyed by burning, and the water expelled, the substance which remains is phosphate of lime, mixed with less than two *per cent.* of carbonate of lime.

From its white earthy appearance, it was formerly considered as an absorbent earth. But since it has been accurately analyzed, that idea has been laid aside, and its use has been suggested as a remedy in rickets, a disease in which the deficiency of the natural deposition of phosphate of lime in the bones seems to be the essential or at least most striking symptom. M. Bonhomme, therefore, gave it to the extent of half a scruple, mixed with phosphate of soda, in several cases with apparent success. Whatever objections may be made to his theory, the practice certainly deserves a trial.

MAGNESIA; olim, MAGNESIA USTA.

Edin.

Magnesia, formerly *Calcined Magnesia.*

Let carbonate of magnesia, put into a crucible, be kept in a red heat for two hours, then put it up in close-stopt glass vessels.

MAGNESIA USTA.

Lond. Dub.

Calcined Magnesia.

Take of

White magnesia, four ounces.

Expose it to a strong heat for two hours; and, when cold, set it by. Keep it in a glass-vessel closely stopt.

BY this process the carbonate of magnesia is freed of its acid and

and water; and, according to the late Dr Black's experiment, loſes about $\frac{7}{12}$ of its weight. A kind of opaque foggy vapour is obſerved to eſcape during the calcination, which is nothing elſe than a quantity of fine particles of magneſia, buoyed off along with a ſtream of the diſengaged gas. About the end of the operation, the magneſia exhibits a kind of luminous or phoſphoreſcent property, which may be conſidered as a pretty exact criterion of its being deprived of its acid.

It is to be kept in cloſe veſſels, becauſe it attracts, though ſlowly, the carbonic acid of the atmoſphere.

We have already (99.) noticed its general chemical properties. In medicine it is uſed for the ſame general purpoſes as the carbonate. In certain affections of the ſtomach, accompanied with much flatulence, magneſia is preferable, both becauſe it contains more magneſia in a given quantity, and, being deprived of its acid, it neutralizes the acid of the ſtomach, without any extrication of gas, which is often a troubleſome conſequence when carbonate of magneſia is emp . yed in theſe complaints.

CARBONAS MAGNESIÆ; olim, MAGNESIA ALBA.
Edin.
Carbonate of Magneſia, formerly *Magneſia Alba.*

Take of
 Sulphate of magneſia,
 Carbonate of potaſs, equal weights.

Diſſolve them ſeparately in double their quantity of warm water, and let the liquors be ſtrained or otherwiſe freed from the feces: then mix them, and inſtantly add eight times their quantity of warm water. Let the liquor boil for a little on the fire, ſtirring it at the ſame time; then let it reſt till the heat be ſomewhat diminiſhed; after which ſtrain it through linen: the carbonate of magneſia will remain upon the cloth, and it is to be waſhed with pure water till it become altogether void of ſaline taſte.

MAGNESIA ALBA.
Lond. Dub.
White Magneſia.

Take of
 Vitriolated magneſia,
 Prepared kali, each two pounds;
 Diſtilled water, boiling, twenty pints.

Diſſolve the vitriolated magneſia and prepared kali ſeparately, each in ten pints of water, and filter through paper; then mix them. Boil the liquor a little while, and ſtrain it whilſt hot through linen, upon which will remain the white magneſia; then waſh away, by repeated affuſions of diſtilled water, the vitriolated kali.

THE

The formula of the Dublin College does not differ from that of London, except in directing that the linen-strainer be stretched out so as to fit it for collecting the magnesia.

In this process there is a mutual decomposition of the two salts employed. The potass unites itself to the sulphuric acid, while the carbonic acid combines with the magnesia. The large quantity of water used is necessary for the solution of the sulphate of potass formed; and the boiling is indispensably requisite for the expulsion of a portion of the carbonic acid, which retains a part of the magnesia in solution. Sulphate of potass may be obtained from the liquor which passes through the filter, by evaporation. This is not pure, however, but mixed with undecomposed carbonate of potass; for 100 parts of crystallized carbonate of potass are sufficient for the decomposition of 125 parts of sulphate of magnesia; and as the carbonate of potass of commerce contains a larger proportion of alkali than the crystallized carbonate, a still less proportion should be used. From these quantities about 45 parts of carbonate of magnesia are obtained.

The ablutions should be made with very pure water; for nicer purposes distilled water may be used, and soft water is in every case necessary. Hard water for this process is peculiarly inadmissible, as the principle in waters, giving the property called *hardness*, is generally owing to a salt of lime, which decomposes the carbonate of magnesia, by compound affinity, giving rise to carbonate of lime, while the magnesia unites itself to the acid of the calcareous salt, by which the quantity of the carbonate is not only lessened, but is rendered impure by the admixture of carbonate of lime. Another source of impurity is the silica which the sub-carbonate of potass generally contains. It is most easily got rid off by exposing the alkaline solution to the air for several days before it is used. In proportion as it becomes saturated with carbonic acid, the silica is precipitated, and may be separated by filtration.

The carbonate of magnesia thus prepared is a very light, white, opaque substance, without smell or taste, effervescing with acids. It is not, however, saturated with carbonic acid. By decomposing sulphate of magnesia by an alkaline carbonate, without the application of heat, carbonate of magnesia is gradually deposited in transparent, brilliant, hexagonal crystals, terminated by an oblique hexagonal plane, and soluble in about 480 times its weight of water. The crystallized carbonate of magnesia consists of 50 acid, 25 magnesia, and 25 water; the sub-carbonate consists of 48 acid, 40 magnesia, and 12 water; and the carbonate of commerce of 34 acid, 45 magnesia, and 21 water. It is decomposed by all the acids, potass, soda, baryta, lime and strontia, the sulphate, phosphate, nitrate, and muriate of alumina, and the super-phosphate of lime.

Carbonate

Carbonate of magnefia is principally given to correct acidity of the ftomach, and in thefe cafes to act as a purgative; for folutions of magnefia in all acids are bitter and purgative; while thofe of the other earths are more or lefs auftere and aftringent. A large dofe of magnefia, if the ftomach contain no acid to diffolve it, neither purges nor produces any fenfible effect: a moderate one, if an acid be lodged there, or if acid liquors be taken after it, procures feveral ftools; whereas the common abforbents, in the fame circumftances, inftead of loofening, bind the belly. When the carbonate of magnefia meets with an acid in the ftomach, there is extricated a confiderable quantity of carbonic acid gas, which fometimes caufes uneafy diftention of the ftomach, and the fymptoms of flatulence. In fuch cafes, therefore, magnefia is preferable to its carbonate; but on other occafions good effects arife from the action of the gas evolved, as in naufea and vomiting.

ALUMINIS PURIFICATIO.

Lond.

Purification of Alum.

Take of
 Alum, one pound;
 Chalk, one drachm;
 Diftilled water, one pint.
Boil them a little, ftrain, and fet the liquor afide to cryftallize.

This procefs is fcarcely neceffary; for the alum of commerce is fufficiently pure for every purpofe; and we apprehend that the addition of the chalk is unchemical, as its only effect will be to decompofe part of the alum, without contributing to the purity of the reft.

SULPHAS ALUMINÆ EXSICCATUS; olim, Alumen Ustum. *Edin.*

Dried Sulphate of Alumine, formerly *Burnt Alum.*

Melt alum in an earthen or iron veffel, and keep it over the fire until it ceafe to boil.

Alumen Ustum.

Lond.

Burnt Alum.

Take of
 Alum, half a pound.
 Burn it in an earthen veffel as long as it boils.

Dub.

Take of
 Alum any quantity.
Expofe it in an earthen veffel to a ftrong fire until it ceafe to boil.

Mr

Mr CHAPTAL found that by exsiccation in red heat, alum of his own manufacture lost 0.67; Roman alum 0.50; English alum 0.47, and Levant alum only 0.40. These differences arise principally from different proportions of water of crystallization, but also form an excess of alumina, which the last contains.

According to Kirwan, crystallized alum consists of 17.66 acid, 12. alumina, and 70.24 water, and alum desiccated at 700° of 36.25 acid, and 63.75 basis, by which it would appear that at that heat it loses not only all its water, but also more than half its acid.

Dried alum is only applied externally as a gentle escharotic to fungous ulcers.

CHAP. V.

METALLINE PREPARATIONS.

ANTIMONY.

SULPHURETUM ANTIMONII PRÆPARATUM; olim, ANTIMONIUM PRÆPARATUM.

Edin.

ANTIMONIUM PRÆPARATUM.

Lond.

Prepared Sulphuret of Antimony, formerly *Prepared Antimony.*

Sulphuret of antimony is prepared in the same way as carbonate of lime (p. 415.)

STIBIUM PRÆPARATUM.

Dub.

Prepared Antimony.

It is reduced to powder, and the impalpable particles, which are to be kept for use, are procured in the manner directed for the preparation of crabs claws.

BY reducing the sulphuret of antimony to the state of an impalpable powder, it is both rendered much more active than it would otherwise be, and it is prevented from irritating the stomach mechanically, of which there would be some danger from the sharpness of its spiculæ. Even in this state, however, it is not a very certain remedy. In general, it operates as a very mild sudorific or cathartic; but sometimes, if it meet with much acid in the stomach, it becomes more active, producing vomiting or hypercatharsis. Therefore, it seems prudent to evacuate the primæ

viæ

viæ before it be exhibited, and to combine it with an abſorbent earth.

It is principally given in ſcrofula, glandular obſtructions, cutaneous diſeaſes and rheumatiſm. Its doſe is from 10 to 30 grains and upwards, and it is beſt exhibited in the form of a powder or bolus.

OXIDUM ANTIMONII CUM SULPHURE, PER NITRATEM POTASSÆ; olim, CROCUS ANTIMONII. *Edin.*

Oxide of Antimony, with Sulphur, by Nitrate of Potaſs, formerly *Crocus of Antimony.*

Take of
 Sulphuret of antimony,
 Nitrate of potaſs, equal weights.

After they are ſeparately powdered and well mixed, let them be injected into a red-hot crucible; when the deflagration is over, ſeparate the reddiſh metallic matter from the whitiſh cruſt; powder it and edulcorate it by repeated waſhings with hot water, till the water come off inſipid.

CROCUS ANTIMONII. *Lond.*
STIBIUM NITRO-CALCINATUM. *Dub.*

Crocus of Antimony. Antimony Calcined by Nitre.

Take of
 Antimony, powdered,
 Nitre, powdered; of each one pound;
 Sea-ſalt, one ounce.

Mix, and inject them by degrees into a red-hot crucible, and melt them, having augmented the heat. Pour out the melted matter; and, when cold, ſeparate it from the ſcoriæ.

IN this proceſs, the nitric acid of the nitre is decompoſed; the antimony is oxidized to that degree in which it forms the orange oxide of Thenard, containing 0.18 oxygen; part of the ſulphur is acidified, and combines with the potaſs of the nitre, while the remaining ſulphur combines with the oxide of the antimony, and forms a dark brown, opaque, vitrified maſs; ſo that after the ſcoriæ and other ſaline matters have been removed by waſhing, the ſubſtance which remains is a ſulphuretted oxide of antimony *.

With regard to the mode of preparation, Bergmann obſerves, that by the common proceſs of throwing the mixture into an ignited uncovered crucible, there is ſometimes a loſs of nearly one half,

* According to Prouſt, it conſiſts of three parts of oxide of antimony, and one of ſulphuret of antimony.

half, and therefore advises the mixture to be put into a cold crucible, which is to be covered and heated till the matter melts, by which means there is very little loss.

What is kept in the shops, is almost universally prepared with less nitre than is here ordered. The consequence is, that too much sulphur remains not acidified, the antimony is scarcely oxidized, and the preparation is unfit for the uses to which it ought to be applied. When nitre has been thus culpably economized, the crocus has a steel gray, instead of a liver brown colour. The addition of common salt, directed by the London and Dublin Colleges, is improper, as it is decomposed, and a portion of muriate of antimony is formed.

The sulphuretted oxide of antimony is a very uncertain preparation, often operating with very great violence. Its internal use is therefore almost proscribed, or at least confined to maniacal cases, and veterinary practice. It is, however, useful in pharmacy, as the basis of other preparations.

OXIDUM ANTIMONII, CUM SULPHURE, VITRIFICATUM; olim, VITRUM ANTIMONII.

Edin.

Vitrified Oxide of Antimony with Sulphur, formerly *Glass of Antimony.*

Strew sulphuret of antimony beat into a coarse powder like sand, upon a shallow unglazed earthen vessel, and apply a gentle heat underneath, that the antimony may be heated slowly: keeping it at the same time continually stirring, to prevent it from running into lumps. White vapours of a sulphureous smell will arise from it. When they cease with the degree of heat first applied, increase the fire a little, so that vapours may again arise; go on in this manner, till the powder, when brought to a red heat, exhales no more vapours. Melt this powder in a crucible with an intense heat, till it assumes the appearance of melted glass; then pour it out on a heated brass plate.

ANTIMONIUM VITRIFICATUM.

Lond.

Vitrified Antimony.

Take of

Powdered antimony, four ounces.

Calcine it in a broad earthen vessel with fire gradually raised, stirring it with an iron rod until it no longer emit smoke. Put this powder into a crucible, so as to fill two-thirds of it. A cover being fitted on, make a fire under it, at first moderate, afterwards stronger, until the matter be melted. Pour out the melted glass.

By this procefs, the fulphuret of antimony is deprived of the greateft part of its fulphur, while the antimony is at the fame time oxidized, fo as to form the dark brown oxide of Thenard, containing 0.16 of oxygen. But as this preparation is not eafily made in the manner here directed, unlefs in a furnace conftructed on purpofe, apothecaries may advantageoufly adopt the fynthetical method of Bergmann, which confifts in melting in a crucible, with one-twelfth or eight of its weight of fulphur, antimony oxidized to a maximum, by deflagrating it with more than twice its weight of nitre. At the temperature neceffary for melting it, the oxide of antimony lofes great part of its oxygen, and combines with the fulphur *.

In whichever way prepared, the glafs of antimony is tranfparent, and has a fine hyacinthine colour. On diffolving it in muriatic acid, it gives out fulphuretted hydrogen gas, which fhows that it is a hydroguretted fulphuret of antimony. Its operation is fo uncertain, that it is only ufed in making other preparations.

OXIDUM ANTIMONII VITRIFICATUM, CUM CERA; olim, VITRUM ANTIMONII CERATUM.

Edin.

Vitrified Oxide of Antimony with Wax; formerly *Cerated Glafs of Antimony.*

Take of
 Yellow wax, one part;
 Glafs of antimony, eight parts.

Melt the wax in an iron veffel, and throw into it the powdered glafs: roaft the mixture over a gentle fire for a quarter of an hour, continually ftirring it; then pour it out, and when cold grind it into powder.

The glafs melts in the wax with a very gentle heat: after it has been about twenty minutes on the fire, it begins to change its colour, and in ten more comes near to that of Scottifh fnuff; which is a mark of its being fufficiently prepared; the mixture lofes about one-ninth of its weight in the procefs.

This medicine was for fome time much efteemed in dyfenteries. The dofe is from two or three grains to twenty, according to the age and ftrength of the patient. In its operation, it makes fome perfons fick, and vomit; it purges almoft every one; though it has fometimes effected a cure without occafioning any evacuation or ficknefs. It is now, however, much lefs ufed than formerly.

SULPHUR

* Since the above was written, it appears from Mr. Prouft's experiments, that glafs of antimony confifts of about 8 parts of oxide of antimony at the minimum, and 1 of fulphuret of antimony.

SULPHUR STIBIATUM FUSCUM, olim, KERMES MINERALIS. *Dub.*

Brown Antimoniated Sulphur; formerly *Kermes Mineral.*

Take of
Prepared antimony,
Mild vegetable alkali, each one ounce.

Melt them together in a crucible, and when cold reduce the substance to powder. Put this into a matrafs with five pounds of pure water, and boil for an hour. Then remove the vessel from the fire; let it stand at rest for a little, and as soon as the liquor becomes clear, pour it cautiously from the sediment. When the liquor grows cool, the brown antimoniated sulphur will separate, which is to be dried on paper.

ACCORDING to Thenard, the brown precipitate consists of

72.760	brown oxide of antimony.
20.298	sulphuretted hydrogen.
4.156	sulphur.
2.786	water and loss.
100.	

He considers kermes mineral, therefore, as a sulphuretted hydroguret of antimony, especially as it differs from that which is prepared by the direct combination of its constituents, only in containing a small quantity of superabundant sulphur.

When the sulphuret of antimony and carbonate of potass are melted together, the carbonic acid is expelled with effervescence, and a sulphuret of antimony and potass is formed. On boiling this in water, water is decomposed, the antimony is oxidized, and the hydrogen combines with the sulphur. The sulphuretted hydrogen thus formed, combines partly with the potass, and partly with the oxide of antimony. Now, the sulphuretted hydroguret of brown oxide of antimony, (kermes mineral), is soluble in a solution of sulphuretted hydroguret of potass, at 212°, but not at ordinary temperatures. Therefore, on cooling, it separates and falls to the bottom.

Such is the present theory of the formation of kermes mineral. With regard to the practice, the directions of the Dublin College differ considerably, especially in the proportions of the substances employed, from the best pharmaceutical writers on the Continent. Lemery melted sixteen parts of sulphuret of antimony, and one of sulphur, with eight parts of carbonate of potass. The last edition of the Prussian Pharmacopœia directs two parts of sulphuret of antimony, and one of exsiccated carbonate of soda, to be melted, and afterwards boiled fifteen minutes in six or eight parts of water, which on cooling deposites a considerable quantity of kermes. The fluid from which the kermes has been deposited fited may be again boiled in the refiduum of the firft decoction, and it will diffolve a frefh portion of kermes, and this procefs may be repeated as long as there remains any to diffolve. After this, the refiduum when melted confifts almoft folely of antimony. It therefore appears, that the alkali renders almoft all the fulphur foluble, and only difpofes the oxidizement of as much antimony as is capable of combining with the fulphuretted hydrogen. We fee no reafon why the whole of the antimony fhould not be converted into kermes by employing a proper addition of fulphur and alkali.

Kermes is alfo made in the humid way. Fourcroy boils in twenty parts of water, fix parts of pure potafs of commerce, and into the boiling folution throws about the twentieth part of the weight of the alkali, or 0.3 of a part of powdered fulphuret of antimony, and continues the boiling for feven or eight minutes, then filters and allows the kermes to precipitate by cooling. Hermbftädt ufes very different proportions; for he boils twelve parts of fulphuret of antimony, and three of falt of tartar, in ninety-fix parts of water, down to fixty-four, and then filters, &c. Gren employs four parts of fulphuret of antimony, fixteen of carbonate of potafs, and fixty-four of water, and boils for feveral hours.

This preparation of antimony is lefs ufed in Britain than on the Continent. It is an active fubftance, and apt to excite vomiting. To adults, the dofe is a grain, or a grain and a half.

SULPHURETUM ANTIMONII PRÆCIPITATUM.

Edin.

Precipitated Sulphuret of Antimony.

Take of

Water of potafs, four pounds;
Water, three pounds;
Prepared fulphuret of antimony, two pounds.

Boil them, in a covered iron pot, over a flow fire for three hours, adding more water, if neceffary, and frequently ftirring the mixture with an iron fpatula: ftrain the liquor while warm through a double cloth, and add to it when filtered as much diluted fulphuric acid as is neceffary to precipitate the fulphuret, which muft be well wafhed with warm water.

SULPHUR ANTIMONII PRÆCIPITATUM.

Lond.

Precipitated Sulphur of Antimony.

SULPHUR STIBIATUM RUFUM.

Dub.

Orange Antimoniated Sulphur.

THE directions of thefe Colleges only differ from thofe of the Edinburgh College in the nomenclature.

This is alſo, according to the analyſis of Thenard, a ſulphuretted hydroguret of antimony, which conſiſts of

68.3	orange oxide of antimony.
17.877	ſulphuretted hydrogen.
12.	ſulphur.
98.177	

Thenard conſiders the ſulphur as only mechanically and accidentally mixed; and that the eſſential difference between this preparation and kermes mineral conſiſts in the degree of oxidizement of the antimony.

The precipitated ſulphuret of antimony, like the kermes, may be prepared either in the dry or in the moiſt way. The latter is the mode adopted by the Britiſh Colleges, and alſo ſeems to be the moſt univerſally employed on the Continent. Göttling boils two parts of ſulphuret of antimony, and three of ſulphur, in a ſufficient quantity of a recent ſolution of potaſs, filters the ſolution, and precipitates with ſulphuric acid, diluted with twelve times its weight of water. Wiegleb treats in the ſame manner two parts of ſulphuret of antimony with one of ſulphur. But to his proportions it has been objected, that the product reſembles kermes more than ſulphur auratum. If this objection be juſt, it muſt apply in a ſtill ſtronger degree to the formula of the Britiſh Colleges, in which no ſulphur is added.

In the dry way, two parts of ſulphuret of antimony and three of ſulphur may be melted with five of pure carbonate of potaſs in a covered crucible, as quickly as poſſible, poured into an iron mortar, reduced to powder, and diſſolved by boiling the powder in water. The ſolution is to be filtered warm, diluted with a ſufficient quantity of water, and precipitated with dilute ſulphuric acid. By ſome, the ſolution is allowed to remain at reſt for twenty-four hours before it be filtered, and ſome precipitate with nitrous acid.

The proceſſes for making the golden ſulphuret of antimony, depend on the property which the hydroguretted ſulphuret of potaſs poſſeſſes, of diſſolving, and retaining diſſolved, even at ordinary temperatures, a portion of orange oxide of antimony; and as the attraction by which potaſs exiſts in this compound is weaker than its affinity for acids, on the addition of any acid, the potaſs unites with the acid; a portion of ſulphuretted hydrogen gas eſcapes; and the oxide of antimony, combined with the reſt of the ſulphur and hydrogen, are precipitated in the form of a light orange powder. When the acid is added gradually, the proportion of oxide of antimony always decreaſes, while that of the ſulphur increaſes in each ſucceſſive portion of precipitate. Hence in the old manner of preparing this ſubſtance from the ſcoriæ, formed in reducing antimony from its ſulphuret, and which contained but little ſulphur, the two firſt portions of precipitate, being dark coloured, were reject-

ed,

ed, and only the product of the third precipitation retained for ufe. The want of economy in this procefs is fufficiently obvious, as well as the very great improvement in modern times, of adding a fufficient quantity of fulphur, and precipitating the whole at once.

Notwithftanding the great celebrity of Thenard as a chemift, and his having paid particular attention to the combinations of antimony, we may be allowed to doubt the accuracy of his opinion refpecting the effential difference between kermes mineral and the golden fulphuret of antimony, until he publifhes the experiments on which it is founded. It appears to us, that it will be extremely difficult, if not impoffible, to prove in fuch fubftances a difference of only 2 *per cent.* of oxidizement. If he fhould fail in his attempt to prove it, the only apparent difference between thefe bodies will be in the proportion of fulphur they contain. For it is agreeable to analogy to fuppofe, that the fulphuretted hydroguret of antimony is more foluble in a folution of hydroguretted fulphuret of potafs at 212°, than at 60°. Therefore, as a boiling folution cools, that portion of the fulphuretted hydroguret of antimony, which it is unable to retain in folution at a reduced temperature, feparates and forms the red precipitate, known by the name of Kermes Mineral; but the portion which remains in folution, can only be obtained by decompofing the hydroguretted fulphuret of potafs itfelf, by means of an acid; and therefore the precipitate forming the fulphur auratum antimonii, is a mixture or compound of hydroguretted fulphuret of antimony and fulphur, which gives it a brighter and paler colour *.

 In

* Since the above obfervations were written, we have feen a paper upon antimony by Prouft, publifhed in the Journal de Phyfique, vol. 55. and in which we were agreeably flattered to find, that many of our conjectures refpecting the nature of the antimonial preparations were confirmed by the experiments of that excellent chemift. We can only infert fome of his general conclufions at prefent.

We have two oxides of antimony: the one containing 23, and the other 30 *per cent.* of oxygen. The firft is very fufible, opaque, and cryftalline. It is the bafis of the common faline preparations of this metal, fuch as the muriates and tartrites.

The fecond does not readily enter into the fame combinations, and follows the fame law with feveral other metals, at the maximum of oxidizement.

Antimony, at its minimum of oxidizement, cannot go beyond that degree, without attaining its maximum, nor be reduced below it, without being reduced to its metallic ftate.

The oxides, both at the minimum and maximum, are incapable of forming any union with fulphur. The former is capable of diffolving the fulphuret of antimony; and acquires by that union, thofe vitreous and hepatic properties, which belong to thofe compounds hitherto confidered as fulphuretted oxides of antimony. The latter feems alfo capable of forming the fame combinations, but only by lofing its excefs of oxygen above the minimum.

The oxide at the minimum can unite with fulphuretted hydrogen, and forms two compounds, kermes, and fulphur auratum. The former is well known, the latter very little, for we do not rightly underftand in what it differs from the former.

The oxide at the maximum, is incapable of entering into this combination.

In its action on the body, the orange ſulphuret of antimony coincides with the kermes mineral; but on account of the larger proportion of ſulphur, it muſt be given in ſomewhat larger doſes.

MURIAS ANTIMONII.

Edin.

Muriate of Antimony.

Take of

Oxide of antimony with ſulphur, by nitrate of potaſs,
Sulphuric acid, each one pound;
Dried muriate of ſoda, two pounds.

Pour the ſulphuric acid into a retort, gradually adding the muriate of ſoda and oxide of antimony previouſly mixed. Then perform the diſtillation in a ſand-bath. Expoſe the diſtilled matter for ſeveral days to the air, that it may deliqueſce, and then pour the liquid part from the feces.

ANTIMONIUM MURIATUM.

Lond.

Muriated Antimony.

STIBIUM MURIATUM CAUSTICUM.

Dub.

Cauſtic Muriated Antimony.

The proceſſes of theſe Colleges are eſſentially the ſame with that of the Edinburgh College.

THE antimony in this preparation, according to Thenard, is in the fifth degree of oxidizement, and contains 0.20 of oxygen. It is the ſame with the oxide obtained from antimony by ſublimation. The muriate of antimony may be formed by diſſolving the ſublimed oxide directly in muriatic acid, or by leaving antimony long immerſed in it. In the latter caſe it becomes ſlowly oxidized by decompoſing the water, and is then diſſolved. Some differences have been ſaid to exiſt between the muriates differently prepared, but they are not aſcertained. Muriate of antimony was formerly prepared by diſtilling ſulphuret of antimony with muriate of quickſilver. Muriate of antimony paſſes over into the receiver, and black ſulphuret of quickſilver remains in the retort. But this mode of preparation is both expenſive and dangerous. In the proceſs directed by the Colleges, the ſulphuric acid decompoſes the muriate of ſoda, and the muriatic acid, diſengaged, diſſolves and carries over with it the oxide of antimony. It is at firſt obtained in the ſtate of a thick ſubſtance, which from its appearance got the name of Butter of Antimony; but by expoſing it for ſome days to the action of the air, it attracts humidity until it become ſaturated with it. We have already obſerved, that the oxide of antimony made uſe of in this preparation, is ſeldom ſufficiently oxidized or deprived of its ſulphur; and when this is the caſe, there is conſiderable danger of the veſſel burſting, from the great quantity of ſulphureous vapours diſengaged, and the product is rendered leſs pure from the admixture of ſulphur. But theſe inconveniences are prevented, according to Göttling, by uſing the glaſs of antimony. He introduces into a retort a mixture of four ounces of glaſs of antimony in powder, with ſixteen of muriate of ſoda, and then pours into it twelve ounces of ſulphuric acid, diluted with eight of water. He lutes on a receiver with gypſum, and diſtils to dryneſs in a ſand-bath, with a heat gradually increaſed. By this proceſs, he ſays, about twenty ounces of very ſtrong fuming muriate of antimony are obtained. The reſiduum in the retort is ſulphate of ſoda, but unfit for internal uſe, on account of its being mixed with ſome antimony.

Muriate of antimony may be uſed as an eſcharotic, but it is principally employed in the formation of the next article.

CALX STIBII PRÆCIPITATA.
Dub.
Precipitated Calx of Antimony.

Take of
- Mild vegetable alkali,
- Cauſtic muriated antimony, each eight ounces;
- Water, forty pounds.

Diſſolve the vegetable alkali in the water, and to the filtered liquor add the cauſtic muriated antimony. Dry the calx which ſubſides, after waſhing away the ſaline matters.

THIS proceſs is intended to ſeparate the oxide contained in the muriate of antimony, by means of the ſuperior affinity which potaſs poſſeſſes for muriatic acid. It is abſolutely neceſſary that the muriate of antimony be poured into the alkaline ſolution, and not the ſolution into the muriate; for the muriate is partially decompoſed by water alone, which combines with part of the acid; and the ſalt, brought to the ſtate of an inſoluble ſubmuriate, is precipitated. Therefore, if we pour the alkaline ſolution into the muriate of antimony, the muriate acts firſt upon the alkali, and immediately afterwards upon the water of each portion of the ſolution; and therefore we obtain a mixed precipitate of oxide of antimony and ſubmuriate of antimony. But if we pour the muriate into the alkaline ſolution, the whole acid of each portion of the muriate immediately finds a ſufficient quantity of alkali to ſaturate it, and the whole, or at leaſt a much larger proportion of the antimony, is precipitated in the ſtate of oxide.

The oxide thus obtained, according to Thenard, contains 80 of antimony, and 20 of oxygen, and is the fifth oxide of antimony. It is only uſed in making other preparations.

OXIDUM ANTIMONII CUM PHOSPHATE CALCIS; olim, PULVIS ANTIMONIALIS.

Edin.

Oxide of Antimony with Phosphate of Lime; formerly *Antimonial Powder.*

Take of
Sulphuret of antimony, in coarse powder,
Shavings of hartshorn, equal weights.

Mix, and put them into a wide red-hot iron pot, and stir the mixture constantly, until it be burnt into a matter of a grey colour, which is then to be removed from the fire, ground into powder, and put into a coated crucible. Lute to this crucible another inverted over it, and perforated in the bottom with a small hole, and apply the fire, which is to be raised gradually, to a white heat, and kept in that increased state for two hours. Lastly, grind the matter, when cold, into a very fine powder.

PULVIS ANTIMONIALIS. *Lond.* PULVIS STIBIATUS. *Dub.*
Antimonial Powder.

The directions of these Colleges are exactly the same with those already given.

THIS is supposed to be nearly the same with the celebrated nostrum of Dr James, the composition of which was ascertained by Dr Pearson of London, and to him we are also indebted for the above formula.

By burning sulphuret of antimony and shavings of hartshorn in a white heat, the sulphur is entirely expelled, and the antimony is oxidized, while the gelatine of the hartshorn is destroyed, and nothing is left but phosphate of lime, combined with a little lime. Therefore, the mass which results is a mixture of oxide of antimony and phosphate of lime, which corresponds, at least as to the nature of the ingredients, with James's powder, which, by Dr Pearson's analysis, was found to consist of 43 phosphate of lime, and 57 oxide of antimony. Another excellent chemist, Mr Chenevix, has lately proposed a method of forming the same combination in the humid way, with the view of obtaining a preparation always similar in its composition and properties. He was led to this proposal by considering the uncertainty of the application, and the precarious nature of the agency of fire, by which means a variable portion of the oxide of antimony may be volatilized, and that which remains may be oxidized in various degrees.

Mr Chenevix therefore proposes to prepare a substitute for James's powder, by dissolving together equal weights of submuriate of antimony, and of phosphate of lime, in the smallest possible quantity of muriatic acid, and then pouring this solution gradually into water sufficiently alkalized with ammonia. For the reason mentioned in the

the preceding article, it is abſolutely neceſſary that the muriatic ſolution be poured into the alkaline liquor. By an oppoſite mode of procedure, the precipitate would contain more antimony at firſt, and towards the end the phoſphate of lime would be predominant, and the antimony would be partly in the ſtate of a ſubmuriate. The phoſphate of lime is moſt conveniently obtained pure by diſſolving calcined bone in muriatic acid, and by precipitating it by ammonia. If the ammonia be quite free from carbonic acid, no muriate of lime is decompoſed. Mr Chenevix alſo found, that his precipitate is entirely ſoluble in every acid which can diſſolve either phoſphate of lime or oxide of antimony ſeparately, and that about 0.28 of James's powder, and at an average 0.44 of the pulvis antimonialis of the London Pharmacopœia, reſiſt the action of every acid.

The oxide of antimony with phoſphate of lime, howſoever prepared, is one of the beſt antimonials we poſſeſs. It is given as a diaphoretic in febrile diſeaſes, in doſes of from three to eight grains, repeated every third or fourth hour. In larger quantities, it operates as a purgative or emetic. From its being inſoluble in water, it muſt be given either in the form of a powder, or made into a pill or bolus.

TARTRIS ANTIMONII; olim, TARTARUS EMETICUS.
Edin.
Tartrite of Antimony, formerly *Tartar Emetic*.
ANTIMONIUM TARTARISATUM.
Lond.
Tartarized Antimony.

Take of
- Oxide of antimony with ſulphur, by nitrate of potaſs, three parts;
- Super-tartrite of potaſs, four parts;
- Diſtilled water, thirty-two parts.

Boil in a glaſs-veſſel for a quarter of an hour, ſtrain through paper, and ſet aſide the ſtrained liquor to cryſtallize.

TARTARUM STIBIATUM.
Dub.
Antimoniated Tartar.

Take of
- The precipitated calx of antimony, two ounces;
- Cryſtals of tartar in very minute powder, four ounces;
- Diſtilled water, five pounds.

Boil until the powders be diſſolved, and ſtrain the liquor when cold through paper; then having thrown away the ſalt which remains upon the paper, cryſtallize by evaporation and ſlow refrigeration. The cryſtals ſhould have a regular figure.

The tartarous acid is capable of combining, in many examples, with two bases at the same time, forming with them triple crystallizable salts. In the present instance, it is combined with oxide of antimony and potass; and as the potass is essential to its constitution, and the real tartrite of antimony is a different salt, its name should certainly have been Tartrite of Antimony and Potass.

In the preparation of this salt, the different combinations of oxide of antimony have been employed. Any of them will afford a very pure salt, provided the antimony is in that state of oxidizement in which it contains about 0.20 of oxygen. The crocus, precipitated oxide, submuriate, and glass, are all occasionally employed. The London and Edinburgh Colleges use the crocus. To this the principal objection is, that it is never found in the shops in a state fit for this purpose. The Dublin College use the precipitated oxide, which answers extremely well, but is too expensive to be generally adopted. The submuriate, which is more easily prepared, is just as good; for the muriatic acid is completely separated by part of the potass, and remains in the mother water. The glass is perhaps the least objectionable of any, and is recommended by Göttling. It always, however, contains about 0.1 of silica. The quantity of water employed must be sufficient to dissolve the tartar-emetic formed. The time during which the ebullition is to be continued, is stated differently by different pharmaceutists. No harm can arise from continuing it longer than is absolutely necessary; but it is certainly a waste of time and fuel to protract it for hours. But the circumstance which renders the tartar-emetic most variable in its effects, is the mode of crystallization. Some evaporate it to dryness; others to a pellicle, and set it aside to crystallize; and others again crystallize by slow evaporation. On account of the silica which is combined with the oxide of antimony, and which, being held in solution by the potass, impedes the crystallization, and varies the nature of the product, Vauquelin recommends the solution to be first evaporated to dryness, and that the saline mass obtained should be redissolved in boiling water, and then crystallized: For, towards the end of the first evaporation, the silica separates, and becomes totally insoluble. In this way, he says, that we obtain both a purer salt, and in larger quantity. Thenard has also shewn, that tartar-emetic often contains tartrite of lime, which crystallizes in silky needles, arranged around a common centre: he therefore advises us not to evaporate farther the mother water, especially of the first crystallization; and to crystallize the tartrite of potass and antimony at least twice. We have also observed it. A saturated boiling solution of tartar-emetic was suffered to crystallize in a moderate temperature: the mother-water was then poured off, and accidentally exposed to a considerably lower temperature;

perature; a new cryſtallization of ſtars of fine ſilky needles immediately took place. If we employ an exceſs of ſupertartrite of potaſs, part of it will remain undecompoſed, and will cryſtallize before or along with the tartar-emetic. This ſource of impurity is eaſily avoided by uſing an exceſs of the antimonial oxide, which remaining undiſſolved, occaſions no error, and prevents the neceſſity of throwing away, as the Dublin College direct, the cryſtals which form on the filtering paper, if the ſolution be ſaturated.

Tartrite of antimony and potaſs, or tartar-emetic, cryſtallizes in triangular pyramids, or in octohedrons, more elongated than thoſe of alum. It has a ſtyptic metallic taſte. It is ſoluble in three times its weight of water at 212°, and in fifteen at 60°. As this ſtatement of its ſolubility is very different from that of moſt writers, from Bergmann to Fourcroy, who ſay that it requires 80 parts of water at 60°, and ſomewhat leſs than 40 of boiling water, it is neceſſary to mention, that it was aſcertained by careful experiment with the moſt beautiful cryſtals of tartar-emetic we ever ſaw, more than half an inch in length, and perfectly free from the admixture of any foreign ſalt. The cryſtals effloreſce ſlowly and ſlightly in the air. The property of deliqueſcing aſcribed to them by Göttling, muſt have ariſen from the preſence of other ſalts, which is more probable, as he does not prepare his tartar-emetic by cryſtallization, but by evaporating the ſolution to dryneſs. The ſolution of tartar-emetic ſlightly reddens tincture of turnſol. It is decompoſed by acids, alkalies, alkaline carbonates, ſulphuretted hydrogen and its compounds, vegetable juices, decoctions and infuſions, and many of the metals. According to Thenard, it conſiſts of tartrite of antimony 54, tartrite of potaſs 34, water 8, and loſs 4; or, oxide of antimony 38, tartarous acid 34, potaſs 16, water and loſs 12; and by eſtimation from the analyſis of tartrite of potaſs, and ſupertartrite of potaſs, by the ſame chemiſt, it appears, that to ſaturate 38 parts of oxide of antimony, 70.4 of ſuper-tartrite of potaſs are neceſſary: the whole of the ſuperfluous acid being 16, combines with the oxide, while 34 of the tartrite of potaſs combine with the tartrite of antimony thus formed, and 20.4 of tartrite of potaſs remain in ſolution in the mother water.

We have been thus particular in our account of the preparation and chemical properties of tartar emetic, becauſe it is not only of all the preparations of antimony the moſt certain in its operation, but is almoſt indiſpenſable for the ſucceſsful practice of medicine.

In doſes of from one to three grains it operates as an emetic, and ſometimes as a cathartic. In ſmaller doſes, it excites nauſea, and proves a powerful diaphoretic and expectorant. As an emetic it is chiefly given in the beginning of fevers and febrile diſ-

eaſes,

eases, in chincough, and, in general, whenever we wish to evacuate the stomach quickly. When great debility is present, and in the advanced stages of typhoid fever, its use is improper, and even sometimes fatal. As a diaphoretic it is given in small doses, of from an eighth to a quarter of a grain; and as an expectorant in doses still smaller.

The only proper form for exhibiting it is in solution; and as the intensity of its action on the body is liable to variation, from differences in its own strength, and in the constitution of the patient, it should almost always be given in divided doses, at short intervals, if we wish to excite vomiting; and at longer intervals, if we only wish it to act on the skin or lungs.

VINUM TARTRITIS ANTIMONII; olim, VINUM ANTIMONIALE. *Edin.*

Wine of Tartrite of Antimony, formerly *Antimonial Wine.*

Take of
Tartrite of antimony, twenty-four grains;
Spanish white wine, one pound.
Mix them so that the tartrite of antimony may be dissolved.

VINUM TARTARI STIBIATI.
Dub.
Wine of Antimoniated Tartar.

Take of
Antimoniated tartar, ten grains;
Distilled water, boiling-hot, half an ounce;
Spanish white wine, two ounces.
Dissolve the antimoniated tartar in the water, and then add the wine.

VINUM ANTIMONII TARTARISATI.
Lond.
Wine of Tartarized Antimony.

Take of
Tartarized antimony, two scruples;
Boiling distilled water, two ounces;
Spanish white wine, eight ounces.
Dissolve the tartarized antimony in the boiling distilled water, and add the wine.

VINUM ANTIMONII.
Lond.
Wine of Antimony.

Take of
Vitrified antimony, in powder, one ounce;
Spanish white wine, a pint and a half.
Digest them for twelve days, agitating them frequently, and strain through paper.

ALL

All these are solutions of tartrite of antimony and potass in wine; for, in the last instance, a portion of the glass of antimony is dissolved by the supertartrite of potass contained in the wine; and as the quantity of this is variable, so also the quantity of oxide of antimony dissolved, varies: and therefore the preparation ought to be entirely rejected, since its strength can never be known. It is also to be regretted, that the strength of the solutions of tartar-emetic in wine, as prescribed by the different Colleges, is not uniform. According to the Edinburgh College, one ounce of the solution contains two grains of tartar-emetic, while the same quantity, according to the other Colleges, contains four grains.

In its employment and effects, the vinous solution of tartar-emetic does not differ from one made with water.

ANTIMONIUM CALCINATUM.

Lond.

Calcined Antimony.

Take of

Antimony, powdered, eight ounces;

Nitre, powdered, two pounds.

Mix them, and project the mixture by degrees into a red-hot crucible. Burn the white matter about half an hour; and, when cold, powder it; after which wash it with distilled water.

On touching the ignited crucible, this mixture deflagrates with a lively white flame; the antimony is oxidized to the maximum, the sulphur is acidified, and the nitre is decomposed and reduced to its base. The product of this deflagration is a lemon-coloured, scorified mass, which, after being washed with water, leaves the greater part of the oxide of antimony united to about a fifth of its weight of potass; while the remainder of the oxide, combined with a much larger proportion of potass, is dissolved in the water, along with the sulphate of potass formed, and a small quantity of nitre which has escaped decomposition. The oxide of antimony obtained by this process contains about 0.32 oxygen, is scarcely acted upon by acids, and is capable of forming with the alkalies, crystallizable compounds, enjoying a determinate degree of solubility. It may therefore be considered as nearly approaching to the state of an acid; and therefore the insoluble residuum of this process might be named Super-antimonite of potass, and the dissolved portion from its different proportions Antimonite of potass.

This is a preparation of no very great activity. It formerly bore the name of Diaphoretic antimony, from its supposed effect; but even that was doubted: and since the introduction of James's powder into general use, it has not been much employed. It may be given in doses from five grains to half a drachm.

CHAP.

CHAP. VI.

S I L V E R.

NITRAS ARGENTI; olim, CAUSTICUM LUNARE. *Edin.*
ARGENTUM NITRATUM. *Dub.*
Nitrate of Silver. Nitrated Silver, formerly *Lunar Caustic.*

Take of
Pureſt ſilver, flatted into plates, and cut in pieces, four ounces;
Diluted nitrous acid, eight ounces;
Diſtilled water, four ounces.

Diſſolve the ſilver in a phial with a gentle heat, and evaporate the ſolution to dryneſs. Then put the maſs into a large crucible, and place it on the fire, which ſhould at firſt be gentle, and afterward increaſed by degrees till the maſs flows like oil; then pour it into iron-pipes, previouſly heated and anointed with tallow. Laſtly, keep it in a glaſs-veſſel well ſhut.

ARGENTUM NITRATUM.
Lond.
Nitrated Silver.

Take of
Silver, one ounce;
Diluted nitrous acid, four ounces.

Diſſolve the ſilver in the diluted nitrous acid, in a glaſs-veſſel, over warm ſand; then dry it by gently increaſing the heat; afterwards melt it in a crucible, taking care that the heat be not too great, and pour it into proper forms.

THE only difference between theſe formulæ is in the proportion of acid employed. The Edinburgh and Dublin Colleges uſe equal weights of ſilver and acid. The London College uſes double the quantity of acid. The fact is, that nitrous acid is capable of diſſolving more than half its weight of ſilver. Therefore, in the one caſe, a portion of ſilver will be left undiſſolved; and, in the other, there will be an exceſs of acid, which, however, will be expelled by the heat neceſſary to bring the ſalt to a ſtate of dryneſs. During the ſolution the metal is oxidized by the decompoſition of part of the acid, while the nitrous gas diſengaged at firſt diſſolves in the acid, and gives it a green colour, which, however, diſappears when the heat is increaſed ſo as to expel the gas. The acid employed muſt be very pure. If it contain, as the acid of commerce always does, ſulphuric or muriatic acid, theſe

these re-act upon the nitrate as soon as it is formed, and a white precipitate, consisting of sulphate and muriate of silver, falls to the bottom.

The method which the refiners employ for examining the purity of their aquafortis (the name they give to dilute nitrous acid), and purifying it if necessary, is to let fall into it a few drops of a solution of nitrate of silver already made: if the liquor remain clear, and grow not in the least turbid or whitish, it is fit for use; otherwise, they add a small quantity more of the solution, which immediately turns the whole of a milky white colour; the mixture being then suffered to rest for some time, deposites a white sediment; from which it is cautiously decanted, examined again, and, if necessary, farther purified by a fresh addition of the solution.

It is necessary to employ very pure water in this process, for the muriates and earthy salts which common water generally contain, precipitate part of the silver in the state of a muriate or oxide. If distilled water be not used, the water should be added to the acid before it be tried and purified by the nitrate of silver.

The silver flatted into thin plates, as directed in the second of the above processes, needs not be cut in pieces: the solution will go on the more speedily, if they are only turned round into spiral circumvolutions, so as to be conveniently got into the glass, with care that the several surfaces do not touch each other. By this management, a greater extent of the surface is exposed to the action of the menstruum, than when the plates are cut in pieces and laid above each other. If the silver be alloyed with copper, the solution will have a permanent greenish blue colour, and acquire a bright blue on the addition of ammonia. If it contain gold, the gold is not dissolved, but is found at the bottom of the solution, in the form of a black or deep purple powder.

The crucible ought to be of silver or porcelain; as, with the common crucibles, the loss arising from the nitrate of silver sinking into their substance is too great. It ought also to be large enough to hold five or six times the quantity of the dry matter; for it bubbles and swells up greatly, so as otherwise to be apt to run over. During this time, also, little drops are now and then spirted up, whose causticity is increased by their heat, against which the operator ought therefore to be on his guard. The fire must be kept moderate till this ebullition ceases, and till the matter becomes consistent in the heat that made it boil before: then quickly increase the fire till the matter flows thin at the bottom like oil, on which it is to be immediately poured into the mould; for if the heat be continued after this, the nitrate of silver begins to be decomposed, and the silver is reduced.

In want of a proper iron-mould, one may be formed of tempered tobacco-pipe clay, not too moist, by making in a lump of it,

with

with a smooth stick first greased, as many holes as there is occasion for: pour the liquid matter into these cavities, and when congealed take it out by breaking the mould. Each piece is to be wiped clean from the grease, and wrapt up in soft dry paper, not only to keep the air from acting upon them, but likewise to prevent their corroding or discolouring the fingers in handling.

Nitrate of silver is crystallizable. Its crystals are brilliant plates, having a variable number of sides. Their taste is austere, and intensely bitter. They are very soluble in water, but permanent in the air, and not deliquescent. They are decomposed by heat, light, phosphorus, charcoal, many metals, all the alkalies and earths, sulphuric, muriatic, phosphoric and fluoric acids, and by the salts they form. When deprived of water, and melted according to the directions of the colleges, it forms a black or dark-grey coloured mass, which, when broken, appears to consist of radii, diverging from the centre. It is not deliquescent when free from copper, which is seldom the case. It may, however, be prepared perfectly pure, even from a solution containing copper, by evaporating and crystallizing it as long as it furnishes firm tabular crystals. These are then to be washed with a little distilled water, and melted with a gentle heat. The nitrate of copper remains in the mother-water, and the silver which it contains may be precipitated with muriatic acid.

A strong solution of nitrate of silver corrodes and decomposes animal substances; in a more diluted state it stains them of an indelible black; and for this purpose it is sometimes applied to the hair. The fused nitrate of silver is the strongest and most manageable caustic we possess, and is employed to remove fungous excrescences, callous edges, warts, strictures in the urethra, and the like. It is also used to destroy the venereal poison in chancres, before it has acted on the system. A weak solution of it may be applied as a stimulus to indolent ulcers, or injected into fistulous sores.

Notwithstanding its causticity, it has been given internally. Boerhaave, Boyle, and others, commend it highly in hydropic cases. The former assures us, that made into pills with crumb of bread and a little sugar, and taken on an empty stomach (some warm water sweetened with honey, being drank immediately after), it purges gently without griping, and brings away a large quantity of water, almost without the patient's perceiving it: that it kills worms, and cures many inveterate ulcerous disorders. He nevertheless cautions against using it too freely, or in too large a dose; and observes, that it always proves corrosive and weakening to the stomach.

It has been more recently employed, and with success, in epilepsy and angina pectoris. On account of its very great activity, each pill should not contain above one-eighth or one-fourth of a grain.

CHAP.

CHAP. VII.

COPPER.

ÆRUGO PRÆPARATA.

Dub.

Prepared Verdegris.

Let the verdegris be ground to powder, and the minute particles be ſeparated in the manner directed for the preparation of crabs claws.

Lond.

Verdegris is to be prepared as other ſubſtances not ſoluble in water, (p. 415.)

The intention of this proceſs is merely to obtain the ſub-acetite of copper in the ſtate of the moſt minute mechanical diviſion.

SOLUTIO SULPHATIS CUPRI COMPOSITA; olim, Aqua Styptica.

Edin.

Compound Solution of Sulphate of Copper, formerly *Styptic Water.*

Take of
- Sulphate of copper,
- Sulphate of alumina, each three ounces;
- Water, two pounds;
- Diluted ſulphuric acid, an ounce and a half.

Boil the ſulphates in the water to diſſolve them, and then add the acid to the liquor filtered through paper.

In this preparation, the ſubſtances diſſolved in the water exert no chemical action on each other, and the compoſition was probably contrived from the falſe idea, that the ſum of the powers of ſubſtances having ſimilar virtues, was increaſed by mixing them with each other.

As might naturally be ſuppoſed, this is a powerful ſtyptic, and is ſomewhat ſimilar to the old *aqua aluminoſa Bateana* of the former pharmacopœias, ſo much celebrated for ſtopping profuſe hæmorrhagies. Its chief uſe is for ſtopping bleedings at the noſe; and for this purpoſe, cloths or doſſils, ſteeped in the liquor, are to be applied to the part.

AMMO-

AMMONIARETUM CUPRI; olim, CUPRUM AMMONIACUM.
Edin.
Ammoniaret of Copper, formerly *Ammoniacal Copper.*

Take of
Pureſt ſulphate of copper, two parts;
Carbonate of ammonia, three parts.

Rub them carefully together in a glaſs mortar, until, after the efferveſcence has entirely ceaſed, they unite into a violet-coloured maſs, which muſt be wrapped up in blotting paper, and firſt dried on a chalk-ſtone, and afterwards by a gentle heat. The product muſt be kept in a glaſs-phial well cloſed.

CUPRUM AMMONIATUM.
Dub.
Ammoniated Copper.

Take of
Vitriolated copper, half an ounce;
Mild volatile alkali, an ounce and a half.

Triturate them in a glaſs-mortar, until, after the efferveſcence has entirely ceaſed, they unite into a maſs, which is to be wrapped up in bibulous paper, and dried upon a layer of gypſum, placed in warm ſand. It is afterwards to be kept in a phial, cloſed with a glaſs-ſtopper.

THE difference between the proportions of the ingredients of this preparation, directed by the two Colleges, is very ſtriking. We know of no experiments to aſcertain which of them is moſt correct. It may ſeem ſtrange that directions are given ſo particularly concerning the manner of drying a mixture which is prepared by rubbing two dry ſubſtances together. But ſuch a phenomenon is by no means uncommon, and ariſes from the quantity of water of cryſtallization contained in the ingredients being greater than what is required by the new compound formed: As ſoon, therefore, as the ingredients begin to act upon each other, a quantity of water is ſet at liberty, which renders the maſs moiſt.

The nature of this compound, and conſequently the name which ſhould be given it, are not yet ſufficiently aſcertained. Prepared according to the directions of the Colleges, it evidently contains oxide of copper, ammonia, and ſulphuric acid. If theſe ſubſtances be chemically combined, it ſhould be denominated the Sulphate or Sub-ſulphate of Copper and Ammonia.

There is another way of preparing this ſubſtance, leſs economical indeed, but more inſtructive to the ſtudent of chemiſtry, and leſs liable to variety in the product. Into a ſaturated ſolution of ſulphate of copper, drop a ſolution of carbonate of ammonia, or, what is better, water of ammonia, until the bluiſh green precipitate, which is formed at firſt, be rediſſolved, and the liquor regain its tranſparency, and become of a beautiful deep blue colour.

Concentrate this solution by evaporation, and mix it with about an equal quantity of alcohol, upon which the salt immediately precipitates in silky blue crystals, which are to be collected by filtration, dried, and kept in a phial with a ground glass stopper.

Ammonia, having a stronger affinity for sulphuric acid than oxide of copper has, separates the oxide, which, being insoluble, is precipitated in the form of a bluish green powder. But as this oxide itself is soluble in ammonia, it is redissolved when more ammonia is added than is sufficient to saturate the acid. Instead of obtaining the compound thus formed in a dry state by evaporation, which would partly decompose it, advantage is taken of its insolubility in alcohol, which, from its more powerful affinity, separates the water of the solution, and precipitates the cupreous salt in silky blue crystals. When a sufficient quantity of alcohol has been employed, it merely abstracts the water of the solution, and precipitates the whole of the saline matter contained in it, which we are therefore disposed to consider as a ternary compound of sulphuric acid, oxide of copper, and ammonia. By drying, this precipitate undergoes some alteration, for it is no longer totally soluble in water. As, however, the solution is easily effected by the addition of ammonia, it would appear that the alteration consists in the decomposition of part of the ammonia.

This preparation has sometimes been serviceable in epilepsies; but, from its frequent want of success, and the disagreeable consequences with which its use is sometimes attended, it has not lately been much prescribed. It is employed by beginning with doses of half a grain, twice a day; and increasing them gradually to as much as the stomach will bear. Dr Cullen sometimes increased the dose to five grains.

LIQUOR CUPRI AMMONIATI; olim, AQUA SAPPHARINA. *Dub.*

Liquor of Ammoniated Copper, formerly *Sapphire Water*.

Take of

Lime-water, fresh made, eight ounces;

Sal ammoniac, two scruples;

Verdegris prepared, four grains.

Mix and digest them for twenty-four hours, then pour off the pure liquor.

AQUA CUPRI AMMONIATI. *Lond.*

Water of Ammoniated Copper.

Take of

Lime-water, one pint;

Sal ammoniac, one dram.

Let them stand together, in a copper-vessel, till the ammonia be saturated.

In this preparation the lime-water decomposes the muriate of ammonia and forms muriate of lime; while the ammonia disengaged immediately re-acts upon the oxide of copper contained in the verdegris, and renders it soluble. But as the quantity of lime employed is not sufficient to decompose all the muriate of ammonia, the solution contains muriate of ammonia, muriate of lime, and ammoniaret of copper, forming probably a triple salt, with the acetous acid. The mode of preparing this solution, adopted by the London College, is the remains of a fortuitous pharmacy, now justly exploded by the other Colleges.

This compound solution is applied externally for cleaning foul ulcers, and disposing them to heal. It has been recommended also for taking off specks and films from the eyes; but when used with this intention, it ought to be diluted with some pure water, as in the state of strength in which it is here ordered, it irritates and inflames the eyes considerably.

CHAP. VIII.

IRON.

FERRI LIMITURA PURIFICATA.

Edin.

Purified Filings of Iron.

Place a sieve over the filings, and apply a magnet, so that the filings may be attracted upwards through the sieve.

This process does not fulfil the purpose for which it is intended. For the adhesion of a very small particle of iron renders brass and other metals attractable by the magnet. The filings of iron got from the shops of different artificers, which are always mixed with solder, and other metals, cannot be purified in this way, so as to render them fit for internal use; and indeed the only way they can be obtained sufficiently pure is by filing a piece of pure iron with a clean file.

FERRI OXIDUM NIGRUM PURIFICATUM; olim, Ferri Squamæ Purificatæ.

Edin.

Purified Black Oxide of Iron, formerly *Purified Scales of Iron.*

Let the scales of the oxide of iron, which are to be found at the foot of the blacksmith's anvil, be purified by the application of a magnet. For the magnet will attract only the smaller and purer

purer ſcales, and will leave thoſe which are larger and leſs pure.

HERE the application of the magnet is uſeful, becauſe theſe ſcales contain no foreign metal, but are mixed with earthy and other impurities, which could be ſeparated in no other way.

CARBONAS FERRI; olim, FERRI RUBIGO.
Edin.
Carbonate of Iron, formerly *Ruſt of Iron.*

Moiſten purified filings of iron frequently with water, that they may be converted into ruſt, which is to be ground into an impalpable powder.

FERRI RUBIGO.
Lond.
Ruſt of Iron.

Take of
Iron filings, one pound.

Expoſe theſe to the air, often moiſtening them with water until they be corroded into ruſt; then powder them in an iron mortar, and waſh over with diſtilled water the very fine powder. Moiſten the reſiduum, which is not reduced by moderate triture to a powder, which may be eaſily waſhed over, and expoſe it again to the air; and, laſtly, after having ground it in a mortar, waſh it over. Dry the powder which is waſhed over.

Dub.

Take of
Iron wire, any quantity.

Cut it into pieces, which are to be moiſtened frequently with water, and expoſed to the air until they be corroded into ruſt. Then powder them in an iron-mortar. and by pouring water upon them, waſh over the fineſt part of the powder, which is to be dried. The ſame proceſs may be frequently repeated.

IRON is one of the moſt eaſily oxidized of the metals. It is capable of attracting oxygen from the air, and of decompoſing water even in the cold. By expoſure at the ſame time to air and moiſture, it is very quickly oxidized, while at the ſame time it abſorbs carbonic acid, and is converted into a reddiſh brown pulverulent ſubſtance, well known by the name of ruſt of iron. For medical uſe it is prepared as the other ſubſtances inſoluble in water.

