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THE

# BRITISH PHARMACOPŒIA

1914

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# 1914

PUBLISHED UNDER THE DIRECTION OF

THE GENERAL COUNCIL OF

MEDICAL EDUCATION AND REGISTRATION

OF THE UNITED KINGDOM

PURSUANT TO THE ACTS

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1914

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## NOTICE

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# PREFACE

TO THE

## BRITISH PHARMACOPŒIA, 1914

THE Medical Act of 1858, section 54, enacts that 'the General Council shall cause to be published under their direction a Book containing a list of medicines and compounds, and the manner of preparing them, together with the true weights and measures by which they are to be prepared and mixed, and containing such other matter and things relating thereto as the General Council shall think fit, to be called "The British Pharmacopœia"; and the General Council shall cause to be altered, amended, and republished, such Pharmacopœia as often as they shall deem it necessary.'

The Medical Council Act, 1862 (25th and 26th Victoria, cap. 91), recites among other things that different Pharmacopœias have hitherto been in use in England, Scotland, and Ireland, and that the Pharmacopœia to be published by the General Council is intended to supersede the above-mentioned Pharmacopœias, and enacts that 'the British Pharmacopœia, when published, shall for all purposes be deemed to be substituted throughout Great Britain and Ireland for the several above-mentioned Pharmacopœias; and any Act of Parliament, Order in Council, or custom relating to any such last-mentioned Pharmacopœias shall be deemed, after the publication of the *British* Pharmacopœia, to refer to such Pharmacopœia.'

In compliance with and under the sanction and authority of these Acts of Parliament, the Council reduced to uniformity the several processes and descriptions of the Pharmacopœias of London, Edinburgh, and Dublin, and published, in 1864 in London, the British Pharmacopœia. A second Pharmacopœia was published in 1867, and an Addendum in 1874. A third Pharmacopœia was prepared in 1885, and a further Addendum in 1890. A fourth Pharmacopœia was issued in 1898, and an Indian and Colonial Addendum in 1900. This Addendum, at the request of the Government of India, was modified to suit Indian requirements, and published as 'The Government of India Edition' in 1901. The issue of 1914 is the fifth British Pharmacopœia.

The Council has desired, in each issue of the British Pharmacopœia, to afford to the members of the Medical Profession and to those engaged in the preparation of medicines throughout the British Empire one uniform standard and guide, whereby the nature and composition of substances to be used in medicine may be ascertained and determined. For the accomplishment of this object the Council, when preparing the fourth British Pharmacopœia (1898), sought, through Her late Majesty's Privy Council, the assistance of various Medical and Pharmaceutical Bodies in India and the Dominions overseas, and incorporated many of the recommendations of these Bodies in the text. A small number of alternative substances or preparations, for which official recognition had been desired for use in particular parts of the Empire, received sanction for this purpose by inclusion in an Appendix. Certain medicinal plants and substances suggested for inclusion by the Indian and Colonial Authorities were dealt with more fully in the Addendum of 1900. In preparing the present Pharmacopœia the Council has again received through

His Majesty's Privy Council, with the co-operation of the India Office and the Colonial Office, much help from the Dominions overseas, and, by the inclusion in the text of such articles as have stood the test of experience, has now been able to produce a British Pharmacopœia suitable for the whole Empire.

No figures or detailed descriptions of plants yielding official substances are given in the text of the present Pharmacopœia. The histological characters of the parts of plants officially recognised are fully described whenever the information is important. In many instances in which drugs of vegetable origin are used in a powdered form, the histological characters of the powder are given when by chemical testing alone the identity of the article in question could not be certainly determined.

The names of official substances defined in the text are printed with Capital Initial letters ; while words in the text which refer to articles, reagents, and processes defined or described in an Appendix are printed in *italics*.

No material change has been made in chemical nomenclature. Generally the familiar Latin titles have been retained unaltered, but in some instances the English titles of chemical substances have been modified to accord with current usage. The English titles are not, as a rule, literal translations of the Latin titles. Of synonyms, only the more important of those employed in prescribing have been inserted.

Abbreviations of the Latin titles have been adopted in the Index. The suggestion that a list of such abbreviations should be appended to the British Pharmacopœia, in the interest of international uniformity, was made in a courteous communication from Dr Remington, Chairman of the United States Pharmacopœial Convention.

The Council has learned that similar abbreviations are likely to be adopted in the forthcoming Pharmacopœia of the United States of America. The list given in the Appendix will probably be found useful to dispensers and others, especially those in foreign countries, who have to interpret the abbreviations occurring in the prescriptions of British practitioners.

In this Pharmacopœia the Centigrade thermometric scale, and the metric system of Weights and Measures, are used for all pharmaceutical and analytical computations. The metric system has also been employed for the specification of doses, in the expectation that in the near future the system will be generally adopted by British prescribers. At the present time students and practitioners of medicine are accustomed to use the metric system in connexion with the work of chemical, physical, physiological, pathological, and pharmacological laboratories; it will doubtless facilitate the application of science to practice when the same system is used for therapeutic purposes also. As a transitional provision, doses have also been expressed in terms of the imperial system; but it is necessary to call special attention to the fact that the relation between the metric and the imperial dose of a given preparation, as set forth in the text, is that of approximate equivalence only. For convenience, whole numbers have generally been employed in stating doses expressed according to the imperial system, with but small deviation from the doses already familiar by long usage: whole numbers have, for a like reason, been employed in stating doses expressed according to the metric system; but as fractional differences are thus necessarily ignored, the two sets of whole numbers do not in general express exactly the same quantities.

In prescriptions the symbol 3j is often used to represent

60 grains, and also to represent 1 fluid drachm ; and the symbol ℥j to represent sometimes 480 grains, sometimes 437·5 grains, and also to represent 1 fluid ounce. As these symbols are apt to be misread, it is recommended that prescribers should cease to employ them.

It must be clearly understood that the 'doses' mentioned in the Pharmacopœia are not authoritatively enjoined by the Council, as binding upon prescribers. They are intended merely for general guidance, and represent, in each instance, the average range of the quantities which, in ordinary cases, are usually prescribed for adults. The medical practitioner will exercise his own judgment and act on his own responsibility in respect of the amount of any therapeutic agent he may prescribe or administer. Where, however, an unusually large dose appears to be prescribed, it is the duty of the pharmacist or dispenser to satisfy himself that the prescriber's intention has been correctly interpreted.

The Board of Trade (May 1, 1908) recognised 'mil' as a short official designation for the millilitre, 'decimil' for the tenth of a millilitre, and 'centimil' for the hundredth of a millilitre. These convenient terms are used in stating the 'metric' doses ; but in paragraphs relating to analysis, and in those relating to the manufacture of galenical preparations, the term 'millilitre' is always employed.

In the description of analytical processes the term 'drop' is often used. In accordance with the International Agreement, 1906, the external diameter of the dropping-tube is to be of exactly 3 millimetres ; at 15°, 20 drops of distilled water from this dropping-tube are equivalent to 1 millilitre.

It is to be regretted, from a theoretical point of view, that the graduation and in certain cases the employment by analysts of metric and imperial vessels for purposes of measurement, and the adjustment and in most cases the

employment of vessels for determining specific gravities, are not conducted at one and the same standard temperature. But the practical advantage of rendering these temperatures identical would be insignificant, while the resulting confusion would be serious. As regards such operations, therefore, the Pharmacopœia employs metric measures and volumetric vessels graduated at 15·5° C. (60° F.); while for the purposes for which the imperial system is employed measuring vessels are recognised which have been graduated at 16·7° C. (62° F.), the temperature authorised by the Weights and Measures Act, 1878.

When a 'water-bath' is directed to be used, it is to be understood that this term refers to an apparatus by means of which water or its vapour, at a temperature not exceeding 100°, is applied to the outer surface of a vessel containing the substance to be heated, which substance may thus be subjected to a heat near to, but necessarily below, that of 100°. The term 'steam-bath' is used when it is desired to employ the heat of steam at a temperature of not less than 100°.

The paragraphs in former issues which purported to be descriptive of the sources or modes of manufacture of official chemical substances have been made more concise, so far as the requirements of the Medical Act of 1858 will permit; but descriptions of the characters and tests by which the substances may be identified, and by which their freedom from impurity may be determined, have been amplified and increased in number.

The qualitative tests by which the basic and acidic radicals of ordinary salts are recognised, and by which common impurities are detected, instead of being many times repeated in the text, as in previous issues of the Pharmacopœia, are brought together in an Appendix, the

text simply stating the names of the radicals or other matters which should in each case be present or absent. Special tests, of infrequent use or restricted application, remain in the text. The list of tests in the Appendix is therefore not to be taken as including all the analytical methods that are employed in the Pharmacopœia.

The composition of Solutions employed for Volumetric Determinations is given in detail in an Appendix. In accordance with analytical usage it has been found convenient to express different degrees of dilution in fractional terms of a 'normal' solution, *N/1*. The abbreviation '*T. Sol.*' has been employed in the Appendix in two instances, to avoid confusion with other solutions of different strengths which have already been defined in the text of the Pharmacopœia. The abbreviations 'Pb T.' and 'As T.' are employed for articles and reagents, defined in the Appendix, for the quantitative estimation of lead and arsenic respectively.

It has been found desirable to indicate a limit to the proportion of lead or of arsenic permissibly present as an impurity in many pharmacopœial substances. Such limits are noted in the text, while details of the mode of employing the appropriate quantitative tests are given in an Appendix. The same practice has been adopted with respect to many of the methods relating to the determination of Acid Value, Saponification Value, Iodine Value, Unsaponifiable Matter, Esters, and Alcohols. These methods are given in an Appendix, while in the text of the several monographs relating to Fixed Oils, Fats, Waxes, Resins, and Volatile Oils, only the numbers expressing the appropriate pharmacopœial values are stated.

The solubility of a substance is expressed by stating the number of millilitres of the solvent in which one gramme of a solid or one millilitre of a liquid will remain in solution

at a temperature of 15·5°. The strength of a solution is expressed by stating the number of grammes of a solid or millilitres of a liquid which are to be contained in a given number of millilitres of the solution; thus a solution of '1 in 10' or '10 per cent.' means that one gramme of a solid or one millilitre of a liquid is to be contained in ten millilitres of the solution.

In stating the 'solution' relations of chemical substances to acid, alkaline, or saline liquids, the term 'solubility' is necessarily sometimes used in a general sense irrespective of more or less obvious concomitant chemical changes.

In determining the alkaloidal strength or the quantity of ash of crude drugs, the calculations are made with drugs dried at 100°, unless otherwise specified.

The atomic weights adopted in the British Pharmacopœia are in accord with the values agreed upon for 1914 by the International Committee on Atomic Weights. The values are based upon the atomic weight of Oxygen taken as 16, not upon that of Hydrogen taken as 1. In quantitative testing, the specified amounts of solid or liquid substances are to be regarded as proportions indicating official standards of purity; they are not necessarily prescribed as the weights or volumes to be actually used in the operations. The amount in millilitres of a volumetric solution which will react with a stated amount of a solid or liquid substance, instead of being extended to the several places of decimals which theory might justify, is given only to such a degree of accuracy as may easily be attained in reading off the graduations of an ordinary burette. In short, the details of procedure in these and other chemical operations are now left to the skill and judgment of pharmacists and of analysts who are assumed to be fully trained.

In the Pharmacopœia of 1885 an endeavour was made for the first time to fix the alkaloidal strength of some of the Tinctures. In the Pharmacopœia of 1898 a further step was taken by specifying in a number of cases the amount of the more important alkaloid, or of 'total alkaloid,' which ought to be present. In the present Pharmacopœia the number of crude drugs and of their galenical preparations which are required to contain a definite proportion of the chief active constituent or constituents has been increased, and the official processes for their 'assay' have been revised. It has also been found desirable to prepare Extracts of Belladonna, Hyoscyamus, Nux Vomica, and Opium in the form of dry powders, of which the alkaloidal strengths are officially defined.

In the case of drugs of definite chemical composition there has been a similar extension of the number to which 'assay' processes are to be applied, and, in general, the minimum degree of purity required is specified in the definition of the drug.

The tests for the Volatile Oils and for the Fixed Oils and allied substances have been revised, and additional tests of identity and of purity have been introduced.

Most of the Liquid Extracts are of such a strength that one hundred millilitres represent one hundred grammes of the drug employed. The Liquid Extract of Belladonna, used as the basis of other preparations of the drug, and the Liquid Extract of Ipecacuanha, the basis of the Wine of Ipecacuanha, contain definite proportions of total alkaloids. The Liquid Extract of Nux Vomica, from which the Dry Extract is prepared, contains a definite proportion of strychnine; and the Liquid Extract of Hydrastis, from which the Tincture is now prepared, contains a definite proportion of hydrastine. When dry extracts and liquid extracts are derived from the same source,

the word 'Siccum' is attached to the designation of the former, and the word 'Liquidum' to the latter.

The 'Liquores Concentrati,' which were tentatively introduced in 1898 as approximate equivalents of certain Decoctions and Infusions, have been little used, and are now omitted from the Pharmacopœia.

An International Conference respecting the Unification of the Formulæ for Potent Drugs and Preparations in the several national pharmacopœias, held at Brussels on September 15–20, 1902, led to the adoption in 1906 by the participating States of a series of recommendations commonly referred to as 'The International Agreement.' These recommendations have necessitated certain changes in the preparation, composition, and strength of important galenical compounds containing potent ingredients, with the object of promoting uniformity in the pharmacopœial usage of different countries. They have already been embodied more or less completely in the various national pharmacopœias that have been issued since 1902. The changes in the British Pharmacopœia thereby occasioned are generally slight; they have been indicated in the Prefatory Tables and in footnotes, while a separate Prefatory Table gives a list of deviations from the International Agreement, with the reasons for departure from the recommendations. The British practice of measuring liquids by volume and solids by weight has been maintained. It is more convenient, both to prescribers and to dispensers, than the continental practice, contemplated in the Agreement, of weighing liquids as well as solids. The variations caused by this difference of usage are, however, of no great importance.

Different degrees of coarseness or fineness of the powders of drugs are distinguished by numbers, such as No. 20 or

No. 60, which in the sieves employed by pharmacists indicate the number of parallel wires of the usual thickness, included in a length of 2·54 centimetres (1 inch), in either transverse direction.

It has not been thought desirable to describe, in the Pharmacopœia, various pharmaceutical devices which have been introduced in recent years for the more easy administration of medicines. When so directed by the prescriber, the drugs of the Pharmacopœia may be dispensed in non-official forms such as capsules, cachets, granules, compressed discs or tablets, and the like ; but the drugs themselves, in all such cases, must respond to the official characters and tests.

In selecting additions to the Pharmacopœia, and in deciding on the omission of articles contained in the Pharmacopœia of 1898, the Council has received important aid from the following Authorities :

The Royal College of Physicians of London
The Royal College of Surgeons of England
The Apothecaries' Society of London
The University of Cambridge
The University of Durham
The Royal College of Surgeons of Edinburgh
The Royal Faculty of Physicians and Surgeons of Glasgow
The University of Edinburgh
The University of Glasgow
The University of Aberdeen
The University of St Andrews
The University of London
The Victoria University of Manchester
The University of Birmingham
The University of Liverpool
The University of Leeds
The Royal College of Physicians of Edinburgh
The Royal College of Physicians of Ireland
The Royal College of Surgeons in Ireland
The Apothecaries' Hall of Ireland
The University of Dublin

The Council has also been aided, as regards the inclusion or omission of articles contained in the Pharmacopœia of 1898, by several independent inquiries as to the frequency with which the various official preparations have actually been prescribed in different localities.

The Council, recognising that it was desirable to obtain the co-operation of medical, pharmaceutical, chemical, and botanical authorities throughout the Empire, has taken effective steps to this end in preparing the present Pharmacopœia, which has been in course of preparation for several years.

Thus it has instituted—

(1) A Pharmacopœia Conference, consisting of members of the Council and the following delegates nominated by the Pharmaceutical Societies of the United Kingdom:

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|---|---|
| *Mr Charles Ekin | Mr G. D. Beggs |
| Dr Inglis Clark | Mr Walter Hills |
| *Mr K. J. Downs | |

(2) A Committee of Reference in Pharmacy, consisting of the following members nominated by the Pharmaceutical Society of Great Britain and the Pharmaceutical Society of Ireland:

| | |
|---|---|
| Mr W. N. Allen | Mr E. W. Lucas |
| Mr F. C. J. Bird | Mr G. Lunan |
| Mr J. E. Brunker | †Mr G. F. Merson |
| Mr D. B. Dott | Mr J. C. Umney |
| Professor H. G. Greenish | ††Mr Edmund White |
| Mr C. A. Hill | Mr R. Wright |
| Mr W. Kirkby | |

Of this Committee of Reference the following delegates of the Pharmaceutical Societies of the United Kingdom were members *ex officio*: Mr Walter Hills, Dr Inglis Clark, Mr G. D. Beggs. Mr Walter Hills was elected Chairman, and Professor H. G. Greenish, Secretary.

(3) A Committee of Reference in Chemistry, consisting of Sir T. E. Thorpe, F.R.S., and Dr J. J. Dobbie, F.R.S.; and a Committee of Reference in Botany, consisting of Sir David Prain, F.R.S., and Mr E. Morell Holmes.

(4) A series of official inquiries transmitted by the courtesy of the Colonial Office and of the India Office to all the

* Since deceased. † Resigned 1908. †† Resigned 1911.

Governments and Administrations of the Empire, asking for the co-operation of their respective Medical and Pharmaceutical Authorities in the work of adapting the new Pharmacopœia to the requirements of all parts of the British Dominions. In preparing the text of the Pharmacopœia the most careful consideration has been given to a large number of suggestions which, in response to these inquiries, have been received, through the Secretaries of State, from these Medical and Pharmaceutical Authorities, and in particular from those of South Australia, Fiji, Falkland Islands, Bahamas, British Honduras, British Guiana, Barbados, Saint Lucia, Leeward Islands, Natal, Orange Free State Province, Saint Helena, Sierra Leone, Gambia, British Central Africa (now Nyasaland Protectorate), Malta, Hong Kong and Weihaiwei, Mauritius, Straits Settlements, India, Transvaal, Western Australia, Cape Town, Ceylon, New Zealand.

The Council has made constant use of important practical researches which have been carried on by British pharmacists at the request, in many instances, of the Pharmacopœia Committee of the Council, the Pharmacopœia Conference, or the Committee of Reference in Pharmacy. The following publications have had a special bearing on the work of revision:

'A Digest of Researches and Criticisms,' by Dr John Attfield, F.R.S., 1900.

'Digest of Researches and Criticisms,' by W. Chattaway, F.I.C., 1903.

'Report and Recommendations with reference to the Tests for the Detection of Arsenic in the Drugs of the British Pharmacopœia,' by Professor W. R. Dunstan, C.M.G., M.A., LL.D., F.R.S., and H. H. Robinson, M.A., F.C.S.

'The Solubility of the Chemical Substances mentioned in the British Pharmacopœia,' by Professor H. G. Greenish, F.I.C., and F. A. Upsher Smith.

'The Essential Oils of the British Pharmacopœia,' by C. A. Hill, B.Sc., F.I.C., and John C. Umney, F.C.S.

'The Oils, Fats, and Waxes of the British Pharmacopœia,' by E. W. Lucas, F.I.C., F.C.S., and F. C. J. Bird.

'The most suitable Limit-Test for Arsenic in Official Substances and Preparations and the Limits for Arsenic that may reasonably be adopted,' by C. A. Hill, B.Sc., F.I.C.

'Quantitative Colorimetric Test for Lead,' by C. A. Hill, B.Sc., F.I.C.

'On the Official Ointments, with special reference to the Substances used as Bases,' by R. B. Wild, M.D., M.Sc., M.R.C.P.

'Enquiries on the Value of Ointment Bases under different Climatic Conditions,' by E. W. Lucas, F.I.C., F.C.S.

In addition the Committee of Reference in Pharmacy has presented to the Council a series of important reports and recommendations, which have been published from time to time by the Council for the information of medical practitioners and pharmacists, and widely circulated. These publications, and the expert criticisms they have evoked, have been freely used in the preparation of the present Pharmacopœia.

The Pharmacopœia has been edited by Professor Tirard, M.D., F.R.C.P., of King's College, University of London, and Professor H. G. Greenish, F.I.C., of the Pharmaceutical Society of Great Britain. The Council is much indebted

to the Editors for their skilful and assiduous services.

The general supervision of the work has been entrusted by the Medical Council to a Pharmacopœia Committee, which since 1898, the date of the last issue, has included the following past members:

| | |
|---|---|
| Dr Leech | Mr Tichborne |
| Sir David C. McVail | Sir John Batty Tuke |
| Mr Brudenell Carter | Dr Atthill |
| Sir Dyce Duckworth | Dr J. F. Payne |
| Dr Little | |

The present members of the Pharmacopœia Committee are:

Sir Donald MacAlister, President, *Chairman*

| | |
|---|---|
| Dr Norman Moore | Sir Thomas Fraser |
| Sir George Philipson | Dr Cash |
| Dr Caton | Sir John Moore |
| Dr Barrs | Sir William Whitla |

with Professor Tirard, the senior Editor, as *Secretary*.

The Committee has expressed to the Council its high appreciation of the manner in which Professor Tirard has performed his responsible duties, since his appointment to the office of Secretary in 1895.

Office of the General Medical Council
299 Oxford Street, London W
July 13, 1914

## Divisions of the British Empire referred to in the British Pharmacopœia

**India.**—Ajmer-Merwara, The Andamans, Assam, Bengal, Bihar and Orissa, Bombay, Baluchistan, Burma, The Central Provinces and Berar, Coorg, Delhi, Madras, The North-West Frontier Province, the Punjab, United Provinces of Agra and Oudh.

**African.**—Basutoland, Bechuanaland Protectorate, Gambia, Gold Coast, Nigeria, Northern Rhodesia, Southern Rhodesia, Saint Helena, Sierra Leone, Swaziland, The Union of South Africa (provinces of Cape of Good Hope, Natal, Orange Free State, Transvaal).

**Australasian.**—New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia, Northern Territory of Australia, Federal Capital Territory; forming the Commonwealth of Australia. New Zealand, Fiji Islands, Papua, Western Pacific.

**Eastern.**—Ceylon, Hong Kong, Labuan, Mauritius, Seychelles, Straits Settlements, Weihaiwei.

**Mediterranean.**—Cyprus, Gibraltar, Malta.

**North American.**—Alberta, British Columbia, Manitoba, New Brunswick, North-west Territories, Nova Scotia, Ontario, Prince Edward Island, Quebec, Saskatchewan, Yukon; forming the Dominion of Canada. Newfoundland.

**West Indian.**—Bahama Islands, Barbados, Bermuda Islands, British Guiana, British Honduras, Jamaica and Turks and Caicos Islands, Leeward Islands (Antigua, Dominica, Montserrat, Saint Christopher and Nevis, Virgin Islands), Trinidad and Tobago, Windward Islands (Grenada, Saint Lucia, Saint Vincent).

The Falkland Islands in the South Atlantic.

## Articles and Preparations included in the British Pharmacopœia, 1914, which were not in that of 1898, nor in the Indian and Colonial Addendum of 1900

Acetonum
Acetum Cantharidini
Acidum Acetylsalicylicum
Acidum Hydriodicum Dilutum
Acidum Picricum
Adrenalinum
Barbitonum
Benzaminæ Lactas
Calcii Lactas
Cantharidinum
Cassiæ Fructus
Chloral Formamidum
Cresol
Diamorphinæ Hydrochloridum
Emplastrum Cantharidini
Ethyl Chloridum
Ferri Phosphas Saccharatus
Glucosum
Guaiacol
Guaiacol Carbonas
Hexamina
Injectio Strychninæ Hypodermica
Ipomœæ Radix
Liquor Adrenalini Hydrochloricus
Liquor Cresol Saponatus
Liquor Formaldehydi
Liquor Formaldehydi Saponatus
Methyl Salicylas
Methylsulphonal
Pelletierinæ Tannas
Phenolphthaleinum
Resorcinum
Sennæ Fructus
Sevum Benzoatum
Sodii Phosphas Acidus
Strontii Bromidum
Syrupus Acidi Hydriodici
Theobrominæ et Sodii Salicylas
Tinctura Cantharidini
Unguentum Cantharidini
Unguentum Lanæ Compositum
Unguentum Plumbi Subacetatis
Zinci Oleostearas

## Articles and Preparations included in the British Pharmacopœia of 1898, or in the Indian and Colonial Addendum of 1900, but not included in the British Pharmacopœia, 1914

Acalypha
Acetum Cantharidis
Acetum Ipecacuanhæ
Acetum Mylabridis
Acidum Gallicum
Adhatoda
Ammonii Phosphas
Andrographis
Antimonium Nigrum Purificatum
Aqua Pimentæ
Aqua Sambuci
Argenti Oxidum
Aristolochia
Arnicæ Rhizoma
Azadirachta Indica
Bismuthi Oxidum
Calotropis
Cambogia
Cambogia Indica
Cantharis
Caoutchouc
Cerii Oxalas
Charta Sinapis
Cimicifugæ Rhizoma
Cissampelos

Cocæ Folia
Conii Folia
Conii Fructus
Coscinium
Crocus
Cuspariæ Cortex
Decoctum Cissampeli
Decoctum Granati Corticis
Decoctum Hygrophilæ
Elaterinum
Elaterium
Emplastrum Ammoniaci cum Hydrargyro
Emplastrum Calefaciens Mylabridis
Emplastrum Cantharidis
Emplastrum Mylabridis
Emplastrum Opii
Emplastrum Picis
Emplastrum Plumbi Iodidi
Extractum Acalyphæ Liquidum
Extractum Adhatodæ Liquidum
Extractum Anthemidis
Extractum Belladonnæ Viride
Extractum Cimicifugæ Liquidum
Extractum Cissampeli Liquidum
Extractum Cocæ Liquidum
Extractum Glycyrrhizæ Spirituosum
Extractum Jaborandi Liquidum
Extractum Jalapæ
Extractum Pareiræ Liquidum
Extractum Physostigmatis
Extractum Sarsæ Liquidum
Extractum Stramonii
Extractum Taraxaci Liquidum
Ferri Arsenas
Ferri Phosphas
Ficus
Galbanum
Granati Cortex
Hemidesmi Radix
Hygrophila
Infusum Andrographidis
Infusum Azadirachtæ Indicæ
Infusum Coscinii
Infusum Cuspariæ
Infusum Lupuli
Infusum Serpentariæ
Infusum Tinosporæ
Infusum Toddaliæ
Jaborandi Folia
Liquor Andrographidis Concentratus
Liquor Aristolochiæ Concentratus
Liquor Berberidis Concentratus
Liquor Calumbæ Concentratus
Liquor Caoutchouc
Liquor Coscinii Concentratus
Liquor Chiratæ Concentratus
Liquor Cuspariæ Concentratus
Liquor Epispasticus Mylabridis
Liquor Ferri Acetatis
Liquor Ferri Pernitratis
Liquor Krameriæ Concentratus
Liquor Quassiæ Concentratus
Liquor Rhei Concentratus
Liquor Sarsæ Compositus Concentratus
Liquor Senegæ Concentratus
Liquor Sennæ Concentratus
Liquor Serpentariæ Concentratus
Liquor Sodii Ethylatis
Liquor Thyroidei
Liquor Tinosporæ Concentratus
Liquor Toddaliæ Concentratus
Lupulinum
Lupulus
Mezerei Cortex
Mistura Creosoti
Mistura Spiritus Vini Gallici
Moschus
Mylabris
Oleum Pimentæ
Papaveris Capsulæ
Pareiræ Radix
Physostigmatis Semina
Picrotoxinum
Pilula Cambogiæ Composita
Pilula Galbani Composita
Pilula Scammonii Composita
Pimenta
Piper Nigrum
Pix Burgundica
Plumbi Carbonas

Prunum
Pulvis Elaterini Compositus
Sambuci Flores
Sarsæ Radix
Sassafras Radix
Scammonium
Sinapis
Sinapis Albæ Semina
Sinapis Nigræ Semina
Sodii Sulphocarbolas
Sodium
Spiritus Ætheris Compositus
Spiritus Vini Gallici
Stramonii Semina
Succus Acalyphæ
Succus Adhatodæ
Succus Belladonnæ
Succus Conii
Succus Hyoscyami
Sulphuris Iodidum
Sumbul Radix
Syrupus Hemidesmi
Thus Americanum
Tinctura Adhatodæ
Tinctura Aloes
Tinctura Andrographidis
Tinctura Aristolochiæ
Tinctura Arnicæ
Tinctura AzadirachtæIndicæ
Tinctura Calotropis
Tinctura Cantharidis
Tinctura Cimicifugæ
Tinctura Conii
Tinctura Coscinii
Tinctura Croci
Tinctura Jaborandi
Tinctura Lupuli
Tinctura Sumbul
Tinctura Tinosporæ
Tinospora
Toddalia
Trochiscus Sodii Bicarbonatis
Tylophoræ Folia
Unguentum Cantharidis
Unguentum Conii
Unguentum Glycerini Plumbi Subacetatis
Unguentum Mylabridis
Unguentum Plumbi Acetatis
Unguentum Plumbi Carbonatis
Unguentum Sulphuris Iodidi
Unguentum Veratrinæ
Veratrina
Zinci Sulphocarbolas

## Articles and Preparations the Names of which have been Altered

| Former Names, 1898 or 1900 | Present Names, 1914 |
|---|---|
| Adeps | Adeps Præparatus |
| Aloe Barbadensis<br>Aloe Socotrina | Aloe |
| Alumen | Alumen Purificatum |
| Benzol | Benzenum |
| Borax | Borax Purificatus |
| Carbonis Bisulphidum | Carbon Disulphidum |
| Eucalypti Gummi | Kino Eucalypti |
| Extractum Aloes Barbadensis | Extractum Aloes |
| Extractum Belladonnæ Alcoholicum | Extractum Belladonnæ Siccum |
| Extractum Cascaræ Sagradæ | Extractum Cascaræ Sagradæ |
| Extractum Euonymi Siccum | Extractum Euonymi [Siccum |
| Extractum Hyoscyami Viride | Extractum Hyoscyami |
| Extractum Nucis Vomicæ | Extractum Nucis Vomicæ Siccum |
| Extractum Opii | Extractum Opii Siccum |

| | |
|---|---|
| Extractum Viburni Prunifolii Liquidum | Extractum Viburni Liquidum |
| Ferrum Tartaratum | Ferri et Potassii Tartras |
| Hydrargyri Oleas | Hydrargyrum Oleatum |
| Linum | Lini Semina |
| Linum Contusum | Lini Semina Contusa |
| Liquor Iodi Fortis | Tinctura Iodi Fortis |
| Liquor Magnesii Carbonatis | Liquor Magnesii Bicarbonatis |
| Oleum Gynocardiæ | Oleum Chaulmoogræ |
| Oleum Pini | Oleum Abietis |
| Oleum Terebinthinæ | Oleum Terebinthinæ Rectificatum |
| Pilula Aloes Barbadensis / Pilula Aloes Socotrinæ | Pilula Aloes |
| Rhei Radix | Rhei Rhizoma |
| Senna Alexandrina / Senna Indica | Sennæ Folia |
| Soda Tartarata | Sodii et Potassii Tartras |
| Sodii Arsenas | Sodii Arsenas Anhydrosus |
| Syrupus Codeinæ | Syrupus Codeinæ Phosphatis |
| Tinctura Colchici Seminum | Tinctura Colchici |
| Tinctura Iodi | Tinctura Iodi Mitis |
| Trochiscus Eucalypti Gummi | Trochiscus Kino Eucalypti |
| Unguentum Gynocardiæ | Unguentum Chaulmoogræ |
| Unguentum Hydrargyri Oleatis | Unguentum Hydrargyri Oleati |

## Articles and Preparations of the British Pharmacopœia of 1898, or of the Indian and Colonial Addendum of 1900, the Composition of which has been Altered

(Some minor alterations are not included)

*Belladonnæ Folia
Collodium Vesicans
Confectio Sulphuris
Decoctum Aloes Compositum
Emplastrum Calefaciens
*Extractum Belladonnæ Siccum (Extractum Belladonnæ Alcoholicum)
*Extractum Ergotæ
*Extractum Hyoscyami
Extractum Ipecacuanhæ Liquidum
Extractum Nucis Vomicæ Siccum (Extractum Nucis Vomicæ)
Ferri Carbonas Saccharatus
Hydrargyrum Oleatum (Hydrargyri Oleas)
*Hyoscyami Folia
Injectio Ergotæ Hypodermica
Linimentum Hydrargyri
Liquor Atropinæ Sulphatis
Liquor Epispasticus
Lotio Hydrargyri Nigra
Mistura Ferri Composita
Oleum Phosphoratum
Oxymel Scillæ
Oxymel Urgineæ
Pilula Ferri
Pilula Hydrargyri Subchloridi Composita
Pilula Phosphori
Syrupus Ferri Iodidi
Syrupus Rhei
*Tinctura Belladonnæ

Tinctura Cardamomi Composita
Tinctura Cinchonæ Composita
*Tinctura Hyoscyami
Tinctura Pruni Virginianæ
Tinctura Rhei Composita
Tinctura Sennæ Composita
Tinctura Strophanthi
Trochiscus Acidi Carbolici
Trochiscus Acidi Tannici
Trochiscus Catechu
Trochiscus Ipecacuanhæ
Unguentum Acidi Carbolici
Unguentum Aquæ Rosæ
Unguentum Belladonnæ
Unguentum Capsici
Unguentum Cetacei
Unguentum Chrysarobini
Unguentum Hamamelidis
Unguentum Hydrargyri Ammoniati
Unguentum Iodoformi
Unguentum Paraffini
Unguentum Plumbi Iodidi

* These preparations approximately correspond to those recommended in the International Agreement, November 1906.

## Articles and Preparations of the British Pharmacopœia of 1898, or of the Indian and Colonial Addendum of 1900, the Strengths of which have been Altered

(Some minor alterations are not included)

Acetum Scillæ
Acetum Urgineæ
Acidum Nitricum Dilutum
Acidum Phosphoricum Dilutum
Acidum Sulphuricum Dilutum
Amyl Nitris
Emplastrum Belladonnæ
Ferri Carbonas Saccharatus
Ferri Phosphas Saccharatus (Ferri Phosphas)
Injectio Cocainæ Hypodermica
Injectio Morphinæ Hypodermica
Linimentum Hydrargyri
Liquor Ferri Perchloridi Fortis
Liquor Hydrargyri Perchloridi
Liquor Potassæ
Pilula Phosphori
Potassa Caustica
Spiritus Ætheris Nitrosi
Spiritus Juniperi
Syrupus Chloral
Syrupus Codeinæ Phosphatis (Syrupus Codeinæ)
*Syrupus Ferri Iodidi
Tabellæ Trinitrini
*Tinctura Aconiti
*Tinctura Belladonnæ
Tinctura Camphoræ Composita
*Tinctura Colchici
*Tinctura Digitalis
*Tinctura Nucis Vomicæ
*Tinctura Opii
Tinctura Opii Ammoniata
Tinctura Picrorhizæ
*Tinctura Strophanthi
Trochiscus Acidi Carbolici
Unguentum Acidi Carbolici
*Unguentum Hydrargyri
Unguentum Hydrargyri Ammoniati
Unguentum Hydrargyri Compositum
Unguentum Hydrargyri Subchloridi
*Vinum Antimoniale
Vinum Aurantii

* These preparations approximately correspond to those recommended in the International Agreement, November 1906.

## Deviations from the Recommendations of the International Agreement of November 1906

| Article or Preparation. | Recommendation. | Reason for Deviation. |
|---|---|---|
| Aconiti Radix | Employ tuber of current year | Standardisation of root renders this limitation unnecessary. |
| Extractum Belladonnæ Siccum | Prepare a solid extract (containing about 10 per cent. of water) by means of alcohol (70 per cent.) | Standardised dry powdered extract preferable to unstandardised moist extract. |
| Extractum Hyoscyami | Prepare a solid extract (containing about 10 per cent. of water) by means of alcohol (70 per cent.) | Standardised dry powdered extract preferable to unstandardised moist extract. |
| Ipecacuanhæ Radix | Powder only the root-bark rejecting the woody portion. | Standardisation of powdered root renders this limitation unnecessary. |
| Nux Vomica Extractum Tinctura | Standardise in terms of total alkaloid. | Standardisation in terms of the more toxic alkaloid, strychnine, preferable. Of the total alkaloid about one-half is strychnine. |
| Tinctura Aconiti | Standardise in terms of total alkaloid. | Standardisation in terms of ether-soluble alkaloid preferable. |

In the Index the letters "I.A." are affixed to the Latin Names and Synonyms proposed in the International Agreement of 1906 where these differ from those adopted in the British Pharmacopœia. In each such case reference is given to the official drug or preparation approximately corresponding to that named in the Agreement.

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# THE
# BRITISH PHARMACOPŒIA

Names of official substances defined in the text are printed with capital initial letters; words in the text which refer to articles, reagents, and processes defined or described in an Appendix are printed in *italics*.

## ACACIÆ CORTEX

### Acacia Bark

Acacia Bark is the dried bark of Acacia arabica, *Willd.*, and also the dried bark of Acacia decurrens, *Willd.*; obtained from wild or cultivated trees not less than seven years old, and, after being dried, kept for one year before use.

*Characters.*—Bark of Acacia arabica hard and woody, rusty brown, and tending to divide into several layers. Outer surface of the older pieces covered with thick blackish periderm, rugged, fissured longitudinally and transversely. Inner surface red, longitudinally striated and fibrous. Taste astringent and mucilaginous.

Bark of Acacia decurrens usually in curved or channelled pieces, one and a half to three millimetres thick. External surface greyish brown, darkening with age; often with irregular longitudinal ridges, and, sometimes, transverse cracks. Inner surface reddish-brown, longitudinally striated; fracture irregular and coarsely fibrous, freshly fractured surface pale. Slight tan-like odour; taste astringent.

## ACACIÆ GUMMI

### Gum Acacia

Gum Acacia is a gummy exudation from the stem and branches of Acacia Senegal, *Willd.*, and of other species of Acacia, *Willd.*

*Characters and Tests.*—In rounded or ovoid tears or

masses of various sizes, or in more or less angular fragments with glistening surfaces; nearly colourless or with a yellowish tint. Tears opaque from numerous minute fissures; very brittle, the fractured surface being vitreous in appearance. Nearly inodorous; taste bland and mucilaginous. Insoluble in *alcohol* (90 per cent.); almost entirely soluble in *water*, the solution being translucent, viscous, and slightly acid. When dissolved in an equal weight of *water*, the solution is not glairy, and after admixture with more *water*, yields no gummy deposit on standing. An aqueous solution (1 in 10) exhibits slight lævorotation (absence of dextrin, certain sugars, etc.). 10 millilitres of the same solution are not precipitated by *solution of lead acetate*; are not, after previous boiling and cooling, coloured blue or brown by 0·1 millilitre of *N/10 solution of iodine* (absence of starch and dextrin), or bluish-black by *T. Sol. of ferric chloride* (absence of tannin). Ash not more than 4 per cent.