Apothecaries ſeldom make it themſelves, but obtain it from perſons who manufacture it in large quantities. It may be alſo prepared by precipitating the ſulphate of iron with an alkaline carbonate; and as the proceſs, though more expenſive, is infinitely leſs tedious, and furniſhes a carbonate of iron of very great purity, and in the ſtate of the utmoſt minuteneſs, it has been admitted by the Edinburgh College.

CARBONAS FERRI PRÆCIPITATUS.

Edin.

Precipitated Carbonate of Iron.

Take of
 Sulphate of iron four ounces,
 Carbonate of ſoda five ounces,
 Water, ten pounds.

Diſſolve the ſulphate in the water, and add the carbonate of ſoda, previouſly diſſolved, in a ſufficient quantity of water, and mix them thoroughly.

Waſh the carbonate of iron, which is precipitated, with warm water, and afterwards dry it.

On mixing the ſolutions of theſe ſalts together, there is an immediate mutual decompoſition. Sulphate of ſoda is formed, which remains in ſolution, and carbonate of iron, which is precipitated of a green colour. The precipitate when firſt formed, is the carbonate of black oxide of iron, or contains the iron in the ſtate of black oxide, the ſtate in which it exiſts in the green ſulphate of iron; but in the proceſs of drying, it abſorbs more oxygen, becomes of a red colour, and is converted into the carbonate of red oxide of iron. As the precipitate is extremely light and bulky, it is not eaſily ſeparated by allowing it to ſubſide, and pouring off the clear liquor; filtration ſhould therefore be employed. The carbonate of ſoda is uſed in preference to the carbonate of potaſs, on account of the greater ſolubility of ſulphate of ſoda than of ſulphate of potaſs, which renders the ſubſequent ablution of the ſalt more eaſy.

The carbonate of iron is an excellent and ſafe chalybeate. It may be given in doſes from five grains to ſixty; but all chalybeates anſwer better in ſmall doſes, frequently repeated, than in large doſes.

AQUA FERRI AËRATI.

Dub.

Water of Aërated Iron.

It is prepared in the ſame manner as the water of fixed air (p. 374.), by ſuſpending in the water half an ounce of iron-wire.

This is a very elegant chalybeate. The iron is in the ſtate of black oxide, and is diſſolved by means of carbonic acid. It was firſt prepared by Bergmann, in imitation of the natural chalybeate waters, and it forms an excellent ſubſtitute for them.

SUL-

SULPHAS FERRI.
Edin.
Sulphate of Iron.

Take of
Purified filings of iron, ſix ounces ;
Sulphuric acid, eight ounces ;
Water, two pounds and a half.
Mix them, and after the effervefcence ceafes, digeſt the mixture for ſome time upon warm ſand ; then ſtrain the liquor through paper, and after due evaporation ſet it at reſt to cryſtallize.

FERRUM VITRIOLATUM.
Lond.
Vitriolated Iron.

Take of
Filings of iron,
Vitriolic acid, each eight ounces ;
Diſtilled water, three pints.
Mix them in a glaſs-veſſel ; and, when the effervefcence has ceaſed, place the mixture for ſome time upon hot ſand ; then pour off the liquor, ſtraining it through paper ; and, after due evaporation, ſet it aſide to cryſtallize.

FERRUM VITRIOLATUM ; olim, SAL MARTIS.
Dub.
Vitriolated Iron, formerly *Salt of Steel.*

Take of
Iron-wire, two ounces,
Vitriolic acid, three ounces and a half ;
Water, two pounds.
Mix the acid by degrees with the water in a glaſs-veſſel, and gradually add the iron-wire cut into pieces ; digeſt the mixture for ſome time, and ſtrain it through paper. Laſtly, ſet aſide the liquor, after due evaporation, to cryſtallize, by ſlow refrigeration.

ALTHOUGH the ſulphate of iron may be purified by ſolution, filtration and cryſtallization, ſufficiently, for many purpoſes, yet it cannot be procured perfectly pure except by the direct union of ſulphuric acid and iron ; and as it is of conſequence that it ſhould be pure when adminiſtered internally, directions for its preparation have been given by all the Colleges. The differences which may be obſerved in the proportions of the materials employed, is of little conſequence, as ſulphuric acid and iron unite only in one proportion.

Iron ſcarcely acts upon ſulphuric acid, unleſs aſſiſted by heat. It then becomes oxidized, by abſtracting oxygen from a portion of the acid, and converting it into ſulphurous acid gas or ſulphur, and combines with the remainder of the acid. But it acts with great rapidity on diluted sulphuric acid; in which case it is not oxidized at the expence of the acid itself, but by decomposing the water, and therefore the hydrogen of the water is separated in the form of gas. The action of the acid and iron upon each other often ceases before the acid is nearly saturated, and may be renewed by the addition of a little water. The reason is, that all the water which was not decomposed is employed to dissolve the sulphate of iron formed.

The properties and uses of sulphate of iron have been already mentioned.

SULPHAS FERRI EXSICCATUS.

Edin.

Dried Sulphate of Iron.

Take of

Sulphate of iron any quantity.

Expose it to the action of a moderate heat in an unglazed earthen vessel, until it become white and perfectly dry.

THE heat applied here must not be so great as to decompose the sulphate of iron, but only to deprive it of its water of crystallization.

OXIDUM FERRI RUBRUM.

Edin.

Red Oxide of Iron.

Expose dried sulphate of iron to an intense heat, until it is converted into a very red matter.

BY the violent heat applied in this preparation, the sulphate of iron is completely decomposed, and copious white fumes are expelled. The iron is converted into the red oxide; part of the sulphuric acid is therefore reduced to the state of sulphurous acid, and the rest of the acid is expelled in a very concentrated state. This process was formerly employed in this country, and still is employed in Germany, for the preparation of sulphuric acid; which, however, from the presence of the sulphurous acid, was possessed of some peculiar properties, such as emitting fumes and crystallizing. The residuum is composed of red oxide of iron, combined with a little red sulphate of iron, which renders it deliquescent. To obtain the oxide perfectly pure, the residuum must therefore be washed with water, and dried quickly, to prevent the absorption of carbonic acid.

TINCTURA MURIATIS FERRI.

Edin.

Tincture of Muriate of Iron.

Take of

The purified scales of oxide of iron in powder, three ounces;

Muriatic

Muriatic acid about ten ounces, or as much as may be ſufficient to diſſolve the powder.

Digeſt by a gentle heat, and after the powder is diſſolved, add as much

Alcohol as will make the whole quantity of liquor amount to two pounds and a half.

TINCTURA FERRI MURIATI.

Lond.

Tincture of Muriated Iron.

Take of

The ruſt of iron, half a pound;

Muriatic acid, three pounds;

Rectified ſpirit of wine, three pints.

Pour the muriatic acid on the ruſt of iron in a glaſs-veſſel; and ſhake the mixture now and then during three days. Set it by, that the feces may ſubſide; then pour off the liquor; evaporate this to one pint, and, when cold, add to it the vinous ſpirit.

Dub.

Take of

Iron wire, half a pound;

Muriatic acid, three pounds;

Rectified ſpirit of wine, three pounds.

The directions for combining theſe are exactly the ſame with thoſe of the London College.

IN making this preparation, each of the Colleges uſes iron in a different ſtate; the Dublin College, metallic iron; the Edinburgh, the black oxide; and the London College, the carbonate of the red oxide. There is no difference between the ſolutions of iron and of its black oxide; becauſe the iron is converted into the ſtate of black oxide by the decompoſition of the water, before it is diſſolved; and accordingly, when iron is diſſolved in muriatic acid, there is a diſengagement of hydrogen gas; whereas the black oxide is diſſolved without any effervеſcence. But muriatic acid is capable of combining either with the black or red oxides of iron, and forms with each, ſalts, having diſtinctive properties.

The red muriate of iron is not cryſtallizable; has a dark orange colour; is deliqueſcent; forms a brown red ſolution, having a very aſtringent taſte; and is ſoluble in alcohol. The green muriate is cryſtallizable; has little colour; is very ſoluble in water, forming a pale green ſolution; and is inſoluble in alcohol. But the aqueous ſolution of green muriate attracts oxygen ſo rapidly from the atmoſphere, that unleſs the acceſs of the air be totally excluded, it is always partially converted into red muriate. The ſolutions of iron and of its black oxide, are accordingly found always to contain a greater or leſs proportion of red muriate, and are

are therefore not uniform or conſtant in their properties. Beſides, as it is only the red muriate which is ſoluble in alcohol, it appears to us that it is better, according to the directions of the London College, to uſe the red carbonate of iron, by which means we obtain an unmixed and permanent ſolution of the red muriate. Muriate of iron is alſo formed, when we diſſolve the ſulphuret of iron in muriatic acid for the purpoſe of procuring ſulphuretted hydrogen gas. It is alſo the reſiduum which remains in the retort after the ſublimation of muriate of ammonia and iron.

When well prepared, the alcoholic ſolution of muriate of iron has a yellowiſh colour, and very aſtringent taſte. It is an excellent chalybeate, and may be given in doſes of ten or twenty drops twice or thrice a-day, in any proper vehicle.

MURIAS AMMONIÆ ET FERRI; olim, FLORES MARTIALES. *Edin.*

Muriate of Ammonia and Iron; formerly *Martial Flowers.*

Take of

Red oxide of iron, waſhed and again dried;

Muriate of ammonia, equal weights;

Mix them thoroughly and ſublime.

FERRUM AMMONIACALE.

Lond.

Ammoniacal Iron.

Take of

Iron filings, one pound;

Sal ammoniac, two pounds.

Mix and ſublime. What remains at the bottom of the veſſel mix by rubbing together with the ſublimed matter, and again ſublime.

ALTHOUGH at a low temperature ammonia decompoſes the muriate of iron, at a high temperature iron and its oxides decompoſe muriate of ammonia. But as muriate of ammonia is itſelf a volatile ſalt, great part of it eſcapes undecompoſed; ſo that the product is a mixture of muriate of ammonia with red muriate of iron. According to the formula of the Edinburgh College, the decompoſition is effected by ſimple affinity. As ſoon as the oxide of iron acts on the muriate of ammonia, the ammonia which is ſeparated comes over; then as the heat increaſes, undecompoſed muriate of ammonia is ſublimed; which, as the proceſs advances, is mixed with an increaſing proportion of muriate of iron. In the proceſs of the London College, the decompoſition is more complex; for the iron filings muſt not only decompoſe the muriate of ammonia, but muſt alſo decompoſe ammonia itſelf, before it can become ſufficiently oxidized. In conſequence of the latter decompoſition, a conſiderable quantity of hydrogen gas is produced.

produced. Both Colleges employ a much larger quantity of iron than is neceſſary. According to the German pharmaceutiſts, if the iron be equal to one-ſixteenth of the muriate of ammonia, it is ſufficient. The new Pruſſian Diſpenſatory directs one ounce of iron to be diſſolved in two ounces of muriatic acid, and one of nitrous acid; this ſolution of red muriate of iron to be mixed with a watery ſolution of twelve ounces of muriate of ammonia, and the whole evaporated to dryneſs; and the dry maſs to be ſublimed in a wide-necked retort, with a heat increaſed to redneſs.

Whatever proceſs be employed, the heat muſt be applied as quickly as poſſible; and the ſublimed product thoroughly mixed by trituration, and kept in well-ſtopt glaſs-veſſels. It ſhould have a deep orange colour, and a ſmell reſembling ſaffron, and ſhould deliqueſce in the air.

This preparation is ſuppoſed to be highly aperient and attenuating; though no otherwiſe ſo than the reſt of the chalybeates, or at moſt only by virtue of the ſaline matter joined to the iron. It has been found of ſervice in hyſterical and hypochondriacal caſes, and in diſtempers proceeding from a laxity and weakneſs of the ſolids, as the rickets. From two or three grains to ten may be conveniently taken in the form of a bolus.

TINCTURA FERRI AMMONIACALIS.

Lond.

Tincture of Ammoniacal Iron.

Take of

Ammoniacal iron, four ounces;

Proof-ſpirit, one pint.

Digeſt and ſtrain.

THIS is merely a ſpirituous ſolution of the preceding article, and is a much leſs elegant medicine than the ſimple tincture of muriate of iron.

FERRUM TARTARISATUM.

Lond.

Tartarized Iron.

Take of

Filings of iron, one pound;

Cryſtals of tartar in powder, two pounds.

Mix them with diſtilled water into a thick maſs, which is to be expoſed to the action of the air for eight days in a wide glaſs-veſſel; then grind the matter, after being dried in a ſand bath, to a very minute powder.

THIS is in fact a triple tartrite of iron and potaſs, the exceſs of acid in the ſuper-tartrite of potaſs being ſaturated by oxide of iron. The iron is oxidized during the firſt part of the proceſs, in which it is moiſtened and expoſed to the action of the air.

Tartrite

Tartrite of potaſs and iron may alſo be formed, by boiling a ſolution of ſuper-tartrite of potaſs with iron, or, what is ſtill better, with ſome of the oxides of iron, until the exceſs of acid be ſaturated. The compound, according to Thenard, is very ſoluble, varies in colour according to the ſtate of the oxide; cryſtallizes in ſmall needles, and has a chalybeate taſte. It is not precipitated by alkalies or alkaline carbonates. It is decompoſed by ſulphuretted hydrogen and its compounds, and by gallic acid. The editors of Gren's Pharmacy ſay, that a ſolution of iron in ſuper-tartrite of potaſs, furniſhes by evaporation greeniſh ſpathoſe permanent cryſtals, difficultly ſoluble; which is ſurely a miſtake; at leaſt it neither correſponds with Thenard's account, nor with the old name of this preparation, Mars Solubilis.

The tartrite of iron and potaſs may be given in the form of powder or bolus, in doſes of from ten to thirty grains.

VINUM FERRI.

Lond.

Wine of Iron.

Take of

Iron filings, four ounces;

Spaniſh white wine, four pints.

Digeſt for a month, often ſhaking the veſſel, and then ſtrain.

VINUM FERRATUM; olim, VINUM CHALYBEATUM.

Dub.

Ironated Wine, formerly *Chalybeate Wine.*

Take of

Iron wire cut in pieces, four ounces;

White Rheniſh wine, four pints.

Digeſt for a month, often ſhaking the veſſel, and then ſtrain.

THIS is merely a ſolution of the preceding article in wine; for the iron is only diſſolved in the wine by means of the ſuper-tartrite of potaſs it contains. The Rheniſh wine, directed by the Dublin College, will therefore diſſolve a larger quantity of iron than the Spaniſh white wine of the London College. But a ſolution of a known proportion of the preceding article in wine, will give a medicine of more equal powers, and may be made extemporaneouſly.

The doſe is from a drachm to half an ounce, repeated twice or thrice a day in chlorotic caſes.

TINCTURA FERRI ACETATI.

Dub.

Tincture of Acetated Iron.

Take of

Acetated vegetable alkali;

Vitriolated iron, each one ounce.

Rub

Rub the acetated alkali and vitriolated iron together in a glafs-mortar, until the mafs deliquefces; then add, during the trituration, the alcohol, and ftrain the folution.

THE acetite of potafs and fulphate of iron decompofe each other, and form acetite of iron, and fulphate of potafs. But as the fulphate of potafs is not foluble in alcohol, the folution, after filtration, is an alcoholic folution of acetite of iron. The acetous acid is alfo capable of combining with both oxides of iron; and as the iron in the fulphate, is in the ftate of black oxide, which has a ftrong attraction for oxygen, it is probable that the acetite prepared in the way directed is a mixed acetite.

It has an extremely ftyptic tafte, and is given in dofes of thirty or forty drops.

CHAP. IX.

MERCURY.

HYDRARGYRUM PURIFICATUM.

Dub.

Purified Quickfilver.

Take of
Quickfilver, fix pounds.
Draw off four pounds by flow diftillation.

HYDRARGYRUS PURIFICATUS.

Lond.

Purified Quickfilver.

Take of
Quickfilver,
Iron-filings, each four pounds.
Rub them together, and diftil from an iron-veffel.

Edin.

Take of
Quickfilver, four parts;
Filings of iron, one part.
Rub them together, and diftil from an iron-veffel.

THE quickfilver of commerce is often adulterated with lead, tin, or other metals, which renders it unfit for internal ufe, and for many preparations. It therefore becomes neceffary to purify it, and fortunately its comparatively great volatility fupplies us with an eafy mode. The Dublin College diftil it fimply without any

any addition; but, left towards the end of the procefs the mercury fhould elevate any impurities along with it, they draw off but two-thirds. The principal objection to this procefs is the want of economy; for although the remaining third may be ufed for fome purpofes, its value is very much depreciated. As iron has a much ftronger affinity for almoft all the fubftances with which quickfilver may be adulterated, than quickfilver has, by adding iron-filings we may draw off the whole quickfilver by diftillation, without any fear of the impurities rifing along with it. The London College add an equal weight of iron-filings, but fo large a quantity caufes the fize of the diftilling apparatus to be unneceffarily increafed. The Edinburgh College ufe one-fourth, which is certainly enough.

Glafs-retorts are inadmiffible in this diftillation; becaufe, when the mercury begins to boil, the concuffion is fo great, that they would certainly be broken. Iron-retorts are the beft, although ftrong earthen ones may be alfo ufed. The receiver may be of the fame materials, or of glafs, if we wifh to infpect the progrefs of the operation; but in this cafe we muft interpofe an adopter between the retort and receiver, and fill the receiver nearly full of water, that the mercury may not crack it by falling hot into it. The retort employed fhould be fo large, that the quickfilver fhould not fill above one-third of it.

ACETIS HYDRARGYRI.

Edin.

Acetite of Quickfilver.

Take of

Purified quickfilver, three ounces,

Diluted nitrous acid, four ounces and a half, or a little more than may be required for diffolving the mercury;

Acetite of potafs, three ounces;

Boiling water, eight pounds.

Mix the quickfilver with the diluted nitrous acid; and after the effervefcence has ceafed, digeft if neceffary with a gentle heat, until the quickfilver be entirely diffolved. Then diffolve the acetite of potafs in the boiling water, and immediately to this folution, ftill hot, add the former, and mix them by agitation. Then fet the mixture afide to cryftallize. Place the cryftals in a funnel, and wafh them with cold diftilled water; and, laftly, dry them with as gentle a heat as poffible.

Hydrargyrus Acetatus.
Lond.
Acetated Quickſilver.

Take of
 Purified quickſilver,
 Diluted nitrous acid, each half a pound;
 Acetated kali, three ounces;
 Tepid diſtilled water, two pounds.

Mix the quickſilver with the diluted nitrous acid in a glaſs-veſſel, and digeſt them for twenty four hours with a gentle heat, that the quickſilver may be diſſolved. Pour the nitrated quickſilver thus prepared into the acetated kali, previouſly diſſolved in the tepid (90°) water, that acetated quickſilver may be formed, which is to be firſt waſhed with cold diſtilled water, and afterwards diſſolved in a ſufficient quantity of boiling diſtilled water. Filter this ſolution through paper, and ſet it aſide to cryſtallize.

Hydrargyrum Acetatum.
Dub.
Acetated Quickſilver.

Take of
 Purified quickſilver,
 Diluted nitrous acid, each half a pound;
 Acetated vegetable alkali, three ounces;
 Diſtilled water, heated to about the ninetieth degree, two pounds and a half.

Diſſolve the mercury in the acid with a gentle heat. Mix the liquor, before cryſtals form in it by cooling, with the water in which the acetated vegetable alkali has been previouſly diſſolved. Waſh the precipitate with cold diſtilled water, then pour upon it twenty-four pounds of diſtilled water, and boil a little. Having removed the veſſel from the fire, let it ſtand at reſt for about ten minutes; and, laſtly, pour off from the ſediment the clear liquor, and let the acetated quickſilver cryſtallize in it by ſlow refrigeration.

These proceſſes are all fundamentally the ſame. Nitrate of mercury is decompoſed by acetite of potaſs; and the products are acetite of mercury and nitrate of potaſs. The nitrate of potaſs being much more ſoluble than the acetite of mercury, remains in ſolution after the latter is ſeparated by cryſtallization. Mercury is capable of forming different combinations with nitrous acid, which poſſeſs each their characteriſtic properties. When we employ a ſufficient quantity of acid to diſſolve the mercury without the aſſiſtance of heat, and to retain it in ſolution, there is always an exceſs of acid; and therefore it is a ſolution of ſuper-nitrate of mercury. If we evaporate this ſolution very gently, or if we employ a a larger proportion of mercury at firſt, and aſſiſt the action of the acid by a gentle heat, we obtain nitrate of mercury cryſtallized in various forms. But if we aſſiſt the action of the acid by boiling, a larger quantity of mercury is diſſolved, and a ſub-nitrate is formed; for, if we attempt to dilute the ſolution with water, a copious precipitate of ſub-nitrate of mercury immediately takes place, and the ſolution contains ſuper-nitrate of mercury. It is ſtill unaſcertained, whether theſe ſolutions differ only in the proportions of the metal and acid, or in the degree of the oxidizement of the mercury. Fourcroy ſays, that it is more oxidized in the ſub-nitrate, becauſe, during the converſion of the nitrate into the ſub-nitrate by the action of heat, nitrous gas is extricated. He alſo ſays, that it forms a ſoluble ſalt when decompoſed with muriatic acid. Chenevix, on the contrary, aſſerts that it is leſs oxidized, becauſe ſuper-nitrate of mercury, prepared without heat, is capable, when heated to ebullition, of diſſolving an additional quantity of mercury without the formation of any nitrous gas. Experiments alone can decide which of theſe chemiſts has ſtated the fact accurately; but we are rather inclined to agree with the latter, as he was acquainted with Fourcroy's opinion, and criticizes it. We have mentioned theſe particulars with regard to the nitrates of mercury in this place, becauſe we have no opportunity of doing it in a ſeparate article, and we ſhall have occaſion to mention them frequently *.

For making the acetite of mercury, the nitrate is prepared with a very gentle heat, and with exceſs of acid, that it may be retained in perfect ſolution, and that there may be no poſſibility of any admixture of ſub-nitrate with the acetite formed. A larger proportion of acid is uſed by the Edinburgh College than by the other Colleges, but we believe it to be neceſſary. In mixing the ſolutions, we muſt be careful to pour the mercurial ſolution into the acetite of potaſs, becauſe, by adopting the contrary procedure, ſub-nitrate of mercury will be precipitated undecompoſed, if any of it be contained in the mercurial ſolution. For diſſolving the acetite

* In our accounts of the quantity of oxygen, we have always followed the eſtimation of thoſe chemiſts who have moſt particularly deſcribed any of theſe ſalts. Thus, we have ſometimes followed M. Fourcroy, ſometimes Mr Chevenix; but, to prevent the appearance of inconſiſtency, it is neceſſary to obſerve, that theſe excellent chemiſts differ remarkably in the quantities of oxygen they ſuppoſe to be in the ſame oxide. M. Fourcroy ſuppoſes that there are but three oxides: the black oxide, which he ſays contains 0.04 of oxygen; the red oxide, which contains 0.08; and another ſtill more oxidized, but which cannot be obtained ſeparate. The grey, yellow, and white oxides, he ſuppoſes to be ſub-ſalts, containing ſome of theſe oxides.

Mr Chevenix has eſtimated the oxide in the ſub-muriate to contain 0.107 of oxygen, and that in the muriate to contain 0.15 of oxygen; but we are not to be miſled by theſe numbers, to ſuppoſe that the oxide in the ſub-muriate contains more oxygen than the red oxide does. On the contrary, it is extremely probable that it is the ſame, or nearly the ſame with Fourcroy's black oxide, and that the oxide in the muriate is the red oxide. The numerical proportion of oxygen in theſe oxides muſt therefore be ſtill conſidered as unaſcertained.

acetite of potaſs, the London and Dublin Colleges only uſe as much water as is capable of retaining the nitrate of potaſs in ſolution: the acetite of mercury is therefore precipitated, and is purified by again diſſolving it in boiling water and cryſtallizing it. This part of the proceſs is ſimplified by the Edinburgh College, who uſe as much water for diſſolving the acetite of potaſs as is capable of retaining, as long as it is hot, the acetite of mercury in ſolution, and of allowing it to cryſtallize as it cools. In this way, therefore, it is procured at once ſufficiently pure. The exſiccation of the acetite of mercury is an operation of great delicacy; for it is ſo ſpongy, that it retains the moiſture with great obſtinacy; and it is decompoſed ſo eaſily that heat can ſcarcely be employed. It is beſt dried by compreſſing it between ſeveral folds of bibulous paper.

Acetite of mercury is ſcarcely ſoluble in cold water, but diſſolves readily in boiling water. It generally cryſtallizes in micaceous plates, and is extremely eaſy of decompoſition.

It is ſuppoſed to be a mild preparation of mercury, and was the active ingredient of the celebrated Keyſer's pills. In ſolution it has alſo been recommended externally, to remove freckles and cutaneous eruptions.

MURIAS HYDRARGYRI; olim, Mercurius Sublimatus Corrosivus. *Edin.*

Muriate of Quickſilver, formerly *Corroſive Sublimate.*

Hydrargyrus Muriatus. *Lond.*

Muriated Quickſilver.

Hydrargyrum Muriatum Corrosivum. *Dub.*

Corroſive Muriated Quickſilver.

Take of
- Purified quickſilver, two pounds;
- Sulphuric acid, two pounds and a half;
- Dried muriate of ſoda, four pounds.

Boil the quickſilver with the ſulphuric acid in a glaſs-veſſel placed in a ſand bath, until the matter be dried. Mix the matter when cold in a glaſs-veſſel, with the muriate of ſoda; then ſublime in a glaſs-cucurbit, with a heat gradually increaſed. Laſtly, ſeparate the ſublimed matter from the ſcoriæ.

By boiling the quickſilver to dryneſs with ſulphuric acid, the metal is oxidized by the decompoſition of part of the acid, and combines with the reſt to form ſub-ſulphate of quickſilver. In the ſecond part of the proceſs, this ſub-ſulphate is decompoſed by dried muriate of ſoda, muriate of quickſilver ſublimes, and ſulphate of ſoda remains behind. In Holland it is manufactured by

ſubjecting

ſubjecting to ſublimation a mixture of dried ſulphate of iron, nitrate of potaſs, muriate of ſoda, and quickſilver. In the former editions of the Edinburgh Pharmacopœia, the mercury was oxidized by boiling it to dryneſs in nitrous acid, and then ſublimed with muriate of ſoda and ſulphate of iron. Bergmann recommends the ſublimation of ſub-nitrate of mercury and muriate of ſoda.

Muriate of quickſilver cryſtallizes by ſublimation in priſmatic needles, forming a white ſemi-tranſparent maſs. It is ponderous. Its taſte is acrid, ſtyptic, and durable. It is ſoluble in 20 parts of cold water, and in 2 at 212°. It is alſo ſoluble in 3.8 parts of alcohol at 70°, and in almoſt an equal weight of boiling alcohol. It gives a green colour to ſyrup of violets. It is not altered by expoſure to the air, and is ſublimed unchanged by heat. It is not decompoſed by any of the acids; but is ſoluble, without alteration, in the ſulphuric, nitric, and muriatic acids. It is precipitated by all the alkalies and earths, of an orange-yellow colour, which gradually changes to a brick red; and by their carbonates, of a permanent yellow colour. Ammonia forms with it an inſoluble, white, triple ſalt. It is alſo decompoſed by ſeveral of the metals. It conſiſts, according to Mr Chevenix, of

Quickſilver	69.7	Oxide of mercury	82
Oxygen	12.3		
		Muriatic acid	18
			100

And the oxide therefore conſiſts of

Quickſilver	85
Oxygen	15
	100

Muriate of mercury is one of the moſt violent poiſons with which we are acquainted. Externally it acts as an eſcharotic or a cauſtic; and in ſolution it is uſed for deſtroying fungous fleſh, and for removing herpetic eruptions; but even externally it muſt be uſed with very great caution. It has however been recommended to be given internally, by the reſpectable authorities of Boerhaave and Van Swieten; and it is the active ingredient of all the empyrical antivenereal ſyrups. Were it really capable of curing the venereal diſeaſe, or equal in efficacy to the common modes of adminiſtering mercury, it would poſſeſs many advantages over them in other reſpects: But that it cannot be depended upon, is almoſt demonſtrated by its uſe as an antivenereal being very much confined to the quacks, and by the teſtimony of the moſt experienced practitioners. Mr Pearſon ſays, that it will ſometimes cure

cure the primary ſymptoms of ſyphilis, eſpecially if it produce conſiderable ſoreneſs of the gums, and the common effects of mercury; but that it will often fail in removing a chancre; and where it has removed it, that the moſt ſteady perſeverance will not ſecure the patient from a conſtitutional affection. It is on ſome occaſions, however, a uſeful auxiliary to a mercurial courſe, in quickly bringing the ſyſtem under the influence of mercury, and in ſupporting its action after the uſe of frictions, and is peculiarly efficacious in relieving venereal pains, in healing ulcers of the throat, and in promoting the deſquamation of eruptions.

SUB-MURIAS HYDRARGYRI; olim, CALOMELAS.
Edin.
Sub-muriate of Quickſilver, formerly *Calomel.*

Take of
Muriate of quickſilver, ground to powder in a glaſs-mortar, four ounces;
Purified quickſilver, three ounces.

Rub them together in a glaſs-mortar, with a little water, to prevent the acrid powder from riſing, until the mercury be extinguiſhed; and having put the powder, after being dried, into an oblong phial, of which it fills only one-third, ſublime from warm ſand. After the ſublimation is finiſhed, having broken the phial, throw away both the red matter found near the bottom of the phial, and the white matter near its neck, and ſublime the reſt of the maſs. Grind this into a very minute powder, which is laſtly to be waſhed with boiling diſtilled water.

HYDRARGYRUM MURIATUM MITE SUBLIMATUM.
Dub.
Mild Sublimated Muriated Mercury.

Take of
Corroſive muriated mercury, one pound;
Purified quickſilver, nine ounces.

Rub them together until the globules diſappear, and ſublime. Rub the ſublimed matter with the reſiduum, and repeat the ſublimation. Laſtly, waſh the ſublimed matter with frequent affuſions of boiling diſtilled water.

CALOMELAS.
Lond.
Calomel.

Take of
Muriated quickſilver, one pound;
Purified quickſilver, nine ounces.

Rub them together, until the globules disappear and sublime; then rub the whole matter again together and sublime. Repeat the sublimation in the same manner four times. Afterwards triturate the matter into a very subtile powder, and wash it by the affusion of boiling distilled water.

When quicksilver is triturated with muriate of quicksilver, it abstracts from the oxidized quicksilver of the muriate a part of its oxygen, and the whole mass assumes a blackish grey colour. When this is exposed to a degree of heat sufficient to convert it into vapour, the action of the different portions of quicksilver upon each other, and upon the muriatic acid, is much more complete: and the whole is converted into a solid white mass, consisting of mercury in a state of less oxidizement, and combined with less acid than in the muriate.

The trituration of the muriate of mercury is a very noxious operation, as it is almost impossible to prevent the finer particles from rising and affecting the operator's eyes and nostrils. To lessen this evil, the Edinburgh College direct the addition of a little water. In the second part of the process, when the heat is applied, a small portion of quicksilver and undecomposed muriate first arise, and condense themselves in the highest part or neck of the phial; then the sub-muriate rises, and, being less volatile, condenses in the upper half of the body, while a small quantity of quicksilver, in a state of considerable oxidizement, remains fixed, or near the bottom. The Edinburgh College separate the sub-muriate from the other matters, and sublime it again. The other Colleges triturate the whole together again, and re-sublime it, the Dublin College once, the London four times. As in the first sublimation, a portion of the quicksilver and of the muriate of quicksilver always arise undecomposed, a second sublimation is necessary, especially if we triturate the whole products of the first sublimation together; but any further repetition of the process is perfectly useless. Lest any portion of muriate should have escaped decomposition, the sub-muriate must be edulcorated with boiling distilled water, until the water which comes off forms no precipitate with alkalies.

Sub-muriate of mercury is generally obtained in the form of a white solid mass; but is capable of crystallizing in tetrahedral prisms terminated by pyramids. It has no taste, and is scarcely soluble in water or in alcohol. It is less volatile than muriate of mercury. It is blackened by light, and becomes brown when triturated with lime-water or the alkalies. It is converted by oxymuriatic acid into muriate of quicksilver. According to Mr Chenevix, it consists of

Quicksilver,

Quickfilver, 79 / Oxygen, 9.5	Oxide of quickfilver,		88.5
	Muriatic acid,		11.5
			100

And its oxide contains,	Quickfilver,	89.3
	Oxygen,	10.7
		100

By comparing this analyfis with that of the muriate of mercury, 54 parts of quickfilver feem in fact fufficient to convert 100 of the muriate into fub-muriate; but with Mr Chenevix we think the excefs employed by the Colleges a ufeful precaution.

The fub-muriate of quickfilver is one of the beft mercurials we poffefs. By proper management it may be made to increafe, in a remarkable manner, almoft any of the fecretions or excretions. One grain mixed with fugar, and fnuffed up the noftrils, is recommended as a powerful errhine in amaurofis. The fame mixture is blown into the eye, to remove fpecks from the cornea. Given in dofes of one grain morning and evening, or in larger dofes combined with opium, to prevent it from acting as a purgative, it excites ptyalifm. In larger dofes of five grains and upwards, it is an excellent purgative. Combined with diuretics, it proves diuretic, and with fudorifics, fudorific.

It is one of the preparations of mercury which is capable of curing fyphilis in every form. It alfo produces very powerful and falutary effects in obftructions and chronic inflammations of the vifcera, efpecially of the liver; and, in general, it is applicable to every cafe in which mercurials are indicated.

SUB-MURIAS HYDRARGYRI PRÆCIPITATUS.

Edin.

Precipitated Sub-muriate of Quickfilver.

Take of

Diluted nitrous acid,

Purified quickfilver, each eight ounces;

Muriate of foda, four ounces and a half;

Boiling water, eight pounds.

Mix the quickfilver with the diluted nitrous acid, and towards the end of the effervefcence digeft with a gentle heat, frequently fhaking the veffel in the mean time. But it is neceffary to add more quickfilver to the acid than it is capable of diffolving, that a perfectly faturated folution may be obtained.

Diffolve at the fame time the muriate of foda in the boiling water, and into this folution pour the other while ftill hot, and mix them quickly by agitation. Pour off the faline liquor after the precipitate has fubfided, and wafh the fub-muriate of quick-

 filver

ſilver by repeated affuſions of boiling water, which is to be poured off each time after the depoſition of the ſub-muriate, until the water come off taſteleſs.

Hydrargyrus Muriatus Mitis.
Lond.
Mild Muriated Quickſilver.

Take of
Purified quickſilver,
Dilute nitrous acid, of each half a pound.
Mix in a glaſs-veſſel, and ſet it aſide until the quickſilver be diſſolved. Let them boil, that the nitrated quickſilver may be diſſolved. Pour out the boiling liquor into a glaſs-veſſel, containing another boiling liquor, conſiſting of
Muriatic ſalt, four ounces;
Diſtilled water, eight pints.
After the powder has ſubſided to the bottom of the veſſel, pour off the clear ſupernatant liquor, and waſh the powder which remains behind, till it becomes inſipid, with frequent affuſions of hot water; then dry it on blotting-paper with a gentle heat.

Hydrargyrum Muriatum Mite Præcipitatum.
Dub.
Precipitated Mild Muriated Quickſilver.

Take of
Purified quickſilver, ſix ounces and a half;
Diluted nitrous acid, ſix ounces.
Digeſt in a glaſs-veſſel with a moderate heat for ſix hours, occaſionally agitating it. Towards the end of the ſolution, increaſe the heat ſo as to make the liquor boil for a little, which is then to be poured off from the quickſilver remaining undiſſolved, and mixed with ten pounds of boiling water, in which four ounces of common ſalt have been previouſly diſſolved. Waſh the powder which ſubſides to the bottom with warm diſtilled water, as long as the liquor decanted from it is rendered turbid from the addition of a few drops of mild ley.

In the firſt part of this proceſs, a ſaturated ſolution of nitrate of quickſilver, with exceſs of oxide, is formed. In the ſecond, there is a mutual decompoſition of this nitrate, and of the muriate of ſoda; nitrate of ſoda is formed, and muriate of quickſilver, with exceſs of oxide. Mr Chenevix thinks, that as water is capable of decompoſing ſub-nitrate of quickſilver, a part of it is actually decompoſed by the water holding the muriate of ſoda in ſolution, and that the precipitate prepared according to the directions of the colleges, is a mixture of ſub-muriate and ſub-nitrate of quickſilver. To remedy this defect, he propoſes either to employ a ſolution of quickſilver in nitrous acid made without heat, that is a folution of fuper-nitrate of mercury, or to add to the folution of muriate of foda a quantity of muriatic acid. To the latter propofal there appears no objection; but as he himfelf is of opinion, that the fuper-nitrate of quickfilver contains the metal in a ftate of greater oxidizement, it furely cannot be ufed with propriety, for the preparation of a muriate, which fhould contain the quickfilver in a ftate of lefs oxidizement, and, in fact, the folution has been found to contain muriate of quickfilver. Befides, we apprehend, that if a fufficient quantity of muriate of foda be ufed, (and no inconvenience can arife from ufing it in excefs), and if we be careful to pour the folution of the nitrate of mercury into that of the muriate of foda, that no fub-nitrate will be contained in the precipitate. Indeed, if we follow the directions of M. Delkefkamp, and drop the folution of muriate of foda into that of nitrate of mercury, a large proportion of the precipitate will confift of fub-nitrate.

When properly prepared, the fub-muriate obtained by precipitation fcarcely differs from that obtained by fublimation. Göttling found no other difference than that the precipitated fub-muriate became grey, when triturated with lime-water, whereas the fublimed fub-muriate becomes black. But he expofed to heat half an ounce of the precipitated fub-muriate in a fubliming apparatus; fcarcely a grain of a reddifh matter remained fixed; and the fublimed matter now became black when triturated with lime-water, and differed in no refpect from fub-muriate prepared in the ordinary way by fublimation. It therefore would feem to be an improvement in the procefs, to fublime the fub-muriate after it is precipitated; efpecially as by that operation it would be moft effectually feparated from any fub-nitrate which might be mixed with it.

There is ftill another way of preparing the fub-muriate of mercury, without ufing corrofive fublimate, which muft be noticed. It was contrived by Hermbftaedt, and is recommended by Moench with the confidence derived from experience, as the very beft procefs for preparing the fub muriate of quickfilver.

Take

Pure quickfilver, feven ounces and a half;
Sulphuric acid, four ounces;
Dried muriate of foda, five ounces and a half.

Diftil in a glafs-retort the fulphuric acid, with four ounces of the quickfilver, until they be converted into a dry white mafs: Triturate the fulphate of mercury thus formed, with the remaining three ounces and a half of quickfilver, until the globules difappear; then add the muriate of foda; mix them and fublime. As the product of the firft fublimation ftill contains unoxidized quickfilver, it is to be again triturated and fublimed. The fublimate being wafhed, is now pure fub-muriate of quickfilver, and weighs about fix ounces.

The theory of this proceſs is the ſame with that of the formation of the muriate of quickſilver. The difference between the two products ariſes from the proportion of quickſilver being greater, and that of the muriate of ſoda employed being leſs. We are not prepared to ſtate the comparative economy of theſe three proceſſes deſcribed, for preparing ſub-muriate of quickſilver; but of the laſt proceſs, we may obſerve, that according to Mr Chenevix's analyſis, ſeven ounces and half of quickſilver ſhould furniſh nine ounces and a half of ſub-muriate of quickſilver; ſo that there is evidently a conſiderable loſs, which muſt be owing either to the formation of muriate of quickſilver, or of oxide of quickſilver. To diminiſh this loſs, we might diſſolve the reſiduum of the firſt ſublimation, which is principally ſulphate of ſoda, in the water with which the ſublimate was waſhed, and precipitate the ſolution with carbonate of ſoda. We ſhould thus regain the remaining portion of the quickſilver in the ſtate of brown carbonate, which might be applied to many purpoſes. The ſame thing might be practiſed with advantage on the waſhings and reſiduums of ſeveral of the other preparations.

CALX HYDRARGYRI ALBA.

Lond.

White Calx of Quickſilver.

SUB-MURIAS HYDRARGYRI ET AMMONIÆ.

Sub-muriate of Quickſilver and Ammonia.

Take of
- Muriated quickſilver,
- Sal ammoniac,
- Water of prepared kali, each half a pound.

Diſſolve firſt the ſal ammoniac, afterwards the muriated quickſilver in diſtilled water, and add to theſe the water of prepared kali. Waſh the powder until it become inſipid.

When to a ſolution of muriate of ammonia, there is added muriate of quickſilver, about thirty times more of the latter is diſſolved than the ſame quantity of pure water is capable of diſſolving; and there takes place a conſiderable increaſe of temperature. Now, as theſe facts ſufficiently prove a reciprocal action of the two ſalts, and as there is no decompoſition, it is evident that they muſt have combined to form a triple ſalt; eſpecially as they cannot be again ſeparated either by ſublimation or cryſtallization. This compound may therefore, with propriety, be termed Muriate of Mercury and Ammonia. It is the Sal Alembroth of the alchemiſts. It is very ſoluble in water, and is ſublimed by heat without decompoſition. When to a ſolution of this ſalt we add a ſolution of an alkaline carbonate, there occurs a partial decompoſition. The alkali combines with a portion of the muriatic acid; and reduces the muriate of mercury and ammonia,

to

to the ſtate of a ſub-muriate, which, being inſoluble, falls to the bottom of the ſolution.

The ſub-muriate of mercury and ammonia thus precipitated, has at firſt an earthy and afterwards a metallic taſte. It is not ſoluble in water. It is decompoſed by heat; furniſhing water, ammonia, and nitrogen gas, while 0.86 of ſub-muriate of mercury remains behind. Sulphuric and nitric acids partially decompoſe it, and convert it into muriate of mercury, and triple ſalts of mercury and ammonia. Muriatic acid diſſolves it, and converts it into muriate of quickſilver and ammonia. According to Fourcroy's analyſis, it conſiſts of 81 oxide of mercury,

16 muriatic acid,

3 ammonia.

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100

Therefore, if the analyſis of the different muriates be correct, there is an unneceſſary want of economy in uſing equal parts of muriate of ammonia and muriate of mercury; for by calculation, at leaſt, we ſhould employ only one part of the former to eight of the latter.

It is only uſed for ointments; and its principal recommendation is its fine white colour.

OXIDUM HYDRARGYRI CINEREUM.

Edin.

Aſh-coloured Oxide of Quickſilver.

Take of

Purified quickſilver, four parts;

Diluted nitrous acid, five parts;

Diſtilled water, fifteen parts;

Water of carbonate of ammonia, a ſufficient quantity.

Diſſolve the mercury in the nitrous acid; then gradually add the diſtilled water, and pour into the mixture as much water of the carbonate of ammonia as ſhall be ſufficient to precipitate the whole of the oxide of mercury, which is then to be waſhed with pure water and dried.

PULVIS HYDRARGYRI CINEREUS.

Dub.

Aſh-coloured Powder of Quickſilver.

Take of

Quickſilver, two ounces;

Diluted nitrous acid, two ounces and a half.

Diſſolve the quickſilver with a moderate heat, and dilute the liquor with eight ounces of cold diſtilled water; then drop into it an ounce and a half of the liquor of mild volatile alkali, or as much as may be ſufficient to precipitate the metal, which is to be washed with frequent affusions of warm water, and afterwards dried.

These processes, which are essentially the same, are intended to furnish a substitute for the black oxide of quicksilver, on which the efficacy of the mercurials most frequently employed, and most certainly useful, depends. In these, the mercury is oxidized by trituration, in contact with the atmosphere; but this operation is both so tedious and troublesome, that it is often imperfectly performed or assisted by improper means.

In the processes we are now explaining, it was supposed that as ammonia has a stronger affinity for nitric acid than oxide of mercury has, it would separate oxide of mercury from its solution in nitric acid; and, therefore, that the precipitate obtained was oxide of mercury similar to that formed by tituration. But since the nature of the triple metalline salts has been better understood, this has been discovered to be an error, although the exact mode of their action is not yet explained. The grey precipitate which is formed, may, speaking generally, be called a sub-nitrate of mercury and ammonia; for it consists of oxide of mercury and ammonia, not saturated with nitric acid; but even to ocular inspection it does not seem to be homogeneous; and when it is digested in acetous acid, it is partially dissolved, and the residuum acquires a very pale, or almost white colour. The portion dissolved seems to be black oxide, and the white residuum to be pure sub-nitrate of mercury and ammonia, which, according to Fourcroy, crystallizes in brilliant polyhedral crystals, without smell, of an extremely styptic taste, scarcely soluble in water, is decomposed by heat, by the sulphuric and muriatic acids, and by lime, potass, and soda, and consists of 68.20 oxide of mercury, 16 of ammonia, and 15.80 of nitric acid. According to these observations, this preparation ought not to be called the grey oxide of mercury, and is not identical with the black oxide of mercury, prepared by trituration. If, however, it answered the same purposes, the identity would be of little consequence; but from its never having been introduced into general use, although so much more easily prepared, we may presume that it is not equal in point of efficacy.

Black oxide of mercury may however be obtained, according to the direction of Saunders, by triturating with lime-water, and subsequent edulcoration, the sublimed sub-muriate of mercury, or rather the precipitated sub-muriate, as proposed by Göttling; and that the decomposition may be more easy and complete, we shall venture to suggest, that for this preparation the latter sub-muriate should not be dried, but should be triturated with the lime-water as soon as it is edulcorated. This simple black oxide certainly merits a fair trial.

HYDRAR-

HYDRARGYRUS CUM CRETA.

Lond.

Quickſilver with Chalk.

Take of

Purified quickſilver, three ounces;

Prepared chalk, five ounces.

Triturate them together until the globules diſappear.

Quicksilver has a ſtrong affinity for oxygen, and abſorbs it ſlowly from the atmoſphere. But the combination may be conſiderably accelerated by agitation, and ſtill more by triturating quickſilver with any ſubſtance which promotes its mechanical diviſion, and thus increaſes its ſurface. With this view, quickſilver is triturated with viſcid ſubſtances, as fats, honey, ſyrup, &c. or with pulverulent ſubſtances, as the chalk in the preſent example.

In this ſtate of oxidizement, quickſilver contains about 0.04 of oxygen according to Fourcroy, is ſoluble in acids without the extrication of nitrous gas, and is eaſily reduced by heat, and even by light.

The black oxide is the mildeſt, but at the ſame time the moſt efficacious of the preparations of mercury. Combined with chalk it is not in general uſe; but in the form of the common mercurial pill and ointment, it is more employed than any other preparations of the ſame metal except calomel.

HYDRARGYRUM CALCINATUM.

Dub.

Calcined Quickſilver.

Take of

Purified quickſilver, any quantity.

Put it into an open glaſs-veſſel, with a narrow mouth and wide bottom. Expoſe this to about the ſix-hundredth degree of heat, until the metal be converted into red ſcales.

Hydrargyrus Calcinatus.

Lond.

Calcined Quickſilver.

Take of

Purified quickſilver, one pound.

Expoſe the quickſilver in a flat-bottomed glaſs-cucurbit, to an heat of about 600 degrees in a ſand-bath, till it concretes into the form of a red powder.

This is an extremely tedious, and therefore expenſive operation, becauſe mercury is incapable of abſorbing from the atmoſphere the quantity of oxygen neceſſary to convert it into the red oxide, except when in the ſtate of vapour. But as the form of a

veſſel,

veſſel, which will prevent the diſſipation and loſs of the mercurial vapour, will at the ſame time hinder the free acceſs and frequent renewal of the air, the operation can only proceed ſlowly. The veſſel moſt advantageouſly employed, is a wide, flat-bottomed matraſs, with a very narrow, and almoſt capillary neck. Only ſo much mercury is introduced into it as will cover the bottom of the matraſs; and the veſſel is not inſerted in the ſand deeper than the mercury ſtands within it. A degree of heat is then applied ſufficient to cauſe a gentle ebullition in the mercury, which is thus alternately converted into vapour, and condenſed again in the upper part of the veſſel. While in the ſtate of vapour, it abſorbs the oxygen of the air contained in the veſſel: by which means it is gradually changed into a black, and then into a red powder; but a complete converſion into the latter ſtate is not effected in leſs than ſeveral months.

Red oxide of quickſilver thus prepared, conſiſts of ſmall cryſtalline grains, of a deep red colour, and very brilliant ſparkling appearance. By heat it may be ſublimed in the form of a beautiful ruby-coloured vitrified ſubſtance. At a red heat it is decompoſed, giving out oxygen gas, while the metal is revived, and is immediately volatilized. It is ſoluble in ſeveral of the acids; and during its ſolution it does not decompoſe them or water. It is eaſily diſoxidized. It contains about 0.1 oxygen.

It is not only an acrid ſubſtance, violently purgative and emetic, but even cauſtic and poiſonous. Its internal uſe is proſcribed; but it is applied externally as an eſcharotic, being previouſly triturated to a very fine powder; or it is formed into a ſtimulating ointment with unctuous ſubſtances.

OXIDUM HYDRARGYRI RUBRUM PER ACIDUM NITRICUM; olim, MERCURIUS PRÆCIPITATUS RUBER.

Edin.

Red Oxide of Quickſilver by Nitric Acid, formerly *Red Precipitated Mercury.*

Take of

Purified quickſilver, one pound;

Diluted nitrous acid, ſixteen ounces.

Diſſolve the quickſilver, and evaporate the ſolution, with a gentle heat, to a dry white maſs; which, after being ground into powder, is to be put into a glaſs-cucurbit, and to have a thick glaſs-plate laid upon its ſurface. Then, having adapted a capital, and placed the veſſel in a ſand-bath, apply a gradually increaſed heat, until the matter be converted into very red ſcales.

HYDRARGYRUS

HYDRARGYRUS NITRATUS RUBER.
Lond.
Red Nitrated Quickſilver.

Take of
 Purified quickſilver,
 Nitrous acid, of each one pound;
 Muriatic acid, one drachm.

Mix in a glaſs-veſſel, and diſſolve the quickſilver in a ſand-bath; then raiſe the fire until the matter be converted into red cryſtals.

HYDRARGYRUM SUB-NITRATUM.
Dub.
Sub-nitrated Quickſilver.

Take of
 Purified quickſilver, twenty ounces;
 Diluted nitrous acid, twenty-five ounces.

Mix them in a glaſs-veſſel, and diſſolve the quickſilver with a moderate heat; then increaſe the fire until the matter be converted into red ſcales.

IN the firſt part of theſe proceſſes a fully ſaturated nitrate of mercury is formed. In the ſecond part, the metal is oxidized to the maximum by the decompoſition of the acid. When a ſufficient heat is applied, the nitrate of mercury firſt melts, then exhales nitric oxide gas, and changes its colour ſucceſſively to yellow, orange, and brilliant purple red. If well prepared, it ſhould have a cryſtalline ſcaly appearance; and it is entirely volatile at a red heat, and ſoluble without any reſiduum in nitrous acid. According to Fourcroy, it contains no nitrous acid, unleſs a ſufficient heat has not been applied. It therefore differs in no reſpect from the red oxide prepared by the action of heat alone, except in the facility of its preparation.

In an economical point of view, it is evident that no more acid ſhould be employed than what is abſolutely neceſſary. If, therefore, the proportion of the Dublin College be ſufficient, that of the London muſt be much too large. The addition of the ſmall quantity of muriatic acid directed by the London College, is ſaid to increaſe the beauty of its appearance. How it ſhould do ſo, we are at a loſs to conceive; for the muriatic acid having a ſtronger affinity for mercury than nitrous acid has, will form with it a portion of muriate of mercury, which, being comparatively volatile, will be diſſipated long before the nitrate of mercury is decompoſed. The uſe of the muriatic acid is therefore to be rejected as being uſeleſs and extravagant, and not from the fear expreſſed by Mr Accum, that a ſubſtance poiſonous in itſelf ſhould be rendered more poiſonous.

SUB-SULPHAS HYDRARGYRI FLAVUS; olim, TURPETHUM MINERALE. *Edin.*

Yellow Sub-Sulphate of Quickſilver, formerly *Turpeth Mineral.*

Take of

Purified quickſilver, four ounces;

Sulphuric acid, ſix ounces.

Put them into a glaſs-cucurbit, and boil them in a ſand-bath to dryneſs. Throw into boiling water the white matter, which is left in the bottom, after having reduced it to powder. A yellow powder will immediately be produced, which muſt be frequently waſhed with warm water.

HYDRARGYRUS VITRIOLATUS.

Lond.

Vitriolated Quickſilver.

Take of

Purified quickſilver, one pound;

Vitriolic acid, fifteen ounces.

Having mixed in a glaſs-veſſel, heat them by degrees until they unite, and dry the matter completely with a ſtrong fire. This matter, on the affuſion of a large quantity of hot diſtilled water, will immediately become yellow, and fall to powder. Rub the powder with this water in a glaſs-mortar. After the powder has ſubſided, pour off the water, and waſh the matter with diſtilled water till it becomes inſipid.

THE action of ſulphuric acid on mercury has been examined with conſiderable attention by Fourcroy. In the cold they have no action on each other, but on the application of heat, the ſulphuric acid begins to be decompoſed, ſulphurous acid gas is extricated, and the metal is oxidized, and combines with the undecompoſed acid, forming with it a white ſaline maſs, covered with a colourleſs fluid. In this ſtate it reddens vegetable blues, is acrid and corroſive, does not become yellow by the contact of the air, and is not decompoſed by water either warm or cold. It is therefore ſuper-ſulphate of quickſilver, and the proportion of the acid in exceſs is variable.

By waſhing the ſaline maſs repeatedly with ſmall quantities of water, it is at laſt rendered perfectly neutral. It no longer reddens vegetable blues. It is white; it cryſtallizes in plates, or fine priſmatic needles; it is not very acrid; it is not decompoſed either by cold or boiling water, but is ſoluble in 500 parts of the former, and in about 250 of the latter. It is much more ſoluble in water acidulated with ſulphuric acid. The ſulphate of quickſilver conſiſts of 75 quickſilver, 8 oxygen, 12 ſulphuric acid, and 5 water.

But if, inſtead of removing the exceſs of acid from the ſuper-ſulphate of quickſilver, by waſhing it with water, we continue the action

action of the heat according to the directions of the Colleges, there is a copious evolution of sulphurous acid gas, and the saline residuum is converted into a white mass, which therefore evidently contains both a larger proportion of mercury, and in a state of greater oxidizement, than the salt from which it was formed. But this white saline mass is farther analyzed by the affusion of hot water; for one portion of it is dissolved, while the remainder assumes the form of a beautiful yellow powder. The portion dissolved is said to contain excess of acid. The yellow powder is, on the contrary, a sub-sulphate.

The sub-sulphate of quicksilver has a bright yellow colour, a considerably acrid taste, is soluble in 2000 parts of cold water, is also soluble in sulphuric acid slightly diluted, and is decomposed by the nitric acid, and forms muriate of quicksilver with the muriatic acid, while the neutral sulphate forms sub-muriate. It oxidizes quicksilver, and is converted by trituration with it into a black powder. At a red heat it gives out oxygen gas, and the metal is revived. It consists of 76 mercury, 11 oxygen, 10 sulphuric acid, and 3 water.

It is a strong emetic, and with this intention operates the most powerfully of all the mercurials that can be safely given internally. Its action, however, is not confined to the primæ viæ; it will sometimes excite a salivation, if a purgative be not taken soon after it. This medicine is used chiefly in virulent gonorrhœas, and other venereal cases, where there is a great flux of humours to the parts. Its chief use at present is in swellings of the testicle from a venereal affection; and it seems not only to act as a mercurial, but also, by the severe vomiting it occasions, to perform the office of a discutient, by accelerating the motion of the blood in the parts affected. It is said likewise to have been employed with success, in robust constitntions, against leprous disorders, and obstinate glandular obstructions: the dose is from two grains to six or eight. It may be given in doses of a grain or two as an alterative and diaphoretic. Dr Hope *senior* has found, that in doses of one grain, with a little powder of liquorice root, it is the most convenient errhine he has had occasion to employ.

This medicine was lately recommended as the most effectual preservative against the hydrophobia.

On the whole, however, we consider it as a superfluous preparation, whose place may be more safely supplied by other mercurials or emetics.

SULPHURETUM

SULPHURETUM HYDRARGYRI NIGRUM; olim, ÆTHIOPS MINERALIS.

Edin.

Black Sulphuret of Quickfilver, formerly *Æthiops Mineral.*

Take of

Purified quickfilver,

Sublimed fulphur, each equal weights.

Grind them together in a glafs-mortar with a glafs peftle, till the mercurial globules totally difappear.

It is alfo prepared with twice the quantity of quickfilver.

HYDRARGYRUS CUM SULPHURE.

Lond.

Quickfilver with Sulphur.

HYDRARGYRUM SULPHURATUM NIGRUM.

Dub.

Black Sulphurated Quickfilver.

Take of

Purified quickfilver,

Flowers of fulphur, each one pound.

Rub them together until the globules difappear.

THIS procefs, fimple as it appears, is not, even in the prefent advanced ftate of chemiftry, perfectly underftood. It was formerly imagined, that the quickfilver was merely mechanically divided, and intimately mixed with the fulphur. But that they are really chemically united, is indifputably proved by the infolubility of the compound in nitrous acid. Fourcroy is of opinion, that during the trituration, the mercury abforbs oxygen, and is converted into the black oxide, and that in this ftate it is flightly combined with the fulphur. The editors of Gren alfo fuppofe it to be in the ftate of black oxide, but that it is combined with hydroguretted fulphur; and they direct a little water to be added during the trituration, that by its decompofition it may furnifh the neceffary hydrogen.