## ACETANILIDUM

### Acetanilide

*Synonym*—Phenyl-acetamide

Acetanilide, $C_8H_9NO$, may be obtained by the interaction of glacial acetic acid and aniline.

*Characters and Tests.*—Colourless, glistening lamellar crystals; inodorous; taste slightly pungent. Melting point 113°. Soluble in 210 parts of *water*, and in 4·2 parts of *alcohol* (90 per cent.); soluble in *ether*, and in *chloroform*. Heated with *solution of sodium hydroxide* the odour of aniline is given off, and if the liquid is then warmed with a few drops of *chloroform* the unpleasant odour of phenyl isocyanide is developed. An aqueous solution mixed with *solution of bromine* gives a yellowish-white precipitate (distinction from phenacetin). Forms a colourless solution with cold *sulphuric acid* or with cold *nitric acid*. A cold saturated aqueous solution does not affect *solution*

*of litmus* (absence of free acid), and is not affected by *T. Sol. of ferric chloride* (absence of phenazone, and salts of aniline). Ash not more than 0·1 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centigrams. | 2 to 5 grains. |

## ACETONUM

### Acetone

Acetone, or dimethyl-ketone, $C_3H_6O$, may be obtained by the dry distillation of calcium acetate, or barium acetate.

*Characters and Tests.*—A colourless, transparent, mobile and volatile liquid. Characteristic odour; taste pungent and sweetish. Forms clear mixtures with *water*, *alcohol* (90 per cent.), *ether*, and *chloroform* in all proportions. Specific gravity 0·795 to 0·798. Not less than 95 per cent. distils between 55° and 57°. Leaves no residue when evaporated on a water-bath. 10 millilitres, to which a few drops of *solution of phenolphthalein* have been added, require not more than 1 drop of *N/1 solution of sodium hydroxide* to produce a permanent pink coloration. 20 millilitres do not completely decolorise 0·1 millilitre of *N/10 solution of potassium permanganate* within fifteen minutes (limit of readily oxidisable impurities). Yields a clear mixture with an equal volume of *petroleum spirit* (limit of water).

## ACETUM CANTHARIDINI

### Vinegar of Cantharidin

| | |
|---|---|
| Cantharidin . . . . | 1 gramme |
| Glacial Acetic Acid . . . | 200 millilitres |
| Acetic Acid sufficient to produce . | 2000 millilitres |

Dissolve the Cantharidin in the Glacial Acetic Acid with

the aid of a water-bath; cool, and add sufficient Acetic Acid to produce the required volume.

This preparation contains approximately the same proportion of Cantharidin as the Acetum Cantharidis of the British Pharmacopœia, 1898.

## ACETUM SCILLÆ

### Vinegar of Squill

| | |
|---|---|
| Squill, bruised | 1000 grammes |
| Acetic Acid | 1000 millilitres |
| Distilled Water | 3200 millilitres |

Macerate for seven days; press and filter.

*Tests.*—Specific gravity 1·070. 10 millilitres require for neutralisation not less than 10·8 millilitres of *N/1 solution of sodium hydroxide.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This preparation is of approximately twice the strength of the Acetum Scillæ of the British Pharmacopœia, 1898.

## ACETUM URGINEÆ

### Vinegar of Urginea

| | |
|---|---|
| Urginea, bruised | 1000 grammes |
| Acetic Acid | 1000 millilitres |
| Distilled Water | 3200 millilitres |

Macerate for seven days; press and filter.

*Tests.*—Specific gravity 1·070. 10 millilitres require for neutralisation not less than 10·8 millilitres of *N/1 solution of sodium hydroxide,*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This preparation is of approximately twice the strength of the Acetum Urgineæ of the Indian and Colonial Addendum, 1900.

## ACIDUM ACETICUM

### Acetic Acid

Acetic Acid may be obtained by the destructive distillation of wood, and contains 33 per cent. by weight of hydrogen acetate, $HC_2H_3O_2$, and 67 per cent. by weight of water.

*Characters and Tests.*—A clear, colourless liquid with pungent odour, yielding, when neutralised with an alkali, the *reactions* characteristic of acetates. Specific gravity 1·044. Yields no residue on evaporation, and no characteristic *reactions* for copper, chlorides, nitrates, sulphates, or sulphites. Does not immediately darken in colour when exactly neutralised with *solution of ammonia* and warmed with *solution of silver nitrate* (absence of formates). 5 millilitres require for neutralisation 28·7 millilitres of *N/1 solution of sodium hydroxide*. 2 millilitres do not completely decolorise a mixture of one drop of *solution of potassium permanganate* and 10 millilitres of *water* within half a minute (limit of empyreumatic matter). When tested for lead according to the quantitative method described in Appendix V, using 10 grammes in each Nessler glass, no difference in colour is observed on the addition of the *solution of sodium sulphide* to one of the solutions (absence of lead). *Arsenic limit* 2 parts per million.

## ACIDUM ACETICUM DILUTUM

### Diluted Acetic Acid

Diluted Acetic Acid contains 5 per cent. by weight of hydrogen acetate, $HC_2H_3O_2$.

| | |
|---|---|
| Acetic Acid . . . . | 152·6 grammes |
| Distilled Water sufficient to produce | 1000·0 millilitres |

Mix.

*Tests.*—Specific gravity 1·007. 20 millilitres require for neutralisation 16·7 millilitres of *N/1 solution of sodium hydroxide.* Free from the impurities indicated under 'Acidum Aceticum.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## ACIDUM ACETICUM GLACIALE

### Glacial Acetic Acid

Glacial Acetic Acid contains not less than 98·9 per cent. by weight of hydrogen acetate, $HC_2H_3O_2$.

*Characters and Tests.*—At summer temperatures (about 15° to 20°) it is a clear, colourless liquid with a very pungent odour. Yields, when neutralised, the *reactions* characteristic of acetates. Crystallises when sufficiently cooled, and does not entirely re-melt until the temperature rises above 14·7°. 1 gramme diluted with 50 millilitres of *water* requires for neutralisation not less than 32·9 millilitres of *N/2 solution of sodium hydroxide.* Leaves no residue on evaporation, and yields no characteristic *reactions* for lead, copper, arsenic, chlorides, nitrates, sulphates, or sulphites. Does not immediately darken in

colour when neutralised with *solution of ammonia* and warmed with *solution of silver nitrate* (absence of formates). 2 millilitres of Glacial Acetic Acid do not completely decolorise a mixture of three drops of *solution of potassium permanganate* and 10 millilitres of *water* within half a minute (limit of empyreumatic matter).

## ACIDUM ACETYLSALICYLICUM

### Acetylsalicylic Acid

Acetylsalicylic Acid, $C_9H_8O_4$, may be obtained by the action of acetic anhydride or of acetyl chloride on salicylic acid.

*Characters and Tests.*—A white, crystalline powder; taste slightly acid. Sparingly soluble in *water*; soluble in 5 parts of *alcohol* (90 per cent.); soluble in *ether*. Melting point from 133° to 135°. When 0·5 gramme is boiled for two or three minutes with 10 millilitres of *solution of sodium hydroxide* and to the cooled solution excess of *diluted sulphuric acid* is added, a crystalline precipitate is produced which, after washing and drying, responds to the tests described under 'Acidum Salicylicum,' and the filtrate, after neutralisation, yields the *reactions* characteristic of acetates. When 0·5 gramme is shaken with 20 millilitres of *water* and 1 drop of *T. Sol. of ferric chloride* is added, no violet coloration is produced (absence of salicylic acid). *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## ACIDUM ARSENIOSUM

### Arsenious Anhydride

*Synonyms*—Arsenic: Arsenious Acid

Arsenious Anhydride may be obtained by roasting

certain arsenical ores, and contains not less than 99·8 per cent. of arsenious oxide, $As_4O_6$.

*Characters and Tests.*—A heavy white powder, or broken white lumps which have a vitreous fracture and usually appear stratified. Very slowly soluble in 65 parts of *water*. Slowly heated in a test-tube it yields a sublimate of minute, brilliant, transparent, octahedral crystals. Its aqueous solution, which is odourless, tasteless, and faintly acid to *litmus*, gives with *solution of silver ammonio-nitrate* a canary-yellow precipitate readily dissolved by *solution of ammonia* and by *nitric acid*. Sprinkled on ignited charcoal, it emits an alliaceous odour. Entirely volatilised by heat. 0·1 gramme, dissolved in boiling *water* with the aid of a little *solution of sodium hydroxide*, the cooled solution being slightly acidified with *hydrochloric acid* and then made alkaline with excess of *sodium bicarbonate*, decolorises not less than 20·1 millilitres of *N/10 solution of iodine*. Dissolves completely in *solution of ammonia*, and the resulting liquid, when diluted with an equal volume of *water* and acidified with *hydrochloric acid*, is not yellow (absence of arsenious sulphide).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 milligrams. | 1/64 to 1/16 grain. |

## ACIDUM BENZOICUM

### Benzoic Acid

Benzoic Acid, $HC_7H_5O_2$, may be obtained from benzoin, or prepared synthetically.

*Characters and Tests.*—Light, feathery, crystalline plates and needles, flexible, nearly colourless and odourless when quite pure, but possessing an agreeable, aromatic odour when obtained from benzoin by sublimation. Soluble in 450 parts of *water*, in 3 of *alcohol* (90 per cent.), in 2·5 of *ether*,

and in 7 of *chloroform*. Melting point 121·5°, but if sublimed from benzoin about 120°. Heated in a dry test-tube it melts and sublimes leaving only a slight residue. Volatilises in the vapour of *water*. The solution obtained by gently warming 0·2 gramme with 20 millilitres of *water* and 1 millilitre of *N/1 solution of sodium hydroxide* and filtering yields a pale reddish precipitate with *T. Sol. of ferric chloride*. When 0·5 gramme is heated in a closed crucible with twice its weight of *calcium carbonate*, the mass dissolved in *diluted nitric acid*, and *solution of silver nitrate* added, not more than the slightest cloudiness results (absence of chlorobenzoic acid). Yields no characteristic *reactions* for oxalates. Does not develop the odour of benzaldehyde when warmed with its own weight of *potassium permanganate* and ten times its weight of *diluted sulphuric acid* (absence of cinnamic acid). *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## ACIDUM BORICUM

### Boric Acid

*Synonym*—Boracic Acid

Boric Acid may be obtained by the interaction of sulphuric acid and borax, and contains not less than 99·5 per cent. of orthoboric acid, $H_3BO_3$.

*Characters and Tests.*—White, pearly lamellar crystals, or irregular masses of crystals, or crystalline powder; unctuous to the touch; taste feebly acid and bitter, leaving a sweetish after-taste. Soluble in 25 parts of *water*, in 4 of *glycerin*, and in 30 of *alcohol* (90 per cent.), the solutions being clear. *Turmeric paper* moistened with an aqueous solution slightly acidified with *hydrochloric acid* becomes

brownish-red on gently drying, and this colour changes to a greenish-black on the addition of *solution of potassium hydroxide*. The alcoholic solution burns with a flame tinged with green. 1 gramme dissolved in a mixture of 25 millilitres of *water* and 20 millilitres of *glycerin* requires for neutralisation not less than 16·0 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. Yields no characteristic *reactions* for copper, and not more than the slightest *reactions* for iron, calcium, magnesium, chlorides, or sulphates. *Lead limit* 25 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## ACIDUM CARBOLICUM

### Phenol

Phenol, $C_6H_6O$, commonly termed carbolic acid, may be obtained from coal-tar oil.

*Characters and Tests.*—Small, colourless, deliquescent crystals; odour peculiar but not fetid or tarry; taste sweetish, pungent. Has a caustic action on skin and mucous membrane. Freely soluble in *alcohol* (90 per cent.), in *ether, chloroform, glycerin,* in the fixed and volatile oils, and in solutions of alkalies. Exposed to moist air it may acquire a pinkish tinge. At 15·5°, 100 parts of Phenol are liquefied by the addition of 10 parts of *water,* form a clear liquid with 30 to 40 parts of *water,* and are completely dissolved by 1200 parts of *water.* The aqueous solution is clear and colourless. Melting point from 39° to 40°; boiling point not higher than 183°. Specific gravity at the melting point 1·060 to 1·066. Phenol does not immediately redden *blue litmus paper.* Optically inactive. Coagulates *collodion* and *solution of albumen.* An aqueous solution of Phenol

becomes deep purple with *T. Sol. of ferric chloride*; yields a white precipitate with excess of *solution of bromine*; and when mixed with one-fourth of its volume of *solution of ammonia*, and then with a few drops of *solution of chlorinated soda*, becomes blue after a time, or immediately on gently heating. One volume of Phenol liquefied by the addition of 10 per cent. of *water*, forms with 1 volume of *glycerin* a clear liquid which is not rendered turbid by the addition of 3 volumes of *water* (absence of cresol). Evaporated on a water-bath it leaves not more than 0·1 per cent. of residue.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

## ACIDUM CARBOLICUM LIQUEFACTUM

### Liquefied Phenol

*Synonym*—Liquefied Carbolic Acid

| | |
|---|---|
| Phenol . . . . . | 100 grammes |
| Distilled Water sufficient to produce . | 115 grammes |

Mix.

*Characters and Tests.*—A liquid, at first colourless, but usually acquiring a pinkish hue. Forms a clear solution on the addition of 12 to 20 per cent. by weight of *water* at 15·5°. Specific gravity 1·067 to 1·069. Boiling point gradually rising to a temperature not higher than 183°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 centimils. | 1 to 3 minims |

## ACIDUM CHROMICUM

### Chromic Anhydride

*Synonym*—Chromic Acid

Chromic Anhydride, $CrO_3$, may be obtained by the interaction of sulphuric acid and potassium bichromate. It should be preserved in well-stoppered bottles.

*Characters and Tests.*—Crimson acicular crystals, very deliquescent, inodorous, acting corrosively on the skin. Very soluble in *water* and in *ether*. Strongly heated it first melts and then evolves oxygen, leaving, after heating to redness, a green residue, which yields little or nothing to *water*. Warmed with *hydrochloric acid*, chlorine is evolved. In contact with relatively small proportions of *alcohol* (90 per cent.), *ether*, *glycerin*, or certain other organic substances, sudden combustion or explosion may ensue. When 4 grammes are dissolved in a mixture of 20 millilitres of *water* with 10 millilitres of *hydrochloric acid*, 5 millilitres of *solution of barium chloride* added and the mixture filtered, the filtrate yields no further precipitate on the addition of more of the reagent (limit of sulphates).

## ACIDUM CITRICUM

### Citric Acid

Citric Acid may be obtained from the juice of the fruit of various species of Citrus, and contains not less than 99·5 per cent. of hydrogen citrate, $H_3C_6H_5O_7,H_2O$.

*Characters and Tests.*—Large colourless prisms; taste strongly acid. Soluble in about 0·5 part of *water*, somewhat less soluble in *alcohol* (90 per cent.), and slightly soluble in *ether*. Yields, when neutralised, the *reactions* characteristic of citrates. 1 gramme dissolved in *water* requires for neutralisation 14·2 millilitres of *N/1 solution of sodium hydroxide*. Yields no characteristic

*reactions* for copper or iron, and not more than very slight *reactions* for calcium or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 1·4 parts per million. 1 gramme of powdered Citric Acid mixed with 10 millilitres of *sulphuric acid* in a test-tube previously rinsed with *sulphuric acid* acquires not more than a pale yellow colour when kept at a temperature of 90° for one hour (absence of tartaric acid). Ash not more than 0·05 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## ACIDUM HYDRIODICUM DILUTUM

### Diluted Hydriodic Acid

Diluted Hydriodic Acid is an aqueous liquid containing, when freshly prepared, 10 per cent. by weight of hydrogen iodide, HI, and 1 per cent. by weight of hydrogen hypophosphite, $HPH_2O_2$. It may be obtained by the action of hydrogen sulphide on a solution of iodine, with the subsequent addition of hydrogen hypophosphite.

*Characters and Tests.*—A clear, colourless liquid. Yields, when neutralised, the *reactions* characteristic of iodides. Yields no characteristic *reactions* for barium, calcium, potassium, sulphates, or sulphides. When to 5 grammes of the Acid, diluted with a little *water*, 45 millilitres of *N/10 solution of silver nitrate*, 5 millilitres of *nitric acid*, and 0·5 millilitre of *solution of ferric sulphate* are added, not less than 5 or more than 7 millilitres of *N/10 solution of ammonium thiocyanate* are required to produce a per-

manent pink coloration. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils. | 5 to 10 minims. |

## ACIDUM HYDROBROMICUM DILUTUM

### Diluted Hydrobromic Acid

Diluted Hydrobromic Acid is an aqueous liquid containing 10 per cent. by weight of hydrogen bromide, HBr. It may be obtained by the interaction of bromine and sulphurous acid, and subsequent distillation.

*Characters and Tests.*—Clear, colourless, and inodorous. Yields, when neutralised, the *reactions* characteristic of bromides. Specific gravity 1·077. 10 millilitres require for neutralisation 13·3 millilitres of *N/1 solution of sodium hydroxide.* 2 millilitres require, for complete precipitation, 26·6 millilitres of *N/10 solution of silver nitrate.* Yields no characteristic *reactions* for barium, chlorides, phosphates, or sulphites, and only a slight *reaction* for sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million. Leaves not more than 0·01 per cent. of residue on evaporation.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 mils. | 15 to 60 |

## ACIDUM HYDROCHLORICUM

### Hydrochloric Acid

Hydrochloric Acid is a liquid containing 31·79 per cent. by weight of hydrogen chloride, HCl, and 68·21 per cent. by weight of water. It may be obtained by dissolving in

water the gas produced by the interaction of sulphuric acid and sodium chloride.

*Characters and Tests.*—Colourless and strongly acid, emitting white, pungent fumes. Yields, when neutralised, the *reactions* characteristic of chlorides. Specific gravity 1·160. 5 millilitres, diluted with *water*, require for neutralisation 50·6 millilitres of *N/1 solution of sodium hydroxide.* When diluted with *water* yields no characteristic *reactions* for bromides, iodides, sulphates, or sulphites, and only slight *reactions* for iron. Diluted with *water* and *solution of potassium iodide* added, no blue colour is produced on the addition of *mucilage of starch* (absence of free chlorine). *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Leaves not more than 0·01 per cent. by weight of residue on evaporation.

## ACIDUM HYDROCHLORICUM DILUTUM

### Diluted Hydrochloric Acid

Diluted Hydrochloric Acid contains 10 per cent. by weight of hydrogen chloride, HCl.

| | |
|---|---|
| Hydrochloric Acid . . . | 330 grammes |
| Distilled Water sufficient to produce | 1000 millilitres |

Mix.

*Tests.*—Yields, when neutralised, the *reactions* characteristic of chlorides. Specific gravity 1·048. 10 millilitres require for neutralisation 28·7 millitres of *N/1 solution of sodium hydroxide.* Free from the impurities indicated under ' Acidum Hydrochloricum.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## ACIDUM HYDROCYANICUM DILUTUM

### Diluted Hydrocyanic Acid

*Synonym*—Dilute Prussic Acid

Diluted Hydrocyanic Acid is an aqueous solution containing 2 per cent. by weight of hydrogen cyanide, HCN. It may be obtained by the interaction of diluted sulphuric acid and potassium ferrocyanide, and subsequent distillation. Should be stored in a dark place, in small, inverted stoppered bottles of amber-coloured glass.

*Characters and Tests.*—A colourless liquid with a characteristic odour. Specific gravity 0·997. Only slightly acid to *litmus*. Yields, when neutralised, the *reactions* characteristic of cyanides. 5 millilitres, mixed with 50 millilitres of *water*, 5 millilitres of *solution of ammonia*, and 3 drops of *solution of potassium iodide*, require the addition of not less than 18·4 and not more than 19 millilitres of *N/10 solution of silver nitrate* before a permanent precipitate begins to form. 5 millilitres evaporated in a platinum dish leave no appreciable residue. Yields not more than the slightest characteristic *reactions* for sulphates or chlorides.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centimils. | 2 to 5 minims. |

## ACIDUM LACTICUM

### Lactic Acid

Lactic Acid is an aqueous solution containing not less than 75 per cent. by weight of hydrogen lactate, $HC_3H_5O_3$, and not less than 10 per cent. by weight of lactide, $C_6H_8O_4$. It may be obtained by the fermentation of lactose.

*Characters and Tests.*—Colourless, syrupy, hygroscopic, inodorous; acid to *litmus*. Miscible in all proportions with *water*, *alcohol* (90 per cent.), and *ether*; nearly insoluble in *chloroform*. Specific gravity about 1·21. Warmed with one-tenth of its weight of *potassium permanganate* it yields the odour of aldehyde. 1 gramme diluted with 10 millilitres of *water* requires for neutralisation not less than 8·3 millilitres of *N/1 solution of sodium hydroxide*. After the further addition of 10 millilitres of the alkaline solution and boiling for fifteen minutes, not more than 8·6 millilitres of *N/1 solution of sulphuric acid* are required to neutralise the excess of alkali. Yields no characteristic *reactions* for copper, iron, chlorides, citrates, oxalates, phosphates, sulphates, or tartrates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Diluted with *water* gives no precipitate with *solution of copper sulphate* (absence of sarco-lactic acid), and none, or only the slightest traces, with excess of *solution of potassio-cupric tartrate*, even after prolonged boiling (absence of more than traces of various sugars). The mixture obtained by heating Lactic Acid with excess of *zinc carbonate* and evaporating to dryness, when exhausted with *absolute alcohol* and the latter evaporated, does not leave any sweet residue (absence of glycerin). Yields no rancid odour when gently warmed (absence of fatty acids). When carefully poured upon an equal volume of *sulphuric acid* contained in a clean test-tube, little or no darkening in colour occurs (absence of organic impurities). No turbidity, whether permanent or transient, is produced when the Acid is added drop by drop to twice its volume of *ether* (absence of gum, sugars, mannite, calcium phosphate). Yields no precipitate with *solution of lead subacetate* (absence of malic acid and sulphuric acid).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 2 mils. | 15 to 30 minims. |

## ACIDUM NITRICUM

### Nitric Acid

Nitric Acid contains 70 per cent. by weight of hydrogen nitrate, $HNO_3$, and 30 per cent. by weight of water. It may be obtained by the interaction of sulphuric acid and sodium nitrate.

*Characters and Tests.*—A clear, colourless, or almost colourless liquid emitting corrosive fumes. Yields, when neutralised, the *reactions* characteristic of nitrates. Specific gravity 1·42. 1 gramme diluted with *water* requires for neutralisation 11·1 millilitres of *N/1 solution of sodium hydroxide.* When diluted with *water* yields no characteristic *reactions* for copper, iron, chlorides, bromates, iodates, or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Leaves not more than 0·05 per cent. by weight of residue on evaporation.

## ACIDUM NITRICUM DILUTUM

### Diluted Nitric Acid

Diluted Nitric Acid contains 10 per cent. by weight of hydrogen nitrate, $HNO_3$.

| | |
|---|---|
| Nitric Acid . . . . . | 151 grammes |
| Distilled Water sufficient to produce | 1000 millilitres |

Mix.

*Tests.*—Specific gravity 1·057. 10 millilitres require for neutralisation 16·8 millilitres of *N/1 solution of sodium hydroxide.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

This Diluted Acid is of approximately three-fifths the strength of the corresponding preparation of the British Pharmacopœia, 1898, and contains 10 per cent. by weight of hydrogen nitrate, $HNO_3$.

## ACIDUM NITRO-HYDROCHLORICUM DILUTUM

### Diluted Nitro-hydrochloric Acid

| | |
|---|---|
| Nitric Acid . . . . . | 60 millilitres |
| Hydrochloric Acid . . . | 80 millilitres |
| Distilled Water . . . . | 500 millilitres |

Mix the Acids with the Distilled Water, and keep the mixture in a glass-stoppered bottle for fourteen days before use.

*Tests.*—Specific gravity 1·07. 10 millilitres require for neutralisation about 26·6 millilitres of *N/1 solution of sodium hydroxide.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## ACIDUM OLEICUM

### Oleic Acid

Oleic Acid may be obtained by the saponifying action of alkalies and subsequent action of acids, or by the action of superheated steam, upon commercial oleins.

*Characters and Tests.*—A straw-coloured liquid, occasionally with a faintly rancid odour. Insoluble in *water*, but readily soluble in *alcohol* (90 per cent.), in *chloroform*, or in *ether*. When cooled it does not become semi-solid until the temperature has fallen below 9°. Specific gravity 0·890 to 0·910.

## ACIDUM PHOSPHORICUM CONCENTRATUM

### Concentrated Phosphoric Acid

Concentrated Phosphoric Acid is a liquid containing 66·3 per cent. by weight of hydrogen orthophosphate, $H_3PO_4$, and 33·7 per cent. by weight of water. It may be obtained by the oxidation of phosphorus.

*Characters and Tests.*—A colourless, syrupy liquid with an acid taste and reaction. Leaves, on evaporation, a residue which melts at a low red heat, and when cold forms a glass-like mass. Yields, when neutralised, the *reactions* characteristic of phosphates. Specific gravity 1·5. 1 gramme mixed with a solution of 5 grammes of *sodium chloride* in 20 millilitres of *water* requires for neutralisation 13·5 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. Yields when diluted with *water* no characteristic *reactions* for copper, calcium, chlorides, or nitrates, and not more than slight *reactions* for iron or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

## ACIDUM PHOSPHORICUM DILUTUM

### Diluted Phosphoric Acid

Diluted Phosphoric Acid contains 10 per cent. by weight of hydrogen orthophosphate, $H_3PO_4$.

| | |
|---|---|
| Concentrated Phosphoric Acid . | 159·5 grammes |
| Distilled Water sufficient to produce . . . . . | 1000·0 millilitres |

Mix.

*Tests.*—Specific gravity 1·057. 10 millilitres mixed with a solution of 5 grammes of *sodium chloride* in 20

millilitres of *water* require for neutralisation 21·6 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## ACIDUM PICRICUM

### Picric Acid

*Synonym*—Carbazotic Acid

Picric Acid may be obtained by the action of nitric acid and sulphuric acid on phenol, and contains not less than 99 per cent. of tri-nitro-phenol, $C_6H_2(NO_2)_3OH$.

*Characters and Tests.*—Bright yellow crystalline powder. Inodorous; taste very bitter. Soluble in 90 parts of *water*, and in 10 parts of *alcohol* (90 per cent.), forming intensely yellow solutions which stain the skin yellow. Melting point 122°. 2 grammes dissolved in hot *water* require for neutralisation 17·3 millilitres of *N/2 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator.

## ACIDUM SALICYLICUM

### Salicylic Acid

Salicylic Acid, $HC_7H_5O_3$, may be obtained from natural salicylates such as the oils of wintergreen (Gaultheria procumbens, *Linn.*) and sweet-birch (Betula lenta, *Linn.*), or by the interaction of sodium phenate and carbon dioxide.

*Characters and Tests.*—Distinct, prismatic, colourless crystals. Taste at first sweetish, then acid, leaving a burning sensation in the throat. Soluble in about 500 parts of *water*, in 3·5 of *alcohol* (90 per cent.), or in 2 of *ether*. Melting point 156° to 159°. Carefully heated it volatilises without decomposition. Dissolves in *solution of ammonium acetate*, and in *solution of sodium phosphate*. *T. Sol. of ferric chloride* gives with the aqueous solution a violet colour, or, if the solution be largely diluted, a reddish-violet colour. Shaken with a small proportion of *water*, the mixture filtered, and the solution evaporated, there remains a white residue, having no buff-tinted fringe (absence of iron, organic impurities, and colouring matter). Salicylic Acid dissolves in cold *sulphuric acid*, imparting to the liquid not more than a faint brownish tint in fifteen minutes (absence of certain organic impurities). When 1 gramme of the Acid is dissolved in an excess of cold *solution of sodium carbonate*, the liquid shaken with an equal volume of *ether*, and the ethereal solution allowed to evaporate spontaneously, the residue, if any, is free from the odour of phenol (absence of phenol). *Arsenic limit* 2 parts per million. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## ACIDUM SULPHURICUM

### Sulphuric Acid

Sulphuric Acid may be obtained by the combustion of sulphur or pyrites and the oxidation and hydration of the resulting sulphur dioxide by means of nitrous and aqueous vapours, and contains not less than 95 per cent. by weight of hydrogen sulphate, $H_2SO_4$.

*Characters and Tests.*—A colourless, corrosive, intensely acid liquid of oily consistence, evolving much heat on the addition of *water*. Yields, when neutralised, the *reactions* characteristic of sulphates. Specific gravity about 1·841. 1 gramme diluted with 20 or 30 millilitres of *water* requires for neutralisation not less than 19·3 millilitres of *N/1 solution of sodium hydroxide*. Yields no characteristic *reactions* for copper, iron, ammonium, chlorides, nitrates, nitrites, or sulphites. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. *Hydrochloric acid* to which *sodium sulphite* has been added, when poured carefully upon an equal volume of Sulphuric Acid contained in a test-tube, does not cause a red coloration at the junction of the two liquids, and no red precipitate forms on warming the tube (absence of selenium). Leaves not more than 0·05 per cent. by weight of solid residue on evaporation.

## ACIDUM SULPHURICUM AROMATICUM

### Aromatic Sulphuric Acid

| | |
|---|---|
| Tincture of Ginger . . . | 250 millilitres |
| Spirit of Cinnamon . . . | 15 millilitres |
| Sulphuric Acid . . . . | 70 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Mix the Sulphuric Acid gradually with six hundred millilitres of the Alcohol; cool to 15·5°; add the Spirit of Cinnamon and Tincture of Ginger and sufficient of the Alcohol to produce the required volume.

*Tests.*—Specific gravity 0·917 to 0·923. 10 millilitres require for neutralisation not less than 24·9 millilitres of *N/1 solution of sodium hydroxide*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## ACIDUM SULPHURICUM DILUTUM

### Diluted Sulphuric Acid

Diluted Sulphuric Acid contains 10 per cent. by weight of hydrogen sulphate, $H_2SO_4$.

| | |
|---|---|
| Sulphuric Acid . . . . | 112·5 grammes |
| Distilled Water . . . . | 940·0 millilitres, or a sufficient quantity |

Add the Sulphuric Acid very gradually to one-half of the Distilled Water contained in a glass flask ; cool to 15·5° and add sufficient Distilled Water to make the resulting liquid respond to the following tests.

*Tests.*—Specific gravity 1·069. 10 millilitres require for neutralisation 21·7 millilitres of *N/1 solution of sodium hydroxide.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## ACIDUM SULPHUROSUM

### Sulphurous Acid

Sulphurous Acid is an aqueous solution containing 6·4 per cent. by weight of hydrogen sulphite, $H_2SO_3$, corresponding to 5 per cent. by weight of sulphur dioxide, $SO_2$. The sulphur dioxide may be obtained by heating sulphuric acid with charcoal or sulphur.

*Characters and Tests.*—A colourless liquid with a pungent, sulphurous odour. Yields, when neutralised, the *reactions* characteristic of sulphites. Yields not more than a

slight precipitate with *solution of barium chloride* (limit of sulphates), but a copious precipitate if *solution of chlorine* is also added. Leaves no appreciable residue on evaporation. Specific gravity 1·025. 1 gramme, diluted with 100 millilitres of recently boiled and cooled *water*, requires 15·5 millilitres of *N/10 solution of iodine* for complete oxidation, *mucilage of starch* being used as indicator. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## ACIDUM TANNICUM

### Tannic Acid

*Synonym*—Tannin

Tannic Acid, $C_{14}H_{10}O_9$, may be extracted by water-saturated ether from galls which have been subjected to a special fermentation.

*Characters and Tests.*—A light brownish powder consisting of thin glistening scales. Characteristic odour; taste strongly astringent. Reaction acid. Soluble in 1 part of *water* or of *alcohol* (90 per cent.), and, slowly, in 1 part of *glycerin*. It is precipitated from an aqueous solution by many mineral salts and acids. The aqueous solution precipitates *solutions of isinglass*, *albumen*, alkaloids, and *tartarated antimony*, and gives with *T. Sol. of ferric chloride* a bluish-black colour. Ash not more than 0·2 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## ACIDUM TARTARICUM

### Tartaric Acid

Tartaric Acid may be obtained from acid potassium tartrate, and contains not less than 99 per cent. of hydrogen tartrate, $H_2C_4H_4O_6$.

*Characters and Tests.*—Colourless monoclinic prisms; taste strongly acid. Soluble in less than 1 part of *water*, and in 3 parts of *alcohol* (90 per cent.). Yields, when neutralised, the *reactions* characteristic of tartrates. An aqueous solution is dextrorotatory. 1 gramme dissolved in *water* requires for neutralisation not less than 13·2 millilitres of *N/1 solution of sodium hydroxide*. Yields no characteristic *reactions* for copper, iron, or oxalates, and not more than the slightest *reactions* for calcium. *Lead limit* 20 parts per million. *Arsenic limit* 1·4 parts per million. 1 gramme dissolved in 50 millilitres of *water*, on addition of 0·5 millilitre of *solution of barium chloride*, does not yield a greater opalescence than 1 millilitre of *N/100 solution of sulphuric acid* when precipitated under the same conditions (limit of sulphates). Ash not more than 0·1 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## ACONITI RADIX

### Aconite Root

Aconite Root is the dried root of Aconitum Napellus, *Linn.*

*Characters and Tests.*—From four to ten centimetres

long, and from one to two centimetres wide at the upper extremity. Conical, dark brown, with numerous root scars, and crowned with the base of the stem or the remains of a bud. Internally solid and starchy. In transverse section a stellate cambium with small vascular bundles at the projecting angles; primary cortex narrow, with isolated thick-walled sclerenchymatous cells; cells of parenchymatous tissue contain numerous small simple or compound starch grains. No marked odour; taste at first slight, followed by persistent sensation of tingling and numbness. Yields not less than 0·40 per cent. of ether-soluble alkaloids when assayed by the following process:—

Into a small stoppered glass percolator, provided with a glass tap and suitably plugged with cotton wool, introduce 10 grammes of Aconite Root in No. 40 powder and 75 millilitres of *alcohol* (70 per cent.). Macerate for four hours, shaking occasionally. Then allow percolation to proceed slowly until the liquid ceases to drop. Continue the percolation by the addition of more of the same menstruum until 150 millilitres have been collected or the Root is exhausted. Evaporate the percolate to dryness in a shallow porcelain evaporating basin, at a temperature not exceeding 60°. Dissolve the residue in 5 millilitres of *N/10 solution of sulphuric acid* diluted with 20 millilitres of *water*. Filter into a separating funnel, washing the dish and filter with about 30 millilitres of *water*. Add to the mixed filtrate and washings 25 millilitres of *ether* and 2 millilitres of *solution of ammonia*, and shake for one minute. After separation draw off the lower layer into a flask, and filter the ethereal solution into a beaker. Return the contents of the flask to the separator, add 20 millilitres of *ether* and again shake for one minute, separating the aqueous liquid and filtering the ethereal solution into the beaker. Repeat the operation with two other portions, each of 20 millilitres, of *ether*. Evaporate the mixed ethereal solutions to dryness. dry the residue at 60°, dissolve it in 5 millilitres of *N/20 solution of sulphuric acid* diluted with 20 millilitres of *water*, and titrate back with *N/20 solution of sodium hydroxide*, *tincture of cochineal* being used as indicator. Deduct the

number of millilitres of the alkaline solution required from 5. Each millilitre of the difference corresponds to 0·03217 gramme of ether-soluble alkaloids. The product of the difference multiplied by 0·3217 gives the percentage of ether-soluble alkaloids in the powdered Root.

## ACONITINA

### Aconitine

Aconitine, $C_{34}H_{45}NO_{11}$, is an alkaloid obtained from Aconite Root.

*Characters and Tests.*—Colourless, transparent, hexagonal crystals belonging to the rhombic system, prismatic and tabular. Melting point 198°, at which temperature evolution of acetic acid occurs. Almost insoluble in *water*, *petroleum spirit*, and *carbon disulphide*; readily soluble in *benzene* and in *chloroform*, less readily in *ether* and in *absolute alcohol*. Forms a crystalline hydrochloride which melts at 149°. A drop of an aqueous solution (1 in 10000) placed upon the tongue produces a characteristic tingling and numbing sensation. An aqueous solution, not more dilute than 1 in 4000, faintly acidified with *acetic acid*, yields a reddish precipitate on the addition of a few drops of *N/10 solution of potassium permanganate*. The ethereal solution obtained by boiling Aconitine with *N/2 alcoholic solution of potassium hydroxide*, removing most of the alcohol by evaporation, diluting with *water*, acidifying, and extracting with *ether*, leaves on evaporation a crystalline residue of benzoic acid. When 0·0002 gramme of Aconitine is gently warmed with 4 drops of *sulphuric acid* an odour of benzoic acid is evolved, and if after five minutes a few crystals of *resorcin* are added and the heat continued, a reddish-yellow colour, changing to intense red, is produced. No appreciable ash.

## ADEPS BENZOATUS

### Benzoated Lard

| | |
|---|---|
| Prepared Lard . . . . | 1000 grammes |
| Benzoin, in coarse powder . . | 30 grammes |

Melt the Lard, add the Benzoin, and maintain at a temperature of 60° for one hour, stirring frequently; strain, and stir until nearly cold.

In India, Benzoated Suet (Sevum Benzoatum) should be employed in making the official preparations for which Benzoated Lard is directed to be used.

## ADEPS LANÆ

### Wool Fat

*Synonym*—Anhydrous Lanolin

Wool Fat is the purified fat of sheep's wool, freed from water.

*Characters and Tests.*—A yellowish, tenacious, unctuous substance. Almost inodorous. Melting point about 40°. When a solution of 0·1 gramme in a mixture of 5 millilitres of *chloroform* and 0·5 millilitre of *acetic anhydride* is gently poured upon the surface of 5 millilitres of *sulphuric acid* in a test-tube, a purplish-brown ring, the upper layer of which gradually becomes green, is developed at the surface of contact (presence of cholesterol). A solution of 2·0 grammes in 10 millilitres of *ether* remains colourless on the addition of 2 drops of *solution of phenolphthalein* (absence of free alkali), but becomes deep red on the addition of 1 drop of *N/1 solution of sodium hydroxide* (limit of free acid). Heated with *solution of sodium hydroxide* no ammoniacal odour is evolved (absence of organic nitrogenous matter). Ash not more than 0·3 per cent.

## ADEPS LANÆ HYDROSUS

### Hydrous Wool Fat

*Synonym*—Lanolin

| | |
|---|---|
| Wool Fat . . . . . | 70 grammes |
| Distilled Water . . . . | 30 millilitres |

Mix.

*Tests.*—10 grammes heated on a water-bath, with stirring, until the weight is constant, yield not less than 7 grammes of a residue which responds to the tests described under 'Adeps Lanæ.

## ADEPS PRÆPARATUS

### Prepared Lard

Prepared Lard is the purified internal fat of the hog, Sus scrofa, *Linn.*

*Characters and Tests.*—A soft, white, homogeneous, unctuous substance. Odour faint but not rancid. Entirely soluble in *ether*. *Acid value* not more than 1·2; *saponification value* 192 to 198; *iodine value* 52 to 63; *unsaponifiable matter* not more than 0·5 per cent.; *refractive index* at 60° 1·4530 to 1·4550. Forms on melting a clear liquid which does not deposit water on standing. *Water* boiled with it does not acquire an alkaline reaction (absence of alkalies), and, after filtering and acidifying with *nitric acid*, does not yield any reaction with *solution of silver nitrate* (absence of chlorides). When a mixture of 20 millilitres of the melted and filtered Lard with 10 millilitres of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute and allowed to stand, the acid layer does not become pink (absence of sesame oil).

In India, Prepared Suet (Sevum Præparatum) should be employed in making the official preparations for which Prepared Lard is directed to be used.

## ADRENALINUM

### Adrenalin

Adrenalin, or lævo-methylamino-ethanol-catechol, $C_9H_{13}NO_3$, may be obtained from the suprarenal glands of animals.

*Characters and Tests.*—A light-brown, or nearly white, microcrystalline powder. Very slightly soluble in *water*; almost insoluble in *alcohol* (90 per cent.), in *ether*, and in *chloroform*. Combines with acids to form salts which are readily soluble in *water* and in *alcohol* (90 per cent.). Melts, with partial decomposition, between 205° and 212°. Alkaline to moistened *litmus paper*. A dilute, slightly acid solution gives with a trace of *ferric chloride* an emerald-green colour which is changed to purple or carmine by the cautious addition of a dilute solution of *sodium hydroxide*; readily reduces *solution of auric chloride*; gradually develops a characteristic unpleasant odour when a small quantity is mixed with five times its volume of *solution of sodium hydroxide*; yields no precipitate with *solution of potassio-mercuric iodide* (absence of most alkaloids). No appreciable ash.

## ÆTHER

### Ether

Ether, also known as ethylic ether, $C_4H_{10}O$, may be obtained by distilling a mixture of ethylic alcohol or industrial methylated spirit and sulphuric acid, and rectifying the distillate. It should be preserved in a cool dark place.

*Characters and Tests.*—A colourless, very volatile and inflammable liquid. Odour and taste strong and characteristic. Slightly soluble in *water*; miscible in all proportions with *alcohol* (90 per cent.), *chloroform*, and fixed and volatile oils. Specific gravity 0·720. Boiling point from 34° to 36°.

Its vapour mixed with air is explosive in contact with flame. 5 millilitres, on spontaneous evaporation in a glass dish, leave a film of moisture which does not redden or bleach *blue litmus paper* (absence of free acid, sulphurous acid).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 2 mils (repeated). | 15 to 30 minims (repeated). |
| 3 to 4 mils (single). | 45 to 60 minims (single). |

## ÆTHER ACETICUS

### Acetic Ether

Acetic Ether is a liquid obtained by distilling a mixture of ethylic alcohol, acetic acid, and sulphuric acid, and purifying the product. It contains not less than 90 per cent. of ethyl acetate, $C_2H_5C_2H_3O_2$.

*Characters and Tests.*—A colourless liquid with a fragrant odour. Soluble in all proportions in *alcohol* (90 per cent.), in *ether* and in *chloroform*, and in not less than 11 parts of *water*. Specific gravity 0·900 to 0·907. Moistened *blue litmus paper* introduced into it is not immediately reddened. A little allowed to evaporate from filter paper leaves no extraneous odour. When carefully poured over *sulphuric acid* no dark ring is formed within fifteen minutes at the surface of contact. Contains not less than 90 per cent. of ethyl acetate as determined by the following process :—

Introduce about 5 grammes into a tared stoppered flask, weigh, and make up to 100 millilitres with *water*. Transfer 10 millilitres of this solution to a titration flask and neutralise with *N/1 solution of sodium hydroxide*, *solution of phenolphthalein* being used as indicator. Then add 20 millilitres of the alkaline solution, set aside for five minutes, rotating occasionally, dilute with *water* and titrate back with *N/1 solution of sulphuric acid*. Deduct from 20 the

number of millilitres of the acid solution required. Each millilitre of the difference corresponds to 0·088 gramme of ethyl acetate.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 2 mils (repeated). | 15 to 30 minims (repeated). |
| 3 to 4 mils (single). | 45 to 60 minims (single). |

## ÆTHER PURIFICATUS

### Purified Ether

Purified Ether possesses the characters and responds to the tests described under 'Æther.' It responds also to the following tests :—

*Tests.*—Kept in contact with *potassium hydroxide* freshly broken into small fragments, in a well-stoppered white glass bottle in the dark, no yellow coloration is developed within one hour. Mixed with one-tenth of its volume of freshly prepared *solution of potassium iodide*, it does not develop a yellow colour within three hours when kept in a completely filled white glass stoppered bottle in the dark and frequently shaken. Yields no reaction with the following test for methyl compounds :—

Well shake 2 volumes of the Purified Ether in a separating funnel with 1 volume of *alcohol* (20 per cent.) and 1 volume of *water*, allow the mixture to separate, and draw off the lower layer. Mix 5 millilitres of this lower layer in a wide test-tube with 2·5 millilitres of an aqueous solution (1 in 50) of *potassium permanganate* and 0·2 millilitre of *sulphuric acid*. At the end of three minutes add to the contents of the tube 0·5 millilitre of an aqueous solution (9·6 in 100) of *oxalic acid*, followed by 1 millilitre of *sulphuric acid*, and then by 5 millilitres of *decolorised solution of fuchsin* ; mix thoroughly and set aside for twenty minutes. No violet colour is produced (absence of methyl compounds).

## AGROPYRUM

### Couch Grass

*Synonym*—Triticum

Couch Grass is the dried rhizome of Agropyron repens, *Beauv.*, freed from remains of leaves and rootlets.

*Characters.*—Rhizome pale yellow, rigid, from two to two and a half millimetres in diameter, usually in pieces from three to six millimetres long. Strongly furrowed longitudinally, hollow except at the nodes. Contains no starch. No odour; taste slightly sweet.

## ALCOHOL ABSOLUTUM

### Absolute Alcohol

Absolute Alcohol is ethyl hydroxide, $C_2H_5OH$, with not more than 1 per cent. by weight of water; obtained by the dehydration of less strong ethylic alcohol, and subsequent distillation.

*Characters and Tests.*—Specific gravity from 0·794 (equivalent to 99·95 per cent. of ethyl hydroxide by volume and by weight) to 0·7969 (equivalent to 99·4 per cent. of ethyl hydroxide by volume or 99 per cent. by weight). Very volatile and hygroscopic at ordinary temperatures. Anhydrous *copper sulphate* shaken occasionally during two or three hours in a well-closed vessel with about fifty times its weight of Absolute Alcohol does not assume a decidedly blue colour (absence of excess of water). Free from the impurities indicated under 'Spiritus Rectificatus,' and resembling it in other general characters.

## ALOE

### Aloes

Aloes is the juice that flows from the transversely cut leaves of Aloe chinensis, *Baker*, Aloe Perryi, *Baker*, and probably other species of Aloe, evaporated to dryness. Known in commerce as Curaçao aloes, Socotrine aloes, or Zanzibar aloes.

*Characters and Tests.*—In hard masses, varying in colour from yellowish-brown to dark or chocolate-brown. Fractured surface dull, waxy and uniform (Curaçao and Zanzibar aloes), or uneven and somewhat porous (Socotrine aloes). Small splinters examined under the microscope exhibit minute crystals embedded in a transparent mass. Characteristic odour; taste nauseous and bitter. The solution obtained by dissolving 0·1 gramme of Aloes in 10 millilitres of boiling *water* and adding 0·5 gramme of *purified borax* acquires a green fluorescence. *Nitric acid* dropped on a little crushed Aloes acquires a reddish-brown colour (Socotrine and Zanzibar aloes), or a crimson colour (Curaçao aloes). Almost entirely soluble in *alcohol* (60 per cent.). Loss on drying at 100° not more than 10 per cent. Ash not more than 5 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centigrams. | 2 to 5 grains. |

## ALOINUM

### Aloin

Aloin is a crystalline principle obtained from aloes.

*Characters and Tests.*—A pale yellow, microcrystalline powder. Almost inodorous; taste intensely bitter. Almost entirely soluble in 130 parts of *water*, in 18 parts of

*alcohol* (90 per cent.), and in 50 parts of *acetone*; very sparingly soluble in *ether*, *chloroform*, and *benzene*; readily soluble in dilute *solution of ammonia*, the liquid becoming red and acquiring a greenish-red fluorescence. 0·5 gramme of Aloin gently warmed with 25 millilitres of *water* forms an almost clear solution; the filtered liquid remains clear on cooling, but on long standing slowly deposits pale yellow crystals of Aloin. One drop of *solution of copper sulphate* added to 20 millilitres of an aqueous solution (1 in 1000) of Aloin produces a bright yellow coloration, which is changed to red by the addition of 0·5 millilitre of a saturated aqueous solution of *sodium chloride*, and to violet on the further addition of 1 millilitre of *alcohol* (90 per cent.). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

## ALSTONIA

### Alstonia

Alstonia is the dried bark of Alstonia scholaris, *R. Br.*, and also of Alstonia constricta, *F. Mucll.*

*Characters.*—Bark of Alstonia scholaris usually in irregular fragments, three to twelve millimetres thick; texture somewhat spongy, fracture short and coarse; external layer unevenly rough and fissured, brownish-grey with occasional blackish spots; internal layer bright buff. Transverse section shows numerous small medullary rays in inner layer. Almost odourless; taste bitter.

Bark of Alstonia constricta usually in curved pieces or quills about sixty millimetres wide, and twelve millimetres thick. Periderm from two and a half to six millimetres thick, rusty brown, strongly rugose, with large deeply fissured reticulations. Bark internally cinnamon-

brown, with strong coarse longitudinal striæ. Transverse section shows dark-brown periderm covering the inner orange-brown tissues, in which numerous small shining particles can be seen with a lens. Fracture short and granular in outer layers, fibrous in inner. Slight aromatic odour ; taste very bitter.

## ALUMEN EXSICCATUM

### Exsiccated Alum

Potassium Alum . . . . 100 grammes

Heat the Potassium Alum in a porcelain dish or other suitable vessel till it liquefies, then increase and continue the application of heat until aqueous vapour ceases to be disengaged, and the salt has lost from 45 to 46 per cent. of its weight.

*Characters.*—A white powder slowly and completely soluble in 20 parts of *water*. Absorbs moisture on exposure to air. Yields the reactions and is free from the impurities indicated under ' Alumen Purificatum.'

## ALUMEN PURIFICATUM

### Purified Alum

Purified Alum is aluminium and potassium sulphate (Potassium Alum), $Al_2(SO_4)_3,K_2SO_4,24H_2O$, or aluminium and ammonium sulphate (Ammonium Alum), $Al_2(SO_4)_3$, $(NH_4)_2SO_4,24H_2O$, and is obtained by the combination of aluminium sulphate with potassium sulphate or with ammonium sulphate.

*Characters and Tests.*—In colourless transparent crystalline masses ; taste sweetish, astringent. Soluble in 10 parts of *water*, the solution being clear and having an acid

reaction; freely soluble in *glycerin*, insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of aluminium, of potassium or ammonium, and of sulphates. Yields no characteristic *reactions* for copper, lead, zinc, calcium, or sodium, and not more than very slight *reactions* for iron. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## AMMONIACUM

### Ammoniacum

Ammoniacum is a gum-resin exuded from the flowering and fruiting stem of Dorema Ammoniacum, *D. Don*, and possibly other species of Dorema.

*Characters and Tests.*—In small dull white, yellowish-white, or brownish-white tears or in nodular masses varying from about five to twenty-five millimetres in diameter. Hard and brittle when cold, the freshly fractured surface having a waxy lustre; softens when warmed. Internally opaque and varying in colour from milky-white to pale brownish-yellow. Faint characteristic but not alliaceous odour; taste bitter, acrid. Triturated with *water* forms a white emulsion. Freshly fractured surface coloured yellow by *solution of sodium hydroxide* and dark-red or orange by *solution of chlorinated soda*. The solution obtained by boiling 1 gramme of the powdered gum-resin with 10 millilitres of *water*, filtering, and adding *alcohol* (90 per cent.) till clear, assumes a reddish-violet coloration on the addition of one drop of *T. Sol. of ferric chloride*. The solution obtained by boiling 1 gramme of the coarsely powdered gum-resin for a few minutes with 10 millilitres of *hydrochloric acid* diluted with an equal volume of *water* does not exhibit a blue fluorescence when filtered and made alkaline with *solution of ammonia* (absence of asafetida and African ammoniacum). **Ash not more than 7 per cent.**

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## AMMONII BENZOAS

### Ammonium Benzoate

Ammonium Benzoate, $NH_4C_7H_5O_2$, may be obtained by neutralising benzoic acid with solution of ammonia.

*Characters and Tests.*—Colourless lamellar crystals. Taste saline, slightly acrid. Soluble in 6 parts of *water*, and in 30 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of ammonium salts. An aqueous solution yields a pale reddish precipitate on the addition of *T. Sol. of ferric chloride*. A strong aqueous solution, to which a little *hydrochloric acid* is added, yields a crystalline precipitate of benzoic acid. Completely volatilised by heat. If 1 gramme is dissolved in 20 millilitres of *water* and excess of *nitric acid* added, a crystalline precipitate of benzoic acid separates, the filtrate from which remains clear on the addition of *solution of barium chloride*, and does not become more than slightly opalescent on the addition of *solution of silver nitrate*. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## AMMONII BROMIDUM

### Ammonium Bromide

Ammonium Bromide may be obtained by neutralising hydrobromic acid with solution of ammonia. When dried at 100° it contains not less than 98 per cent. of pure ammonium bromide, $NH_4Br$.

*Characters and Tests.*—Small colourless crystals. Taste somewhat pungent, saline. Soluble in 1·5 parts of *water*, and in 13 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of ammonium salts and of bromides. Loses not more than 1 per cent. of its weight when dried at 100°. 0·5 gramme of this dried salt dissolved in *water* requires for complete precipitation not less than 50·5 and not more than 51·5 millilitres of *N/10 solution of silver nitrate* (limit of impurities). Completely volatilised by heat. Yields no characteristic *reactions* for iron, bromates, iodides, or nitrates, and not more than the slightest *reaction* for sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## AMMONII CARBONAS

### Ammonium Carbonate

Ammonium Carbonate is a variable mixture of ammonium hydrogen carbonate, $NH_4HCO_3$, with ammonium carbamate, $NH_4NH_2CO_2$. It may be obtained by heating ammonium sulphate or chloride with calcium carbonate.

*Characters and Tests.*—Translucent, crystalline masses. Ammoniacal odour ; taste pungent, ammoniacal. Alkaline to *litmus*. Soluble in 4 parts of *water*. Exposed to the air it becomes covered with a white efflorescence which is only superficial ; this efflorescence should be scraped off before the salt is used for dispensing. Yields the *reactions* characteristic of ammonium salts and of carbonates. 1 gramme dissolved in 40 millilitres of *water* requires for neutralisation not less

than 18·0 millilitres of *N/1 solution of sulphuric acid.* Completely volatilised by heat. Yields not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million. When its aqueous solution is neutralised with a mineral acid and evaporated to dryness, the residue is colourless and odourless (absence of tarry matters).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigrams. | 3 to 10 grains. |

## AMMONII CHLORIDUM

### Ammonium Chloride

Ammonium Chloride, $NH_4Cl$, may be obtained by neutralising crude solution of ammonia or ammonium carbonate with hydrochloric acid, and purifying the product.

*Characters and Tests.*—Colourless, inodorous crystals. Taste saline, cooling. Soluble in 3 parts of *water*, and in 60 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of ammonium salts and of chlorides. Completely volatilised by heat. Yields no characteristic *reactions* for copper, carbonates, or nitrates, and not more than the slightest *reactions* for iron, or for sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## AMYGDALA AMARA

### Bitter Almond

Bitter Almond is the ripe seed of Prunus Amygdalus, *Stokes, var.* amara, *Baill.*

*Characters.*—Resembles the Sweet Almond in general appearance, but is distinguished by being shorter and proportionally broader, by its bitter taste, and by the characteristic odour resembling that of prussic acid given off by its aqueous emulsion.

## AMYGDALA DULCIS

### Sweet Almond

Sweet Almond is the ripe seed of Prunus Amygdalus, *Stokes, var.* dulcis, *Baill.* Known in commerce as the Jordan almond.

*Characters.*—About two and a half centimetres or somewhat more in length, nearly oblong in outline, more or less compressed, pointed at one extremity and rounded at the other. Testa cinnamon-brown, thin and scaly. Seed exalbuminous, containing two large planoconvex oily cotyledons. Taste bland; when triturated with *water* forms a white emulsion with no marked odour.

## AMYL NITRIS

### Amyl Nitrite

Amyl Nitrite is a liquid obtained by the interaction of amylic alcohol (which has been distilled between 128° and 132°) and nitrous acid. It consists chiefly of iso-amyl nitrite, $C_5H_{11}NO_2$, but contains also other nitrites of the homologous series. It should be kept in small, stoppered bottles in a cool, dark place.

*Characters and Tests.*—A volatile liquid of a yellowish colour, fragrant odour, and not more than the faintest acid reaction. Almost insoluble in *water*; soluble in *alcohol* (90 per cent.) in all proportions. Specific gravity 0·870 to 0·880. Not less than 90 per cent. distils below 100°. A mixture of 5 volumes with sufficient *alcohol* (90 per cent.) to form 100 volumes yields a liquid of which a portion tested in a nitrometer as described under 'Spiritus Ætheris Nitrosi' yields not less than 7·9 times its volume of nitric oxide gas. On shaking with an equal volume of *solution of sodium hydroxide* the aqueous portion acquires not more than a pale yellow colour (limit of aldehyde). Remains transparent when cooled to 0° (absence of water).

*Dose* (*by inhalation*).

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centimils. | 2 to 5 minims. |

## AMYLUM

### Starch

Starch is procured from the grains of (1) common wheat, Triticum sativum, *Lam.*; (2) maize, Zea Mays, *Linn.*; and (3) rice, Oryza sativa, *Linn.*

*Characters and Tests.*—In fine powder or in irregular angular or columnar masses, which are readily reduced to powder; white, inodorous. Cold *water* mixed with an equal weight of Starch does not become more than faintly acid or alkaline to *litmus*. Boiled with *water* and cooled, it gives a deep blue colour with *N/10 solution of iodine*. Under the microscope the several varieties of Starch present the following characters:—1. Wheat Starch: A mixture of

large and small granules, the former lenticular in shape, and marked with faint concentric striæ surrounding a nearly central hilum. 2. Maize Starch: Granules more uniform in size, frequently polygonal, somewhat smaller than the large granules of wheat starch, and having a very distinct hilum but without evident concentric striæ. 3. Rice Starch: Granules extremely minute, nearly uniform in size, polygonal, without evident hilum or striæ. Starch is free from granules other than those described.

## ANETHI FRUCTUS

### Dill Fruit

Dill Fruit is the dried ripe fruit of Peucedanum graveolens, *Benth. and Hook. f.*

*Characters.*—Composed of two mericarps usually separate and freed from the pedicel; each broadly oval, about four millimetres long, and two to three millimetres broad. Brown; very strongly compressed dorsally; dorsal ridges inconspicuous, but the lateral ridges prolonged into paler brown wings. In transverse section, six vittæ in each mericarp. Odour and taste agreeably aromatic.

## ANISI FRUCTUS

### Anise Fruit

Anise Fruit is the dried ripe fruit of Pimpinella Anisum, *Linn.*

*Characters and Test.*—Ovoid, somewhat compressed laterally; about five millimetres long and two millimetres broad. Mericarps usually united and attached to the pedicel. Rough from the presence of short bristly hairs. Greenish-grey or greyish-brown; primary ridges pale, slender and entire. In transverse section, numerous vittæ in each mericarp; commissural surface of the endosperm not deeply grooved. Agreeably aromatic odour; taste aromatic and sweet. Ash not more than 11 per cent.

## ANTHEMIDIS FLORES

### Chamomile Flowers

Chamomile Flowers are the expanded flower-heads of Anthemis nobilis, *Linn.*, collected from cultivated plants, and dried.

*Characters.*—Flower-heads hemispherical, from about twelve to twenty millimetres in diameter, white or pale buff in colour. Involucre composed of several rows of oblong bracts with membranous margins; receptacle solid, conical, and densely covered with concave, blunt, narrow, scaly bracts; florets mostly ligulate and white, the ligula possessing four veins and terminating in three teeth. Strong aromatic odour; taste bitter.

## ANTIMONII OXIDUM

### Antimonious Oxide

Antimonious Oxide, $Sb_2O_3$, may be obtained by pouring solution of antimonious chloride into water, and decomposing the precipitated antimony oxychloride with sodium carbonate.

*Characters and Tests.*—A greyish-white powder, fusible at a low red heat. Insoluble in *water*. Readily soluble in *hydrochloric acid*, the solution yielding the *reactions* characteristic of antimony. The solution obtained by dissolving 0·25 gramme in *diluted hydrochloric acid*, adding 5 grammes of *sodium potassium tartrate* and then a slight excess of *sodium bicarbonate*, discharges the colour of 34·5 millilitres of *N/10 solution of iodine*. Yields no characteristic *reactions* for lead, copper, arsenium, calcium, sodium, or potassium, not more than slight *reactions* for iron, and not more than the slightest *reactions* for chlorides or sulphates. Dissolves entirely when boiled with an excess of an aqueous solution of *acid potassium tartrate*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 centigrams. | 1 to 2 grains. |

## ANTIMONIUM SULPHURATUM

### Sulphurated Antimony

Sulphurated Antimony is a mixture containing antimony sulphides and oxides, and sulphur.

| | |
|---|---|
| Antimonious sulphide ('black antimony') of commerce . . | 200 grammes |
| Sublimed Sulphur . . . | 200 grammes |
| Caustic soda of commerce . . | 100 grammes |
| Diluted Sulphuric Acid, Distilled Water | of each a sufficient quantity |

Dissolve the caustic soda in two thousand millilitres of the Distilled Water; with this solution mix the antimonious sulphide and the Sublimed Sulphur; boil for two hours with frequent stirring, adding Distilled Water occasionally to maintain the same volume; then, while the

mixture is still hot, add three thousand six hundred millilitres of boiling Distilled Water ; strain the product through calico ; before the strained liquid cools add to it by degrees Diluted Sulphuric Acid till the latter is in slight excess ; collect the precipitate on a calico filter ; wash with Distilled Water till the washings are free from sulphates ; dry at a temperature not exceeding 100°.

*Characters and Tests.*—An orange-red powder, readily dissolved by hot *hydrochloric acid* with evolution of hydrogen sulphide and separation of sulphur. 1 gramme digested with 20 millilitres of hot *water* yields a filtrate which, after acidification with *diluted nitric acid*, becomes not more than slightly cloudy on the addition of *solution of barium chloride* (limit of sulphates). *Arsenic limit* 1000 parts per million. 3 grammes moistened with *diluted nitric acid*, warmed with successive portions of *fuming nitric acid* until red fumes cease to be evolved, and then dried and carefully heated to redness, leave a whitish residue weighing not less than 1·6 or more than 1·8 grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 centigrams. | 1 to 2 grains. |

## ANTIMONIUM TARTARATUM

### Tartarated Antimony

*Synonyms*—Potassio-tartrate of Antimony: Tartar Emetic: Emetic Tartar

Tartarated Antimony may be obtained by setting aside a mixture of antimonious oxide and acid potassium tartrate, made into a paste with a little water, until combination has taken place, and then purifying by crystallisation from water. Contains not less than 99 per cent. of antimonium potassio-tartrate, $(KSbOC_4H_4O_6)_2,H_2O$.

*Characters and Tests.*—Colourless transparent crystals exhibiting triangular facets. Soluble in 17 parts of *water*, forming a slightly acid solution; almost insoluble in *alcohol* (90 per cent.), moderately soluble in weak alcoholic liquids. Taste sweet and metallic. Precipitated from its solutions by *solution of tannic acid*. Yields the *reactions* characteristic of antimony, of potassium, and of tartrates. The solution obtained by dissolving 0·5 gramme in 25 millilitres of *water*, and adding 5 grammes of *sodium potassium tartrate* and 1·5 grammes of *sodium bicarbonate*, discharges the colour of not less than 29·8 or more than 30·2 millilitres of *N/10 solution of iodine*. Yields no characteristic *reactions* for lead, copper, arsenium, iron, sodium, ammonium, chlorides, or sulphates. Does not effervesce with an aqueous solution of *sodium bicarbonate* (absence of acid potassium tartrate.)

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2·5 to 8 milligrams. | 1/25 to 1/8 grain. |

*Emetic Dose.*

| | |
|---|---|
| 3 to 6 centigrams. | 1/2 to 1 grain. |

## APOMORPHINÆ HYDROCHLORIDUM

### Apomorphine Hydrochloride

Apomorphine Hydrochloride, $(C_{17}H_{17}NO_2,HCl)_2,H_2O$, is the hydrochloride of an alkaloid which may be obtained from morphine by the abstraction of the elements of a molecule of water.

*Characters and Tests.*—Small, greyish-white, shining, acicular crystals, turning green on exposure to air and light. Soluble in 60 parts of *water* and in 50 parts of *alcohol* (90 per cent.) The solutions decompose on boiling or keeping, with production of a green colour; but remain unchanged

for a considerable time if acidified with a trace of *hydrochloric acid*. Yields the *reactions* characteristic of chlorides. Gives a deep red colour with dilute *T. Sol. of ferric chloride*. The addition of an aqueous solution of *sodium bicarbonate* to an aqueous solution (1 in 100) of Apomorphine Hydrochloride produces a white precipitate rapidly changing to green; this precipitate forms a purple solution with *ether*, a bluish solution with *chloroform*, and a green solution with *alcohol* (90 per cent.).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| *By hypodermic injection,* | |
| 3 to 6 milligrams. | 1/20 to 1/10 grain. |
| *By the mouth,* | |
| 6 to 16 milligrams. | 1/10 to 1/4 grain. |

## AQUA ANETHI

### Dill Water

| | |
|---|---|
| Dill Fruit . . . . . | 100 grammes |
| Water . . . . . | 2000 millilitres |

Distil one thousand millilitres.

In preparing this and other similar aqueous liquids by distillation, only good natural potable **water** must be employed, as directed for 'Distilled Water.'.

See Appendix XII, page 529, Aquæ.

## AQUA ANISI

### Anise Water

| | |
|---|---|
| Anise Fruit . . . . . | 100 grammes |
| Water . . . . . | 2000 millilitres |

Distil one thousand millilitres.

See Appendix XII, page 529, Aquæ.

## AQUA AURANTII FLORIS

### Orange-flower Water

Orange-flower Water is the orange-flower water of commerce, prepared by distillation from the flowers of the Bitter Orange tree, Citrus Aurantium, var. Bigaradia, *Hook, f.*, diluted, immediately before use, with twice its volume of Distilled Water.

*Characters and Tests.*—Colourless or with a slight yellowish tint; odour very fragrant. Yields no *reactions* for lead or copper.

The orange-flower water of commerce is a saturated solution of the volatile oil of the fresh flowers.

## AQUA CAMPHORÆ

### Camphor Water

| | |
|---|---|
| Camphor . . . . . | 1 gramme |
| Alcohol (90 per cent.) . . . | 2 millilitres |
| Distilled Water . . . . | 1000 millilitres |

Dissolve the Camphor in the Alcohol; add the solution in successive portions to the Distilled Water, shaking after each addition; finally shake occasionally until all the Camphor is dissolved.

## AQUA CARUI

### Caraway Water

| | |
|---|---|
| Caraway Fruit . . . . . | 100 grammes |
| Water . . . . . | 2000 millilitres |

Distil one thousand millilitres.

See Appendix XII, page 529, Aquæ.

## AQUA CHLOROFORMI

### Chloroform Water

| | |
|---|---|
| Chloroform . . . . | 2·5 millilitres |
| Distilled Water sufficient to produce . . . . | 1000·0 millilitres |

Dissolve.

## AQUA CINNAMOMI

### Cinnamon Water

| | |
|---|---|
| Cinnamon Bark, bruised. . . | 100 grammes |
| Water . . . . . | 2000 millilitres |

Distil one thousand millilitres.

See Appendix XII, page 529, Aquæ.

## AQUA DESTILLATA

### Distilled Water

Distilled Water is prepared by distillation from good natural potable water.

*Characters and Tests.*—Colourless, odourless, and tasteless. Yields no *reactions* for sulphates, chlorides, or nitrates. 100 millilitres evaporated to dryness on a water-bath leave not more than 0·005 gramme of solid residue. 50 millilitres with one drop of *solution of sodium sulphide* remain colourless when viewed in a Nessler glass standing on a white tile (absence of lead, copper, and iron). 250 millilitres with a mixture of 3 millilitres of *sulphuric acid* and 0·1 millilitre of *N/10 solution of potassium permanganate*, after standing for three hours at about 15·5°, are coloured blue on the addition of a crystal of *potassium*

*iodide* and 1 millilitre of *mucilage of starch* (absence of more than traces of organic matter). 50 millilitres mixed with 2 millilitres of *alkaline solution of potassio-mercuric iodide* when viewed in a Nessler glass standing on a white tile do not, after five minutes, yield a more intense colour than that yielded by 50 millilitres of ammonia-free water with 0·5 millilitre of *dilute solution of ammonium chloride* (*Nessler's*) when tested under similar conditions (limit of ammonia).

## AQUA FŒNICULI

### Fennel Water

| | |
|---|---|
| Fennel Fruit | 100 grammes |
| Water | 2000 millilitres |

Distil one thousand millilitres.

See Appendix XII, page 529, Aquæ.

## AQUA LAUROCERASI

### Cherry-Laurel Water

| | |
|---|---|
| Cherry-Laurel Leaves, crushed | 800 grammes |
| Water | 2500 millilitres |

Distil one thousand millilitres; shake the product; filter, if necessary; adjust the strength of the finished product either by adding hydrocyanic acid or Distilled Water, so that, when tested as described under 'Acidum Hydrocyanicum Dilutum,' it contains 0·1 per cent. by weight of hydrocyanic acid, HCN.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

## AQUA MENTHÆ PIPERITÆ

### Peppermint Water

| | |
|---|---|
| Oil of Peppermint | 1 millilitre |
| Water | 1500 millilitres |

Distil one thousand millilitres.

See Appendix XII, page 529, Aquæ.

## AQUA MENTHÆ VIRIDIS

### Spearmint Water

| | |
|---|---|
| Oil of Spearmint | 1 millilitre |
| Water | 1500 millilitres |

Distil one thousand millilitres.

See Appendix XII, page 529, Aquæ.

## AQUA ROSÆ

### Rose Water

Rose Water is the rose water of commerce, prepared by distillation from the flowers of Rosa damascena, *Linn.*, diluted, immediately before use, with twice its volume of Distilled Water.

The rose water of commerce is a saturated solution of the volatile oil of the fresh rose flowers.

## ARAROBA

### Araroba

*Synonyms*—Goa Powder: Crude Chrysarobin

Araroba is a substance found in cavities in the trunk of

Andira Araroba, *Aguiar*, freed as much as possible from fragments of wood, dried and powdered.

*Characters and Test.*—The powder varies in colour from brownish-yellow to umber-brown. Yields to hot *benzene* not less than 50 per cent. of a substance which, on evaporating the filtrate, drying and powdering the residue, has the characters described under 'Chrysarobinum.'

## ARGENTI NITRAS

### Silver Nitrate

*Synonym*—Lunar Caustic

Silver Nitrate, $AgNO_3$, may be obtained by the interaction of nitric acid and silver.

*Characters and Tests.*—In colourless tabular crystals. Taste bitter, metallic. Soluble in less than its own weight of *water*, slightly soluble in *alcohol* (90 per cent.); soluble in *ether*, and in *glycerin*. Yields the *reactions* characteristic of silver and of nitrates. 1 gramme dissolved in 15 millilitres of *water* yields with *hydrochloric acid* a precipitate, which, when washed and dried, weighs 0·843 gramme. The filtrate, when evaporated to dryness on a water-bath, leaves no appreciable residue. Yields no characteristic *reactions* for lead, copper, iron, or sulphates.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 30 milligrams. | 1/4 to 1/2 grain. |

## ARGENTI NITRAS INDURATUS

### Toughened Caustic

| | |
|---|---|
| Silver Nitrate . . . . . | 95 grammes |
| Potassium Nitrate . . . . | 5 grammes |

Fuse together, mix and pour into suitable moulds.

*Characters and Tests.*—White or greyish-white cylindrical rods or cones. Freely soluble in *water*, but only sparingly in *alcohol* (90 per cent.). Yields the *reactions* characteristic of silver, of potassium, and of nitrates. 1 gramme, dissolved in 15 millilitres of *water*, yields with *hydrochloric acid* a precipitate which, when washed and dried, weighs 0·8 gramme, and the filtrate when evaporated leaves a white residue.

## ARGENTI NITRAS MITIGATUS

### Mitigated Caustic

| | |
|---|---|
| Silver Nitrate . . . . . | 20 grammes |
| Potassium Nitrate . . . . | 40 grammes |

Fuse together, mix and pour into suitable moulds.

*Characters and Tests.*—White or greyish-white cylindrical rods or cones. Freely soluble in *water*, but only sparingly in *alcohol* (90 per cent.). Yields the *reactions* characteristic of silver, of potassium, and of nitrates. 3 grammes, dissolved in 15 millilitres of *water*, yield with *hydrochloric acid* a precipitate which, after washing with hot *water* and drying, weighs 0·843 gramme.

## ARMORACIÆ RADIX

### Horseradish Root

Horseradish Root is the fresh root of Cochlearia Armoracia, *Linn.*, collected from cultivated plants.

*Characters.*—Nearly cylindrical, except at the crown, where it is somewhat enlarged, and marked with closely approximated semi-amplexicaul leaf-scars. Diameter from twelve to twenty-five millimetres, length commonly thirty centimetres or more; pale yellowish-white or brownish-white externally, whitish within. Inodorous when unbroken,

but yielding a characteristic pungent odour when scraped or bruised; taste very pungent.

## ARNICÆ FLORES

### Arnica Flowers

Arnica Flowers are the dried flower-heads of Arnica montana, *Linn.*

*Characters.*—Receptacle nearly flat, bristly, with two rows of dark-green, linear-lanceolate, acute, hairy bracts. Each ray-floret possesses a much shrivelled dark yellow ligulate corolla which, after expansion in water, exhibits from eight to twelve veins and three terminal teeth. Disc-florets numerous, yellow. Fruits slender, shrivelled, with numerous appressed hairs, and crowned with a single row of stiff, whitish, barbed bristles. Slight aromatic odour; taste bitter and acrid.

## ARSENII IODIDUM

### Arsenious Iodide

Arsenious Iodide, $AsI_3$, may be obtained by the direct combination of iodine and arsenium, and purification of the product by crystallisation.

*Characters and Tests.*—Small orange-coloured crystals. Soluble in *water*, and in *alcohol* (90 per cent.). The aqueous solution is acid to *litmus*, and yields the *reactions* characteristic of arsenic and of iodides. Heated in a test-tube it entirely volatilises, violet vapours of iodine being set free.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 milligrams. | 1/20 to 1/5 grain. |

## ASAFETIDA

### Asafetida

Asafetida is an oleo-gum-resin obtained by incision from the root of Ferula fœtida, *Regel*, and probably other species of Ferula.

*Characters and Tests.*—Rounded or flattened tears from twelve to twenty-five millimetres in diameter, or masses containing tears, greyish-white to dull yellow, darkening on keeping. Fresh tears usually tough at ordinary temperatures, hard when cold. Internally yellowish and translucent, or milk-white and opaque ; freshly exposed surfaces often slowly become pink, then red, and finally reddish-brown. Odour strong, alliaceous and persistent ; taste bitter, acrid and alliaceous. When triturated with *water* Asafetida forms a white emulsion. When the freshly fractured surface of a tear is touched with *sulphuric acid*, a bright red or brownish-red colour is produced. The tincture obtained by macerating 0·5 gramme of Asafetida with 10 millilitres of *alcohol* (90 per cent.), filtered, made alkaline with *strong solution of ammonia*, and then largely diluted with *alcohol* (90 per cent.), does not exhibit a blue fluorescence (distinction from and absence of galbanum). Contains not more than 50 per cent. of matter insoluble in *alcohol* (90 per cent.). Ash not more than 15 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## ATROPINA

### Atropine

Atropine, $C_{17}H_{23}NO_3$, is an alkaloid obtained from Atropa Belladonna, *Linn.*, and other plants of the natural order Solanaceæ.

*Characters and Tests.*—Colourless acicular crystals. Soluble in about 500 parts of *water*, readily soluble in *alcohol* (90 per cent.), in *chloroform*, and in *ether*. Melting point 114·5° to 115·5°. Its aqueous solution has an alkaline reaction and powerfully dilates the pupil of the eye. 0·05 gramme dissolved in 5 millilitres of *water* acidified with *hydrochloric acid* yields with *solution of auric chloride* a lemon-yellow precipitate which, after recrystallisation from boiling *water* acidified with *hydrochloric acid*, has a minutely crystalline character, is dull and pulverulent when dry, and melts at 137° to 139° (distinction from hyoscyamine). 0·01 gramme with 5 drops of *nitric acid* yields, when evaporated to dryness on a water-bath, a residue scarcely yellow in colour which, after cooling, assumes a violet colour on moistening with freshly prepared *alcoholic solution of potassium hydroxide*. 0·05 gramme dissolves in 1 millilitre of *sulphuric acid* without coloration, and the solution remains colourless on the addition of 1 drop of *nitric acid*. 10 millilitres of a solution containing 1 part of Atropine in 80 parts of *water* slightly acidified with *hydrochloric acid* does not at once become cloudy on the addition of 4 millilitres of *solution of ammonia* (absence of apoatropine).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 0·3 to 0·6 milligram. | 1/200 to 1/100 grain. |

## ATROPINÆ SULPHAS

### Atropine Sulphate

Atropine Sulphate, $(C_{17}H_{23}NO_3)_2,H_2SO_4$, is the sulphate of the alkaloid Atropine.