The black fulphuret of quickfilver thus prepared by trituration, has a pulverulent form, is infoluble in nitric acid, is totally foluble in a folution of potafs, and is precipitated unchanged from this folution, by acids. It is not altered by expofure to the air; and when heated in an open veffel, it emits fulphurous acid gas, acquires a dark violet colour, and, laftly, fublimes in a brilliant red mafs, compofed of cryftalline needles.

The combination of quickfilver with fulphur may be much more fpeedily effected by the affiftance of heat, by pouring the mercury, previoufly heated, upon the fulphur in a ftate of fufion, and ftirring them until they cool, and form a confiftent mafs, which may be afterwards powdered. The fulphuret prepared by fufion, differs,

differs, however, from that prepared by trituration; for it is not soluble in a solution of potass, but is converted by long ebullition in it into the red sulphuret, and it also reddens spontaneously in course of time from the action of the air.

Black sulphuret of mercury may be also prepared in the humid way, as it is called, by precipitation, or even by direct solution. According to Berthollet, mercury agitated with sulphuretted hydroguret of ammonia, forms a black sulphuret exactly resembling that prepared by trituration; but if hydroguretted sulphuret of ammonia be used, the black precipitate formed, gradually assumes a red colour, and the solution contains sulphuretted hydroguret of ammonia. The same phenomena take place with all the mercurial salts.

As a medicine, black sulphuret of quicksilver possesses no very conspicuous effects. It is principally used as an alterative in glandular affections, and in cutaneous diseases. It has been commonly given in doses of from 5 to 10 grains; but even in doses of several drachms, and continued for a considerable length of time, it has scarcely produced any sensible effect.

HYDRARGYRUM SULPHURATUM RUBRUM; olim, CINNABARIS FACTITIA.

Lond. Dub.

Red Sulphurated Quicksilver, formerly *Factitious Cinnabar*.

Take of

Quicksilver purified, forty ounces;

Sulphur, eight ounces.

Mix the quicksilver with the melted sulphur; and if the mixture takes fire, extinguish it by covering the vessel; afterwards reduce the mass to powder and sublime it.

As soon as the mercury and sulphur begin to unite, a considerable explosion frequently happens, and the mixture is very apt to take fire, especially if the process be somewhat hastily conducted. This accident the operator will have previous notice of, from the matter swelling up, and growing suddenly consistent: as soon as this happens, the vessel must be immediately close-covered.

During the sublimation, care must be had that the matter do not rise into the neck of the vessel, so as to block up and burst the glass. To prevent this, a wide-necked bolt head, or rather an oval earthen-jar, coated, should be chosen for the subliming vessel. If the former be employed, it will be convenient to introduce at times an iron-wire, somewhat heated, in order to be the better assured that the passage is not blocking up; the danger of which may be prevented by cautiously raising the vessel higher from the fire.

If the ingredients were pure, no feces will remain. In such cases, the sublimation may be known to be over, by introducing a

wire

wire as before, and feeling therewith the bottom of the vessel, which will then be perfectly smooth: if any roughness or inequalities are perceived, either the mixture was impure, or the sublimation is not completed; if the latter be the case, the wire will soon be covered over with the rising cinnabar.

The preparers of cinnabar in large quantity, employ earthen jars, which in shape pretty much resemble an egg. These are of different sizes, according to the quantity intended to be made at one sublimation, which sometimes amounts to two hundredweight. The jar is usually coated from the small end almost to the middle, to prevent its breaking from the vehemence or irregularity of the fire. The greater part, which is placed uppermost, not being received within the furnace, has no occasion for this defence. The whole secret, with regard to this process, is the management of the fire, which should be so strong as to keep the matter continually subliming to the upper part of the jar, without coming out at its mouth, which is covered with an iron-plate. Care should also be taken to put into the subliming vessel only small quantities of the mixture at a time.

When taken out of the subliming vessels, the red sulphuret of quicksilver is a brilliant crystalline mass, and first acquires its very rich colour when reduced to the form of a fine powder by trituration. It has neither smell nor taste, and is insoluble in water and in alcohol. In close vessels it sublimes entirely unchanged, but requires for this purpose a pretty great degree of heat. It is not soluble in any acid, and is only decomposed by the nitro-muriatic, which dissolves the quicksilver, and separates the sulphur. It is not decomposed by boiling it with solutions of the alkalies, but is decomposed by melting it with potass, soda, lime, iron, lead, copper, antimony, and several other metals. Proust has proved it to consist of 85 quicksilver, and 14 or $14\frac{1}{2}$ sulphur, and that the quicksilver is not oxidized to a maximum, as had been falsely supposed, but in its metallic state. His analysis is confirmed by the other methods by which cinnabar may be prepared. Thus, the black sulphuret of quicksilver by fusion is converted into the red sulphuret, by boiling it in a solution of potass, which can only act by dissolving the sulphuretted hydrogen and superfluous sulphur. Sub-muriate, or sub-sulphate of mercury, sublimed with sulphur, furnish red sulphuret of mercury, and muriate, or sulphate, of mercury.

Red sulphuret of quicksilver is sometimes used in fumigations against venereal ulcers in the nose, mouth, and throat. Half a dram of it burnt, the fume being imbibed with the breath, has occasioned a violent salivation. This effect is by no means owing to the medicine as a sulphuret; for when set on fire, it is no longer such, but mercury resolved into vapour, and blended with the sulphureous fulphurous acid gas; in which circumftances, this mineral has very powerful effects.

Mr Pearfon, from his experiments on mercurial fumigation, concludes, that where checking the progrefs of the difeafe fuddenly is an object of great moment, and where the body is covered with ulcers or large and numerous eruptions, and, in general, to ulcers, fungi, and excrefcences, the vapour of mercury is an application of great efficacy and utility; but that it is apt to induce a ptyalifm rapidly, and great confequent debility, and that for the purpofe of fecuring the conftitution againft a relapfe, as great a quantity of mercury muft be introduced into the fyftem, by inunction, as if no fumigation had been employed.

CHAP. X.

LEAD.

ACETIS PLUMBI; olim, SACCHARUM SATURNI.
Edin.
Acetite of Lead; formerly *Sugar of Lead.*

Take of
White oxide of lead, any quantity;
Put it into a cucurbit, and pour upon it of
Diftilled acetous acid ten times its weight.
Let the mixture ftand upon warm fand till the acid become fweet; when it is to be poured off, and frefh acid added until it ceafe to become fweet. Then evaporate all the liquor, freed from impurities, in a glafs-veffel, to the confiftence of thin honey, and fet it afide in a cold place, that cryftals may be formed, which are to be dried in the fhade. The remaining liquor is again to be evaporated, that new cryftals may be formed; and the evaporation is to be repeated until no more cryftals concrete.

CERUSSA ACETATA.
Lond.
Acetated Cerufe.

Take of
Cerufe, one pound;
Diftilled vinegar, one gallon and a half.
Boil the cerufe with the vinegar until the vinegar is faturated; then filter through paper; aud, after proper evaporation, fet it afide to cryftallize.

Dub.

Take of
 Ceruse, any quantity;
 Distilled vinegar, ten times as much.

Digest in a glass-vessel, until the vinegar become sweet. Having poured this off, add more vinegar, until it cease to become sweet. Filter the liquor, and evaporate it slowly, so that it may form crystals, which are to be dried in the shade.

The acetite of lead is seldom prepared by the apothecary, as he can procure it at an infinitely cheaper rate from those who manufacture it in large quantities. The preparation of it, as directed by the Colleges, is a case of simple solution. The process frequently fails, from the oxide of lead employed being adulterated, with carbonate of lime, or some other earthy substance. The acetous acid employed, should be as strong as can be procured; for with a weak acid the product of pure salt is small, and the quantity of mother-water is increased. The addition of a small quantity of alcohol to the solution, after it has been duly evaporated, is said to improve the beauty of the crystals. The mother-water may also be made to furnish pure crystals, by adding to it a fresh portion of acetous acid; for without that precaution, it furnishes only a very heavy, yellow, pulverulent mass, in which there seems to be an excess of oxide of lead.

The manufacture of acetite of lead is conducted more economically, when the oxide is dissolved in the acid at the same time that it is prepared; which is done by alternately exposing plates of lead to the vapour of acetous acid, and immersing the plates thus covered with oxide into the acid itself.

Acetite of lead has a sweet styptic taste. It has a white colour, and crystallizes in flat parallelopipeds, terminated by a wedge, or more commonly in shining needles. It is soluble in water, and in alcohol; effloresces slightly in the air, and is decomposed by heat and light. It is also decomposed by the alkalies, and most of the earths and acids. The proportions of its constituents have not been ascertained.

The internal use of acetite of lead, notwithstanding the encomiums some have been rash enough to bestow upon it, is entirely to be rejected. It forms, however, a very valuable external application in external and phlegmonic inflammations, bruises, and diseases of the skin. It is always applied in solution, either simply, as to the eyes, or by means of cloths soaked in it, or mixed with bread-crumb. A drachm, with five ounces of any distilled water, forms a strong solution, and with ten ounces of water a weak solution. If common water be used, the addition of about a drachm of acetous acid will be necessary to keep the lead in solution.

AQUA

AQUA LITHARGYRI ACETATI.

Lond.

LIQUOR LITHARGYRI ACETATI; olim, EXTRACTUM SATURNI.

Dub.

Water of Acetated Litharge, formerly *Extract of Lead.*

Take of

Litharge, two pounds and four ounces;

Diſtilled vinegar, one gallon.

Mix, and boil to ſix pints, conſtantly ſtirring; then ſet it aſide. After the feces have ſubſided, ſtrain.

LIQUOR LITHARGYRI ACETATI COMPOSITUS.

Dub.

AQUA LITHARGYRI ACETATI COMPOSITA.

Lond.

Compound Liquor of Acetated Litharge.

Take of

Liquor of acetated litharge, a drachm;

Diſtilled water, fourteen ounces, (one pint, *Lond.*);

Weaker ſpirit of wine, a drachm.

Mix the ſpirit and liquor of acetated litharge, then add the diſtilled water.

THESE preparations do not differ from ſolutions of the ſame ſtrength of acetite of lead, and are leſs proper as their ſtrength is apt to vary. The vitrified oxide of lead made uſe of in this inſtance, is leſs eaſily ſoluble, on account of its greater force of aggregation, than the white oxide; but, on the other hand, it is leſs liable to be adulterated. The addition of the diluted alcohol to the weak ſolution, is intended to prevent its decompoſition, but it alſo renders it ſlightly ſtimulant.

CHAP. XI.

TIN.

STANNI PULVIS.

Lond.

Powder of Tin.

Take of

Tin, four ounces.

Melt it, and take off the ſcoriæ. Then pour it into a clean iron veſſel. Reduce it to powder, either by agitation or trituration; and paſs the fine part of the powder through a hair-ſieve.

Dub.

Take of

Tin, any quantity.

Having melted it over the fire, agitate it while it is cooling, with an iron ſpatula, until it be reduced to powder; which is to be paſſed when cold through a ſieve.

THE College of Edinburgh do not give this preparation, inſerting *Limatura et Pulvis Stanni* in their liſt of the materia medica. It is often employed as a remedy againſt worms, particularly the flat kinds, which too often elude the force of other medicines. The general doſe is from a ſcruple to a drachm; ſome confine it to a few grains. But Dr Alſton aſſures us, in the Edinburgh Eſſays, that its ſucceſs chiefly depends on its being given in much larger quantities. He directs an ounce of the powder on an empty ſtomach mixed with four ounces of molaſſes; next day, half an ounce; and the day following, half an ounce more; after which, a cathartic is adminiſtered. He ſays the worms are uſually voided during the operation of the purge, but that pains of the ſtomach occaſioned by them are removed almoſt immediately upon taking the firſt doſe of the tin.

This practice is ſometimes ſucceſsful in the expulſion of tæniæ, but by no means ſo frequently as Dr Alſton's obſervations would lead us to hope.

Blane's powder, which certainly ſucceeds ſometimes in curing the diſtemper in dogs, ſeems to be a ſulphuretted oxide of tin.

CHAP. XII.

ZINC.

OXIDUM ZINCI.

Edin.

Oxide of Zinc.

Let a large crucible be placed in a furnace filled with live coals, ſo as to be ſomewhat inclined towards its mouth; and when the bottom of the crucible is moderately red, throw into it a ſmall piece of zinc, about the weight of a drachm. The zinc ſoon inflames, and is at the ſame time converted into white flakes, which are to be from time to time removed from the ſurface of the

the metal with an iron ſpatula, that the combuſtion may be more complete; and at laſt, when the zinc ceaſes to flame, the oxide of zinc is to be taken out of the crucible. Having put in another piece of zinc, the operation is to be repeated, and may be repeated as often as is neceſſary. Laſtly, the oxide of zinc is to be prepared in the ſame way as the carbonate of lime.

ZINCUM CALCINATUM.
Lond.
Calcined Zinc.

Take of
Zinc, broken into pieces, eight ounces.
Throw the zinc at ſeveral times into an ignited, large, deep, and inclined crucible; placing over it another crucible, in ſuch a manner that the air may have free acceſs to the burning zinc.
Take out the calx as ſoon as it appears, and paſs its white and lighter part through a ſieve.

CALX ZINCI; olim, FLORES ZINCI.
Dub.
Calx of Zinc, formerly *Flowers of Zinc.*

Take of
Zinc, broken into pieces, any quantity.
Throw it, at different times, into a ſufficiently deep crucible, heated red-hot, and placed with its mouth inclined towards the mouth of the furnace. After each time any zinc is thrown in, cover the crucible with another inverted over it, but ſo that the air may have acceſs to the zinc. Preſerve the white and very light calx for uſe.

THIS is an inſtance of ſimple oxidizement. At a red heat, zinc attracts the oxygen of the atmoſphere ſo ſtrongly, that it is quickly covered with a cruſt of white oxide, which prevents the air from acting on the metal below; and therefore we are deſired to operate only on ſmall pieces at a time, and to place the crucible ſo that we may eaſily take out the oxide formed, and introduce freſh pieces of zinc. As ſoon as the cruſt of oxide is broken or removed, the zinc inflames, and burns with a brilliant white or greeniſh blue flame, being at the ſame time converted into very light white flocculi. To ſave theſe as much as poſſible, we are directed to uſe a very deep and large crucible, and to cover it with an inverted crucible. But as we muſt not cover it ſo as to prevent the acceſs of the air, it is doubtful whether the latter precaution be of much ſervice. The greater part of the zinc is, however, oxidized in the crucible, without being previouſly converted into vapour; and as this portion of the oxide is always mixed with particles of zinc, it is neceſſary to ſeparate them by trituration and elutriation.

The oxide thus obtained is of a pure white colour, without ſmell or taſte, infuſible and fixed in the fire, inſoluble in water or alcohol, and entirely ſoluble in acids. The preſence of lead in it is detected by ſulphuric acid, which forms in that caſe an inſoluble ſulphate of lead. The white oxide of zinc contains 82.15 zinc, and 17.85 oxygen.

White oxide of zinc is applied externally as a detergent and exſiccant remedy. With twice its weight of axunge, it forms an excellent application to deep chops, or excoriated nipples. But beſides being applied externally, it has alſo of late been uſed internally. In doſes from one to ſeven or eight grains, it has been much celebrated in the cure of epilepſy and ſeveral ſpaſmodic affections: and there are ſufficient teſtimonies of their good effects, where tonic remedies in thoſe affections are proper.

CARBONAS ZINCI IMPURUS PRÆPARATUS; olim, LAPIS CALAMINARIS PRÆPARATUS.

Edin.

Prepared Impure Carbonate of Zinc, formerly *Prepared Calamine.*

The impure carbonate of zinc, after being roaſted by thoſe who make braſs, is prepared in the ſame way as carbonate of lime, (p. 415.)

LAPIS CALAMINARIS PRÆPARATUS.

Dub.

Prepared Calamine.

Reduce calcined calamine to powder, and ſeparate the impalpable parts in the ſame manner that is directed in the preparation of crabs claws, (p. 415.)

Lond.

See the preparation of ſubſtances inſoluble in water, (p. 415.)

As this oxide of zinc is intended for external application, and often to parts very eaſily irritated, too much pains cannot be beſtowed in reducing it to a fine powder.

OXIDUM ZINCI IMPURUM PRÆPARATUM; olim, TUTIA PRÆPARATA.

Edin.

Prepared Impure Oxide of Zinc, formerly *Prepared Tutty.*

It is prepared as carbonate of lime, (p. 415.)

TUTIA PRÆPARATA.

Lond.

Prepared Tutty.

See the preparation of ſubſtances inſoluble in water, (p. 415.)

This oxide is alſo prepared for external uſe only.

SULPHAS ZINCI.
Edin.
Sulphate of Zinc.

Take of
Zinc, cut into fmall pieces, three ounces;
Sulphuric acid, five ounces.
Water, twenty ounces.

Mix them, and when the effervefcence is finifhed, digeft the mixture for a little on hot fand; then ftrain the deca ed liquor through paper, and after proper evaporation fet it apart, that it may cryftallize.

ZINCUM VITRIOLATUM.
Lond. Dub.
Vitriolated Zinc.

Take of
White vitriol, one pound;
Vitriolic acid, one drachm;
Boiling diftilled water, three pints.

Mix and filter through paper. After proper evaporation, fet it afide in a cold place to cryftallize.

THE fulphate of zinc of commerce is never pure, but always contains iron, copper, and a little lead. From the mode of its preparation, there is alfo a deficiency of acid and water of cryftallization. The means directed for purifying it by the London and Dublin Colleges will fupply thefe, but do not feparate the foreign metals, except perhaps the lead. If, therefore, a pure fulphate of zinc be wanted, we may, according to the directions of the Edinburgh College, diffolve pure zinc in pure fulphuric acid; but we believe this procefs is very rarely practifed, efpecially as the common fulphate of zinc may be fufficiently purified by expofing it in folution to the air, by which means red oxide of iron is precipitated, and by digefting it upon pure zinc, which precipitates the other metals.

Sulphate of zinc cryftallizes in tetrahedral prifms terminated by pyramids. It has a metallic, ftyptic tafte; efflorefces flowly when expofed to the air. It is foluble in 2.5 parts of water at 60°, and in much lefs boiling water. It is not foluble in alcohol. It is decompofed by the alkalies and earths, hydroguretted fulphurets, and fulphuretted hydrogurets. It confifts of 20 oxide of zinc, 40 acid, and 40 water of cryftallization.

Sulphate of zinc, in dofes from ten grains to half a drachm, operates almoft inftantly as an emetic, and is at the fame time perfectly fafe. It is therefore given, when immediate vomiting is required, as in cafes where poifon has been fwallowed. By employing it internally, in fmaller dofes, it acts as a tonic; and fome think it in every cafe preferable to the oxides zinci.

Externally it is used as a styptic application to stop hæmorrhagies; diminish increased discharges, as gonorrhœa; and to cure external inflammations arising from debility and relaxation of the blood-vessels, as in some cases of ophthalmia.

SOLUTIO SULPHATIS ZINCI.

Edin.

Solution of Sulphate of Zinc.

Take of

Sulphate of zinc, sixteen grains;
Water, eight ounces;
Diluted sulphuric acid, sixteen drops.

Dissolve the sulphate of zinc in the water; then, having added the acid, filter through paper.

The acid is here added to dissolve the excess of oxide of zinc, which the common sulphate often contains. This solution is of a strength proper for injecting into the urethra in gonorrhœa, or applying to the eyes in chronic ophthalmia.

AQUA ZINCI VITRIOLATI cum CAMPHORA.

Lond.

Water of Vitriolated Zinc with Camphor.

Take of

Vitriolated zinc, half an ounce;
Camphorated spirit, half an ounce, by measure;
Boiling water two pints.

Mix, and filter through paper.

It is used externally as a lotion for some ulcers, particularly those in which it is necessary to restrain a great discharge. It is also not unfrequently employed as a collyrium in some cases of ophthalmia, where a large discharge of watery fluid takes place from the eyes with but little inflammation; but when it is to be applied to this tender organ, it ought first, at least, to be diluted by the addition of more water.

AQUA ALUMINIS COMPOSITA.

Lond.

Compound Alum Water.

Take of

Alum,
Vitriolated zinc, of each half an ounce;
Boiling distilled water, two pints.

Pour the water on the salts in a glass-vessel, and strain.

This water was long known in our shops, under the title of *Aqua aluminosa Bateana.*

It

It is uſed for cleanſing and healing ulcers and wounds; and for removing cutaneous eruptions, the part being bathed with it hot three or four times a-day. It is ſometimes likewiſe employed as a collyrium; and as an injection in gonorrhœa and fluor albus, when not accompanied with virulence.

SOLUTIO ACETITIS ZINCI.

Edin.

Solution of Acetite of Zinc.

Take of
  Sulphate of zinc, a drachm;
  Diſtilled water, ten ounces.
Diſſolve.

Take of
  Acetite of lead, four ſcruples;
  Diſtilled water, ten ounces.
Diſſolve.

Mix the ſolutions; let them ſtand at reſt a little, and then filter the liquor.

This is a caſe of double elective attraction, the lead combining and forming an inſoluble compound with the ſulphuric acid, while the zinc unites with the acetous acid, and remains in ſolution.

The acetite of zinc may be obtained by evaporation in talcy cryſtals. It is ſoluble in water, and is decompoſed by heat. It is not poiſonous.

When cryſtallized acetite of lead and ſulphate of zinc are triturated together, the mixture preſently becomes moiſt, which is owing to the new compounds combining with leſs water of cryſtallization than the original ſalts, by which means a portion of the water is diſengaged in its fluid form.

The ſolution of acetite of zinc is with many practitioners deſervedly much eſteemed as an aſtringent collyrium, and injection.

CHAP. XIII.

ALCOHOL, ETHER, AND ETHEREAL SPIRITS.

ALCOHOL.

Lond.

Ardent Spirit.

Take of
  Rectified ſpirit of wine, one gallon;

Prepared

Prepared kali, made hot, one pound and a half;
Pure kali, one ounce.

Mix the vinous ſpirit with the pure kali, and afterwards add one pound of the hot prepared kali; ſhake them, and digeſt for twenty-four hours. Pour off the ſpirit, to which add the reſt of the prepared kali, and diſtil in a water-bath. It is to be kept in a veſſel well-ſtopped. The kali ſhould be heated to 300° Fahrenheit.

The ſpecific gravity of the alcohol is to that of diſtilled water as 815 to 1000.

Dub.

Take of
Rectified ſpirit of wine, five pounds;
Pearl-aſhes, dried over the fire, and ſtill warm, one pound;
Cauſtic vegetable alkali, in powder, one ounce.

Mix the ſpirit and the cauſtic alkali; add the pearl-aſhes, previouſly reduced to powder, and digeſt the mixture for three days, frequently agitating it; then pour off the ſpirit, and diſtil over three pounds with a moderate heat.

The ſpecific gravity of this ſpirit is to that of diſtilled water as 820 to 1000.

THE theory of theſe proceſſes has been already explained (p. 129.), and alſo the ſuperiority of muriate of lime over carbonate of potaſs for ſeparating the laſt portions of water from alcohol. The potaſs is uſed by the London and Dublin Colleges in ſuch ſmall quantity that it can have little effect; when added in conſiderable quantity, it acts upon the alcohol itſelf, and decompoſes it. The Edinburgh College give no directions for the preparation of a perfectly pure alcohol, as it is never uſed in pharmacy; but it is perhaps to be regretted, that they have given the title of alcohol to a liquid which is not the alcohol of chemiſts.

ÆTHER SULPHURICUS.

Edin.

Sulphuric Ether.

Take of
Sulphuric acid,
Alcohol, each thirty two ounces.

Pour the ſpirit into a glaſs-retort fit for ſuſtaining a ſudden heat, and add to it the acid in an uninterrupted ſtream. Mix them by degrees, ſhaking them moderately and frequently; this done, inſtantly diſtil from ſand previouſly heated for the purpoſe, into a receiver kept cool with water or ſnow. But the heat is to be ſo managed, that the liquor ſhall boil as ſoon as poſſible, and continue to boil till fixteen ounces are drawn off; then let the retort be removed from the ſand.

To the diſtilled liquor add two drachms of potaſs; then diſtil from a very high retort, with a very gentle heat, into a cool receiver, until ten ounces have been drawn off.

If ſixteen ounces of alcohol be poured upon the acid remaining in the retort after the firſt diſtillation, and the diſtillation be repeated, more ether will be obtained; and this may be repeated ſeveral times.

ÆTHER VITRIOLICUS.
Lond.
Vitriolic Ether.

Take of
The ſpirit of vitriolic ether, two pounds by weight;
Water of pure kali, one ounce by meaſure.

Shake them together, and diſtil, with a gentle heat, fourteen ounces by meaſure.

ÆTHER VITRIOLICUS.
Dub.
Vitriolic Ether.

Take of
Vitriolic ethereal liquor, ſixteen ounces;
Cauſtic vegetable alkali, in powder, two drachms.

Mix them, and diſtil with a gentle heat ten ounces from a very high retort into a cooled receiver.

ÆTHER SULPHURICUS CUM ALCOHOLE.
Edin.
Sulphuric Ether with Alcohol.

Take of
Sulphuric ether, one part;
Alcohol, two parts.

Mix them.

SPIRITUS ÆTHERIS VITRIOLICI.
Lond.
Spirit of Vitriolic Ether.

Take of
Rectified ſpirit of wine,
Vitriolic acid, each one pound.

Pour the acid gradually upon the ſpirit, and mix them by ſhaking; then diſtil with a gentle heat, from a retort into a tubulated receiver, to which another recipient is fitted, the ſpirit of vitriolic ether till ſulphureous vapours begin to riſe.

If you apply another receiver, and continue the diſtillation, a little oil of wine will be obtained, which is to be preſerved for uſe.

Liquor Æthereus Vitriolicus.
Dub.
Vitriolic Ethereal Liquor.

Take of
Rectified spirit of wine,
Sulphuric acid, each thirty-two ounces.

Put the spirit into a glass-retort, capable of supporting a sudden heat, and pour upon it the acid in a continued stream. Mix them gradually, and having placed the retort in sand previously heated, distil the liquor into a cool receiver. But the heat is to be so regulated, that the mixture may boil as soon as possible; and the retort is to be removed from the sand when sixteen ounces have come over.

OLEUM VINI.
Lond.
Oil of Wine.

Take of
Alcohol,
Vitriolic acid, of each one pint.

Mix them by degrees, and distil; taking care that no black froth pass into the receiver. Separate the oily part of the distilled liquor from the volatile vitriolic acid. To the oily part add as much water of pure kali as is sufficient to correct the sulphureous smell; then distil off the little ether with a gentle heat. The oil of wine will remain in the retort, swimming on the watery liquor; from which it is to be separated.

SPIRITUS ÆTHERIS VITRIOLICI COMPOSITUS.
Lond.
Compound Spirit of Vitriolic Ether.

Take of
Spirit of vitriolic ether, two pounds;
Oil of wine, three drachms.

Mix them.

LIQUOR ÆTHEREUS OLEOSUS; olim, Liquor Hoffmanni Anodynus. *Dub.*
Oily Ethereal Liquor, formerly *Anodyne Liquor of Hoffmann.*

Take what remains in the retort after the distillation of the vitriolic ether.

Distil to one-half with a moderate heat.

The products arising from the decomposition of alcohol by the action of the acids are extremely curious and interesting. The theory of their formation was not understood until lately, when it was admirably explained by Fourcroy and Vauquelin, who shew-ed that the acid remains unchanged, and that the alcohol is converted into ether, water, and charcoal.

The moſt convenient way of mixing the ingredients is to put the alcohol into the retort firſt, and, with a long-tubed funnel reaching down to the bottom of the retort, to pour in the acid. By cautious agitation the two fluids unite, and heat is produced, which may be taken advantage of in the diſtillation, if we have a ſand-bath previouſly heated to the ſame degree, to ſet the retort into immediately after the mixture is completed; nor is there any occaſion for a tubulated receiver, if we immerſe the ordinary receiver, which ought to be large, in water, or bury it in broken ice.

The diſtillation ſhould be performed with an equal and very gentle heat. The juncture of the retort and recipient is to be luted with a paſte made of linſeed meal, and further ſecured by a piece of wet bladder.

Immediately on mixing the acid with the alcohol, there is a conſiderable increaſe of temperature, and a ſlight diſengagement of alcohol, ſomewhat altered, and having an aromatic odour. On placing the retort in the ſand-bath, a portion of pure alcohol firſt comes over; and when the mixture in the retort boils, the ether riſes, and is condenſed in thin, broad, ſtraight ſtreaks, having the appearance of oil. Until the liquor which paſſes over into the receiver amounts to about half, or ſomewhat more than half, of the alcohol operated on, it conſiſts almoſt entirely of alcohol and ether, and there has been no production of any permanently elaſtic fluid: but now the production of ether ceaſes; the ſulphuric acid is decompoſed; and ſulphureous vapours begin to ariſe, which condenſe in irregular ſtreaks, or in drops: we muſt therefore either put a ſtop to the proceſs, or change the receiver. In the latter caſe the products, are ſulphurous acid, acetous acid, water, and oil of wine, as it was called, accompanied towards the end by a peculiar ſpecies of carburetted hydrogen gas, called by the Dutch chemiſts Olefiant gas; becauſe, when mixed with oxygenized muriatic acid, it forms oil. At laſt the matter in the retort, which has now become thick and black, ſwells up, and prevents us from carrying the proceſs further.

If we ſtop the proceſs before the ſulphureous vapours ariſe, the whole acid, diluted with a proportion of water, and mixed with charcoal, remains in the retort; but if we allow the proceſs to go on, there is a continual decompoſition of the acid, which is therefore diminiſhed in quantity. In either caſe, according to Prouſt, the ſulphuric acid may be obtained from the black reſiduum in the retort, by diluting it with twice its weight of water, filtering it through linen, and evaporating it till it acquire the ſpecific gravity 1.84, then adding about one five-hundredth part of nitrate of potaſs, and continuing the evaporation until the acid become perfectly

fectly colourless, and acquire the specific gravity of 1.86. The residuum, however, may be more advantageously preserved, as the Edinburgh College direct, for preparing more ether, by repeating the process repeatedly with fresh quantities of alcohol. Proust indeed denies that this residuum is capable of converting more alcohol into ether; but that excellent chemist has somehow fallen into error, for it is a fact, that was known in the time of that no less excellent chemist Dr Lewis, and inserted in his first edition of this Dispensatory, published in 1753, and not a recent discovery of Citizen Cadet, as Fourcroy would lead us to believe. If farther confirmation be wanted, we shall instance Göttling, who says, that from three or four pounds of this residuum, he has prepared 60 or 70 pounds of the spirit of vitriolic ether, and more than twelve pounds of vitriolic ether, without rectifying the residuum, or allowing the sulphureous vapour to evaporate. The ether may be separated from the alcohol and sulphureous acid, with which it is always mixed, by redistilling it with a very gentle heat, after mixing it with potass, or rather lime, which combine with the acid, or with black oxide of manganese, which converts the sulphureous into sulphuric acid, and thus deprives it of its volatility.

The chemical properties of ether have been already noticed (§ 231.). As a medicine taken internally, it is an excellent antispasmodic, cordial and stimulant. In catarrhal and asthmatic complaints, its vapour is inhaled with advantage, by holding in the mouth a piece of sugar on which ether has been dropt. It is given as a cordial in nausea, and in febrile diseases of the typhoid type; as an antispasmodic, in hysteria, and in other spasmodic and painful diseases; and as a stimulus in soporose and apoplectic affections. Regular practitioners seldom give so much as half an ounce, much more frequently only a few drops, for a dose; but empirics have sometimes ventured upon much larger quantities, and with incredible benefit. When applied externally, it is capable of producing two very opposite effects according to its management; for, if it be prevented from evaporating, by covering the place to which it is applied closely with the hand, it proves a powerful stimulant and rubefacient, and excites a sensation of burning heat. In this way it is frequently used for removing pains in the head or teeth. On the contrary, if it be dropt on any part of the body, exposed freely to the contact of the air, its rapid evaporation produces an intense degree of cold; and as this is attended with a proportional diminution of bulk in the part applied, in this way it has frequently facilitated the reduction of strangulated hernia.

The mixture of ether with alcohol, whether prepared directly by mixing them as the Edinburgh College direct, or in the impure state in which it comes over in the first part of the process for distilling ether, the spirit of vitriolic ether of the London, and

the

the vitriolic ethereal liquor of the Dublin Colleges, poſſeſſes ſimilar virtues with ether, but in an inferior degree.

SPIRITUS ÆTHERIS NITROSI.
Edin.
Spirit of Nitrous Ether.

LIQUOR ÆTHEREUS NITROSUS.
Dub.
Nitrous Ethereal Liquor.

Take of
 Alcohol, three pounds;
 Nitrous acid, one pound.

Pour the alcohol into a capacious phial, placed in a veſſel full of cold water, and add the acid by degrees, conſtantly agitating them. Let the phial be ſlightly covered, and placed for ſeven days in a cool place; then diſtil the liquor with the heat of boiling water into a receiver kept cool with water or ſnow, till no more ſpirit comes over.

SPIRITUS ÆTHERIS NITROSI.
Lond.
Spirit of Nitrous Ether.

Take of
 Rectified ſpirit of wine, two pints;
 Nitrous acid, half a pound.

Mix them, by pouring in the acid to the ſpirit, and diſtil with a gentle heat one pound ten ounces.

THIS proceſs is attended with much greater difficulty and danger than the directions of the Pharmacopœias would lead us to ſuppoſe. For the action of the acid upon the alcohol is ſo very violent, that either a large proportion of the ethereal product is diſſipated and loſt; or if we attempt to operate in cloſe veſſels, we run the hazard of breaking them. The action of alcohol and nitrous acid upon each other is much influenced by their proportions. If we uſe a ſmall proportion of alcohol, or pour alcohol into nitrous acid, there immediately takes place a great increaſe of temperature, and a violent efferveſcence and diſengagement of red fumes. On the contrary, if the acid be added to the alcohol, no apparent action takes place until the quantity of acid added amount to about one-fourth of the alcohol; bubbles of gas then begin to be diſengaged, and the action is increaſed in proportion as more acid is added. By placing the phials containing the alcohol and acid, in cold, or rather iced water, they may be mixed without danger in the proportions directed by the Colleges. During the period that the mixture is ſet at reſt in a cool place, the action goes on ſlowly, and at laſt ceaſes. We may now proceed to to the diſtillation, which muſt be performed with a very ſlow and well-regulated fire; for the vapour is very apt to expand with ſo much violence as to burſt the veſſels; and the heat muſt at no time exceed 212°, otherwiſe a portion of undecompoſed acid will paſs over and ſpoil the product.

The ſpirit of nitrous ether thus obtained is a colourleſs fluid, of a fragrant odour, lighter than water, extremely volatile and inflammable, poſſeſſing properties in general analogous to the ſpirit of ſulphuric ether. It ſhould not give a blue colour to tincture of guaiac, or exhibit any other ſigns of acidity. By age and expoſure to the air, it is gradually decompoſed, and gives riſe to the reproduction of nitrous acid. When this change has taken place, it may be rectified by ſaturating the acid with lime water, and rediſtilling the ethereal fluid. In all probability it is a mixture of nitrous ether and alcohol; for by diminiſhing the quantity of alcohol employed, we obtain a fluid having a ſimilar relation to the ſpirit of nitrous ether, that ſulphuric ether has to the ſpirit of ſulphuric ether.

When alcohol and nitrous acid are mixed in the proportion neceſſary for the formation of nitrous ether, the utmoſt precautions muſt be taken to diminiſh their action on each other. This may be done by adding the acid to the alcohol, in very ſmall portions at a time, and at conſiderable intervals. In this way Mr Dehne procured, from two pounds of alcohol, and one pound eight ounces and three drachms of nitrous acid, one pound nine ounces and three drachms of ether: the reſiduum weighed one pound twelve ounces; there was therefore a loſs of three ounces. Dr Black contrived a very ingenious method of retarding the action of nitrous acid upon alcohol, by rendering their mixture extremely ſlow. On two ounces of the ſtrong acid put into a phial, pour ſlowly and gradually about an equal quantity of water, which, by being made to trickle down the ſides of the phial, will float on the ſurface of the acid without mixing with it; then add, in the ſame cautious manner, three ounces of alcohol, which in its turn will float on the ſurface of the water. By this means the three fluids are kept ſeparate on account of their different ſpecific gravities, and a ſtratum of water is interpoſed between the acid and ſpirit. The phial containing the ſpirit muſt be ſtopped with a conical ſtopper, and this ſtopper confined to its place by a weak ſpring. The phial is now to be ſet in a cool place, and the acid will gradually aſcend, and the ſpirit deſcend through the water, this laſt acting as a boundary to reſtrain their action on each other. When this commences, bubbles of gas riſe through the fluids, and the acid gets a blue colour, which it again loſes in the courſe of a few days, at which time a yellow nitrous ether begins to ſwim on the ſurface. As ſoon as the formation of air-bubbles ceaſes, it is time to remove the ether formed; for if allowed to remain, its quantity

decreaſes.

decreafes. By this method a quantity of nitrous ether is formed, without the danger of producing elaftic vapours or explofion. The refiduum of this procefs is ftill capable of forming a fpirit of nitrous ether, with an additional quantity of alcohol.

There is ftill another method of forming nitrous ether, which is indeed faid to be preferable to that mentioned. It was firft practifed by M. Voigt. Four pounds of dried nitrate of potafs are to be introduced into a tubulated retort, connected with a Woulfe's apparatus; and a mixture of four pounds of fulphuric acid, and three pounds four ounces of alcohol, is to be poured upon it. Without the application of any external heat, nitrous ether paffes over into the receiver, and the refiduum furnifhes, on more alcohol being added to it, fpirit of nitrous ether.

When alcohol is converted into ether by the action of nitrous acid, the change produced on it is nearly the fame with that produced by fulphuric acid. In the latter cafe, it is effected by the affinities which form water, and charcoal is precipitated. In the former, it is effected by the affinities which form carbonic acid, and no water is formed.

Spirit of nitrous ether has been long defervedly held in great efteem. It quenches thirft, promotes the natural fecretions, expels flatulencies, and moderately ftrengthens the ftomach. It may be given in dofes of from twenty drops to a drachm, in any convenient vehicle. Mixed with a fmall quantity of fpiritus ammoniæ aromaticus, it proves a mild, yet efficacious, diaphoretic, and often remarkably diuretic; efpecially in fome febrile cafes, where fuch a falutary evacuation is wanted. A fmall proportion of this fpirit added to malt fpirits, gives them a flavour approaching to that of French brandy.

CHAP. XIV.

HERBARUM ET FLORUM EXSICCATIO.

Lond.

THE DRYING OF HERBS AND FLOWERS.

Let thefe, fpread out lightly, be dried by a gentle heat.

Edin.

Herbs and flowers are to be dried by the gentle heat of a ftove or common fire, in fuch quantities at a time, that the procefs may be finifhed as quickly as poffible; for by this means their powers are beſt preſerved; the teſt of which is the perfect preſervation of their natural colour.

The leaves of hemlock (*conium maculatum*), and of other plants containing a ſubtile volatile matter, muſt be immediately pounded, after being dried, and afterwards kept in glaſs-phials well corked.

For further obſervations on the drying and preſervation of ſimple ſubſtances, the 11th, 16th and 19th paragraphs of the ſecond ſection of the firſt part of this work may be conſulted.

SCILLÆ EXSICCATIO.

Lond.

The Drying of Squill.

Cut the ſquill, after having removed its dry coats, tranſverſely into thin ſlices, and dry it by a gentle heat.

Scilla Maritima Exsiccata.

Edin.

Dried Sea Squill.

Cut the root of the ſea-ſquill, after having removed its external coat, tranſverſely into thin ſlices, and dry it by a gentle heat. The ſign of its being properly dried is, that although rendered friable, it retains its bitterneſs and acrimony.

Scillæ Præparatæ.

Dub.

Prepared Squills.

Cut the ſquills, after having removed their membranaceous integuments, as thin as poſſible, and ſuſpend the cut ſlices in the ſhade to dry. When dry, reduce them to powder, which is to be kept in a corked phial.

By this method the ſquill dries much ſooner than when its ſeveral coats are only ſeparated; the internal part being here laid bare, which, in each of the entire coats, is covered with a thin ſkin, which impedes the exhalation of the moiſture. The root loſes in this proceſs four-fifths of its original weight; the parts which exhale with a moderate heat appear to be merely watery: hence ſix grains of the dry root are equivalent to half a drachm of it when freſh; a circumſtance to be particularly regarded in the exhibition of this medicine. But if too great heat has been employed to dry it, it becomes almoſt inert, and it alſo loſes by long keeping in the ſtate of powder.

Dried ſquills furniſh us with a medicine, ſometimes advantageouſly employed as an emetic, often as an expectorant, but ſtill more frequently as a powerful diuretic.

MILLIPEDÆ PRÆPARATIO.

Lond.

The Preparation of Millipeds.

MILLIPEDÆ PRÆPARATÆ.

Dub.

Prepared Millipeds.

The millipeds are to be incloſed in a thin canvas cloth, and ſuſpended over hot proof ſpirit in a cloſe veſſel, till they be killed by the ſteam, and rendered friable.

THIS is the laſt remains of a juſtly exploded practice, which aſcribed extraordinary virtues to whatever was barbarous and diſguſting.

SPONGIÆ USTIO.

Lond.

The Burning of Sponge.

SPONGIA USTA.

Dub.

Burnt Sponge.

Cut the ſponge in pieces, and bruiſe it, ſo as to free it from ſmall ſtones; burn it in a cloſe iron-veſſel, until it becomes black and friable; afterwards reduce it to a very fine powder.

THIS medicine has been in uſe for a conſiderable time, and employed againſt ſcrofulous diſorders and cutaneous foulneſſes, in doſes of a ſcruple and upwards. Its virtues probably depend on the preſence of a little alkali. It alſo contains charcoal; and its uſe may be entirely ſuperſeded by theſe ſubſtances, which may be obtained in other manners, at a much cheaper rate.

CHAP. XV.

EXPRESSED JUICES.

THE juices of ſucculent plants are obtained by expreſſion (§ 50. S. 2.). They are of a very compound nature, conſiſting of the ſap, the ſecreted fluids and fecula mixed together. When firſt procured, they are very high coloured, turbid, and loaded with parenchymatous matter. They may be ſeparated by reſt, filtration (§ 45. S. 2.), heat and clarification, (§ 53. S. 2.). The firſt proceſs may be employed when the juice is very fluid, is not ſuſceptible of alteration, and does not contain volatile matter. The ſecond is perhaps the moſt perfect, but it is tedious, and applicable only to very fluid juices. In many inſtances it may be facilitated by the addition of water. The third procefs is more expeditious, and is employed for juices which are very alterable, or which contain volatile matters. It is performed by introducing the juice into a matrafs, and immerfing it in boiling water for fome minutes. The feculæ are coagulated, and eafily feparated by filtration. Clarification can only be ufed for very vifcid mucilaginous juices, which contain nothing volatile. It renders them fufficiently fine; but the heat employed deepens their colour, and manifeftly alters them, fo that it is not merely a defecating, but a decompofing procefs. When depurated, juices are yellow or red, but never green.

The fluids thus extracted from fucculent fruits, both of the acid and fweet kind, from moft of the acrid herbs, as fcurvy-grafs and water creffes, from the acid herbs, as forrel and wood-forrel, from the aperient lactefcent plants, as dandelion and hawkweed, and from fundry other vegetables, contain great part of the peculiar tafte and virtues of the refpective fubjects. The juices, on the other hand, extracted from moft of the aromatic herbs, have fcarcely any thing of the flavour of the plants, and feem to differ little from decoctions of them made in water boiled till the volatile odorous parts have been diffipated. Many of the odoriferous flowers, as the lily, violet, hyacinth, not only impart nothing of their fragrance to their juice, but have it totally deftroyed by the previous bruifing. From want of fufficient attention to thefe particulars, practitioners have been frequently deceived in the effects of preparations of this clafs: juice of mint has been often prefcribed as a ftomachic, though it wants thofe qualities by which mint itfelf and its other preparations operate.

There are equal differences in regard to their preferving thofe virtues, and this independently of the volatility of the active matter, or its difpofition to exhale. Even the volatile virtue of fcurvy-grafs may, by the above method, be preferved almoft entire in its juice for a confiderable time; while the active parts of the juice of the wild cucumber quickly feparate and fettle to the bottom, leaving the fluid part inert. Juices of arum root, iris root, bryony root and other vegetables, in like manner allow their medicinal parts to fettle at the bottom.

If juices are intended to be kept for any length of time, about one fortieth part of their weight of good fpirit of wine may be added, and the whole fuffered to ftand as before; a frefh fediment will now be depofited, from which the liquor is to be poured off, ftrained again, and put into fmall bottles which have been wafhed with fpirit and dried. A little oil is to be poured on the furface, fo as very nearly to fill the bottles, and the mouths clofed with leather, paper, or ftopped with ftraw, as the flafks are in which Florence oil is brought to us: this ferves to keep out duft, and fuffers the air to efcape, which in procefs of time arifes from all vegetable liquors, and which would otherwife endanger the burft-

ing

ing of the glasses; or, being imbibed afresh, render their contents vapid and foul. The bottles are to be kept on the bottom of a good cellar or vault, placed up to the necks in sand. By this method some juices may be preserved for a year or two; and others for a much longer time, though, whatever care be taken, they are found to answer better when fresh; and from the difficulty of preserving them, they have of late been very much laid aside, especially since we have been provided with more convenient and useful remedies. The following is the only composition of the kind retained in our Pharmacopœias.

SUCCUS COCHLEARIÆ COMPOSITUS.
Lond.
Compound Juice of Scurvy-Grass.

Take of
Juice of Garden scurvy-grass, two pints;
Brooklime,
Water cresses, of each one pint;
Seville oranges, twenty ounces by measure.

Mix them, and, after the feces have subsided, pour off the liquor, or strain it.

SUCCUS COCHLEARIÆ OFFICINALIS COMPOSITUS; vulgo, SUCCI AD SCORBUTICOS. *Edin.*
Compound Juice of Scurvy-Grass.

Take of
Juice of scurvy-grass,
Water-cresses, expressed from fresh gathered herbs,
Seville oranges, of each two pounds;
Spirit of nutmegs, half a pound.

Mix them, and let them stand till the feces have subsided, then pour off the clear liquor.

BOTH these compositions are of considerable use for the purposes expressed in the title: the orange-juice is an excellent assistant to the scurvy-grass and other acrid antiscorbutics; which, when thus mixed, have been found from experience to produce much better effects than when employed by themselves. They may be taken in doses from an ounce or two to a quarter of a pint, two or three times a-day: they generally increase the urinary secretion, and sometimes induce a laxative habit.

CHAP. XVI.

INSPISSATED JUICES.

THIS is a very convenient form for the exhibition of thofe fubftances which are fufficiently fucculent to afford a juice by expreffion, and whofe virtues do not refide in any very volatile matter. By infpiffation, the bulk of the requifite dofe is very much diminifhed; they are reduced to a form convenient for making up into pills; and they are much lefs apt to fpoil than the fimple expreffed juices.

SUCCUS SPISSATUS ACONITI NAPELLI.
Edin.
Infpiffated Juice of Wolfsbane.

Bruife the frefh leaves of wolfsbane; and including them in a hempen bag, comprefs them ftrongly till they yield their juice, which is to be evaporated in flat-veffels heated with boiling water, faturated with muriate of foda, and immediately reduced to the confiftence of thick honey.

After the mafs has become cold, let it be put up in glazed earthen veffels, and moiftened with alcohol.

IN the fame maner are prepared from their leaves,

SUCCI SPISSATI	*The* INSPISSATED *Juices of*
ATROPÆ BELLADONNÆ,	*Deadly Nightfhade.*
CONII MACULATI,	*Hemlock.*
HYOSCIAMI NIGRI	*Henbane.*
LACTUCÆ VIROSÆ,	*Poifonous Lettuce.*

SUCCUS BACCÆ SAMBUCI SPISSATUS.
Lond.
Infpiffated Juice of the Elder-berry.

Take of

Expreffed and depurated juices of elder-berries, two pints.

Infpiffate in a water-bath faturated with fea-falt.

IN the fame manner infpiffate

SUCCUS	*The Juice of the*
RIBIS NIGRI,	*Black Currant.*
LIMONIS,	*Lemon.*
CICUTÆ, floribus primum apparentibus.	*Hemlock when about to flower.*

SUCCUS

SUCCUS SPISSATUS CICUTÆ.

Dub.

Inſpiſſated Juice of Hemlock.

Expreſs hemlock gathered when the flowers are juſt appearing, and allow the juice to ſtand ſix hours until the feces ſubſide; then reduce the decanted juice to dryneſs in a water-bath.

In the ſame way is prepared

Succus Spissatus Sambuci, *The Inſpiſſated Juice of Elder-berries*, from freſh gathered berries.

SUCCUS SPISSATUS SAMBUCI NIGRI; vulgo, Rob Sambuci. *Edin.*

Inſpiſſated Juice of Elder-berries, commonly called *Elder Rob.*

Take of

Juice of ripe elder-berries, five pounds;

Pureſt ſugar, one pound.

Evaporate with a gentle heat to the conſiſtence of pretty thick honey.

These inſpiſſated juices contain the virtues of the reſpective vegetables, in a very concentrated ſtate. Thoſe of the elder, black-current, and lemon, are acidulous, cooling, and laxative, and may be uſed in conſiderable quantities, while thoſe of the wolfsbane, hemlock, deadly nightſhade, henbane, and poiſonous lettuce, are highly narcotic and deleterious, and muſt be given only in very ſmall doſes.

SUCCUS SPISSATUS MOMORDICÆ ELATERII; vulgo, Elaterium.

Edin.

Inſpiſſated Juice of the Wild Cucumber.

Elaterium.

Lond.

Elaterium.

Cut into ſlices ripe wild cucumbers, and paſs the juice, very lightly expreſſed, through a very fine hair-ſieve, (into a glaſs-veſſel *Lond.;)* then boil it a little and ſet it by for ſome hours until the thicker part has ſubſided. Pour off the thinner part ſwimming at the top, and ſeparate the reſt by filtering. Cover the thicker part, which remains after filtration, with a linen cloth, and dry it with a gentle heat.

This is not properly an inſpiſſated juice, but a depoſition from the expreſſed juice. Such depoſitions have long been called Fecula, and the denomination has been confirmed in modern times.

Its application, however, appears to us to be too extended; for feculum is applied both to mild and nutritious substances, such as starch, and to drastic substances, such as that of which we are now treating. Besides, if it possessed exactly the same chemical properties as starch, it would be converted into a gelatinous mass by the boiling directed by the Edinburgh College, and would not separate; whereas, the boiling is intended to promote the separation.

The filtration above directed, for draining off such part of the watery fluid as cannot be separated by decantation, is not the common filtration through paper, for this does not succeed here: The grosser parts of the juice, falling to the bottom, form a viscid cake upon the paper, which the liquid cannot pass through. The separation is to be attempted in another manner, by draining the fluid from the top. This is effected by placing one end of some moistened strips of woollen cloth, skeins of cotton, or the like, in the juice, and laying the other end over the edge of the vessel, so as to hang down lower than the surface of the liquor: by this management the separation succeeds in perfection.

Elaterium is a very violent hydragogue cathartic. In general, previous to its operation, it excites considerable sickness at stomach, and not unfrequently it produces severe vomiting. Hence it is seldom employed till other remedies have been tried in vain. But in some instances of ascites it will produce a complete evacuation of water, where other cathartics have had no effect. Two or three grains are in general a sufficient dose. And perhaps the best mode of exhibiting it is by giving it only to the extent of half a grain at a time, and repeating that dose every hour till it begins to operate.

PULPARUM EXTRACTIO.

Edin. Dub.

The Extraction of Pulps.

Boil unripe pulpy fruits, and ripe ones if they be dry, in a small quantity of water until they become soft: then press out the pulp through a hair sieve, and afterwards boil it down to the consistence of honey in an earthen vessel, over a gentle fire; taking care to keep stirring the matter continually.

(The pulp of cassia fistularis is in like manner to be boiled out from the bruised pod, and reduced afterwards to a proper consistence, by evaporating the water.

The pulps of fruits that are both ripe and fresh, are to be pressed out through the sieve, without any previous boiling. *Edin.*)

PULPARUM PRÆPARATIO.

Lond.

The Preparation of Pulps.

Set pulpy fruits, if they be unripe, or ripe and dry, in a moist place, that they may become soft, then press the pulps through a hair-sieve; afterwards boil them first with a gentle heat, and stir them frequently, then evaporate the water in a water-bath, saturated with sea-salt, until the pulps acquire the proper consistency.

Pour boiling water on the bruised pods of the cassia fistularis, so as to wash out the pulp; then press the matter first through a coarse sieve, and then through a hair-sieve; lastly, evaporate the moisture in a water-bath, saturated with sea-salt, so as to reduce the pulp to a proper consistency.

Express the pulps of ripe recent fruits through a sieve, without boiling them.

WHEN these fruits are not sufficiently juicy to afford a pulp by simple expression, the decoction ordered by the Edinburgh and Dublin Colleges is much more certain, and in every respect preferable to exposing them to a moist air, which is not only often inefficacious, but is apt to render them spoilt and mouldy. On the other hand, the precaution used by the London College, of finishing the evaporation in a water-bath, is highly proper, as otherwise they are extremely apt to become empyreumatic.

CHAP. XVII.

FIXED OILS.

THESE oils are commonly denominated Expressed Oils, an appellation which is manifestly improper, as in some instances they are obtained without expression, and in other instances expression is employed to obtain Volatile Oils. The Edinburgh College have therefore distinguished these different classes of oils by the terms Fixed and Volatile, which accurately characterize them.

Fixed oil is formed in no other part of vegetables than in their seeds. Sometimes, although very rarely, it is contained in the parenchyma of the fruit. Of this the best known example is the olive. But it is most commonly found in the seeds of dicotyledonous vegetables, sometimes also in the fruit of monocotyledonous plants, as the cocos butyracea. It has various degrees of consistency, from the tallow of the croton sebiferum of China, and the

the butter of the butter-tree of Africa, to the fluidity of olive oil.

Fixed oil is ſeparated from fruits and ſeeds which contain it, either by expreſſion or decoction. Heat, by rendering the oil more limpid, increaſes very much the quantity obtained by expreſſion; but as it renders it leſs bland, and more apt to become rancid, heat is not uſed in the preparation of oils which are to be employed in medicine. When obtained by expreſſion, oils often contain a mixture of mucilage, ſtarch and colouring matter; but part of theſe ſeparate in courſe of time, and fall to the bottom. When oils become rancid, they are no longer fit for internal uſe, but are then ſaid to effect the killing of quickſilver, as it is called, more quickly. Decoction is principally uſed for the extraction of the viſcid and conſiſtent oils, which are melted out by the heat of the boiling water, and riſe to its ſurface.

OLEUM AMYGDALÆ COMMUNIS.

Edin.

Almond Oil.

Take of

Freſh almonds, any quanitty.

After having bruiſed them in a ſtone-mortar, put them into a hempen bag, and expreſs the oil without heat.

In the ſame manner is to be expreſſed from its ſeeds,

Oleum Lini Usitatissimi, *Oil of Linſeed.*

Oleum Amygdalæ.

Lond.

Almond Oil.

Pound freſh almonds, either ſweet or bitter, in a mortar, then preſs out the oil in a cold preſs.

In the ſame manner are to be expreſſed,

Oleum Lini, *Linſeed-Oil,* from the bruiſed ſeeds.

Oleum Ricini, *Caſtor Oil,* from the ſeeds previouſly decorticated.

Oleum Sinapeos, *Oil of Muſtard,* from the bruiſed ſeeds.

Oleum Amygdalarum.

Dub.

Oil of Almonds.

Bruiſe freſh almonds in a mortar, and expreſs the oil in a preſs without heat.

In the ſame way are to be expreſſed from the ſeeds,

Oleum Lini, *Linſeed-Oil.*

Oleum Sinapis, *Oil of Muſtard.*

The

The chemical properties of these oils have been already (§ 234.) mentioned, and an account of the medical virtues of each will be found in their respective places in the Materia Medica.

CHAP. XVIII.

OILY PREPARATIONS.

OLEUM AMMONIATUM, vulgo Linimentum Volatile, *Edin.*

Ammoniated Oil, commonly called *Volatile Liniment.*

Take of
 Olive-oil, two ounces;
 Water of ammonia, two drachms.
Mix them together.

Linimentum Ammoniæ Fortius. *Lond.*

Stronger Liniment of Ammonia.

Take of
 Water of pure ammonia, one ounce;
 Olive-oil, two ounces.
Shake them together in a phial.

Linimentum Ammoniæ. *Lond.*

Liniment of Ammonia.

Take of
 Water of ammonia, half an ounce;
 Olive-oil, one ounce and a half.
Shake them together in a phial till they are mixed.

The most commonly adopted generic name for the combination of oil with alkalies is Soap, and the species are distinguished by the addition of that of the alkali they contain. On these principles, volatile liniment should be called Soap of Ammonia, as hard soap is soap of soda, and soft soap, soap of potass.

The ammonia used in the two first of these preparations combines much more easily and intimately with the oil than the carbonate of ammonia used in the last. If the carbonate be employed ed with the view of rendering the preparation leſs ſtimulating, the ſame end will be more ſcientifically obtained, by increaſing the proportion of oil mixed with pure ammonia. The two firſt of theſe liniments differ greatly in point of ſtrength, the proportion of water of ammonia in the firſt, being as 1 to 8, and in the ſecond as 1 to 2.

They are very frequently uſed externally as ſtimulants and rubefacients. In inflammatory ſore throats, a piece of flannel moiſtened with theſe ſoaps, applied to the throat, and renewed every four or five hours, is one of the moſt efficacious remedies. By means of this warm ſtimulating application, the neck, and ſometimes the whole body, is put into a ſweat, which, after bleeding, either carries off, or leſſens the inflammation. When too ſtrong, or too liberally applied, they ſometimes occaſion inflammations, and even bliſters. Where the ſkin cannot bear their acrimony, a larger proportion of oil may be uſed.