*Characters and Tests.*—Nearly colourless, crystalline, somewhat hygroscopic. Soluble in less than 1 part

of *water*, and in 4 parts of *alcohol* (90 per cent.), the solutions being neutral to *litmus* and, even when largely diluted, dilating the pupil of the eye. Melting point from 189° to 190°. 0·05 gramme dissolves in 1 millilitre of *sulphuric acid* without coloration, and the solution remains colourless on the addition of 1 drop of *nitric acid*. 10 millilitres of an aqueous solution (1 in 60) do not at once become cloudy on the addition of 4 millilitres of *solution of ammonia* (absence of apoatropine). An aqueous solution, not too dilute, yields with *solution of sodium hydroxide* a white precipitate which, when washed and dried, responds to the tests described under 'Atropina.' Yields the *reaction* characteristic of sulphates. Loses not more than 2 per cent. of moisture when dried at 105°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 0·3 to 0·6 milligram. | 1/200 to 1/100 grain. |

## AURANTII CORTEX INDICUS

### Indian Orange Peel

Indian Orange Peel is the fresh and the dried outer part of the pericarp of varieties of Citrus Aurantium, *Linn.*, grown in India and Ceylon.

*Characters.*—Possesses the pleasant aromatic odour and bitter taste characteristic of Bitter-Orange Peel derived from Citrus Aurantium, var. Bigaradia, *Hook. f.* Inner surface retains not more than a very small amount of the white spongy part of the pericarp.

In India and the Eastern divisions of the Empire, Indian Orange Peel, fresh or dried, may be employed in making the official preparations for which Fresh or Dried Bitter-Orange Peel is directed to be used.

## AURANTII CORTEX RECENS

### Fresh Bitter-Orange Peel

Fresh Bitter-Orange Peel is the fresh outer part of the pericarp of Citrus Aurantium, var. Bigaradia, *Hook. f.*

*Characters.*—Outer surface red or deep orange-red in colour, and generally rough. Inner surface retains not more than a very small amount of the white spongy part of the pericarp; in transverse section numerous large oil-glands below the epidermis. Pleasant aromatic odour; taste aromatic, bitter.

## AURANTII CORTEX SICCATUS

### Dried Bitter-Orange Peel

Dried Bitter-Orange Peel is the dried outer part of the pericarp of Citrus Aurantium, var. Bigaradia, *Hook. f.*

*Characters.*—In thin strips. Outer surface deep orange-red and rough. Inner surface retains not more than a very small amount of the white spongy part of the pericarp; in transverse section numerous large oil-glands below the epidermis. Pleasant aromatic odour; taste aromatic, bitter.

## BALSAMUM PERUVIANUM

### Balsam of Peru

Balsam of Peru is a viscid balsam exuded from the trunk of Myroxylon Pereiræ, *Klotzsch*, after the bark has been beaten and scorched.

*Characters and Tests.*—A viscid liquid, in bulk nearly black but in thin layers deep orange-brown or reddish-brown and transparent. Agreeable balsamic odour; taste acrid, leaving when swallowed a burning sensation

in the throat. Insoluble in *water*; soluble in *chloroform*. 1 volume is soluble in 1 volume of *alcohol* (90 per cent.), but on the further addition of 2 or more volumes of the *alcohol* the mixture becomes turbid. Specific gravity between 1·140 and 1·158. Does not diminish in volume when shaken with an equal bulk of *water* (absence of ethylic alcohol). When tested by the following method it yields not less than 57 per cent. of cinnamein, the saponification value of which is not less than 235:—

Dissolve 1 gramme of the Balsam in 30 millilitres of *ether* and shake in a separating funnel with two successive quantities of 20 and 10 millilitres of *N/2 solution of sodium hydroxide*. Separate the alkaline solutions, mix and shake with 10 millilitres of *ether*. Draw off and reject the alkaline solution. Add the second ethereal solution to that previously obtained. Wash the mixed ethereal solutions with two successive quantities of 5 millilitres of *water*. Transfer the ethereal solution thus washed to a tared wide-mouthed flask, evaporate at a gentle heat until the odour of ether has disappeared, add 1 millilitre of *absolute alcohol*, dry at 100° for half an hour, and weigh. The weight of the cinnamein thus obtained is not less than 0·57 gramme. To this residue add 20 millilitres of *N/2 alcoholic solution of potassium hydroxide* and 20 millilitres of *alcohol* (90 per cent.). Attach a reflux condenser, boil for half an hour, and titrate back with *N/2 solution of sulphuric acid*, *solution of phenolphthalein* being used as indicator. Each gramme of the residue thus treated requires not less than 8·4 millilitres of the alkaline solution for complete saponification (corresponding to a saponification value of not less than 235).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| **3** to 10 decimils. | 5 to 15 minims. |

## BALSAMUM TOLUTANUM

### Balsam of Tolu

Balsam of Tolu is a solid balsam obtained from incisions made in the trunk of Myroxylon toluiferum, *H. B. and K.*

*Characters and Tests.*—A soft, tenacious solid whenfirst imported, becoming harder and finally brittle. Transparent and yellowish-brown in thin films. Pressed between pieces of glass with the aid of heat, and examined with a lens, it exhibits crystals of cinnamic acid. Odour fragrant, especially when warmed; taste aromatic and slightly acid. Soluble in *alcohol* (90 per cent.), the solution being acid to *litmus*. *Acid value* 107·4 to 147·2; *saponification value* 170 to 202. If 5 grammes are gently warmed with three successive portions of 25, 15, and 10 millilitres of *carbon disulphide*, the solution yields, when evaporated to dryness, a distinctly crystalline residue, which when tested as described under 'Styrax Præparatus' yields not less than 1·25 grammes of balsamic acids.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## BARBITONUM

### Barbitone

*Synonyms*—Diethyl-barbituric Acid: Malonurea: Diethyl-malonyl-urea

Barbitone, $C_8H_{12}N_2O_3$, may be obtained by the interaction of the diethyl ester of malonic acid, and carbamide.

*Characters and Tests.*—A white crystalline powder. Inodorous; taste faintly bitter. Slightly soluble in cold *water*, the solution being neutral to *litmus*; more soluble

in hot *water*, and in *alcohol* (90 per cent.); freely soluble in aqueous solutions of the alkalies. Melting point 191°. When fused with a caustic alkali ammonia is evolved; and, when the cooled residue is dissolved in *water* and the solution acidified with *diluted sulphuric acid*, carbon dioxide is liberated, and a characteristic odour resembling that of fatty acids is developed. A few drops of *solution of mercury nitrate* added to 25 millilitres of a saturated aqueous solution acidified with *nitric acid* produces a gelatinous precipitate. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## BELÆ FRUCTUS

### Bael Fruit

Bael Fruit is the fresh half-ripe fruit of Ægle Marmelos, *Correa*.

*Characters.*—Fruit about seven or eight centimetres in diameter, globular, ovoid or pyriform, greyish or yellowish-brown. Outer surface hard, nearly smooth. Rind about three millimetres in diameter, and adherent to a pale-reddish juicy pulp in which are ten to fifteen cells, each containing several woolly seeds. Faint aromatic odour; taste mucilaginous, acidulous, and slightly astringent.

## BELLADONNÆ FOLIA

### Belladonna Leaves

Belladonna Leaves are the leaves of Atropa Belladonna, *Linn.*, collected when the plant is in flower, and dried.

*Characters and Test.*—Eight to twenty centimetres long, broadly ovate, acute, entire, glabrous or nearly so. Transverse section exhibits bi-collateral vascular bundles; mesophyll contains numerous cells filled with very minute crystals of calcium oxalate; epidermal cells of both surfaces possess a delicately striated cuticle. Yields not less than 0·30 per cent. of alkaloids when assayed by the following process:—

Into a small stoppered glass percolator provided with a glass tap and suitably plugged with cotton wool introduce 10 grammes of Belladonna Leaves in No. 60 powder and 50 millilitres of a mixture of *chloroform* 1 volume and *ether* 4 volumes. Shake; set aside for ten minutes; then add 2 millilitres of *solution of ammonia* diluted with 3 millilitres of *water*, and set aside for one hour, shaking frequently. Then allow percolation to proceed slowly, receiving the percolate in a separator containing 6 millilitres of *N/1 solution of sulphuric acid* diluted with 20 millilitres of *water*. When the liquid ceases to pass continue the percolation with a further 50 millilitres or more of the ether-chloroform mixture, added in small quantities, until the Leaves are exhausted. Shake the separator well and, after separation, draw off the acid liquid into a second separator. Repeat the extraction of the ether-chloroform solution with two successive portions, each of 10 millilitres, of the diluted acid. Make the mixed acid solutions alkaline with *solution of ammonia*, and shake out with three successive portions of 15, 15, and 5 millilitres of *chloroform*. Evaporate the mixed chloroformic solutions to dryness, dissolve the residue in 3 millilitres of *ether*, and again evaporate to dryness. Dissolve the residue in 10 millilitres of *N/20 solution of sulphuric acid*, and titrate with *N/20 solution of sodium hydroxide*, *tincture of cochineal* being used as indicator. Deduct the number of millilitres of the alkaline solution required from 10, multiply the difference by 0·1446; the product will be the percentage of alkaloids in the Leaves.

## BELLADONNÆ RADIX

### Belladonna Root

Belladonna Root is the root of Atropa Belladonna, *Linn.*, collected in the autumn, and dried.

*Characters.*—Nearly cylindrical pieces, entire or longitudinally split, usually ten to twenty millimetres in diameter, and fifteen to thirty centimetres or more in length. Externally pale greyish-brown, and finely wrinkled longitudinally. Transverse fracture short. Internally whitish and starchy. Within and mostly near to the cambium ring are numerous scattered groups of vessels and fibres which do not exhibit a prominently radiate arrangement. Most of the parenchymatous cells contain small compound starch grains; some are filled with numerous very minute crystals of calcium oxalate. Taste slightly bitter.

## BENZAMINÆ LACTAS

### Benzamine Lactate

Benzamine Lactate, $C_{15}H_{21}NO_2,C_3H_6O_3$, is the lactate of benzoyl-vinyl-diaceton-alkamine, from which it may be obtained by neutralising with lactic acid.

*Characters and Tests.*—A white crystalline powder. Taste slightly bitter followed by a sensation of numbness. Soluble in 5 parts of *water*, and in 8 parts of *alcohol* (90 per cent.). Its aqueous solution yields with an aqueous solution of *salicylic acid* a white precipitate, and with *solution of ammonia* a white precipitate readily soluble in excess of the reagent. Treated with *nitric acid* and *alcoholic solution of potassium hydroxide* as described under 'Cocainæ Hydrochloridum' a characteristic odour is evolved, recalling peppermint. Does not darken in colour when moistened with *alcohol* (90 per cent.) and triturated with *mercurous chloride* (distinction from

cocaine and *a*-eucaine). An aqueous solution (1 in 100) gives no precipitate with *solution of potassium iodide* (distinction from *a*-eucaine). Dissolves in *sulphuric acid* and in *nitric acid* without coloration. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 30 milligrams. | 1/8 to 1/2 grain. |

## BENZENUM

### Benzene

Benzene, $C_6H_6$, is a liquid hydrocarbon obtained from light coal-tar oil.

*Characters and Tests.*—A colourless, mobile, inflammable liquid. Insoluble in *water*, but miscible with *absolute alcohol* or *ether*. Specific gravity 0·880 to 0·887. 95 per cent. distils between 79° and 82°. It solidifies when cooled to 0°, and if the temperature be allowed to rise does not entirely re-melt below 4°.

## BENZOINUM

### Benzoin

Benzoin is a resinous solidified balsam obtained from the incised stem of Styrax Benzoin, *Dryand.* Known in commerce as Sumatra benzoin.

*Characters and Tests.*—Hard brittle masses consisting of numerous whitish tears embedded in a greyish-brown translucent matrix. Odour agreeable, similar to that of storax; taste slightly acrid. When cautiously heated in a dry test-tube it melts and evolves whitish fumes with an irritating odour. When 0·5 gramme is slowly heated to

about 40° with 10 millilitres of *solution of potassium permanganate* an odour of benzaldehyde is evolved (distinction from Siam benzoin). Not more than 15 per cent. insoluble in *alcohol* (90 per cent.). Ash not more than 5 per cent.

## BERBERIS

### Berberis

Berberis is the dried stem of Berberis aristata, *DC.*

*Characters.*—In undulating pieces from two and a half to five centimetres in diameter. Cork orange-brown, removed in places showing the subjacent darker brown cortex; marked with slightly wavy longitudinal striæ and occasional shallow transverse depressions. Transverse section shows a narrow brown cork; a broad, dark brown bast traversed by conspicuous yellow medullary rays; a bright yellow wood composed of numerous narrow vascular rays, containing many vessels, separated by narrow paler medullary rays. Slight odour; taste bitter.

## BETEL

### Betel

Betel consists of the dried leaves of Piper Betle, *Linn.*

*Characters.*—About fifteen centimetres long, broadly ovate, acuminate, obliquely cordate at base; thin and brittle, upper surface glossy, five or seven conspicuous lateral veins. Mesophyll contains abundant oil-cells filled with brown oleo-resin. Taste warm, aromatic, bitter. As found in commerce the leaves are frequently tied up or stitched together into packets.

## BISMUTHI CARBONAS

### Bismuth Oxycarbonate

*Synonym*—Bismuth Subcarbonate

Bismuth Oxycarbonate, $(Bi_2O_2CO_3)_2,H_2O$, may be obtained by the interaction of bismuth nitrate and ammonium carbonate.

*Characters and Tests.*—A whitish, inodorous powder. Insoluble in *water*; soluble in *nitric acid* diluted with half its volume of *water*. Yields the *reactions* characteristic of bismuth and of carbonates. Yields when strongly heated from 89 to 91 per cent. of bismuth oxide. Yields no characteristic *reactions* for silver, lead, copper, calcium, selenium, tellurium, or chlorides, and not more than the slightest *reaction* for sulphates. *Arsenic limit* 2 parts per million. On mixing 0·02 gramme with 5 drops of *phenol-disulphonic acid*, adding, after five minutes, 10 millilitres of *solution of ammonia*, filtering, washing the precipitate with *water* and adding *water* to the filtrate until it measures 100 millilitres, the colour of the filtrate is not deeper than that obtained by similarly treating 0·00013 gramme of *potassium nitrate* (limit of nitrate). The solution obtained by exhausting 5 grammes with boiling *water* requires for neutralisation not more than 1 millilitre of *N/10 solution of sulphuric acid* (limit of alkaline carbonates).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## BISMUTHI SALICYLAS

### Bismuth Salicylate

Bismuth Salicylate, or oxysalicylate, $BiOC_7H_5O_3$, may be obtained by the interaction of bismuth hydroxide and salicylic acid.

*Characters and Tests.*—A white or nearly white amorphous powder, insoluble in *water*. Yields the *reactions* characteristic of bismuth. When shaken with diluted *T. Sol. of ferric chloride* a violet colour is produced. Yields not more than the slightest characteristic *reaction* with the copper test for nitrates. *Arsenic limit* 2 parts per million. When 5 grammes are shaken with 50 millilitres of *ether*, the ethereal solution filtered off and evaporated to dryness leaves not more than 0·005 gramme of residue (limit of free salicylic acid). Yields when strongly heated from 62 to 65 per cent. of bismuth oxide. Free from the impurities indicated under ' Bismuthi Carbonas.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## BISMUTHI SUBNITRAS

### Bismuth Oxynitrate

Bismuth Oxynitrate, $BiONO_3,H_2O$, may be obtained by the interaction of bismuth nitrate and water.

*Characters and Tests.*—A white, inodorous, microcrystalline powder, with not more than a slight action on *litmus*. Yields the *reactions* characteristic of bismuth and of nitrates. Yields, when strongly heated, from 79 to 82 per cent. of bismuth oxide. Yields no characteristic *reactions* for silver, lead, copper, calcium, selenium, or tellurium, and not more than the slightest *reactions* for chlorides or sulphates. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## BORAX PURIFICATUS

### Purified Borax

*Synonym*—Biborate of Sodium

Purified Borax may be obtained from native borax; it may also be obtained by boiling native calcium borate with solution of sodium carbonate, and contains not less than 98·9 per cent. of sodium pyroborate, $Na_2B_4O_7,10H_2O$.

*Characters and Tests.*—Transparent colourless crystals, sometimes slightly effloresced, with a weak alkaline reaction. Taste saline, alkaline. Soluble in 25 parts of *water*, and in 1 part of *glycerin*; insoluble in *alcohol* (90 per cent.). Colours flame intensely yellow. Its aqueous solution, acidified with *hydrochloric acid*, turns *turmeric paper* brown. A hot saturated solution, acidified with a mineral acid, deposits, as it cools, crystals of boric acid, the solution of which in *alcohol* (90 per cent.) burns with a green flame. 2 grammes dissolved in *water* require for neutralisation 10·4 millilitres of *N/1 solution of sulphuric acid, solution of methyl-orange* being used as indicator; and if to this neutralised solution an equal volume of *glycerin* is added, 20·8 millilitres of *N/1 solution of sodium hydroxide* are required for neutralisation, *solution of phenolphthalein* being used as indicator. Yields no characteristic *reactions* for copper, iron, or calcium, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## BUCHU FOLIA

### Buchu Leaves

Buchu Leaves are the dried leaves of Barosma betulina, *Bart. and Wendl.*

*Characters.*—From twelve to twenty millimetres long, rhomboid-obovate, dull yellowish-green, rigid, cartilaginous when slightly moist. Surface glabrous, bearing small scattered prominences; margin usually sharply denticulate, apex blunt and recurved. Oil glands visible in the leaf, especially near the margin. Transverse section exhibits in epidermis cells containing yellow sphero-crystals; inner walls of these cells thick and rich in mucilage. Odour and taste strong and characteristic.

## BUTEÆ GUMMI

### Butea Gum

*Synonym*—Bengal Kino

Butea Gum is the inspissated juice obtained from incisions in the stem of Butea frondosa, *Roxb.*

*Characters.*—Small irregular shining fragments, very dark ruby colour, thinnest flakes transparent when examined by transmitted light. Partially soluble in *water*; about 40 per cent. soluble in hot *alcohol* (90 per cent.), the solution being scarcely coloured. No odour; taste astringent. Free from corky or woody particles. On keeping, the fragments may become dull and blackish.

In India and the Eastern Divisions of the Empire, Butea Gum may be employed in making the official preparations for which Kino (distinguished in commerce as East Indian, Malabar, Madras, or Cochin kino) is directed to be used.

## BUTEÆ SEMINA

### Butea Seeds

Butea Seeds are the seeds of Butea frondosa, *Roxb.*

*Characters.*—Flat, reniform, from twenty-five to thirty-eight millimetres long, sixteen to twenty-five millimetres

wide, and one and a half to two millimetres thick. Testa thin, glossy, veined, wrinkled, dark reddish-brown. Cotyledons large, leafy, yellow. Faint odour ; taste slightly acrid.

## BUTYL-CHLORAL HYDRAS

### Butyl-Chloral Hydrate

Butyl-Chloral Hydrate, or trichlorbutylidene glycol, $C_4H_7Cl_3O_2$, is a crystalline hydrate obtained by adding water to the liquid butyl-chloral produced by the action of chlorine gas on aldehyde.

*Characters and Tests.*—Pearly-white, trimetric laminæ. Odour pungent but not acrid ; taste acrid and nauseous. Melts at about 78° to a transparent liquid, which, on cooling, begins to solidify at about 71°. Soluble in about 40 parts of *water*, and in less than 1 part of *glycerin* or of *alcohol* (90 per cent.). The aqueous solution is neutral or but slightly acid to *litmus*. When 0·5 gramme is gently warmed for a short time with 10 millilitres of *solution of sodium hydroxide*, 3 drops of *aniline* added and the mixture well shaken and heated to boiling, no odour of phenyl isocyanide is perceptible (absence of chloral hydrate).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## CAFFEINA

### Caffeine

*Synonym*—Theine

Caffeine, $C_8H_{10}N_4O_2,H_2O$, is an alkaloid obtained from the dried leaves of Camellia Thea, *Link*, or from certain other plants.

*Characters and Tests.*—Colourless, silky, acicular, inodorous crystals. Soluble in 80 parts of *water*, somewhat more soluble in *alcohol* (90 per cent.), readily soluble in *chloroform*, sparingly in *ether*. Melting point 235°. Aqueous solution neutral to *litmus* and faintly bitter. Loses part of its water of crystallisation on exposure to the air. Loss when dried at 100° not more than 8·5 per cent.; the dry alkaloid begins to volatilise at a slightly higher temperature and sublimes readily at about 180°. A cold saturated aqueous solution is not precipitated by *N/10 solution of iodine*, or by *solution of potassio-mercuric iodide*, but gives a white precipitate with *solution of tannic acid*, soluble in excess of the reagent. 0·1 gramme dissolves without colour in 1 millilitre of *sulphuric acid*, and also in 1 millilitre of *nitric acid*. When treated with a crystal of *potassium chlorate* and a few drops of *hydrochloric acid*, the mixture being evaporated to dryness in a porcelain dish, a reddish residue remains which becomes purple when exposed to the vapour of *solution of ammonia*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centigrams. | 1 to 5 grains. |

## CAFFEINÆ CITRAS

### Caffeine Citrate

Caffeine Citrate, $C_8H_{10}N_4O_2,C_6H_8O_7$, is an unstable compound of Caffeine and Citric Acid.

| | |
|---|---|
| Caffeine. . . . . | 100 grammes |
| Citric Acid, in powder . . . | 100 grammes |
| Distilled Water . . . . | 16 millilitres |

Mix the Caffeine with the Citric Acid, moisten the mixture with the Distilled Water, and dry on a water-bath with constant stirring.

*Characters and Tests.*—A white powder with an acid reaction. Inodorous; taste acid and faintly bitter. Soluble in 4 parts of hot *water*, but dissociating on the further addition of *water* with separation of caffeine, which completely redissolves in 32 parts of *water*. Loses not more than 1 per cent. of its weight when dried at 100°. When 1 gramme is dissolved in hot *water*, the solution made alkaline with *solution of sodium hydroxide* and shaken with three successive portions, each of 10 millilitres, of *chloroform*, the mixed chloroformic solutions, washed with a little *water*, leave on evaporation a residue weighing not less than 0·45 gramme, and responding to the test with *potassium chlorate* and *hydrochloric acid* described under 'Caffeina.' Caffeine Citrate yields the *reactions* characteristic of citrates.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 60 centigrams. | 2 to 10 grains. |

## CAFFEINÆ CITRAS EFFERVESCENS

### Effervescent Caffeine Citrate

| | |
|---|---|
| Sodium Bicarbonate, in powder | 510 grammes |
| Tartaric Acid, in powder | 270 grammes |
| Citric Acid, in powder | 180 grammes |
| Refined Sugar, in powder | 140 grammes |
| Caffeine Citrate | 40 grammes |

Mix the Caffeine Citrate, Tartaric Acid, and Citric Acid; with this mixture thoroughly incorporate the mixed Sodium Bicarbonate and Refined Sugar; place in a dish or pan of suitable form heated to between 90° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## CALCII CARBONAS PRÆCIPITATUS

### Precipitated Calcium Carbonate

*Synonym*—Precipitated Chalk

Precipitated Calcium Carbonate, $CaCO_3$, is obtained by the interaction of calcium chloride and sodium carbonate.

*Characters and Tests.*—A white microcrystalline powder, insoluble in *water*. Yields the *reactions* characteristic of calcium and of carbonates. Yields no characteristic *reactions* for iron, aluminium, phosphates, or sulphates, and not more than the slightest *reactions* for magnesium or chlorides. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 grammes. | 15 to 60 grains. |

## CALCII CHLORIDUM

### Calcium Chloride

Calcium Chloride, $CaCl_2$, may be obtained by neutralising hydrochloric acid with calcium carbonate, and carefully desiccating at a temperature not exceeding 200°.

*Characters and Tests.*—Dry, white, very deliquescent masses. Taste warm, slightly bitter. Soluble in 1·5 parts of *water*, and in 3 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of calcium and of chlorides. Yields no characteristic *reactions* for iron, aluminium,

or carbonates, and not more than the slightest *reaction* for magnesium. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Evolves no chlorine or hypochlorous acid on the addition of *hydrochloric acid* (absence of hypochlorite). Loses not more than 5 per cent. of its weight when dried at 200°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| **3** to 10 decigrams. | 5 to 15 grains. |

## CALCII HYDRAS

### Calcium Hydroxide

Calcium Hydroxide, $Ca(OH)_2$, is the product, recently prepared, of the interaction of water and Lime.

*Characters and Tests.*—A soft, white powder. Yields the *reactions* characteristic of calcium. Strongly heated it loses nearly one-fourth of its weight of water. Yields not more than the slightest characteristic *reactions* for iron, carbonates, chlorides, sulphates, or silica. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million.

## CALCII HYPOPHOSPHIS

### Calcium Hypophosphite

Calcium Hypophosphite may be obtained by the interaction of phosphorus, calcium hydroxide, and water. It contains not less than 98 per cent. of pure calcium hypophosphite, $Ca(PH_2O_2)_2$.

*Characters and Tests.*—A white crystalline salt, with a pearly lustre; taste bitter, nauseous. Soluble in 8 parts of *water*; insoluble in *alcohol* (90 per cent.). When strongly

heated evolves spontaneously-inflammable hydrogen phosphide and hydrogen, and leaves a reddish residue. Yields the *reactions* characteristic of calcium. Its aqueous solution yields with *T. Sol. of mercuric chloride* a white precipitate turning grey. Yields no characteristic *reactions* for copper or iron, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

Contains not less than 98 per cent. of pure calcium hypophosphite, $Ca(PH_2O_2)_2$, as determined by the following process :—

Dissolve 2·5 grammes in 40 millilitres of *water*; add 5 millilitres of *solution of lead acetate* and sufficient *water* to produce 50 millilitres ; shake the mixture well and allow it to stand for one hour for the precipitate to subside. To 10 millilitres of the clear liquid add 50 millilitres of *N/1 solution of potassium bichromate* and 10 millilitres of *sulphuric acid* ; heat on a water-bath for one hour, cool, and add sufficient *water* to produce 250 millilitres. To 25 millilitres of this solution add 2 grammes of *potassium iodide* and titrate the liberated iodine with *N/10 solution of sodium thiosulphate*, *mucilage of starch* being used as indicator ; not more than 27 millilitres are required.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigrams. | 3 to 10 grains. |

## CALCII LACTAS

### Calcium Lactate

Calcium Lactate may be obtained by neutralising dilute lactic acid with calcium carbonate and evaporating the resulting solution. It contains not less than 93 per cent. of pure calcium lactate, $Ca(C_3H_5O_3)_2,5H_2O$.

*Characters and Tests.*—A white powder ; almost taste-

less. Slowly soluble in 18·5 parts of *water*, forming a clear, colourless solution. Yields the *reactions* characteristic of calcium. The aqueous solution, acidified with *sulphuric acid* and warmed with *potassium permanganate*, develops the odour of aldehyde. A solution of 5 grammes in hot *water* does not become pink on the addition of a few drops of *solution of phenolphthalein*, and requires not more than 0·5 millilitre of *N/1 solution of sodium hydroxide* to produce a pink coloration (limit of acidity). 1 gramme, treated with *sulphuric acid* and incinerated in a crucible, cooled, again treated with *sulphuric acid* and incinerated, leaves a white residue weighing not less than 0·410 and not more than 0·450 gramme. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 decigrams. | 10 to 30 grains. |

## CALCII PHOSPHAS

### Calcium Phosphate

Calcium Phosphate may be obtained by the interaction of calcium chloride with sodium phosphate and excess of ammonia at a boiling temperature.

*Characters and Tests.*—A light, white, amorphous powder, permanent in the air. No odour or taste. Almost insoluble in *water*. Yields the *reactions* characteristic of calcium and of phosphates. Dissolves without residue and without effervescence (absence of carbonate) in *diluted hydrochloric acid* or *diluted nitric acid*. Yields no characteristic *reactions* for barium, ammonium, or silica, and not more than the slightest *reactions* for aluminium or magnesium. *Arsenic limit* 5 parts per million. Its solution in

slight excess of *diluted nitric acid* is not rendered more than slightly opalescent by *solution of silver nitrate* (limit of chlorides), or by *solution of barium chloride* (limit of sulphates). Its solution in slight excess of *diluted hydrochloric acid* is not affected by *hydrogen sulphide* (absence of copper and lead), and, on the subsequent addition of excess of *solution of ammonia*, the precipitate produced is quite white (limit of iron).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## CALUMBÆ RADIX

### Calumba Root

Calumba Root is the root of Jateorhiza Columba, *Miers*, cut in transverse slices and dried.

*Characters and Test.*—In irregular, flattish, circular or oval slices depressed towards the centre, from two and a half to five centimetres or more in diameter, and from three to twelve millimetres or more in thickness, breaking with a short fracture. Cork thin, brownish and wrinkled ; cortex thick, yellowish and separated by a dark line from the greyish wood, in which the parenchymatous tissue is largely developed and the vessels arranged in narrow elongated groups. In the cortex, in transverse section, numerous isolated sclerenchymatous cells, with yellow, irregularly thickened walls enclosing small prismatic crystals of calcium oxalate ; in the wood, vessels with yellow reticulated walls. The parenchymatous cells of both wood and cortex filled with starch grains, which are irregularly ovoid in outline, from 20 to 70 microns in length, and exhibit a conspicuous, excentric, radiate or cleft hilum. Slight odour ; taste bitter. Ash not more than 9 per cent.

## CALX

### Lime

Lime, CaO, is calcium oxide obtained by calcining marble.

*Characters and Tests.*—Compact whitish masses, which readily absorb water. When rather less than their weight of water is added, the masses swell and fall to powder with the development of much heat. The powder obtained by this process of slaking, when shaken with *water*, gives, after filtration, a clear alkaline solution which yields the *reactions* characteristic of calcium. Yields not more than the slightest characteristic *reactions* for iron, silica, carbonates, chlorides, or sulphates. *Arsenic limit* 5 parts per million.

## CALX CHLORINATA

### Chlorinated Lime

Chlorinated Lime is obtained by exposing slaked lime to the action of chlorine gas until absorption ceases.

*Characters and Tests.*—A dull white powder with a characteristic chlorinous odour, becoming moist and gradually decomposing on exposure to air. Partially soluble in *water*. The solution yields the *reactions* characteristic of calcium and of chlorides, and evolves chlorine copiously upon the addition of an acid. 0·5 gramme of Chlorinated Lime, mixed with 1·5 grammes of *potassium iodide* dissolved in 200 millilitres of *water*, gives, when acidified with 6 millilitres of *hydrochloric acid*, a reddish solution, which requires for decolorisation not less than 42·3 millilitres of *N/10 solution of sodium thiosulphate*, corresponding to not less than 30 per cent. of available chlorine.

## CALX SULPHURATA

### Sulphurated Lime

Sulphurated Lime is a mixture consisting chiefly of calcium sulphide and calcium sulphate. It may be obtained by heating calcium sulphate with carbon. Contains not less than 50 per cent. of calcium sulphide, CaS.

*Characters and Tests.*—A greyish-white powder with an odour of hydrogen sulphide; taste nauseous. Yields the *reactions* characteristic of calcium. When 0·8 gramme is mixed in a stoppered flask with a cold solution of 1·4 grammes of *copper sulphate* in 50 millilitres of *water*, and, after the addition of a little *hydrochloric acid*, the mixture is heated to a temperature approaching that of ebullition, well shaken for ten minutes, and then filtered, the filtrate gives no red colour with *solution of potassium ferrocyanide* (presence of a due proportion of sulphide).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## CAMPHORA

### Camphor

Camphor, $C_{10}H_{16}O$, is a white crystalline substance obtained from Cinnamomum Camphora, *T. Nees and Eberm.*, purified by sublimation.

*Characters and Tests.*—Colourless, transparent crystals or crystalline masses of tough consistence; also in rectangular tablets or in pulverulent masses known as 'flowers of camphor.' Penetrating and characteristic odour; taste pungent and somewhat bitter, followed by a sensation of cold. Specific gravity about 0·995. Melting point about 175°.

Soluble in about 700 parts of *water*, in 1 part of *alcohol* (90 per cent.), in 0·25 part of *chloroform*, and in 4 parts of *olive oil*; very soluble in *ether*. Burns readily with a bright smoky flame, volatilises even at ordinary temperatures, and sublimes without residue when heated. Forms a liquid when triturated with chloral hydrate, menthol, phenol, thymol, and certain other substances. A solution of 5 grammes in sufficient *alcohol* (90 per cent.) to produce 20 millilitres exhibits at 15·5° an *optical rotation* of about + 10° (distinction from synthetic camphor).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centigrams. | 2 to 5 grains. |

## CANNABIS INDICA

### Indian Hemp

Indian Hemp consists of the dried flowering or fruiting tops of the pistillate plant of Cannabis sativa, *Linn.*, grown in India; from which the resin has not been removed.

*Characters and Tests.*—In compressed, rough, dusky-green masses, consisting of the branched upper part of the stem, bearing leaves and pistillate flowers or fruits, matted together by a resinous secretion. Upper leaves simple, alternate, 1–3 partite; lower leaves opposite and digitate, consisting of five to seven linear-lanceolate leaflets with distantly serrate margins. Fruit one-seeded and supported by an ovate-lanceolate bract. Both leaves and bracts bear external oleo-resin glands and one-celled curved hairs, the bases of which are enlarged and contain cystoliths. Strong, characteristic odour; taste slight. When a mixture of 10 grammes of finely powdered Indian Hemp and 100 millilitres of *alcohol* (90 per cent.) is shaken occasionally during twenty-four hours and then filtered,

20 millilitres of the filtrate, evaporated in a flat-bottomed dish, yield a residue weighing, when dried at 100°, not less than 0·250 gramme. Ash not more than 15 per cent.

## CANTHARIDINUM

### Cantharidin

Cantharidin, $C_{10}H_{12}O_4$, may be obtained from various species of Cantharis or of Mylabris.

*Characters and Tests.*—Colourless glistening crystals, inodorous. Very slightly soluble in *water*, *petroleum spirit*, or *alcohol* (90 per cent.); more soluble in *chloroform*, in *acetic ether*, and in *acetone*; soluble also in fixed oils. A 0·1 per cent. solution in a fixed oil raises blisters when kept in contact with the skin. Melting point 210° to 212°. Slowly volatilises at 100°, more rapidly at higher temperatures. Soluble in *solution of sodium hydroxide*, the solution depositing crystals of Cantharidin when acidified. Gently warmed with *sulphuric acid* it yields a colourless solution, from which it is separated unchanged when freely diluted with *water*.

## CAPSICI FRUCTUS

### Capsicum

Capsicum is the dried ripe fruit of Capsicum minimum, *Roxb.*

*Characters and Test.*—Dull orange-red, oblong-conical, obtuse, two-celled fruits, from about twelve to twenty millimetres in length and about six millimetres in diameter; sometimes attached to a five-toothed inferior calyx, and long, straight, slender peduncle. Pericarp somewhat shrivelled, glabrous, translucent and leathery, containing from ten to twenty small flat seeds, either loose or attached to a thin reddish dissepiment. The cells of the outer

epidermis of the pericarp have moderately thick walls, are often arranged in rows of five to seven, and exhibit a cuticle uniformly striated (distinction from the fruits of other species of Capsicum). Characteristic odour; taste intensely pungent. Ash not more than 7 per cent.

## CARBO LIGNI

### Wood Charcoal

Wood Charcoal is wood charred by exposure to a red heat without access of air.

*Characters and Tests.*—A black powder without odour or taste, free from gritty matter. When 1 gramme of the Charcoal is boiled for a few minutes with 5 millilitres of *solution of sodium hydroxide* diluted with 15 millilitres of *water* and the mixture filtered, the colour of the filtrate is not deeper than pale yellow (absence of insufficiently carbonised wood). Ash not more than 7·5 per cent.

## CARBON DISULPHIDUM

### Carbon Disulphide

*Synonym*—Carbon Bisulphide

Carbon Disulphide, $CS_2$, may be obtained by combining carbon and sulphur at a high temperature, the product being subsequently condensed and purified.

*Characters and Tests.*—A clear, colourless, highly refractive liquid. Odour characteristic but not fetid. Specific gravity 1·268 to 1·269. Highly inflammable, burning with a blue flame and giving off carbon dioxide and sulphur dioxide. Boiling point 46° to 47°. Vapour mixed with air is explosive in contact with flame. Evaporated spontaneously in a glass vessel, it leaves no residue (absence of free sulphur).

## CARDAMOMI SEMINA

### Cardamom Seeds

Cardamom Seeds are the dried ripe seeds of Elettaria Cardamomum, *Maton.* The seeds should be kept in their pericarps and separated when required for use.

*Characters and Test.*—Fruits from one to two centimetres long, ovoid or oblong, bluntly triangular in section, shortly beaked at the apex, pale buff in colour, plump and nearly smooth or with slight longitudinal striations. Seeds dark reddish-brown, about three millimetres in length and the same in breadth and thickness, irregularly angular, transversely wrinkled, and enclosed in a thin, colourless, membranous aril. The powdered Seeds exhibit abundant, minute, angular starch grains, often compacted into masses; but no spiral vessels, sclerenchymatous fibres, or strongly elongated sclerenchymatous cells (absence of pericarps). Aromatic odour; taste agreeably warm and aromatic. Ash not more than 6 per cent.

## CARUI FRUCTUS

### Caraway Fruit

Caraway Fruit is the dried ripe fruit of Carum Carvi, *Linn.*

*Characters and Test.*—Mericarps usually separate; each from about four to six millimetres long and about one millimetre broad; brown with paler primary ridges; slightly curved, tapering towards each end, and glabrous. In transverse section, six vittæ in each mericarp. Odour and taste aromatic. Ash not more than 9 per cent.

## CARYOPHYLLUM

### Cloves

Cloves are the dried flower-buds of Eugenia caryophyllata, *Thunb.*

*Characters and Tests.*—About fifteen millimetres long, each consisting of a dark-brown, wrinkled, subcylindrical, somewhat angular calyx tube which tapers below and is surmounted by four thick, rigid, patent teeth, between which are four paler, imbricated petals enclosing numerous stamens and a single style. Odour strong, fragrant and spicy; taste very pungent and aromatic. Cloves emit oil when indented with the finger-nail. Ash not more than 7 per cent.