But the firſt of theſe preparations is even ſometimes uſed internally, made into a mixture with ſyrup and ſome aromatic water. A drachm or two taken in this manner three or four times a-day, is a powerful remedy in ſome kinds of catarrh and ſore throat.

OLEUM LINI CUM CALCE.

Edin.

Linſeed-Oil with Lime.

Take of
 Linſeed-oil,
 Lime-water, of each equal parts.
Mix them.

This liniment is extremely uſeful in caſes of ſcalds or burns, being ſingularly efficacious in preventing, if applied in time, the inflammation ſubſequent to burns or ſcalds; or even in removing it, after it has come on.

It is alſo a ſpecies of ſoap, and might be called Soap of Lime, although it probably contains a great exceſs of oil.

OLEUM CAMPHORATUM.

Edin.

Camphorated Oil.

Take of
 Olive-oil, two ounces;
 Camphor, half an ounce.
Mix them ſo that the camphor may be diſſolved.

This is a ſimple ſolution of camphor in fixed oil, and is an excellent application to local pains from whatever cauſe, and to glandular ſwellings.

OLEUM SULPHURATUM.
Edin.
Sulphurated Oil.

Take of
 Olive-oil, eight ounces;
 Sublimed ſulphur, one ounce.
Boil them together in a large iron pot, ſtirring them continually, till they unite.

Lond.

Take of
 Flowers of ſulphur,
 Olive oil, ſixteen ounces, by weight.
Boil the flowers of ſulphur, with the oil, in a pot ſlightly covered, until they be united.

In the ſame way is made,

Petroleum Sulphuratum.
Lond.
Sulphurated Petroleum.

Sulphurated oil was formerly ſtrongly recommended in coughs, conſumptions, and other diſorders of the breaſt and lungs: But the reputation which it had in theſe caſes, does not appear to have been derived from any fair trial or experience. It is manifeſtly hot, acrimonious, and irritating; and ſhould therefore be uſed with the utmoſt caution. It has frequently been found to injure the appetite, offend the ſtomach and viſcera, parch the body, and occaſion thirſt and febrile heats. The doſe of it is from ten to forty drops. It is employed externally for cleanſing and healing foul running ulcers; and Boerhaave conjectures, that its uſe in theſe caſes gave occaſion to the virtues aſcribed to it when taken internally.

CHAP. XIX.

DISTILLED WATERS.

Substances which differ in volatility, may be ſeparated from each other by applying a degree of heat capable of converting the moſt volatile into vapour, and by again condenſing this vapour in a proper apparatus. Water is converted into vapour at 212°, and may be ſeparated by diſtillation from the earthy and ſaline matters which it always contains in a natural ſtate. But, it is evident, that if any ſubſtances which are as volatile as water, be expoſed

posed to the same degree of heat, either by immersing them in boiling water, or exposing them to the action of its steam, they will rise with it in distillation. In this way the camphor and volatile oils of vegetable substances are separated from the more fixed principles; and as water is capable of dissolving a certain quantity of these volatile substances, it may be impregnated with a great variety of flavours by distilling it from different aromatic substances. If the subject of our distillation contain more volatile oil than the water employed is capable of dissolving, it will render the water milky, and afterwards separate from it. It is in this way that essential oils are obtained.

Essential oils are obtained only from odoriferous substances; but not equally from all of this class, nor in quantity proportional to their degree of odour. Some, which, if we were to reason from analogy, should seem very well fitted for this process, yield extremely little oil, and others none at all. Roses and chamomile flowers, whose strong and lasting smell promises abundance, are found to contain but a small quantity of oil: the violet and jessamine flower, which perfume the air with their odour, lose their smell upon the gentlest coction, and do not afford any oil, on being distilled, unless immense quantities are submitted to the operation at once; while savin, whose disagreeable scent extends to a great distance, gives out the largest proportion of oil of almost any vegetable known.

Nor are the same plants equally fit for this operation, when produced in different soils or seasons, or at different times of their growth. Some yield more oil, if gathered when the flowers begin to fall off than at any other time. Of this, we have examples in lavender and rue; others, as sage, afford the largest quantity when young, before they have sent forth any flowers; and others, as thyme, when the flowers have just appeared. All fragrant herbs yield a larger proportion of oil, when produced in dry soils and in warm summers, than in opposite circumstances. On the other hand, some of the disagreeable strong-scented ones, as wormwood, are said to contain most oil in rainy seasons, and when growing in moist rich grounds.

Several chemists have been of opinion, that herbs and flowers, moderately dried, yield a greater quantity of essential oil, than if they were distilled when fresh. It is, however, highly improbable, that the quantity of essential oil will be increased by drying; on the contrary, part of it must be dissipated and lost. But drying may sometimes be useful in other ways; either by diminishing the bulk of the subject to be distilled, or by causing it to part with its oil more easily.

The choice of proper instruments is of great consequence for the performance of this process to advantage. There are some oils which pass freely over the swan-neck of the head of the com-

mon

mon still: others, less volatile, cannot easily be made to rise so high. For obtaining these last, we would recommend a large low head, having a rim or hollow canal round it: in this canal, the oil is detained on its first ascent, and thence conveyed at once into the receiver, the advantages of which are sufficiently obvious.

With regard to the proportion of water to be employed; if whole plants, moderately dried, are used, or the shavings of woods, as much of either may be put into the vessel as, lightly pressed, will occupy half its cavity; and as much water may be added, as will fill two-thirds of it. When fresh and juicy herbs are to be distilled, thrice their weight of water will be fully sufficient; but dry ones require a much larger quantity. In general, there should be so much water, that after all intended to be distilled has come over, there may be liquor enough left to prevent the matter from burning to the still. The water and ingredients, altogether, should never take up more than three-fourths of the still; there should be liquor enough to prevent any danger of an empyreuma, but not so much as to be apt to boil over into the receiver.

The subject of distillation should be macerated in the water until it be perfectly penetrated by it. To promote this effect, woods should be thinly shaved across the grain, or sawn, roots cut transversely into thin slices, barks reduced into coarse powder, and seeds slightly bruised. Very compact and tenacious substances require the maceration to be continued a week or two, or longer; for those of a softer and looser texture, two or three days are sufficient; while some tender herbs and flowers not only stand in no need of maceration, but are even injured by it. The fermentation which was formerly prescribed in some instances, is always hurtful.

With regard to the fire, the operator ought to be expeditious in raising it at first, and to keep it up during the whole process, to such a degree only, that the oil may freely distil; otherwise the oil will be exposed to an unnecessary heat; a circumstance which ought as much as possible to be avoided. Fire communicates to all these oils a disagreeable impregnation, as is evident from their being much less grateful when newly distilled, than after they have stood for some time in a cool place: and the longer the heat is continued, the greater alteration it produces in them.

The greater number of oils require for their distillation the heat of water strongly boiling: but there are many also which rise with a heat considerably less; such as those of lemon and citron peel, of the flowers of lavender and rosemary, and of almost all the more odoriferous kinds of flowers. We have already observed, that these flowers have their fragrance much injured, or even destroyed, by beating or bruising them; it is impaired also by the immersion

immersion in water in the present process, and the more so in proportion to the continuance of the immersion and the heat: hence oils, distilled in the common manner, prove much less agreeable in smell than the subjects themselves. For the distillation of substances of this class, another method has been contrived; instead of being immersed in water, they are exposed only to its vapour. A proper quantity of water being put into the bottom of the still, the odoriferous herbs or flowers are laid lightly in a basket, of such a size that it may enter into the still, and rest against its sides, just above the water. The head being then fitted on, and the water made to boil, the steam, percolating through the subject, imbibes the oil, without impairing its fragrance, and carries it over into the receiver. Oils thus obtained, possess the odour of the subject in an exquisite degree, and have nothing of the disagreeable scent perceivable in those distilled by boiling them in water in the common manner.

Plants differ so much, according to the soil and season of which they are the produce, and likewise according to their own ages, that it is impossible to fix the quantity of water to be drawn from a certain weight of them to any invariable standard. The distillation may always be continued as long as the liquor runs well flavoured off the subject, and no longer.

In the distillation of essential oils, the water, as was observed in a foregoing section, imbibes always a part of the oil. The distilled liquors here treated of, are no other than water thus impregnated with the essential oil of the subject; whatever smell, taste, or virtue, is communicated to the water, or obained in the form of a watery liquor, being found in a concentrated state in the oil.

All those vegetables therefore which contain an essential oil, will give over some virtue to water by distillation: but the degree of the impregnation of the water, or the quantity of water which a plant is capable of saturating with its virtue, are by no means in proportion to the quantity of its oil. The oil saturates only the water that comes over at the same time with it: if there be more oil than is sufficient for this saturation, the surplus separates, and concretes in its proper form, not miscible with the water that arises afterwards. Some odoriferous flowers, whose oil is in so small quantity, that scarcely any visible mark of it appears, unless fifty or an hundred pounds or more are distilled at once, give nevertheless as strong an impregnation to water as those plants which abound most with oil.

Many have been of opinion, that distilled waters may be more and more impregnated with the virtues of the subject, and their strength increased to any assigned degree, by *cohobation*, that is, by redistilling them repeatedly from fresh parcels of the plant. Experience, however, shews the contrary. A water skillfully drawn in the first distillation, proves on every repeated one not stronger but more disagreeable. Aqueous liquors are not capable

pable of imbibing above a certain quantity of the volatile oil of vegetables; and this they may be made to take up by one, as well as by any number of diſtillations: the oftener the proceſs is repeated, the ungrateful impreſſion which they generally receive from the fire, even at the firſt time, becomes greater and greater.

Thoſe plants, which do not yield at firſt waters ſufficiently ſtrong, are not proper ſubjects for this proceſs.

The mixture of water and oil which comes over, is to be put into large narrow-necked bottles, and placed in a cool place, that the portion of oil which is not diſſolved in the water may riſe to the top, or ſink to the bottom, according to its ſpecific gravity. It is then to be ſeparated, either by a ſeparatory, (Plate I. fig. 10.); or by means of a ſmall glaſs-ſyringe; or by means of a filter of paper; or, laſtly, by means of a woollen thread, one end of which is immerſed in the oil, and the other lower end in a phial: the oil will thus paſs over into the phial by capillary attraction, and the thread is to be ſqueezed dry.

Moſt diſtilled waters, when firſt prepared, have a ſomewhat unpleaſant ſmell, which however they gradually loſe: it is therefore adviſable to keep them for ſome days after their preparation in veſſels but ſlightly covered; and not to cork them up until they loſe that ſmell.

That the waters may keep the better, about one-twentieth part their weight of proof-ſpirit may be added to each after they are diſtilled.

Diſtilled waters are employed chiefly as grateful diluents, as ſuitable vehicles for medicines of greater efficacy, or for rendering diſguſtful ones more acceptable to the palate and ſtomach; few are depended on, with any intention of conſequence, by themſelves.

To the chapter on Simple Diſtilled Waters, the London College have annexed the following remarks.

We have ordered moſt of the waters to be diſtilled from the dried herbs, becauſe freſh are not ready at all times of the year. Whenever the freſh are uſed, the weights are to be increaſed. But, whether the freſh or dried herbs be employed, the operator may vary the weight according to the ſeaſon in which they have been produced and collected.

Herbs and ſeeds kept beyond the ſpace of a year, become leſs proper for the diſtillation of waters.

To every gallon of theſe waters add five ounces, by meaſure, of proof-ſpirit.

The Edinburgh College order half an ounce of proof-ſpirit to every pound of the water, which is nearly the ſame.

But the Dublin College order five ounces of proof-ſpirit to be added to each pound. The word *pound* is probably printed by miſtake for *gallon.*

AQUA DISTILLATA.

Lond.

Distilled Water.

Take of

Spring-water, ten gallons.

Draw off by distillation, first, four pints; which being thrown away, draw off four gallons. This water is to be kept in a glass or earthen bottle with a glass-stopper.

Dub.

Take of

Spring-water, twenty pounds.

Put it into a retort, and having thrown away the first pound, draw off ten pounds by distillation with a gentle heat.

Edin.

Let water be distilled in very clean vessels, until about two-thirds have come over.

Water is never found pure in a state of nature; and as it is absolutely necessary, particularly for many chemical operations, that it should be perfectly so, we must separate it from all heterogeneous matters by distillation. The first portion that comes over should be thrown away, not so much from the possibility of its being impregnated with volatile matters contained in the water, as from the probability that it will be contaminated with impurities it may have contracted in its passage through the worm in the refrigeratory. The distillation is not to be pushed too far, lest the water should acquire an empyreumatic flavour.

Although distilled water be necessary for many purposes, we apprehend that the London College, from a desire of extreme elegance, have fallen into a very considerable error in ordering it to be employed for many purposes, such as infusions and decoctions, for which good spring water would answer just as well, and for which, we will venture to say, that it never is employed by the apothecary. The consequence is, that the apothecary has no rule to direct him, when it is absolutely necessary, and when it may be dispensed with, and he will therefore probably dispense with it oftener than is proper.

AQUA CITRI AURANTII.

Edin.

Orange-Peel Water.

Take of

Fresh orange-peel, two pounds.

Pour upon it as much water as shall be sufficient to prevent any empyreuma, after ten pounds have been drawn off by distillation. After due maceration, distil ten pounds.

AQU..

Aqua Foeniculi Dulcis.
Dub. Lond.
Fennel Water.

Take of
The bruiſed ſeeds of ſweet fennel, one pound;
Water, as much as may be ſufficient to prevent empyreuma.
Diſtil one gallon (ten pounds), *Dub.*

The ſame quantity of water is to be diſtilled in the ſame manner from

Six pounds of the recent petals of the Damask Rose, *Aqua Roſæ Centifoliæ.* Edin.
Aqua Roſæ. Lond. Dub.

Three pounds, *Edin.*; one pound and a half, *Lond. Dub.* of Peppermint, *Aqua Menthæ Piperitæ.* Edin.
Aqua Menthæ Piperitidis. Lond. Dub.

Three pounds, *Edin.*; one pound and a half, *Lond. Dub.* of Pennyroyal, in flower,
Aqua Menthæ Pulegii. Edin.
Aqua Pulegii. Lond. Dub.

Two pounds of freſh Lemon Peel,
Aqua Citri Medicæ. Edin.

One pound and a half of Spearmint,
Aqua Menthæ Sativæ. Dub. Lond.

One pound of Cinnamon, (macerated for a day, *Lond. Dub.*)
Aqua Lauri Cinnamoni. Edin.
Aqua Cinnamoni. Lond. Dub.

One pound of Cassia, *Aqua Lauri Caſſiæ.* Edin.

One pound of bruiſed Dill Seeds,
Aqua Anethi. Lond.

Half a pound of Pimento, (macerated for a day, *Lond.*)
Aqua Myrti Pimentæ. Edin.
Aqua Pimento. Lond.

The virtues of all theſe waters are nearly alike; and the peculiarities of each will be eaſily underſtood by conſulting the account given in the Materia Medica of the ſubſtance from which they are prepared. We will only mention, that as roſe water is exceedingly apt to ſpoil, the apothecaries generally prepare it in ſmall quantities at a time from the leaves, preſerved by packing them cloſely in cans with common ſalt.

CHAP. XX.

VOLATILE OILS.

OLEA VOLATILIA.

Edin.

Volatile Oils.

VOLATILE OILS are prepared nearly in the fame manner as the diftilled waters, except that lefs water is to be added. Seeds and woody fubftances are to be previoufly bruifed or rafped. The oil comes over with the water, and is afterwards to be feparated from it, according as it may be lighter than the water, and fwim upon its furface, or heavier, and fink to the bottom.

Befides, in preparing thefe diftilled waters and oils, it is to be obferved, that the goodnefs of the fubject, its texture, the feafon of the year, and fimilar caufes, muft give rife to fo many differences, that no certain or general rule can be given to fuit accurately each example. Therefore, many things are omitted, to be varied by the operator according to his judgment, and only the moft general precepts are given.

OLEA DISTILLATA.

Lond.

Diftilled Oils.

Let thefe oils be drawn off by diftillation, from an alembic with a large refrigeratory; but, to prevent empyreuma, water muft be added to the ingredients; in which they muft be macerated before diftillation.

The water which comes over with the oil in diftillation is to be kept for ufe.

Dub.

Let the oil be extracted by diftillation from the fubject previoufly macerated in water, with the addition of as much water as may be fufficient to prevent empyreuma.

In diftilling fennel, peppermint, fpearmint, and pennyroyal, the water which comes over along with the oil, is to be preferved for ufe in the manner directed in the chapter on Diftilled Waters.

The herbs from which oils are to be extracted by diftillation, are to be dried as foon as they are collected.

According

According to these directions, are prepared the

Volatile, Distilled, or Essential OILS of	OLEA *Volatilia*, Edin. *Distillata*, Dub. *vel Essentialia*. Lond.
Anise,	*Pimpinellæ anisi*. Edin. *Anisi*. Lond. Dub.
Caraway,	*Carui*. Lond. Dub.
Fennel seeds,	*Seminum fœniculi dulcis*. Dub.

from the Seeds.

Juniper berries,	*Juniperi communis*. Edin. *Baccarum juniperi*. Dub. *Juniperi baccæ*. Lond.

from the Berries.

Pimento,	*Myrti pimentæ*. Edin.

from the Fruit.

Fennel flowers,	*Florum fœniculi dulcis*. Dub.
Rosemary,	*Rorismarini officinalis*. Edin. *Rorismarini*. Lond. Dub.
Lavender,	*Lavandulæ spicæ*. Edin. *Lavendulæ*. Lond.
Peppermint,	*Menthæ piperitæ*. Edin. ——— *piperitidis*. Lond. Dub.
Spearmint,	——— *sativæ*. Lond. Dub.
Pennyroyal,	*Pulegii*. Lond. Dub.
Origanum,	*Origani*. Lond. Dub.
Rue,	*Rutæ*. Dub.
Savine,	*Juniperi sabinæ*. Edin. *Sabinæ*. Dub.

from the Flower, or Herb in flower. And of

Sassafras,	*Lauri sassafras*. Edin. *Sassafras*. Lond.

from the Root.

OLEUM TEREBINTHINÆ.

Lond. Dub

Oil of Turpentine.

Take of

Common turpentine, five pounds.

Water, four pints, (four pounds, *Dub.*).

Diftil (two pounds, *Dub.*) (the turpentine with the water in a copper alembic, *Lond.*). After the diftillation of the oil, what remains, (in the retort, *Dub.*) is yellow refin.

OLEUM TEREBINTHINÆ VOLATILE PURISSIMUM.
Edin.

OLEUM TEREBINTHINÆ RECTIFICATUM.
Lond. Dub.
Rectified Oil of Turpentine.

Take of
Oil of turpentine, one pound, (two pounds, *Dub.*);
Water, four pints, (four pounds, *Dub.*)
Diftil (a pound and a half, *Dub.*) (as long as any oil comes over, *Edin.*)

THE procefs here propofed for rectifying this oil, is not only tedious, but accompanied with danger. For unlefs the luting be very clofe, fome of the vapour will be apt to get through; and if this catch fire, it will infallibly burft the veffels. This rectified oil, which in many pharmacopœias is ftyled Ethereal, does not confiderably differ in fpecific gravity, fmell, tafte, or medical qualities, from the former.

The Spirit of Turpentine, as this effential oil has been ftyled, is frequently taken internally as a diuretic and fudorific; and it has fometimes a confiderable effect when taken to the extent of a few drops only. It has, however, been given in much larger dofes, efpecially when mixed with honey. Recourfe has principally been had to fuch dofes in cafes of chronic rheumatifm, particularly in thofe modifications of it which are termed fciatica and lumbago, but fometimes they induce bloody urine.

The water employed in the diftillation of volatile oils always imbibes fome portion of the oil; as is evident from the fmell, tafte, and colour, which it acquires. It cannot, however, retain above a certain quantity; and therefore, fuch as has been already ufed and almoft faturated itfelf, may be advantageoufly employed, inftead of common water, in a fecond, third, or any future diftillation of the fame fubject.

After the diftillation of one oil, particular care fhould be had duly to cleanfe the worm before it be employed in the diftillation of a different fubftance. Some oils, thofe of wormwood and anifeeds for inftance, adhere to it fo tenacioufly, as not to be melted out by heat, or wafhed off by water: the beft way of cleanfing the worm from thefe, is to run a little fpirit of wine through it.

Volatile oils, after they are diftilled, fhould be fuffered to ftand for fome days, in veffels loofely covered with paper, till they have loft their difagreeable fiery odour, and become limpid: then

put

put them up in ſmall bottles, which are to be kept quite full, cloſely ſtopped, in a cool place. With theſe cautions, they will retain their virtues in perfection for many years.

Moſt of the oils mentioned above, are prepared by our chemiſts in Britain, and are eaſily procurable in a tolerable degree of perfection: But the oils from the more expenſive ſpiceries, though ſtill introduced among the preparations in the foreign Pharmacopœias, are, when employed among us, uſually imported from abroad.

Theſe are frequently ſo much adulterated, that it is not an eaſy matter to meet with ſuch as are at all fit for uſe. Nor are theſe adulterations eaſily diſcoverable. The groſſer abuſes, indeed, may be readily detected. Thus, if the oil be mixed with ſpirit of wine, it will turn milky on the addition of water; if with expreſſed oils, rectified ſpirit will diſſolve the volatile, and leave the other behind; if with oil of turpentine, on dipping a piece of paper in the mixture, and drying it with a gentle heat, the turpentine will be betrayed by its ſmell. But the more ſubtile artiſts have contrived other methods of ſophiſtication, which elude all trials of this kind.

Some have looked upon the ſpecific gravity of oils as a certain criterion of their genuineneſs. This, however, is not to be abſolutely depended on; for the genuine oils, obtained from the ſame ſubjects, often differ in gravity as much as thoſe drawn from different ones. Cinnamon and cloves, whoſe oils uſually ſink in water, yield, if ſlowly and warily diſtilled, oils of great fragrancy, which are nevertheleſs ſpecifically lighter than the aqueous fluid employed in their diſtillation; whilſt, on the other hand, the laſt runnings of ſome of the lighter oils prove ſometimes ſo ponderous as to ſink in water.

As all volatile oils agree in the general properties of ſolubility in ſpirit of wine, indiſſolubility in water, miſcibility with water by the intervention of certain intermedia, volatility in the heat of boiling water, &c. it is plain that they may be variouſly mixed with each other, or the dearer ſophiſticated with the cheaper, without any poſſibility of diſcovering the abuſe by any trials of this kind. And, indeed, it would not be of much advantage to the purchaſer, if he had infallible criteria of the genuineneſs of every individual oil. It is of as much importance that they be *good*, as that they be *genuine*; for genuine oils, from inattentive diſtillation, and long and careleſs keeping, are often weaker both in ſmell and taſte than the common ſophiſticated ones.

The ſmell and taſte ſeem to be the only certain teſts of which the nature of the thing will admit. If a bark ſhould have in every reſpect the appearance of good cinnamon, and ſhould be proved indiſputably to be the genuine bark of the cinnamon tree; yet if it want the cinnamon flavour, or has it but in a low degree, we reject it; and the case is the same with the oil. It is only from use and habit, or comparisons with specimens of known quality, that we can judge of the goodness, either of the drugs themselves or of their oils.

Most of the volatile oils indeed, are too hot and pungent to be tasted with safety; and the smell of the subject is so much concentrated in them, that a small variation in this respect is not easily distinguished: but we can readily dilute them to any assignable degree. A drop of the oil may be dissolved in spirit of wine, or received on a bit of sugar, and dissolved by that intermedium in water. The quantity of liquor which it thus impregnates with its flavour, or the degree of flavour which it communicates to a certain determinate quantity, will be the measure of the degree of goodness of the oil.

Volatile oils, medicinally considered, agree in the general qualities of pungency and heat; in particular virtues, they differ as much as the subjects from which they are obtained, the oil being the direct principle in which the virtues, or at least a considerable part of the virtues, of the several subjects reside. Thus the carminative virtue of the warm seeds, the diuretic of juniper berries, the emmenagogue of savin, the nervine of rosemary, the stomachic of mint, the antiscorbutic of scurvy-grass, the cordial of aromatics, &c. are supposed to be concentrated in their oils.

There is another remarkable difference in volatile oils, the foundation of which is less obvious, that of the degree of their pungency and heat. These are by no means in proportion, as might be expected, to those of the subject they were drawn from. The oil of cinnamon, for instance, is excessively pungent and fiery; in its undiluted state it is almost caustic; whereas cloves, a spice which in substance is far more pungent than the other, yields an oil which is far less so. This difference seems to depend partly upon the quantity of oil afforded, cinnamon yielding much less than cloves, and consequently having its active matter concentrated into a smaller volume; partly, upon a difference in the nature of the active parts themselves: for though volatile oils contain always the specific odour and flavour of their subjects, whether grateful or ungrateful, they do not always contain the whole pungency: this resides frequently in a more fixed resinous matter, and does not rise with the oil. After the distillation of cloves, pepper, and some other spices, a part of their pungency is found to remain behind: a simple tincture of them in rectified spirit of wine is even more pungent than their pure essential oils.

The more grateful oils are frequently made use of for reconciling to the stomach medicines of themselves disgustful. It has been customary to employ them as correctors for the resinous purgatives; an use which they do not seem to be well adapted to. All the service they can here be of, is, to make the resin sit more easily

eaſily at firſt on the ſtomach: far from abating the irritating quality upon which the violence of its operation depends, theſe pungent oils ſuperadd a freſh ſtimulus.

Volatile oils are never given alone, on account of their extreme heat and pungency; which in ſome is ſo great, that a ſingle drop let fall upon the tongue, produces a gangrenous eſchar. They are readily imbibed by pure dry ſugar, and in this form may be conveniently exhibited. Ground with eight or ten times their weight of ſugar, they become ſoluble in aqueous liquors, and thus may be diluted to any aſſigned degree. Mucilages alſo render them miſcible with water into an uniform milky liquor. They diſſolve likewiſe in ſpirit of wine; the more fragrant in an equal weight, and almoſt all of them in leſs than four times their own quantity. Theſe ſolutions may be either taken on ſugar, or mixed with ſyrups, or the like. On mixing them with water, the liquor grows milky, and the oil ſeparates.

The more pungent oils are employed externally againſt paralytic complaints, numbneſs, pains, and aches, cold tumours, and in other caſes where particular parts require to be heated or ſtimulated. The toothach is ſometimes relieved by a drop of theſe almoſt cauſtic oils, received on cotton, and cautiouſly introduced into the hollow tooth.

CHAP. XXI.

EMPYREUMATIC VOLATILE OILS.

Empyreumatic Oils agree in many particulars with the volatile oils already treated of, but they alſo differ from them in ſeveral important circumſtances. The latter exiſt ready formed in the aromatic ſubſtances, from which they are obtained, and are only ſeparated from the fixed principles by the action of a heat not exceeding that of boiling water. The former, on the contrary, are always formed by the action of a degree of heat conſiderably higher than that of boiling water, and are the product of decompoſition, and a new arrangement of the elementary principles of ſubſtances, containing at leaſt oxygen, hydrogen, and carbon. Their production is therefore always attended with the formation of other new products. In their chemical properties they do not differ very remarkably from the volatile oils, and are principally diſtinguiſhed from them by their unpleaſant pungent empyreumatic ſmell and rough bitteriſh taſte. They are alſo more apt to

ſpoil

ſpoil by the contact of the air, and the oftener they are rediſtilled they become more limpid, leſs coloured, and more ſoluble in alcohol; whereas the eſſential oils, by repeated diſtillations, become thicker and leſs ſoluble in alcohol.

Their action on the body is exceedingly ſtimulant and heating.

OLEUM PETROLEI.

Lond.

Oil of Petroleum.

Diſtil petroleum in a ſand-bath.

The oil obtained from this bitumen will be more or leſs thin according to the continuance of the diſtillation; and by its continuance, the tar will at laſt be reduced to a black coal; and then the oil will be pretty deep in colour, but perfectly fluid, though very acrid and ſtimulating.

It is leſs diſagreeable than ſome of the other empyreumatic oils which had formerly a place in our pharmacopœias, ſuch as the oleum lateritium.

OLEUM SUCCINI PURISSIMUM.

Edin.

Purified Oil of Amber.

Diſtil oil of amber in a glaſs-retort with ſix times its quantity of water till two thirds of the water have paſſed into the receiver; then ſeparate this very pure volatile oil from the water, and keep it for uſe in cloſe-ſhut veſſels.

Oleum Succini Rectificatum.

Lond.

Rectified Oil of Amber.

Take of

Oil of amber, one pound.

Diſtil three times.

Dub.

Take of

The oil which riſes in the preparation of ſalt of amber three pounds.

Diſtil a pound and a half.

The rectified oil has a ſtrong bituminous ſmell, and a pungent acrid taſte. Given in a doſe of ten or twelve drops, it heats, ſtimulates, and promotes the fluid ſecretions: It is chiefly celebrated in hyſterical diſorders, and in deficiencies of the uterine purgations. Sometimes it is uſed externally, in liniments for weak or paralytic limbs and rheumatic pains.

OLEUM

OLEUM ANIMALE.

Lond.

Animal Oil.

Take of
 Oil of hartſhorn, one pound.
Diſtil three times.

OLEUM CORNU CERVINI RECTIFICATUM.

Dub.

Rectified Oil of Hartſhorn.

Take of
 The oil which aſcends in the diſtillation of the volatile liquor of hartſhorn three pounds.
 Water, ſix pounds.
Diſtil a pound and a half.

Animal Oil, thus rectified, is thin and limpid, of a ſubtle, penetrating, not diſagreeable ſmell and taſte. It is ſtrongly recommended as an anodyne and antiſpaſmodic in doſes of from 15 to 30 drops. Hoffmann reports, that it procures a calm and ſweet ſleep, which continues often for 20 hours, without being followed by any languor or debility, but rather leaving the patient more alert and cheerful than before: that it procures likewiſe a gentle ſweat, without increaſing the heat of the blood: that given to 20 drops or more, on an empty ſtomach ſix hours before the acceſſion of an intermittent fever, it frequently removes the diſorder; and that it is likewiſe a very general remedy in inveterate and chronical epilepſies, and in convulſive motions, eſpecially if given before the uſual time of the attack, and preceded by proper evacuations.

How far empyreumatic oils poſſeſs the virtues that have been aſcribed to them, has not yet been ſufficiently determined by experience; the tedioufneſs and trouble of the rectification having prevented their coming into general uſe, or being often made. They are liable alſo to more material inconvenience in regard to their medicinal uſe, namely, precariouſneſs in their quality; for how perfectly ſoever they may be rectified, they gradually loſe, in keeping, the qualities they had received from that proceſs, and return more and more towards their original fetid ſtate.

CHAP.

CHAP. XXII.

DISTILLED SPIRITS.

The flavour and virtues of diſtilled waters are owing, as obſerved in the preceding chapter, to their being impregnated with a portion of the eſſential oil of the ſubject from which they are drawn. Alcohol, conſidered as a vehicle for theſe oils, has this advantage above water, that it keeps all the oil that riſes with it perfectly diſſolved into an uniform limpid liquor.

Nevertheleſs, many ſubſtances, which, on being diſtilled with water, impart to it their virtues in great perfection; if treated in the ſame manner with ſpirit of wine, ſcarcely give over to it any ſmell or taſte. The cauſe of this difference is, that ſpirit is not ſuſceptible of ſo great a degree of heat as water. It is obvious therefore, that ſubſtances may be volatile enough to riſe with the heat of boiling water, but not with that of boiling ſpirit.

Thus, if cinnamon, for inſtance, be committed to diſtillation with a mixture of ſpirit of wine and water, or with a pure proof-ſpirit, which is no other than a mixture of about equal parts of the two; the ſpirit will ariſe firſt, clear, colourleſs, and tranſparent, and almoſt without any taſte of the ſpice; but as ſoon as the more ponderous watery fluid begins to ariſe, the oil comes freely over with it, ſo as to render the liquor highly odorous, ſapid, and of a milky hue.

The proof-ſpirits uſually met with in the ſhops are accompanied with a degree of ill flavour; which, though concealed by means of certain additions, plainly diſcovers itſelf in diſtillation. This nauſeous flavour does not begin to ariſe till after the purer ſpirituous part has come over; which is the very time that the virtues of the ingredients begin alſo moſt plentifully to diſtil; and hence the liquor receives an ungrateful taint. To this cauſe principally is owing the general complaint, that the cordials of the apothecary are leſs agreeable than thoſe of the ſame kind prepared by the diſtiller; the latter being extremely curious in rectifying or purifying the ſpirits (when deſigned for what he calls fine goods) from all unpleaſant flavour.

SPIRITUS CARI CARVI.
Edin.
Spirit of Caraway.

Take of
Caraway ſeeds, half a pound;

Diluted

Diluted alcohol, nine pounds.

Macerate two days in a cloſe veſſel; then pour on as much water as will prevent empyreuma, and draw off by diſtillation nine pounds.

SPIRITUS CARVI.
Lond. Dub.
Spirit of Caraway.

Take of

Caraway-ſeeds, bruiſed, half a pound;
Proof-ſpirit of wine, one gallon; (nine pounds, *Dub.*)
Water, ſufficient to prevent empyreuma.

Draw off one gallon, (nine pounds, *Dub.*)

IN the ſame manner is prepared the ſame quantity of Spirit from

	SPIRITUS
CINNAMON, one pound,	*Lauri Cinnamomi.* Edin. *Cinnamomi.* Lond. Dub.
PEPPERMINT, one pound and a half,	*Menthæ Piperitæ.* Edin. ——— *Piperitidis.* Lond.
SPEARMINT, one pound and a half,	*Menthæ ſativæ.* Lond.
PENNYROYAL dried, a pound and a half,	*Pulegii.* Lond.
NUTMEG, well bruiſed two ounces,	*Myriſticæ moſchatæ.* Edin. *Nucis moſchatæ.* Dub. Lond.
PIMENTO, half a pound,	*Myrti Pimentæ.* Edin. *Pimento.* Dub. Lond.

SPIRITUS LAVANDULÆ SPICÆ.
Edin.
Spirit of Lavender.

Take of

Flowering ſpikes of lavender, freſh gathered, two pounds;
Alcohol, eight pounds.

Draw off by the heat of boiling water, ſeven pounds.

SPIRITUS LAVENDULÆ.
Lond. Dub.
Spirit of Lavender.

Take of

Freſh flowers of lavender, one pound and a half;
Proof ſpirit of wine, one gallon, (nine pounds, *Dub.*)

Draw off by diſtillation in a water-bath, five pints, (five pounds, *Dub.*)

By

By theſe directions, and in the ſame quantities are prepared,

SPIRITUS RORISMARINI OFFICINALIS,

Edin.

Spiritus Rorismarini,

Lond.

Spirit of Roſemary,

from two pounds of the flowering tops of roſemary, according to the Edinburgh College, and from a pound and half according to the London.

We think it unneceſſary to make particular obſervations on each of theſe ſimple ſpirits, as their virtues are the ſame with thoſe of the ſubſtances from which they are extracted, united to the ſtimulus of the alcohol. The alcohol in the ſpirits of lavender and roſemary, is almoſt pure; in the others it is diluted with about an equal weight of water.

SPIRITUS ANISI COMPOSITUS.

Lond.

Compound Spirit of Aniſeed.

Take of

Aniſeed,
Angelica-ſeed, of each, bruiſed, half a pound;
Proof-ſpirit, one gallon;
Water, ſufficient to prevent empyreuma.

Draw off one gallon by diſtillation.

This compound ſpirit, like the ſimple ones, is an agreeable cordial; indeed too agreeable, for by ſome they are ſo often reſorted to, on the ſlighteſt ſenſation of flatulence in the ſtomach, that their uſe is attended with all the pernicious conſequences of dram-drinking.

SPIRITUS JUNIPERI COMMUNIS COMPOSITUS.

Edin.

Spiritus Juniperi Compositus.

Lond. Dub.

Compound Spirit of Juniper.

Take of

Juniper-berries, well bruiſed, one pound;
Caraway-ſeeds,
Sweet fennel ſeeds, each one ounce and a half;
Diluted alcohol, nine pounds, (one gallon *Lond.*)
Water ſufficient to prevent empyreuma.

(Macerate two days, *Edin.*) Draw off nine pounds, (one gallon, *Lond.*)

The good and bad effects of this ſpirit exactly coincide with thoſe of gin.

SPIRITUS

SPIRITUS RAPHANI COMPOSITUS.

Lond. Dub.

Compound Spirit of Horſe-Radiſh.

Take of
Freſh horſe-radiſh root,
Dried outer-rind of Seville oranges, each two pounds;
Freſh herb of garden ſcurvy-graſs, four pounds;
Bruiſed nutmegs, one ounce;
Proof-ſpirit, two gallons, (eighteen pounds, *Dub.*)
Water ſufficient to prevent empyreuma.
Draw off two gallons, (eighteen pounds, *Dub.*)

Although this proceſs may furniſh an agreeable compound ſpirit, yet it is much to be doubted, whether it poſſeſſes thoſe antiſcorbutic powers for which it was once celebrated.

SPIRITUS AMMONIÆ FŒTIDUS.

Lond.

Fetid Spirit of Ammonia.

Take of
Proof-ſpirit, ſix pints;
Sal ammoniac, one pound;
Aſafœtida, four ounces.
Potaſh, one pound and a half.
Mix them, and draw off by diſtillation five pints, with a ſlow fire.

Edin.

Spiritus Alcali Volatilis Foetidus.

Dub.

Fetid Spirit of Volatile Alkali.

Take of
Spirit of ammonia, eight ounces, (ten ounces, *Dub.*)
Aſafœtida, half an ounce.
Digeſt in a cloſe veſſel twelve hours; then diſtil off, with the heat of boiling water, eight ounces.

This ſpirit, the laſt formula of which is the beſt, as being moſt eaſily prepared, is deſigned as an antihyſteric, and is undoubtedly a very elegant one. Volatile ſpirits, impregnated for theſe purpoſes with different fetids, have been uſually kept in the ſhops; the ingredient here choſen, is the beſt calculated of any for general uſe, and equivalent in virtue to them all. The ſpirit is pale when newly diſtilled, but acquires a conſiderable tinge by keeping.

CHAP.

CHAP. XXIII.

INFUSIONS.

We have already (178, S. 2.) explained the ſenſe in which we employ the term Infuſion. We confine it to the action of a menſtruum not aſſiſted by ebullition, on any ſubſtance conſiſting of heterogeneous principles, ſome of which are ſoluble, and others inſoluble, in that menſtruum. The term is generally uſed in a more extenſive, but we, are inclined to think, a leſs correct ſenſe: thus, lime-water and the mucilages, which are commonly claſſed with the infuſions, are inſtances of ſimple ſolution, and the chalk-mixture is the mechanical ſuſpenſion of an inſoluble ſubſtance. When the menſtruum uſed is water, the ſolution is termed ſimply an Infuſion; but when the menſtruum is alcohol, it is called a Tincture; when wine or vinegar, a Medicated Wine or Vinegar. Infuſions in water are extremely apt to ſpoil, and are generally extemporaneous preparations.

INFUSUM CINCHONÆ OFFICINALIS.

Edin.

Infuſion of Cinchona Bark.

Take of
  Peruvian bark in powder, one ounce;
  Water, one pound.
Macerate for twenty-four hours, and filter.

INFUSUM CORTICIS PERUVIANI.

Dub.

Infuſion of Peruvian Bark.

Take of
  Peruvian bark in coarſe powder, one ounce;
  Mucilage of gum arabic, two ounces;
  Water, twelve ounces.
Triturate the bark with the mucilage, and add the water during the trituration. Macerate for twenty-four hours, and decant the pure liquor.

This is a very elegant form of exhibiting the active principles of Cinchona bark, and that in which it will ſit lighteſt on weak and delicate ſtomachs. The trituration directed by the Dublin College will promote the ſolution, and the addition of the mucilage,

lage, will suspend the finest particles of the substance of the bark itself. The residuum of the cold infusion may be afterwards employed in making other preparations, especially the extract, for its virtues are by no means exhausted. But it must never be dried and sold, or exhibited in substance, for that would be a culpable fraud.

INFUSUM DIGITALIS PURPUREÆ.
Edin.
Infusion of Foxglove.

Take of
- Dried leaves of foxglove, one drachm;
- Boiling water, eight ounces;
- Spirit of cinnamon, one ounce.

Macerate for four hours, and filter.

This is the infusion so highly recommended by Withering. Half an ounce, or an ounce of it, may be taken twice a-day in dropsical complaints. The spirit of cinnamon is added to improve its flavour, and to counteract its sedative effects.

INFUSUM GENTIANÆ LUTEÆ COMPOSITUM; vulgo, INFUSUM AMARUM. *Edin.*
Compound Infusion of Gentian, or Bitter Infusion.

Take of
- Gentian root, half an ounce;
- Dried peel of Seville oranges, one drachm;
- Coriander seeds, half a drachm;
- Diluted alcohol, four ounces;
- Water, one pound.

First pour on the alcohol, and three hours thereafter add the water; then macerate without heat for twelve hours, and strain.

INFUSUM GENTIANÆ COMPOSITUM.
Lond.
Compound Infusion of Gentian.

Take of
- The root of gentian cut into pieces, one drachm;
- Dried orange-peel, a drachm and a half;
- Fresh outer rind of lemons, half an ounce;
- Boiling water, twelve ounces by measure.

Macerate for an hour, and strain.

Dub.

Take of
- Bruised gentian root, two drachms;
- Fresh outer rind of lemons, half an ounce;
- Dried peel of Seville oranges, a drachm and a half;

Diluted alcohol, four ounces;
Boiling water, twelve ounces.

First pour on the spirit, and after three hours, the water. Lastly, after macerating two hours, filter.

THESE formulæ do not differ materially. The Edinburgh College employ the largest proportion of gentian; but they infuse it in cold water, which does not extract the bitter principle so quickly or so fully as boiling water, although it dissipates less of the flavour of the aromatics. The alcohol is a useful addition, both in promoting the extraction of the virtues of all the ingredients, and in preserving the infusion longer from spoiling. This infusion is an extremely good bitter, and is of great service in all cases where bitters in general are necessary. It strengthens the stomach, and increases the appetite; besides acting as a tonic on the other parts of the body, and on the vascular system.

INFUSUM MIMOSÆ CATECHU; vulgo, INFUSUM JAPONICUM. *Edin.*

Infusion of Catechu, commonly called *Japonic Infusion.*

Take of
Extract of catechu, two drachms and a half;
Cinnamon, half a drachm;
Boiling water, seven ounces;
Simple syrup, one ounce.

Macerate the extract and cinnamon in the hot water, in a covered vessel, for two hours, then strain it, and add the syrup.

EXTRACT of catechu is almost pure tanin. This infusion is therefore a powerfully astringent solution. The cinnamon and syrup render it a very agreeable medicine, which will be found serviceable in fluxes proceeding from a laxity of the intestines. Its dose is a spoonful or two every other hour.

INFUSUM RHEI PALMATI.

Edin.

Infusion of Rhubarb.

Take of
Rhubarb, half an ounce;
Boiling water, eight ounces;
Spirit of cinnamon, one ounce.

Macerate the rhubarb in a close vessel with the water for twelve hours; then having added the spirit, strain the liquor.

THIS appears to be one of the best preparations of rhubarb, when designed as a purgative; water extracting its virtue more effectually than either vinous or spirituous menstrua.

INFUSUM

INFUSUM ROSÆ GALLICÆ.
Edin.
Infusion of Roses.

Take of
The petals of red roses, dried, one ounce;
Boiling water, five pounds;
Sulphuric acid, one drachm;
White sugar, two ounces.

Macerate the petals with the boiling water in an earthen vessel, which is not glazed with lead, for four hours; then having poured on the acid, strain the liquor, and add the sugar.

INFUSUM ROSÆ.
Lond.
Infusion of Roses.

Take of
Dried red roses, half an ounce;
Diluted vitriolic acid, three drachms;
Boiling distilled water, two pints and a half;
Double refined sugar, one ounce and a half.

First pour the water on the petals in a glass-vessel, then add the diluted vitriolic acid, and macerate for half an hour. Strain the liquor, when cold, and add the sugar.

INFUSUM ROSARUM; olim, TINCTURA ROSARUM.
Dub.
Infusion of Roses, formerly *Tincture of Roses.*

Take of
The petals of red rose buds, half an ounce;
Diluted vitriolic acid, three drachms;
Boiling water, three pounds.
Double-refined sugar, an ounce and a half.

First mix the acid with the water in a glass or glazed earthen vessel. Macerate the petals in the mixture, then add the sugar to the liquor when cold and strained.

THE difference in the directions for preparing this infusion are immaterial. In fact, the rose-leaves have very little effect, except in giving the mixture an elegant red colour. Its subacid and astringent virtues depend entirely on the sulphuric acid. Altogether, however, it is an elegant medicine, and forms a very grateful addition to juleps in hæmorrhagies, and in all cases which require mild coolers and subastringents: it is sometimes taken with boluses or electuaries of the bark, and likewise makes a good gargle.

INFUSUM SENNÆ SIMPLEX.

Lond.

Simple Infusion of Senna.

Take of

Senna, an ounce and a half;
Ginger, powdered, one drachm;
Boiling distilled water, one pint.

Macerate them for one hour, in a covered vessel; and strain the liquor when cold.

INFUSUM SENNÆ.

Dub.

Infusion of Senna.

Take of

Senna, six drachms;
Ginger, powdered, half a drachm;
Boiling water, ten ounces.

Macerate them for an hour in a covered vessel, then filter.

This is a very elegant infusion of senna, the ginger acting as an useful corrigent. But if the senna were employed to the quantity of a drachm and a half, or two drachms only, in place of the quantity here ordered, it would be more convenient, as it is of advantage that it should be used fresh as here prepared. Of the present infusion, an ounce or two is a sufficient dose.

INFUSUM SENNÆ TARTARISATUM.

Lond.

Tartarised Infusion of Senna.

Take of

Senna, one ounce and a half;
Coriander-seeds, bruised, half an ounce;
Crystals of tartar, two drachms;
Distilled water, one pint.

Dissolve the crystals of tartar by boiling in the water; then pour the liquor, as yet boiling, on the senna and seeds. Macerate for an hour in a covered vessel, and strain when cold.

The addition of the super-tartrite of potass renders the taste of the senna less unpleasant, and also promotes its action.

INFUSUM TAMARINDI INDICI CUM CASSIA SENNA.

Edin.

Infusion of Tamarinds and Senna.

Take of

Preserved tamarinds, one ounce;
Senna, one drachm;
Coriander-seeds, half a drachm;

Brown

Brown ſugar, half an ounce ;
Boiling water, eight ounces.

Macerate them for four hours, occaſionally agitating them, in a cloſe earthen veſſel, not glazed with lead, and ſtrain the liquor.

It may alſo be made with double, triple, &c. the quantity of ſenna.

THIS forms a mild and uſeful purge, excellently ſuited for delicate ſtomachs, and inflammatory diſeaſes. The taſte of the ſenna is well covered by the aromatic ſugar and by the acidity of the tamarinds.

CHAP. XXIV.

DECOCTIONS.

DECOCTIONS differ from infuſions only in the action of the menſtruum being aſſiſted by a boiling heat. At the ſame time, however that the increaſe of temperature facilitates and expedites the ſolution of ſome fixed principles, it gives others a tendency to decompoſition, and diſſipates all volatile matters. Decoction, therefore, can only be uſed with advantage for the extraction of principles which are neither volatilized nor altered by a boiling heat.

DECOCTUM ALTHÆÆ OFFICINALIS.

Edin.

Decoction of Marſhmallows.

Take of
Dried marſhmallow roots, four ounces ;
Raiſins of the ſun, ſtoned, two ounces ;
Water, ſeven pounds.

Boil to five pounds ; place apart the ſtrained liquor till the feces have ſubſided, then pour off the clear liquor.

MARSHMALLOW roots contain nothing ſoluble in water except mucilage, which is very abundant in them. This decoction is therefore to be conſidered merely as an emollient, rendered more pleaſant by the acidulous ſweetneſs of the raiſins.

DECOCTUM ANTHEMIDIS NOBILIS; vulgo, DECOCTUM CHAMÆMELI ſive COMMUNE.

Edin.

Common Decoction, or Decoction of Chamomile.

Take of
Chamomile flowers, dried, one ounce;
Caraway ſeeds, half an ounce;
Water, five pounds.
Boil a quarter of an hour, and ſtrain.

DECOCTUM CHAMÆMELI; ſive, DECOCTUM PRO ENEMATE.

Dub.

Decoction of Chamomile, or Decoction for Glyſters.

Take of
Chamomile flowers, dried, half an ounce;
Sweet fennel ſeeds, two drachms.
Water, a pound.
Boil a little, and ſtrain.

DECOCTUM PRO ENEMATE.

Lond.

Decoction for Clyſters.

Take of
The leaves of mallow, dried, one ounce;
Chamomile-flowers, dried, half an ounce;
Water, one pint.
Boil, and ſtrain.

DECOCTUM PRO FOMENTO.

Lond.

Decoction for Fomentations.

Take of
The leaves of ſouthernwood, dried,
The tops of ſea-wormwood, dried,
Chamomile-flowers, dried, each one ounce;
Bay-leaves, dried, half an ounce;
Diſtilled water, ſix pints.
Boil them a little, and ſtrain.

THESE decoctions are merely ſolutions of bitter extractive, combined, in the third, with mucilage, and in the others with eſſential oils. In making them, the aromatic ſubſtances ſhould not be added until the decoction is nearly completed; for otherwiſe their flavour would be entirely diſſipated.

It muſt however be acknowledged, that theſe impregnations are for the moſt part unneceſſary for the purpoſe of glyſters; and in ordinary caſes, the bulk and warmth produce a diſcharge before theſe medicines can have any effect.

As

As fomentations, their virtues are alſo in a great meaſure to be aſcribed to the influence of the warm water; and when the herbs themſelves are applied, they act only as retaining heat and moiſture for a longer time.

DECOCTUM CINCHONÆ OFFICINALIS; vulgo, DECOCTUM CORTICIS PERUVIANI.

Edin.

Decoction of Cinchona Bark.

Take of
 Cinchona bark, in powder, one ounce;
 Water, a pound and a half.
Boil for ten minutes in a covered veſſel, and ſtrain the liquor while hot.

DECOCTUM CORTICIS PERUVIANI.

Lond.

Decoction of Peruvian Bark.

Take of
 Peruvian bark, powdered, one ounce;
 Diſtilled water, one pint and three ounces.
Boil for ten minutes in a covered veſſel, and ſtrain the liquor while hot.

Dub.

Take of
 Peruvian bark, in coarſe powder, ſix drachms;
 Water, eighteen ounces.
Boil for ten minutes in a veſſel almoſt covered, and ſtrain the liquor, while hot, through linen.

CINCHONA bark readily yields its active principles to the action of boiling water, and in greater quantity than cold water is capable of retaining diſſolved; therefore, when a ſaturated decoction cools, it becomes turbid, and there is always a depoſition of a yellowiſh or reddiſh powder, while the ſupernatant liquor is reduced to the ſtrength of a ſaturated cold infuſion. Decoction therefore preſents us with an eaſy means of obtaining immediately an active preparation of cinchona bark, and with one of greater ſtrength than a cold or even a warm infuſion, provided it be drunk while tepid, and before it forms any depoſition, or if the precipitate be diffuſed by agitation, after it is formed. As the precipitate contains no woody fibre, or other inert matter, it is extremely probable that in very ſmall doſes it would prove, if dried, a very powerful preparation of cinchona bark.

Formerly it was ſuppoſed that the ſtrength of a decoction of cinchona bark, and ſimilar ſubſtances, was increaſed by continuing the boiling for a great length of time; but this is now known to be a miſtake; and indeed, after a certain time, the decoction becomes weaker inſtead of ſtronger, becauſe water at different temperatures is capable of diſſolving only a determinate proportion of their active principles; and therefore, as ſoon as it is ſaturated, any farther decoction is unneceſſary. But moreover, theſe principles, when diſſolved in water, are liable to be decompoſed and become inert, by the abſorption of atmoſpheric oxygen, and this decompoſition is increaſed by increaſe of temperature; and as boiling conſtantly preſents new ſurfaces to the action of the air, it is evidently hurtful when protracted longer than what is juſt neceſſary to ſaturate the water. Ten minutes is ſuppoſed by the Colleges to be ſufficient for that purpoſe.

DECOCTUM DAPHNES MEZEREI.

Edin.

Decoction of Mezereon.

Take of
- The bark of Mezereon root, two drachms;
- Liquorice-root, bruiſed, half-an-ounce;
- Water, three pounds.

Boil it, with a gentle heat, down to two pounds, and ſtrain it.

From four to eight ounces of this decoction may be given four times a-day, in ſome obſtinate venereal and rheumatic affections. It operates chiefly by perſpiration.

DECOCTUM GEOFFRÆÆ INERMIS.

Edin.

Decoction of Cabbage-tree bark.

Take of
- Bark of the cabbage-tree, powdered, one ounce;
- Water, two pounds.

Boil it with a gentle fire down to one pound, and ſtrain.

This is a powerful anthelmintic. It may be given in doſes of one table-ſpoonful to children, and four to adults. If diſagreeable ſymptoms ſhould ariſe from an over-doſe, or from drinking cold water during its action, we muſt immediately purge with caſtor-oil, and dilute with acidulated drinks.

DECOCTUM GUAIACI OFFICINALIS COMPOSITUM; vulgo, Decoctum Lignorum.

Edin.

Compound Decoction of Guaiacum, commonly called *Decoction of the Woods.*

Take of
- Guaiacum raſpings, three ounces;
- Raiſins, ſtoned, two ounces;
- Saſſafras root,

Liquorice,

Liquorice, each one ounce ;
Water, ten pounds.

Boil the guaiacum and raiſins with the water, over a gentle fire, to the conſumption of one-half; adding, towards the end, the ſaſſafras and liquorice. Strain the liquorice, without expreſſion.

THIS decoction is of uſe in ſome rheumatic and cutaneous affections. It may be taken by itſelf, to the quantity of a quarter of a pint twice or thrice a-day, or uſed as an aſſiſtant in a courſe of mercurial or antimonial alteratives ; the patient, in either caſe, keeping warm, in order to promote the operation of the medicine.

DECOCTUM HELLEBORI ALBI.

Lond.

Decoction of White Hellebore.

Take of
The root of white hellebore, powdered, one ounce ;
Diſtilled water, two pints ;
Rectified ſpirit of wine, two ounces.

Boil the water with the root to one pint, and, the liquor being cold, and ſtrained, add to it the ſpirit.

THIS decoction is only uſed externally as a waſh, in tinea capitis, lepra, pſora, &c. When the ſkin is very tender and irritable, it ſhould be diluted with an equal quantity of water.

DECOCTUM HORDEI DISTICHI.

Edin.

DECOCTUM HORDEI.

Lond.

Decoction of Barley. Barley-Water.

Take of
Pearl-barley, two ounces ;
Water, five pounds.

Firſt waſh the barley, from the mealy matter that adheres to it, with ſome cold water ; then boil it a little with about half a pound of water, to extract the colouring matter. Throw this away ; and put the barley thus purified into five pounds of boiling water, which is to be boiled down to one-half, and ſtrained.

DECOCTUM HORDEI COMPOSITUM.

Lond.

Compound Decoction of Barley.

Take of
The decoction of barley, two pints ;
Figs, ſliced, two ounces ;
Liquorice root, ſliced and bruiſed, half-an-ounce ;
Raiſins, ſtoned, two ounces ;
Diſtilled water, one pint.

Boil to two pints, and ſtrain.

THESE

THESE liquors are to be uſed freely, as diluting drinks, in fevers and other acute diſorders: hence it is of conſequence that they ſhould be prepared ſo as to be as elegant and agreeable as poſſible: for this reaſon they are inſerted in the pharmacopœia, and the ſeveral circumſtances which contribute to their elegance ſet down; if any one of them be omitted, the beverage will be leſs grateful. However trivial medicines of this claſs may appear to be, they are of greater importance in the cure of acute diſeaſes than many more elaborate preparations.

Barley-water, however, is much more frequently prepared by nurſes than apothecaries, particularly in its ſimple ſtate.

DECOCTUM POLYGALÆ SENEGÆ.

Edin.

Decoction of Seneka.

Take of
 Seneka root, one ounce;
 Water, two pounds.
Boil to ſixteen ounces, and ſtrain.

THE virtues of this decoction will be eaſily underſtood from thoſe of the root from which it is prepared. The doſe in hydropic caſes, and rheumatic or arthritic complaints, is two ounces, three or four times a-day, according to its effect.

DECOCTUM SMILACIS SARSAPARILLÆ.

Edin.

DECOCTUM SARSAPARILLÆ.

Lond. Dub.

Decoction of Sarſaparilla.

Take of
 The root of ſarſaparilla, ſliced, ſix ounces;
 Diſtilled water, eight pints.
Macerate for two hours, with a heat of about 195°; then take out the root, and bruiſe it; return the bruiſed root to the liquor, and again macerate it for two hours. Then, the liquor being boiled to the meaſure of four pints, preſs it out, and ſtrain.

THE above formula is that of the London College; and as that of the Edinburgh College differs from it only in omitting the ſecond maceration, and that of the Dublin in not expreſſing the temperature in which it is to be performed, we thought it unneceſſary to introduce them. It is indeed a very doubtful remedy, and its diaphoretic effects are probably owing to its being drunk warm. It is totally incapable of curing ſyphilis; but by ſome it is thought uſeful in the ſequelæ of that diſeaſe.

DECOCTUM

DECOCTUM SARSAPARILLÆ COMPOSITUM.

Lond. Dub.

Compound Decoction of Sarſaparilla.

Take of

The root of ſarſaparilla, ſliced and bruiſed, ſix ounces;
Bark of the root of ſaſſafras,
Shavings of guaiacum-wood,
Liquorice-root, bruiſed, of each one ounce;
Mezereon, three drachms;
Diſtilled water, ten pints.