## CASCARA SAGRADA

### Cascara Sagrada

*Synonym*—Rhamni Purshiani Cortex

Cascara Sagrada is the dried bark of Rhamnus Purshianus, *DC.*, collected at least one year before being used.

*Characters and Test.*—In quilled, channelled, or nearly flat pieces from one to two millimetres thick, but varying in length and width. Cork nearly smooth, dark purplish-brown, marked with transversely elongated lenticels, but usually more or less covered with patches of silvery-grey lichen. Inner surface reddish-brown, with faint transverse corrugations and longitudinal striations. Fracture short, but near the inner surface somewhat fibrous. In transverse section, scattered groups of sclerenchymatous cells in both cortex and bast; the parenchymatous cells contain a yellow substance which is coloured violet by *solution of sodium hydroxide.* Odour characteristic but not powerful; taste nauseous, bitter and persistent.

## CASCARILLA

### Cascarilla

Cascarilla is the dried bark of Croton Eluteria, *J. J. Benn.*

*Characters and Test.*—In quills usually from three to ten centimetres in length and from four to twelve millimetres in diameter, or in small curved pieces. Cork greyish-white, easily detached, and often more or less completely removed disclosing a dull brown cortex. Both cork and cortex frequently marked with numerous longitudinal and transverse cracks. Fracture short, the fractured surface exhibiting under a lens a dark reddish-brown bast traversed by numerous, thin, whitish medullary rays. In transverse section cork cells with strongly thickened outer walls, but thin inner walls, in which minute crystals of calcium oxalate are embedded; both cortex and bast free from sclerenchymatous cells. Aromatic odour, especially when burned; taste aromatic and bitter. Ash not more than 11 per cent.

## CASSIÆ FRUCTUS

### Cassia Pods

Cassia Pods are the ripe fruits of Cassia Fistula, *Linn.*

*Characters.*—Long, narrow, cylindrical, shortly stalked fruits about thirty-five to fifty centimetres in length, and fifteen to twenty-five millimetres in diameter. Pericarp nearly smooth, dark chocolate-brown or nearly black, thin and hard. Internally divided by thin transverse dissepiments into numerous compartments, each of which contains a smooth, oval, reddish-brown seed surrounded by a nearly black, sweet pulp.

## CASSIÆ PULPA

### Cassia Pulp

Exhaust crushed Cassia Pods by percolation with Distilled Water; strain; evaporate on a water-bath to the consistence of a soft extract.

## CATECHU

### Catechu

*Synonym*—Catechu Pallidum

Catechu is an extract of the leaves and young shoots of Uncaria Gambier, *Roxb.*

*Characters and Tests.*—In cubes, sometimes more or less agglutinated, each side measuring about twenty-five millimetres. Dark reddish-brown externally, pale cinnamon-brown internally, porous and friable. When examined under the microscope they are found to consist chiefly of minute acicular crystals. No odour; taste at first bitter and very astringent, but subsequently sweetish. Almost entirely soluble in boiling *water*. Not less than 80 per cent. is soluble in *alcohol* (90 per cent.); the alcoholic solution made strongly alkaline with *solution of sodium hydroxide* and shaken with *petroleum spirit* imparts to the latter a brilliant green fluorescence (distinction from Black Catechu); the residue insoluble in *alcohol* (90 per cent.) exhibits no starch grains when examined under the microscope. Ash not more than 5 per cent.; ash of the powder not more than 8 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

In India, in the Eastern, and in the North American Divisions of the Empire, Black Catechu (Catechu Nigrum) may be employed in making the official preparations for which Catechu is directed to be used.

## CATECHU NIGRUM

### Black Catechu

Black Catechu is an extract prepared from the wood of Acacia Catechu, *Willd.*

*Characters and Tests.*—In irregular masses of a dark brown colour, brittle, having a porous, glossy, somewhat conchoidal fracture. Partially soluble in cold *water*, almost entirely soluble in boiling *water*. Not less than 60 per cent. is soluble in *alcohol* (90 per cent.). No odour ; taste sweetish, astringent. Its dilute aqueous solution gives a dark green colour with *T. Sol. of ferric chloride*, changing to purple when made slightly alkaline with *solution of sodium hydroxide*. Ash not more than 5 per cent. ; ash of the powder not more than 8 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

In India, in the Eastern, and in the North American Divisions of the Empire, Black Catechu may be employed in making the official preparations for which Catechu is directed to be used.

## CERA ALBA

### White Beeswax

White Beeswax is Yellow Beeswax, bleached.

*Characters and Tests.*—Hard, nearly white, translucent cakes or masses. 5 grammes heated with a mixture of 10 millilitres of *alcohol* (90 per cent.) and 10 millilitres of *absolute alcohol*, and shaken until evenly distributed, require for neutralisation at boiling temperature not less than 1·5 and not more than 2·2 millilitres of *N/1 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator (limits of free acid).

In other respects White Beeswax responds to the tests described under ' Cera Flava.'

## CERA FLAVA

### Yellow Beeswax

Yellow Beeswax is obtained from the honeycomb of the Hive Bee, Apis mellifica, *Linn.*, and possibly other species of Apis.

*Characters and Tests.*—A yellowish-brown solid ; somewhat brittle when cold, but becoming plastic by the heat of the hand. Agreeable, honey-like odour. Fracture granular, not crystalline. Soluble in *chloroform*, and in fixed and volatile oils. Specific gravity 0·958 to 0·970. Melting point 61° to 64°. *Refractive index* at 80° 1·4380 to 1·4420. When 5 grammes are boiled for ten minutes with 80 millilitres of an aqueous solution (1 in 10) of *sodium hydroxide*, the water lost by evaporation being made up, the resulting solution, cooled, and filtered through asbestos, does not become turbid when acidified with *hydrochloric acid* (absence of fats, fatty acids, Japan wax, resin). 5 grammes heated with 20 millilitres of *absolute alcohol*, and shaken until uniformly distributed, require for neutralisation at boiling temperature not less than 1·5 and not more than 2·0 millilitres of *N/1 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator (limits of free acid). Upon the further addition of 20 millilitres of *N/1 alcoholic solution of potassium hydroxide*, and on well boiling for one and a quarter hours in a flask to which a reflux condenser is attached, not less than 13·2 and not more than 13·8 millilitres of *N/1 solution of sulphuric acid* are required for neutralisation. When 5 grammes are boiled with a mixture of 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* and 15 millilitres of *absolute alcohol* until completely saponified, the alcohol evaporated, the residue dissolved in 20 millilitres of *glycerin* on a water-bath and 80 millilitres of boiling *water* added, a clear or translucent solution is obtained (absence of ceresin, paraffin and other waxes). Not more than 1 per cent. is soluble in boiling *water* (limit of honey).

## CETACEUM

### Spermaceti

Spermaceti is a solid wax obtained from the Sperm Whale, Physeter macrocephalus, *Linn.*, and possibly other species.

*Characters and Tests.*—Translucent, pearly-white, glistening masses, with a leafy, crystalline structure; slightly unctuous to the touch. Almost inodorous. Specific gravity 0·950 to 0·960; *acid value* not more than 1·0; *saponification value* 125 to 136; *iodine value* 3 to 4·4; *refractive index* at 80° about 1·4330. Soluble in 50 parts of hot *alcohol* (90 per cent.), the greater proportion separating again in thin laminæ on cooling. Reducible to powder with the aid of a little *alcohol* (90 per cent.). When 1 gramme is boiled with 10 millilitres of *alcohol* (90 per cent.) for one minute, and the mixture cooled to, and filtered at 0°, the filtrate when poured into *water* may become opalescent, but does not afford a precipitate (absence of stearic acid).

## CHIRATA

### Chiretta

Chiretta is the plant, Swertia Chirata, *Buch.-Ham.*, collected when in flower, and dried.

*Characters.*—Stem about one metre long, smooth, brown or purplish-brown, slightly winged and much branched above, rounded below and containing a large, continuous, easily separable pith. Root oblique. Branches slender, elongated, decussate. Leaves opposite, ovate, glabrous, entire, usually with three to seven lateral veins. Flowers small, numerous, panicled. Fruits superior, bicarpellary, unilocular. No odour; taste extremely bitter.

## CHLORAL FORMAMIDUM

### Chloral Formamide

*Synonym*—Chloralamide

Chloral Formamide, $C_3H_4Cl_3NO_2$, may be obtained by the direct combination of formamide with anhydrous chloral. Should be preserved in amber-coloured bottles.

*Characters and Tests.*—Colourless lustrous crystals. No odour; taste slightly bitter. Soluble in 21 parts of *water*; very soluble in *alcohol* (90 per cent.), the solution being neutral to *litmus*; very soluble in *ether*; slowly soluble in 12 parts of *glycerin*. Melting point 114° to 115°; decomposes at a higher temperature. Hydrolyses in aqueous solution at 60°, yielding chloral hydrate and formamide. Unaffected by dilute acids, but decomposed when warmed with *solution of sodium hydroxide*, chloroform separating and ammonia and sodium formate being produced. Heated with free access of air it volatilises completely without the evolution of inflammable vapours (absence of certain organic impurities). Its solution in *alcohol* (90 per cent.) is not immediately altered in appearance by *solution of silver nitrate* (absence of certain decomposition products).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 3 grammes. | 15 to 45 grains. |

## CHLORAL HYDRAS

### Chloral Hydrate

Chloral Hydrate, $C_2Cl_3H_3O_2$, may be obtained by the addition of water to the liquid chloral, $C_2Cl_3HO$, produced by the action of dry chlorine gas on ethylic alcohol.

*Characters and Tests.*—In colourless, non-deliquescent,

monoclinic plates. Pungent, but not acrid odour; taste pungent and rather bitter. Soluble in less than 1 part of *water*, *alcohol* (90 per cent.), or *ether*, and in 3 parts of *chloroform*. Aqueous solution neutral or only slightly acid to *litmus*. Melting point 49° to 53°; at a slightly higher temperature it volatilises without residue. Decomposed by alkalies with liberation of chloroform. A solution in *chloroform*, shaken with *sulphuric acid*, imparts no colour to the acid (absence of certain organic impurities). When 1 gramme of Chloral Hydrate is warmed with 6 millilitres of *water* and 0·5 millilitre of *solution of sodium hydroxide*, the mixture filtered, sufficient *N/10 solution of iodine* added to impart a deep brown colour, and the whole set aside for an hour, no yellow crystalline precipitate is produced (absence of chloral alcoholate). Its aqueous solution yields no precipitate with *solution of silver nitrate* (absence of free chlorides).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## CHLOROFORMUM

### Chloroform

Chloroform is trichlormethane, $CHCl_3$, to which 2 per cent. of Absolute Alcohol has been added. It may be obtained from ethylic alcohol, industrial methylated spirit, or acetone, by heating with chlorinated lime, slaked lime, and distilled water, and subsequent purification. Should be kept cool and in a dark place.

*Characters and Tests.*—A colourless, volatile liquid. Characteristic odour; taste pungent, sweet. Specific gravity 1·483 to 1·487. Does not begin to boil below 60°. On allowing 10 millilitres to evaporate from a large piece of filter paper placed on a warm plate, no extraneous odour is perceptible at any stage of the evaporation. *Water* which has

been shaken for five minutes with half its volume of Chloroform, and separated from the undissolved Chloroform, is neutral to *litmus* (absence of acid), does not give any colour with 1 millilitre of *solution of cadmium iodide* and 2 drops of *mucilage of starch* (absence of free chlorine), and yields not more than a very slight opalescence with 4 drops of *solution of silver nitrate* (absence of chlorides). After shaking *sulphuric acid* with twice its volume of Chloroform for five minutes, and setting aside for fifteen minutes, both the acid and the Chloroform are nearly colourless. 2 millilitres taken from the layer of *sulphuric acid*, and diluted with 5 millilitres of *water*, remain very nearly colourless, and have a pleasant odour. When this acid liquid is further diluted with 10 millilitres of *water*, and stirred with a glass rod, it is transparent and colourless, and the addition of 4 drops of *solution of silver nitrate* causes not more than a slightly diminished transparency. *Water* which has been shaken with half its volume of Chloroform, previously treated with *sulphuric acid* as described above, yields not more than a slightly diminished transparency with *solution of silver nitrate*. Evaporates without residue.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centimils. | 1 to 5 minims. |

## CHRYSAROBINUM

### Chrysarobin

Chrysarobin is a mixture of substances extracted from Araroba by hot benzene. It consists of a definite chemical compound, $C_{15}H_{12}O_3$, also known as pure chrysarobin, or chrysophanolanthranol, associated with certain other substances of similar composition.

*Characters and Tests.*—A light, microcrystalline, yellowish powder; inodorous; tasteless. Entirely soluble in hot *chloroform* and in hot *benzene*, almost entirely soluble in hot

*alcohol* (90 per cent.), partially and sparingly soluble in *petroleum spirit*, almost insoluble in *water*. Almost entirely soluble in hot *solution of sodium hydroxide*, with production of a deep brownish-red colour. Shaken with *solution of ammonia* the liquid slowly becomes violet. About 1 milligram mixed on a white tile with a drop of *fuming nitric acid* produces a brownish-red liquid, becoming violet on the addition of excess of *solution of ammonia*. Melts when heated, giving off yellow fumes. Ash not more than 1 per cent.

## CINCHONÆ RUBRÆ CORTEX

### Red Cinchona Bark

Red Cinchona Bark is the dried bark of the stem and branches of cultivated plants of Cinchona succirubra, *Pav.*

*Characters and Tests.*—In quilled or curved pieces, length varying from five to thirty centimetres, or more; usually from about two and a half to six millimetres thick; cork brownish or reddish-brown, with longitudinal ridges which are most apparent in the branch bark, and sometimes with reddish warts; inner surface brick-red or deep reddish-brown, irregularly and coarsely striated; fracture shortly fibrous in the smaller, and finely fibrous in the larger, pieces. In transverse section in the cortex, cells filled with minute crystals of calcium oxalate, and also large secretion tubes; in the bast numerous, large, strongly-thickened fibres usually 50 to 70 microns wide and about 1000 microns long, isolated or in small groups. The powdered Bark is brownish or reddish-brown, exhibits abundant parenchymatous tissue with brownish cell-walls, and often with brownish contents, small starch grains, and large isolated bast fibres about 60 microns in diameter, with distinctly striated walls. No marked odour; taste bitter and somewhat astringent.

Red Cinchona Bark when used for official purposes

other than the preparation of alkaloids or their salts, is required to yield from 5 to 6 per cent. of total alkaloids, of which not less than one-half consists of quinine and cinchonidine, as determined by the following process :—

Mix 10 grammes of Red Cinchona Bark, in No. 60 powder, with 6 grammes of *calcium hydroxide* ; add 22 millilitres of *water*, mix intimately in a small porcelain dish or mortar, and set aside for an hour or two. Transfer this mixture to a suitable flask fitted with a reflux condenser, add 130 millilitres of *benzolated amylic alcohol*, boil for about half an hour, and then decant the liquid on to a filter, leaving the sediment in the flask ; add more of the *benzolated amylic alcohol* to the sediment, and boil and decant as before ; repeat this operation a third time ; then transfer the contents of the flask to the filter, and wash by percolation with more of the *benzolated amylic alcohol* until the Bark is exhausted. Introduce the collected filtrate, while still warm, into a stoppered glass separator ; add to it 2 millilitres of *diluted hydrochloric acid*, mixed with 12 millilitres of *water* ; shake well together, and allow the liquids to separate ; draw off the acid liquid, and repeat the process with *water* slightly acidified with *hydrochloric acid*, until the alkaloids have been completely removed. Carefully and exactly neutralise the acid liquid, while warm, with *solution of ammonia*, and concentrate by evaporation to the bulk of 16 millilitres. To the concentrated solution add about 1·5 grammes of *sodium potassium tartrate*, dissolved in twice its weight of *water*, stirring with a glass rod ; after about one hour collect the precipitate, wash, dry at 100° and weigh ; the weight in grammes multiplied by 8 gives the percentage of quinine and cinchonidine in the Bark. To the mother-liquor and washings from the preceding process add *solution of ammonia* in slight excess and shake with three successive portions of 10 millilitres of *chloroform* ; evaporate the mixed chloroformic solutions to dryness, dry the residue at 110° and weigh. The weight in grammes multiplied by 10 and added to the percentage of the quinine and cinchonidine, gives the percentage of total alkaloids.

## CINNAMOMI CORTEX

### Cinnamon Bark

Cinnamon Bark is the dried inner bark of shoots from the truncated stocks of Cinnamomum zeylanicum, *Breyn.* Obtained from cultivated trees. Imported from Ceylon, and distinguished in commerce as Ceylon cinnamon.

*Characters and Test.*—In closely rolled quills, each about nine millimetres in diameter, and containing numerous smaller quills or channelled pieces. Dull, pale yellowish-brown, darker on the inner surface; thin, brittle and splintery; entirely free from cork; marked with small scars or holes and with faint, shining, wavy longitudinal lines. The powdered Bark exhibits abundant parenchymatous tissue with brown cell-walls, isolated bast-fibres not more than 30 microns in diameter, small simple or compound starch grains and thick-walled sclerenchymatous cells, but no cork or fragments of wood. Fragrant odour; taste warm, sweet and aromatic. Ash not more than 5 per cent.

## COCAINA

### Cocaine

Cocaine, $C_{17}H_{21}NO_4$, is an alkaloid obtained from the leaves of Erythroxylum Coca, *Lam.*, and its varieties.

*Characters and Tests.*—In colourless monoclinic prisms. No odour; taste bitter, followed by a sensation of tingling and numbness. Soluble in 10 parts of *alcohol* (90 per cent.), in 4 parts of *ether*, in 0·5 part of *chloroform*, and in 24 parts of *olive oil*; almost insoluble in *water*. Melting point 98°. The dry salt obtained by dissolving Cocaine in *water* acidified with *hydrochloric acid*, and evaporating the solution, responds to the tests described under 'Cocainæ Hydrochloridum.'

## COCAINÆ HYDROCHLORIDUM

### Cocaine Hydrochloride

Cocaine Hydrochloride, $C_{17}H_{21}NO_4,HCl$, is the hydrochloride of the alkaloid cocaine.

*Characters and Tests.*—In colourless prismatic crystals, or a crystalline powder. No odour; taste bitter, followed by a sensation of tingling and numbness. Soluble in 0·5 part of *water*, and in 3 parts of *alcohol* (90 per cent.); insoluble in *olive oil*. Melting point 182° to 186°. Yields the *reactions* characteristic of chlorides. An aqueous solution is neutral to *litmus*, and when applied to the eye dilates the pupil. When moistened with *nitric acid*, the mixture evaporated to dryness, and 1 millilitre of *alcoholic solution of potassium hydroxide* added, a characteristic odour is evolved, recalling peppermint. The addition of 3 drops of *N/10 solution of potassium permanganate* to a solution of 0·1 gramme of the salt in 5 millilitres of *water* to which 3 drops of *diluted sulphuric acid* have been added, gives a violet colour, which, if dust is excluded, does not fade in half an hour (absence of cinnamyl-cocaine and certain other coca alkaloids). If 0·1 gramme is dissolved in 100 millilitres of *water* in a glass beaker, 0·25 millilitre of *solution of ammonia* stirred in, and the mixture set aside for fifteen minutes, the sides of the beaker being occasionally and not too vigorously rubbed with a glass rod, a crystalline deposit separates, leaving the supernatant liquid clear (limit of amorphous alkaloid). 0·05 gramme dissolves in 1 millilitre of cold *sulphuric acid* or cold *nitric acid* without coloration, but with hot *sulphuric acid* the salt chars, evolving an agreeable odour and yielding a sublimate of benzoic acid. Loses not more than 1 per cent. of its weight when dried at 100°. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 16 milligrams. | 1/10 to 1/4 grain. |

## COCCUS

### Cochineal

Cochineal is the dried fecundated insect, Coccus cacti, *Linn.*

*Characters and Tests.*—About five millimetres long; somewhat oval in outline, flat or concave beneath, convex above, transversely wrinkled, purplish-black or purplish-grey; easily reduced to powder, which is dark-red or puce-coloured. Macerated in *water*, no insoluble powder is separated. Ash not more than 6 per cent.

## CODEINA

### Codeine

Codeine, $C_{18}H_{21}NO_3,H_2O$, is an alkaloid obtained from opium or prepared from morphine.

*Characters and Tests.*—Colourless or nearly colourless crystals. Soluble in 80 parts of *water*, and in 80 parts of *solution of ammonia*, readily soluble in *alcohol* (90 per cent.), and in *chloroform*. The aqueous solution has a bitter taste and an alkaline reaction. Melting point 155° to 156°. 0·1 gramme dissolves in 1 millilitre of cold *sulphuric acid* without coloration or with the production at most of a faint pink tinge; but when the solution is gently warmed with a trace of *ammonium molybdate* or of *ferric chloride* a deep bluish-violet colour is developed which, on the addition of a drop of *diluted nitric acid*, changes to scarlet and finally orange. When a little of the powdered alkaloid is sprinkled on *nitric acid* the liquid becomes yellow but not red (distinction from morphine). A saturated aqueous solution, acidified with *hydrochloric acid*, gives no blue colour, but only gradually a dull green, on the addition of diluted *T. Sol. of ferric chloride* and very dilute *solution of potassium ferricyanide* (absence of morphine). A solution (1 in 50)

in *water* acidified with *hydrochloric acid* yields a white precipitate with *solution of sodium hydroxide*, but not with *solution of ammonia*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## CODEINÆ PHOSPHAS

### Codeine Phosphate

Codeine Phosphate, $C_{18}H_{21}NO_3,H_3PO_4,2H_2O$, is the phosphate of the alkaloid codeine.

*Characters and Tests.*—White efflorescent crystals. Taste slightly bitter. Soluble in 3·5 parts of *water*. An aqueous solution (1 in 20) has a slightly acid reaction and yields a white precipitate with *solution of sodium hydroxide*, but not with *solution of ammonia*. Loses its water of crystallisation at 100°. Yields the *reactions* characteristic of phosphates, and responds to the colour-tests described under 'Codeina.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## COLCHICI CORMUS

### Colchicum Corm

Colchicum Corm is the fresh corm of Colchicum autumnale, *Linn.*, collected in early summer; or the same deprived of its coats, sliced transversely, and dried at a temperature not exceeding 65°.

*Characters.*—Fresh corm about thirty-five millimetres long and twenty-five millimetres broad, somewhat conical, hollowed on one side where a new corm is in process of development, and rounded on the other; covered with a thin brown membranous outer coat, and an inner reddish-yellow one; internally white and solid, and when cut yielding a whitish, turbid juice of a disagreeable odour and bitter taste. Dried slices two or three millimetres thick, yellowish at their circumference, somewhat reniform in outline; firm, whitish, amylaceous; breaking readily with a short fracture. No odour; taste bitter.

## COLCHICI SEMINA

### Colchicum Seeds

Colchicum Seeds are the dried ripe seeds of Colchicum autumnale, *Linn.*

*Characters.*—About two and a half millimetres in diameter, subglobular, slightly pointed at the hilum, rough and of a dull reddish-brown colour, minutely pitted, very hard and tough. Endosperm oily; its cells with thickened walls and large pits. No odour; taste bitter and acrid.

## COLLODIUM

### Collodion

| | |
|---|---|
| Pyroxylin . . . . . | 21 grammes |
| Ether . . . . . | 750 millilitres |
| Alcohol (90 per cent.) . . . | 250 millilitres |

Immerse the Pyroxylin in the Alcohol; add the Ether, shake occasionally until dissolved; set aside for a few days; decant if necessary.

*Characters and Tests.*—A colourless, highly inflammable

liquid of syrupy consistence and ethereal odour. Dries quickly upon exposure to the air, and leaves a thin transparent film, which contracts rapidly on drying and is insoluble in *water* or *alcohol* (90 per cent.).

## COLLODIUM FLEXILE

### Flexible Collodion

| | |
|---|---|
| Collodion . . . . . | 940 millilitres |
| Canada Turpentine . . . | 40 grammes |
| Castor Oil . . . . . | 20 grammes |

Mix.

## COLLODIUM VESICANS

### Blistering Collodion

| | |
|---|---|
| Pyroxylin . . . . . | 25 grammes |
| Cochineal, in powder . . . | 10 grammes |
| Blistering Liquid sufficient to produce | 1000 millilitres |

Shake together until the Pyroxylin is dissolved, set aside till clear, and decant the clear liquid.

## COLOCYNTHIDIS PULPA

### Colocynth Pulp

Colocynth Pulp is the dried pulp of the fruit of Citrullus Colocynthis, *Schrad.*, freed from seeds.

*Characters and Tests.*—White, spongy, light fragments. The powdered Pulp exhibits abundant débris of large, thin-walled parenchymatous cells but no starch, and not more than an occasional sclerenchymatous cell or group of such cells. No odour; taste intensely bitter. Yields not more than 2 per cent. of fixed oil to *petroleum spirit*. Ash not less than 9 per cent.

## CONFECTIO PIPERIS

### Confection of Pepper

| | |
|---|---|
| Black pepper of commerce, in powder | 100 grammes |
| Caraway Fruit, in powder | 150 grammes |
| Purified Honey | 750 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## CONFECTIO ROSÆ GALLICÆ

### Confection of Roses

| | |
|---|---|
| Fresh Red-Rose Petals | 250 grammes |
| Refined Sugar | 750 grammes |

Beat together in a stone mortar.

## CONFECTIO SENNÆ

### Confection of Senna

| | |
|---|---|
| Senna Leaves, in powder | 100 grammes |
| Coriander Fruit, in powder | 40 grammes |
| Figs of commerce | 160 grammes |
| Tamarinds | 120 grammes |
| Cassia Pulp | 120 grammes |
| Prunes of commerce | 80 grammes |
| Extract of Liquorice | 15 grammes |
| Refined Sugar | 400 grammes |
| Distilled Water sufficient to produce | 1000 grammes |

Boil the figs and prunes gently with three hundred and fifty grammes of Distilled Water in a covered vessel for four hours; add more Distilled Water to make up the quantity to its original weight, and then incorporate the Tamarinds and Cassia Pulp; digest for two hours; rub the softened pulp of the fruits through a hair sieve, rejecting the seeds and other hard parts; to the pulp thus obtained add the Refined Sugar and Extract of Liquorice, dissolving them by the aid of gentle heat; while the mixture is still warm, add to it gradually the mixed Senna and Coriander powders; mix the whole thoroughly; make the weight of the resulting Confection one thousand grammes, either by evaporation or by the addition of more Distilled Water.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## CONFECTIO SULPHURIS

### Confection of Sulphur

| | |
|---|---|
| Precipitated Sulphur | 450 grammes |
| Acid Potassium Tartrate, in powder | 110 grammes |
| Tragacanth, in powder | 5 grammes |
| Syrup | 210 millilitres |
| Tincture of Orange | 55 millilitres |
| Glycerin | 170 millilitres |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## COPAIBA

### Copaiba

Copaiba is the oleo-resin obtained by incision from the trunk of various species of Copaifera, *Linn.*

*Characters and Tests.*—A more or less viscous liquid, generally transparent and occasionally fluorescent, yellow to golden brown. Specific gravity 0·975 to 0·995. Entirely soluble in *absolute alcohol*; soluble in four times its volume of *petroleum spirit*, the solution yielding only a slight filmy deposit on standing. Aromatic, characteristic odour; taste acrid, somewhat bitter, persistent. Loses about 45 per cent. of its weight when heated for forty-eight hours to 100°. Forms a transparent solution with one-third of its volume of *solution of ammonia*. Four drops carefully added to a mixture of 5 millilitres of *glacial acetic acid* with four drops of *nitric acid* do not yield a purplish or violet colour (absence of gurjun balsam). 1 gramme dissolved in 25 millilitres of *absolute alcohol* requires for neutralisation not less than 2·7 millilitres of *N/2 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator (presence of a due proportion of acid resins). The volatile oil distilled from it responds to the tests described under 'Oleum Copaibæ'.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## CORIANDRI FRUCTUS

### Coriander Fruit

Coriander Fruit is the dried ripe fruit of Coriandrum sativum, *Linn.*

*Characters.*—Nearly globular, about five millimetres in diameter, uniform brownish-yellow in colour, and glabrous. Mericarps usually closely united, and crowned by the calyx teeth and stylopod. Primary ridges wavy and inconspicuous; secondary ridges straight and more prominent. In transverse section, two vittæ on the commissural surface of each mericarp. Aromatic odour, especially when bruised; taste agreeable.

## CREOSOTUM

### Creosote

Creosote is a mixture of phenols which may be obtained by the distillation of beech tar, and consists chiefly of guaiacol and creosol.

*Characters and Tests.*—A colourless or pale yellow, highly refractive liquid, neutral or faintly acid to *litmus*. Freely soluble in *alcohol* (90 per cent.), in *ether*, in *chloroform*, and in *glacial acetic acid*. Specific gravity not below 1·080. Commences to boil below 200°. Not less than 75 per cent. distils between 200° and 220°. A solution (1 in 100) in *alcohol* (90 per cent.) produces with a drop of *T. Sol. of ferric chloride* a green coloration rapidly changing to reddish brown. Dropped on white filter paper and exposed to a temperature of 100° it leaves no translucent stain (absence of less volatile liquids).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centimils. | 1 to 5 minims. |

## CRESOL

### Cresol

Cresol is a mixture of isomers of the formula $C_7H_7OH$, obtained from coal tar. Should be preserved in stoppered amber-coloured bottles.

*Characters and Tests.*—A straw-coloured liquid, becoming brown on keeping or on exposure to light. Soluble in 50 parts of *water*, the solution being neutral to *litmus*; freely soluble in *alcohol* (90 per cent.), in *ether*, in *chloroform*, in *glycerin*, and in the fixed and volatile oils. Specific gravity 1·040 to 1·050. When 0·5 millilitre is shaken with 300 millilitres of *water* and filtered, the filtrate gives a transient bluish colour on the addition of *T. Sol. of ferric chloride*. Not less than 90 per cent. distils between 195° and 205°. 10 millilitres shaken with 10 millilitres of an aqueous solution (1 in 10) of *sodium hydroxide* form an almost clear liquid, from which no appreciable oily layer separates on standing for twenty-four hours (limit of hydrocarbon oils). 5 millilitres mixed with 5 millilitres of *glycerin* form a clear solution from which, on the addition of 5 millilitres of *water*, the cresol completely separates (absence of phenol).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 centimils. | 1 to 3 minims. |

## CRETA PRÆPARATA

### Prepared Chalk

Prepared Chalk is native calcium carbonate, freed from most of its impurities by elutriation.

*Characters and Tests.*—White friable masses or a white powder. Yields the *reactions* characteristic of calcium and of carbonates. Yields not more than the slightest characteristic *reactions* for iron, aluminium, magnesium, phosphates, sulphates, or silica. *Arsenic limit* 5 parts per million. A solution of Prepared Chalk in *diluted acetic acid* yields no precipitate with *solution of potassium chromate* (absence of barium carbonate).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 grammes. | 15 to 60 grains. |

## CUBEBÆ FRUCTUS

### Cubebs

Cubebs are the dried full-grown unripe fruits of Piper Cubeba, *Linn. fil.*

*Characters and Tests.*—Nearly globular, about four millimetres in diameter, greyish-brown or nearly black. Pericarp reticulately wrinkled, thin, brittle, and abruptly prolonged at the base into a slender, rounded stalk about one and a half times as long as the globular portion. Seed almost spherical, sometimes much shrivelled, attached by the base. In the transverse section of the pericarp two layers of sclerenchymatous cells, one near the outer, the other near the inner surface, those of the latter being radially elongated and usually arranged in a single row. Strong, aromatic, and characteristic odour; taste warm, aromatic, and somewhat bitter. When 2 grammes of powdered Cubebs are macerated with 20 millilitres of *ether* for twenty-four hours, and shaken occasionally, 10 millilitres of the clear ethereal solution, allowed to evaporate in a flat-bottomed dish, yield a residue which, dried for one hour in a desiccator over *sulphuric acid*, weighs not less than 0·200 gramme. Crushed Cubebs impart a crimson colour to *sulphuric acid*. Ash not more than 8 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 grammes. | 30 to 60 grains. |

## CUCURBITÆ SEMINA PRÆPARATA

### Melon Pumpkin Seeds

Melon Pumpkin Seeds are the prepared fresh ripe seeds of cultivated plants of Cucurbita maxima, *Duch.* Melon

Pumpkin Seeds must not be more than one month old, and when required for use about 100 grammes are bruised with a little water or milk to a creamy consistence and administered as a single dose.

*Characters.*—Flat, ovate, white, and exalbuminous, consisting of two fleshy, easily separable cotyledons, freshly deprived of the yellowish outer, and brownish inner integument. Faint odour; taste very slight. Before preparation, the seeds measure from eight to twenty millimetres in length, and from nine to twelve millimetres in breadth.

## CUPRI SULPHAS

### Copper Sulphate

*Synonym*—Cupric Sulphate

Copper Sulphate, $CuSO_4,5H_2O$, may be obtained by the interaction of sulphuric acid, copper or copper oxide, and water.

*Characters and Tests.*—Blue triclinic prisms. Soluble in 3·5 parts of *water*, very soluble in *glycerin*, almost insoluble in *alcohol* (90 per cent.). The aqueous solution is acid to *litmus*. Yields the *reactions* characteristic of copper and of sulphates. Yields no characteristic *reactions* for lead, zinc, or aluminium. *Arsenic limit* 10 parts per million. Contains not more than 0·1 per cent. of iron, calculated as iron, Fe, when tested by the following process :—

Dissolve 5 grammes in 25 millilitres of *water*, add 2 millilitres of *nitric acid*, heat to boiling, cool, and add *strong solution of ammonia* until the precipitate which first forms is redissolved and the liquid has a distinct odour

of ammonia. Filter. Wash the filter paper thoroughly with *water* made alkaline with *solution of ammonia*, redissolve in *hydrochloric acid* any precipitate that has been collected, reprecipitate with *solution of ammonia*, collect, wash, dry, ignite, and weigh the residue. It weighs not more than 0·007 gramme.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 120 milligrams. | 1/4 to 2 grains. |

*Emetic Dose.*

| | |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## CUSSO

### Kousso

Kousso consists of the dried panicles of pistillate flowers of Brayera anthelmintica, *Kunth*.

*Characters.*—Usually in more or less cylindrical rolls from three to six decimetres long, composed of reddish panicles of pistillate flowers. Panicles much branched, the branches arising from the axils of large sheathing bracts; more or less covered with hairs and glands. Flowers numerous, small, shortly stalked, mostly unisexual, with two roundish, membranous, veined bracts at the base of each. Calyx with reddish veins, hairy externally, and consisting of two alternating whorls each of five segments, the inner whorl being curved inwards over the young fruit and shrivelled. No marked odour; taste bitter and acrid.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 16 grammes. | 120 to 240 grains. |

## DATURÆ FOLIA

### Datura Leaves

Datura Leaves are the dried leaves of Datura fastuosa, *Linn.*, var. alba, *Nees* and also of Datura Metel, *Linn.*

*Characters.*—Brownish or yellowish green, attaining twenty centimetres in length and thirteen centimetres in breadth; ovate, acuminate, with sinuate-dentate margins and long petioles; often unequal at the base; bearing scattered glandular or simple hairs. Characteristic odour; taste bitter.

## DATURÆ SEMINA

### Datura Seeds

Datura Seeds are the dried seeds of Datura fastuosa, *Linn.* var. alba, *Nees.*

*Characters.*—Yellowish-brown, somewhat wedge-shaped, flattened, with rounded, thickened, furrowed, wavy margins; from four to five millimetres broad and about one millimetre thick. Hilum large, extending from about the middle to the acute end of the seed. Surface finely pitted and reticulated. Endosperm narrow and translucent, enclosing a curved embryo. No odour; taste slightly bitter.

## DECOCTUM ACACIÆ CORTICIS

### Decoction of Acacia Bark

| | |
|---|---|
| Acacia Bark, bruised . . . | 60 grammes |
| Distilled Water sufficient to produce . . . . | 1000 millilitres |

Boil the Acacia Bark with twelve hundred millilitres of

Distilled Water, in a suitable vessel, for ten minutes; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DECOCTUM AGROPYRI

### Decoction of Couch Grass

*Synonym*—Decoction of Triticum

| | |
|---|---|
| Couch Grass, cut small . . | 50 grammes |
| Distilled Water sufficient to produce. . . . . | 1000 millilitres |

Boil the Couch Grass with twelve hundred millilitres of Distilled Water, in a suitable vessel, for ten minutes; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DECOCTUM ALOES COMPOSITUM

### Compound Decoction of Aloes

| | |
|---|---|
| Extract of Aloes . . . . | 10 grammes |
| Myrrh, Potassium Carbonate } of each . | 5 grammes |
| Extract of Liquorice . . . | 40 grammes |
| Compound Tincture of Cardamoms . | 300 millilitres |
| Distilled Water sufficient to produce . . . . | 1000 millilitres |

Reduce the Extract of Aloes and the Myrrh to coarse powder, and boil them and the Potassium Carbonate and the Extract of Liquorice with four hundred millilitres of Distilled Water in a covered vessel for five minutes; cool; add the Tincture of Cardamoms; set aside for two hours; strain through flannel; pass sufficient Distilled Water through the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DECOCTUM GOSSYPII RADICIS CORTICIS

### Decoction of Cotton Root Bark

| | |
|---|---|
| Cotton Root Bark, bruised . . | 200 grammes |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Boil the Cotton Root Bark with two thousand millilitres of the Distilled Water, in a suitable vessel, until the volume is reduced to one thousand millilitres; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DECOCTUM HÆMATOXYLI

### Decoction of Logwood

| | |
|---|---|
| Logwood, in chips . . . | 50 grammes |
| Cinnamon Bark, bruised . . | 10 grammes |
| Distilled Water sufficient to produce. . . . . | 1000 millilitres |

Boil the Logwood with twelve hundred millilitres of Distilled Water in a suitable vessel for ten minutes, adding the Cinnamon Bark towards the end of the time; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DECOCTUM ISPAGHULÆ

### Decoction of Ispaghula

| | |
|---|---|
| Ispaghula, bruised . . . | 15 grammes |
| Distilled Water sufficient to produce . . . . | 1000 millilitres |

Boil the Ispaghula with twelve hundred millilitres of Distilled Water, in a suitable vessel, for ten minutes; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DECOCTUM SAPPAN

### Decoction of Sappan

| | |
|---|---|
| Sappan, in chips . . . . | 50 grammes |
| Cinnamon Bark, bruised . . | 10 grammes |
| Distilled Water sufficient to produce . . . . | 1000 millilitres |

Boil the Sappan with twelve hundred millilitres of Distilled Water, in a suitable vessel, for ten minutes, adding the Cinnamon Bark towards the end of the time; strain; if necessary pour sufficient Distilled Water over the contents of the strainer to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 60 mils. | 1/2 to 2 fluid ounces. |

## DIAMORPHINÆ HYDROCHLORIDUM

### Diamorphine Hydrochloride

*Synonym*—Diacetyl-morphine Hydrochloride

Diamorphine Hydrochloride, $C_{21}H_{23}NO_5,HCl,H_2O$, is the hydrochloride of an alkaloid obtainable by the action of acetic anhydride on morphine.