Macerate, with a gentle heat, for ſix hours; then boil it down to five pints, adding, towards the end of the boiling, the mezereon, and ſtrain the liquor.

The directions of the Dublin College only differ in adding the liquorice-root along with the mezereon, and in reducing the quantity of the ingredients uſed to one-fourth part.

This compound decoction is an elegant mode of preparing an article once highly celebrated under the title of the Liſbon diet drink, which, for a long time after its firſt introduction into Britain, was kept a ſecret; but an account of the method of preparing it was at length publiſhed in the Phyſical and Literary Eſſays of Edinburgh, by Dr Donald Monro.

It operates as a diaphoretic, and may be given with advantage in rheumatic caſes, and in ſome of the ſequelæ of ſyphilis. Three or four ounces may be taken four times a-day.

DECOCTUM ULMI.

Lond.

Decoction of Elm.

Take of

The freſh inner-bark of elm, bruiſed, four ounces;
Diſtilled water, four pints.

Boil to two pints, and ſtrain.

It has been chiefly, if not entirely, under this form of decoction, that the elm-bark has been employed for combating thoſe cutaneous eruptions, againſt which it has of late been ſo highly celebrated. Any experience which we have had of it, however, in actual practice, by no means confirms the very favourable account which ſome have given of its uſe.

CHAP. XXV.

MUCILAGES.

MUCILAGO AMYLI.

Edin. Lond.

Mucilage of Starch.

Take of

Starch, half an ounce;

Water, one pound.

Triturate the ſtarch, gradually adding the water; then boil them a little.

THE London College uſe only three drachms of ſtarch to one pound of water. The mucilage thus formed is very uſeful in thoſe caſes where a glutinous ſubſtance is required; it is often ſucceſsfully employed as a glyſter, in diarrhœas depending on acrimony in the inteſtines.

MUCILAGO ASTRAGALI TRAGACANTHÆ.

Edin.

Mucilage of Gum Tragacanth.

Take of

Gum tragacanth, in powder, one ounce;

Boiling water, eight ounces.

Macerate twenty-four hours; then triturate them carefully, that the gum may be diſſolved; and preſs the mucilage through linen cloth.

MUCILAGO TRAGACANTHÆ.

Lond.

Mucilage of Tragacanth.

Take of

Tragacanth, half an ounce;

Diſtilled water, ten ounces, by meaſure.

Macerate them, with a gentle heat, till the tragacanth be diſſolved.

Mucilago Gummi Tragacanthæ.
Dub.
Mucilage of Tragacanth.

Take of
Gum tragacanth, in powder, one drachm;
Boiling water, eight ounces.
Diſſolve the gum by digeſtion; then ſtrain the mucilage through linen.

Gum Tragacanth is difficultly ſoluble in water. When macerated in it, it ſwells, but does not diſſolve. To effect the ſolution it muſt be beaten into a paſte with ſome of the water; and the reſt of the water muſt be added gradually, and incorporated with the paſte by beating them together. Gum tragacanth is a very tenacious ſubſtance, and requires a very large proportion of water to form a fluid mucilage. That of the Edinburgh College, which is made with eight parts of water, is a paſte rather than a mucilage. The London mucilage is made with twenty parts of water, and the Dublin with ſixty-four.

MUCILAGO MIMOSÆ NILOTICÆ.
Edin.
Mucilage of Gum Arabic.

Take of
Gum Arabic, in powder, one part;
Boiling water, two parts.
Digeſt, with frequent agitation, until the gum be diſſolved; then preſs the mucilage through linen.

Mucilago Arabici Gummi.
Lond.
Mucilage of Gum Arabic.

Take of
Gum Arabic, in powder, four ounces;
Boiling diſtilled water, eight ounces.
Triturate the gum with the water until it be diſſolved.

Dub.

Take of
Gum Arabic, in powder, four ounces;
Boiling water, nine ounces.
Triturate the gum with the water, then preſs the mucilage through linen.

It is very neceſſary to paſs the mucilage through linen, in order to free it from pieces of wood and other impurities, which always adhere to the gum; the linen may be placed in a funnel.

Mucilage

Mucilage of gum arabic is very useful in many operations in pharmacy: it is also much used for properties peculiar to those substances of its own class, and of all the gums it seems to be the purest.

MUCILAGO SEMINUM CYDONII MALI.

Lond.

Mucilage of Quince-Seed.

Take of
- Quince-seeds, one drachm;
- Distilled water, eight ounces, by measure.

Boil with a slow fire for ten minutes; then pass it through linen.

This mucilage, though sufficiently agreeable, is perfectly superfluous, especially as it is apt to become mouldy, from being mixed with the other principles of the seeds soluble in water.

CHAP. XXVI.

S Y R U P S.

S Y R U P I.

Lond. Dub.

Syrups.

In making syrups, where we not have directed either the weight of the sugar, or the manner in which it should be dissolved, this is to be the rule:

Take of
- Double refined sugar, twenty-nine ounces;
- Any kind of liquor, one pint.

Dissolve the sugar in the liquor, in a water-bath; then set it aside for twenty-four hours; take off the scum, and pour off the syrup from the feces if there be any.

The above rule is prefixed to the chapter on syrups in the London Pharmacopœia, and also in that of Dublin, except that the latter desire a pound and a half of the prescribed liquor to be taken, and the solution to be boiled down to one pound before it be set aside.

SYRUPUS

SYRUPUS SIMPLEX, SIVE COMMUNIS.

Edin.

Simple or *Common Syrup.*

Take of
 Double refined ſugar, fifteen parts;
 Water, eight parts.
Let the ſugar be diſſolved by a gentle heat, and boiled a little, ſo as to form a ſyrup.

THIS preparation is a plain liquid ſweet, void of flavour or colour; and is more convenient in extemporaneous preſcription than ſugar undiſſolved.

SYRUPUS ACIDI ACETOSI.

Edin.

Syrup of Acetous Acid.

Take of
 Acetous acid, two pounds and a half;
 Double refined ſugar, three pounds and a half.
Boil them ſo as to form ſyrup.

THIS is to be conſidered as ſimple ſyrup merely acidulated, and is by no means unpleaſant. It is often employed in mucilaginous mixtures, and the like: and, on account of its cheapneſs, it is often preferred to ſyrup of lemons.

SYRUPUS ALLII.

Dub.

Syrup of Garlic.

Take of
 Garlic, ſliced, one pound;
 Double refined ſugar, four pounds;
 Boiling water, two pounds.
Macerate them in a cloſe veſſel for twelve hours; add to the ſtrained liquor the ſugar.

THIS is a very diſagreeable ſyrup; but when we wiſh to extract the virtues of garlic by a watery menſtruum, it is the beſt means we can employ.

SYRUPUS ALTHÆÆ OFFICINALIS.

Edin.

Syrup of Marſhmallow.

Take of
 Freſh marſhmallow roots, one pound;
 Water, ten pounds;
 Double refined ſugar, four pounds;
Boil the water with the roots to the conſumption of one-half, and ſtrain the liquor, ſtrongly expreſſing it. Suffer the ſtrained liquor

quor to reft till the feces have fubfided; and to the depurated liquor add the fugar; then boil fo as to make a fyrup.

Syrupus Althææ.

Lond.

Syrup of Marfhmallow.

Take of
- Frefh root of marfhmallow, bruifed, one pound;
- Double-refined fugar, four pounds;
- Diftilled water, one gallon.

Boil the water with the marfhmallow root to one half, and prefs out the liquor when cold. Set it by twelve hours; and, after the feces have fubfided, pour off the liquor. Add the fugar, and boil it to the weight of fix pounds.

This is merely a mucilaginous fyrup, and is chiefly ufed in nephritic cafes, for fweetening emollient decoctions, and the like.

SYRUPUS AMOMI ZINGIBERIS.

Edin.

Syrup of Ginger.

Take of
- Beat ginger, three ounces;
- Boiling water, four pounds;
- Double-refined fugar, feven pounds and a half.

Macerate the ginger in the water in a clofe veffel, for twenty-four hours; then to the liquor ftrained add the beat fugar, fo as to make a fyrup.

Syrupus Zingiberis.

Lond.

Syrup of Ginger.

Take of
- Ginger, bruifed, four ounces;
- Boiling diftilled water, three pints.

Macerate for four hours, and ftrain; then add double-refined fugar, and make into a fyrup, according to the general prefcription.

These are agreeable and moderately aromatic fyrups, impregnated with the flavour and virtues of the ginger.

SYRUPUS CITRI AURANTII.

Edin.

Syrup of Orange Peel.

Take of
- The frefh outer-rind of Seville oranges, fix ounces;

Boiling

Boiling water, three pounds;
Double-refined ſugar, four pounds.

Macerate the rind in the water for twelve hours; then add to the filtered liquor the ſugar, in powder, and apply a gentle heat, ſo as to form a ſyrup.

Syrupus Corticis Aurantii.
Lond. Dub.
Syrup of Orange Peel.

Take of
Freſh outer-rind of Seville oranges, eight ounces;
Boiling diſtilled water, five pints.

Macerate, for twelve hours, in a cloſe veſſel; and, in the ſtrained liquor, diſſolve double-refined ſugar to make a ſyrup.

In making this ſyrup, it is particularly neceſſary that the ſugar be previouſly powdered, and diſſolved in the infuſion with as gentle a heat as poſſible, to prevent the exhalation of the volatile parts of the peel. With theſe cautions, the ſyrup proves a very elegant and agreeable one, poſſeſſing a great ſhare of the fine flavour of the orange peel.

SYRUPUS CITRI MEDICI; olim, Syrupus Limonum.
Edin.
Syrup of Lemons.

Take of
Juice of lemons, ſuffered to ſtand till the feces have ſubſided, and afterwards ſtrained, three parts;
Double-refined ſugar, five parts.

Diſſolve the ſugar in the juice, ſo as to make a ſyrup.

Syrupus Limonis Succi.
Lond. Dub.
Syrup of Lemon-juice.

Take of
Lemon-juice, ſtrained after the feces have ſubſided, two pints;
Double-refined ſugar, fifty ounces, (four pounds, *Dub.*)

Diſſolve the ſugar ſo as to form a ſyrup.

In the ſame way are prepared,

SYRUPUS SUCCI FRUCTUS MORI.
Lond.
Syrup of Mulberry-juice.

Syrupus Succi Fructus Rubi Idæi.
Lond.
Syrup of Raſpberry-juice.

Syrupus Succi Fructus Ribis Nigri.
Lond.
Syrup of Black Currant-juice.

All thefe are very pleafant cooling fyrups; and with this intention they are occafionally ufed in draughts and juleps, for quenching thirft, abating heat, &c. in bilious or inflammatory diftempers. They are fometimes likewife employed in gargarifms for inflammations of the mouth and tonfils.

SYRUPUS COLCHICI AUTUMNALIS.
Edin.
Syrup of Colchicum.

Take of
Colchicum root, frefh and fucculent, cut into fmall pieces, one ounce;
Vinegar, fixteen ounces;
Double refined fugar, twenty-fix ounces.

Macerate the root in the vinegar two days, now and then fhaking the veffel; then ftrain it with a gentle preffure. To the ftrained liquor add the fugar, and boil a little, fo as to form a fyrup.

This fyrup feems to be the beft preparation of the colchicum. We muft take care to gather this root in the proper feafon: and from errors in this particular we are to afcribe the uncertainty in the effects of this medicine as found in the fhops.

The fyrup of colchicum is often fuccefsfully employed as a diuretic, and may be taken from a drachm or two to the extent of an ounce or more.

SYRUPUS DIANTHI CARYOPHYLLI.
Edin.
Syrup of Clove July-flower.

Take of
Clove July-flowers, frefh gathered and freed from the heels, one pound;
Double refined fugar, feven pounds;
Boiling water, four pounds.

Macerate the petals in the water for twelve hours; then to the ftrained liquor add the fugar previoufly beat, and diffolve it by a gentle heat, fo as to form a fyrup.

Syrupus Caryophylli Rubri.
Lond.
Syrup of Clove July-flower.

Take of
Frefh clove July-flowers, two pounds;
Boiling diftilled water, fix pints.

Macerate

Macerate for twelve hours in a glafs-veffel; and, in the ftrained liquor, diffolve double-refined fugar, fo as to form a fyrup.

As the beauty of the colour is a principal quality in this fyrup, no force in the way of expreffion fhould be ufed in feparating the liquor from the flowers.

Some have fubftituted to it one eafily prepared at feafons when the flowers are not to be procured: an ounce of clove fpice is infufed for fome days in twelve ounces of white wine, the liquor ftrained, and, with the addition of twenty ounces of fugar, boiled to a proper confiftence: a little cochineal renders the colour of this fyrup exactly fimilar to that prepared from the clove July-flower; and its flavour is of the fame kind, though not fo pleafant. The abufe may be readily detected by adding to a little of the fyrup fome alkaline falt or ley; which will change the genuine fyrup to a green colour; but in the counterfeit, it will make no fuch alteration, only varying the fhade of the red.

SYRUPUS CROCI.

Lond.

Syrup of Saffron.

Take of
- Saffron, one ounce;
- Boiling diftilled water, one pint.

Macerate the faffron, in the water, for twelve hours, in a clofe veffel; and diffolve double-refined fugar in the ftrained liquor, that it may be made a fyrup.

Saffron is very well fitted for making a fyrup, as in this form a fufficient dofe of it is contained in a reafonable compafs. This fyrup is a pleafant cordial, and gives a fine colour to juleps.

SYRUPUS MANNÆ.

Dub.

Syrup of Manna.

Take of
- Manna,
- Double-refined fugar, each one pound;
- Senna, half an ounce;
- Boiling water, a pound.

Macerate the fenna in the water, in a covered veffel, for twelve hours; then, with the ftrained liquor mix the manna and the fugar, fo that they may be diffolved.

This fyrup is a mild purgative, and well adapted to children and perfons of a delicate conftitution.

SYRUPUS PAPAVERIS SOMNIFERI.

Edin.

Syrup of White Poppies.

Take of

White poppy-heads, dried, and freed from the ſeeds, two pounds;

Boiling water, thirty pounds;

Double-refined ſugar, four pounds.

Macerate the ſliced heads in the water for twelve hours; next boil till only one-third part of the liquor remain; then ſtrain it, by expreſſing it ſtrongly. Boil the ſtrained liquor to the conſumption of one-half, and ſtrain again; laſtly, add the ſugar, and boil a little ſo as to form a ſyrup.

SYRUPUS PAPAVERIS ALBI.

Lond.

Syrup of White Poppy.

Take of

The heads of white poppies, dried, three pounds and a half;

Double-refined ſugar, ſix pounds;

Diſtilled water, eight gallons.

Slice and bruiſe the heads, then boil them in the water, to three gallons, in a water-bath, ſaturated with ſea-ſalt, and preſs out the decoction. Reduce this, by boiling to about four pints, and ſtrain it while hot, through a ſieve, then through a thin woollen cloth, and ſet it aſide for twelve hours, that the feces may ſubſide. Boil the liquor, poured off from the feces, to three pints, and diſſolve the ſugar in it, that it may be made a ſyrup.

THIS ſyrup, impregnated with the opiate matter of the poppy heads, is given to children in doſes of two or three drachms; to adults, from half an ounce to an ounce and upwards, for eaſing pain, procuring reſt, and anſwering the other intentions of mild opiates. Particular care is requiſite in its preparation, that it may be always made, as nearly as poſſible, of the ſame ſtrength; and accordingly the Colleges have been very minute in their deſcription of the proceſs.

SYRUPUS OPII.

Dub.

Syrup of Opium.

Take of

Extract of opium, forty-eight grains;

Boiling water, three pounds.

Macerate until the opium be diſſolved, then add double refined ſugar, ſo as to make a ſyrup according to the general formula.

THIS ſyrup is an elegant ſubſtitute for the former. It is made with infinitely leſs trouble, and is always of an uniform ſtrength. It contains about two grains and a half of opium in the ounce.

SYRUPUS

SYRUPUS PAPAVERIS ERRATICI.
Lond.
Syrup of Red Poppy.

Take of
 The fresh flowers of the red poppy, four pounds;
 Boiling distilled water, four pints and a half
Put the flowers, by degrees, into the boiling water, in a water-bath, constantly stirring them. After this, the vessel being taken out of the bath, macerate for twelve hours; then press out the liquor, and set it apart, that the feces may subside. Lastly, make it into a syrup, with double-refined sugar.

The design of putting the flowers into boiling water in a water-bath is, that they may be a little scalded, so as to shrink enough to be all immerged in the water; without this artifice, they can scarce be all got in: but they are to be continued no longer over the fire than till this effect is produced, lest the liquor become too thick, and the syrup be rendered ropy.

As a medicine it is perfectly insignificant.

SYRUPUS RHAMNI CATHARTICI.
Edin.
Syrup of Buckthorn.

Take of
 The juice of ripe buckthorn berries, depurated, two parts;
 Double refined sugar, one part.
Boil them so as to form a syrup.

SYRUPUS SPINÆ CERVINÆ.
Lond.
Syrup of Buckthorn.

Take of
 The fresh juice of ripe buckthorn berries, one gallon;
 Ginger, bruised, one ounce;
 Pimento, powdered, one ounce and a half;
 Double-refined sugar, seven pounds.
Set by the juice for three days, that the feces may subside, and strain. Macerate the ginger and pimento in a pint of the strained juice for four hours, and strain. Boil away the rest of the juice to three pints; then add that part of the juice in which the ginger and pimento have been macerated: and, lastly, the sugar, that it may be made a syrup.

Both these preparations, in doses of three or four spoonfuls, operate as brisk cathartics. The principal inconveniences attending them are, their being very unpleasant, and their occasioning a thirst and dryness of the mouth and fauces, and sometimes violent gripes: these effects may be prevented by drinking liberally of water-gruel, or other warm liquids, during the operation.

SYRUPUS ROSÆ GALLICÆ.

Edin.

Syrup of Red Roſes.

Take of

The dried petals of red roſes, ſeven ounces;
Double-refined ſugar, ſix pounds;
Boiling water, five pounds.

Macerate the roſes in the water for twelve hours, then boil them a little and ſtrain the liquor, add to it the ſugar, boil them again for a little ſo as to form a ſyrup.

THIS ſyrup is ſuppoſed to be mildly aſtringent; but is principally valued on account of its red colour.

SYRUPUS ROSÆ CENTIFOLIÆ.

Edin.

Syrup of Damaſk Roſes.

Take of

The freſh petals of the damaſk roſe, one pound;
Boiling water, four pounds;
Double-refined ſugar, three pounds.

Macerate the roſes in the water for a night; then to the liquor ſtrained, and freed from the dregs, add the ſugar; boil them into a ſyrup.

SYRUPUS ROSÆ.

Lond.

Syrup of Roſes.

Take of

The dried petals of the damaſk roſe, ſeven ounces;
Double-refined ſugar, ſix pounds;
Boiling diſtilled water, four pints.

Macerate the roſes in the water for twelve hours, and ſtrain. Evaporate the ſtrained liquor to two pints and an half, and add the ſugar, that it may be made a ſyrup.

THIS ſyrup is an agreeable and mild purgative for children, in the doſe of half a ſpoonful, or a ſpoonful. It likewiſe proves gently laxative to adults; and with this intention may be of ſervice in coſtive habits.

SYRUPUS SCILLÆ MARITIMÆ.

Edin.

Syrup of Squills.

Take of

Vinegar of ſquills, two pounds;
Double-refined ſugar in powder, three pounds and a half.

Diſſolve the ſugar with a gentle heat, ſo as to form a ſyrup.

THIS

This ſyrup was formerly prepared with ſome ſpices, intended to diminiſh the offenſiveneſs of the ſquills; but while they had not this effect, they often counteracted the intention in view, and are therefore omitted. It is uſed chiefly in doſes of a ſpoonful or two, for promoting expectoration, which it does very powerfully.

SYRUPUS TOLUIFERÆ BALSAMI; vulgo, SYRUPUS BALSAMICUS. *Edin.*

Syrup of Balſam of Tolu, formerly *Balſamic Syrup*.

Take of

Common Syrup, two pounds;

Tincture of balſam of Tolu, one ounce.

With the ſyrup recently prepared, and when it has almoſt grown cold, after it has been removed from the fire, gradually mix the tincture with conſtant agitation.

SYRUPUS TOLUTANUS.

Lond.

Syrup of Tolu.

Take of

The balſam of Tolu, eight ounces;

Diſtilled water, three pints.

Boil for two hours. Mix the double-refined ſugar with the liquor, ſtrained after it is cold, that it may be made a ſyrup.

The intention of the contrivers of the two foregoing proceſſes ſeems to have been ſomewhat different. In the latter, which is certainly the moſt elegant, the benzoic acid of the balſam alone is contained: the other ſyrup contains the whole ſubſtance of the balſam in larger quantity. They are both moderately impregnated with the agreeable flavour of the balſam.

SYRUPUS VIOLÆ ODORATÆ.

Edin.

Syrup of Violets.

Take of

Freſh violets, one pound;

Boiling water, four pounds;

Double-refined ſugar, ſeven pounds and a half.

Macerate the violets in the water for twenty four hours in a glaſs or a glazed earthen veſſel, cloſe covered; then ſtrain without expreſſion, and to the ſtrained liquor add the ſugar, powdered, and make into a ſyrup.

SYRUPUS VIOLÆ.

Lond. Dub.

Syrup of Violets.

Take of

The freſh petals of the violet, two pounds;

Boiling diſtilled water, five pints, (ſix pounds, *Dub.*)

Marerate for twenty-four hours; afterwards ſtrain the liquor, without expreſſion, through thin linen. Add double-refined ſugar, that it may be made a ſyrup.

THIS ſyrup has a very agreeable flavour; and in the quantity of a ſpoonful or two proves to children gently laxative. It is apt to loſe, in keeping, the elegant blue colour, for which it is chiefly valued; and hence ſome have been induced to counterfeit it with materials whoſe colour is more permanent, and which are more eaſily obtained. This abuſe may be readily diſcovered, by adding to a little of the ſuſpected ſyrup any acid or alkaline liquor. If the ſyrup be genuine, the acid will change it red, and the alkali green; but if counterfeit, theſe changes will not happen. From this mutability of the colour of the violet, it forms an excellent teſt of the preſence of acids and alkalies; and, it is alſo obvious, that a preſcriber would be deceived if he ſhould expect to give any blue tinge to acidulated or alkalized juleps or mixtures, by the addition of the blue ſyrup.

CHAP. XXVII.

MEDICATED HONEYS.

MEL DESPUMATUM.

Edin. Dub.

Clarified Honey.

MELLIS DESPUMATIO.

Lond.

The Clarification of Honey.

Melt the honey in a water bath, and remove the ſcum as it riſes.

IN this ſimple proceſs, the honey is rendered ſo liquid by the heat of the boiling water, that the wax and other lighter impurities which it commonly contains, riſe to the ſurface in the form of a ſcum, which is eaſily removed. At the ſame time, ſand or any heavier mixture of that kind ſinks to the bottom.

MEL ACETATUM.

Lond.

Acetated Honey.

OXYMEL SIMPLEX.

Dub.

Simple Oxymel.

Take of

Clarified honey, two pounds;

Diſtilled vinegar, one pound by weight.

Boil

Boil them in a glaſs-veſſel with a gentle fire to the conſiſtency of a ſyrup, (*Lond.*)
Having mixed them, bring them thrice to boil in a glaſs-veſſel, and remove the ſcum each time, (*Dub.*)

THIS was once in great repute as a cooling and attenuating medicine; it is ſcarcely uſed in modern practice, except in colds attended with coughs, and in ſore throats, for which, when diluted with ſome aromatic or aſtringent infuſion, as ſage tea, roſe flower tea, &c. it makes uſeful gargles.

OXYMEL COLCHICI.

Lond.

Oxymel of Meadow Saffron.

Take of
The freſh root of meadow ſaffron, cut into thin ſlices, one ounce;
Diſtilled vinegar, one pint;
Clarified honey, two pounds.

Macerate the root of meadow ſaffron, with the vinegar, in a glaſs-veſſel, with a gentle heat, for forty-eight hours. Strain the liquor, preſſed out ſtrongly from the root, and add the honey. Laſtly, boil the mixture, frequently ſtirring it with a wooden ſpoon, to the thickneſs of a ſyrup.

THIS is an active preparation, but its uſe may be entirely ſuperſeded by the ſyrup of the ſame root.

MEL ROSÆ.

Lond. Dub.

Honey of Roſes.

Take of
Dried red-roſe buds, (with the heels cut off, *Dub.*) four ounces;
Boiling diſtilled water, three pints;
Clarified honey, (Honey, *Dub.*) five pounds.

Macerate the roſe-leaves in the water for ſix hours; then mix the honey with the ſtrained liquor, and boil the mixture to the thickneſs of a ſyrup, (removing the ſcum, *Dub.*)

THIS preparation is not unfrequently uſed as a mild cooling detergent, particularly in gargariſms for ulcerations and inflammation of the mouth and tonſils. The roſe-buds here uſed ſhould be haſtily dried, that they may the better preſerve their aſtringency.

The Dublin College, in making this and other ſimilar preparations, uſe unclarified honey, with the idea, probably, that it may be equally well clarified in the courſe of the preparation itſelf. This is no doubt true, but as we do not know what effect the clarification may have on the active ſubſtances added to the honey, we think that the uſe of clarified honey, as directed by the London College, is preferable.

MEL

MEL SCILLÆ.
Lond.
MEL SCILLITICUM.
Dub.
Honey of Squills.

Take of
Clarified honey, (Honey, *Dub.*) three pounds;
Tincture of squills, two pints.
Boil them in a glass-vessel to the thickness of a syrup, (removing the scum, *Dub.*)

THE honey will here be impregnated with all the active parts of the squills which the tincture before contained, and may be employed as an useful expectorant or diuretic.

OXYMEL SCILLÆ.
Lond.
Oxymel of Squills.

Take of
Clarified honey, three pounds;
Vinegar of squills, two pints.
Boil them in a glass-vessel, with a slow fire, to the thickness of a syrup.

OXYMEL of squills is a useful aperient, detergent, and expectorant, and of great service in humoral asthmas, coughs, and other disorders where thick phlegm abounds. It is given in doses of two or three drachms, along with some aromatic water, as that of cinnamon, to prevent the great nausea which it would otherwise be apt to excite. In large doses, it proves emetic.

OXYMEL ÆRUGINIS.
Lond.
Oxymel of Verdegris.

Take of
Prepared verdegris, one ounce;
Vinegar, seven ounces.
Clarified honey, fourteen ounces.
Dissolve the verdegris in the vinegar, and strain it through linen; then add the honey, and boil the whole to a proper thickness.

IT is used only externally for cleansing foul ulcers, and keeping down fungous flesh. It is also often serviceable in venereal ulcerations of the mouth and tonsils: But there is some danger from its application to places from the situation of which it is apt to be swallowed; for even a small quantity of verdegris passing into the stomach may be productive of distressing, if not deleterious effects.

CHAP.

CHAP. XXVIII.

EMULSIONS AND MIXTURES.

In this chapter we comprehend thoſe mixtures in which oils and other ſubſtances inſoluble in water are mixed with and ſuſpended in watery fluids, by means of mechanical diviſion and viſcid ſubſtances, ſuch as mucilages and ſyrups.

EMULSIO AMYGDALÆ COMMUNIS.
Edin.
Almond Emulſion.

Take of
Sweet almonds, one ounce;
Water, two pounds and a half.
Beat the blanched almonds in a ſtone mortar, gradually pouring on them the water; then ſtrain off the liquor.

Lac Amygdalæ.
Lond.
Lac Amygdalarum.
Dub.
Almond Milk.

Take of
Sweet almonds, an ounce and a half.
Double-refined ſugar, half an ounce;
Diſtilled water, two pints.
Beat the almonds with the ſugar; then, rubbing them together, add by degrees the water, and ſtrain the liquor.

EMULSIO ARABICA.
Edin.
Arabic Emulſion.

This is made in the ſame manner as the almond emulſion; only adding, while beating the almonds,
Mucilage of gum Arabic, two ounces.

Emulsio Arabica.
Dub.
Arabic Emulſion.

Take of
Gum Arabic in powder two drachms,
Almonds blanched, half an ounce;
Double-refined ſugar, three drachms;
Decoction of barley, one pound.

Diſſolve the gum in the warm decoction, and when it is almoſt cold, pour it upon the almonds, previouſly well beaten with the ſugar, and at the ſame time triturate them together, ſo as to form a kind of milk, and then filter.

All theſe may be conſidered as poſſeſſing nearly the ſame qualities. They are merely mechanical ſuſpenſions of oil of almonds in watery fluids, by means either of the mucilage with which it is naturally combined in the almonds by itſelf, or aſſiſted by the addition of gum Arabic and ſugar. Therefore, on ſtanding for ſome days, the oily matter ſeparates and riſes to the top, not in a pure form, but like thick cream. By heat the ſame decompoſition is immediately effected.

Great care ſhould be taken that the almonds have not become rancid by keeping; which will not only render the emulſion extremely unpleaſant, a circumſtance of great conſequence in a medicine that requires to be taken in large quantities, but likewiſe give it injurious qualities.

The almonds are blanched by infuſing them in boiling water, and peeling them. The ſucceſs of the preparation depends upon the attention paid to beating the almonds to a ſmooth pulp, and to triturate them with each portion of the watery fluid, ſo as to form an uniform mixture before another portion be added.

Theſe liquors are principally uſed for diluting and obtunding acrimonious humours; particularly in heat of urine and ſtranguries, ariſing either from a natural ſharpneſs of the juices, or from the operation of cantharides, and other irritating medicines: in theſe caſes, they are to be drunk frequently, to the quantity of half a pint or more at a time.

EMULSIO CAMPHORATA.
Edin.
Camphorated Emulſion.

Take of
Camphor, one ſcruple;
Sweet almonds, blanched, two drachms;
Double-refined ſugar, one drachm;
Water, ſix ounces.

This is to be made in the ſame manner as the common emulſion.

Mistura

Mistura Camphorata.
Lond.
Camphorated Mixture.

Take of
Camphor, one drachm ;
Rectified ſpirit of wine, a little ;
Double-refined ſugar, half an ounce ;
Boiling diſtilled water, one pint.

Rub the camphor firſt with the ſpirit of wine, then with the ſugar ; laſtly, add the water by degrees, and ſtrain the mixture.

While camphor is often exhibited in a ſolid ſtate, it is frequently alſo advantageous to employ it as diffuſed in watery fluids ; and with this intention the latter formula is perhaps one of the moſt ſimple, the union being effected merely by the aid of a a ſmall quantity of ſpirit of wine and a little ſugar. The form of emulſion in which the union is effected, by triturating the camphor with a few almonds, is however much ſuperior ; for the unctuous quality of the almonds ſerves in a conſiderable degree to cover the pungency of the camphor, without diminiſhing its activity. Camphor, under both forms, is very uſeful in fevers, taken to the extent of a table-ſpoonful every three or four hours. It is a curious quantity of ſpirit which the London College has ordered ; more eſpecially ſince in a former edition the quantity of ſpirit was ſpecified, viz. ten drops.

LAC AMMONIACI.
Lond. Dub.
Emulſion of Gum Ammoniac.

Take of
Gum Ammoniac, two drams ;
Diſtilled water, half a pint, (eight ounces, *Dub.*)

Rub the gum-reſin with the water, gradually poured on, until it becomes an emulſion.

Lac Asæ Foetidæ.
Lond.
Emulſion of Aſa fœtida.

In the ſame manner may be made an emulſion of Aſa fœtida, and of the reſt of the gum-reſins.

The lac ammoniaci is employed for attenuating tough phlegm, and promoting expectoration, in humoral aſthmas, coughs, and obſtructions of the viſcera. It may be given to the quantity of two ſpoonfuls twice a day.

The lac aſæ fœtidæ is employed in ſpaſmodical, hyſterical, and other nervous affections. And it is alſo not unfrequently uſed under the form of injection. It anſwers the ſame purpoſes as aſa fœtida in ſubſtance.

MISTURA

MISTURA MOSCHATA.
Lond.
Muſk Mixture.

Take of
Muſk, two ſcruples;
Gum Arabic, powdered,
Double-refined ſugar, of each one dram;
Roſe-water, ſix ounces by meaſure.
Rub the muſk firſt with the ſugar, then with the gum, and add the roſe-water by degrees.

THIS had formerly the name of *Julepum e moſcho*, and was intended as an improvement upon the *Hyſteric julep with muſk* of Bates. The julep appears turbid at firſt: on ſtanding a little time, it depoſites a brown powder, and becomes clear, but at the the ſame time loſes great part of its virtue. This inconvenience may be prevented by thoroughly grinding the muſk with gum Arabic before the addition of the water: by means of the gum, the whole ſubſtance of the muſk is kept ſuſpended in the water.

POTIO CARBONATIS CALCIS; olim, POTIO CRETACEA.
Edin.
Chalk Potion.

Take of
Prepared carbonate of lime, one ounce;
Double-refined ſugar, half an ounce;
Mucilage of gum Arabic, two ounces.
Triturate together, and then gradually add of
Water, two pounds and a half;
Spirit of cinnamon, two ounces.
Mix them.

MISTURA CRETACEA.
Lond. Dub.
Chalk Mixture.

Take of
Prepared chalk, one ounce; (half an ounce, *Dub.*);
Double-refined ſugar, ſix drachms; (three drachms, *Dub.*);
Gum Arabic, powdered, one ounce;
Diſtilled water, two pints; (fifteen ounces, *Dub.*).
Mix them.

THIS is a very elegant form of exhibiting chalk, and is an uſeful remedy in diſeaſes ariſing from, or accompanied with, acidity in the primæ viæ. It is frequently employed in diarrhœa proceeding from that cauſe. The mucilage not only ſerves to keep the chalk uniformly diffuſed, but alſo improves its virtues. The doſe

doſe of this medicine requires no nicety. It may be taken to the extent of a pound or two in the courſe of a day.

Theſe two preparations agree pretty much, both in their name and in their nature; but that of the Edinburgh College is moſt agreeable to the palate, from containing a proportion of cinnamon water, by which the diſagreeable taſte of the chalk is taken off.

DECOCTUM CORNU CERVI.

Lond.

Decoction of Hartſhorn.

Take of

Burnt and prepared hartſhorn, two ounces;
Gum Arabic, ſix drachms;
Diſtilled water, three pints.

Boil, conſtantly ſtirring, to two pints; and ſtrain.

Prepared hartſhorn is phoſphate of lime in a minute ſtate of mechanical diviſion. By boiling in a mucilaginous liquid, it will be diffuſed and imperfectly ſuſpended, but not a particle of it will be diſſolved. This is therefore an extremely injudicious preparation; for phoſphate of lime would be much more eaſily and effectually ſuſpended by triturating it with a larger proportion of gum Arabic, and adding the water gradually. But we believe that this preparation has no other action than that of a weak mucilage.

CHAP. XXIX.

MEDICATED VINEGARS.

Infusions of vegetable ſubſtances in acetous acid are commonly called Medicated Vinegars. The action of the acid in this caſe may be conſidered as twofold.

1. It acts ſimply as water, in conſequence of the great quantity of water which enters into its compoſition, and generally extracts every thing which water is capable of extracting.

2. It exerts its own peculiar action as an acid. In conſequence of this, it ſometimes increaſes the ſolvent power of its watery portion, or diſſolves ſubſtances which water alone is incapable of diſſolving, and in a few inſtances it impedes the ſolution of ſubſtances which water alone would diſſolve.

As

As acetous acid, in itfelf fufficiently perifhable, has its tendency to decompofition commonly increafed, by the folution of any vegetable matter in it, it fhould never be ufed as a menftruum, unlefs where it promotes the folution of the folvend, as in extracting the acrid principle of fquills, colchicum, &c. and in diffolving the volatile, and efpecially the empyreumatic oils, or where it coincides with the virtues of the folvend.

ACETUM AROMATICUM.
Edin.
Aromatic Vinegar.

Take of
Tops of rofemary dried,
Leaves of fage dried, each four ounces;
Flowers of lavender dried, two ounces;
Cloves, two drachms;
Diftilled acetous acid, eight pounds.
Macerate for four days, exprefs the liquor, and ftrain it.

This is given as an improved preparation of the *Vinaigre des quatre voleurs*, which was fuppofed to be a certain prophylactic againft the contagion of plague, and fimilar difeafes. It is in fact a pleafant folution of effential oils in vinegar, which will have more effect in correcting bad fmells than in preventing fever.

ACETUM COLCHICI.
Dub.
Vinegar of Meadow Saffron.

Take of
The recent root of colchicum cut in flices, one ounce;
Vinegar, one pound;
Diluted fpirit of wine, one ounce and a half.
Macerate the root in the vinegar for four days, in a glafs-veffel, frequently agitating them; then exprefs the acid, to which decanted from the feces, after they have fubfided, add the fpirit.

The acrid principle in which the virtue of the colchicum refides, is more foluble in vinegar than in water: this is therefore a preparation of confiderable activity. The diluted alcohol is added merely to prevent it from fpoiling.

ACETUM SCILLÆ MARITIMÆ.
Edin.
Vinegar of Squills.

Take of
Dried root of fquills, two ounces;
Diftilled acetous acid, two pounds and a half;
Alcohol, three ounces.

Macerate

Macerate the ſquills with the acetous acid for ſeven days; then preſs out the acid, to which add the alcohol; and when the feces have ſubſided, pour off the clear liquor.

ACETUM SCILLÆ.
Lond.
Vinegar of Squills.

Take of
Squills, recently dried, one pound;
Vinegar, ſix pints;
Proof-ſpirit, half a pint.

Macerate the ſquills with the vinegar in a glaſs-veſſel, with a gentle heat for twenty-four hours; then expreſs the liquor, and ſet it aſide until the feces ſubſide. To the decanted liquor add the ſpirit.

ACETUM SCILLITICUM.
Dub.
Squill Vinegar.

Take of
Squills, recently dried, half a pound;
Vinegar, three pounds;
Proof-ſpirit, four ounces.

Macerate the ſquills in the vinegar for four days in a glaſs-veſſel, frequently agitating it; then expreſs the acid; to which, poured from the feces after they have ſubſided, add the ſpirit.

VINEGAR of ſquills is a medicine of great antiquity. It is a very powerful ſtimulant; and hence it is frequently uſed, with great ſucceſs, as a diuretic and expectorant. The doſe of this medicine is from a drachm to half an ounce: where crudities abound in the firſt paſſages, it may be given at firſt in a larger doſe, to evacuate them by vomiting. It is moſt conveniently exhibited along with cinnamon, or other agreeable aromatic waters, which prevent the nauſea it would otherwiſe, even in ſmall doſes, be apt to occaſion.

ACIDUM ACETOSUM CAMPHORATUM.
Edin.
Camphorated Acetous Acid.

Take of
The ſtronger acetous acid, ſix ounces;
Camphor, half an ounce;
Alcohol, a ſufficient quantity.

Reduce the camphor to powder, by triturating it with the alcohol; then add it to the acid, and diſſolve.

The alcohol, in this preparation is used merely to facilitate the reduction of the camphor to powder: for the strong acetous, or as we would rather call it, the acetic acid, is capable of dissolving even a larger proportion of camphor than is directed in the above formula.

This solution is a powerful analeptic remedy. Its vapour snuffed up the nostrils, which is the only method of using it, is one of the most pungent stimuli we possess. It is so extremely volatile, that it cannot be preserved without excluding it from the contact of the air; and it is so powerful a menstruum, that it corrodes cork, and almost all common metals except gold. It should therefore be kept in glass-phials, with ground glass-stoppers, or in small gold boxes, such as are used for Henry's Aromatic Spirit of Vinegar, for which it is in fact a simpler substitute.

CHAP. XXX.

TINCTURES.

The term Tincture has often been employed in a very vague sense. It is now commonly applied to solutions, made by digestion, in alcohol, or diluted alcohol. But it is also, though perhaps incorrectly, extended to solutions in ether, ethereal spirits, and spirit of ammonia.

Alcohol is capable of dissolving resins, gum-resins, extractive, tanin, sugar, volatile oils, soaps, camphor, adipocere, colouring matters, acids, alkalies, and some compound salts. Many of of these, as the gum-resins, soaps, extractive, tanin, sugar, and saline substances, are also soluble in water, while water is capable of dissolving substances, such as gum, gelatin, and most of the compound salts, which are insoluble in alcohol. But the insolubility of these substances in the different menstrua is not absolute, but merely relative; for a certain proportion of alcohol may be added to a solution of gum in water, without decomposing it; and a solution of resin in alcohol will bear a certain admixture of water, without becoming turbid. Therefore, diluted alcohol, which is a mixture of these two menstrua, sometimes extracts the virtues of heterogeneous compounds more completely than either of them separately.

Alcohol

Alcohol is uſed as a menſtruum,

1. When the ſolvend is not ſoluble, or ſparingly ſoluble in water.
2. When a watery ſolution of the ſolvend is extremely periſhable.
3. When the uſe of alcohol is indicated as well as that of the ſolvend.

In making alcoholic tinctures, we muſt obſerve, that the virtues of recent vegetable matters are very imperfectly extracted by ſpirituous menſtrua. They muſt therefore be previouſly carefully dried, and as we cannot aſſiſt the ſolution by means of heat, we muſt facilitate it by reducing the ſolvend to a ſtate of as minute mechanical diviſion as poſſible. To prevent loſs, the ſolution is commonly made in a cloſe veſſel, and the heat applied muſt be very gentle, leſt it be broken by the expanſion of vapour.

The action of tinctures on the living ſyſtem is always compounded of the action of the menſtruum, and of the matters diſſolved in it. Now, theſe actions may either coincide with, or oppoſe each other; and as alcohol is at all times a powerful agent, it is evident that no ſubſtance ſhould be exhibited in the form of a tincture, whoſe action is different from that of alcohol, unleſs it be capable of operating in ſo ſmall a doſe, that the quantity of alcohol taken along with it is inconſiderable.

Tinctures are not liable to ſpoil, as it is called, but they muſt nevertheleſs be kept in well cloſed phials, eſpecially when they contain active ingredients, to prevent the evaporation of the menſtruum.

They generally operate in doſes ſo ſmall, that they are rarely exhibited by themſelves, but commonly combined with ſome vehicle. In chooſing the latter, we muſt ſelect ſome ſubſtance which does not decompoſe the tincture, or at leaſt ſeparates nothing from it in a palpable form.

The London College direct all tinctures, except that of muriate of iron, to be prepared in cloſed phials.

The Dublin College explain, that, when they order ſubſtances to be *digeſted*, they mean it to be done with a low degree of heat; and when they are to be *macerated*, it is to be done with a degree of heat between 60° and 90°.

TINCTURA ALOES SOCOTORINÆ.

Edin.

TINCTURA ALOES.

Dub.

Tincture of Socotorine Aloes.

Take of

Socotorine aloes in powder, half a ounce;
Extract of liquorice, an ounce and a half;

 Alcohol,

Alcohol, four ounces;
Water, one pound.

Digeſt for ſeven days in a cloſed veſſel, with a gentle heat, and frequent agitation. (Theſe directions are to be obſerved in preparing all tinctures, *Edin.*)

Tinctura Aloes.
Lond.
Tincture of Aloes.

Take of
Socotorine aloes, powdered, half an ounce;
Extract of liquorice, an ounce and a half;
Diſtilled water,
Proof ſpirit, of each eight ounces by meaſure.

Digeſt in a ſand-bath, now and then ſhaking the veſſel, until the extract be diſſolved, and then ſtrain.

The Dublin College uſe the ſame proportion with the Edinburgh College, but in double quantity; and they direct the extract of liquorice to be ſoftened in the water made boiling hot, which facilitates its ſolution. The London College order the fluids by meaſure; and ſixteen by meaſure are only equal to fourteen ounces and a half by weight.

In this ſimple tincture, all the active parts of the aloes are ſuſpended in the menſtruum. The extract of liquorice ſerves both to promote the ſuſpenſion and to cover the taſte of the aloes; and in thoſe caſes where we wiſh for the operation of the aloes alone, this is perhaps one of the beſt formulæ under which it can be exhibited in a fluid ſtate. About an ounce may be taken for a doſe.

TINCTURA ALOES cum MYRRHA.
Edin.
Tincture of Aloes with Myrrh.

Take of
Myrrh, in powder, two ounces;
Alcohol, one pound and a half;
Water, half a pound.

Mix the alcohol with the water, then add the myrrh; digeſt for four days; and, laſtly, add
Socotorine aloes, one ounce and a half;
Saffron, an ounce.

Digeſt again for three days, and pour off the tincture from the ſediment.

TINCTURA ALOES COMPOSITA.
Lond.
Compound Tincture of Aloes.

Take of
Socotorine aloes,
Saffron, of each three ounces;
Tincture of myrrh, two pints.
Digeſt for eight days, and ſtrain.

THIS is ſuppoſed to be an improvement on the Elixir Proprietatis of Paracelſus. Theſe tinctures differ conſiderably in ſtrength; the latter contains one part of aloes to eight of the menſtruum; the former one to ſixteen, while the ſimple tincture already mentioned contains but one to thirty-two. In preſcription theſe proportions muſt be attended to. The myrrh and ſaffron may add to its ſtimulating properties.

TINCTURA AMOMI REPENTIS.
Edin.
Tincture of Cardamom.

Take of
Leſſer cardamom-ſeeds, four ounces;
Proof-ſpirit, two pounds and a half.
Macerate for ſeven days, and ſtrain through paper.

TINCTURA CARDAMOMI.
Lond. Dub.
Tincture of Cardamom.

Take of
Leſſer cardamom-ſeeds, huſked and bruiſed, three ounces;
Proof ſpirit, two pints, (two pounds, *Dub.*)
Digeſt for eight days, (ſeven, *Dub.*) and ſtrain.

TINCTURE of cardamoms has been in uſe for a conſiderable time. It is a pleaſant, warm cordial; and may be taken, along with any proper vehicle, in doſes of from a drachm to a ſpoonful or two.

TINCTURA CARDAMOMI COMPOSITA.
Lond. Dub.
Compound Tincture of Cardamom.

Take of
Leſſer cardamom-ſeeds, huſked,
Caraway-ſeeds,
(Cochineal, *Lond.*) each, powdered, two drachms;
Cinnamon, bruiſed, half an ounce;
Raiſins, ſtoned, four ounces;
Proof-ſpirit, two pints, (two pounds, *Dub.*)
Digeſt for fourteen days, and ſtrain.

This tincture contains ſo ſmall a proportion of cardamoms as to be hardly entitled to derive its name from that article. Altogether, although it may be ſufficiently pleaſant, the compoſition is injudicious; for the large proportion of raiſins uſed forms only a very uneconomical and inelegant method of ſweetening an aromatic tincture.

TINCTURA ARISTOLOCHIÆ SERPENTARIÆ.

Edin.

Tincture of Snake-root.

Take of
 Virginian ſnake-root, two ounces;
 Cochineal, one drachm;
 Diluted alcohol, two pounds and a half.
Digeſt for ſeven days, and ſtrain through paper.

Tinctura Serpentariæ.

Lond. Dub.

Tincture of Snake-root.

Take of
 Virginian ſnake-root, three ounces;
 Proof-ſpirit, two pints, (two pounds, *Dub.*).
 Digeſt for eight days, (ſeven, *Dub.*) and ſtrain.

This tincture, which contains the whole virtues of the root, may be taken to the quantity of a ſpoonful or more every five or ſix hours; and to this extent it often operates as an uſeful diaphoretic.

TINCTURA ASSÆ FOETIDÆ.

Edin.

Tincture of Aſafœtida.

Take of
 Aſſafœtida, four ounces;
 Alcohol, two pounds and an half.
 Digeſt for ſeven days, and ſtrain through paper.

Lond.

Take of
 Aſſafœtida, four ounces;
 Rectified ſpirit of wine, two pints.
Digeſt with a gentle heat for ſix days; and ſtrain.

Dub.

Take of
 Aſſafœtida, four ounces;
 Rectified ſpirit of wine, two pounds;
 Water, eight ounces.

Add

Add the ſpirit to the aſſafœtida, triturated with the water, and digeſt for ſeven days; then ſtrain.

THIS tincture poſſeſſes the virtues of the aſſafœtida itſelf; and may be given in doſes of from ten drops to fifty or ſixty.

TINCTURA AURANTII CORTICIS.

Lond. Dub.

Tincture of Orange-Peel.

Take of
  Freſh orange-peel, three ounces;
  Proof-ſpirit, two pints, (two pounds, *Dub.*)
Digeſt for three days; and ſtrain.

THIS tincture is an agreeable bitter, flavoured at the ſame time with the eſſential oil of the orange-peel.

TINCTURA BALSAMI PERUVIANI.

Lond.

Tincture of Balſam of Peru.

Take of
  Balſam of Peru, four ounces;
  Rectified ſpirit of wine, one pint.
Digeſt until the balſam be diſſolved.

THE whole of the Peruvian balſam is diſſolved by ſpirit of wine; this therefore may be conſidered as a good method of freeing it from its impurities; while at the ſame time it is thus reduced to a ſtate under which it may be readily exhibited: but at preſent it is very little employed, unleſs in compoſition, either under this or any other form.

TINCTURA BENZOES COMPOSITA; vulgo, BALSAMUM TRAUMATICUM. *Lond. Edin.*

Compound Tincture of Benzoin.

Take of
  Benzoin, three ounces;
  (Storax, ſtrained, two ounces; *Lond.*)
  Balſam of Tolu, one ounce;
  Socotorine aloes, half an ounce;
  Rectified ſpirit of wine, two pints.
Digeſt with a gentle heat for three days, (ſeven *Edin.*) and ſtrain.

THE Edinburgh College omit the ſtorax, and uſe hepatic aloes in place of the ſocotorine. Theſe differences are not very material; and both preparations may be conſidered as elegant ſimplifications of ſome very complicated compoſitions, which were celebrated under different names; ſuch as Baume de Commandeur, Wade's balſam, Friar's balſam, Jeſuits drops, &c. Theſe, in general, conſiſted of a confuſed farrago of diſcordant ſubſtances.

They, however, derived confiderable activity from the benzoin and aloes; and every thing to be expected from them may readily be obtained from the prefent formulæ.

TINCTURA CAMPHORÆ; vulgo, SPIRITUS VINOSUS CAMPHORATUS. *Edin.*

Tincture of Camphor.

Take of
Camphor, one ounce;
Alcohol, one pound.
Mix them together, that the camphor may be diffolved.
It may alfo be made with a double, triple, &c. proportion of camphor.

SPIRITUS CAMPHORATUS.

Lond.

Camphorated Spirit.

Take of
Camphor, four ounces;
Rectified fpirit of wine, two pints:
Mix them, fo that the camphor may be diffolved.

Dub.

Take of
Camphor, half-an-ounce;
Rectified fpirit of wine, eight ounces.
Mix them, that the camphor may be diffolved.

THESE folutions of camphor are only employed for external ufes, againft rheumatic pains, paralytic numbneffes, inflammations, for difcuffing tumours, preventing gangrenes, or reftraining their progrefs. They are too pungent to be exhibited internally, and cannot be diluted with water, without being totally decompofed.

TINCTURA CASCARILLÆ.

Lond. Dub.

Tincture of Cafcarilla.

Take of
The bark of cafcarilla, powdered, four ounces;
Proof-fpirit, two pints, (two pounds, *Dub.*).
Digeft with a gentle heat for eight days, (feven, *Dub.*) and ftrain.

PROOF-SPIRIT readily extracts the active powers of the cafcarilla; and the tincture may be employed to anfwer moft of thofe purpofes for which the bark itfelf is recommended: But in the cure of intermittents, it in general requires to be exhibited in fubftance.

TINC-

TINCTURA CASSIÆ SENNÆ COMPOSITA; vulgo, ELIXIR SALUTIS. *Edin.*

Compound Tincture of Senna, commonly called *Elixir of Health.*

Take of
- Senna leaves, two ounces;
- Jalap-root, one ounce;
- Coriander feeds, half-an-ounce;
- Diluted alcohol, three pounds and a half.

Digeft for feven days, and to the ftrained liquor add four ounces of double-refined fugar.

TINCTURA SENNÆ.
Lond. Dub.
Tincture of Senna.

Take of
- Senna, one pound;
- Caraway-feeds, bruifed, one ounce and a half;
- Leffer cardamom-feeds, bruifed, (and hufked, *Dub.*) half an ounce;
- Raifins, ftoned, fixteen ounces;
- Proof fpirit, one gallon, (nine pounds, *Dub.*)

Digeft for fourteen days, and ftrain.

BOTH thefe tinctures are ufeful carminatives and cathartics, efpecially to thofe who have accuftomed themfelves to the ufe of fpirituous liquors; they oftentimes relieve flatulent complaints and colics, where the common cordials have little effect: the dofe is from one to two ounces.

TINCTURA CASTOREI.
Lond. Dub.
Tincture of Caftor.

Take of
- Ruffian Caftor, powdered, two ounces;
- Proof-fpirit, two pints, (two pounds, *Dub.*)
- Digeft for ten days, (feven, *Dub.*), and ftrain.

Edin.

Takeof
- Ruffian caftor, an ounce and a half;
- Alcohol, one pound.

Digeft them for feven days, and ftrain through paper.

IT has been difputed whether a weak or rectified fpirit, and whether cold or warm digeftion, are preferable for making this tincture.

From feveral experiments made to determine this queftion, it appears that caftor, macerated without heat, gives out its finer and

and moſt grateful parts to either ſpirit, but moſt perfectly to the rectified: that heat enables both menſtrua to extract the greateſt part of its groſſer and more nauſeous matter: and that proof-ſpirit extracts this laſt more readily than rectified.

The tincture of caſtor is recommended in moſt kinds of nervous complaints and hyſteric diſorders: In the latter, it ſometimes does ſervice, though many have complained of its proving ineffectual. The doſe is from twenty drops to forty, fifty, or more.

TINCTURA CINCHONÆ OFFICINALIS.

Edin.

TINCTURA CORTICIS PERUVIANI.

Dub.

Tincture of Cinchona, or Peruvian Bark.

Take of

Cinchona bark, four ounces;

Diluted alcohol, two pounds and a half, (two pounds, *Dub.*)

Digeſt for ſeven days, and ſtrain, (through paper, *Edin.*)

Lond.

Take of

Cinchona bark, powdered, ſix ounces;

Proof-ſpirit of wine, two pints.

Digeſt with a gentle heat for eight days, and ſtrain.

THIS tincture is certainly impregnated with the virtues of Cinchona, but not to ſuch a degree that it can be given in ſufficient doſes to act as cinchona, without exhibiting more ardent ſpirit than what is proper to be given as a medicine. Indeed, we are afraid that this and other bitter and tonic tinctures, as they are called, are with ſome only an apology for dram-drinking, and that the moſt apparent effects they produce are thoſe of a ſlight degree of intoxication.

TINCTURA CINCHONÆ, SIVE CORTICIS PERUVIANI, COMPOSITA.

Lond. Dub.

Compound Tincture of Peruvian Bark.

Take of

Peruvian bark, powdered, two ounces;

Exterior peel of Seville oranges, dried, one ounce and a half, (half an ounce, *Dub.*);

Virginian ſnake-root, bruiſed, three drachms;

Saffron, one drachm;

(Cochineal, powdered, two ſcruples, *Lond.*);

Proof-ſpirit, twenty ounces, (two pounds, *Dub.*)

Digeſt for fourteen days, and ſtrain.

THIS

This has been for a confiderable time celebrated under the title of *Huxham's Tincture of Bark.*

As a corroborant and ftomachic, it is given in dofes of two or three drachms: but when employed for the cure of intermittents, it muft be taken to a greater extent.

TINCTURA COLOMBÆ.
Lond. Edin. Dub.
Tincture of Colomba.

Take of
- Colomba-root, powdered, two ounces and a half, (two ounces, *Edin. Dub.*);
- Proof-fpirit of wine, two pints.

Digeft for eight days, (feven, *Edin. Dub.*) and ftrain.

The colomba readily yields its active qualities to the menftruum here employed; and accordingly, under this form, it may be advantageoufly employed againft bilious vomitings, and thofe different ftomach ailments, in which the colomba has been found ufeful; but where there does not occur fome objection to its ufe in fubftance, that form is in general preferable to the tincture.

TINCTURA CONVOLVULI JALAPÆ.
Edin.
Tincture of Jalap.

Take of
- Jalap, in coarfe powder, three ounces;
- Diluted alcohol, fifteen ounces.

Digeft them for eight days, and ftrain the tincture through paper.

Tinctura Jalapii.
Lond.

Tinctura Jalapæ.
Dub.
Tincture of Jalap.

Take of
- Powdered jalap, eight ounces;
- Proof-fpirit, two pints.

Digeft, with a gentle heat, for eight days, and ftrain.

Alcohol was formerly ordered for the preparation of this tincture; but rectified fpirit diffolving little more than the pure refinous parts of the jalap, rendered the ufe of the medicine fomewhat lefs commodious than that of the tincture prepared with proof-fpirit.

TINC-

TINCTURA CROCI.

Edin.

Tincture of Saffron.

Take of
English saffron, one ounce;
Proof-spirit, fifteen ounces.

After digesting them for seven days, let the tincture be strained through paper.

The proof spirit is a very proper menstruum for extracting the medical virtues of the saffron, and affords a convenient mode of exhibiting that drug, the qualities of which were mentioned in the Materia Medica.

TINCTURA DIGITALIS PURPUREÆ.

Edin.

Tincture of Foxglove.

Take of
The dried leaves of foxglove, one ounce;
Diluted alcohol, eight ounces.

Digest for seven days, and strain through paper.

This tincture is a very powerful medicine, and contains the virtues of the foxglove in a very manageable form. It has been chiefly used to diminish the force of the circulation of the blood in hæmoptysis, and often with remarkable success. It has been also said to cure phthisis pulmonalis, but subsequent experience has not confirmed the first trials. Like every other form in which foxglove is given, it should be given in very small doses at first, such as from ten to twenty drops, and cautiously increased.

TINCTURA GALBANI.

Lond.

Tincture of Galbanum.

Take of
Galbanum, cut into small pieces, two ounces;
Proof-spirit of wine, two pints.

Digest with a gentle heat for eight days, and strain.

Galbanum is one of the strongest of the fetid gums; and although less active, it is much less disagreeable than asa fœtida; and under the form of tincture it may be successfully employed in cases of flatulence and hysteria, where its effects are immediately required, particularly with those who cannot bear asa fœtida.

TINCTURA

TINCTURA GENTIANÆ COMPOSITA; vulgo, ELIXIR STOMACHICUM. *Edin.*

Compound Tincture of Gentian, commonly called *Stomachic Elixir.*

Take of
Gentian-root, two ounces;
Seville orange-peel, dried, one ounce;
Canella alba, half an ounce;
Cochineal half a drachm;
Diluted alcohol, two pounds and a half.

Macerate for ſeven days, and ſtrain through paper.

Lond.

Take of
Gentian root, ſliced and bruiſed, two ounces;
Exterior dried peel of Seville oranges, one ounce;
Leſſer cardamon-ſeeds, huſked and bruiſed, half an ounce;
Proof-ſpirit of wine, two pints.

Digeſt for eight days, and ſtrain.

THESE are very elegant ſpirituous bitters. As the preparations are deſigned for keeping, lemon-peel, an excellent ingredient in the watery bitter infuſions, has, on account of the periſhableneſs of its flavour, no place in theſe. The aromatics are here very commodious ingredients, as in this ſpirituous menſtruum they are free from the inconvenience with which they are attended in other liquors, of diminiſhing their tranſparency.

TINCTURA GUAIACI.

Edin.

Tincture of Guaiac.

Take of
Gum guaiac, one pound;
Alcohol, two pounds and a half.

Digeſt for ten days, and ſtrain.

WHAT is called gum guaiac is in fact a reſin, and perfectly ſoluble in alcohol. This ſolution is a powerful ſtimulating ſudorific, and may be given in doſes of about half an ounce in rheumatic and arthritic caſes. It was once ſuppoſed to be a ſpecific againſt the gout.

TINCTURA HELLEBORI NIGRI.

Lond. Dub.

Tincture of Black Hellebore.

Take of
Black hellebore, in coarſe powder, four ounces;
(Cochineal, powdered, two ſcruples, *Lond.*);

Proof-

Proof ſpirit of wine, two pints, (two pounds, *Dub.*)
Digeſt with a gentle heat for eight days, (ſeven, *Dub.*) and ſtrain.

Edin.

Take of
Black hellebore root, four ounces;
Cochineal, half a drachm;
Diluted alcohol, two pounds and a half.
Digeſt them together ſeven days, and afterwards filter the tincture through paper.

This is perhaps the beſt preparation of hellebore, when deſigned for an alterative, the menſtruum here employed extracting the whole of its virtues. It has been found, from experience, particularly ſerviceable in uterine obſtructions. In ſanguine conſtitutions, where chalybeates are hurtful, it has been ſaid that it ſeldom fails of exciting the menſtrual evacuations, and removing the ill conſequences of their ſuppreſſion. A tea-ſpoonful of the tincture may be taken twice a-day in warm water or any other convenient vehicle.

TINCTURA HYOSCIAMI NIGRI.

Edin.

Tincture of Henbane.

Take of
The leaves of henbane, dried, one ounce;
Diluted alcohol, eight ounces.
Digeſt for ſeven days, and ſtrain through paper.

This tincture, although not yet come into general uſe, is a valuable anodyne, and in many caſes may be ſubſtituted with advantage for the tincture of opium, eſpecially where the latter produces obſtinate conſtipation, or, inſtead of its uſual ſoporific and ſedative effects, it cauſes uneaſineſs, reſtleſſneſs, and univerſal irritation.

TINCTURA KINO.

Edin. Dub.

Tincture of Gum Kino.

Take of
Kino, (in powder, *Dub.*) two ounces;
Diluted alcohol, a pound and a half.
Digeſt ſeven days, and ſtrain through paper.

We have already ſtated our reaſons for believing kino to be a ſpecies of tanin, prepared by decoction and evaporation. This is certainly a very aſtringent tincture, and will be found an excellent medicine in obſtinate diarrhœas and in lienteria.

TINCTURA

TINCTURA LAURI CINNAMOMI.
Edin.
Tincture of Cinnamon.

Take of
Cinnamon, three ounces;
Diluted alcohol, two pounds and a half.
Macerate for ſeven days, and ſtrain through paper.

TINCTURA CINNAMOMI.
Lond.
Tincture of Cinnamon.

Take of
Cinnamon, bruiſed, one ounce and a half;
Proof ſpirit of wine, one pint.
Digeſt for ten days, and ſtrain.

Dub.

Take of
Cinnamon, bruiſed, three ounces and a half;
Proof-ſpirit, two pounds.
Mix and digeſt for ten days, then ſtrain.

THE tincture of cinnamon poſſeſſes the aſtringent virtues of the cinnamon, as well as its aromatic cordial ones; and in this reſpect it differs from the diſtilled waters of that ſpice.

TINCTURA LAURI CINNAMOMI COMPOSITA; olim, TINCTURA AROMATICA. *Edin.*
Compound Tincture of Cinnamon, formerly *Aromatic Tincture.*

Take of
Cinnamon,
Leſſer cardamom-ſeeds, each one ounce;
Long-pepper, two drachms;
Proof-ſpirit, two pounds and a half.
Macerate for ſeven days, and filter the tincture through paper.

TINCTURA CINNAMOMI COMPOSITA.
Lond.
TINCTURA AROMATICA.
Dub.
Aromatic Tincture.

Take of
Cinnamon, bruiſed, ſix drachms;
Leſſer cardamom-ſeeds, without the capſules, one drachm, (three drachms, *Lond.*);
Long-pepper, in powder,

Ginger,

Ginger, in powder, two drachms ;
Proof-fpirit, two pounds, (two pints, *Lond.*)
Mix and digeft for feven days, then ftrain.

In their formula, the Dublin and London Colleges diminifh the quantity of cardamom-feeds, and fubftitute for it a proportion of ginger. This makes no alteration on the virtues of the preparation, which is a very warm aromatic, too hot to be given without dilution. A tea-fpoonful or two may be taken in wine, or any other convenient vehicle, in languors, weaknefs of the ftomach, flatulencies, and other fimilar complaints; and in thefe cafes it is often employed with advantage.

TINCTURA LAVENDULÆ COMPOSITA.
Dub.
Spiritus Lavandulæ Spicæ Compositus.
Edin.
Compound Tincture or Spirit of Lavender.

Take of
Spirit of lavender, three pounds ;
Spirit of rofemary, one pound ;
Cinnamon, one ounce, (half an ounce, *Dub.*)
Cloves, two drachms ;
Nutmeg, half-an-ounce ;
Red faunders-wood, three drachms.
Macerate for feven days, and filter.

Spiritus Lavendulæ Composita.
Lond.
Compound Spirit of Lavender.

Take of
Spirit of lavender, three pints ;
Spirit of rofemary, one pint ;
Cinnamon, bruifed,
Nutmegs, bruifed, of each half-an-ounce ;
Red faunders, one ounce.
Digeft for ten days, and ftrain.

These preparations do not differ materially. They are grateful cordials, of which from ten to a hundred drops may be conveniently taken dropt upon fugar. It does not appear very clearly whether they fhould be confidered as fpirits or tinctures; for although the fpirit of lavender be the predominant ingredient, yet the mode of preparation is that of a tincture, and the fpirit as a menftruum diffolves aftringent colouring, and other fubftances, which would not rife with it in diftillation.

TINCTURA

TINCTURA MELOES VESICATORII.
Edin.
TINCTURA CANTHARIDUM.
Dub.
Tincture of Cantharides.

Take of
Cantharides, bruifed, one drachm, (two drachms, *Dub.*)
Proof-fpirit, one pound, (two pounds, *Dub.*)
Mix and digeft for feven days; then ftrain through paper.

TINCTURA CANTHARIDIS.
Lond.
Tincture of Spanifh Flies.

Take of
Bruifed cantharides, two drachms;
Cochineal, powdered, half a drachm;
Proof-fpirit, one pint and a half.
Digeft for eight days, and ftrain.

THIS tincture contains the active principle of the cantharides, whatever it may be. It is applied externally as a ftimulant and rubefacient, and is fometimes given internally, in dofes of from ten to twenty drops, as a diuretic.

TINCTURA MIMOSÆ CATECHU; olim, TINCTURA JAPONICA.
Edin.
Tincture of Catechu.

Take of
Extract of catechu, three ounces;
Cinnamon, two ounces;
Diluted alcohol, two pounds and a half.
Digeft for eight days, and ftrain through paper.

TINCTURA CATECHU.
Lond.
Tincture of Catechu.

Take of
Catechu, three ounces;
Cinnamon, bruifed, two ounces;
Proof-fpirit of wine, two pints.
Digeft for ten days, and ftrain.

THE cinnamon is a very ufeful addition to the catechu, not only as it warms the ftomach, &c. but likewife as it improves the roughnefs and aftringency of the other.

This tincture is of fervice in all kinds of defluxions, catarrhs, loofeneffes, uterine fluors, and other diforders, where mild aftringent medicines are indicated. Two or three tea-fpoonfuls may be taken every now and then in red wine, or any other proper vehicle.

TINCTURA MOSCHI.

Dub.

Tincture of Mufk.

Take of
Mufk, two drachms;
Rectified fpirit of wine, one pound.
Mix and macerate for feven days, and ftrain.

Rectified fpirit is the moft complete menftruum for mufk; but in this form it is often impoffible to give fuch a quantity of the mufk as is neceffary for our purpofe; and hence this article is more frequently employed under the form of julep or bolus.

TINCTURA MYRRHÆ.

Edin.

Tincture of Myrrh.

Take of
Myrrh, in powder, three ounces;
Alcohol, twenty ounces;
Water, ten ounces.
Digeft for feven days, and ftrain through paper.

Lond.

Take of
Myrrh, bruifed, three ounces;
Proof-fpirit of wine, a pint and a half;
Rectified fpirit of wine, half a pint.
Digeft with a gentle heat for eight days, and ftrain.

Dub.

Take of
Myrrh, bruifed, three ounces;
Rectified fpirit of wine, two pounds.
Mix and digeft for feven days; then ftrain.

Tincture of myrrh is recommended internally for warming the habit, attenuating vifcid juices, ftrengthening the folids, opening obftructions, particularly thofe of the uterine veffels, and refifting putrefaction. The dofe is from fifteen drops to forty or more. The medicine may perhaps be given in thefe cafes to advantage; though with us, it is more commonly ufed externally, for cleanfing foul ulcers, and promoting the exfoliation of carious bones.

TINCTURA

TINCTURA OPII, SIVE THEBAICA; vulgo, LAUDANUM LIQUIDUM. *Edin. Dub.*

Tincture of Opium, or *Thebaic Tincture*, commonly called *Liquid Laudanum.*

Take of
 Opium, two ounces;
 Diluted alcohol, two pounds.
Digeſt ſeven days, and filter through paper.

Lond.

Take of
 Hard purified opium, powdered, ten drachms;
 Proof-ſpirit of wine, one pint.
Digeſt for ten days, and ſtrain.

THESE are very elegant liquid opiates; and as they are now directed, they are of the ſame ſtrength, or contain the ſame proportion, of opium; a drachm of each tincture containing, as is found by evaporating the tincture, three grains and a half of pure opium.

It is to be regretted that theſe tinctures are not ſo well adapted for keeping as could be wiſhed: in long ſtanding, a part of the opium is gradually depoſited from both, and conſequently the tinctures become weaker: the part which thus ſeparates, amounts ſometimes, as it is ſaid, to near one-fourth of the quantity of opium at firſt diſſolved.

TINCTURA OPII CAMPHORATA. *Lond.*

Olim, ELIXIR PAREGORICUM. *Dub.*

Camphorated Tincture of Opium. Paregoric Elixir.

Take of
 Hard purified opium,
 Flowers of benzoin, of each one drachm;
 Camphor, two ſcruples;
 Eſſential oil of aniſeed, one drachm;
 Proof-ſpirit of wine, two pints.
Digeſt for ten days, (Mix and macerate for ſeven days, *Dub.*) and ſtrain.

IN this formula the virtues of the opium and camphor are combined. It gets an agreeable flavour from the acid of benzoin and eſſential oil. The latter will alſo render it more ſtimulating; but whether it derives any ſalutary virtues from the former, we do not know. It was originally preſcribed under the title of Elixir Aſthmaticum, which it does not ill deſerve. It contributes to allay the tickling which provokes frequent coughing; and at the ſame time it is ſuppoſed to open the breaſt, and give greater liberty of breathing. It is given to children againſt the chincough, &c. from five drops to twenty : to adults, from twenty to an hundred. Half-an-ounce, by meaſure, contains about a grain of opium.

TINCTURA RHEI PALMATI.
Edin.
Tincture of Rhubarb.

Take of
Rhubarb, three ounces ;
Leſſer cardamom ſeeds, half-an-ounce ;
Diluted alcohol, two pounds and a half.
Digeſt for ſeven days, and ſtrain through paper.

TINCTURA RHABARBARI.
Lond.
Tincture of Rhubarb.

Take of
Rhubarb, cut into pieces, two ounces ;
Leſſer cardamom ſeeds, bruiſed, (and huſked, *Dub.*)
Saffron, two drachms ;
Proof-ſpirit of wine, two pints, (two pounds, *Dub.*)
Digeſt for eight days, (ſeven days, *Dub.*) and ſtrain.

TINCTURA RHABARBARI COMPOSITA.
Lond.
Compound Tincture of Rhubarb.

Take of
Rhubarb, ſliced, two ounces ;
Liquorice-root, bruiſed, half-an-ounce ;
Ginger, powdered,
Saffron, each two drachms ;
Diſtilled water, one pint ;
Proof-ſpirit of wine, twelve ounces, by meaſure.
Digeſt for fourteen days, and ſtrain.

TINCTURA RHEI CUM ALOE ; olim, ELIXIR SACRUM.
Edin.
Tincture of Rhubarb with Aloes, commonly called *Sacred Elixir.*

Take of
Rhubarb, ten drachms ;
Socotorine aloes, ſix drachms ;
Leſſer cardamom ſeeds, half an ounce ;
Diluted alcohol, two pounds and a half.
Digeſt for ſeven days, and ſtrain through paper.

TINCTURA

TINCTURA RHEI CUM GENTIANA; olim, TINCTURA RHEI AMARA. *Edin.*

Tincture of Rhubarb with Gentian, formerly *Bitter Tincture of Rhubarb.*

Take of
Rhubarb, two ounces;
Gentian-root, half an ounce;
Diluted alcohol, two pounds and a half.
Digeſt for ſeven days, and then ſtrain the tincture through paper.

ALL the foregoing tinctures of rhubarb are deſigned as ſtomachics and corroborants, as well as purgatives: ſpirituous liquors excellently extract thoſe parts of the rhubarb in which the two firſt qualities reſide, and the additional ingredients conſiderably promote their efficacy. In weakneſs of the ſtomach, indigeſtion, laxity of the inteſtines, diarrhœas, colic, and other ſimilar complaints, theſe medicines are frequently of great ſervice.

TINCTURA SABINÆ COMPOSITA. *Lond.*

Compound Tincture of Savin.

Take of
Extract of ſavin, one ounce;
Tincture of caſtor, one pint;
——— myrrh, half a pint.
Digeſt till the extract of ſavin be diſſolved, and then ſtrain.

THIS preparation is improved from one deſcribed in ſome former diſpenſatories under the name of Elixir Uterinum. It is ſaid to be a medicine of great importance in uterine obſtructions, and in hypochondriacal caſes; though, poſſibly, means might be contrived of ſuperadding more effectually the virtues of ſavin to a tincture of myrrh and caſtor. It may be given from five drops to twenty or thirty, or more, in any ſuitable vehicle.

TINCTURA SAPONIS; vulgo, LINIMENTUM SAPONACEUM. *Edin.*

Tincture of Soap, formerly *Saponaceous Liniment.*

Take of
Soap, four ounces;
Camphor, two ounces;
Volatile oil of roſemary, half-an-ounce.
Alcohol, two pounds.
Digeſt the ſoap in the alcohol for three days; then add to the filtered liquor the camphor and the oil, agitating them diligently.

Linimentum Saponis Compositum.

Lond.

Compound Soap Liniment.

Take of

Soap, three ounces;
Camphor, one ounce;
Spirit of rosemary, one pint.

Digest the soap in the spirit of rosemary until it be dissolved, and add to it the camphor.

Linimentum Saponaceum.

Dub.

Saponaceous Liniment.

Take of

Castile soap, two ounces,
Camphor, one ounce;
Alcohol,
Water, each eight ounces;
Essential oil of rosemary, two scruples.

Dissolve the soap in the water over a gentle fire; strain the liquor through linen, and when it is almost cold, add the camphor and oil dissolved in the alcohol.

TINCTURA SAPONIS cum OPIO; olim, Linimentum Anodynum. *Edin.*

Tincture of Soap with Opium, formerly *Anodyne Liniment.*

This is prepared in the same way, and from the same substances, as the other tincture of soap, (p. 575.) but with the addition from the beginning of one ounce of opium.

These tinctures are only used externally, and possess great efficacy in removing local pains when rubbed on the affected part.

TINCTURA SCILLÆ.

Lond. Dub.

Tincture of Squill.

Take of

Squills, fresh dried, four ounces;
Proof-spirit of wine, two pints, (two pounds, *Dub.*)

Digest for eight days, and pour off the liquor.

(Mix and digest for seven days; then remove from the fire, and when the feces have subsided, pour off the pure liquor, *Dub.*)

The active principle of squills is soluble in alcohol, and there are cases in which a tincture may be useful.

TINCTURA

TINCTURA TOLUIFERÆ BALSAMI; olim, TINCTURA TOLUTANA. *Edin.*

TINCTURA BALSAMI TOLUTANI.

Lond. Dub.

Tincture of the Balsam of Tolu.

Take of

Balsam of Tolu, an ounce and a half, (one ounce, *Dub.*);

Alcohol, one pint, (one pound, *Dub. Edin.*)

Digest until the balsam be dissolved; and then strain the tincture through paper.

This solution of balsam of Tolu possesses all the virtues of the balsam itself. It may be taken internally, with the several intentions for which that valuable balsam is proper, to the quantity of a tea-spoonful or two, in any convenient vehicle. Mixed with the plain syrup of sugar, it forms an elegant balsamic syrup.

TINCTURA VALERIANÆ.

Lond.

Tincture of Valerian.

Take of

The root of wild valerian, in coarse powder, four ounces;

Proof-spirit of wine, two pints.

Digest with a gentle heat for eight days, and strain.

The valerian root ought to be reduced to a pretty fine powder, otherwise the spirit will not sufficiently extract its virtues. The tincture proves of a deep colour, and considerably strong of the valerian; though it has not been found to answer so well in the cure of epileptic disorders as the root in substance, exhibited in the form of powder or bolus. The dose of the tincture is, from half a spoonful to a spoonful or more two or three times a-day.

TINCTURA VERATRI ALBI.

Edin.

Tincture of White Hellebore.

Take of

White hellebore root, eight ounces;

Proof-spirit, two pounds and a half.

Digest them together for seven days, and filter the tincture through paper.

This tincture is sometimes used for assisting cathartics, &c. and as an emetic in apoplectic and maniacal disorders. It may likewise be so managed, as to prove a powerful alterative and deobstruent, in cases where milder remedies have little effect. But a great deal of caution is requisite in its use: the dose, at first, ought to be only a few drops; if considerable, it proves violently emetic or cathartic.

TINCTURA ZINGIBERIS.

Lond.

Tincture of Ginger.

Take of

Ginger, powdered, two ounces;

Proof-spirit, two pounds.

Digest in a gentle heat for eight days, and strain.

THIS simple tincture of ginger is a warm cordial, and is rather intended as a useful addition, in the quantity of a drachm or two, to purging mixtures, than for being used alone.

CHAP. XXXI.

TINCTURES MADE WITH ETHEREAL SPIRITS.

WE have classed these tinctures by themselves, because they are more strongly characterized by the nature of the menstruum than of the substances dissolved in it. Indeed, the ethereal spirits are used in these instances, not to dissolve bodies which would resist the action of alcohol and water, but for the sake of their own direct action on the body.

TINCTURA ALOES ÆTHEREA.

Edin.

Ethereal Tincture of Aloes.

Take of

Myrrh,

Socotorine aloes, of each an ounce and a half;

English saffron, one ounce;

Sulphuric ether with alcohol, one pound.

Digest the myrrh with the liquor for four days, in a close vessel; then add the saffron and aloes.

Digest again for four days, and, when the feces have subsided, pour off the tincture.

THIS tincture agrees generally in its effects with the other tinctures of aloes, the only difference arising from the more penetrating and stimulating nature of the menstruum itself.

ÆTHER SULPHURICUS CUM ALCOHOLE AROMATICUS. *Edin.*

Aromatic Sulphuric Ether with Alcohol.

This is made of the ſame aromatics, and in the ſame manner as the compound tincture of cinnamon; except that, in place of the alcohol, ſulphuric ether with alcohol is employed.

This is deſigned for perſons whoſe ſtomachs are too weak to bear the following acid tincture; to the taſte, it is gratefully aromatic, without any perceptible acidity.

ACIDUM SULPHURICUM AROMATICUM. *Edin.*

Aromatic Sulphuric Acid.

Take of
Alcohol, two pounds;
Sulphuric acid, ſix ounces.
Drop the acid gradually into the alcohol.
Digeſt the mixture with a very gentle heat in a cloſe veſſel for three days, and then add of
Cinnamon, an ounce and a half;
Ginger, one ounce.
Digeſt again in a cloſe veſſel for ſix days, and then filter the tincture through paper placed in a glaſs-funnel.

Although the name given to this preparation by the College does not ſanction its arrangement with the ethereal tinctures, yet we have ventured to place it here, from the belief that the alcohol is completely or partially changed, by the digeſtion with the acid, into an ethereal ſpirit, and that the principal difference between this and the preceding tincture conſiſts in the preſence of the acid, which is not to be conſidered as the menſtruum by which the tincture is formed, but as an acid mixed with the ethereal tincture.

This is a valuble medicine in weakneſs and relaxations of the ſtomach, and decays of conſtitution, particularly in thoſe which proceed from irregularities, which are accompanied with ſlow febrile ſymptoms, or which follow the ſuppreſſion of intermittents. It frequently ſucceeds, after bitters and aromatics by themſelves had availed nothing; and, indeed, great part of its virtues depend on the ſulphuric acid; which, barely diluted with water, has, in thoſe caſes where the ſtomach could bear the acidity, produced happy effects.

It is very uſefully conjoined with cinchona, and other tonic barks, both as covering their diſagreeable taſte, and as coinciding with them in virtue. It may be given in doſes of ten to thirty drops, or more, ſeveral times a day.

CHAP.

CHAP. XXXII.

AMMONIATED OR *VOLATILE TINCTURES.*

Ammonia, like ether, is ſo powerful an agent on the living ſyſtem, that we think it gives a peculiar character to the compoſitions into which it enters. They are all highly ſtimulating and pungent, and apt to excite diaphoreſis. As ammonia exerts conſiderable and peculiar powers as a ſolvent, theſe tinctures muſt never be combined in preſcription with any thing acid, which would not only neutralize the ammonia, and deſtroy its peculiar action on the living ſyſtem, but would precipitate whatever was diſſolved by its agency.

LINIMENTUM CAMPHORÆ COMPOSITUM.

Lond.

Compound Camphor Liniment.

Take of

Camphor, two ounces;

Water of pure ammonia, ſix ounces;

Spirit of lavender, ſixteen ounces.

Mix the water of ammonia with the ſpirit; and diſtil from a glaſs-retort, with a ſlow fire, ſixteen ounces. Then diſſolve the camphor in the diſtilled liquor.

Linimentum Camphoratum.

Dub.

Camphorated Liniment.

Take of

Camphor, three ounces;

Ley of aërated volatile alkali, ten ounces;

Spirit of lavender, two pounds.

Mix the ley and the ſpirit; and diſtil from a glaſs-retort, with a gentle heat, two pounds. Then diſſolve the camphor in the diſtilled liquor.

These compoſitions are more pungent and penetrating than the ſolutions of camphor in alcohol. In the quarto impreſſion of their Pharmacopœia, the London College employed the ſolution of carbonated ammonia, but changed it in the octavo edition for the water of pure ammonia, which is certainly an improvement.

LINIMENTUM

LINIMENTUM VOLATILE.

Dub.

Volatile Liniment.

Take of
- The aromatic ſpirit of volatile alkali, one ounce ;
- Liniment of ſoap, two ounces.

Mix them.

This is an entirely different compoſition from the volatile liniment of the Edinburgh and London Pharmacopœias. The latter is a ſoap formed of ammonia and fixed oil, whereas the preſent is an ammoniated tincture of camphor, ſoap of ſoda, and volatile oils. In its effects it differs from the ſoap-liniment of the Dublin College only in being more ſtimulating.

ALCOHOL AMMONIATUM AROMATICUM, SIVE SPIRITUS AMMONIÆ AROMATICUS.

Edin.

Aromatic Ammoniated Alcohol, or *Aromatic Spirit of Ammonia.*

Take of
- Spirit of ammonia, eight ounces ;
- Volatile oil of roſemary, one drachm and a half ;
- Volatile oil of lemon-peel, one drachm.

Mix them that the oils may be diſſolved.

SPIRITUS AMMONIÆ COMPOSITUS.

Lond.

Compound Spirit of Ammonia.

Take of
- Spirit of ammonia, two pints ;
- Eſſential oil of lemon,
- ———— cloves, of each two drachms.

Mix them.

SPIRITUS ALKALI VOLATILIS AROMATICUS.

Dub.

Aromatic Spirit of Volatile Alkali.

Take of
- Spirit of volatile alkali, two pounds ;
- Eſſential oil of lemon,
- ———— nutmeg, of each two drachms.

Mix them.

Volatile oils are diſſolved readily and completely by ſpirit of ammonia ; and medicines of this kind might be prepared extemporaneouſly, by dropping any proper eſſential oil into ſpirit of ammonia, which will readily diſſolve the oil without the aſſiſtance of diſtillation. But it is perhaps preferable that they ſhould be kept in the ſhops ready mixed.

All

All the foregoing compositions turnout excellent ones, provided the oils are good. The dose is from five or six drops to sixty or more.

Volatile salts, thus united with aromatics, are not only more agreeable in flavour, but likewise more acceptable to the stomach, and less acrimonious than in their pure state.

SPIRITUS AMMONIÆ SUCCINATUS.
Lond.
Succinated Spirit of Ammonia.

Take of
Alcohol, one ounce, by weight;
Water of pure ammonia, four ounces, by measure;
Rectified oil of amber, one scruple, by weight;
Soap, ten grains.

Digest the soap and oil of amber in the alcohol till they be dissolved; then add the water of pure ammonia, and mix them by shaking.

This preparation is intended as a substitute for Eau de Luce, which was formerly imported entirely from Paris. It is now, we believe, prepared also by the chemists and druggists in London; but without some peculiar manipulation, which is kept secret, the above formula does not succeed in giving the liquor that permanent milky opacity, which is deemed essential to good Eau de Luce, for it becomes more or less transparent by keeping. This fancied perfection is, however, in a medical point of view, immaterial; and whether it be opaque or transparent, it is an excellent analeptic remedy, and may be used in the same circumstances, and in the same doses as the spirit of ammonia itself.

TINCTURA CASTOREI COMPOSITA.
Edin.
Compound Tincture of Castor.

Take of
Russia castor, one ounce;
Asa fœtida, half an ounce;
Ammoniated alcohol, one pound.

Digest for seven days in a close-stopped phial, and filter through paper.

This composition is a medicine of real efficacy, particularly in hysterical disorders, and the several symptoms which accompany them. The spirit here used is an excellent menstruum, both for the castor and the asa fœtida, and greatly adds to their virtues.

TINCTURA CINCHONÆ AMMONIATA.

Lond.

Ammoniated Tincture of Cinchona.

Take of
  Cinchona, powdered, four ounces;
  Compound ſpirit of ammonia, two pints.
Digeſt in a cloſe veſſel for ten days, and ſtrain.

We are not acquainted with this tincture; but from our knowledge of the active principles of cinchona bark, we are not diſpoſed to think it a very judicious preparation; for the nature of the menſtruum is ſo ſtimulating, that little effect can be expected from any portion of the bark it is capable of diſſolving.

TINCTURA GUAIACI AMMONIATA.

Edin.

Ammoniated Tincture of Guaiac.

Take of
  Gum guaiac, four ounces;
  Ammoniated alcohol, one pound and a half.
Digeſt for ſeven days, and filter through paper.

Tinctura Guaiaci.

Lond.

Tincture of Guaiacum.

Take of
  Gum guaiacum, four ounces;
  Compound ſpirit of ammonia, a pint and a half.
Digeſt for three days, and ſtrain.

Tinctura Guaiaci Volatilis.

Dub.

Volatile Tincture of Guaiac.

Take of
  Guaiac, four ounces;
  Aromatic ſpirit of volatile alkali, one pound and a half.
Mix and macerate for ſeven days, in a veſſel cloſely covered, then filter.

These are very elegant and efficacious tinctures; the ammoniated ſpirit readily diſſolving the reſin, and at the ſame time promoting its medicinal virtue. In rheumatic caſes, a tea or even table ſpoonful, taken every morning and evening in any convenient vehicle, particularly in milk, has proved of ſingular ſervice.

TINCTURA OPII AMMONIATA; olim, ELIXIR PAREGORICUM. *Edin.*

Ammoniated Tincture of Opium, formerly *Paregoric Elixir.*

Take of
 Benzoic acid,
 English saffron, of each three drachms;
 Opium, two drachms;
 Essential oil of aniseed, half a drachm;
 Ammoniated alcohol, sixteen ounces.
Digest for seven days in a close vessel, and strain.

THIS is a preparation of considerable efficacy in many spasmodic diseases, as chincough, &c. the ammonia removing the spasm immediately, while the opium tends to prevent its return. Each drachm contains about a grain of opium.

TINCTURA VALERIANÆ AMMONIATA.
Lond. Dub.
Ammoniated Tincture of Valerian.

Take of
 Wild valerian, in coarse powder, four ounces;
 Compound spirit of ammonia, two pints.
Digest for eight days, (seven days, in a vessel closely covered, *Dub.*) and strain.

THE compound spirit of ammonia is here an excellent menstruum, and at the same time considerably promotes the virtues of the valerian, which in some cases wants assistance of this kind. The dose may be a tea-spoonful or two.

CHAP. XXXIII.

MEDICATED WINES.

PARMENTIER has occupied thirty-two pages of the Annales de Chimie, to prove that wine is an extremely bad menstruum for extracting the virtues of medicinal substances. His argument, (for there is but one), is, that by the infusion of vegetable substances in wine, its natural tendency to decomposition is so much accelerated, that at the end of the process, instead of wine, we have only a liquor containing the elements of bad vinegar. As a solvent,

vent, diluted alcohol perfectly fuperfedes the ufe of wine; and if we wifh to ufe wine to cover the tafte, or to affift the operation of any medicine, M. Parmentier propofes, that a tincture of the fubftance fhould be extemporaneoufly mixed with wine as a vehicle.

Notwithftanding this argument appears to us to have great weight, we fhall give to the medicated wines, retained in the pharmacopœias, the characters they ftill generally poffefs.

VINUM ALOES SOCOTORINÆ; vulgo, TINCTURA SACRA.
Edin.

Wine of Socotorine Aloes, commonly called *Sacred Tincture.*

Take of
Socotorine aloes, one ounce;
Leffer cardamom-feeds,
Ginger, each one drachm;
Spanifh white wine, two pounds.

Digeft for feven days, ftirring now and then, and afterwards ftrain.

VINUM ALOETICUM.
Dub.
Aloetic Wine.

Take of
Socotorine aloes, four ounces;
Canella alba, two ounces;
Spanifh white wine, four pounds.

Powder the aloes and canella alba feparately, then mix and pour on the wine, afterwards digeft for fourteen days, frequently fhaking the veffel; and, laftly, filter the liquor.

VINUM ALOES.
Lond.
Wine of Aloes.

Take of
Socotorine aloes, eight ounces;
Canella alba, two ounces;
Spanifh white-wine, fix pint;
Proof-fpirit, two pints.

Powder the aloes and canella feparately; mix them, and pour on the wine and fpirit: digeft for fourteen days, now and then fhaking them; and ftrain.

It will not be amifs to mix white fand, cleanfed from impurities, with the powder, in order to prevent the moiftened aloes from fticking together.

THIS medicine has long been in great efteem, not only as a cathartic, but likewife as a ftimulus.

It

It appears from long experience to be a medicine of excellent ſervice. The doſe, as a purgative, is from one to two ounces. It may be introduced into the habit, ſo as to be productive of excellent effects, as an alterant, by giving it in ſmall doſes, at proper intervals : Thus managed, it does not for a conſiderable time operate remarkably by ſtool : but at length proves purgative, and occaſions a lax habit of much longer continuance than that produced by the other common cathartics.

VINUM GENTIANÆ COMPOSITUM; vulgo, VINUM AMARUM. *Edin.*

Compound Wine of Gentian, commonly called *Bitter Wine.*

Take of
Gentian root, half an ounce ;
Peruvian bark, one ounce ;
Seville orange-peel, dried, two drachms ;
Canella alba, one drachm ;
Proof-ſpirit, four ounces ;
Spaniſh white wine, two pounds and a half.

Firſt pour on the ſpirit, and after twenty-four hours add the wine ; then macerate for three days, and ſtrain.

THIS wine is intended to ſupply the place of the *Tinctura ad ſtomachicos*, as it was formerly called. Wine is a menſtruum fully capable of extracting the active powers of the different ingredients ; and it ſupplies us with a very uſeful and elegant ſtomachic medicine, anſwering the purpoſes intended much better than the celebrated elixir of Van Helmont, and other unchemical and uncertain preparations, which had formerly a place in our pharmacopœias.

VINUM IPECACUANHÆ.
Lond. Dub.
Wine of Ipecacuanha.

Take of
The root of ipecacuanha, bruiſed, two ounces ;
Spaniſh white wine, two pints, (two pounds, *Dub.*) ;

Digeſt for ten days, (ſeven days, *Dub.*), and ſtrain.

Edin.

Take of
Ipecacuanha, in powder, one ounce ;
Spaniſh white wine, fifteen ounces ;

Macerate for ſeven days, and filter through paper.

BOTH theſe wines are very mild and ſafe emetics, and equally ſerviceable, in dyſenteries alſo, with the ipecacuanha in ſubſtance ; this root yielding nearly all its virtues to the Spaniſh white wine, here

here ordered, as it does a good ſhare of them even to aqueous liquors. The common doſe is an ounce, more or leſs, according to the age and ſtrength of the patient.

VINUM NICOTIANÆ TABACI.

Edin.

Tobacco Wine.

Take of
  The dried leaves of tobacco, one ounce;
  Spaniſh white wine, one pound,
Macerate for ſeven days, and then ſtrain the liquor.

We have already, under the article Nicotiana in the Materia Medica, offered ſome obſervations on its introduction into practice by Dr Fowler, as a very uſeful remedy in the cure of dropſies and dyſuries. From his treatiſe on that ſubject the preſent formula is taken; and we may obſerve, that while in practice we have frequently experienced from the tobacco thoſe good effects for which Dr Fowler recommends it, we are inclined to give the preſent formula the preference to every other which he has propoſed. It ſeems to extract more fully the active principles of the tobacco than either water or ſpirit taken ſeparately.

VINUM RHEI PALMATI.

Edin.

Rhubarb Wine.

Take of
  Rhubarb ſliced, two ounces;
  Canella alba, one drachm;
  Diluted alcohol, two ounces;
  Spaniſh white wine, fifteen ounces.
Macerate for ſeven days, and ſtrain through paper.

Vinum Rhabarbari.

Lond.

Wine of Rhubarb.

Take of
  Sliced rhubarb, two ounces and a half;
  Leſſer cardamon ſeeds, bruiſed and huſked, half an ounce;
  Saffron, two drachms;
  Spaniſh white wine, two pints;
  Proof-ſpirit, half a pint.
Digeſt for ten days and ſtrain.

By aſſiſting the ſolvent power of the wine, the proof-ſpirit in the above formulæ is a very uſeful addition. This is a warm, cordial, laxative medicine. It is uſed chiefly in weakneſs of the ſtomach and bowels, and ſome kinds of looſeneſſes, for evacuating the offending matter, and ftrengthening the tone of the vifcera. It may be given in dofes of from half a fpoonful to three or four fpoonfuls or more, according to the circumftances of the diforder, and the ftrength of the patient.

CHAP. XXXIV.

EXTRACTS AND RESINS.

Extract in pharmacy has long been ufed, in the common and true acceptation of the term, to exprefs a thing extracted, and therefore it was applied to fubftances of all kinds which were extracted from heterogeneous bodies, by the action of any menftruum, and again reduced to a confiftent form, by the evaporation of that menftruum. Lately, however, Extract has been ufed in a different and much more limited fenfe, as the name for a peculiar principle, which is often indeed contained in extracts, and which before had no proper appellation. Although we have ufed it in this fenfe, (§ 262.), on farther confideration we regret having done fo; for it is certainly improper to employ a word, which in common language has a fixed and appropriate meaning, to exprefs any new fubftance or relation of fubftances. Such arbitrary changes in the application of words are fources of infinite confufion, and retard fcience. Accordingly, in reading the works of the French authors, it is extremely difficult, and fometimes impoffible to afcertain whether the word Extract be employed in the common or in the more limited acceptation. It is in the former fenfe that we employ it here, and in which we wifh it to be only ufed, while a new word fhould be invented as the name of the new fubftance. Till a better be propofed, we fhall call it Extractive.

Extracts are of various kinds, according to the nature of the fubftances from which they are obtained, and the menftruum employed; but they commonly confift of gum, fugar, extractive, tannin, gallic acid, or refin, or feveral of them mixed in various proportions. The menftrua moft commonly employed are water and alcohol. The former is capable of extracting all the fubftances enumerated, except the refin, and the latter all except the gum. Wine is alfo fometimes employed, but very improperly; for as a folvent it can only act as a mixture of alcohol and water, and the principles which it leaves behind on evaporation are rather injurious than of advantage to the extract.

Water is the menftruum moft economically employed in making extracts, as it is capable of diffolving all the active princi-

ples

ples except resin, and can have its solvent powers assisted by a considerable degree of heat.

Watery extracts are prepared by boiling the subject in water, and evaporating the strained decoction to a thick consistence.

It is indifferent, with regard to the medicine, whether the subject be used fresh or dry; since nothing that can be preserved in this process will be lost by drying. With regard to the facility of extraction, there is a very considerable difference; vegetables in general giving out their virtues more readily when moderately dried than when fresh.

Very compact dry substances should be reduced into exceedingly small parts, previous to the affusion of the menstruum.

The quantity of water ought to be no greater than is necessary for extracting the virtues of the subject. This point, however, is not very easily ascertained; for although some of the common principles of extracts be soluble in a very small proportion of water, there are others, such as the tannin, of which water can dissolve only a certain proportion, and cannot be made to take up more by any length of boiling; and we have no very good method of knowing when we have used a sufficient quantity of water; for vegetable substances will continue to colour deeply successive portions of water boiled with them, long after they are yielding nothing to it but colouring matter. Perhaps one of the best methods is to boil the subject in successive quantities of water, as long as the decoctions form a considerable precipitate with the test which is proper for detecting the substance we are extracting, such as a solution of gelatin for tannin, of alum for extractive, &c.

"The decoctions are to be depurated by colature; and afterwards suffered to stand for a day or two, when a considerable quantity of sediment is usually found at the bottom. If the liquor poured off clear be boiled down a little, and afterwards suffered to cool again, it will deposite a fresh sediment, from which it may be decanted before you proceed to finish the evaporation. The decoctions of very resinous substances do not require this treatment, and are rather injured by it; the resin subsiding along with the inactive dregs."

Such were the directions given in the former editions of this work for the depuration of the decoctions, and we have inserted them at full length, because, although we doubt very much of their propriety, our reasons for so doing are scarcely more than hypothetical. We would advise the decoctions to be evaporated after they have been filtered boiling hot, without any further depuration; because some of the most active principles of vegetable substances, such as tannin, are much more soluble in boiling than in cold water, and because almost all of them are very quickly affected by exposure to the atmosphere. Therefore, if a boiling decoction, saturated with tannin, be allowed to cool, the greatest part of the very principle on which the activity of the substance depends will separate to the bottom, and according to the above directions, will be thrown away as sediment. The same objection applies more strongly to allowing the decoction to cool, and deposite a fresh sediment, after it has been partially evaporated. Besides, by allowing the decoctions to stand several days before we proceed to their evaporation, we are in fact allowing the active principles contained in the decoction to be altered by the action of the air, and to be converted into substances, perhaps inactive, which also are thrown away as sediment.

The evaporation is most conveniently performed in broad shallow vessels; the larger the surface of the liquor, the sooner will the aqueous parts exhale. This effect may likewise be promoted by agitation.

When the matter begins to grow thick, great care is necessary to prevent its burning. This accident, almost unavoidable if the quantity be large, and the fire applied as usual under the evaporating pan, may be effectually prevented, by carrying on the inspissation after the common manner, no farther than to the consistence of a syrup, when the matter is to be poured into shallow tin or earthen pans, and placed in an oven, with its door open, moderately heated; which acting uniformly on every part of the liquid, will soon reduce it to any degree of consistence required. This may likewise be done, and more securely, by setting the evaporating vessel in boiling water; but the evaporation is in this way very tedious.

Alcohol is much too expensive to be employed as a menstruum for obtaining extracts, except in those cases where water is totally inadequate to the purpose. These cases are,

1*st*, When the nature of the extract is very perishable when dissolved in water, so that it is liable to be decomposed before the evaporation can be completed, especially if we cannot proceed immediately to the evaporation.

2*dly*, When water is totally incapable of dissolving the substance to be extracted; and,

3*dly*, When the substance extracted can bear the heat of boiling alcohol without being evaporated, but would be dissipated by that of boiling water; that is, when it requires a heat greater than 176°, and less than 212°, for its vaporization.

In the last case, the alcohol must be perfectly free from water, because the heat necessary to evaporate it at the end of the process would frustrate the whole operation. Hence, also, the subject itself ought always to be dry: those substances which lose their virtue by drying, lose it equally on being submitted to this treatment with the purest alcohol.

In this way the alcoholic extract of some aromatic substances, as cinnamon, lavender, rosemary, retain a considerable degree of their fine flavour.

In

In the second case, the alcohol need not be so very strong, because it is still capable of dissolving resinous substances, although diluted with a considerable proportion of water.

In the first case, the alcohol may be still much weaker; or rather, the addition of a small proportion of alcohol to water will be sufficient to retard or prevent the decomposition of the decoction.

The alcohol employed in all these cases should be perfectly free from any unpleasant flavour, lest it be communicated to the extract.

The inspissation should be performed from the beginning, in the gentle heat of a water-bath. We need not suffer the alcohol to evaporate in the air: the greatest part of it may be recovered by collecting the vapour in common distilling vessels. If the distilled spirit be found to have brought over any flavour from the subject, it may be advantageously reserved for the same purposes again.

When diluted alcohol is employed, the distillation should only be continued as long as alcohol comes over; and the evaporation should be finished in wide open vessels.

In this chapter we have also included the processes intended for purifying inspissated juices and resinous substances.

Pure resins are prepared, by adding to spirituous tinctures of resinous vegetables, a large quantity of water. The resin, incapable of remaining dissolved in the watery liquor, separates and falls to the bottom; leaving in the menstruum such other principles of the plant as the spirit might have extracted at first along with it. But this is only practised for the purpose of analysis.

EXTRACTS made with WATER only.

Edin.

EXTRACTUM GENTIANÆ LUTEÆ.

Extract of Gentian.

Take of

Gentian-root, any quantity.

Having cut and bruised it, pour upon it eight times its quantity of water. Boil to the consumption of one half of the liquor, and strain it by strong expression. Evaporate the decoction immediately to the consistence of thick honey, in a bath of water saturated with muriate of soda.

In the same manner are prepared Extracts

Of the roots of	
Liquorice,	*Extractum* radicis *Glycyrrhizæ glabræ.*
Black Hellebore,	——— ——— *Hellebori nigri.*
Of the leaves of	
Rue,	——— foliorum *Rutæ graveolentis.*
Senna,	——— ——— *Cassiæ Sennæ.*

Of the flowers of Chamomile,	*Extractum* florum *Anthemidis nobilis.*
Of the heads of White Poppy,	——— capitum *Papaveris albi.*
And of Logwood,	——— ligni *Hæmatoxyli Campechensis.*

EXTRACTA.

Lond.

Extract of Broom Tops,	*Extractum cacuminis Genistæ.*
——— Chamomile,	——— *Chamæmeli.*
——— Gentian,	——— *Gentianæ.*
——— Liquorice,	——— *Glycyrrhizæ.*
——— Black Hellebore,	——— *Hellebori nigri.*
——— White Poppy,	——— *Papaveris albi.*
——— Rue,	——— *Rutæ.*
——— Savin,	——— *Sabinæ.*

Boil the article in distilled water, press out the decoction, strain it, and set it apart that the feces may subside; then boil it again in a water-bath saturated with sea-salt to a consistence proper for making pills.

The same kind of bath is to be used in the preparation of all the extracts, that the evaporation may be properly performed.

EXTRACTA SIMPLICIORA.

Dub.

Simple Extracts.

All simple extracts, unless otherwise ordered, are to be prepared according to the following rule:

The parts of the plants ordered are to be boiled in water; the liquor is then to be expressed, and after the feces have subsided, it is to be filtered; and lastly, it is to be evaporated with a gentle heat and frequently stirred, until it acquire a consistence proper for forming pills.

The simple extracts enumerated in this pharmacopœia are,

Extractum Aloes,	Extract of Aloes.
——— *Chamæmeli,*	——— Chamomile.
——— *Gentianæ,*	——— Gentian.
——— *Glycyrrhizæ,*	——— Liquorice.
——— *Hæmatoxyli,*	——— Logwood.
——— *Hellebori nigri,*	——— Black Hellebore.
——— *Jalapæ,*	——— Jalap.
——— *Quercûs,*	——— Oak-Bark.
——— *Rutæ,*	——— Rue.
——— *Sabinæ,*	——— Savin.

EXTRAC-

EXTRACTUM CINCHONÆ, SIVE CORTICIS PERUVIANI. *Lond.*

Extract of Cinchona, or Peruvian Bark.

Take of

Peruvian bark, in coarſe powder, one pound;
Diſtilled water, twelve pints.

Boil for an hour or two, and pour off the liquor, which, while hot, will be red and pellucid, but, as it grows cold, will become yellow and turbid. The ſame quantity of water being again poured on, boil the bark as before, and repeat this boiling until the liquor, on becoming cold, remains clear. Then reduce all theſe liquors, mixed together and ſtrained, to a proper thickneſs, by evaporation.

This extract muſt be prepared under two forms; one *ſoft*, and fit for making pills; the other *hard* and pulverizable.

EXTRACTUM CORTICIS PERUVIANI DURUM.
Dub.
Hard Extract of Peruvian Bark.

Take of

Peruvian bark, in coarſe powder, one pound;
Water, twelve pounds.

Mix and boil to the half; then ſtrain the liquor ſtill boiling. What remains upon the filter is to be again boiled with freſh affuſions of water, as often as may be neceſſary. Laſtly, evaporate all the decoctions, mixed and filtered, after they have cooled, until the extract become ſo hard as to be reducible to powder.

EXTRACTUM CORTICIS PERUVIANI MOLLE.
Dub.
Soft Extract of Peruvian Bark.

This is prepared in the ſame manner, except that the extract is made no drier than to render it fit for the formation of pills.

EXTRACTUM HÆMATOXYLI, SIVE LIGNI CAMPECHENSIS. *Lond.*

Extract of Logwood.

Take of

Shavings of logwood, one pound.

Boil it four times or oftener, in a gallon of diſtilled water, to one-half; then boil all the liquors, mixed and ſtrained, down to a proper conſiſtence.

EXTRACTUM OPII.
Dub.
Extract of Opium.

Take of
Purified opium, two ounces;
Boiling water, one pound.

Melt the opium in the water, and to the liquor ſtrained, while it is warm, add one pound of cold diſtilled water. Expoſe this liquor for two days to the air, filter it again, and, laſtly, evaporate it to the conſiſtence of an extract over a very gentle fire.

EXTRACTUM SENNÆ.
Lond.
Extract of Senna.

Take of
Senna, one pound;
Diſtilled water, one gallon.

Boil the ſenna in the diſtilled water, adding after its decoction a little rectified ſpirit of wine. Evaporate the ſtrained liquor to a proper thickneſs.

Dub.

Take of
Senna, one pound;
Water, eight pounds;
Rectified ſpirit of wine, eight ounces.

Boil the ſenna in the water to one-half; add the ſpirit to the decoction after it is cold, and digeſt in a covered veſſel for twenty-four hours, then expreſs the liquor, and evaporate it to a proper thickneſs over a very gentle fire.

EXTRACTS made with ALCOHOL and WATER.

EXTRACTUM CINCHONÆ OFFICINALIS.
Edin.
Extract of Cinchona.

Take of
Cinchona bark, in powder, one pound;
Alcohol, four pounds.

Digeſt for four days, and pour off the tincture.

Boil the reſiduum in five pounds of diſtilled water for fifteen minutes, and filter the decoction boiling hot through linen. Repeat this decoction and filtration with an equal quantity of diſtilled water, and reduce the liquor by evaporation to the conſiſtence of thin honey. Draw off the alcohol from the tincture by by distillation, until it also become thick; then mix the liquor, thus inspissated, and evaporate in a bath of boiling water, saturated with muriate of soda, to a proper consistency.

EXTRACTUM RADICIS CONVOLVULI JALAPÆ.
Edin.
Extract of Jalap.

THIS is prepared in the same way.

EXTRACTUM CORTICIS PERUVIANI cum RESINA.
Lond.
Extract of Peruvian Bark with the Resin.

Take of
- Peruvian bark, reduced to coarse powder, one pound;
- Rectified spirit of wine, four pints.

Digest it for four days, and pour off the tincture; boil the residuum in ten pints of distilled water to two; then strain the tincture and decoction separately, evaporating the water from the decoction, and distilling off the spirit from the tincture, until each begins to be thickened. Lastly, mix the resinous with the aqueous extract, and make the mass fit for forming into pills.

EXTRACTUM CASCARILLÆ.
Lond.
Extract of Cascarilla.

EXTRACTUM JALAPII.
Lond.
Extract of Jalap.

THESE are both prepared in the same way.

EXTRACTUM CASCARILLÆ RESINOSUM.
Dub.
Resinous Extract of Cascarilla.

Take of
- Cascarilla, in coarse powder, one pound;
- Rectified spirit of wine, four pounds.

Digest for four days, then pour of the tincture and strain; boil the residuum in twelve pounds of water to two, and purify this liquor in the same way as the former. Evaporate the decoction, and distil the tincture till both begin to grow thick; and, lastly, mix them well together.

EXTRACTUM CORTICIS PERUVIANI RUBRI RESINOSUM. *Dub.*
Resinous Extract of Red Peruvian Bark.

EXTRACTUM VALERIANÆ SYLVESTRIS RESINOSUM. *Dub.*

Resinous Extract of Wild Valerian.

These are both prepared in the same way.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM. *Lond.*

Compound Extract of Coloquintida.

Take of
Pith of coloquintida, cut small, six drachms;
Socotorine aloes, powdered, an ounce and a half;
Scammony, powdered, half an ounce;
Smaller cardamom seeds, husked and powdered, one drachm;
Proof-spirit, one pint.

Digest the coloquintida in the spirit, with a gentle heat, during four days. To the expressed tincture add the aloes and scammony; when these are dissolved, draw off the spirit by distillation, and evaporate the water, adding the seeds towards the end of the process, so as to form an extract fit for making into pills.

OPIUM PURIFICATUM. *Lond. Dub.*

Purified Opium.

Take of
Opium, cut into small pieces, one pound;
Proof-spirit of wine, twelve pints.

Digest the opium with a gentle heat, stirring now and then till it be dissolved, and filter through paper. Distil the tincture, so prepared, to a proper thickness, (for making into pills, *Dub.*)

(Purified opium must be kept in two forms; one *soft*, proper for forming into pills; the other *hard*, which may be reduced into powder, *Lond.*)

The chapter on extracts and resins in the London Pharmacopœia is concluded with the two following general directions:

1. All the extracts, during the time of inspissation, must be gently agitated.

2. On all the softer watery extracts, a small quantity of spirit of wine must be sprinkled.

All these extracts are supposed to contain the virtues of the substances from which they are prepared, in a very pure and concentrated form: But this supposition is, we believe, in several instances erroneous; and the directions for preparing them are frequently injudicious and uneconomical.

As the changes which opium and aloes undergo by solution, and subsequent evaporation, have never been ascertained by careful and satisfactory experiments, we prefer well-selected pieces of these

these substances to the preparations in which they are supposed to be purified.

Cinchona bark is a medicine of very great importance; but unfortunately the proportion of woody fibres, or inert matter, which enter into its composition is so great, that weak stomachs cannot bear it, when given in quantity sufficient to produce any very powerful effects. On this account, the preparation of an extract, which may contain its active principles in a concentrated form, becomes also an object of importance. On this subject there is still much room for experiment. The London and Dublin Colleges, in their directions, certainly err in two important particulars; in the first place, in desiring the decoction to be continued until the greatest part of the menstruum is evaporated; and, in the second place, in separating by filtration the powder which separates from the decoction after it has cooled. The first error probably originated in the idea, that by continuing the boiling for a great length of time more of the bark would be dissolved; but we now know, that water is incapable of dissolving more than a certain quantity of the active principles of bark: and that after the water has become saturated, by continuing the decoction we diminish the quantity of the menstruum, and therefore also diminish the quantity of bark dissolved. It is not so easy to account for the second error; for, according to the old idea, that the powder which separated on cooling from a saturated decoction of cinchona, was a resinous substance, it surely ought not to have been rejected from what were supposed to be resinous extracts. This precipitate is now known to be caused by the much greater solubility of tannin in boiling than in cold water, so that the precipitate is not different from what remains in solution. Accordingly we have found by experiment, that cinchona gave at least one-half more extract when the decoction were conducted according to the directions of the Edinburgh College.

The real advantage of so expensive an agent as alcohol, in preparing any of these extracts, has not been demonstrated; and, if we are not misinformed, it is seldom employed by the apothecaries in preparing even what are called the Resinous Extracts.

The same observations apply to the preparation of other astringent extracts, such as those of logwood and oak-bark.

RESINA FLAVA.

Lond. Dub.

Yellow Rosin.

This remains in the retort after the distillation of oil of turpentine.

Turpentines are combinations of volatile oils and resins, which are easily separated by distillation. The process, however, cannot

cannot be carried fo far as to feparate the whole of the oil, without charring and burning the refin. In this ftate it has a brown colour and a certain degree of tranfparency, and is well known under the name of Fidlers Rofin. But, if water be added to the refiduum of the diftillation, and be thoroughly mixed with it by agitation, it becomes opaque, and is called Yellow Rofin.

Yellow rofin is a ufeful ingredient in the compofition of plafters and hard ointments.

AMMONIACI PURIFICATIO.

Lond.

The Purification of Gum Ammoniacum.

If gum ammoniac do not feem to be pure, boil it in water till it become foft; then fqueeze it through a canvafs-bag, by means of a prefs. Let it remain at reft till the refinous part fubfide; then evaporate the water; and towards the end of the evaporation, mix the refinous part with the gummy.

In the fame manner are purified *afa fœtida* and fimilar *gum-refins*.

You may alfo purify any gum which melts eafily, fuch as *Galbanum*, by putting it in an ox-bladder, and holding it in boiling water till it become fo foft that it can be feparated from its impurities by preffing through a coarfe-linen cloth.

As one, and perhaps the moft active conftituent of gummy-refins, as they are called, is of a volatile nature, it is evident that it muft be in a great meafure diffipated in the procefs juft defcribed, and that we cannot expect the fame virtues in thefe fubftances after they are purified, which they poffefs in their crude ftate. This procefs is therefore contrary to the principles of good pharmacy; and fuch fpecimens of thefe gummy-refins as ftand in need of it to give them an apparent degree of purity, fhould not be admitted into the fhop of the apothecary. Befides, many of the impurities which they ufually contain, are eafily feparated in compounding the preparations or extemporaneous prefcriptions into which they enter.

STYRAX PURIFICATA.

Lond. Dub.

Purified Storax.

STYRACIS PURIFICATIO.

The Purification of Storax.

Diffolve the ftorax in rectified fpirit of wine, and ftrain the folution: afterwards reduce it to a proper thicknefs with a gentle heat.

STORAX is a balfam or combination of refin and benzoic acid, both of which are foluble in alcohol, and neither of them volatile in the heat neceffary for evaporating alcohol. The procefs for purifying it is therefore not liable to any chemical objections.

CHAP.

CHAP. XXXV.

POWDERS.

THIS form is proper for ſuch materials only as are capable of being ſufficiently dried to become pulveriſable, without the loſs of their virtue. There are many ſubſtances, however, of this kind, which cannot be conveniently taken in powder; bitter, acrid, fetid drugs are too diſagreeable; emollient and mucilaginous herbs and roots are too bulky; pure gums cohere, and became tenacious in the mouth: fixt alkaline ſalts deliqueſce when expoſed to the air; and volatile alkalies exhale. Many of the aromatics, too, ſuffer a great loſs of their odorous principle when kept in powder; as in that form they expoſe a much larger ſurface to the air.