*Characters and Tests.*—A white, crystalline powder; taste bitter. Melting point from 231° to 232°. Soluble in 3 parts of *water* and in 11 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of chlorides. 0·1 gramme dissolved in 2 millilitres of *alcohol* (90 per cent.), mixed with 1 millilitre of *sulphuric acid* and warmed, develops an odour of acetic ether. A solution of 0·1 gramme in 1 millilitre of *sulphuric acid* heated on a water-bath, cooled and diluted with 6 millilitres of *water*, gives a deep blue colour on the addition of an aqueous solution (0·5 in 100) of *potassium ferricyanide* to which 1 drop of *T. Sol. of ferric chloride* has been added. Treated with a few drops of *nitric acid* a yellow colour is produced, which changes to greenish-blue on warming, and finally becomes yellow again. 0·02 gramme added to 5 millilitres of an aqueous solution (0·5 in 100) of *potassium ferricyanide*, to which 1 drop of *T. Sol. of ferric chloride* has been added, produces a greenish colour and not a deep blue (absence of morphine).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2·5 to 8 milligrams. | 1/25 to 1/8 grain. |

## DIGITALIS FOLIA

### Digitalis Leaves

Digitalis Leaves are the dried leaves of Digitalis purpurea, *Linn.*, collected from plants commencing to flower, thoroughly dried at a low temperature, and kept dry in well-filled air-tight containers. When powdered no portion should be rejected.

*Characters.*—From ten to thirty centimetres or more in length, and sometimes as much as twelve to fifteen centimetres broad, with a winged petiole of varying length down which the lower veins are decurrent; broadly ovate or ovate-lanceolate, subacute, crenate or irregularly crenate-dentate. Upper surface somewhat rugose, dull green and slightly hairy; under surface paler and densely pubescent. Hairs of two kinds, either simple, mostly 3–5 celled and bluntly pointed, or glandular and consisting of a short pedicel bearing a unicellular or bicellular gland. In transverse section, no sclerenchymatous cells or fibres, and no crystals of calcium oxalate. In the powdered Leaves, groups of epidermal cells with more or less sinuous walls, numerous fragments of multicellular hairs with thin, granular walls; but no sclerenchymatous cells or fibres, or crystals of calcium oxalate. No marked odour; taste very bitter.

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

## EMBELIA

### Embelia

Embelia is the dried fruit of Embelia Ribes, *Burm. fil.*, and also of Embelia robusta, *Roxb.*

*Characters.*—Globular, about four millimetres in diameter, varying in colour from dull red to nearly black;

warty or striated longitudinally; superior, minutely beaked and often attached to a 5-partite calyx and slender pedicel. Pericarp brittle, enclosing a single seed surrounded by a delicate membrane. Seed reddish, marked with lighter spots. Endosperm horny and slightly ruminated. Taste slightly astringent and aromatic.

*Dose (in powder).*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 16 grammes. | 60 to 240 grains. |

## EMPLASTRUM BELLADONNÆ

### Belladonna Plaster

| | |
|---|---|
| Liquid Extract of Belladonna . | 50·0 millilitres |
| Resin Plaster . . . . | 137·5 grammes |

Concentrate the Liquid Extract of Belladonna by evaporation at a low temperature until it is reduced in weight to twelve and a half grammes; add the Resin Plaster, previously melted; mix.

This Plaster contains 0·25 per cent. of the alkaloids of Belladonna Root, and is of one-half the strength of the Emplastrum Belladonnæ of the British Pharmacopœia, 1898.

## EMPLASTRUM CALEFACIENS

### Warming Plaster

| | |
|---|---|
| Cantharidin . . . . | 0·2 gramme |
| Chloroform . . . . | 20·0 millilitres |
| Olive Oil . . . . . | 40·0 millilitres |
| Resin Plaster . . . . | 940·0 grammes |

Dissolve the Cantharidin in the Chloroform, add the Olive Oil, and mix with the Resin Plaster, previously melted on a water-bath.

This Plaster contains 0·02 per cent. of Cantharidin, which is approximately the proportion contained in the Emplastrum Calefaciens of the British Pharmacopœia, 1898.

See Appendix XII, page 529, Oleum Olivæ.

## EMPLASTRUM CANTHARIDINI

### Cantharidin Plaster

| | |
|---|---|
| Cantharidin | 2 grammes |
| Chloroform | 100 millilitres |
| Yellow Beeswax | 450 grammes |
| Wool Fat sufficient to produce | 1000 grammes |

Dissolve the Cantharidin in the Chloroform by the aid of heat, add to the other ingredients previously melted on a water-bath, and stir until cold.

This Plaster contains 0·2 per cent. of Cantharidin, which is approximately the proportion contained in the Emplastrum Cantharidis of the British Pharmacopœia, 1898.

See Appendix XII, page 529, Emplastra.

## EMPLASTRUM HYDRARGYRI

### Mercurial Plaster

| | |
|---|---|
| Mercury | 328 grammes |
| Olive Oil | 18 grammes |
| Sublimed Sulphur | 2 grammes |
| Lead Plaster | 652 grammes |

Heat the Olive Oil with the Sulphur until a reddish-brown liquid is obtained; with this solution triturate the Mercury until metallic globules are no longer visible; add the Lead Plaster, previously melted; mix.

See Appendix XII, page 529, Oleum Olivæ.

## EMPLASTRUM MENTHOL

### Menthol Plaster

| | |
|---|---|
| Menthol | 150 grammes |
| Yellow Beeswax | 100 grammes |
| Resin | 750 grammes |

Melt the Beeswax and Resin together; when the mixture has cooled to about 70° add the Menthol, and stir until dissolved.

See Appendix XII, page 529, Emplastra.

## EMPLASTRUM PLUMBI

### Lead Plaster

| | |
|---|---|
| Lead Oxide | 400 grammes |
| Olive Oil | 800 grammes |
| Distilled Water | 400 millilitres, |
| | or a sufficient quantity |

Boil gently together in a steam-bath, stirring constantly until combination has been effected. When cool remove the plaster-like mass produced; knead it thoroughly with hot water, and allow it to dry.

See Appendix XII, page 529, Oleum Olivæ.

## EMPLASTRUM RESINÆ

### Resin Plaster

*Synonym*—Adhesive Plaster

| | |
|---|---|
| Resin | 100 grammes |
| Lead Plaster | 850 grammes |
| Hard Soap | 50 grammes |

Melt each ingredient separately at as low a temperature as possible; mix.

See Appendix XII, page 529, Emplastra.

## EMPLASTRUM SAPONIS

### Soap Plaster

| | |
|---|---|
| Hard Soap . . . . . | 140 grammes |
| Lead Plaster . . . . . | 835 grammes |
| Resin . . . . . | 25 grammes |

Melt each ingredient separately at a low temperature; mix; evaporate, with constant stirring, to a proper consistence.

See Appendix XII, page 529, Emplastra.

## ERGOTA

### Ergot

*Synonym*—Ergot of Rye

Ergot is the sclerotium of Claviceps purpurea, *Tulasne*, originating in the ovary of Secale cereale, *Linn.* Ergot should be thoroughly dried and kept entire in air-tight containers; it should not be used if more than one year old.

*Characters and Test.*—Subcylindrical or somewhat triangular, tapering towards the ends, generally curved; from one and a half to four centimetres long; longitudinally furrowed on each side, but more especially on that which is concave; often irregularly cracked; very dark violet-black externally, whitish or pinkish-white within; fracture short. Odour characteristic and disagreeable, especially when triturated with *solution of sodium hydroxide*; taste disagreeable.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 grammes. | 15 to 60 grains. |

## ETHYL CHLORIDUM

### Ethyl Chloride

Ethyl Chloride, $C_2H_5Cl$, may be obtained by the action of hydrochloric acid on ethylic alcohol or on industrial methylated spirit; in the latter case it will contain a small but variable proportion of methyl chloride, $CH_3Cl$.

*Characters and Tests.*—Gaseous at normal temperature and pressure, but as usually supplied it is condensed into a colourless, mobile, inflammable, and very volatile liquid. Odour pleasant and ethereal, not alliaceous; if kept in vessels provided with rubber fittings, it may acquire a slight odour of rubber. Specific gravity at 0°, 0·920 to 0·960. *Water* which has been shaken with twice its volume of liquid Ethyl Chloride is neutral to *litmus*, and gives no opalescence or precipitate with *solution of silver nitrate* (absence of sulphur dioxide and of hydrochloric acid). *Sulphuric acid* does not become coloured when shaken with ten times its volume of liquid Ethyl Chloride and, after separation and dilution with an equal volume of *water*, has no unpleasant odour, or odour of ether, and does not become turbid on the addition of *solution of silver nitrate* (absence of ether, empyreumatic matter, and certain other substances). When 0·4 gramme is saponified by heating in a stoppered bottle in a water-bath with 10 millilitres of *N/1 alcoholic solution of potassium hydroxide*, the liquid requires for neutralisation not more than 38·2 millilitres of *N/10 solution of sulphuric acid*, corresponding to a proportion of not less than 99·5 per cent. by weight of esters calculated as ethyl chloride, $C_2H_5Cl$.

## EUONYMI CORTEX

### Euonymus Bark

Euonymus Bark is the dried root-bark of Euonymus atropurpureus, *Jacq.*

*Characters.*—In quilled or curved pieces, from two to four millimetres thick. Outer layer a soft, friable, greyish cork, marked with dark patches. Inner surface pale tawny-white and smooth. Fracture short, the fractured surface yellowish in colour. Transverse section free from sclerenchymatous cells and fibres, and exhibiting, in the secondary bast, laticiferous cells filled with a granular, elastic substance. Faint but characteristic odour; taste somewhat mucilaginous, afterwards bitter and slightly acrid.

## EXTRACTUM AGROPYRI LIQUIDUM

### Liquid Extract of Couch Grass

*Synonym*—Liquid Extract of Triticum

| | |
|---|---|
| Couch Grass, cut small . . | 1000 grammes |
| Distilled Water, boiling . . | 10000 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Boil the Couch Grass with the Distilled Water for thirty minutes; strain; evaporate to seven hundred and fifty millilitres; cool, and add sufficient of the Alcohol to produce the required volume; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM ALOES

### Extract of Aloes

| | |
|---|---|
| Aloes, in small fragments . . | 1000 grammes |
| Distilled Water, boiling . . | 10000 millilitres |

Add the Aloes to the Distilled Water and stir well until

they are thoroughly mixed; set aside the mixture for twenty-four hours; decant; strain; evaporate the strained liquid to dryness at a temperature not exceeding 60°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 25 centigrams. | 1 to 4 grains. |

## EXTRACTUM BELÆ LIQUIDUM

### Liquid Extract of Bael

| | |
|---|---|
| Bael Fruit, bruised . . . | 1000 grammes |
| Chloroform Water . . . | 15000 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Macerate the bruised Bael Fruit for twelve hours in five thousand millilitres of the Chloroform Water; pour off and reserve the clear liquid; repeat the maceration a second and a third time for one hour in each case, using for each maceration five thousand millilitres of the Chloroform Water; press the marc; strain the mixed liquids through flannel. Evaporate to seven hundred and fifty millilitres; cool; add sufficient of the Alcohol to produce the required volume; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM BELLADONNÆ LIQUIDUM

### Liquid Extract of Belladonna

Liquid Extract of Belladonna contains in 100 millilitres 0·75 gramme of the alkaloids of Belladonna Root.

| | |
|---|---|
| Belladonna Root, in No. 20 powder | 1000 grammes |
| Alcohol (90 per cent.) | of each a sufficient quantity |
| Distilled Water | |

Exhaust the Belladonna Root with a mixture of seven volumes of the Alcohol and one volume of Distilled Water by the *repercolation process* until from every three grammes of the Root one millilitre of strong percolate has been obtained. Determine the proportion of alkaloids in this strong percolate by the following process :—

Introduce into a separator 10 millilitres of the strong percolate, 50 millilitres of *water*, 2 millilitres of *diluted sulphuric acid*, and 10 millilitres of *chloroform*. Shake vigorously, set aside until complete separation has taken place, draw off the lower layer, and wash it with two successive portions, each of 10 millilitres, of *water* acidified with *diluted sulphuric acid*. Add the washings to the upper layer left in the separator. Make the mixture distinctly alkaline with *solution of ammonia*, and extract the alkaloids by shaking with three successive portions, each of 10 millilitres, of *chloroform*. Mix the chloroformic solutions, shake with 10 millilitres of *water*, allow separation to take place, draw off the lower layer into a beaker, and set aside for the chloroform to evaporate. Heat the residue on a water-bath for thirty minutes, add 10 millilitres of *N/20 solution of sulphuric acid*, warm gently until dissolved, and titrate back with *N/20 solution of sodium hydroxide, tincture of cochineal* being used as indicator. Deduct the number of millilitres of alkaline solution required from 10 ; the remainder, multiplied by 0·01446, gives the number of grammes of the alkaloids contained in 10 millilitres of the strong percolate. To the remainder of the strong percolate add sufficient of the alcoholic menstruum to produce a Liquid Extract of Belladonna containing 0·75 gramme of the alkaloids of Belladonna Root in 100 millilitres.

*Test.*—Examined by the foregoing process, Liquid Extract of Belladonna is found to contain in 100 millilitres

0·75 gramme of the alkaloids of Belladonna Root. *Limit of error* 0·05 gramme in excess or defect.

This Liquid Extract contains 0·75 gramme of the alkaloids of Belladonna Root in 100 millilitres ; 110 minims contain 3/4 grain.

## EXTRACTUM BELLADONNÆ SICCUM

### Dry Extract of Belladonna

*Synonyms*—Extractum Belladonnæ Alcoholicum : Extractum Belladonnæ

Dry Extract of Belladonna contains in 100 grammes 1 gramme of the alkaloids of Belladonna Leaves.

| | |
|---|---|
| Belladonna Leaves, in No. 40 powder<br>Alcohol (70 per cent.) | of each a sufficient quantity |

Reduce ten grammes of the Belladonna Leaves to No. 60 powder and determine the proportion of alkaloids present by the process described under ' Belladonnæ Folia.' Moisten one thousand grammes of the Belladonna Leaves with two hundred and fifty millilitres of the Alcohol, pack firmly in a percolator and percolate with more of the Alcohol until four thousand millilitres of percolate have been obtained. Determine the proportion of total solids in the percolate by evaporating twenty millilitres, drying the residue at 80°, and weighing. Determine also the proportion of alkaloids in the percolate by the process described under ' Tinctura Belladonnæ,' employing forty millilitres of the percolate in the place of one hundred millilitres of the Tincture.

Having thus determined the proportion of total solids and of alkaloids in the percolate, calculate the amount of each the remainder of the percolate will yield, and also the amount of the powdered Belladonna Leaves, the alkaloidal strength of which has also been determined, that must be

added to afford a dry extract containing 1 per cent. of alkaloids. Add to the percolate a somewhat smaller amount of the powdered Leaves than calculation has shown to be necessary, recover the alcohol by distillation, and dry the residue in a shallow, flat, tared dish, first on a water-bath, and finally in a current of air at 60° to 80°. Weigh the dish with its contents, calculate the additional amount of powdered Leaves that will be necessary, add this to the product of evaporation, transfer the whole to a dry, slightly warmed mortar and triturate carefully until thoroughly mixed. Pass the powdered Extract through a No. 20 sieve, transfer to a bottle which can be securely closed, and preserve in a cool dry place.

*Test.*—Slightly moisten 5 grammes of the Extract with a mixture of 1 volume of *acetic acid* and 9 volumes of *alcohol* (70 per cent.), pack in a small percolator and percolate with the same menstruum, if necessary under increased air-pressure, until 50 millilitres of percolate have been collected. Then proceed as described under 'Tinctura Belladonnæ,' using 50 millilitres of percolate in the place of 100 millilitres of the Tincture.

Examined by the foregoing process, Dry Extract of Belladonna is found to contain in 100 grammes 1 gramme of the alkaloids of Belladonna Leaves. *Limit of error* 0·05 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

This Dry Extract contains 1 per cent. of the alkaloids of Belladonna Leaves.

## EXTRACTUM CANNABIS INDICÆ

### Extract of Indian Hemp

Exhaust Indian Hemp, in coarse powder, with Alcohol (90 per cent.) by the *percolation process*; recover the

alcohol by distillation, and evaporate the residue to a soft extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## EXTRACTUM CASCARÆ SAGRADÆ LIQUIDUM

### Liquid Extract of Cascara Sagrada

| | |
|---|---|
| Cascara Sagrada, in No. 20 powder | 1000 grammes |
| Alcohol (90 per cent.) | 250 millilitres |
| Distilled Water sufficient to produce | 1000 millilitres |

Exhaust the Cascara Sagrada with the Distilled Water by the *percolation process*; evaporate the percolate to six hundred millilitres; add the Alcohol previously mixed with one hundred and fifty millilitres of the Distilled Water, or with sufficient to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM CASCARÆ SAGRADÆ SICCUM

### Dry Extract of Cascara Sagrada

*Synonym*—Extractum Cascaræ Sagradæ

Exhaust Cascara Sagrada, in No 20 powder, with Distilled Water by the *percolation process*; evaporate the percolate to dryness on a water-bath.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## EXTRACTUM CINCHONÆ LIQUIDUM

### Liquid Extract of Cinchona

Liquid Extract of Cinchona contains in 100 millilitres 5 grammes of the alkaloids of Red Cinchona Bark.

| | | |
|---|---|---|
| Red Cinchona Bark, in No. 60 powder | 1000 | grammes |
| Hydrochloric Acid | 31 | millilitres |
| Glycerin | 125 | millilitres |
| Alcohol (90 per cent.) } Distilled Water } | of each a sufficient quantity | |

Mix the Red Cinchona Bark with five thousand millilitres of the Distilled Water, to which the Hydrochloric Acid and Glycerin have been added; set aside in a covered vessel for forty-eight hours, stirring frequently; transfer to a percolator; when the liquid ceases to pass continue the percolation with Distilled Water until the percolate ceases to give a precipitate with excess of *solution of sodium hydroxide*. Evaporate the percolate in a porcelain or enamelled iron vessel at a temperature not exceeding 85°, until it is reduced to one thousand millilitres.

Determine the proportion of alkaloids in the liquid product by the following process:—

Transfer 5 millilitres to a stoppered glass separator; add 15 millilitres of *benzolated amylic alcohol* and 10 millilitres of *N/1 alcoholic solution of potassium hydroxide*; shake well, set aside in a warm place for a few minutes, shaking occasionally, and then allow the liquids to separate; pour off the clear upper layer into a second separator and repeat the shaking with two further portions of 15 and 10 millilitres of *benzolated amylic alcohol*. Shake the mixed alcoholic liquids with two portions, each of 5 millilitres, of *water*, and reject the aqueous liquid; then shake vigorously with a warm mixture of 12 millilitres of *diluted hydrochloric acid* and 60 millilitres of *water*, using three successive portions of 30, 30, and 12 millilitres, and drawing off the acid liquids into a separator. To this acid liquid

add 15 millilitres of *chloroform* and distinct excess of *solution of ammonia*, shake vigorously, allow the liquids to separate and draw off the chloroformic layer into a tared dish; repeat the shaking and separating with further portions, each of 10 millilitres, of *chloroform* until the aqueous liquid, after acidification with *diluted sulphuric acid*, gives no further precipitate with *solution of potassio-mercuric iodide*. Add the chloroformic solutions to that in the dish, allow the chloroform to evaporate slowly; dry the residue in the dish at a temperature of about 110° and weigh. The weight of the residue is that of the total alkaloids in 5 millilitres of the liquid product.

Having thus ascertained the alkaloidal strength of the liquid product, bring every volume of it containing 5 grammes of total alkaloids to eighty-five millilitres, either by evaporation or by dilution with Distilled Water as may be necessary, add twelve and a half millilitres of the Alcohol, and finally sufficient Distilled Water to produce one hundred millilitres of the Liquid Extract.

*Test.*—Examined by the foregoing process, Liquid Extract of Cinchona is found to contain in 100 millilitres 5 grammes of the alkaloids of Red Cinchona Bark. *Limit of error* 0·2 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Liquid Extract contains 5 grammes of the alkaloids of Red Cinchona Bark in 100 millilitres; 110 minims contain 5 grains.

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM COLCHICI

### Extract of Colchicum

Crush fresh Colchicum Corms, deprived of their coats; press out the juice; allow the feculence to subside; decant; heat the clear liquid to 100°; strain through flannel, and

evaporate at a temperature not exceeding 70° to a soft extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## EXTRACTUM COLOCYNTHIDIS COMPOSITUM

### Compound Extract of Colocynth

| | |
|---|---|
| Colocynth Pulp . . . . | 150 grammes |
| Extract of Aloes . . . . | 300 grammes |
| Scammony Resin . . . . | 100 grammes |
| Curd Soap, in powder . . . | 75 grammes |
| Cardamom Seeds, in powder . . | 25 grammes |
| Alcohol (60 per cent.) . . . | 4000 millilitres |

Macerate the Colocynth Pulp in the Alcohol for four days; press out the tincture; recover the alcohol by distillation; evaporate to dryness; add the Extract of Aloes, Scammony Resin, and powdered Cardamom Seeds; powder; mix the powder with the Curd Soap.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## EXTRACTUM ERGOTÆ

### Extract of Ergot

| | |
|---|---|
| Ergot, crushed . . . . | 1000 grammes |
| Distilled Water . . . . | 7500 millilitres |
| Alcohol (90 per cent.) . . . | 650 millilitres |

Macerate the Ergot with five thousand millilitres of the

Distilled Water for twelve hours; strain; repeat the maceration with the remainder of the Distilled Water; strain; press; evaporate the mixed liquids to five hundred millilitres; add the Alcohol; set aside for three days, stirring occasionally; filter; evaporate the filtrate to a soft extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## EXTRACTUM ERGOTÆ LIQUIDUM

### Liquid Extract of Ergot

| | |
|---|---|
| Ergot, crushed . . . . | 1000 grammes |
| Distilled Water . . . . | 7500 millilitres |
| Alcohol (90 per cent.) . . . | 375 millilitres |

Macerate the crushed Ergot with five thousand millilitres of the Distilled Water for twelve hours; strain; repeat the maceration with the remainder of the Distilled Water; press; strain; evaporate the mixed liquids to seven hundred millilitres; when cold, add the Alcohol; set aside for an hour; filter. The product measures about one thousand millilitres.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 decimils. | 10 to 30 minims. |

## EXTRACTUM EUONYMI

### Extract of Euonymus

Exhaust Euonymus Bark in No. 20 powder with Alcohol (45 per cent.) by the *percolation process*. Evaporate the percolate and thoroughly dry the residue. Powder the product as far as possible and mix it with one-fourth of its weight of Calcium Phosphate, continuing the drying and

powdering until a sufficiently dry preparation is obtained; transfer this to a well-closed bottle.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 centigrams. | 1 to 2 grains. |

## EXTRACTUM FILICIS LIQUIDUM

### Liquid Extract of Male Fern

Liquid Extract of Male Fern contains in 100 grammes not less than 20 grammes of filicin.

| | |
|---|---|
| Male Fern, in No. 20 powder | 1000 grammes |
| Ether . . . | a sufficient quantity |

Exhaust the Male Fern by percolation with the Ether; from the clear percolate recover the ether by distillation and finally evaporate on a water-bath until an oily extract remains.

*Tests.*—Specific gravity not less than 1·000. *Refractive index* at 40° not less than 1·490. Contains in 100 grammes not less than 20 grammes of filicin as determined by the following process:—

Dissolve 5 grammes of the Liquid Extract in 40 millilitres of *ether*, transfer to a separator, add 100 grammes of *solution of barium hydroxide* and shake vigorously and continuously for five minutes. Allow the liquids to separate and filter off 86 grammes of the aqueous liquid. Acidify this with *hydrochloric acid* and extract with three successive portions of 30, 20, and 15 millilitres of *ether*. Filter the mixed ethereal solutions, wash the filter paper with *ether*, evaporate, dry the residue at 100° and weigh. It weighs not less than 0·8 gramme, equivalent to not less than 20 grammes of filicin in 100 grammes of the Liquid Extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 mils. | 45 to 90 minims. |

This Liquid Extract contains not less than 20 per cent. of filicin.

## EXTRACTUM GENTIANÆ

### Extract of Gentian

Infuse Gentian Root in ten times its weight of Distilled Water for two hours; boil for fifteen minutes; pour off; press; strain; evaporate the liquid to a soft extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## EXTRACTUM GLYCYRRHIZÆ

### Extract of Liquorice

| | |
|---|---|
| Liquorice Root, in No. 20 powder | 1000 grammes |
| Chloroform Water | 5000 millilitres |

Mix the Liquorice Root with one-half of the Chloroform Water; set aside for twenty-four hours; strain; press; to the pressed marc add the remainder of the Chloroform Water and set aside for six hours; strain; press; mix the strained liquids; heat to 100°; strain through flannel; evaporate to a soft extract.

## EXTRACTUM GLYCYRRHIZÆ LIQUIDUM

### Liquid Extract of Liquorice

| | |
|---|---|
| Liquorice Root, in No. 20 powder | 1000 grammes |
| Chloroform Water | 5000 millilitres |
| Alcohol (90 per cent.) | a sufficient quantity |

Mix the Liquorice Root with one-half of the Chloroform Water; set aside for twenty-four hours; strain; press; to the pressed marc add the remainder of the Chloroform Water, and set aside for six hours; strain; press; mix the strained liquids; heat to 100°; strain through flannel; evaporate until the liquid has acquired, when cold, a specific gravity of 1·200; add to this one-fourth of its volume of the Alcohol; let the mixture stand for twelve hours; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM GOSSYPII RADICIS CORTICIS LIQUIDUM

### Liquid Extract of Cotton Root Bark

| | |
|---|---|
| Cotton Root Bark, in No. 30 powder | 1000 grammes |
| Glycerin | 250 millilitres |
| Alcohol (90 per cent.) sufficient to produce | 1000 millilitres |

Mix the Glycerin with seven hundred and fifty millilitres of the Alcohol; moisten the Cotton Root Bark with this mixture and continue the *percolation process*, using as menstruum first the remainder of the mixture of Glycerin and Alcohol, and afterwards sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## EXTRACTUM GRINDELIÆ LIQUIDUM

### Liquid Extract of Grindelia

| | |
|---|---|
| Grindelia, in No. 40 powder . . | 1000 grammes |
| Sodium Bicarbonate . . . | 100 grammes |
| Distilled Water . . . . | 500 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Exhaust the Grindelia by *percolation* with the Alcohol. Recover the alcohol from the percolate by distillation, and dissolve the residue in the Distilled Water to which the Sodium Bicarbonate has previously been added; after effervescence has ceased, add sufficient Distilled Water to produce seven hundred and fifty millilitres, and then sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decimils. | 10 to 20 minims. |

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM HAMAMELIDIS LIQUIDUM

### Liquid Extract of Hamamelis

| | |
|---|---|
| Hamamelis Leaves, dried, in No. 40 powder . . . | 1000 grammes |
| Alcohol (45 per cent.) sufficient to produce . . . . | 1000 millilitres |

Exhaust the Hamamelis Leaves by *percolation* with the Alcohol. Reserve the first eight hundred and fifty millilitres of the percolate; recover the alcohol from the remainder by distillation; evaporate the residue to a soft extract; dissolve this in the reserved portion; add

sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## EXTRACTUM HYDRASTIS LIQUIDUM

### Liquid Extract of Hydrastis

Liquid Extract of Hydrastis contains in 100 millilitres 2 grammes of hydrastine.

| | |
|---|---|
| Hydrastis Rhizome, in No. 60 powder . . . . . | 1000 grammes |
| Alcohol (60 per cent.) . . | a sufficient quantity |

Exhaust the Hydrastis Rhizome with the Alcohol by the *percolation process*; reserve the first eight hundred and fifty millilitres of the percolate; recover the alcohol from the remainder by distillation; evaporate to a soft extract and dissolve in the reserved portion. Determine the proportion of hydrastine in the liquid extract thus obtained by the following process:—

Transfer 10 millilitres of the liquid extract to a 100 millilitre graduated flask, add 20 millilitres of *solution of potassium iodide* diluted with 60 millilitres of *water*, and then sufficient *water* to produce 100 millilitres. Shake the mixture for several minutes and filter. Transfer 50 millilitres of the filtrate to a separator, render alkaline with *solution of ammonia*, add 30 millilitres of *ether*, and shake at intervals during several minutes. Allow the liquids to separate, draw off the aqueous solution into a beaker and the ethereal solution into a tared beaker. Return the aqueous solution to the separator and repeat the operation with two successive portions, each of 20 millilitres, of *ether* for one minute. Draw off and reject the aqueous layer; transfer the ethereal solutions to the tared beaker and evaporate at a gentle heat; dry the residue on a water-bath and weigh. The weight is that of the hydrastine in 5

millilitres of the liquid extract examined. To the remainder of the liquid extract add sufficient of the menstruum to produce a Liquid Extract of Hydrastis containing 2 grammes of hydrastine in 100 millilitres.

*Test.*—Examined by the foregoing process Liquid Extract of Hydrastis is found to contain in 100 millilitres 2 grammes of hydrastine. *Limit of error* 0·1 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Liquid Extract contains 2 grammes of hydrastine in 100 millilitres; 110 minims contain 2 grains.

## EXTRACTUM HYOSCYAMI

### Extract of Hyoscyamus

*Synonym*—Extract of Henbane

Extract of Hyoscyamus contains in 100 grammes 0·3 gramme of the alkaloids of Hyoscyamus Leaves.

| | |
|---|---|
| Hyoscyamus Leaves, in No. 40 powder<br>Alcohol (70 per cent.) . . . | } of each a sufficient quantity |

Reduce ten grammes of the Hyoscyamus Leaves to No. 60 powder, and determine the proportion of alkaloids present by the process described under 'Belladonnæ Folia.' Moisten one thousand grammes of the Hyoscyamus Leaves with two hundred and fifty millilitres of the Alcohol, pack firmly in a percolator, and percolate with more of the Alcohol until four thousand millilitres of percolate have been obtained. Determine the proportion of total solids in the percolate by evaporating twenty millilitres, drying the residue at 80°, and weighing. Determine

also the proportion of alkaloids in the percolate by the process described under 'Tinctura Belladonnæ.'

Having thus determined the proportion of total solids and of alkaloids in the percolate, proceed as directed under 'Extractum Belladonnæ Siccum' to prepare a dry Extract of Hyoscyamus containing 0·3 per cent. of alkaloids.

*Test.*—Examined by the process described under 'Extractum Belladonnæ Siccum,' Extract of Hyoscyamus is found to contain in 100 grammes 0·3 gramme of the alkaloids of Hyoscyamus Leaves. *Limit of error* 0·015 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

This Extract may be used when the Extractum Hyoscyami of the International Agreement is required. It contains 0·3 per cent. of the alkaloids of Hyoscyamus Leaves.

## EXTRACTUM IPECACUANHÆ LIQUIDUM

### Liquid Extract of Ipecacuanha

Liquid Extract of Ipecacuanha contains in 100 millilitres 2 grammes of the alkaloids of Ipecacuanha Root.

| | |
|---|---|
| Ipecacuanha Root, in No. 120 powder . . . . . | 1000 grammes |
| Alcohol (90 per cent.) . . | a sufficient quantity |

Pack the Ipecacuanha Root uniformly in a conical percolator, add two hundred millilitres of the Alcohol, and set aside for twelve hours; then percolate with successive portions, each of two hundred millilitres, of the Alcohol, added at intervals of twelve hours, until the liquid begins to drop from the orifice of the percolator. Continue the per-

colation with more of the Alcohol until seven hundred and fifty millilitres of percolate have been collected. Reserve this portion. Then percolate until exhaustion is complete; recover the alcohol from this percolate by distillation, and dissolve the residual extract in the reserved portion. Determine the proportion of alkaloids in the liquid extract thus obtained by the following process :—

Introduce 5 millilitres of the liquid extract into a separator and add 4 millilitres of *water*, 1 millilitre of *diluted sulphuric acid*, and 10 millilitres of *ether*. Shake, and separate the ethereal solution. Repeat the shaking with 5 millilitres of *ether* and again separate. Wash the mixed ethereal solutions in a second separator with two successive portions, each of 5 millilitres, of *water*, and add the washings to the contents of the first separator. Shake this aqueous liquid with 10 millilitres of *chloroform* and excess of *solution of ammonia*. Separate the chloroformic solution and filter it through a small filter-paper into a tared dish. Repeat the shaking with *chloroform*, separation, and filtration, twice, finally washing the filter-paper with a little *chloroform*. Evaporate the mixed chloroformic solutions to about 2 millilitres, add 5 millilitres of *ether*, evaporate, dry at a temperature not exceeding 80° and weigh the residual alkaloids.

To the remainder of the liquid extract add sufficient of the Alcohol to produce a Liquid Extract of Ipecacuanha containing in 100 millilitres 2 grammes of the alkaloids of Ipecacuanha Root.

*Test.*—Examined by the foregoing process Liquid Extract of Ipecacuanha is found to contain in 100 millilitres 2 grammes of the alkaloids of Ipecacuanha Root. *Limit of error* 0·1 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centimils. | 1/2 to 2 minims. |

This Liquid Extract contains 2 grammes of the alkaloids of Ipecacuanha Root in 100 millilitres; 110 minims contain 2 grains.

## EXTRACTUM KAVÆ LIQUIDUM

### Liquid Extract of Kava

| | |
|---|---|
| Kava Rhizome, in No. 20 powder . . . . . | 1000 grammes |
| Alcohol (90 per cent.) . | a sufficient quantity |
| Alcohol (45 per cent.) . | a sufficient quantity |

Mix the powdered Kava Rhizome with two thousand millilitres of the Alcohol (90 per cent.) ; set aside in a closed vessel for forty-eight hours ; transfer to a percolator and percolate slowly, reserving the first seven hundred and fifty millilitres of the percolate. Continue the percolation, adding the Alcohol (45 per cent.) until the powder is exhausted ; recover most of the alcohol from this percolate by distillation ; evaporate the residue at a temperature below 80° to a soft extract, and dissolve this in the reserved percolate ; add sufficient of the Alcohol (90 per cent.) to produce one thousand millilitres of the Liquid Extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## EXTRACTUM KRAMERIÆ

### Extract of Krameria

*Synonym*—Extract of Rhatany

Exhaust Krameria Root, in No. 10 powder, with Distilled Water by the *percolation process* ; evaporate the percolate to dryness.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## EXTRACTUM NUCIS VOMICÆ LIQUIDUM

### Liquid Extract of Nux Vomica

Liquid Extract of Nux Vomica contains in 100 millilitres 1·5 grammes of strychnine.

| | |
|---|---|
| Nux Vomica, in No. 20 powder | 1000 grammes |
| Alcohol (70 per cent.) | a sufficient quantity |

Exhaust the Nux Vomica with the Alcohol by the *repercolation process* until five hundred millilitres of percolate have been obtained. Place this percolate in a closed vessel with fifteen grammes of Hard Paraffin and heat to 60° for a few minutes, shaking vigorously. Allow the contents of the vessel to cool and the layer of paraffin which will have separated to solidify. Pour off the percolate thus freed from fat ; filter. Determine the proportion of strychnine in it by the following process :—

Evaporate 10 millilitres on a water-bath to a syrupy extract ; dissolve the residue in 10 millilitres of warm *water* and transfer to a separator, washing the dish with a further 10 millilitres of *water*. Add 10 millilitres of *chloroform* and a solution of 5 grammes of *sodium carbonate* in 25 millilitres of *water*. Shake vigorously ; set aside and separate the chloroformic solution. Repeat the extraction with *chloroform* twice. Mix the three chloroformic solutions, and extract the alkaloids by shaking with three successive portions, each of 10 millilitres, of *N/1 solution of sulphuric acid*, transferring the acid solutions to a second separator. Make the acid solutions alkaline with *solution of ammonia*, and again extract the alkaloids by shaking successively with 10, 5, and 5 millilitres of *chloroform*, drawing off the chloroformic solutions into a small flask. Remove the chloroform by distillation, dissolve the residue in 15 millilitres of *water* containing 3 per cent. by weight of *sulphuric acid*, heat the solution to 50°, add 3 millilitres of a mixture of equal volumes of *nitric acid* and *water*, and set aside for ten minutes. Transfer the solution to a separator, rinsing the flask with a little *water*, make alkaline with *solution of sodium hydroxide*, and extract

the alkaloid by shaking successively with 10, 5, and 5 millilitres of *chloroform*. Wash the mixed chloroformic solutions in a separator with 5 millilitres of *water*, transfer to a tared dish and allow the chloroform to evaporate, adding towards the end 5 millilitres of *alcohol* (90 per cent.). Evaporate to dryness, dry the residue at 100°, and weigh. The weight is the weight in grammes of the strychnine contained in 10 millilitres of percolate.

To the remainder of the percolate add sufficient Alcohol (70 per cent.) to produce a Liquid Extract of Nux Vomica containing in 100 millilitres 1·5 grammes of strychnine.

*Test.*—Examined by the foregoing process Liquid Extract of Nux Vomica is found to contain in 100 millilitres 1·5 grammes of strychnine. *Limit of error* 0·05 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 centimils. | 1 to 3 minims. |

This Liquid Extract contains 1·5 grammes of strychnine in 100 millilitres; 110 minims contain 1·5 grains.

## EXTRACTUM NUCIS VOMICÆ SICCUM

### Dry Extract of Nux Vomica

*Synonym*—Extractum Nucis Vomicæ

Dry Extract of Nux Vomica contains in 100 grammes 5 grammes of strychnine.

| | |
|---|---|
| Liquid Extract of Nux Vomica<br>Calcium Phosphate | of each a sufficient quantity |

Evaporate ten millilitres of the Liquid Extract in a flat-bottomed dish and dry at 100°. The weight of the dry extract thus obtained deducted from three grammes gives the weight of Calcium Phosphate to be added to each ten

millilitres of the Liquid Extract. Take one hundred parts by volume of the Liquid Extract; recover the alcohol by distillation; add sufficient of the Calcium Phosphate, as indicated by the above determination, to produce, when dried at 100°, and reduced to a fine powder, thirty parts by weight of the Dry Extract.

*Test.*—3 grammes of Dry Extract of Nux Vomica, when exhausted with *alcohol* (70 per cent.), afford a liquid which when tested by the process described under 'Extractum Nucis Vomicæ Liquidum' yields 0·15 gramme of strychnine, representing in 100 grammes of the Dry Extract 5 grammes of strychnine. *Limit of error* 0·2 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

This Dry Extract contains 5 per cent. of strychnine.

## EXTRACTUM OPII LIQUIDUM.

### Liquid Extract of Opium

Liquid Extract of Opium contains in 100 millilitres 0·75 gramme of morphine, calculated as anhydrous.

| | |
|---|---|
| Dry Extract of Opium . . | 37·5 grammes |
| Alcohol (90 per cent.) . . | 200·0 millilitres |
| Distilled Water sufficient to produce . . . . | 1000·0 millilitres |

Mix the Extract with seven hundred millilitres of the Distilled Water; set aside in a cool place for twenty-four hours, stirring frequently; add the Alcohol; set aside again for twenty-four hours; filter; wash the filter with sufficient Distilled Water to produce the required volume.

*Test.*—Examined by the process described under 'Tinctura Opii,' Liquid Extract of Opium is found to contain in 100 millilitres 0·75 gramme of morphine, calculated as anhydrous. *Limit of error* 0·05 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 decimils. | 5 to 30 minims. |

This Liquid Extract contains 0·75 gramme of morphine in 100 millilitres; 110 minims contain 3/4 grain.

See Appendix XII, page 529, Extracta Liquida.

## EXTRACTUM OPII SICCUM

### Dry Extract of Opium

*Synonym*—Extractum Opii

Dry Extract of Opium contains in 100 grammes 20 grammes of morphine, calculated as anhydrous.

Exhaust sliced Opium with about five times its weight of Distilled Water; strain the liquid through flannel; cool and ascertain its volume. Determine the percentage of morphine present in forty millilitres of this liquid by the process described under 'Tinctura Opii,' and determine also the percentage of total solids dried at 100°. Add to the remainder of the liquid sufficient Calcium Phosphate to yield an extract which, when dried at 100°, contains 20 per cent. of morphine; evaporate to dryness, powder, and finally dry at 100°.

*Test.*—Examined by the process described under 'Opium,' Dry Extract of Opium is found to contain in 100 grammes 20 grammes of morphine, calculated as anhydrous. *Limit of error* 1 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

This Dry Extract contains 20 per cent. of morphine.

## EXTRACTUM PICRORHIZÆ LIQUIDUM

### Liquid Extract of Picrorhiza

Picrorhiza, in No. 60 powder . . 1000 grammes
Alcohol (60 per cent.) sufficient
to produce . . . . 1000 millilitres

Exhaust the Picrorhiza with the Alcohol by the *percolation process*. Reserve the first eight hundred and fifty millilitres of the percolate; recover the alcohol from the remainder by distillation; evaporate the residue to a soft extract; dissolve this in the reserved portion; add sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 mils. | 15 to 60 minims. |

## EXTRACTUM RHEI

### Extract of Rhubarb

Exhaust Rhubarb, in No. 20 powder, with Alcohol (60 per cent.) by the *percolation process*. Recover most of the alcohol from the percolate by distillation, and evaporate the residual liquid to dryness.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## EXTRACTUM STROPHANTHI

### Extract of Strophanthus

Strophanthus Seeds, reduced to No.
30 powder, and dried at 45° . 25 grammes
Ether
Alcohol (90 per cent.) } of each a sufficient quantity
Milk Sugar, in powder

Pack the Strophanthus Seeds in a percolator; moisten with the Ether, and macerate for twenty-four hours; then allow percolation to proceed, continuing the addition of the Ether until the liquid passes through colourless. Remove the marc from the percolator, and dry it, gradually heating it to 50°. Again reduce it to powder, repack in the percolator, and moisten with the Alcohol. Macerate for forty-eight hours, then pour on successive quantities of the Alcohol, percolating slowly, until two hundred and fifty millilitres of liquid are obtained. Evaporate most of the alcohol; transfer the residual liquid to a tared dish; concentrate until the liquid begins to thicken; then add sufficient of the Milk Sugar to produce fifty grammes of Extract, in powder.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## EXTRACTUM TARAXACI

### Extract of Taraxacum

Crush Taraxacum Root; press out the juice; allow the feculence to subside; decant; heat the liquid to 100°, and maintain the temperature for ten minutes; strain; evaporate to a soft extract.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## EXTRACTUM VIBURNI LIQUIDUM

### Liquid Extract of Black Haw

| | |
|---|---|
| Black Haw, in No. 60 powder . | 1000 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Exhaust the Black Haw with the Alcohol by the *percolation process*. Reserve the first eight hundred and fifty millilitres of the percolate; recover the alcohol from the remainder by distillation; evaporate the residue to a soft extract; dissolve this in the reserved portion; add sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

## FEL BOVINUM PURIFICATUM

### Purified Ox Bile

Evaporate five hundred millilitres of fresh ox bile to one-fourth of its volume; shake this liquid with twice its volume of Alcohol (90 per cent.); set the mixture aside until the solid matter has subsided; decant the clear solution, and filter the remainder, washing the filter and contents with a little more Alcohol (90 per cent.). Distil off most of the alcohol from the mixed liquids, and evaporate the residue in a porcelain dish, on a water-bath, to the consistence of a firm extract.

*Characters and Tests.*—A yellowish-green hygroscopic substance, having a taste partly sweet and partly bitter, soluble in *water* and in *alcohol* (90 per cent.). 1 millilitre of an aqueous solution (1 in 100) in which 0·1 gramme of *refined sugar* has been dissolved, gradually acquires a deep violet colour when mixed with 10 millilitres of *syrupy phosphoric acid* and heated in a water-bath. Its aqueous solution on the addition of twice its volume of *alcohol* (90 per cent.) gives no precipitate (absence of unpurified ox bile).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## FERRI CARBONAS SACCHARATUS

### Saccharated Iron Carbonate

Saccharated Iron Carbonate is ferrous carbonate, more or less oxidised, mixed with glucose. Contains not less than 50 per cent. of ferrous salts calculated as ferrous carbonate, $FeCO_3$.

| | |
|---|---|
| Ferrous Sulphate . . . . | 97·5 grammes |
| Glucose . . . . . | 30·0 grammes |
| Sodium Carbonate . . . | 105·0 grammes |
| Distilled Water, boiling, . | a sufficient quantity |

Dissolve fifteen grammes of the Glucose in three hundred millilitres of the Distilled Water, and dissolve the Ferrous Sulphate in the solution. Dissolve the Sodium Carbonate in one hundred and fifty millilitres of the Distilled Water, and to this add the solution of the Ferrous Sulphate, stirring constantly. Then add four hundred millilitres of the Distilled Water, mix thoroughly, and allow the precipitate to subside. Decant the supernatant liquid, and wash the precipitate with two successive quantities, each of four hundred millilitres, of the Distilled Water. Mix the washed precipitate with the remainder of the Glucose, and dry at a temperature not exceeding 100°. Powder the product, and preserve it in a stoppered bottle.

*Characters and Tests.*—A greenish-brown powder, with a feebly chalybeate taste. Soluble with effervescence in *hydrochloric acid* diluted with half its volume of *water*. 1 gramme, dissolved in excess of warm *concentrated phosphoric acid* and diluted with *water*, does not cease to yield a blue precipitate with *solution of potassium ferricyanide* until 43·1 millilitres of *N/10 solution of potassium bichromate* have been added. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 decigrams. | 10 to 30 grains. |

## FERRI ET AMMONII CITRAS

### Iron and Ammonium Citrate

| | |
|---|---|
| Solution of Ferric Sulphate . . | 200 millilitres |
| Solution of Ammonia . . . | 460 millilitres, or a sufficient quantity |
| Citric Acid . . . . . | 80 grammes |
| Distilled Water . . . | a sufficient quantity |

Prepare ferric hydroxide as follows :—Mix three hundred and twenty millilitres of the Solution of Ammonia with eight hundred millilitres of Distilled Water ; gradually add to this the Solution of Ferric Sulphate, previously diluted with eight hundred millilitres of Distilled Water ; stir constantly and briskly, taking care that ammonia is, finally, in slight excess as indicated by the odour ; set aside the mixture for two hours, stirring it occasionally ; pour it on a calico filter ; when the liquid has drained away, wash the precipitated ferric hydroxide with Distilled Water until free from sulphates.

Dissolve the Citric Acid in its own weight of Distilled Water ; warm the mixture on a water-bath ; add the ferric hydroxide, previously well drained ; stir them together until nearly the whole of the hydroxide has dissolved, or until the Citric Acid is saturated with ferric hydroxide (prepared, if necessary, from more of the Solution of Ferric Sulphate) ; let the solution cool ; add one hundred and ten millilitres of Solution of Ammonia ; filter through flannel, adding some Distilled Water if necessary ; evaporate to the consistence of syrup, the presence of a very slight excess of ammonia being maintained ; dry in thin layers on flat porcelain or glass plates at a temperature not exceeding 40° ; remove the dry flakes of Iron and Ammonium Citrate.

*Characters and Tests.*—In thin, dark red, transparent scales. Taste slightly sweet and astringent. Soluble in 0·5 part of *water* ; almost insoluble in *alcohol* (90 per cent.). Aqueous solution slightly acid to *litmus*. Yields from 31

to 32 per cent. of ash, which, when moistened with *water*, is not alkaline to *litmus* (absence of fixed alkali). When a solution of 1 gramme in 10 millilitres of *water* is heated with a slight excess of *solution of potassium hydroxide*, ammonia is evolved and ferric hydroxide is precipitated; the filtrate from this, acidified with *acetic acid*, does not yield any crystalline precipitate (absence of tartrates). Yields not more than the slightest characteristic *reaction* for sulphates. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## FERRI ET POTASSII TARTRAS

### Iron and Potassium Tartrate

*Synonyms*—Ferrum Tartaratum: Tartarated Iron

| | |
|---|---|
| Solution of Ferric Sulphate | 200·0 millilitres |
| Solution of Ammonia | 320·0 millilitres, or a sufficient quantity |
| Acid Potassium Tartrate, in powder | 66·5 grammes |
| Distilled Water | a sufficient quantity |

From the Solution of Ferric Sulphate prepare ferric hydroxide as directed under 'Ferri et Ammonii Citras.'

Mix the ferric hydroxide intimately with the Acid Potassium Tartrate in a porcelain dish; let the mixture stand for twenty-four hours; heat to a temperature not exceeding 60°, add gradually six hundred millilitres of Distilled Water; stir constantly until nothing more will dissolve; filter; evaporate at a temperature not exceeding 60° to the consistence of syrup; dry in thin layers on flat porcelain or glass plates at a temperature not exceeding 40°; remove the dry flakes of Iron and Potassium Tartrate.

*Characters and Tests.*—In thin transparent scales of a deep garnet colour; taste somewhat sweetish and astringent. Soluble in *water*, sparingly soluble in *alcohol* (90 per cent.). *Arsenic limit* 5 parts per million. The aqueous solution, acidified with *hydrochloric acid*, yields a copious blue precipitate with *solution of potassium ferrocyanide*. When a solution of 1 gramme in 10 millilitres of *water* is boiled with a slight excess of *solution of potassium hydroxide*, a reddish-brown precipitate separates, and the filtered solution, slightly acidified with *acetic acid*, yields, as it cools, a crystalline deposit. Yields not less than 30 per cent. of ferric oxide when incinerated with free access of air, the ash being washed with *water* and again incinerated.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## FERRI ET QUININÆ CITRAS

### Iron and Quinine Citrate

| | |
|---|---|
| Solution of Ferric Sulphate | 180 millilitres |
| Quinine Sulphate | 40 grammes |
| Diluted Sulphuric Acid | 60 millilitres |
| Citric Acid | 123 grammes |
| Solution of Ammonia, Distilled Water | of each a sufficient quantity |

From the Solution of Ferric Sulphate prepare ferric hydroxide as directed under 'Ferri et Ammonii Citras.'

Mix the Quinine Sulphate with eight times its weight of Distilled Water; add the Diluted Sulphuric Acid; when the salt is dissolved precipitate the quinine with a slight excess of Solution of Ammonia; collect the precipitate on a filter; wash it with twelve hundred millilitres of Distilled Water.

Dissolve the Citric Acid in its own weight of Distilled Water; warm the solution on a water-bath; add the ferric hydroxide, previously well drained; stir them together; when the hydroxide has dissolved, add the precipitated quinine; continue the stirring until this also has dissolved; let the solution cool; add, in small quantities at a time, sixty millilitres of Solution of Ammonia, diluted with eighty millilitres of Distilled Water; stir briskly, allowing the quinine which separates with each addition of ammonia to dissolve before the next addition is made; filter the solution; evaporate it to the consistence of a thin syrup; dry the latter in thin layers on flat porcelain or glass plates at a temperature not exceeding 40°; remove the dry flakes of Iron and Quinine Citrate.

*Characters and Tests.*—In thin scales of a greenish-yellow colour, somewhat deliquescent; taste bitter, chalybeate. Soluble in 0·5 part of *water*. The solution is very slightly acid, and yields precipitates which are reddish-brown with *solution of potassium hydroxide*, white with *solution of ammonia*, blue with *solution of potassium ferrocyanide* and with *solution of potassium ferricyanide*. *Arsenic limit* 5 parts per million. Ash, when moistened with *water*, not alkaline to *litmus* (absence of fixed alkali). 5 grammes, dissolved in 45 millilitres of *water* and treated with excess of *solution of ammonia*, yield a white precipitate, which, when dissolved out by repeated treatment of the liquid with *chloroform*, the latter evaporated, and the residue dried at 110°, weighs not less than 0·75 gramme. This precipitate is almost entirely soluble in a little *ether*; on incineration it leaves not more than a minute residue; neutralised with *diluted sulphuric acid* and crystallised, it possesses the characters of and responds to the tests described under 'Quininæ Sulphas.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## FERRI PHOSPHAS SACCHARATUS

### Saccharated Iron Phosphate

Saccharated Iron Phosphate is ferrous phosphate, more or less oxidised, mixed with glucose. It contains not less than 60 per cent. of ferrous salts calculated as ferrous phosphate. $Fe_3(PO_4)_2,8H_2O$.

| | |
|---|---|
| Ferrous Sulphate . . . . | 120 grammes |
| Sodium Phosphate . . . . | 110 grammes |
| Sodium Carbonate . . . . | 50 grammes |
| Glucose . . . . . | 40 grammes |
| Distilled Water, boiling, . . | a sufficient quantity |

Dissolve twenty grammes of the Glucose in four hundred millilitres of the Distilled Water, and dissolve the Ferrous Sulphate in the solution. Dissolve the Sodium Phosphate in four hundred millilitres of the Distilled Water, and to this add the solution of the Ferrous Sulphate, stirring constantly. Then add the Sodium Carbonate previously dissolved in four hundred millilitres of the Distilled Water. Mix thoroughly, and allow the precipitate to subside. Decant the supernatant liquid, wash the precipitate with two successive quantities, each of two thousand millilitres, of the Distilled Water, mix it with the remainder of the Glucose, and dry at a temperature not exceeding 100°. Powder the product and preserve it in a stoppered bottle.

*Characters and Tests.*—A slate-blue, amorphous powder. Taste sweetish, chalybeate. Partially soluble in *water*, soluble in *hydrochloric acid*. The acid solution yields blue precipitates with *solution of potassium ferrocyanide* and *solution of potassium ferricyanide*; when treated with *tartaric acid* and excess of *solution of ammonia*, and subsequently with *solution of magnesium ammonio-sulphate*, it yields a white granular precipitate. 1 gramme dissolved in excess of warm *concentrated phosphoric acid* does not cease to yield a blue precipitate with *solution of potassium ferricyanide* until 35·9 millilitres of *N/10 solution of potassium bichro-*

*mate* have been added. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## FERRI SULPHAS

### Ferrous Sulphate

Ferrous Sulphate may be prepared by the interaction of diluted sulphuric acid and iron. It contains not less than 97·5 per cent. of pure ferrous sulphate, $FeSO_4,7H_2O$.

*Characters and Tests.*—Oblique rhombic prisms of a greenish colour, or a crystalline powder of a pale bluish-green colour; taste astringent. Insoluble in *alcohol* (90 per cent.), soluble in less than 2 parts of *water* previously boiled and cooled, giving a clear solution (absence of oxy-sulphate). Yields the *reactions* characteristic of ferrous salts and of sulphates. 1 gramme dissolved in 20 millilitres of *diluted sulphuric acid* decolorises not less than 35 millilitres of *N/10 solution of potassium permanganate*. Yields no characteristic *reactions* for copper or zinc. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centigrams. | 1 to 5 grains. |

## FERRI SULPHAS EXSICCATUS

### Exsiccated Ferrous Sulphate

Exsiccated Ferrous Sulphate is Ferrous Sulphate deprived of part of its water of crystallisation. It contains not less than 77 per cent. of pure anhydrous ferrous sulphate, $FeSO_4$.

*Characters and Tests.*—A nearly white powder, slowly but entirely soluble in *water*. 0·5 gramme dissolved in *water* and acidified with *sulphuric acid* decolorises not less than 25·3 millilitres of *N/10 solution of potassium permanganate*. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 centigrams. | 1/2 to 3 grains. |

## FERRUM

### Iron

Iron is annealed iron wire, having a diameter of about 0·1 millimetre (about No. 35 wire gauge), or wrought-iron nails, free from oxide.

*Test.*—*Arsenic limit* 200 parts per million.

## FERRUM REDACTUM

### Reduced Iron

Reduced Iron may be obtained by reducing ferric hydroxide, heated to dull redness, by means of a stream of dry hydrogen. It contains not less than 80 per cent. of metallic iron, with a variable amount of iron oxide.

*Characters and Tests.*—A fine greyish-black powder, strongly attracted by the magnet, and producing metallic streaks when rubbed with firm pressure in a mortar. Dissolves in *hydrochloric acid* with evolution of hydrogen, and without any odour of hydrogen sulphide, the solution giving a light-blue precipitate with *solution of potassium ferrocyanide*. When 0·25 gramme, in very fine powder, is added to a hot solution of 1·25 grammes of *copper sulphate*

in 20 millilitres of *water*, the mixture kept hot and occasionally well shaken during ten minutes, and then rapidly filtered with the minimum of exposure to air, the filtrate decolorises not less than 35·8 millilitres of *N/10 solution of potassium permanganate*. Not more than 1 per cent. is insoluble in *hydrochloric acid*. *Arsenic limit* 200 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centigrams. | 1 to 5 grains. |

## FILIX MAS

### Male Fern

Male Fern is the rhizome of Dryopteris Filix-mas, *Schott*. Collected late in the autumn, divested of its roots, leaves, and dead portions, and carefully dried. Should not be kept more than a year.

*Characters*.—From seven to fifteen centimetres or more in length; the rhizome itself about two centimetres in diameter. Entirely covered with the hard, persistent, curved, angular, dark brown bases of the petioles. which bear numerous brown membranous scales. Petioles green internally and exhibiting in transverse section about eight pale yellow fibrovascular bundles arranged in a diffuse circle (distinction from the petioles of Athyrium Filix-fœmina, *Roth*.). Rhizome brown externally, green internally. In transverse section, stalked secreting glands in intercellular spaces. Margins of the membranous scales with two-celled projections but no glands; at the base two minute glands (distinction from the rhizomes of certain other ferns). Feeble but disagreeable odour; taste sweetish and astringent at first, but subsequently bitter and nauseous.

## FŒNICULI FRUCTUS

### Fennel Fruit

Fennel Fruit is the ripe fruit of Fœniculum vulgare, *Mill.*, collected from cultivated plants, and dried.

*Characters and Test.*—Small, oblong, straight or slightly curved, from three to ten millimetres long, and from two to four millimetres in diameter. Greenish or greenish-brown. Each of the two mericarps with five prominent principal ridges and six large vittæ. Aromatic odour; taste strong, sweet and camphoraceous. Ash not more than 11 per cent.

## GALLA

### Galls

Galls are excrescences on Quercus infectoria, *Olivier*, resulting from the deposition of the eggs of Cynips gallæ tinctoriæ, *Olivier*.

*Characters.*—Hard, heavy, subglobular, from twelve to eighteen millimetres or more in diameter, tuberculated on the surface, the tubercules and intervening spaces being smooth; dark bluish-green or dark olive-green externally, yellowish or brownish-white within, with a small central cavity. Galls sink in water and exhibit no perforation. No odour; taste intensely astringent.

## GELATINUM

### Gelatin

Gelatin is the air-dried product obtained by the action of boiling water on animal tissues such as skin, tendons, ligaments, and bones.

*Characters and Tests.*—In almost colourless, translucent sheets or shreds. Insoluble in *alcohol* (90 per cent.) and in *ether*; soluble in *acetic acid*. A solution in hot *water* (1 in 50) is inodorous and solidifies to a jelly on cooling. An aqueous solution yields a precipitate with *solution of tannic acid*, but not with solutions of other acids, or with dilute solution of *alum*, *solution of lead acetate*, or *T. Sol. of ferric chloride*. Ash not more than 2 per cent.

## GELSEMII RADIX

### Gelsemium Root

Gelsemium Root is the dried rhizome and root of Gelsemium nitidum, *Michaux*.

*Characters.*—In nearly cylindrical pieces about fifteen centimetres or more long, and usually from six to eighteen millimetres thick; occasionally with fibrous rootlets attached. Fracture splintery. In transverse section, a thin cortex, and a porous, yellowish, distinctly radiate wood with numerous, conspicuous, straight medullary rays. Rhizome usually with a brown or dark brownish-violet cork, often much fissured; nearly straight, and exhibiting silky fibres in the bast. Root yellowish-brown, finely wrinkled, and somewhat tortuous. Slightly aromatic odour; taste bitter.

## GENTIANÆ RADIX

### Gentian Root

Gentian Root is the dried rhizome and root of Gentiana lutea, *Linn*.

*Characters and Tests.*—In nearly cylindrical pieces, entire or longitudinally split, varying in length, but seldom exceeding two and a half centimetres in thickness; yellowish-

brown externally, and longitudinally wrinkled. Rhizome with closely approximated encircling leaf scars, and frequently terminated by a bud. Tough when slightly moist, but brittle when dry. Fractured surface nearly uniform reddish-yellow. Parenchymatous tissue of rhizome and root abundant, containing small oil globules and minute crystals of calcium oxalate but not more than an occasional starch grain; vessels reticulated; no sclerenchymatous cells or fibres. Characteristic odour; taste at first slightly sweet but afterwards bitter. When 5 grammes of the powdered Root are macerated with 100 millilitres of *water* for twenty-four hours, shaken occasionally and filtered, 10 millilitres of the filtrate yield on evaporation in a flat-bottomed dish not less than 0·165 gramme of residue dried at 100°. Ash not more than 6 per cent.

## GLUCOSUM

### Glucose

Glucose is a mixture of dextrose and other analogous substances, and is obtained by the hydrolysis of starch.

*Characters and Tests.*—A very viscous syrup, almost colourless. No odour; taste sweetish. Freely soluble in *water*, the solution being dextrorotatory and yielding a red precipitate when warmed with *solution of potassio-cupric tartrate*. 2 grammes dried at 100° in a thin film in a flat-bottomed dish do not lose more than 0·4 gramme (limit of moisture). When 10 grammes are dissolved in 100 millilitres of *water*, to which 10 millilitres of *N/10 solution of iodine* have previously been added, on shaking the mixture and immediately titrating with *N/10 solution of sodium thiosulphate*, not less than 6·8 millilitres of the latter solution are required for decolorisation (limit of sulphites). *Arsenic limit* 2 parts per million. Ash not more than 0·5 per cent.

## GLUSIDUM

### Gluside

Gluside, or benzoic sulphinide, $C_7H_5NSO_3$, the anhydride of orthosulphamido-benzoic acid, may be prepared from toluene.

*Characters and Tests.*—A white crystalline powder. Taste, in dilute solution, intensely sweet. Soluble in 400 parts of *water*, and in 38 parts of *alcohol* (90 per cent.); soluble also in solutions of alkalies and of alkaline carbonates, the neutral sodium salt being known as 'soluble gluside.' Completely soluble in 12 parts of *acetone*. 1 gramme heated for four hours on a water-bath with 10 millilitres of a mixture of 4 volumes of *sulphuric acid* and 3 volumes of *water* completely dissolves, and when the solution is diluted with an equal volume of *water* and allowed to stand for twenty-four hours no crystals separate. Gently warmed for a short time with *sulphuric acid* no blackening occurs. Ash not more than 0·5 per cent.

## GLYCERINUM

### Glycerin

Glycerin, or glycerol, is a trihydric alcohol, $C_3H_5(OH)_3$, associated with a small percentage of water; it is obtained by the hydrolysis of fats and fixed oils by means of alkalies or of superheated steam.

*Characters and Tests.*—A clear, colourless, hygroscopic, syrupy liquid. No odour; taste sweet, followed by a sensation of warmth. Miscible with *water*, and with *alcohol* (90 per cent.). Insoluble in *ether*, in *chloroform*, and in fixed oils. Specific gravity 1·260. When strongly heated decomposes with evolution of irritating vapours. Neutral to *litmus*. An aqueous solution (1 in 10) yields no char-

acteristic *reactions* for ammonium, chlorides, or sulphates. Assumes, when heated, not more than a faint yellow but no pink coloration, and yields not more than a very slight charred residue and no odour of burnt sugar (absence of sugar). Undergoes no darkening in colour when mixed with an equal volume of *solution of ammonia* and a few drops of *solution of silver nitrate*, the mixture being kept protected from light and the observation being made after a lapse of five minutes (absence of formic acid, acrolein). Gently warmed with an equal volume of *diluted sulphuric acid*, the mixture being vigorously shaken, not more than a faint odour is noticeable (absence of fatty acids). Shaken with an equal volume of *sulphuric acid*, the mixture being kept cool, not more than a very slight straw coloration is produced (absence of extraneous organic matter). A mixture of 10 millilitres of Glycerin with 40 millilitres of *water*, 1 drop of *solution of ammonia*, and 1 drop of *solution of tannic acid*, assumes not more than a faint and transient pink or purple coloration (limit of iron). When tested for lead according to the quantitative test described in Appendix V, but using 10 grammes in each Nessler glass, no difference is observed upon the addition of the *solution of sodium sulphide* to one of the solutions (absence of lead). When the foregoing test is repeated, but omitting the addition of *solution of ammonia* and of *solution of potassium cyanide*, and adding to each solution 1 millilitre of *diluted hydrochloric acid*, no difference in colour is observed upon the addition of *solution of hydrogen sulphide* to one of the solutions (absence of copper). *Arsenic limit* 4 parts per million. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

## GLYCERINUM ACIDI BORICI

### Glycerin of Boric Acid

| | |
|---|---|
| Boric Acid . . . . . | 300 grammes |
| Glycerin sufficient to produce. . | 1000 grammes |

Add the Boric Acid to four hundred and fifty grammes of the Glycerin, boil until dissolved, constantly stirring; evaporate at a temperature rising to but not exceeding 150° until the weight of the mixture has been reduced to five hundred grammes, the stirring being continued. Add sufficient Glycerin to produce the required weight; mix thoroughly.

## GLYCERINUM ACIDI CARBOLICI

### Glycerin of Phenol

| | |
|---|---|
| Phenol . . . . . | 20 grammes |
| Glycerin sufficient to produce . | 100 millilitres |

Triturate the Phenol with the Glycerin in a warmed mortar until solution is effected.

## GLYCERINUM ACIDI TANNICI

### Glycerin of Tannic Acid

| | |
|---|---|
| Tannic Acid . . . . . | 20 grammes |
| Glycerin sufficient to produce . | 100 millilitres |

Triturate the Tannic Acid with the Glycerin in a warmed mortar until solution is effected.

## GLYCERINUM ALUMINIS

### Glycerin of Alum

| | |
|---|---|
| Purified Alum . . . . | 20·0 grammes |
| Distilled Water . . . . | 7·5 millilitres |
| Glycerin sufficient to produce . | 120·0 millilitres |

Powder the Alum, triturate with the Distilled Water and Glycerin until solution is effected, warming slightly if necessary; set aside; pour off the clear liquid from any deposit that may be formed.

## GLYCERINUM AMYLI

### Glycerin of Starch

| | |
|---|---|
| Starch . . . . . | 20 grammes |
| Glycerin . . . . . | 130 millilitres |
| Distilled Water . . . . | 30 millilitres |

Mix; heat, stirring constantly, until a translucent jelly is formed.

## GLYCERINUM BORACIS

### Glycerin of Borax

| | |
|---|---|
| Purified Borax . . . . | 20 grammes |
| Glycerin . . . . . | 120 millilitres |

Powder the Borax, and triturate with the Glycerin in a warmed mortar until solution is effected.

## GLYCERINUM PEPSINI

### Glycerin of Pepsin

| | |
|---|---|
| Pepsin | 100·0 grammes |
| Hydrochloric Acid | 11·5 millilitres |
| Glycerin | 600·0 millilitres |
| Distilled Water sufficient to produce | 1000·0 millilitres |

Mix the Hydrochloric Acid, Glycerin, and two hundred and sixty millilitres of the Distilled Water; add the Pepsin; dissolve; add sufficient Distilled Water to produce the required volume; set aside for twenty minutes; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

10 mils of this preparation contain 1 gramme of Pepsin; 1 fluid drachm contains about 5·5 grains.

## GLYCERINUM PLUMBI SUBACETATIS

### Glycerin of Lead Subacetate

| | |
|---|---|
| Strong Solution of Lead Subacetate | 500 millilitres |
| Glycerin | 500 millilitres |
| Distilled Water | a sufficient quantity |

Evaporate the Strong Solution of Lead Subacetate to dryness on a water-bath; add the Glycerin; warm gently until dissolved; cool; add Distilled Water till the specific gravity of the mixture is 1·48; filter, if necessary.

## GLYCERINUM TRAGACANTHÆ

### Glycerin of Tragacanth

| | |
|---|---|
| Tragacanth, in powder . . . | 10 grammes |
| Glycerin . . . . . | 30 millilitres |
| Distilled Water . . . . | 10 millilitres |

Mix the Glycerin with the Tragacanth ; add the Distilled Water ; triturate until a homogeneous paste is produced.

## GLYCYRRHIZÆ RADIX

### Liquorice Root

Liquorice Root is the peeled root and peeled subterranean stem of Glycyrrhiza glabra, *Linn.*, and other species of Glycyrrhiza.

*Characters and Tests.*—In nearly cylindrical, pale yellow pieces with a fibrous surface and coarsely fibrous fracture. In transverse section, bark thick, with numerous groups of bast fibres radiately arranged and accompanied by cells containing prismatic crystals of calcium oxalate ; wood porous, distinctly radiate, yellow, with similar fibres and also large vessels with thick, yellow, pitted or reticulate walls ; in the parenchymatous tissue of both bark and wood abundant small starch grains. Powdered Root pale yellow, with numerous bast fibres, often in yellowish groups and accompanied by prisms of calcium oxalate ; pitted or sometimes reticulated vessels and oval or rounded starch grains not more than 20 microns long ; free from fragments of dark brown cork and from sclerenchymatous cells ; colours *sulphuric acid* orange-yellow. Faint, characteristic odour ; taste sweet and almost free from bitterness. When 5 grammes are macerated with 50 millilitres of *chloroform water* for twenty-four hours, shaken occasionally and filtered, 10 millilitres of the filtrate evaporated in a flat-bottomed dish yield not less than 0·200 gramme of residue dried at 100°. Ash not more than 6 per cent.

## GOSSYPII RADICIS CORTEX

### Cotton Root Bark

Cotton Root Bark is the dried root-bark of Gossypium herbaceum, *Linn.*, and of other cultivated species of Gossypium.

*Characters.*—In strips or quilled pieces; thin, tough and fibrous. Cork thin, pale brown, longitudinally striated; removed in places and then disclosing the orange-brown cortex. Inner surface whitish, silky and finely striated. Secondary bast readily separable into thin fibrous laminæ. No odour; taste slightly acrid and astringent.

## GOSSYPIUM

### Cotton

*Synonym*—Cotton Wool

Cotton consists of the hairs of the seed of Gossypium herbaceum, *Linn.*, and of other cultivated species of Gossypium, freed from fatty matter.

*Characters and Tests.*—In long, white, soft filaments, each consisting of an elongated cell, appearing, when seen under the microscope, as a flattened, twisted band with slightly thickened rounded edges. Inodorous and tasteless. Soluble in *ammoniacal solution of copper oxide.* Readily wetted by *water*, and not imparting to it either an alkaline or an acid reaction. Ash not more than 0·5 per cent.

## GRINDELIA

### Grindelia

Grindelia consists of the dried leaves and flowering tops of Grindelia camporum, *Greene.*

*Characters.*—Stems slender, yellow, smooth. Leaves three to five centimetres long, oblong or spathulate, sessile or amplexicaul, pale green, rigid, brittle, smooth, glabrous; surface minutely dotted; margin coarsely serrate. Flower-heads yellow, hard, resinous, with several rows of lanceolate-acuminate, recurved bracts. Fruits bi-auriculate or unidentate at the summit, with a pappus consisting of two thick, stiff bristles. All parts more or less resinous. Slightly aromatic odour; taste aromatic and bitter.

## GUAIACI LIGNUM

### Guaiacum Wood

Guaiacum Wood is the heart-wood of Guaiacum officinale, *Linn.*, or of Guaiacum sanctum, *Linn.*

*Characters and Test.*—Dark greenish-brown, dense, hard; heavier than water. In transverse section, abundant sclerenchymatous fibres, scattered, isolated vessels, and medullary rays one cell wide. Odour, on warming, somewhat aromatic; taste slightly acrid. An alcoholic tincture prepared from the Wood assumes a blue colour on the addition of diluted *T. Sol. of ferric chloride.*

## GUAIACI RESINA

### Guaiacum Resin

Guaiacum Resin is the resin obtained from the stem of Guaiacum officinale, *Linn.*, or of Guaiacum sanctum, *Linn.*

*Characters and Tests.*—In masses, or sometimes in large more or less rounded tears. Brittle; fracture vitreous; thin splinters transparent, from yellowish-green to reddish-brown. Powdered Resin greyish, but becoming green on exposure to light and air. Odour, on warming, some-

what aromatic; taste slightly acrid. A solution in *alcohol* (90 per cent.) is coloured blue by diluted *T. Sol. of ferric chloride*. 1 gramme of the powdered Resin, shaken for five minutes with 5 millilitres of *petroleum spirit*, yields a colourless filtrate which does not become green when shaken with an equal volume of *diluted solution of copper acetate* (absence of colophony). Not more than 10 per cent. insoluble in *alcohol* (90 per cent.). Ash not more than 4 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## GUAIACOL

### Guaiacol

Guaiacol, $C_7H_8O_2$, may be prepared synthetically or obtained by the fractional distillation of beech tar creosote.

*Characters and Tests.*—A colourless liquid, or colourless crystals melting at about 28°. Characteristic, tarry odour; taste caustic, very pungent. Soluble in 80 parts of *water;* freely soluble in *alcohol* (90 per cent.), in *ether*, in *glycerin*, and in fixed oils. Liquid Guaiacol optically inactive; specific gravity 1·116 to 1·140. Distils between 200° and 205°. A trace of *T. Sol. of ferric chloride* added to 25 millilitres of a solution (1 in 100) of Guaiacol in *alcohol* (90 per cent.) immediately produces a blue colour which changes to emerald-green on the addition of more of the test-solution, and finally becomes yellowish. When liquid Guaiacol is shaken with twice its volume of *petroleum spirit* and allowed to stand, the mixture separates into well-defined layers which do not exhibit permanent turbidity. 1 millilitre of liquid Guaiacol dissolves when warmed with 2 millilitres of an aqueous solution (15 in 100) of *sodium hydroxide;* the nearly white mass which results on cooling yields a clear solution with 25 millilitres of *water* (absence of oily hydrocarbons).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centimils. | 1 to 5 minims. |

## GUAIACOL CARBONAS

### Guaiacol Carbonate

Guaiacol Carbonate, $(C_7H_7O)_2CO_3$, is the carbonic ester of guaiacol. It may be obtained by the interaction of carbonyl chloride with sodium guaiacolate.

*Characters and Tests.*—A white crystalline powder, inodorous and almost tasteless. Insoluble in *water*; sparingly soluble in *alcohol* (90 per cent.), the solution being neutral to *litmus*. Melting point 85° to 88°. When the liquid obtained by heating Guaiacol Carbonate with *N/20 solution of sodium hydroxide* is acidified, carbon dioxide is evolved and guaiacol is liberated. A saturated solution in *alcohol* (90 per cent.) does not assume a greenish or bluish colour on the addition of *T. Sol. of ferric chloride* (absence of free guaiacol). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## GUMMI INDICUM

### Indian Gum

*Synonym*—Ghatti Gum

Indian Gum is a gummy exudation from the stem of Anogeissus latifolia, *Wall.*

*Characters and Tests.*—In vermiform or rounded tears of varying size, colourless or pale yellow; surface dull, fracture vitreous. Slight odour; taste insipid and muci-

laginous. Entirely soluble in *water*, forming a viscous, adhesive mucilage. Insoluble in *alcohol* (90 per cent.). The aqueous solution is gelatinised by the addition of *alcohol* (90 per cent.), or *solution of lead subacetate*; but it is unaffected by the addition of *T. Sol. of ferric chloride* or of *solution of lead acetate* (distinction from Amrad and certain other gums). It is not coloured blue or brown by a small quantity of *N/10 solution of iodine* (absence of starch or commercial dextrin). Ash not more than 4 per cent.

In India and the Eastern Divisions of the Empire, Indian Gum may be employed in making the official preparations for which Gum Acacia is directed to be used, one part of the former being taken for every two parts ordered of the latter (see 'Mucilago Gummi Indici').

## HÆMATOXYLI LIGNUM

### Logwood

Logwood is the heart-wood of Hæmatoxylon campechianum, *Linn.*

*Characters and Test.*—Hard, heavy, dull orange to purplish-red externally and reddish-brown internally. In transverse section, alternating yellowish-brown and dark brown wavy tangential lines. In the form of chips or coarse powder, it is free from signs of fermentation, and from green metallic lustre. Slight, agreeable odour; taste sweetish, astringent. Readily imparts a reddish-violet colour to *water* made slightly alkaline with *solution of sodium hydroxide.*

## HAMAMELIDIS CORTEX

### Hamamelis Bark

*Synonym*—Witch Hazel Bark

Hamamelis Bark is the dried bark of Hamamelis virginiana, *Linn.*

*Characters.*—In curved or channelled pieces about one and a half millimetres thick, and from one-half to two decimetres long, sometimes covered with a silvery-grey or dark-grey scaly cork marked with transverse lenticels, but frequently freed from the cork, and then exhibiting a nearly smooth reddish-brown outer surface. Inner surface pale reddish-pink, and finely striated longitudinally; fracture laminated and coarsely fibrous. In transverse section, a cortex containing prismatic crystals of calcium oxalate, a complete ring of sclerenchymatous cells, and numerous tangentially elongated groups of bast fibres. No marked odour; taste astringent.