The doſe of powders, in extemporaneous preſcription, is generally about half a drachm: it rarely exceeds a whole drachm; and is not often leſs than a ſcruple. Subſtances which produce powerful effects in ſmaller doſes are not truſted to this form, unleſs their bulk be increaſed by additions of leſs efficacy; thoſe which require to be given in larger ones are better fitted for other forms.

The uſual vehicle for taking the lighter powders, is any agreeable thin liquid. The ponderous powders, particularly thoſe prepared from metallic ſubſtances, require a more conſiſtent vehicle, as ſyrups; for from thin ones they ſoon ſubſide: Reſinous ſubſtances likewiſe are moſt commodiouſly taken in thick liquors; in thin ones, they are apt to run into lumps, which are not eaſily again ſoluble.

PULVIS ALOES CUM CANELLA.

Lond.

Powder of Aloes with Canella.

Take of

Socotorine aloes, one pound;

White canella, three ounces.

Powder them ſeparately, and then mix them.

THIS compoſition has long been known in the ſhops under the title of *Hiera picra.* It furniſhes us with an uſeful aloëtic purgative, the canella operating as a good corrigent for the aloes. But it is more frequently employed as the baſis of electuaries, or pills.

PULVIS

PULVIS ALOETICUS cum GUAIACO.

Lond.

Aloetic Powder with Guaiacum.

Take of
Socotorine aloes, one ounce and an half;
Gum guaiacum, one ounce;
Aromatic powder, half an ounce.
Rub the aloes and gum guaiacum feparately to powder; then mix them with the aromatic powder.

This alfo furnifhes us with a ufeful purgative: But when taken only in fmall dofes, its chief effect is that of promoting perfpiration.

PULVIS ALOETICUS cum FERRO.

Lond.

Aloetic Powder with Iron.

Take of
Socotorine aloes, an ounce and an half;
Myrrh, two ounces;
Dry extract of gentian,
Vitriolated iron, of each one ounce.
Reduce them feparately to powder, and mix them.

In this powder we have an aloetic and chalybeate conjoined. It is an ufeful medicine, and is particularly employed with advantage in cafes of obftructed menftruation.

PULVIS AROMATICUS.

Lond. Dub.

Aromatic Powder.

Take of
Cinnamon, two ounces;
Smaller cardamom-feeds, hufked,
Ginger,
Long-pepper, of each one ounce.
Rub them together to a powder, (which is to be kept in a well-corked phial, *Dub.*)

Edin.

Take of
Cinnamon,
Smaller cardamom feeds,
Ginger, each equal parts.
Reduce them to a very fine powder, which is to be kept in a glafs veffel well clofed.

Both thefe compofitions are agreeable, hot, fpicy, medicines; and as fuch may be ufefully taken in cold phlegmatic habits and

decayed

decayed conſtitutions, for warming the ſtomach, promoting digeſtion, and ſtrengthening the tone of the viſcera. The doſe is from ten grains to a ſcruple and upwards. The firſt is conſiderably the warmeſt, from the quantity of long pepper which it contains.

PULVIS ASARI COMPOSITUS.

Lond. Dub.

Compound Powder of Aſarabacca.

Take of
- Aſarabacca,
- Sweet marjoram,
- Syrian herb-maſtich,
- Lavender, of each, dried, one ounce.

Reduce them together to powder, which is to be kept in a cloſed phial.

PULVIS ASARI EUROPÆI COMPOSITUS.

Edin.

Compound Powder of Aſarabacca.

Take of
- The leaves of aſarabacca, three parts;
- ———— marjoram,
- Flowers of lavender, of each one part.

Rub them together to powder.

They are both agreeable and efficacious errhines, and ſuperior to moſt of thoſe uſually ſold under the name of *herb ſnuff.* They are often employed with great advantage in caſes of obſtinate headach, and of ophthalmias reſiſting other modes of cure. Taken under the form of ſnuff to the extent of five or ſix grains at bedtime, they will operate the ſucceeding day as a powerful errhine, inducing frequent ſneezing, and likewiſe a copious diſcharge from the noſe. It is, however, neceſſary, during their operation, to avoid expoſure to cold.

PULVIS CARBONATIS CALCIS COMPOSITUS; olim, PULVIS CRETACEUS. *Edin.*

Compound Powder of Carbonate of Lime, formerly *Chalk Powder.*

Take of
- Prepared carbonate of lime, four ounces;
- Nutmeg, half a drachm;
- Cinnamon, one drachm and a half.

Reduce them together to powder.

PULVIS

PULVIS CRETÆ COMPOSITUS.
Lond.
Compound Powder of Chalk.

Take of
Prepared chalk, half a pound;
Cinnamon, four ounces;
Tormentil,
Gum Arabic, of each three ounces;
Long pepper, half an ounce.
Powder them ſeparately, and mix them.

THE addition of the aromatics in the above formula, coincides with the general intention of the remedy, which is indicated for weakneſs and acidity in the ſtomach, and in looſeneſs from acidity.

PULVIS CRETÆ COMPOSITUS CUM OPIO.
Lond.
Compound Powder of Chalk with Opium.

Take of
Compound powder of chalk, eight ounces;
Hard purified opium, powdered, one drachm and an half.
Mix them.

FROM the addition of the opium this remedy becomes ſtill more powerful than the above in reſtraining diarrhœa.

PULVIS CHELARUM CANCRI COMPOSITUS.
Lond.
Compound Powder of Crabs Claws.

Take of
Crabs claws, prepared, one pound;
Chalk,
Red-coral, each, prepared, three ounces.
Mix them.

THE invention of this formula muſt be aſcribed ſolely to the unphiloſophical idea, that the ſum of the powers of medicines was increaſed by mixing them together; for the preſent powder is a mixture of three varieties of carbonate of lime, which, notwithſtanding the immenſe differences of their prices, do not differ in their effects.

PULVIS CERUSSÆ COMPOSITUS.
Lond.
Compound Powder of Ceruſe.

Take of
Ceruſe, five ounces;
Sarcocoll, an ounce and a half;

Tragacanth

Tragacanth, half an ounce.
Powder them together.

THIS is employed for external purposes, as in collyria, lotions, and injections for repelling acrimonious humours, and in inflammations; but for all these purposes it is very inferior to solutions of acetite of lead.

PULVIS CONTRAYERVÆ COMPOSITUS.

Lond.

Compound Powder of Contrayerva.

Take of
  Contrayerva, powdered, five ounces;
  Compound powder of crabs claws, one pound and a half.
Mix them.

THIS medicine has a very good claim to the title of an alexipharmic and sudorific. The contrayerva by itself proves very serviceable in low fevers, where the vis vitæ is weak, and a diaphoresis to be promoted. It is possible, that the crabs claws are of no farther service than as they divide this active ingredient, and make it sit more easily on the stomach.

PULVIS IPECACUANHÆ ET OPII.

Edin.

PULVIS IPECACUANHÆ COMPOSITUS; olim PULVIS DOVERI.

Lond. Dub.

Powder of Ipecacuanha and Opium, or *Compound Powder of Ipecacuan*, formerly *Dover's Powder*.

Take of
  Ipecacuanha, in powder,
  Opium, (purified, *Dub.*, hard purified, *Lond.*) of each one part;
  Sulphate of potass, eight parts.
Triturate them together into a fine powder.

THE sulphate of potass, from the grittiness of its crystals, is perhaps better fitted for tearing and dividing the tenacious opium than any other salt: this seems to be its only use in the preparation. The operator ought to be careful that the opium and ipecacuanha be equally diffused through the whole mass of powder, otherwise different portions of the powder must have differences in degree of strength.

This powder is one of the most certain sudorifics, and, as such, was recommended by Dr Dover as an effectual remedy in rheumatism. Modern practice confirms its reputation, not only in rheumatism, but also in dropsy and several other diseases, where it is often difficult by other means to produce a copious sweat. The dose is from five to twenty grains, according as the patient's stomach and strength can bear it. It is proper to avoid much drinking immediately after taking it, otherwise it is very apt to be rejected by vomiting before any other effects are produced.

PULVIS JALAPÆ COMPOSITUS.

Edin.

Compound Powder of Jalap.

Take of
  Jalap root, one part;
  Super-tartrite of potass, two parts.
Grind them together to a very fine powder.

THE use of the crystals in this preparation, is to break down and divide the jalap; and therefore they are directed to be triturated together, and not separately.

PULVIS MYRRHÆ COMPOSITUS.

Lond.

Compound Powder of Myrrh.

Take of
  Myrrh,
  Dried savin,
  ——— rue,
  Russian castor, of each one ounce.
Rub them together into a powder.

THIS is a reformation of the Trochisci è Myrrha, a composition contrived by Rhazes against uterine obstructions. From a scruple to a drachm or more, two or three times a-day, may be taken in any convenient vehicle, or made into boluses.

PULVIS OPIATUS.

Lond.

Opiate Powder.

Take of
  Hard purified opium, powdered, one drachm;
  Burnt and prepared hartshorn, nine drachms.
Mix them.

Edin.

Take of
  Opium, one part;
  Prepared carbonate of lime, nine parts.
Rub them together to a fine powder.

IN these powders the opium is the only active ingredient; and it is immaterial whether the phosphate or carbonate of lime be used to promote its mechanical division.

PULVIS SCAMMONII COMPOSITUS.

Lond.

Compound Powder of Scammony.

Take of
  Scammony,
  Hard extract of jalap, of each two ounces;

Ginger,

Ginger, half an ounce.
Powder them ſeparately, and mix them.

Edin.

Take of
Scammony,
Super-tartrite of potaſs, equal parts.
Rub them together to a very fine powder.

Dub.

Take of
Scammony,
Vitriolated vegetable alkali, each two ounces;
Ginger, half an ounce.
Powder them ſeparately, and then mix them.

In the firſt of theſe compoſitions, the ſcammony is combined with another purgative more active than itſelf, and in the others, with one much leſs ſo; which difference muſt be attended to in preſcription. The ginger is an uſeful addition, and will render it leſs apt to gripe.

PULVIS SCAMMONII COMPOSITUS cum ALOE.

Lond.

Compound Powder of Scammony with Aloes.

Take of
Scammony, ſix drachms;
Hard extract of jalap,
Socotorine aloes, of each an ounce and an half;
Ginger, half an ounce.
Powder them ſeparately, and mix them.

In this formula, the combination of ſcammony, jalap, and aloes, furniſhes a very active purgative, which, with ſome intentions at leaſt, may be preferable to either of the preceding. From five to ten grains of it operate as a purgative, even in caſes of obſtinate coſtiveneſs.

PULVIS SCAMMONII cum CALOMELANE.

Lond.

Powder of Scammony with Calomel.

Take of
Scammony, half an ounce;
Calomel,
Double refined ſugar, of each two drachms.
Powder them ſeparately, and then mix them.

In this formula, we have the ſcammony in a more ſimple ſtate, united with ſuch a proportion of calomel, as muſt very conſiderably aid its purgative power; and accordingly it may be employed with advantage, both in cases of obstinate costiveness, and in dropsical affections, where a considerable discharge is required from the system.

PULVIS SENNÆ COMPOSITUS.

Lond.

Compound Powder of Senna.

Take of
Senna,
Crystals of tartar, of each two ounces;
Scammony, half an ounce;
Ginger, two drachms.
Rub the scammony by itself, rub the rest together into a powder, and then mix them all.

This powder is given as a cathartic, in the dose of two scruples, or a drachm. The spice is added, not only to divide, but to warm the medicine, and make it sit easier on the stomach. The scammony is used as a stimulus to the senna; the quantity of the latter necessary for a dose, when not assisted by some more powerful material, being too bulky to be conveniently taken in this form.

PULVIS SULPHATIS ALUMINÆ COMPOSITUS; olim, PULVIS STYPTICUS. *Edin.*

Compound Powder of Sulphate of Alumina, formerly *Styptic Powder.*

Take of
Sulphate of alumina, four parts;
Kino, one part.
Rub them together to a fine powder.

This powder is composed of two very powerful astringents, but which we believe are not combined with propriety. At least, it is certain that a solution of alum is decomposed by a solution of kino.

PULVIS TRAGACANTHÆ COMPOSITUS.

Lond.

Compound Powder of Tragacanth.

Take of
Tragacanth, powdered,
Gum Arabic,
Starch, of each an ounce and an half;
Double refined sugar, three ounces.
Rub them together into a powder.

This composition is a mild emollient; and hence becomes serviceable in hectic cases, tickling coughs, strangury, some kinds of alvine fluxes, and other disorders proceeding from a thin acrimonious

monious ſtate of the humours, or an abraſion of the mucus of the inteſtines: they ſoften, and give a greater degree of conſiſtency to the former, and defend the latter from being irritated or excoriated by them. All the ingredients coincide in theſe general intentions. The doſe is from half a drachm to two or three drachms, which may be frequently repeated.

CHAP. XXXVI.

CONSERVES.

CONSERVES are compoſitions of recent vegetable matters and ſugar, beaten together into an uniform maſs.

This management is introduced for preſerving certain ſimples, undried, in an agreeable form, with as little alteration as poſſible in their native virtues; and to ſome ſubjects it is very advantageouſly applied. Vegetables, whoſe virtues are loſt or deſtroyed in drying, may in this form be kept uninjured for a length of time: for, by carefully ſecuring the mouth of the containing veſſel, the alteration, as well as diſſipation, of their active principles, is generally prevented; and the ſugar preſerves them from the corruption which juicy vegetables would otherwiſe undergo.

The ſugar ſhould be pounded by itſelf, and paſſed through a ſieve, before it be mixed with the vegetable maſs, for without this it cannot be properly incorporated. Roſe-buds, and ſome other vegetables, are prepared for mixing with ſugar by a ſmall wooden-mill contrived for that purpoſe.

There are, however, vegetables whoſe virtues are impaired by this treatment. Mucilaginous ſubſtances, by long lying with ſugar, become leſs glutinous; and aſtringents ſenſibly become ſofter upon the palate. Many of the fragrant flowers are of ſo tender and delicate a texture, as almoſt entirely to loſe their peculiar qualities on being beaten or bruiſed.

In general, it is obvious, that in this form, on account of the large admixture of ſugar, only ſubſtances of conſiderable activity can be taken with advantage as medicines. And, indeed, conſerves are at preſent conſidered chiefly as auxiliaries to medicines of greater efficacy, or as intermediums for joining them together. They are very convenient for reducing into boluſes or pills the more ponderous powders, as ſubmuriate of mercury, the oxides of iron, and other mineral preparations; which, with liquid or leſs conſiſtent matters, as ſyrups, will not cohere.

The ſhops were formerly encumbered with many conſerves altogether inſignificant; the few now retained have in general either an agreeable flavour to recommend them, or are capable of anſwering ſome uſeful purpoſes as medicines. Their common doſe is the bulk of a nutmeg, or as much as can be taken up at once or twice upon the point of a knife. There is, in general, no great danger of exceeding in this particular.

CONSERVÆ	CONSERVES
	Edin.
Corticis exterioris recentis fructûs Citri Aurantii, *radulâ abraſi.*	Of the outer rind of oranges, raſped off by a grater.
Fructûs Roſæ Caninæ, *maturi à ſeminibus eorumque pube ſolicitè purgatæ.*	Of the pulp of ripe hips, freed from the ſeeds and hairs adhering to them.
Petalorum Roſæ Rubræ *nondum explicitorum.*	Of red-roſe buds.

Beat each of theſe to a pulp, gradually adding, during the beating, three times their weight of double-refined ſugar.

CONSERVÆ	CONSERVES
	Lond.
Abſinthii Maritimi.	Of ſea wormwood.
Corticis exterioris Aurantii Hiſpalenſis.	Of the outer rind of the Seville orange.
Lujulæ.	Of wood ſorrel.
Roſæ Rubræ.	Of the red roſe.

Pluck the leaves from the ſtalks, the unblown petals from the cups, taking off the heels.

Take off the outer rind of the oranges by a grater. When prepared in this way, beat them with a wooden peſtle in a marble mortar, firſt by themſelves, afterwards with three times their weight of double-refined ſugar until they be mixed.

CONSERVA CYNOSBATI.

Lond.

Conſerve of Hips.

Take of

Pulp of ripe hips, one pound;

Double-refined ſugar, powdered, twenty ounces.

Mix them into a conſerve.

CONSERVA

CONSERVA ACETOSELLÆ.

Dub.

Conſerve of Wood Sorrel.

Beat the leaves of wood ſorrel, gradually adding twice their weight of double-refined ſugar.

CONSERVA CORTICIS AURANTII.

Dub.

Conſerve of Orange Peel.

To the outer peel of Seville oranges taken off with a grater, gradually add three times its weight of double-refined ſugar, while beating them together.

CONSERVA ROSÆ.

Dub.

Conſerve of Roſes.

Beat the petals of red-roſe buds freed from the calices and heels, gradually adding three times their weight of double-refined ſugar.

It is ſcarcely neceſſary to make any particular remarks on theſe conſerves. Their taſte and virtues are compounded of thoſe of ſugar, and the ſubſtance combined with it. The wood ſorrel and hips are acidulous and refrigerant; the orange-rind and wormwood bitter and ſtomachic, and the red-roſe buds aſtringent.

CONSERVA ARI.

Lond.

Conſerve of Arum.

Take of

Freſh root of arum, bruiſed, half a pound;

Double-refined ſugar, a pound and a half.

Beat them together in a mortar.

This is one of the beſt forms for exhibiting this ſimple, as its virtues are deſtroyed by drying, and are not extracted by any menſtruum. It may be given to adults in doſes of a drachm.

CONSERVA PRUNI SYLVESTRIS.

Lond.

Conſerve of Sloes.

Put the ſloes in water upon the fire that they may ſoften, taking care that they be not broken; then the ſloes being taken out of the water, preſs out the pulp, and mix it with three times its weight of double-refined ſugar into a conſerve.

This preparation is a gentle aſtringent, and may be given as ſuch in the doſe of two or three drachms.

CONSERVA SCILLÆ.

Lond.

Conserve of Squills.

Take of
Fresh squills, one ounce;
Double-refined sugar, five ounces.
Beat them together in a mortar into a conserve.

This conserve is directed to be prepared in a small quantity, to guard against its varying in strength. It may be given, to adults, in doses of from half a drachm to two scruples, especially when fresh.

The conserve of squills is a more uncertain and less agreeable mode of exhibiting this article, than the powder of the dried root made into pills, or a bolus with any other conserve.

The London College conclude their chapter on conserves, with desiring all the conserves, especially those of arum and squills, to be kept in close vessels.

CHAP. XXXVII.

ELECTUARIES AND CONFECTIONS.

Electuaries are composed chiefly of powders mixed up with syrups, &c. into such a consistence, that the powders may not separate in keeping, that a dose may be easily taken up on the point of a knife, and not prove too stiff to swallow.

Electuaries receive chiefly the milder alterative medicines, and such as are not ungrateful to the palate. The more powerful drugs, as cathartics, emetics, opiates, and the like, (except in officinal electuaries to be dispensed by weight), are seldom trusted in this form, on account of the uncertainty of the dose: disgustful ones, acrids, bitters, fetids, cannot be conveniently taken into it; nor is the form of an electuary well fitted for the more ponderous substances, as mercurials, these being apt to subside on keeping, unless the composition be made very stiff.

The lighter powders require thrice their weight of honey, or syrup, boiled to the thickness of honey, to make them into the consistence of an electuary; of syrups of the common consistence, twice the weight of the powder is sufficient.

Where the common syrups are employed, it is necessary to add likewise a little conserve, to prevent the compound from drying too

too ſoon. Electuaries of Peruvian bark, for inſtance, made up with ſyrup alone, will often in a day or two grow too dry for taking.

Some powders, eſpecially thoſe of the leſs grateful kind, are more conveniently made up with mucilage than with ſyrup, honey, or conſerve. The three latter ſtick about the mouth and fauces, and thus occaſion the taſte of the medicine to remain for a conſiderable time; whilſt mucilages paſs freely, without leaving any taſte in the mouth. A little ſoft extract of liquorice, joined to the mucilage, renders the compoſition ſufficiently grateful, without the inconveniencies of the more adheſive ſweets.

The quantity of an electuary, directed at a time, in extemporaneous preſcription, varies much according to its conſtituent parts, but it is rarely leſs than the ſize of a nutmeg, or more than two or three ounces.

ELECTUARIUM AROMATICUM.

Edin.

Aromatic Electuary.

Take of

Aromatic powder, one part;

Syrup of orange peel, two parts.

Mix and beat them well together, ſo as to form an electuary.

Dub.

Take of

Conſerve of orange peel, three ounces;

Cinnamon,

Nutmeg, of each, in powder, half an ounce;

Ginger, in powder,

Saffron, of each two drachms;

Double-refined ſugar, one ounce;

Syrup of orange peel, as much as may be neceſſary to form the whole into an electuary, by beating them well together.

CONFECTIO AROMATICA.

Lond.

Aromatic Confection.

Take of

Zedoary, in coarſe powder,

Saffron, of each half a pound;

Diſtilled water, three pints.

Macerate for twenty-four hours; then preſs and ſtrain. Reduce the ſtrained liquor, by evaporation, to a pint and a half; to which add,

Compound powder of crabs-claws, ſixteen ounces;

Cinnamon,

Nutmeg,

Nutmeg, of each two ounces;
Cloves, one ounce;
Smaller cardamom seeds, half an ounce;
Double-refined sugar, two pounds.

Reduce the aromatics together to a very fine powder, and form them into a confection, by adding the sugar.

THESE compositions are sufficiently grateful, and moderately warm. They are given in the form of a bolus, in doses of from five grains to a scruple, or upwards, as a cordial, or as a vehicle for more active substances. The simple composition of the Edinburgh College serves all these purposes as well as the complicated formula of the London College.

ELECTUARIUM CASSIÆ FISTULÆ.
Edin.
Electuary of Cassia.

Take of
Pulp of cassia fistularis, six ounces;
Pulp of tamarinds,
Manna, each an ounce and a half;
Syrup of pale roses, six ounces.

Having beat the manna in a mortar, dissolve it with a gentle heat, in the syrup; then add the pulps, and evaporate them with a regularly continued heat to the consistence of an electuary.

ELECTUARIUM CASSIÆ.
Lond. Dub.
Electuary of Cassia.

Take of
The fresh extracted pulp of cassia, half a pound;
Manna, two ounces;
Pulp of tamarinds, one ounce;
Rose syrup, half a pound.

Beat the manna, and dissolve it over a slow fire in the rose syrup; then add the pulps; and, with a continued heat, evaporate the whole to the proper thickness of an electuary.

THESE compositions are very convenient officinals, to serve as a basis for purgative electuaries and other similar purposes. The tamarinds give them a pleasant taste, and do not subject them, as might be expected, to turn sour. After standing for four months, the composition has been found no sourer than when first made. This electuary likewise is usefully taken by itself, to the quantity of two or three drachms occasionally, for gently loosening the belly in costive habits.

ELECTUARIUM

ELECTUARIUM CASSIÆ SENNÆ; olim, ELECTUARIUM LENITIVUM. *Edin.*

ELECTUARIUM SENNÆ.

Lond.

Electuary of Senna, commonly called *Lenitive Electuary.*

Take of
Senna, eight ounces;
Coriander feeds, four ounces;
Liquorice, three ounces;
Figs, one pound;
Pulp of tamarinds,
——— caffia,
——— prunes, each half a pound;
Double-refined fugar, two pounds and a half.

Powder the fenna with the coriander feeds, and fift out ten ounces of the mixed powder. Boil the remainder with the figs and liquorice, in four pints of (diftilled, *Lond.*) water, to one half; then prefs out and ftrain the liquor. Evaporate this ftrained liquor to the weight of about a pound and a half; then add the fugar, and make a fyrup; add this fyrup by degrees to the pulps, and, laftly, mix in the powder.

Dub.

Take of
Senna leaves, in very fine powder, four ounces;
Pulp of French prunes, one pound;
——— tamarinds, two ounces;
Molaffes, a pound and a half;
Effential oil of caraway, two drachms.

Boil the pulps in the fyrup to the thicknefs of honey; then add the powders, and, when the mixture is cooled, add the oil; then beat them all well together, fo as to form an electuary.

THIS electuary is a very convenient laxative, and has long been in common ufe among practitioners. Taken to the fize of a nutmeg or more, as occafion may require, it is an excellent laxative for loofening the belly in coftive habits.

The formula of the Dublin College is much more fimple and elegant than the other; but might be rendered ftill more fo, by fubftituting an equivalent quantity of fine fugar for the molaffes.

ELECTUARIUM CATECHU; olim, CONFECTIO JAPONICA. *Edin.*

Electuary of Catechu, commonly called *Japonic Confection.*

Take of
Extract of mimofa catechu, four ounces;

Kino,

Kino, three ounces;
Cinnamon,
Nutmeg, each one ounce;
Opium diffused in a sufficient quantity of Spanish white wine, one dram and a half;
Syrup of dried roses boiled to the consistence of honey, two pounds and a quarter.

Reduce the solids to powder; and having mixed them with the opium and syrup, make them into an electuary.

ELECTUARIUM CATECHU COMPOSITUM; olim, CONFECTIO JAPONICA. *Dub.*

Compound Electuary of Catechu, formerly *Japonic Confection.*

Take of
Catechu, four ounces;
Cinnamon,
Nutmeg, each one ounce;
Kino, three ounces;
Purified opium, diffused in a sufficient quantity of Spanish white wine, a drachm and a half;
Syrup of ginger;
Syrup of orange peel, of each, evaporated to the consistence of honey, fourteen ounces;
Tincture of Tolu, two drachms.

Mix them, so as to form an electuary.

THESE electuaries, which do not differ in any material particular, are extremely useful astringent medicines, and are often given in doses of a tea-spoonful, frequently repeated, in cases of diarrhœa, &c. Ten scruples contain one grain of opium.

ELECTUARIUM SCAMMONII.

Lond. Dub.

Electuary of Scammony.

Take of
Scammony, in powder, one ounce and a half;
Cloves,
Ginger, of each six drachms;
Essential oil of caraway, half a drachm;
(Syrup of roses, as much as is sufficient, *Lond.*)

Mix the spices, powdered together, with the syrup (of orange peel, *Dub.*); then add the scammony, and lastly the oil of caraway.

THIS electuary is a warm, brisk purgative. A drachm and a half contain fifteen grains of scammony.

ELECTUARIUM

ELECTUARIUM OPIATUM; olim, ELECTUARIUM THEBAICUM. *Edin.*

Opiate Electuary, commonly called *Thebaic Electuary.*

Take of

Aromatic powder, ſix ounces;

Virginian ſnake-root, in fine powder, three ounces;

Opium diffuſed in a ſufficient quantity of Spaniſh white wine, half an ounce;

Syrup of ginger, one pound.

Mix them, and form an electuary.

CONFECTIO OPIATA.

Lond.

Confection of Opium.

Take of

Hard purified opium, powdered, ſix drachms;

Long-pepper,

Ginger,

Caraway-ſeeds, of each two ounces;

Syrup of white poppy, boiled to the conſiſtence of honey, three times the weight of the whole.

Mix the purified opium with the ſyrup heated; then add the other ingredients, rubbed to powder.

THE action which theſe electuaries will produce on the living ſyſtem, is abundantly apparent from the nature of their ingredients. They are combinations of aromatics with opium; one grain of opium being contained in thirty-ſix of the London confection, and in forty-three of the Edinburgh electuary.

CHAP. XXXVIII.

TROCHES.

TROCHES and lozenges are compoſed of powders made up with glutinous ſubſtances into little cakes, and afterwards dried. This form is principally made uſe of for the more commodious exhibition of certain medicines, by fitting them to diſſolve ſlowly in the mouth, ſo as to paſs by degrees into the ſtomach; and hence theſe preparations have generally a conſiderable proportion of ſu-

gar

gar or other materials grateful to the palate. Some powders have likewise been reduced into troches, with a view to their preservation; though possibly for no very good reasons; for the moistening, and afterwards drying them in the air, must in this light be of greater injury, than any advantage accruing from this form can counterbalance.

TROCHISCI CARBONATIS CALCIS.

Edin.

Troches of Carbonate of Lime.

Take of

Carbonate of lime, four ounces;
Gum Arabic, one ounce;
Nutmeg, one drachm;
Double refined sugar, six ounces.

Powder them together, and form them with water into a mass for making troches.

TROCHISCI CRETÆ.

Lond.

Troches of Chalk.

Take of

Chalk, prepared, four ounces;
Crabs claws, prepared, two ounces;
Cinnamon, half an ounce;
Double-refined sugar, three ounces.

Powder them, and add mucilage of gum-arabic, and make troches.

THESE are used against acidity of the stomach, especially when accompanied with diarrhœa.

TROCHISCI GLYCYRRHIZÆ.

Lond. Dub.

Troches of Liquorice.

Take of

Extract of liquorice,
Double-refined sugar, of each ten (six, *Dub.*) ounces;
Tragacanth, powdered, three (two, *Dub.*) ounces.

Powder them thoroughly, and make them into troches with rose-water.

Edin.

Take of

Extract of liquorice,
Gum Arabic, each one part;
White sugar, two parts.

Dissolve

Diſſolve them in warm water, and ſtrain: then evaporate the ſolution over a gentle fire till it be of a proper conſiſtence for being formed into troches.

These are both agreeable pectorals, and may be uſed at pleaſure in tickling coughs. The former of theſe two receipts is the eaſieſt and beſt mode of making theſe troches. Refined extract of liquorice ſhould be uſed; and it is eaſily powdered in the cold, after it has been laid for ſome days in a dry and rather warm place. The ſolution and ſubſequent evaporation directed by the Edinburgh College is exceedingly troubleſome, and apt to give them an empyreumatic flavour.

TROCHISCI GLYCYRRHIZÆ cum OPIO.
Edin.
Liquorice Troches with Opium.

Take of
- Opium, two drachms;
- Tincture of Tolu, half an ounce;
- Common ſyrup, eight ounces;
- Extract of liquorice, ſoftened in warm water,
- Gum Arabic, in powder, of each five ounces.

Grind the opium well with the tincture, then add by degrees the ſyrup and extract; afterwards gradually ſprinkle upon the mixture the powdered gum Arabic. Laſtly, dry them ſo as to form a maſs to be made into troches, each weighing ten grains.

Trochisci Glycyrrhizæ Compositi.
Dub.
Compound Troches of Liquorice.

Take of
- Purified opium, two drachms;
- Balſam of Peru, one drachm;
- Tincture of myrrh, three drachms.

Triturate the opium in the balſam and tincture mixed, until it be perfectly diſſolved; then gradually add of
- Tincture of Tolu, two drachms;
- Extract of liquorice, ſoftened in warm water, nine ounces.

Beat them together thoroughly, gradually adding of gum Arabic, in powder, five ounces, and form the maſs into troches, weighing ten grains each.

These directions for preparing the above troches are ſo full and particular, that no further explanation is neceſſary. Six of the Dublin troches, and ſeven and a half of the Edinburgh, contain about one grain of opium. Theſe troches are medicines of approved efficacy in tickling coughs depending on an irritation of the fauces. Beſides the mechanical effect of the inviſcating matters

ters in involving acrid humours, or lining and defending the tender membranes, the opium muſt no doubt have a conſiderable ſhare, by more immediately diminiſhing the irritability of the parts themſelves.

TROCHISCI GUMMOSI.

Edin.

Gum Troches.

Take of

Gum Arabic, four parts;

Starch, one part;

Double-refined ſugar, twelve parts.

Powder them, and make them into a proper maſs with roſe-water, ſo as to form troches.

TROCHISCI AMYLI.

Lond.

Troches of Starch.

Take of

Starch, one ounce and a half;

Liquorice, ſix drachms;

Florentine orris, half an ounce;

Double-refined ſugar, one pound and a half.

Powder them, and by means of mucilage of gum-tragacanth, make troches.

They may be made, if ſo choſen, without the orris.

THESE compoſitions are very agreeable pectorals, and may be uſed at pleaſure. They are calculated for allaying the tickling in the throat which provokes coughing.

Although the compoſition in the London and Edinburgh pharmacopœias be ſomewhat different, yet their effects are very much the ſame.

TROCHISCI MAGNESIÆ.

Lond.

Troches of Magneſia.

Take of

Burnt magneſia, four ounces;

Double-refined ſugar, two ounces;

Ginger, powdered, one ſcruple.

Triturate them together, and with the addition of the mucilage of gum Arabic, make troches.

THESE are excellent antacids, and at the ſame time tend to keep the bowels open.

TROCHISCI NITRATIS POTASSÆ.
Edin.
Troches of Nitrate of Potaſs.

Take of
Nitrate of potaſs, one part;
Double-refined ſugar, three parts.
Rub together to powder and form them with mucilage of gum tragacanth into a maſs, to be divided into troches.

TROCHISCI NITRI.
Lond.
Troches of Nitre.

Take of
Purified nitre, powdered, four ounces;
Double-refined ſugar, powdered, one pound;
Tragacanth, powdered, ſix drachms.
With the addition of water, make troches.

THIS is a very agreeable form for the exhibition of nitre; though, when the ſalt is thus taken without any liquid, (if the quantity be conſiderable), it is apt to occaſion uneaſineſs about the ſtomach, which can only be prevented by large dilution with aqueous liquors.

TROCHISCI SULPHURIS.
Lond.
Troches of Sulphur.

Take of
Waſhed flowers of ſulphur, two ounces;
Double-refined ſugar, four ounces.
Rub them together, with a ſufficient quantity of the mucilage of quince-ſeeds, and make troches.

THIS compoſition is to be conſidered only as an agreeable form for the exhibition of ſulphur, no alteration or addition being here made to its virtues.

CHAP. XXXIX.
PILLS.

To this form are peculiarly adapted thoſe drugs which operate in a ſmall doſe, and whoſe nauſeous and offenſive taſte or ſmell require them to be concealed from the palate.

Pills dissolve the most difficultly in the stomach, and produce the most gradual and lasting effects, of all the internal forms. This is, in some cases, of great advantage; in others, it is a quality not at all desirable; and sometimes may even be of dangerous consequence, particularly with regard to emetics; which, if they pass the stomach undissolved, and afterwards exert themselves in the intestines, operate there as violent cathartics. Hence emetics are among us scarce ever given in pills; and hence to the resinous and difficultly soluble substances, saponaceous ones ought to be added, in order to promote their solution.

Gummy resins, and inspissated juices, are sometimes soft enough to be made into pills, without addition: where any moisture is requisite, spirit of wine is more proper than syrups or conserves, as it unites more readily with them, and does not sensibly increase their bulk. Light dry powders require syrup or mucilages: and the more ponderous, as the mercurial and other metallic preparations, thick honey, conserve, or extracts.

Light powders require about half their weight of syrup; or of honey, about three-fourths their weight; to reduce them into a due consistence for forming pills. Half a dram of the mass will make five or six pills of a moderate size.

Gums and inspissated juices, are to be first softened with the liquid prescribed: the powders are then to be added, and the whole beat thoroughly together, till they be perfectly mixed.

The masses for pills are best kept in bladders, which should be moistened now and then with some of the same kind of liquid that the mass was made up with, or with some proper aromatic oil.

PILULÆ ALOETICÆ.

Edin.

Aloetic Pills.

Take of
 Aloes in powder,
 Soap, equal parts.
Beat them with simple syrup into a mass fit for making pills.

Dub.

Take of
 Barbadoes aloes in powder one ounce;
 Extract of gentian, half an ounce;
 Ginger in powder two drachms.
Beat them together, and form a mass with jelly of soap, (gelatina saponis).

PILULÆ

PILULÆ ALOES COMPOSITÆ.

Lond.

Compound Pills of Aloes.

Take of
Socotorine aloes, powdered, one ounce ;
Extract of gentian, half an ounce ;
Oil of caraway seeds, two scruples ;
Syrup of ginger, as much as is sufficient.
Beat them together.

ALTHOUGH soap can scarcely be thought to facilitate the solution of the aloes in the stomach, as was supposed by Boerhaave and others, it is probably the most convenient substance that can be added to give it the proper consistence for making pills. When extract of gentian is triturated with aloes, they re-act upon each other, and become too soft to form pills, so that the addition of any syrup to the mass is perfectly unnecessary, unless at the same time some powder be added to give it consistency, as is done by the Dublin College. These pills have been much used as warm and stomachic laxatives: they are very well suited for the costiveness so often attendant on people of sedentary lives. Like other preparations of aloes, they are also used in jaundice, and in certain cases of obstructed menses. They are seldom used for producing full purging; but if this be required, a scruple or half a drachm of the mass may be made into pills of a moderate size for one dose.

PILULÆ ALOES, CUM ASSA FŒTIDA.

Edin.

Pills of Aloes, with Assa Fœtida.

Take of
Socotorine aloes,
Assa fœtida,
Soap, equal parts :
Form them into a mass with mucilage of gum Arabic.

THESE pills, in doses of about ten grains twice a-day, produce the most salutary effects in cases of dyspepsia, attended with flatulence and costiveness.

PILULÆ ALOES CUM COLOCYNTHIDE.

Edin.

Pills of Aloes with Colocynth.

Take of
Socotorine aloes,
Scammony, of each eight parts;
Colocynth, four parts;
Oil of cloves,
Sulphate of potass with sulphur, of each one part.

Reduce the aloes and ſcammony into a powder with the ſalt; then let the colocynth, beat into a very fine powder, and the oil, be added; laſtly, make it into a proper maſs with mucilage of gum Arabic.

In theſe pills we have a very uſeful and active purgative; and where the ſimple aloetic pill is not ſufficient for obviating coſtiveneſs, this will often effectually anſwer the purpoſe. Little of their activity can depend upon the ſalt which enters the compoſition. Theſe pills often produce a copious diſcharge in caſes of obſtinate coſtiveneſs, when taken to the extent only of five or ten grains; but they may be employed in much larger doſes. They are, however, ſeldom uſed with the view of producing proper catharſis. Half a dram of the maſs contains about five grains of the colocynth, ten of the aloes, and ten of the ſcammony.

PILULÆ ALOES cum MYRRHA.

Lond.

Pills of Aloes with Myrrh.

Take of
Socotorine aloes, two ounces;
Myrrh,
Saffron, of each one ounce;
Syrup of ſaffron, as much as is ſufficient.

Powder the aloes and myrrh ſeparately; and afterwards beat all the ingredients together into a maſs.

Edin.

Take of
Socotorine aloes, two ounces;
Myrrh, one ounce;
Saffron, half an ounce.

Beat them into a maſs with a proper quantity of ſyrup.

These pills have long continued in practice, without any other alteration than in the ſyrup with which the maſs is made up, and in the proportion of ſaffron. The virtues of this medicine may be eaſily underſtood from its ingredients. Theſe pills, given to the quantity of half a dram or two ſcruples, prove conſiderably cathartic, but they anſwer much better purpoſes in ſmaller doſes as laxatives or alteratives.

PILULÆ ASSÆ FŒTIDÆ COMPOSITÆ.

Edin.

Compound Pills of Aſſa fœtida.

Take of
Aſſa fœtida,
Galbanum,
Myrrh, each eight parts;

Rectified

Rectified oil of amber, one part.
Beat them into a mafs with fimple fyrup.

PILULÆ GALBANI COMPOSITÆ.
Lond.
Compound Pills of Galbanum.

Take of
Galbanum,
Opopanax,
Myrrh,
Sagapenum, of each one ounce;
Affa fœtida, half an ounce;
Syrup of faffron, as much as is fufficient.
Beat them together.

THESE pills are defigned for antihyfterics and emmenagogues, and are very well calculated for anfwering thofe intentions; half a fcruple, a fcruple, or more, may be taken every night, or oftener.

PILULÆ AMMONIARETI CUPRI.
Edin.
Pills of Ammoniaret of Copper.

Take of
Ammoniaret of copper, fixteen grains;
Bread-crumb, four fcruples;
Water of carbonate of ammonia, as much as may be fufficient.
Beat them into a mafs, to be divided into thirty-two equal pills.

EACH of thefe pills weighs about three grains, and contains fomewhat more than half a grain of the ammoniaret of copper. They feem to be the beft form of exhibiting this medicine.

PILULÆ HYDRARGYRI.
Edin.
Mercurial Pills.

Take of
Purified quickfilver,
Conferve of red rofes, of each one ounce;
Starch, two ounces.
Triturate the quickfilver with the conferve in a glafs-mortar, till the globules completely difappear, adding occafionally a little mucilage of gum Arabic; then add the ftarch, and beat the whole with water into a mafs, which is to be immediately divided into four hundred and eighty equal pills.

Lond.

Take of
Purified quickfilver, two drachms;

Conserve of roses, three drachms;
Liquorice, finely powdered, one drachm.

Rub the quicksilver with the conserve until the globules disappear; then, adding the liquorice powder, mix them together.

Dub.

Take of
Quicksilver,
Extract of liquorice, each three drachms;
Liquorice-root, in fine powder, a drachm and a half.

Triturate the quicksilver with the extract of liquorice, reduced with warm water to the consistence of honey, until its globules disappear entirely; then add the powder of liquorice, and as much water as shall be sufficient to form it into a mass.

The common mercurial pill is one of the best preparations of mercury, and may, in general, supersede most other forms of this medicine. In its preparation the mercury is minutely divided, and probably converted into the black oxide. To effect its mechanical division it must be triturated with some viscid substance. Soap, resin of guaiac, honey, extract of liquorice, manna, and conserve of roses, have all been at different times recommended. The soap and guaiac have been rejected on account of their being decomposed by the juices of the stomach; and the honey, because it was apt to gripe some people. With regard to the others, the grounds of selection are not well understood, perhaps the acid contained in the conserve of roses may contribute to the extinction of the mercury. We learn when the mercury is completely extinguished, most easily, by rubbing a very little of the mass with the point of the finger on a piece of paper, if no globules appear. As soon as this is the case, it is necessary to mix with the mass a proportion of some dry powder, to give it a proper degree of consistency. For this purpose, powder of liquorice-root has been commonly used; but it is extremely apt to become mouldy, and to cause the pills to spoil. The Edinburgh College have, therefore, with great propriety, substituted for it starch, which is a very inalterable substance, and easily procured at all times in a state of purity. It is necessary to form the mass into pills immediately, as it soon becomes hard. One grain of mercury is contained in four grains of the Edinburgh mass, in three of the London, and in two and a half of the Dublin. The dose of these pills must be regulated by circumstances; from two to six five-grain pills may be given daily.

PILULÆ

PILULÆ OPII.
Lond.
Opium Pills.

Take of
Hard purified opium, powdered, two drachms;
Extract of liquorice, one ounce.
Beat them until they are perfectly united.

PILULÆ OPIATÆ; olim, PILULÆ THEBAICÆ.
Edin.
Pills of Opium, or Thebaic Pills.

Take of
Opium, one part;
Extract of liquorice, feven parts;
Jamaica pepper, two parts.
Soften the opium, and extract feparately with diluted alcohol, and having beat them into a pulp, mix them; then add the pepper reduced to a powder; and, laftly, having beat them well together, form the whole into a mafs.

THESE two compofitions, though differing in feveral particulars, are yet fundamentally very much the fame. The firft is a fimple opiate, in which every five grains of the mafs contains one of opium; and on the opium alone can we fuppofe that the activity of the medicine depends.

The fecond contains one grain of opium in ten of the mafs.

PILULÆ RHEI COMPOSITÆ.
Edin.
Compound Pills of Rhubarb.

Take of
Rhubarb, one ounce;
Socotorine aloes, fix drachms;
Myrrh, half an ounce;
Effential oil of peppermint, half a drachm.
Make them into a mafs, with a fufficient quantity of fyrup of orange-peel.

THIS pill is intended for moderately warming and ftrengthening the ftomach, and gently opening the belly. A fcruple of the mafs may be taken twice a-day.

PILULÆ SCILLÆ.
Lond.
PILULÆ SCILLITICÆ.
Dub.
Squill Pills.

Take of
Frefh dried fquills, powdered, one drachm;

Ginger, powdered,
Soap, of each three drachms ;
Ammoniacum, two drachms ;
Syrup of ginger, as much as is sufficient.

Beat them together, (and form a mass with jelly of soap, *Dub.*)

Pilulæ Scilliticæ.
Edin.
Squill Pills.

Take of
Dried root of squills, in fine powder, one scruple ;
Gum ammoniac,
Lesser cardamom seeds, in powder,
Extract of liquorice, each one drachm.

Mix, and form them into a mass with simple syrup.

These are elegant and commodious forms for the exhibition of squills, whether for promoting expectoration, or with the other intentions to which that medicine is applied. As the virtue of the compound is derived chiefly from the squills, the other ingredients are often varied in extemporaneous prescription.

PILULÆ STIBII COMPOSITÆ; olim, Pilulæ Plummeri.
Dub.
Compound Antimonial Pills, formerly *Plummer's Pills.*

Take of
Precipitated sulphur of antimony,
Mild muriate of mercury, each three drachms ;
Extract of gentian,
Hard Spanish soap, each one drachm.

Let the mercury be triturated with the sulphur ; then add the extract, and form a mass with jelly of soap.

These pills were recommended to the attention of the public about forty years ago by Dr Plummer, whose name they long bore. He represented them in a paper which he published in the Edinburgh Medical Essays, as a very useful alterative ; and on his authority they were at one time much employed ; but they are now less extensively used than formerly.

CHAP. XL.

CATAPLASMS.

By cataplaſms are in general underſtood thoſe external applications which are brought to a due conſiſtence or form for being properly applied, not by means of oily or fatty matters, but by water or watery fluids. Of theſe not a few are had recourſe to in actual practice; but they are ſeldom prepared in the ſhops of the apothecaries; and in ſome of the beſt modern pharmacopœias no formulæ of this kind are introduced. The London and Dublin Colleges, however, although they have abridged the number of cataplaſms, ſtill retain a few; and it is not without ſome advantage that there are fixed forms for the preparation of them.

CATAPLASMA ALUMINIS.
Lond.
Cataplaſm of Alum.

Coagulum Aluminosum.
Dub.
Alum-Curd.

Take

The white of two eggs, (any quantity, *Dub.*)

Shake them with a piece of alum till they be coagulated.

This preparation is taken from Riverius. It is an uſeful aſtringent epithem for ſore, moiſt eyes. Where the complaint is violent, this preparation, after the inflammation has yielded a little to bleeding, is one of the beſt external remedies. It is to be ſpread on lint, and applied at bed-time.

CATAPLASMA CUMINI.
Lond.
Cataplaſm of Cummin.

Take of

Cummin ſeed, one pound;
Bay-berries,
Dry leaves of water germander, or ſcordium,
Virginian ſnake root, of each three ounces;
Cloves, one ounce.

Rub

Rub them all together to powder; and, with the addition of three times the weight of honey, make a cataplafm.

THIS was intended as a reformation of the *Theriaca Londinenfis*, which for fome time paft has been fcarcely otherwife ufed than as a warm cataplafm. In place of the numerous articles which formerly entered that compofition, only fuch of its ingredients are retained as contribute moft to this intention: But even the article from which it now derives its name, as well as feveral others which ftill enter, probably contribute very little to any medical properties it may poffefs.

CATAPLASMA SINAPEOS.
Lond.
CATAPLASMA SINAPINUM.
Dub.
Muftard Cataplafm.

Take of
Muftard-feed, powdered,
Crumb of bread, of each half a pound;
Vinegar, as much as is fufficient.
Mix and make a cataplafm.

CATAPLASMS of this kind are commonly known by the name of *Sinapifms*. They were formerly frequently prepared in a more complicated ftate, containing garlic, black foap, and other fimilar articles; but the above fimple form will anfwer every purpofe which they are capable of accomplifhing. They are employed only as ftimulants; they often inflame the part and raife blifters, but not fo perfectly as cantharides. They are frequently applied to the foles of the feet in the low ftate of acute difeafes, for raifing the pulfe and relieving the head. The chief advantage they have depends on the fuddennefs of their action.

CHAP. XLI.

LINIMENTS, OINTMENTS, CERATES, AND PLASTERS.

THESE are all combinations of fixed oil, or animal fat, with other fubftances, and differ from each other only in confiftence. Deyeux has, indeed, lately defined plafters to be combinations of oil with metallic oxides; but as this would comprehend many of our

our prefent ointments, and exclude many of our plafters, we fhall adhere to the old meaning of the terms.

Liniments are the thinneft of thefe compofitions, being only a little thicker than oil.

Ointments have generally a degree of confiftence like that of butter.

Cerates are firmer, and contain a larger proportion of wax.

Plafters are the moft folid, and when cold fhould be firm, and fhould not adhere to the fingers; but when gently heated, fhould become fufficiently foft to fpread eafily, and fhould then adhere to the fkin. Plafters derive their firmnefs, either from a large proportion of wax, or from the prefence of fome metallic oxide, fuch as that of lead.

To prevent repetition, the Edinburgh College give the following canon for the preparation of thefe fubftances.

In making thefe compofitions, the fatty and refinous fubftances are to be melted with a gentle heat, and then conftantly ftirred, adding, at the fame time, the dry ingredients, if there be any, until the mixture, on cooling, becomes ftiff. (*Edin.*)

ADIPIS SUILLÆ, SEVIque OVILLI, PRÆPARATIO.

Lond.

The Preparation of Hog's-lard and Mutton-fuet.

Cut them into pieces, and melt them over a flow fire; then feparate them from the membranes by ftraining.

THESE articles had formerly a place alfo among the preparations of the Edinburgh College. But now they introduce them only into their lift of the Materia Medica; as the apothecary will in general find it more for his intereft to purchafe them thus prepared, than to prepare them for himfelf; for the procefs requires to be very cautioufly conducted, to prevent the fat from burning or turning black.

LINIMENTUM SIMPLEX.

Edin.

Simple Liniment.

Take of

Olive oil, four parts;

White wax, one part.

THIS confifts of the fame articles which form the Unguentum fimplex of the Edinburgh Pharmacopœia, but merely in a different proportion, fo as to render the compofition thinner; and where a thin confiftence is requifite, this may be confidered as a very elegant and ufeful application.

UNGUENTUM ADIPIS SUILLÆ.

Lond.

Ointment of Hog's-lard.

Take of
Prepared hog's-lard, two pounds ;
Rose-water, three ounces.

Beat the lard with the rose water until they be mixed ; then melt the mixture with a slow fire, and set it apart that the water may subside ; after which, pour off the lard from the water, constantly stirring until it be cold.

In the last edition of the London Pharmacopœia, this was styled *Unguentum simplex*, the name given by the Edinburgh College to the following.

UNGUENTUM SIMPLEX.

Edin.

Simple Ointment.

Take of
Olive oil, five parts ;
White wax, two parts.

Both these ointments may be used for softening the skin and healing chaps. The last is, however, preferable, as being more steadily of one uniform consistence. For the same reason it is also to be preferred as the basis of other more compounded ointments.

UNGUENTUM SPERMATIS CETI.

Lond. Dub.

Ointment of Spermaceti.

Take of
Spermaceti, six drachms ;
White wax, two drachms ;
Olive oil, three ounces.

Melt them together over a slow fire, stirring them constantly and briskly until they be cold.

This had formerly the name of *Linimentum album*, and it is perhaps only in consistence that it can be considered as differing from the unguentum simplex, already mentioned, or the ceratum simplex, afterwards to be taken notice of.

UNGUENTUM CERÆ.

Lond. Dub.

Wax Ointment.

Take of
White wax, four ounces ;
Spermaceti, three ounces ;
Olive oil, one pint, (fourteen ounces, *Dub.*)

Stir

Stir them, after being melted with a ſlow fire, conſtantly and briſkly, until cold.

THIS ointment had formerly the title of *Unguentum album* in the London Pharmacopæia. It differs very little from the Unguentum ſimplex of the Edinburgh Pharmacopœia, and in nothing from the Unguentum ſpermatis ceti of the other Pharmacopœias, excepting that in this ointment the proportion of wax is four times greater. It is an uſeful cooling ointment for excoriations and other frettings of the ſkin.

CERATUM SIMPLEX.

Edin.

Simple Cerate.

Take of

Olive oil, ſix parts;
White wax, three parts;
Spermaceti, one part.

THIS differs from the ſimple ointment in containing a greater proportion of wax to the oil, and in the addition of the ſpermaceti. But by theſe means it obtains only a more firm conſiſtence, without any eſſential change of properties.

CERATUM SPERMATIS CETI.

Lond. Dub.

Cerate of Spermaceti.

Take of

Spermaceti, half an ounce;
White wax, two ounces;
Olive oil, four ounces.

Melt them together, and ſtir until the cerate be cold.

THIS had formerly the name of *Ceratum album*, and it differs in nothing from the Unguentum ſpermatis ceti, or Linimentum album, as it was formerly called, excepting in conſiſtence, both the wax and the ſpermaceti bearing a greater proportion to the oil.

UNGUENTUM RESINÆ FLAVÆ.

Lond. Dub.

Ointment of Yellow Reſin.

Take of

Yellow reſin,
Yellow wax, of each one pound;
Olive oil, one pint, (ſeven ounces, *Dub.*)

Melt the reſin and wax with a ſlow fire; then add the oil and ſtrain the mixture while hot.

UNGUENTUM

UNGUENTUM RESINOSUM.

Edin.

Resinous Ointment.

Take of
Hog's-lard, eight parts;
White resin, five parts;
Yellow wax, two parts.

THESE are commonly employed in dressings, for digesting, cleansing, and incarnating wounds and ulcers.

CERATUM RESINÆ FLAVÆ.

Lond. Dub.

Cerate of Yellow Resin.

Take of
Ointment of yellow resin, half a pound;
Yellow wax, one ounce.
Melt them together, and make a cerate.

THIS had formerly the name of *Unguentum citrinum.* It is no otherwise different from the Yellow basilicum, or Ungentum resinæ flavæ, then being of a stiffer consistence, which renders it for some purposes more commodious.

EMPLASTRUM CERÆ.

Dub.

EMPLASTRUM CERÆ COMPOSITUM.

Lond.

Compound Wax Plaster.

Take of
Yellow wax,
Prepared mutton-suet, of each three pounds;
Yellow resin, one pound.
Melt them together, and strain the mixture while it is fluid.

EMPLASTRUM SIMPLEX, SIVE EMPLASTRUM CEREUM.

Edin.

Simple or Wax Plaster.

Take of
Yellow wax, three parts;
Mutton-suet,
White resin, each two parts.

THIS plaster had formerly the title of *Emplastrum attrahens,* and was chiefly employed as a dressing after blisters, to support some discharge, and it is a very well contrived plaster for that purpose. Sometimes, however, it irritates too much on account of the resin; and hence, when designed only for dressing blisters, the

resin

resin ought to be entirely omitted, unless where a continuance of the pain and irritation, excited by the vesicatory, is required. Indeed, plasters of any kind are not very proper for dressing blisters; their consistence makes them sit uneasy, and their adhesiveness renders the taking them off painful. Cerates, which are softer and less adhesive, appear much more eligible: the Ceratum spermatis ceti will serve for general use; and for some particular purposes, the Ceratum resinæ flavæ may be applied.

UNGUENTUM ELEMI.

Dub.

UNGUENTUM ELEMI COMPOSITUM.

Lond.

Compound Ointment of Elemi.

Take of

Elemi, one pound;
Turpentine, ten ounces;
Mutton-suet, prepared, two pounds;
Olive-oil, two ounces.

Melt the elemi with the suet; and having removed it from the fire, mix it immediately with the turpentine and oil; after which strain the mixture.

This ointment, formerly known by the name of *Linimentum Arcæi*, has long been used for digesting, cleansing, and incarnating; and for these purposes is preferred by some surgeons to all the other compositions of this kind.

UNGUENTUM PICIS.

Lond. Dub.

Tar Ointment.

Take of

Tar,
Mutton-suet, prepared, of each half a pound.

Melt them together, and strain.

Edin.

Take of

Tar, five parts;
Yellow wax, two parts.

THESE compositions cannot be considered as differing essentially from each other. As far as they have any peculiar activity, this entirely depends on the tar. From the empyreumatic oil and saline matters which it contains, it is undoubtedly of some activity. Accordingly, it has been successfully employed against some cutaneous affections, particularly tinea capitis.

EMPLASTRUM

EMPLASTRUM PICIS BURGUNDICÆ.

Dub.

EMPLASTRUM PICIS COMPOSITUM.

Lond.

Compound Burgundy Pitch Plaster.

Take of
 Burgundy-pitch, two pounds;
 Ladanum, (Galbanum, *Dub.*) one pound;
 Yellow resin,
 Yellow wax, of each four ounces;
 Expressed oil of mace, one ounce.

To the pitch, resin, and wax, melted together, add first the ladanum, (galbanum, *Dub.*), and then the oil of mace.

EMPLASTRUM CUMINI.

Lond.

Cummin Plaster.

Take of
 Cummin-seeds,
 Caraway-seeds,
 Bay-berries, of each three ounces;
 Burgundy-pitch, three pounds;
 Yellow wax, three ounces.

Melt the pitch and wax together, and mix with them the rest of the ingredients, powdered, and make a plaster.

THIS plaster stands recommended as a moderately warm discutient; and is directed by some to be applied to the hypogastric region, for strengthening the viscera, and expelling flatulencies: but it is a matter of great doubt, whether it derives any virtue, either from the article from which it is named, or from the caraway seeds or bay-berries which enter its composition.

EMPLASTRUM LADANI COMPOSITUM.

Lond.

Compound Ladanum Plaster.

Take of
 Ladanum, three ounces;
 Frankincense, one ounce;
 Cinnamon, powdered,
 Expressed oil of mace, of each half an ounce;
 Essential oil of mint, one drachm.

To the melted frankincense, add first the ladanum, softened by heat; then the oil of mace. Mix these afterwards with the cinnamon and oil of mint, and beat them together, in a warm mortar, into a plaster. Let it be kept in a close vessel.

THIS has been considered as a very elegant stomach plaster. It is contrived so as to be easily made occasionally, (for these kinds of of compoſitions, on account of their volatile ingredients, are not fit for keeping), and to be but moderately adheſive, ſo as not to offend the ſkin, and that it may, without difficulty, be frequently renewed; which theſe ſorts of applications, in order to their producing any conſiderable effect, require to be.

UNGUENTUM SAMBUCI.

Lond.

UNGUENTUM SAMBUCINUM.

Dub.

Elder Ointment.

Take of

Elder-flowers, four pounds:
Mutton ſuet, prepared, three pounds;
Olive oil, one pint.

Boil the flowers in the ſuet and oil, till they be almoſt criſp; then ſtrain with expreſſion.

COMPOSITIONS of this kind were formerly very frequent; but vegetables, by boiling in oils, impart to them nothing but a little mucilage, which changes the greaſy oils to drying oils, and any reſin they may contain; but that alſo is never in ſuch quantity as to affect the nature of the oil. We, therefore, do not ſuppoſe that this ointment poſſeſſes any properties different from a ſimple ointment of the ſame conſiſtency.

UNGUENTUM CANTHARIDIS.

Lond.

UNGUENTUM CANTHARIDUM.

Dub.

Ointment of Spaniſh Flies.

Take of

Spaniſh flies, powdered, two ounces;
Diſtilled water, eight ounces, (water, nine ounces, *Dub.*)
Ointment of yellow reſin, eight ounces.

Boil the water with the Spaniſh flies to one-half, and ſtrain. To the ſtrained liquor add the ointment of yellow reſin. Evaporate this mixture in a water-bath, ſaturated with ſea-ſalt, to the thickneſs of an ointment.

UNGUENTUM INFUSI MELOES VESICATORII; vulgo, UNGUENTUM EPISPASTICUM MITIUS.

Edin.

Ointment of Infuſion of Cantharides, commonly called *Mild Epiſpaſtic Ointment.*

Take of

Cantharides,
White reſin,
Yellow wax, each one part;

Hogs-lard,
Venice turpentine, each two parts;
Boiling water, four parts.

Infuse the cantharides in the water for a night; then strongly press out and strain the liquor, and boil it with the lard till the water be consumed; then add the resin and wax; and when these are melted, take the ointment off the fire and add the turpentine.

THESE ointments, containing the soluble parts of the cantharides, uniformly blended with the other ingredients, are more commodious, and in general occasion less pain, though little less effectual in their action, than the compositions with the fly in substance This, however, does not uniformly hold; and accordingly the Edinburgh College, with propriety, introduce the following.

UNGUENTUM PULVERIS MELOES VESICATORII; olim, UNGUENTUM EPISPASTICUM FORTIUS.

Edin.

Ointment of the Powder of Spanish Flies, formerly *Stronger Epispastic Ointment.*

Take of
Resinous ointment, seven parts;
Powdered cantharides, one part.

THIS ointment is employed in the dressings for blisters, intended to be made *perpetual,* as they are called, or to be kept running for a considerable time, which in many chronic, and some acute cases, is of great service. Particular care should be taken, that the cantharides employed in these compositions be reduced into very subtile powder, and that the mixtures be made as equal and uniform as possible. But with these precautions, there are some particular habits in which this ointment operates with even less pain than the former, while at the same time it is generally more effectual.

CERATUM CANTHARIDIS.

Lond. Dub.

Cerate of Cantharides.

Take of
Cerate of spermaceti, softened with heat, six drachms, (one ounce, *Dub.*)
Spanish flies, finely powdered, one drachm, (four scruples, *Dub.*)
Mix them.

Under this form cantharides may be made to act to any extent that is requisite. It may supply the place either of the blistering plaster or ointment; and there are cases in which it is preferable to either. It is particularly more convenient than the emplastrum cantharidum,

cantharidum, where the ſkin to which the bliſter is to be applied is previouſly much affected, as in caſes of ſmall-pox; and in ſupporting a drain under the form of iſſue, it is leſs apt to ſpread than the ſofter ointment.

EMPLASTRUM CANTHARIDIS.

Lond. Dub.

Plaſter of Spaniſh Flies.

Take of
 Spaniſh flies, finely powdered, one pound;
 Wax plaſter, two pounds;
 Prepared hogs-lard, half a pound.

Having melted the plaſter and lard, ſprinkle and mix in the flies, a little before they become firm.

EMPLASTRUM MELOES VESICATORII; olim, EMPLASTRUM VESICATORIUM. *Edin.*

Plaſter of Spaniſh Flies, formerly *Bliſtering Plaſter.*

Take of
 Mutton ſuet,
 Yellow wax,
 White roſin,
 Cantharides, each equal weights.

Beat the cantharides into a fine powder, and add them to the other ingredients, previouſly melted, and removed from the fire.

Both theſe formulæ are very well ſuited to anſwer the intention in view, that of exciting bliſters; for both are of a proper conſiſtence and ſufficient degree of tenacity, which are here the only requiſites. Cantharides of good quality, duly applied to the ſkin, never fail of producing bliſters. When, therefore, the deſired effect does not take place, it is to be aſcribed to the flies either being faulty at firſt, or having their activity afterwards deſtroyed by ſome accidental circumſtance; ſuch as too great heat in forming, or in ſpreading the plaſter, or the like.

EMPLASTRUM MELOES VESICATORII COMPOSITUM.

Edin.

Compound Plaſter of Spaniſh Flies.

Take of
 Burgundy pitch,
 Cantharides, each twelve parts;
 Yellow wax, four parts;
 Sub-acetite of copper, two parts;
 Muſtard-ſeed,
 Black pepper, each one part.

Having firſt melted the pitch and wax, add the turpentine, and to theſe, in fuſion, and ſtill hot, add the other ingredients, reduced to a fine powder and mixed, and stir the whole carefully together, so as to form a plaster.

This is supposed to be the most infallible blistering plaster. It certainly contains a sufficient variety of stimulating ingredients.

UNGUENTUM HELLEBORI ALBI.

Lond. Dub.

Ointment of White Hellebore.

Take of

White hellebore, one ounce;

Ointment of hogs-lard, (hogs-lard, *Dub.*) four ounces;

Essence of lemon, half a scruple.

Mix, and make an ointment.

White hellebore externally applied has long been celebrated in the cure of cutaneous diseases.

UNGUENTUM SULPHURIS.

Lond. Dub.

Sulphur Ointment.

Take of

Ointment of hogs-lard, half-a-pound, (five ounces, *Dub.*)

Flowers of sulphur, four (three, *Dub.*) ounces.

Mix them, and make an ointment.

Edin.

Take of

Hogs-lard, four parts;

Sublimed sulphur, one part.

To each pound of this ointment add,

Volatile oil of lemons, or

——————— of lavender, half a drachm.

Sulphur is a certain remedy for the itch, more safe than mercury. A pound of ointment serves for four unctions. The patient is to be rubbed every night, a fourth part of the body at each time. Though the disease may be thus cured by a single application, it is in general advisable to touch the parts most affected for a few nights longer, and to conjoin with the frictions the internal use of sulphur.

UNGUENTUM ACIDI NITROSI.

Edin.

Ointment of Nitrous Acid.

Take of

Hogs-lard, one pound;

Nitrous acid, six drachms.

Mix the acid gradually with the melted axunge, and diligently beat the mixture as it cools.

The

The axunge in this ointment ſeems to be oxidized; for during the action of the acid upon it, there is a great deal of nitric oxide gas diſengaged. It acquires a yellowiſh colour, and a firmer conſiſtency; and forms an excellent and cheap ſubſtitute, in ſlight herpetic and other cutaneous affections, for the ointment of nitrate of mercury.

EMPLASTRUM OXIDI PLUMBI SEMIVITREI; olim, EMPLASTRUM COMMUNE. *Edin.*

Plaſter of the Semi-vitrified Oxide of Lead, formerly *Common Plaſter.*

Take of
Semi-vitrified oxide of lead, one part;
Olive-oil, two parts.

Boil them, adding water, and conſtantly ſtirring the mixture till the oil and litharge be formed into a plaſter.

EMPLASTRUM LITHARGYRI.

Lond. Dub.

Litharge Plaſter.

Take of
Litharge, in very fine powder, five pounds;
Olive oil, a gallon, (nine pounds, *Dub.*)
Water, two pints, (two pounds, *Dub.*)

Boil them with a ſlow fire, conſtantly ſtirring until the oil and litharge unite, ſo as to form a plaſter. (But it will be proper to add more boiling water, if the water that was firſt added be nearly conſumed before the end of the proceſs. *Lond.*)

Oxides of lead, boiled with oils, unite with them into a plaſter of an excellent conſiſtence, and which makes a proper baſis for ſeveral other plaſters.

In the boiling of theſe compoſitions, a quantity of water muſt be added, to prevent the plaſter from burning and growing black. Such water as it may be neceſſary to add during the boiling, muſt be previouſly made hot; for cold liquor would not only prolong the proceſs, but likewiſe occaſion the matter to explode, and be thrown about with violence, to the great danger of the operator: This accident will equally happen upon the addition of hot water, if the plaſter be extremely hot. It is therefore better to remove it from the fire a little before each addition of water.

Theſe plaſters, which have been long known under the name of Diachylon, are common applications in excoriations of the ſkin, ſlight fleſh wounds, and the like. They keep the part ſoft and ſomewhat warm, and defend it from the air, which is all that can be expected in theſe caſes from any plaſter.

EMPLASTRUM RESINOSUM; vulgo, EMPLASTRUM ADHÆSIVUM. *Edin.*

Resinous Plaster, commonly called *Adhesive Plaster.*

Take of
- Plaster of semi-vitrified oxide of lead, five parts;
- White resin, one part.

Melt them together, and make a plaster.

EMPLASTRUM LITHARGYRI CUM RESINA. *Lond.*

Litharge Plaster with Resin.

Take of
- Litharge plaster, three pounds;
- Yellow resin, half a pound.

To the litharge plaster, melted with a very slow fire, add the powdered resin; mix them well, and make a plaster.

THESE plasters are chiefly used as adhesives for keeping on other dressings, for retaining the edges of recent wounds together, when we are endeavouring to cure them by the first intention, and for giving mechanical support to new flesh, and contracting the size of ulcers, in the manner recommended by Mr Baynton, for the cure of ulcers of the legs.

EMPLASTRUM ASSÆ FOETIDÆ; vulgo, EMPLASTRUM ANTIHYSTERICUM. *Edin.*

Plaster of Assa fœtida, commonly called, *Antihysteric Plaster.*

Take of
- Plaster of semi-vitrified oxide of lead,
- Assa fœtida, each two parts;
- Galbanum,
- Yellow wax, each one part.

THIS plaster is applied to the umbilical region, or over the whole abdomen, in hysteric cases; and sometimes with good effect; but probably more from its effect as giving an additional degree of heat to the part, than from any influence derived from the fetid gums.

EMPLASTRUM GUMMOSUM. *Edin.*

Gum Plaster.

Take of
- Plaster of semi-vitrified oxide of lead, eight parts;
- Gum ammoniacum,
- Galbanum,
- Yellow wax, each one part.

EMPLASTRUM

EMPLASTRUM LITHARGYRI COMPOSITUM.

Lond.

Compound Plaſter of Litharge.

Take of

Litharge-plaſter, three pounds;
Strained galbanum, eight ounces;
Turpentine, ten drachms;
Frankincenſe, three ounces.

The galbanum and turpentine being melted, mix with them the powdered frankincenſe, and afterwards the litharge-plaſter, melted alſo with very ſlow fire, and make a plaſter.

Both theſe plaſters are uſed as digeſtives and ſuppuratives; particularly in abſceſſes, after a part of the matter has been maturated and diſcharged, for ſuppurating or diſcuſſing the remaining hard part; but it is very doubtful whether they derive any advantage from the gums entering their compoſition.

CERATUM SAPONIS.

Lond. Dub.

Soap-Cerate.

Take of

Soap, (hard Spaniſh ſoap, *Dub.*) eight ounces;
Yellow wax, ten ounces;
Litharge, powdered, one pound;
Olive-oil, one pint, (fourteen ounces, *Dub.*)
Vinegar, one gallon, (eight pounds, *Dub.*)

Boil the vinegar with the litharge, over a ſlow fire, conſtantly ſtirring, until the mixture unites and thickens; then mix in the other articles, and make a cerate.

Notwithstanding the name, this cerate may rather be conſidered as another ſaturnine application; its action depending very little on the ſoap.

EMPLASTRUM SAPONIS.

Lond.

Emplastrum Saponaceum.

Dub.

Soap-Plaſter.

Take of

Soap, one part;
Litharge-plaſter, ſix parts.

Mix the ſoap with the melted litharge-plaſter, and boil them to the thickneſs of a plaſter.

Emplastrum Saponaceum.
Edin.
Saponaceous Plaster.

Take of
Plaster of semi-vitrified oxide of lead, four parts;
Gum plaster, two parts;
Soap, sliced, one part.
To the plasters, melted together, add the soap; then boil for a little, so as to form a plaster.

These plasters have been supposed to derive a resolvent power from the soap; and in the last, the addition of the gums is supposed to promote the resolvent virtue of the soap: but it is a matter of great doubt, whether they derive any material advantage from either addition.

EMPLASTRUM THURIS COMPOSITUM.
Lond.
Compound Frankincense Plaster.

Take of
Frankincense, half a pound;
Dragons-blood, three ounces;
Litharge-plaster, two pounds.
To the melted litharge-plaster add the rest, powdered.

It has been supposed that plasters composed of styptic medicines constringe and strengthen the part to which they are applied, but on no very just foundation; for plasters in general relax rather than astringe, the unctuous ingredients necessary in their composition counteracting and destroying the effect of the others.

If constantly worn with a proper bandage, it will, in children, frequently do service, though, perhaps, not so much from any strengthening quality of the ingredients, as from its being a soft, close, and adhesive covering.

UNGUENTUM OXIDI PLUMBI ALBI; vulgo, Unguentum Album. *Edin.*
Ointment of White Oxide of Lead, formerly *White Ointment.*

Take of
Simple ointment, five parts;
White oxide of lead, one part.

This is a cooling deficcative ointment, of great use when applied to excoriated surfaces.

UNGUENTUM

UNGUENTUM ACETITIS PLUMBI; vulgo, UNGUENTUM SATURNINUM. *Edin.*

Ointment of Acetite of Lead, formerly *Saturnine Ointment.*

Take of
Simple ointment, twenty parts.
Acetite of lead, one part.

UNGUENTUM CERUSSÆ ACETATÆ.
Lond. Dub.
Ointment of Acetated Cerufe.

Take of
Acetated cerufe, two drachms;
White wax, two ounces;
Olive-oil, half-a-pint, (half a pound, *Dub.*)

Rub the acetated cerufe, previoufly powdered, with fome part of the olive oil; then add it to the wax, melted with the remaining oil. Stir the mixture until it be cold.

THESE are alfo excellent cooling ointments, of the greateft ufe in many cafes.

CERATUM LITHARGYRI ACETATI COMPOSITUM.
Lond.
CERATUM LITHARGYRI ACETATI.
Dub.
Compound Cerate of Acetated Litharge.

Take of
Water of acetated litharge, two ounces and a half;
Yellow wax, four ounces;
Olive-oil, nine ounces;
Camphor, half a drachm.

Rub the camphor with a little of the oil. Melt the wax with the remaining oil, and as foon as the mixture begins to thicken, pour in by degrees the water of acetated litharge, and ftir conftantly until it be cold; then mix in the camphor previoufly rubbed with oil.

THIS application has been rendered famous by the recommendations of Mr Goulard. It is unqueftionably in many cafes very ufeful; it cannot, however, be confidered as varying effentially from the faturnine ointments, already mentioned. It is employed with nearly the fame intentions, and differs from them chiefly in confiftence.

UNGUENTUM HYDRARGYRI; vulgo, UNGUENTUM COERULEUM. *Edin.*

Ointment of Quickfilver, commonly called *Blue Ointment.*

Take of
Quickfilver,

Mutton

Mutton-fuet, each one part;
Hogs-lard, three parts.

Rub them carefully in a mortar till the globules entirely difappear.

This ointment may alfo be made with double or treble the quantity of quickfilver.

UNGUENTUM HYDRARGYRI FORTIUS.

Lond. Dub.

Stronger Mercurial Ointment.

Take of
Purified quickfilver, two pounds;
Prepared hog's-lard, twenty-three ounces;
Prepared mutton-fuet, one ounce.

Firft triturate the quickfilver with the fuet and a little of the hogslard, until the globules be extinguifhed; then add the reft of the lard, and form it into an ointment.

UNGUENTUM HYDRARGYRI MITIUS.

Lond. Dub.

Milder Mercurial Ointment.

Take of
The ftronger ointment of quickfilver, one part;
Hogs-lard, prepared, two parts.

Mix them.

UNGUENTUM OXIDI HYDRARGYRI CINEREI.

Edin.

Ointment of Grey Oxide of Quickfilver.

Take of
Grey oxide of quickfilver, one part;
Hogs-lard, three parts.

THESE ointments are principally employed, not with a view to their topical action, but with the intention of introducing mercury in an active ftate into the circulating fyftem; which may be effected by gentle friction on the found fkin of any part, particularly on the infide of the thighs or legs. For this purpofe, thefe fimple ointments are much better fuited than the more compounded ones with turpentine and the like, formerly employed. For, by any acrid fubftance, topical inflammation is apt to be excited, preventing further friction, and giving much uneafinefs. To avoid this, it is neceffary, even with the mildeft and weakeft ointment, to change occafionally the place at which the friction is performed.

It is requifite that the ointments, in which the mercury is extinguifhed by trituration, fhould be prepared with very great care: for upon the degree of triture which has been employed, the

activity

activity of the mercury very much depends. The addition of the mutton-suet, now adopted by both Colleges, is an advantage to the ointment, as it prevents it from running into the state of oil, which the hogs-lard alone, in warm weather, or in a warm chamber, is sometimes apt to do, and which is followed by a separation of parts. We are even inclined to think, that the proportion of suet directed by the London College is too small for this purpose, and indeed seems to be principally intended for the more effectual triture of the mercury: But it is much more to be regretted, that in a medicine of such activity, the Colleges should not have directed the same proportion of mercury to the fatty matter.

If the efficacy of the ointment prepared with the grey oxide were sufficiently established, the facility and certainty of its preparation would be attended with great advantages.

EMPLASTRUM HYDRARGYRI.

Edin.

Plaster of Quicksilver.

Take of
- Olive-oil,
- White resin, each one part;
- Quicksilver, three parts;
- Plaster of semi-vitrified oxide of lead, six parts.

Melt the oil and resin together, and when this mixture is cold, let the quicksilver be rubbed with it till the globules disappear; then add by degrees the litharge plaster, melted, and let the whole be accurately mixed.

EMPLASTRUM AMMONIACI CUM HYDRARGYRO.

Lond.

Plaster of Gum Ammoniac with Quicksilver.

Take of
- Gum ammoniac, strained, one pound;
- Purified quicksilver, three ounces;
- Sulphurated oil, a drachm, or as much as may be necessary.

Triturate the quicksilver with the sulphurated oil, until its globules disappear; then gradually add the gum ammoniac melted, and mix them.

EMPLASTRUM LITHARGYRI CUM HYDRARGYRO.

Lond.

Litharge-Plaster with Quicksilver.

Take of
- Litharge-plaster, one pound;
- Purified quicksilver, three ounces;
- Sulphurated oil, one drachm, or what is sufficient.

Make

Make the plaster in the same manner as the ammoniacum plaster with quickfilver.

These mercurial plasters are considered as powerful resolvents and discutients, acting with much greater certainty for these intentions than any composition of vegetable substances alone; the mercury exerting itself in a considerable degree, and being sometimes introduced into the habit in such quantity as to affect the mouth. Pains in the joints and limbs from a venereal cause, nodes, tophi, and beginning indurations, are said to yield to them sometimes.

UNGUENTUM CALCIS HYDRARGYRI ALBI.

Lond.

Ointment of the White Calx of Quickfilver.

Take of

The white calx of quickfilver, one drachm;
Ointment of hogs-lard, one ounce and a half;

Mix, and make an ointment.

This is a very elegant mercurial ointment, and frequently made use of in the cure of obstinate cutaneous affections.

UNGUENTUM OXIDI HYDRARGYRI RUBRI.

Edin.

Ointment of Red Oxide of Quickfilver.

Take of

Red oxide of quickfilver by nitrous acid, one part;
Hogs-lard, eight parts.

This is an excellent stimulating ointment, often of very great service in indolent ill-conditioned sores, when we wish to excite them to greater action. If it prove too stimulating, it may be diluted with axunge; and in this state it is often applied to the eyelids in chronic ophthalmia.

UNGUENTUM NITRATIS HYDRARGYRI; vulgo, UNGUENTUM CITRINUM.

Edin.

Ointment of Nitrate of Quickfilver, commonly called *Yellow Ointment.*

UNGUENTUM HYDRARGYRI NITRATI.

Lond. Dub.

Ointment of Nitrated Quickfilver.

Take of

Quickfilver, one part;

Nitrous

Nitrous acid, two parts;
Hogs-lard, twelve parts.

Diſſolve the quickſilver in the nitrous acid, by digeſtion in a ſand-heat; and, while the ſolution is very hot, mix with it the lard, previouſly melted by itſelf, and juſt beginning to grow ſtiff. Stir them briſkly together in a marble-mortar, ſo as to form the whole into an ointment.

UNGUENTUM NITRATIS HYDRARGYRI MITIUS.
Edin.
Milder Ointment of Nitrate of Quickſilver.

This is prepared in the ſame way, with three times the quantity of hogs-lard.

Although the activity of the nitrated quickſilver be very conſiderably moderated by the animal fat with which it is afterwards united, yet it ſtill affords us a very active ointment; and, as ſuch, it is frequently employed with ſucceſs in cutaneous and other topical affections. In this condition, however, the mercury does not ſo readily enter the ſyſtem, as in the preceding form. Hence it may even be employed in ſome caſes with more freedom; but in other inſtances it is apt to excoriate and inflame the parts. On this account a reduction of its ſtrength is ſometimes requiſite; and it is often alſo neceſſary, from the hard conſiſtence which it gradually acquires, in conſequence of the action of the acid on the lard.

UNGUENTUM SUB-ACETITIS CUPRI.
Edin.
Ointment of Sub-Acetite of Copper,

Take of
Reſinous ointment, fifteen parts;
Sub-acetite of copper, one part.

This ointment is uſed for cleanſing ſores, and keeping down fungous fleſh. Where ulcers continue to run from a weakneſs in the veſſels of the parts, the tonic powers of copper promiſe conſiderable advantage.

It is alſo frequently uſed with advantage in caſes of ophthalmia, depending on ſcrofula, where the palpebræ are principally affected; but when it is to be thus applied, it is in general requiſite that it ſhould be ſomewhat weakened by the addition of a proportion of ſimple ointment or hogs-lard. An ointment ſimilar to the above, and celebrated for the cure of ſuch inſtances of ophthalmia, has long been ſold under the name of *Smellom's eye-ſalve.*

UNGUENTUM OXIDI ZINCI IMPURI; olim, UNGUENTUM TUTIÆ. *Edin.*

Ointment of Impure Oxide of Zinc, formerly *Ointment of Tutty.*

Take of
Simple liniment, five parts;
Prepared impure oxide of zinc, one part.

UNGUENTUM TUTIÆ.

Lond. Dub.

Ointment of Tutty.

Take of
Prepared tutty,
Ointment of spermaceti, (hogs-lard, *Dub.*) as much as may be sufficient.
Mix them so as to make a soft ointment.

UNGUENTUM OXIDI ZINCI.

Edin.

Ointment of Oxide of Zinc.

Take of
Simple liniment, six parts;
Oxide of zinc, one part.

THESE ointments are chiefly used in affections of the eye, particularly in those cases where redness arises rather from relaxation than from active inflammation.

CERATUM CARBONATIS ZINCI IMPURI.

Edin.

Cerate of Impure Carbonate of Zinc.

Take of
Simple cerate, five parts;
Prepared impure carbonate of zinc, one part.

CERATUM LAPIDIS CALAMINARIS; olim, CERATUM EPULOTICUM. *Lond. Dub.*

Calamine Cerate, formerly *Epulotic Cerate.*

Take of
Calamine, prepared,
Yellow wax, of each (one part, *Dub.*) half a pound;
Olive oil, (two parts, *Dub.*) one pint.
Melt the wax with the oil; and as soon as the mixture, exposed to the air, begins to thicken, mix with it the calamine, and stir the cerate until it be cold.

THESE compositions are formed upon the cerate which Turner strongly recommends in cutaneous ulcerations and excoriations, and which has been usually distinguished by his name. They ap-

pear

pear from experience to be excellent epulotics, and as ſuch are frequently made uſe of in practice.

EMPLASTRUM OXIDI FERRI RUBRI; olim, EMPLASTRUM ROBORANS. *Edin.*

Plaſter of Red Oxide of Iron, commonly called *Strengthening Plaſter.*

Take of
Plaſter of ſemi-vitrified oxide of lead, twenty-four parts;
White reſin, ſix parts;
Yellow wax,
Olive-oil, each three parts;
Red oxide of iron, eight parts.

Grind the red oxide of iron with the oil, and then add it to the other ingredients previouſly melted.

THIS plaſter is uſed in weakneſſes of the large muſcles, as of the loins; and its effects ſeem to proceed from the artificial mechanical ſupport given to the part, which may alſo be done by any other plaſter that adheres with equal firmneſs.

TABLES

TABLES,

Shewing the Proportion of ANTIMONY, OPIUM, *and* QUICKSILVER, *contained in ſome Compound Medicines.*

TARTRITE OF ANTIMONY.

Wine of Tartrite of Antimony contains two grains of tartrite of antimony, or tartar-emetic, in the ounce. *Edin.*

OPIUM.

Opiate Confection contains one grain of opium in thirty-ſix grains. *Lond.*

Opiate, or *Thebaic Electuary,* contains in each drachm about a grain and a half of opium. *Edin.*

Electuary of Catechu, or *Japonic Confection,* contains in each ounce about two grains and a half of opium; for one grain of opium is contained in one hundred and ninety-three grains. *Edin.*

Compound Powder of Chalk with Opium contains one grain of opium in about forty-three grains. *Lond.*

Compound Powder of Ipecacuan contains one grain of opium in ten grains. *Lond.*

Powder of Ipecacuan and Opium contains ſix grains of opium in each drachm, or one grain in ten. *Edin.*

Opiate Powder contains one grain of Opium in ten. *Lond.*

Pills of Opium contain one grain of opium in five. *Lond.*

Opiate or *Thebaic Pills* contain ſix grains of opium in each drachm, or five grains contain half a grain of opium. *Edin.*

Tincture of Opium or *Liquid Laudanum* is made with two ſcruples of opium in each ounce of the liquid, or with five grains in each drachm. But a drachm of the tincture appears, by evaporation, to contain about three grains and a half of opium. *Edin.*

Ammoniated Tincture of Opium, or *Paregoric Elixir,* is made with about eight grains in each ounce of the liquid, or with about one grain in the drachm. *Edin.*

Tincture of Soap with Opium, formerly called *Opiate Liniment, Anodyne Balſam,* is made with one ſcruple of opium in each ounce of the liquid. *Edin.*

Troches of Liquorice with Opium, contain about one grain of opium in each drachm. *Edin.*

QUICKSILVER.

Quicksilver.

Quickſilver Pills contain five grains of quickſilver in each drachm. Each pill contains one grain of quickſilver *Edin.*

Quickſilver Pills contain four grains of quickſilver in twelve grains. *Lond.*

Quickſilver Ointment contains twelve grains of quickſilver in each drachm; made with double quickſilver, each drachm contains twenty-four grains. *Edin.*

Stronger Quickſilver Ointment contains one drachm of quickſilver in two drachms. *Lond.*

Weaker Quickſilver Ointment contains one drachm of quickſilver in ſix drachms

Quickſilver Plaſter contains about ſixteen grains of quickſilver in each drachm. *Edin.*

Plaſter of Litharge with Quickſilver contains about one ounce of quickſilver in five ounces. *Lond.*

Plaſter of Ammoniac with Quickſilver contains about one ounce of quickſilver in five ounces. *Lond.*

Powder of Scammony with Calomel contains one grain of calomel in four grains. *Lond.*

Ointment of Nitrated Quickſilver contains twelve grains of nitrated quickſilver in one drachm. *Lond.*

Stronger Ointment of Nitrate of Quickſilver contains in each drachm four grains of quickſilver and eight of nitrous acid. *Edin.*

Milder Ointment of Nitrate of Quickſilver contains in each ſcruple half a grain of quickſilver, and one grain of nitrous acid. *Edin.*

Ointment of White Calx of Quickſilver contains in each drachm about four grains and a half of the calx. *Lond.*

OR,

One grain of *Tartrite of Antimony* is contained in

Wine of tartrite of antimony. *Edin.*	grs. 240
Wine of antimoniated tartar. *Dub.* -	120
Wine of tartarized antimony. *Lond.* -	120
Wine of antimony. *Lond.* - -	uncertain.

One grain of precipitated *Sulphuret of Antimony* is contained in

Compound pills of antimony. *Dub.* -	grs. 2[illegible]7

One grain of *Opium* is contained in

Opiate confection. *Lond.* - -	grs. 36
Opiate electuary. *Edin* - - -	43
Electuary of catechu. *Edin.* - - -	193

One grain of *Opium* is contained in

Compound electuary of catechu. *Dub.*	grs. 199
Troches of liquorice with opium. *Edin.* - -	75
Compound troches of liquorice. *Dub.* - -	60
Pills of opium. *Lond.* - - -	5
Opiate pills. *Edin.* - - - -	10
Opiate powder. *Lond.* - - -	10
Compound powder of chalk with opium. *Lond.* -	43
Compound powder of ipecacuan. *Lond. Dub.* -	10
Powder of ipecacuan and opium. *Edin.* -	10
Tincture of opium. *Edin. Lond. Dub.* - -	12
Camphorated tincture of opium. *Lond.* -	244
Ditto ditto *Dub.* - -	196
Ammoniated tincture of opium. *Edin.* -	68
Tincture of soap with opium, - -	31.5

One grain of *Quicksilver* is contained in

Quicksilver pills. *Lond.* - -	grs. 3.
Ditto. *Dub.* - - -	2.5
Ditto. *Edin.* - - -	4
Stronger quicksilver ointment. *Lond. Dub.* -	2
Weaker quicksilver ointment. *Lond. Dub.* -	6
Quicksilver ointment. *Edin.* - - - -	5
Quicksilver plaster. *Edin.* - - -	5.5
Litharge plaster with quicksilver. *Lond.* - -	5.
Ammoniac plaster with quicksilver. *Lond.* -	5.

One grain of *Calomel* is contained in

Powder of scammony with calomel. *Lond.* -	4
Compound antimonial pills. *Dub.* - -	2.7

One grain of the *grey oxide of quicksilver* is contained in

Ointment of the grey oxide of quicksilver. *Edin.*	grs. 4

One grain of the *red oxide of quicksilver* is contained in

Ointment of red oxide of quicksilver. *Edin.*	grs. 9

One grain of *white calx of quicksilver* is contained in

Ointment of white calx of quicksilver. *Lond.*	grs. 13

One grain of *nitrate of mercury* is contained in

Stronger ointment of nitrate of mercury. *Edin.*	grs. 5
Ointment of nitrated quicksilver. *Lond. Dub.* -	5
Milder ointment of nitrate of quicksilver. *Edin.*	13

In many instances these proportions are only to be considered as approximations to the truth, as they are calculated from the quantities

quantities of the ingredients taken to form the preparation, not from the quantities which exiſt in it after it is formed. The nitrate of mercury, for example, in the different ointments into which it enters, is eſtimated as equal to the whole quantity of mercury and nitrous acid employed to form it, although, from the very nature of the preparation, it cannot be ſo much. In the ſolutions of opium, the opium is eſtimated as equal to the whole quantity employed, although not above two-thirds of it be diſſolved. Laſtly, no allowance is made for the loſs by evaporation; and hence, notwithſtanding the difference by calculation, the Edinburgh troches of liquorice with opium contain probably as much opium as thoſe of Dublin; for the former being made with ſyrup, they will loſe more in drying than the latter, which are made with extract of liquorice.

Table *of Names changed in the laſt Edition of the London Pharmacopœia.*

Names changed.	*New Names.*
A.	
ACETUM ſcilliticum.	Acetum ſcillæ.
Æthiops mineralis.	Hydrargyrus cum ſulphure.
Aqua aluminoſa bateana.	Aqua aluminis compoſita.
calcis ſimplex.	calcis.
cinnamomi ſimplex.	cinnamomi.
ſpirituoſa.	Spiritus cinnamomi.
fortis.	Acidum nitroſum dilutum.
hordeata.	Decoctum hordei.
juniperi compoſita.	Spiritus juniperi compoſitus.
menthæ piperitidis ſimplex.	Aqua menthæ piperitidis.
ſpirituoſa.	Spiritus menthæ piperitidis.
vulgaris ſimplex.	Aqua menthæ ſativæ.
ſpirituoſa.	Spiritus menthæ ſativæ.
nucis moſchatæ.	nuclei fructus myriſticæ, ſive nucis moſchatæ.
piperis Jamaicenſis.	Aqua pimento.
pulegii ſimplex.	pulegii.
ſpirituoſa.	Spiritus pulegii.
raphani compoſita.	raphani compoſitus.
roſarum damaſcenarum.	Aqua roſæ.
ſapphirina.	cupri ammoniati.
ſeminum anethi.	anethi.
aniſi compoſita.	Spiritus aniſi compoſitus.
carui	carui.
vitriolica camphorata.	Aqua zinci vitriolati cum camphora.
Argenti vivi purificatio.	Hydrargyri purificatio.
Axungiæ porcinæ curatio.	Adipis ſuillæ præparatio.

B.

Names changed.	*New Names.*
B.	
Balſamum ſulphuris barbadenſe.	Petroleum ſulphuratum.
ſimplex.	Oleum ſulphuratum.
traumaticum.	Tinctura benzoës compoſita.
C.	
Calx antimonii.	Antimonium calcinatum.
Cataplaſma e cymino.	Cataplaſma cumini.
Cauſticum antimoniale.	Antimonium muriatum.
commune fortius.	Calx cum kali puro.
lunare.	Argentum nitratum.
Ceratum album.	Ceratum ſpermatis ceti.
citrinum.	reſinæ flavæ.
epuloticum.	lapidis calaminaris.
Chalybis rubigo præparata.	Ferri rubigo.
Cinnabaris factitia.	Hydrargyrus ſulphuratus ruber.
Coagulum aluminoſum.	Cataplaſma aluminis.
Confectio cardiaca.	Confectio aromatica.
Cornu cervi calcinatio.	Cornu cervi uſtio.
D.	
Decoctum album.	Decoctum cornu cervi.
commune pro clyſtere.	pro enemate.
corticis peruviani.	cinchonæ ſive corticis peruviani.
pectorale.	hordei compoſitum.
E.	
Electarium lenitivum.	Electuarium ſennæ.
Elixir aloës.	Tinctura aloës compoſita.
myrrhæ compoſitum.	ſabinæ compoſita.
paregoricum	opii camphorata.
Emplaſtrum ex ammoniaco cum mercurio.	Emplaſtrum ammoniaci cum hydrargyro.
Emplaſtrum attrahens.	Emplaſtrum ceræ compoſitum.
cephalicum.	picis burgundicæ compoſitum.
commune.	lithargyri.
adhæſivum.	cum reſina.
commune cum gummi.	lithargyri compoſitum.
commune cum mercurio.	lithargyri cum hydrargyro.
e cymino.	cumini.
roborans.	thuris compoſitum.
e ſapone.	ſaponis.
ſtomachicum.	ladani compoſitum.
veſicatorium.	cantharidis.
Emulſio communis.	Lac amygdalæ.

Names changed.	*New Names.*
Extractum catharticum.	Extractum colocynthidis compoſitum.
ligni campechenſis.	hæmatoxyli ſive ligni campechiani.
corticis peruviani.	cinchonæ ſive corticis peruviani.
thebäicum ſive opium colatum.	Opium purificatum.
F.	
Flores benzöini.	Flores benzoës.
martiales.	Ferrum ammoniacale.
Fotus communis.	Decoctum pro fomento.
H.	
Hiera picra.	Pulvis aloës cum canella.
I.	
Infuſum amarum ſimplex.	Infuſum gentianæ compoſitum.
ſenæ communis.	ſennæ tartariſatum.
Julepum e camphora.	Miſtura camphorata.
e creta.	cretacea.
e moſcho.	moſchata.
L.	
Linimentum album.	Unguentum ſpermatis ceti.
ſaponaceum.	Linimentum ſaponis.
volatile.	ammoniæ.
Lixivium ſaponarium.	Aqua kali puri.
tartari.	kali præparati.
M.	
Mel ægyptiacum.	Oxymel æruginis.
roſaceum.	Mel roſæ.
Mercurius calcinatus.	Hydrargyrus calcinatus.
corroſivus ſublimatus.	muriatus.
ruber.	nitratus ruber.
dulcis ſublimatus.	Calomelas.
emeticus flavus.	Hydrargyrus vitriolatus.
præcipitatus albus.	Calx hydrargyri alba.
N.	
Nitrum vitriolatum.	Kali vitriolatum.
O.	
Oleum petrolei barbadenſis.	Oleum petrolei.
terebinthinæ æthereum.	terebinthinæ rectificatum.
Opium colatum.	Opium purificatum.
Oxymel ſcilliticum.	Oxymel ſcillæ.
ſimplex.	Mel acetatum.

P.

Names changed.	*New Names.*
P.	
Philonium londinenſe.	Confectio opiata.
Pilulæ aromaticæ.	Pulvis aloëticus cum guaiaco.
ecphracticæ.	aloës cum ferro.
gummoſæ.	Pilulæ Galbani compoſitæ.
rufi.	aloës cum myrrha.
Pulvis e bolo compoſitus.	Pulvis cretæ compoſitus.
cum opio.	cum opio.
e ceruſſa compoſitus.	ceruſſæ.
e chelis cancrorum compoſitus.	cancri chelarum compoſitus.
ſternutatorius.	aſari compoſitus.
R.	
Rob baccarum ſambuci.	Succus baccæ ſambuci ſpiſſatus.
S.	
Saccharum ſaturni.	Ceruſſa acetata.
Sal abſinthii.	Kali præparatum.
catharticus amarus.	Magneſia vitriolata.
glauberi.	Natron vitriolatum.
diureticus.	Kali acetatum.
martis.	Ferrum vitriolatum.
tartari.	Kali præparatum.
vitrioli.	Zincum vitriolatum.
volatilis ſalis ammoniaci.	Ammonia præparata.
Species aromaticæ.	Pulvis aromaticus.
Spiritus cornu cervi.	Liquor volatilis cornu cervi.
lavendulæ ſimplex.	Spiritus lavendulæ.
nitri dulcis.	ætheris nitroſi.
glauberi.	Acidum nitroſum.
ſalis ammoniaci.	Aqua ammoniæ.
ſalis ammoniaci dulcis.	Spiritus ammoniæ.
ſalis marini glauberi.	Acidum muriaticum.
vinoſus camphoratus.	Spiritus camphoratus.
vitrioli dulcis.	ætheris vitriolici.
volatilis aromaticus.	ammoniæ compoſitus.
fœtidus.	fœtidus.
Succi ſcorbutici.	Succus cochleariæ compoſitus.
Syrupus ex althæa.	Syrupus althææ.
e corticibus aurantiorum.	corticis aurantii.
balſamicus.	tolutanus.
e meconio.	papaveris albi.
roſarum ſolutivus.	roſæ.
T.	
Tabellæ cardialgicæ.	Trochiſci cretæ.
Tartarum emeticum.	Antimonium tartariſatum.
ſolubile.	Kali tartariſatum.

Tartarum

Names changed.	*New Names.*
Tartarum vitriolatum.	Kali vitriolatum.
Tinctura amara.	Tinctura gentianæ compoſita.
aromatica.	cinnamomi compoſita.
corticis peruviani ſimplex.	cinchonæ ſive corticis peruviani.
corticis peruviani volatilis.	cinchonæ, ſive corticis peruviani, ammoniata.
fœtida.	aſſæ fœtidæ
florum martialium.	ferri ammoniacalis.
guaiacina volatilis.	guaiaci.
japonica.	catechu.
martis in ſpiritu ſalis.	ferri muriati.
melampodii.	hellebori nigri.
rhabarbari ſpirituoſa.	rhabarbari.
vinoſa.	Vinum rhabarbari.
roſarum.	Infuſum roſæ.
ſacra.	Vinum aloës.
ſtomachica.	Tinctura cardamomi compoſita.
thebaïca.	opii.
valerianæ volatilis.	valerianæ ammoniata.
Trochiſci bechici albi.	Trochiſci amyli.
nigri.	glycyrrhizæ.

V.

Vinum antimoniale.	Vinum antimonii.
chalybeatum.	ferri.
Unguentum album.	Unguentum ceræ.
baſilicum flavum.	reſinæ flavæ.
cæruleum fortius.	hydrargyri fortius.
cæruleum mitius.	hydrargyri mitius.
e gummi elemi.	elemi compoſitum.
e mercurio præcipitato.	calcis hydrargyri albæ.
ſaturninum.	ceruſſæ acetatæ.
ſimplex.	adipis ſuillæ.
ad veſicatoria.	cantharidis.

TABLE *of Names changed, and of ſome Synonimes, in the laſt Edition of the Edinburgh Pharmacopœia.*

Names changed.	*New Names.*
A.	
ABSINTHIUM.	ARTEMISIA abſinthium.
Acetoſa.	Rumex acetoſa.
Acetum vini.	Acidum acetoſum.
Acidum vitriolicum.	ſulphuricum.
vitrioli aromaticum.	aromaticum.
Ærugo.	Sub-Acetis cupri.
Æther vitriolicus.	Æther ſulphuricus.
Æthiops mineralis.	Sulphuretum hydrargyri nigrum.
Agaricus.	Boletus igniarius.
Alkali cauſticum.	Potaſſa.
fixum foſſile.	Carbonas ſodæ.
vegetabile.	potaſſæ impurus.
volatile.	ammoniæ.
Alumen.	Sulphas aluminæ.
uſtum.	exſiccatus.
Ammonia muriata.	Murias ammoniæ.
præparata.	Carbonas ammoniæ.
Amygdala dulcis.	Amygdalus communis.
Angelica ſativa.	Angelica Archangelica.
Aniſum.	Pimpinella aniſum
Antimonium.	Sulphuretum antimonii.
calcareo-phoſphoratum	Oxidum antimonii cum phoſphate calcis.
muriatum.	Murias antimonii.
tartariſatum.	Tartris antimonii.
Aqua ammoniæ.	Aqua carbonatis ammoniæ.
acetatæ.	acetitis ammoniæ.
cauſticæ.	ammoniæ.
cupri vitriolati compoſita, *vel* aqua ſtyptica.	Solutio ſulphatis cupri compoſita.
lixivia cauſtica.	Aqua potaſſæ.
zinci vitriolati.	Solutio ſulphatis zinci.
Arabicum gummi.	Gummi mimoſæ niloticæ.
Argentum nitratum.	Nitras argenti.
Arſenicum.	Oxidum arſenici.

Aſſa

Names changed.	*New Names.*
Aſa fœtida.	Gummi-reſina ferulæ aſſæ fœtidæ.
Aurantium Hiſpalenſe.	Citrus aurantium.
B.	
Balſamum Canadenſe.	Reſina pini balſameæ.
Copaibæ.	copaiferæ officinalis.
Gileadenſe.	amyridis Gileadenſis.
Peruvianum.	Balſamum myroxyli peruiferi.
Tolutanum.	toluiferæ balſami.
traumaticum.	Tinctura benzoës compoſita.
Bardana.	Arctium lappa.
Barilla.	Carbonas ſodæ impurus.
Barytes.	barytæ.
Belladonna.	Atropa belladonna.
Benzoinum.	Balſamum ſtyracis benzoës.
Biſtorta.	Polygonum biſtorta.
Borax.	Boras ſodæ.
Butyrum antimonii.	Murias antimonii.
C.	
Cajeputa.	Melaleuca leucadendron.
Calamus aromaticus.	Acorus calamus.
Calomelas.	Sub-Murias hydraryyri.
Calx viva.	Calx.
Cancrorum lapilli.	Carbonas calcis præparatus.
Cantharis.	Meloë veſicatorius.
Cardamomum minus.	Amomum repens.
Carduus benedictus.	Centaurea benedicta.
Carica.	Fructus ficûs caricæ.
Carvi.	Carum carvi.
Caryophylla aromatica.	Caryophyllus aromaticus.
rubra.	Dianthus caryophyllus.
Caſcarilla.	Croton eleutheria.
Caſſia fiſtularis.	Caſſia fiſtula.
lignea.	Laurus caſſia.
Catechu.	Extractum mimoſæ catechu.
Cauſticum commune acerrimum	Potaſſa.
mitius.	cum calce.
lunare.	Nitras argenti.
Centaurium minus.	Gentiana centaurium.
Ceruſſa.	Oxidum plumbi album.
acetata.	Acetis plumbi.
Chamæmelum.	Anthemis nobilis.
Cicuta.	Conium maculatum.
Cinnabaris factitia.	Sulphuretum hydrargyri rubrum.
Cinara hortenſis.	Cinara ſcolymus.
Cineres clavellati.	Carbonas potaſſæ impurus.
Cinnamomum.	Laurus cinnamomum.
Coccinella.	Coccus cacti.
Colocynthis.	Cucumis colocynthis.

Confectio

Names changed.	*New Names.*
Confectio japonica.	Electuarium catechu.
Contrayerva.	Dorſtenia contrayerva.
Cortex peruvianus.	Cortex cinchonæ officinalis.
Creta alba.	Carbonas calcis.
Crocus antimonii. metallorum.	Oxidum antimonii cum ſulphure per nitratem potaſſæ.
Cryſtalli tartari.	Super-Tartris potaſſæ.
Cucumis agreſtis.	Fructus recens momordicæ elaterii.
Cuprum ammoniacum.	Ammoniaretum cupri.
vitriolatum.	Sulphas cupri.
Cynoſbatos.	Fructus recens roſæ caninæ.
D.	
Daucus ſilveſtris.	Daucus carota.
Decoctum chamæmeli *vel* commune.	Decoctum anthemidis nobilis.
lignorum.	guaiaci officinalis compoſitus.
Dens leonis.	Leontodon taraxacum.
E.	
Elaterium.	Succus ſpiſſatus momordicæ elaterii.
Electuarium lenitivum.	Electuarium caſſiæ ſennæ.
Elixir paregoricum.	Tinctura opii ammoniata.
ſacrum.	rhei cum aloë.
ſalutis.	caſſiæ ſennæ compoſita.
ſtomachicum.	gentianæ compoſita.
Emplaſtrum adhæſivum.	Emplaſtrum reſinoſum.
cereum.	ſimplex.
lithargyri *vel* commune.	oxidi plumbi ſemivitrei.
lithargyri compoſitum *vel* roborans.	oxidi ferri rubri.
veſicatorium.	meloës veſicatorii.
Emulſio communis.	Emulſio amygdalæ communis.
F.	
Ferri rubigo.	Carbonas ferri.
ſquamæ purificatæ.	Ferri oxidum nigrum purificatum.
præparatæ.	præparatum.
Ferrum ammoniatum.	Murias ammoniæ et ferri.
vitriolatum.	Sulphas ferri.
uſtum.	Oxidum ferri rubrum.
Filix mas.	Polypodium filix mas.
Flores martiales.	Murias ammoniæ et ferri.
ſulphuris.	Sulphur ſublimatum.
zinci.	Oxidum zinci.
Fœniculum dulce.	Anethum fœniculum.

G.

Names changed.	*New Names.*
G.	
Galbanum.	Gummi-reſina bubonis galbani.
Geniſta.	Spartium ſcoparium.
Granata malus.	Punica granatum.
H.	
Helleborus albus.	Veratrum album.
Hepar ſulphuris.	Sulphuretum potaſſæ.
Hippocaſtanum.	Æſculus hippocaſtanum.
Hydrargyrus acetatus.	Acetis hydrargyri.
muriatus corroſivus.	Murias hydrargyri.
mitis.	Sub-Murias hydrargyri.
præcipitatus.	præcipitatus.
nitratus ruber.	Oxidum hydrargyri rubrum per acidum nitricum.
præcipitatus cinereus.	Oxidum hydrargyri cinereum.
ſulphuratus niger.	Sulphuretum hydrargyri nigrum.
vitriolatus flavus.	Sub-Sulphas hydrargyri flavus.
I.	
Infuſum amarum.	Infuſum gentianæ luteæ compoſitum.
roſarum.	roſæ Gallicæ.
J.	
Jalapa.	Convolvulus jalapa.
L.	
Lapis calaminaris.	Carbonas zinci impurus.
Lavendula.	Lavandula ſpica.
Laudanum liquidum.	Tinctura opii.
Lignum Campechenſe.	Lignum Hæmatoxyli Campechiani.
Limon.	Fructus citri medicæ.
Linimentum anodynum *vel* opiatum.	Tinctura ſaponis cum opio.
aquæ calcis.	Oleum lini cum calce.
ſaponaceum.	Tinctura ſaponis.
volatile.	Oleum ammoniatum.
Lithargyrus.	Oxidum plumbi ſemivitreum.
Lixiva acetata.	Acetis potaſſæ.
e tartaro.	Carbonas potaſſæ puriſſimus.
purificata.	Carbonas potaſſæ.
tartariſata.	Tartris potaſſæ.
vitriolata.	Sulphas potaſſæ.
ſulphurea.	cum ſulphure.
Lixivium cauſticum.	Aqua potaſſæ.

M.

Names changed.	*New Names.*
M.	
Magneſia alba.	Carbonas magneſiæ.
uſta.	Magneſia.
vitriolata.	Sulphas magneſiæ.
Majorana.	Origanum majorana.
Manna.	Succus concretus fraxini orni.
Maſtiche.	Reſina piſtachiæ lentiſci.
Melampodium.	Helleborus niger.
Mercurius.	Hydrargyrus.
præcipitatus ruber.	Oxidum hydrargyri rubrum.
ſublimatus corroſivus.	Murias hydrargyri.
Mezereum.	Daphne mezereum.
Minium.	Oxidum plumbi rubrum.
Muria.	Murias ſodæ.
N.	
Naſturtium aquaticum.	Siſymbrium naſturtium.
Nitrum.	Nitras potaſſæ.
Nux moſchata.	Nucleus fructûs myriſticæ moſchatæ.
O.	
Olea ſtillatitia.	Olea volatilia.
Oleum ſuccini rectificatum.	Oleum ſuccini puriſſimum.
terebinthinæ rectificatum.	terebinthinæ volatile puriſſimum.
Olibanum.	Gummi-reſina juniperi lyciæ.
Oliva.	Olea Europæa.
P.	
Palma.	Cocos butyracea.
Petroleum Barbadenſe.	Bitumen petroleum.
Petroſelinum.	Apium petroſelinum.
Pilulæ cupri.	Pilulæ ammoniareti cupri.
thebaicæ.	opiatæ.
Pimento *vel* piper Jamaicenſis.	Myrtus pimenta.
Piper Indicum.	Capſicum annuum.
Pix Burgundica.	Reſina pini abietis.
Plumbum uſtum.	Oxidum plumbi ſemivitreum.
Potio cretacea.	Potio carbonatis calcis.
Prunus Gallica.	Prunus domeſtica.
Pulegium.	Mentha pulegium
Pulvis antimonialis.	Oxidum antimonii cum phoſphate calcis.
cretaceus.	Pulvis carbonatis calcis compoſitus.
Doveri.	ipecacuanhæ et opii.
Pyrethrum.	Anthemis pyrethrum.

R.

Names changed.	New Names.
R.	
Raphanus ruſticanus.	Cochlearia armoracia.
Reſina alba.	Reſina pini.
Rhabarbarum.	Rheum palmatum.
Roſa pallida.	Roſa centifolia.
rubra.	Gallica.
Rubigo ferri præparata.	Carbonas ferri præparatus.
S.	
Sabina.	Juniperus ſabina.
Saccharum ſaturni.	Acetis plumbi.
Sal alkalinus fixus foſſilis.	Carbonas ſodæ.
vegetabilis.	potaſſæ.
ammoniacus.	Murias ammoniæ.
catharticus amarus.	Sulphas magneſiæ.
cornu cervi.	Carbonas ammoniæ.
Glauberi.	Sulphas ſodæ.
marinus Hiſpanus.	Murias ſodæ.
polychreſtus.	Sulphas potaſſæ cum ſulphure.
Rupellenſis.	Tartris potaſſæ et ſodæ.
ſuccini.	Acidum ſuccinicum.
tartari.	Carbonas potaſſæ puriſſimus.
Sanguis draconis.	Reſina pterocarpi draconis.
Santalum rubrum.	Pterocarpus ſantalinus.
Santonicum.	Artemiſia ſantonicum.
Sarſaparilla.	Smilax ſarſaparilla.
Saſſafras.	Laurus ſaſſafras.
Scammonium.	Gummi-reſina convolvuli ſcammoniæ.
Seneka.	Polygala ſenega.
Senna.	Caſſia ſenna.
Serpentaria Virginiana.	Ariſtolochia ſerpentaria.
Simarouba.	Quaſſia ſimaruba.
Sinapi album.	Sinapis alba.
Soda.	Carbonas ſodæ.
muriata.	Murias ſodæ.
phoſphorata.	Phoſphas ſodæ.
tartariſata.	Tartris potaſſæ et ſodæ.
vitriolata.	Sulphas ſodæ.
Spiritus ætheris vitriolici.	Æther ſulphuricus cum alcohole.
ammoniæ.	Alcohol ammoniatum.
aromaticus.	aromaticum.
fœtidus.	fœtidum.
cornu cervi.	Aqua carbonatis ammoniæ.
Mindereri.	acetitis ammoniæ.
vinoſus rectificatus.	Alcohol.
tenuior.	dilutum.
camphoratus.	Tinctura camphoræ.

Staphiſagria.

Names changed.	*New Names.*
Staphiſagria.	Delphinium ſtaphiſagria.
Stramonium.	Datura ſtramonium.
Sulphur antimonii præcipitatum. auratum antimonii.	Sulphuretum antimonii præcipitatum.
Syrupus balſamicus *vel* Tolutanus.	Syrupus toluiferæ balſami.
papaveris albi.	papaveris ſomniferi.
T.	
Taraxacum.	Leontodon taraxacum.
Tartarus crudus.	Super-Tartris potaſſæ impurus.
Tartari cryſtalli.	potaſſæ.
Tartarum ſolubile.	Tartris potaſſæ.
vitriolatum.	Sulphas potaſſæ.
Tartarus emeticus.	Tartris antimonii.
Terebinthina Veneta.	Reſina pini laricis.
Terra Japonica.	Extractum mimoſæ catechu.
Tinctura aloës vitriolata.	Tinctura aloës ætherea.
aromatica.	lauri cinnamomi compoſita.
ferri.	muriatis ferri.
cantharidum.	meloës veſicatorii.
Japonica.	mimoſæ catechu.
rhei amara.	rhei cum gentiana.
ſacra.	Vinum aloës ſocotorinæ.
Tolutana.	Tinctura toluiferæ balſami.
Toxicodendron.	Rhus toxicodendron.
Tragacantha.	Gummi aſtragali tragacanthæ.
Trifolium.	Menyanthes trifoliata.
Trochiſci Arabici.	Trochiſci gummoſi.
Turpethum minerale.	Sub-Sulphas hydrargyri flavus.
Tutia.	Oxidum zinci impurum.
U.	
Unguentum album *vel* ceruſſæ.	Unguentum oxidi plumbi albi.
æruginis.	ſub-Acetitis cupri.
cœruleum.	hydrargyri.
citrinum.	nitratis hydrargyri.
epiſpaſticum fortius.	pulveris meloës veſicatorii.
mitius.	infuſi meloës veſicatorii.
ſaturninum.	acetitis plumbi.
tutiæ.	oxidi zinci impuri.
Uva paſſa.	Fructus ſiccatus vitis viniferi.
urſi.	Arbutus uva urſi.
V.	
Valeriana ſylveſtris.	Valeriana officinalis.
Vinum amarum.	Vinum gentianæ compoſitum.

Names changed.	*New Names.*
Vinum antimoniale.	Vinum tartritis antimonii.
Vitriolum album.	Sulphas zinci.
cœruleum.	cupri.
viride.	ferri.
Vitrum antimonii.	Oxidum antimonii cum ſulphure vitrificatum.
ceratum.	antimonii vitrificatum cum cera.
W.	
Winteranus cortex.	Cortex Winteræ aromaticæ.
Z.	
Zincum uſtum.	Oxidum zinci.
vitriolatum.	Sulphas zinci.
Zingiber.	Amomum zingiber.

Note.—(*Edin.*) In theſe Indexes of changed names, fearing leſt they might become too long, and ſatisfied if every poſſible error might be avoided, we have only introduced thoſe ſimples of which we have changed the principal and common names, called in natural hiſtory Generic Names; ſuch as Anethum fœniculum for Fœniculum, Anthemis nobilis for Chamæmelum, Gentiana Centaureum for Centaurium minus; but we have omitted all thoſe ſimples whoſe former generic names remain, and to which we have only added their ſpecific or trivial names, ſuch as Digitalis purpurea, Rheum palmatum, Papaver ſomniferum.

For the ſame reaſon, we have thought it ſufficient to introduce into theſe Indexes the changed name of every ſimple, having generally omitted the titles of the preparations and compoſitions which are formed of them. Thus, we have mentioned, that Laurus Cinnamomum is to be uſed in place of Cinnamomum; but we have omitted the Aqua, Spiritus, and Tinctura Lauri Cinnamomi, truſting that their new names cannot be a ſource of doubt or error to any perſon.

ENGLISH

ENGLISH INDEX.

A

Calcined

Decoction

Molybdenum

Vitriolated

LATIN INDEX.

Alkali

Cancer

D

Decoctum

Flammula

Hydrargyrum

Mechoacanna

Pimento

Pulvis

Sulphuretum

Trochiſci

FINIS

Directions to the Bookbinder.

PLATE	I. to front	p. 110.
	II.	111.
	III.	112.
	IV.	113.
	V.	114.
	VI.	118.

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