## HAMAMELIDIS FOLIA

### Hamamelis Leaves

*Synonym*—Witch Hazel Leaves

Hamamelis Leaves are the fresh or dried leaves of Hamamelis virginiana, *Linn.*

*Characters.*—Broadly oval in outline, from seven to fifteen centimetres long. Upper surface dark green or brownish-green, under surface paler; apex obtuse, margin sinuate; narrowed towards the base, oblique, slightly cordate, and shortly petiolate. Veins pinnate and prominent on the under surface, where they are furnished with stellate hairs. No marked odour; taste astringent and slightly bitter.

## HEXAMINA

### Hexamine

*Synonym*—Hexamethylenetetramine

Hexamine may be obtained by the interaction of ammonia with formic aldehyde. It contains not less than 98 per cent. of pure hexamethylenetetramine, $C_6H_{12}N_4$.

*Characters and Tests.*—Colourless crystals or crystalline powder. Inodorous; taste at first sweetish, afterwards bitter. Soluble in 1·5 parts of *water*, and in 8 parts of *alcohol* (90 per cent.). The aqueous solution is alkaline to *litmus*. When heated to 263°, it sublimes without fusing, and partially decomposes. When heated with *diluted sulphuric acid* formic aldehyde is evolved, and when the solution is cooled and made alkaline with *solution of sodium hydroxide* ammonia is liberated. 0·1 gramme warmed with 5 millilitres of *sulphuric acid* and 0·1 gramme of *salicylic acid* develops a carmine colour. A solution of 1 gramme in *water*, mixed with 35 millilitres of *N/1 solution of sulphuric acid*, evaporated on a water-bath until the odour of formaldehyde has disappeared, requires for neutralisation not more than 7 millilitres of *N/1 solution of sodium hydroxide*, *solution of methyl orange* being used as indicator. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## HIRUDO

### Leeches

Leeches are (1) Hirudo medicinalis, *Linn.*, the Speckled Leech, and (2) Hirudo quinquestriata, *Schmarda*, the Five-striped or Australian Leech.

*Characters.*—Body soft, smooth, five centimetres or more long, tapering to each extremity, plano-convex, marked with from ninety to one hundred fine annulations. Anterior extremity terminated by a small sucker surrounding the tri-radiate jaws, the posterior extremity by a large sucker. (1) Speckled Leech: dorsal surface olive-green, with six longitudinal stripes; ventral surface greenish-yellow, with black spots. (2) Five-striped Leech: dorsal surface greenish-brown, with five longitudinal stripes; ventral surface greenish-yellow, not spotted.

## HOMATROPINÆ HYDROBROMIDUM

### Homatropine Hydrobromide

Homatropine Hydrobromide, $C_{16}H_{21}NO_3,HBr$, is the hydrobromide of an alkaloid prepared from tropine.

*Characters and Tests.*—White crystalline powder, or aggregations of minute crystals. Soluble in about 6 parts of *water*, and in about 18 parts of *alcohol* (90 per cent.), the solutions being neutral to *litmus*. Yields the *reactions* characteristic of bromides. An aqueous solution (1 in 100) applied to the eye powerfully dilates the pupil. 1 millilitre of this solution made alkaline with *solution of ammonia*, shaken with *chloroform*, the chloroformic solution being then separated and evaporated, yields a residue which turns first yellow and then brick-red when warmed with 1·5 millilitres of a solution (2 in 100) of *mercuric chloride* in *alcohol* (60 per cent.). When treated with *nitric acid* and *alcoholic solution of potassium hydroxide* as described under 'Atropina,' a reddish-yellow colour is produced, not changing to violet (distinction from atropine).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 2 milligrams. | 1/64 to 1/32 grain. |

## HYDRARGYRI IODIDUM RUBRUM

### Red Mercuric Iodide

*Synonyms*—Biniodide of Mercury : Mercuric Iodide

Red Mercuric Iodide, $HgI_2$, is obtained by the interaction of aqueous solutions of mercuric chloride and potassium iodide.

*Characters and Tests.*—A crystalline powder of a vermilion colour, becoming yellow when heated to about 150°.

Almost insoluble in *water*, sparingly soluble in *alcohol* (90 per cent.), freely and entirely soluble in *ether* (absence of mercurous iodide), and in *solution of potassium iodide*. Yields the *reactions* characteristic of mercuric salts and of iodides. Volatilises at a temperature under redness, leaving not more than a trace of fixed residue. When 0·5 gramme is well shaken with 10 millilitres of *water* and filtered, the filtrate is not coloured more than slightly brown by *hydrogen sulphide* (limit of mercuric chloride), and does not become more than opalescent on the addition of *solution of silver nitrate* (limit of chlorides).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 milligrams. | 1/32 to 1/16 grain. |

## HYDRARGYRI OXIDUM FLAVUM

### Yellow Mercuric Oxide

Yellow Mercuric Oxide may be obtained by the interaction of aqueous solutions of mercuric chloride and sodium hydroxide. It contains not less than 99·3 per cent. of pure mercuric oxide, HgO.

*Characters and Tests.*—A yellow powder; insoluble in *water*; readily soluble in *hydrochloric acid*, the solution yielding the *reactions* characteristic of mercuric salts. When 1 gramme is shaken with 5 millilitres of *water* for five minutes, the mixture is neutral to *litmus*. When gently heated it assumes a red colour. The solution obtained by dissolving 0·5 gramme in 2 millilitres of *nitric acid* and diluting with 20 millilitres of *water* requires not less than 45·8 millilitres of *N/10 solution of ammonium thiocyanate* to produce a permanent pink coloration, *solution of ferric sulphate* being used as indicator. Heated to incipient redness it is resolved into oxygen and the vapour of mercury, leaving not more than 0·5 per cent. of fixed residue.

## HYDRARGYRI OXIDUM RUBRUM

### Red Mercuric Oxide

*Synonym*—Red Precipitate

Red Mercuric Oxide may be obtained by heating mercurous nitrate until acid vapours cease to be evolved. Contains not less than 99·3 per cent. of pure mercuric oxide, HgO.

*Characters and Tests.*—Orange-red powder, or crystalline scales. Insoluble in *water*; soluble in *hydrochloric acid*, the solution yielding the *reactions* characteristic of mercuric salts. Gently heated it becomes dark violet, but resumes its orange-red colour on cooling. Heated in a dry test-tube it does not evolve orange fumes (absence of nitrates). Responds to the quantitative test described under 'Hydrargyri Oxidum Flavum.' Heated to incipient redness it is resolved into oxygen and the vapour of mercury, leaving not more than 0·3 per cent. of fixed residue.

## HYDRARGYRI PERCHLORIDUM

### Mercuric Chloride

*Synonyms*—Corrosive Sublimate: Perchloride of Mercury: Bichloride of Mercury

Mercuric Chloride may be obtained as a sublimate by heating a mixture of mercuric sulphate, sodium chloride, and black oxide of manganese. It contains not less than 98·6 per cent. of pure mercuric chloride, $HgCl_2$.

*Characters and Tests.*—Heavy, colourless, crystalline masses, possessing a highly acrid, metallic taste. Soluble in 18 parts of *water*, and in 4 parts of *alcohol* (90 per cent.), or of *ether*. Yields the *reactions* characteristic of mercuric salts and of chlorides. When heated Mercuric Chloride

sublimes without decomposition, leaving only a trace of fixed residue. Yields not less than 72·8 or more than 73·8 per cent. of metallic mercury, Hg, when tested by the following process :—

Dissolve 0·5 gramme in 20 millilitres of *water* in a tared beaker-flask, add 10 millilitres of *hypophosphorous acid*, or sufficient to reduce the whole of the mercuric chloride present, and heat on a water-bath until the particles of mercury that separate collect at the bottom of the flask. Pour the contents of the flask on a tared filter-paper, wash both the flask and filter-paper successively with *water*, *alcohol* (90 per cent.), and *ether*; dry over *sulphuric acid*, and weigh the metallic precipitate.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 milligrams. | 1/32 to 1/16 grain. |

## HYDRARGYRI SUBCHLORIDUM

### Mercurous Chloride

*Synonyms*—Calomel: Subchloride of Mercury: Hydrargyri Chloridum

Mercurous Chloride, HgCl, is obtained as a sublimate by heating a mixture of mercurous sulphate and sodium chloride.

*Characters and Tests.*—A heavy dull white powder, sometimes rendered yellowish by prolonged trituration; nearly tasteless. Insoluble in *water*, in *alcohol* (90 per cent.), and in *ether*; soluble in a boiling mixture of *nitric acid* and *hydrochloric acid*, the solution, when diluted with *water*, yielding the *reactions* characteristic of mercuric salts. Volatilises when sufficiently heated, leaving not more than a trace of fixed residue. Warmed with *solution of sodium hydroxide* it becomes black, but does not evolve ammonia (absence of mercuric-ammonium chloride). When

1 gramme is well shaken with 10 millilitres of *water* and filtered, the filtrate is not darkened by *hydrogen sulphide* (absence of mercuric chloride).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 30 centigrams. | 1/2 to 5 grains. |

## HYDRARGYRUM

### Mercury

Mercury is a liquid metal which may be obtained from native mercuric sulphide.

*Characters and Test.*—A silver-white, heavy liquid with a metallic lustre; easily divisible into globules. Readily volatilises when heated, leaving no appreciable fixed residue (absence of metallic and other impurities).

## HYDRARGYRUM AMMONIATUM

### Ammoniated Mercury

*Synonyms*—White Precipitate: Ammonio-chloride of Mercury: Mercuric-ammonium Chloride

| | |
|---|---|
| Mercuric Chloride . . . . | 60 grammes |
| Solution of Ammonia . . . | 80 millilitres |
| Distilled Water . . | a sufficient quantity |

Dissolve the Mercuric Chloride in twelve hundred millilitres of Distilled Water with the aid of heat; pour the liquid into the Solution of Ammonia diluted with four hundred millilitres of Distilled Water, constantly stirring; collect the precipitate on a filter; wash it with two hundred and fifty millilitres of Distilled Water, and dry at a temperature not exceeding 30°.

*Characters and Tests.*—A white, heavy, tasteless powder; insoluble in *alcohol* (90 per cent.) or *ether*; slowly decomposed by *water*. Digested with *solution of sodium hydroxide* it evolves ammonia, acquiring a pale yellow colour, and the liquid, filtered and acidified with *nitric acid*, yields a white precipitate with *solution of silver nitrate*. Boiled with *solution of stannous chloride* it becomes grey, and yields globules of metallic mercury. Volatilises without fusing when sufficiently heated, leaving no appreciable fixed residue. When 0·3 gramme is triturated in a glass mortar with a few drops of *water*, and transferred to a flask with the aid of 40 millilitres of *water*, the mortar being finally rinsed with a solution of 2 grammes of *potassium iodide* in 10 millilitres of *water* and the rinsings added to the contents of the flask, then, the flask being securely closed and rotated frequently until solution is complete, the liquid thus obtained requires for neutralisation not less than 22·5 millilitres of *N/10 solution of hydrochloric acid*, *solution of methyl orange* being used as indicator (presence of not less than 94·5 per cent. of mercuric-ammonium chloride, $NH_2HgCl$).

## HYDRARGYRUM CUM CRETA

### Mercury with Chalk

*Synonym*—Grey Powder

| | |
|---|---|
| Mercury . . . . . | 20 grammes |
| Prepared Chalk . . . . | 40 grammes |

Triturate together in a porcelain mortar until the mixture acquires a uniform grey colour and metallic globules cease to be visible to the naked eye.

*Characters and Tests.*—A light-grey powder, free from grittiness; tends to aggregate into minute globules. Insoluble in *water*; partially dissolved by *diluted hydrochloric acid*, the residual mercury being left in a finely

divided state; the filtered liquid does not yield any white or grey precipitate on the addition of *solution of stannous chloride* (absence of mercuric compounds).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centigrams. | 1 to 5 grains. |

## HYDRARGYRUM OLEATUM

### Oleated Mercury

*Synonym*—Mercuric Oleate

| | |
|---|---|
| Yellow Mercuric Oxide . . . | 20 grammes |
| Liquid Paraffin . . . . | 5 grammes |
| Oleic Acid . . . . . | 75 grammes |

Triturate the Mercuric Oxide with the Liquid Paraffin until it is thoroughly subdivided; add the Oleic Acid with vigorous stirring. Heat the mixture to 50°, triturating occasionally until combination is effected, and, when cool, a yellowish unctuous preparation is obtained.

## HYDRASTIS RHIZOMA

### Hydrastis Rhizome

Hydrastis Rhizome is the dried rhizome and roots of Hydrastis canadensis, *Linn.*

*Characters and Test.*—Rhizome tortuous, simple or branched, from ten to forty millimetres long and from three to ten millimetres thick; yellowish-brown, becoming darker by age. On the upper surface, short ascending branches usually terminated by cup-shaped scars; on the lower

surface and sides numerous thin, brittle roots. Fracture clean, resinous; fractured surface brownish-yellow or greenish-yellow. In transverse section, a ring of bright yellow, somewhat distant, wood-bundles. Slight but characteristic odour; taste bitter. Ash not more than 11 per cent.

## HYOSCINÆ HYDROBROMIDUM

### Hyoscine Hydrobromide

*Synonym*—Scopolamine Hydrobromide

Hyoscine Hydrobromide, $C_{17}H_{21}NO_4,HBr,3H_2O$, is the hydrobromide of an alkaloid, hyoscine or scopolamine, obtained from various plants of the natural order Solanaceæ.

*Characters and Tests.*—Small, colourless, transparent, non-deliquescent rhombic crystals. Soluble in 4 parts of *water*. Loses about 12 per cent. of its weight when dried at 100°. Yields the *reactions* characteristic of bromides. An aqueous solution (5 in 100) yields with *solution of sodium hydroxide* a white precipitate soluble in excess of the reagent, but no precipitate with *solution of ammonia*. The alkaloid removed from the ammoniacal solution by shaking with *chloroform*, separating and evaporating the chloroformic solution, when dissolved in *diluted hydrochloric acid*, yields with *solution of auric chloride* a yellow precipitate, which, recrystallised from *water* acidified with *hydrochloric acid* and dried, melts at 198° to 200°. Treated with *nitric acid* as described under 'Atropina' a violet colour is developed. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 0·3 to 0·6 milligram. | 1/200 to 1/100 grain. |

## HYOSCYAMI FOLIA

### Hyoscyamus Leaves

*Synonym*—Henbane Leaves

Hyoscyamus Leaves are the leaves of Hyoscyamus niger, *Linn.*, collected from the flowering plants, and dried.

*Characters.*—Pale green, varying in length but seldom exceeding twenty-five centimetres; mostly sessile; exstipulate, triangular-ovate or ovate-oblong, acute, undulated, irregularly toothed, sinuate or pinnatifid, with conspicuous midrib. On both surfaces, but particularly on the under surface and near the veins, long uniserial hairs terminating in pluricellular glands. In the mesophyll prismatic and cluster-crystals of calcium oxalate. Strong, characteristic odour; taste bitter, slightly acrid.

## HYOSCYAMINÆ SULPHAS

### Hyoscyamine Sulphate

Hyoscyamine Sulphate, $(C_{17}H_{23}NO_3)_2,H_2SO_4,2H_2O$, is the sulphate of an alkaloid, hyoscyamine, obtained from various plants belonging to the natural order Solanaceæ.

*Characters and Tests.*—A deliquescent crystalline powder. Soluble in 0·5 part of *water*. Melting point from 203° to 204°. Yields the *reaction* characteristic of sulphates. When treated with *nitric acid* and *alcoholic solution of potassium hydroxide*, as described under 'Atropina,' a violet coloration is produced. 0·05 gramme, dissolved in 5 millilitres of *water* acidified with *hydrochloric acid*, yields with *solution of auric chloride* a yellow precipitate which, recrystallised from *water* acidified with *hydrochloric acid*, forms brilliant golden-yellow scales melting,

when dried, at 165°. Dissolves in *sulphuric acid* without coloration. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 0·3 to 0·6 milligram. | 1/200 to 1/100 grain. |

## INFUSUM ALSTONIÆ

### Infusion of Alstonia

| | |
|---|---|
| Alstonia, bruised . . . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for half an hour; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM AURANTII

### Infusion of Orange Peel

| | |
|---|---|
| Dried Bitter-Orange Peel, cut small . . . . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM AURANTII COMPOSITUM

### Compound Infusion of Orange Peel

| | |
|---|---|
| Dried Bitter-Orange Peel, cut small . . . . . | 25 grammes |
| Lemon Peel, cut small . . | 10 grammes |
| Cloves, bruised . . . . | 5 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

See Appendix XII, page 529, Limonis Cortex Siccatus.

## INFUSUM BUCHU

### Infusion of Buchu

| | |
|---|---|
| Buchu Leaves, freshly broken . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 60 mils. | 1 to 2 fluid ounces. |

## INFUSUM CALUMBÆ

### Infusion of Calumba

| | |
|---|---|
| Calumba Root, cut small . . | 50 grammes |
| Distilled Water, cold . . . | 1000 millilitres |

Infuse in a covered vessel for half an hour; strain.

[*For dose see over.*

INFUSUM CALUMBÆ (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM CARYOPHYLLI

### Infusion of Cloves

| | |
|---|---|
| Cloves, bruised . . . . | 25 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM CASCARILLÆ

### Infusion of Cascarilla

| | |
|---|---|
| Cascarilla, in No. 10 powder . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM CHIRATÆ

### Infusion of Chiretta

| | |
|---|---|
| Chiretta, cut small . . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM CINCHONÆ ACIDUM

### Acid Infusion of Cinchona

| | |
|---|---|
| Red Cinchona Bark, in No. 40 powder | 50·0 grammes |
| Aromatic Sulphuric Acid | 12·5 millilitres |
| Distilled Water, boiling | 1000·0 millilitres |

Mix the Red Cinchona Bark with the Distilled Water in a covered vessel; add the Aromatic Sulphuric Acid; infuse for one hour; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM DIGITALIS

### Infusion of Digitalis

| | |
|---|---|
| Digitalis Leaves, in No. 20 powder | 7 grammes |
| Distilled Water, boiling | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 7 to 15 mils. | 2 to 4 fluid drachms. |

## INFUSUM ERGOTÆ

### Infusion of Ergot

| | |
|---|---|
| Ergot, freshly crushed . . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 60 mils. | 1 to 2 fluid ounces. |

## INFUSUM GENTIANÆ COMPOSITUM

### Compound Infusion of Gentian

| | |
|---|---|
| Gentian Root, thinly sliced . | 12·5 grammes |
| Dried Bitter-Orange Peel, cut small . . . . | 12·5 grammes |
| Lemon Peel, cut small . . | 25·0 grammes |
| Distilled Water, boiling . . | 1000·0 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

See Appendix XII, page 529, Limonis Cortex Siccatus.

## INFUSUM KRAMERIÆ

### Infusion of Krameria

*Synonym*—Infusion of Rhatany

| | |
|---|---|
| Krameria Root, bruised . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM QUASSIÆ

### Infusion of Quassia

| | |
|---|---|
| Quassia Wood, rasped . . . | 10 grammes |
| Distilled Water, cold . . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM RHEI

### Infusion of Rhubarb

| | |
|---|---|
| Rhubarb, in thin slices . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM ROSÆ ACIDUM

### Acid Infusion of Roses

| | |
|---|---|
| Red-Rose Petals, dried and broken . . . . | 25·0 grammes |
| Diluted Sulphuric Acid . . | 12·5 millilitres |
| Distilled Water, boiling . . | 1000·0 millilitres |

Add the Diluted Sulphuric Acid to the Distilled Water; infuse the Red-Rose Petals in the mixture in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM SCOPARII

### Infusion of Broom

| | |
|---|---|
| Broom Tops, dried and bruised . | 100 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 60 mils. | 1 to 2 fluid ounces. |

## INFUSUM SENEGÆ

### Infusion of Senega

| | |
|---|---|
| Senega Root, in No. 10 powder . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for half an hour; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INFUSUM SENNÆ

### Infusion of Senna

| | |
|---|---|
| Senna Leaves . . . . | 100 grammes |
| Ginger, sliced . . . . | 5 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils (repeated). | 1/2 to 1 fluid ounce (repeated). |
| 60 mils (single). | 2 fluid ounces (single). |

## INFUSUM UVÆ URSI

### Infusion of Bearberry

| | |
|---|---|
| Bearberry Leaves, bruised . . | 50 grammes |
| Distilled Water, boiling . . | 1000 millilitres |

Infuse in a covered vessel for fifteen minutes; strain while hot.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## INJECTIO APOMORPHINÆ HYPODERMICA

### Hypodermic Injection of Apomorphine

| | |
|---|---|
| Apomorphine Hydrochloride . . | 1 gramme |
| Diluted Hydrochloric Acid . . | 1 millilitre |
| Distilled Water, recently boiled and cooled, sufficient to produce . . . . . | 100 millilitres |

Mix the Diluted Hydrochloric Acid with fifty millilitres of the Distilled Water; dissolve the Apomorphine Hydrochloride in the mixture, and add sufficient of the Distilled Water to produce the required volume.

*Dose (by hypodermic injection).*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils. | 5 to 10 minims. |

This Injection should be recently prepared. 100 millilitres contain 1 gramme of Apomorphine Hydrochloride; 110 minims contain 1 grain.

## INJECTIO COCAINÆ HYPODERMICA

### Hypodermic Injection of Cocaine

| | |
|---|---|
| Cocaine Hydrochloride . . | 5·00 grammes |
| Salicylic Acid . . . . | 0·15 gramme |
| Distilled Water . . . . | 100·00 millilitres, or a sufficient quantity |

Boil the Distilled Water; add the Salicylic Acid; dissolve the Cocaine Hydrochloride in the solution when cool; add, if necessary, sufficient recently boiled and cooled Distilled Water to produce one hundred millilitres of the Injection.

*Dose (by hypodermic injection).*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils. | 5 to 10 minims. |

This Injection is of one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898. It contains 5 grammes of Cocaine Hydrochloride in 100 millilitres; 110 minims contain 5 grains.

## INJECTIO ERGOTÆ HYPODERMICA

### Hypodermic Injection of Ergot

| | |
|---|---|
| Extract of Ergot | 33 grammes |
| Phenol | 1 gramme |
| Distilled Water, recently boiled and cooled, sufficient to produce | 100 millilitres |

Dissolve.

*Dose (by hypodermic injection).*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils. | 5 to 10 minims. |

This Injection should be recently prepared. 100 millilitres contain 33 grammes of Extract of Ergot; 110 minims contain 33 grains.

## INJECTIO MORPHINÆ HYPODERMICA

### Hypodermic Injection of Morphine

| | |
|---|---|
| Morphine Tartrate | 2·5 grammes |
| Distilled Water, recently boiled and cooled, sufficient to produce | 100·0 millilitres |

Dissolve.

*Dose (by hypodermic injection).*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils. | 5 to 10 minims. |

This Injection is of one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898. It contains 2·5 grammes of Morphine Tartrate in 100 millilitres; 110 minims contain 2·5 grains.

## INJECTIO STRYCHNINÆ HYPODERMICA

### Hypodermic Injection of Strychnine

| | |
|---|---|
| Strychnine Hydrochloride . . | 0·75 gramme |
| Distilled Water, recently boiled and cooled, sufficient to produce . | 100·0 millilitres |

Dissolve.

*Dose* (*by hypodermic injection*).

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils. | 5 to 10 minims. |

This Injection contains 0·75 gramme of Strychnine Hydrochloride in 100 millilitres; 110 minims contain 3/4 grain.

## IODOFORMUM

### Iodoform

Iodoform, $CHI_3$, may be obtained by the action of iodine on ethylic alcohol in the presence of solution of potassium carbonate.

*Characters and Tests.*—Shining, lemon-yellow, small, hexagonal crystals, somewhat unctuous to the touch. Odour and taste persistent and disagreeable. Very slightly soluble in *water*; soluble in 100 parts of *alcohol* (90 per cent.), and in 8 parts of *ether*, the solutions being neutral to *litmus*; soluble also in *chloroform*, in *carbon disulphide*, in volatile oils, and in fixed oils; sparingly soluble in *benzene*. When warmed with *alcoholic solution of potassium hydroxide*, the resulting solution, acidified with *nitric acid*, becomes brown, and, when cold, changes to blue on the addition of *mucilage of starch*. 10 millilitres of *water* with which 1 gramme of Iodoform has been shaken are colourless and not bitter (absence of soluble yellow colour-

ing matters and of picric acid), and yield no *reactions* for iodides. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 centigrams. | 1/2 to 3 grains. |

## IODUM

### Iodine

Iodine may be obtained from the ashes of seaweeds and from native iodides and iodates. It contains not less than 99 per cent. of pure iodine, I.

*Characters and Tests.*—In rhombic prisms or octahedrons of the trimetric system, of dark colour, and metallic lustre. Characteristic odour. Yields, when gently heated, a violet-coloured vapour. Very slightly soluble in *water*, more soluble in *alcohol* (90 per cent.); readily soluble in *solution of potassium iodide*, in *ether*, and in *carbon disulphide*. *Mucilage of starch* colours the aqueous solution deep blue. Sublimes without appreciable residue, the first portion sublimed not including any slender colourless prisms emitting a pungent odour (absence of iodine cyanide). A solution of Iodine in *chloroform* is perfectly clear (absence of moisture). 0·5 gramme, dissolved in 50 millilitres of *water* containing 1 gramme of *potassium iodide*, requires for decolorisation not less than 39 millilitres of *N/10 solution of sodium thiosulphate*.

## IPECACUANHÆ RADIX

### Ipecacuanha Root

Ipecacuanha Root is the dried root of Psychotria Ipecacuanha, *Stokes*.

*Characters and Tests.*—In somewhat tortuous pieces

seldom more than fifteen centimetres long or six millimetres thick; from dark brick-red to very dark brown; closely annulated externally, the annulations not taking the form of narrow ridges partially encircling the root (distinction from Cartagena ipecacuanha). Fracture short, the fractured surface exhibiting a thick greyish bark and small dense wood. Bark consisting of thin-walled parenchymatous cells, some containing slender raphides, but most filled with simple or compound starch grains, the simple seldom exceeding fifteen microns in length; wood consisting chiefly of tracheids and containing no vessels or typical medullary rays. In the powdered Root, thin-walled parenchymatous tissue, abundant simple or compound starch grains, the single grains seldom exceeding 15 microns in diameter, acicular calcium oxalate crystals, fragments of brown cork, lignified tracheids and wood-parenchyma; but not more than a very occasional vessel or strongly thickened sclerenchymatous cell. Slight odour; taste bitter. Ash not more than 5 per cent. Yields not less than 2 per cent. of alkaloids when tested by the following process :—

Shake 7 grammes of the Root, in No. 60 powder, frequently during five minutes with 70 millilitres of a mixture of 1 volume of *chloroform* and 3 volumes of *ether*; add 5 millilitres of *solution of ammonia* and shake frequently during one hour; then add 5 millilitres of *water* or sufficient to make the powder agglomerate on violently shaking. Separate 50 millilitres of the clear liquid, and shake first with 10 millilitres of *N/1 solution of hydrochloric acid*, and then with three successive portions, each of 3 millilitres, of *water*. Mix the several aqueous solutions, make alkaline with *solution of ammonia*, and shake out first with 10 millilitres and then with three successive portions, each of 5 millilitres, of a mixture of 6 volumes of *ether* and 1 volume of *chloroform*. Mix the several ethereal solutions, evaporate, dry the residue at 80° and weigh. It weighs not less than 0·100 gramme.

Powdered Ipecacuanha Root, when used for official purposes other than the production of standardised pre-

parations, must be adjusted, if necessary, by the addition of powdered Milk Sugar to contain in 100 grammes when tested by the foregoing process 2 grammes of the alkaloids of Ipecacuanha Root. *Limit of error* 0·1 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

*Emetic Dose.*

| | |
|---|---|
| 1 to 2 grammes. | 15 to 30 grains. |

## IPOMŒÆ RADIX

### Orizaba Jalap Root

*Synonym*—Mexican Scammony Root

Orizaba Jalap Root is the dried root of Ipomœa orizabensis, *Ledanois*.

*Characters and Test.*—In irregular, tough, or fibrous pieces of varying size and shape, but often in portions, three to five centimetres wide and two to four centimetres thick, of transverse slices of large roots. Externally greyish-black and wrinkled, internally greyish or brownish. From the transverse surface coarse fibres protrude in irregular concentric circles. Slight odour; taste faintly acrid. Yields to *alcohol* (90 per cent.) a resin which has the properties enumerated under 'Scammoniæ Resina.'

## ISPAGHULA

### Ispaghula

Ispaghula consists of the dried seeds of Plantago ovata, *Forsk.*

*Characters.*—Seeds boat-shaped, somewhat acute at one end, from two to three millimetres long and from one to one and a half millimetres wide; pale greyish-brown, with a darker elongated spot on the convex side; on the concave side the hilum covered with the remains of a thin white membrane. In *water* the testa swells, producing a viscous mucilage. No odour or taste.

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 grammes. | 45 to 150 grains. |

## JALAPA

### Jalap

Jalap consists of the dried tubercules of Ipomœa Purga, *Hayne.*

*Characters and Tests.*—Tubercules dark brown, irregularly oblong, napiform or fusiform, three to eight centimetres or more long, the larger being often incised. Hard, compact and heavy; externally wrinkled, and marked with small transverse scars; internally yellowish-grey to dingy brown. In transverse section irregular, dark, concentric lines; examined microscopically numerous compound starch grains, many of which are gelatinised, cluster-crystals of calcium oxalate, and cells containing a resinous emulsion stained yellow by *N/10 solution of iodine*; in the wood, pitted vessels and tracheids. Characteristic odour; taste at first sweet but afterwards acrid and disagreeable. Ash not more than 6·5 per cent. Yields not less than 9 or more than 11 per cent. of resin having the properties of Jalap Resin, when treated by the process described under 'Jalapæ Resina.'

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## JALAPÆ RESINA

### Jalap Resin

Jalap Resin is a mixture of resins obtained from Jalap.

Exhaust coarsely powdered Jalap with Alcohol (90 per cent.). Recover most of the alcohol by distillation; pour the concentrated solution thus obtained into eight times its volume of Distilled Water; allow the resin that separates to subside, wash with Distilled Water, and dry at a gentle heat.

*Characters and Tests.*—In dark-brown opaque fragments, translucent at the edges, brittle, breaking with a resinous fracture; readily reduced to a pale-brown powder. Characteristic odour; taste acrid. Readily soluble in *alcohol* (90 per cent.). When 1 gramme of the powdered Resin is triturated with 20 millilitres of *water* and filtered, the filtrate is almost colourless. A solution of 0·1 gramme in 10 millilitres of *solution of sodium hydroxide*, boiled for a few moments and cooled, when acidified with *hydrochloric acid*, may become opalescent but not immediately turbid (absence of certain other resins). Not more than 15 per cent. of the powdered Resin is soluble in *ether* (absence of scammony resin).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centigrams. | 2 to 5 grains. |

## KALADANA

### Kaladana

*Synonym*—Pharbitis Seeds

Kaladana consists of the dried seeds of Ipomœa hederacea, *Jacq.*

*Characters.*—Seeds in the form of a segment of a sphere ; usually about five millimetres long, but sometimes much smaller; nearly black. In transverse section, minute dark resin-cells in the plaited cotyledons. Slight odour; taste acrid.

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 3 grammes. | 30 to 45 grains. |

## KALADANÆ RESINA

### Kaladana Resin

*Synonym*—Pharbitisin

Kaladana Resin is a mixture of resins obtained from Kaladana.

Exhaust coarsely powdered Kaladana with Alcohol (90 per cent.). Recover most of the alcohol by distillation ; pour the concentrated solution thus obtained into eight times its volume of Distilled Water ; allow the resin that separates to subside, wash with Distilled Water, and dry at a gentle heat.

*Characters and Tests.*—In brownish opaque fragments, translucent at the edges ; brittle, breaking with a resinous fracture ; readily reduced to a grey powder. Somewhat disagreeable odour, especially when warmed ; taste sweetish, acrid. Readily soluble in *alcohol* (90 per cent.) ; almost insoluble in *benzene*, *ether*, *chloroform*, or *carbon disulphide*. When 1 gramme of the powdered Resin is triturated with 20 millilitres of *water* and filtered, the filtrate is almost colourless. A solution of 0·1 gramme in 10 millilitres of *solution of sodium hydroxide*, boiled for a few moments and cooled, when acidified with *hydrochloric acid*, may become opalescent but not immediately turbid (absence of certain other resins).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## KAOLINUM

### Kaolin

Kaolin is a native aluminium silicate, powdered, and freed from gritty particles by elutriation.

*Characters and Tests.*—A soft whitish powder, insoluble in *water*, or in diluted acids. When the product of its fusion with alkalies is digested with *water*, the filtered solution acidified with *hydrochloric acid*, evaporated to dryness, and the residue digested with *diluted hydrochloric acid*, a deposit of silica is obtained, and the supernatant acid solution yields the *reactions* characteristic of aluminium.

## KAVÆ RHIZOMA

### Kava Rhizome

Kava Rhizome is the peeled, dried, and divided rhizome of Piper methysticum, *Forst. fil.*

*Characters.*—In whitish or light brownish-grey irregularly cuboid or roughly wedge-shaped fragments from which the periderm has been sliced off; from one to five centimetres thick. In transverse section, usually exhibiting a central dense pith, surrounded by a distinct ring of narrow, radiating, vascular bundles separated by relatively broad, paler, medullary rays. Fracture starchy. Slight, agreeable odour; taste pungent and bitter.

## KINO

### Kino

Kino is the juice obtained from incisions in the trunk of Pterocarpus Marsupium, *Roxb.*, heated to boiling and

evaporated to dryness. Known in commerce as East Indian, Malabar, Madras, or Cochin kino.

*Characters and Tests.*—In small, angular, glistening opaque, reddish-black, brittle fragments; transparent and ruby-red in thin laminæ. Inodorous; taste very astringent. Almost entirely soluble in *alcohol* (90 per cent.), slowly and incompletely soluble in cold *water*, not less than 75 per cent. soluble in boiling *water*, the solutions being deep red in colour. Almost entirely insoluble in *ether*. An aqueous solution (1 in 20) yields a voluminous reddish precipitate with dilute mineral acids, and, when largely diluted with *water*, a greenish-black precipitate with *T. Sol. of ferric chloride*. Ash not more than 2·5 per cent.

*Dose (in powder).*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

In India and the Eastern Divisions of the Empire, Butea Gum (Buteæ Gummi) may be employed in making the official preparations for which Kino (distinguished in commerce as East Indian, Malabar, Madras, or Cochin kino) is directed to be used.

## KINO EUCALYPTI

### Eucalyptus Kino

*Synonyms*—Eucalyptus Gum: Red Gum

Eucalyptus Kino is an exudation from the stem of various species of Eucalyptus.

*Characters and Tests.*—In very dark reddish-brown grains or small masses. Thin fragments transparent and ruby-red, or garnet-red. Inodorous; taste astringent. Tough and adhering to the teeth when chewed. Not less than 80 per cent. soluble in *water*. Almost entirely soluble in *alcohol* (90 per cent.).

*Dose (in powder).*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## KRAMERIÆ RADIX

### Krameria Root

*Synonym*—Rhatany Root

Krameria Root is the dried root of Krameria triandra, *Ruiz and Pav.* (Peruvian Rhatany), and also of another species of Krameria, probably Krameria argentea, *Mart.* (Pará Rhatany).

*Characters and Test.*—Peruvian Rhatany is nearly cylindrical, slightly flexuous, reddish-brown; length variable; thickness not exceeding fifteen millimetres. Cork scaly; fracture splintery; wood yellow. In transverse section, bark bright reddish-brown and occupying about one-third of the radius of the section. Pará Rhatany is cylindrical, nearly straight, dark purplish-brown or almost black, and marked with deep transverse cracks. Fracture short; wood pale reddish-brown. In transverse section, bark dark reddish-brown and occupying about one-half of the radius of the section. Both varieties inodorous; taste of the bark astringent, of the wood scarcely perceptible. Ash not more than 4 per cent.

## LAMELLÆ ATROPINÆ

### Discs of Atropine

Discs of Atropine are discs of Gelatin with Glycerin, each weighing about 1·3 milligrams (1/50 grain) and containing 0·013 milligram (1/5000 grain) of Atropine Sulphate.

Prepare as directed in Appendix X, employing 0·016 gramme of Atropine Sulphate and 8·8 grammes of *basis.*

## LAMELLÆ COCAINÆ

### Discs of Cocaine

Discs of Cocaine are discs of Gelatin with Glycerin, each weighing about 3·5 milligrams (1/20 grain) and containing 1·3 milligrams (1/50 grain) of Cocaine Hydrochloride.

Prepare as directed in Appendix X, employing 1·65 grammes of Cocaine Hydrochloride and 15 grammes of *basis*.

## LAMELLÆ HOMATROPINÆ

### Discs of Homatropine

Discs of Homatropine are discs of Gelatin with Glycerin, each weighing about 2·1 milligrams (1/32 grain) and containing 0·65 milligram (1/100 grain) of Homatropine Hydrobromide.

Prepare as directed in Appendix X, employing 0·82 gramme of Homatropine Hydrobromide and 10·1 grammes of *basis*.

## LAMELLÆ PHYSOSTIGMINÆ

### Discs of Physostigmine

*Synonym*—Discs of Eserine

Discs of Physostigmine are discs of Gelatin with Glycerin, each weighing about 1·3 milligrams (1/50 grain) and containing 0·065 milligram (1/1000 grain) of Physostigmine Sulphate.

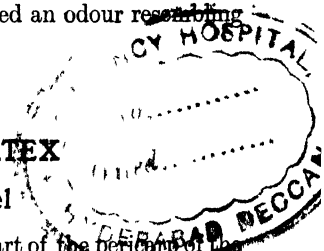
Prepare as directed in Appendix X, employing 0·082 gramme of Physostigmine Sulphate and 8·45 grammes of *basis*.

## LAUROCERASI FOLIA

### Cherry-Laurel Leaves

Cherry-Laurel Leaves are the fresh leaves of Prunus Laurocerasus, *Linn.*

*Characters.*—Thick, coriaceous, on short, strong petioles, oblong or somewhat obovate, from twelve to eighteen centimetres long, tapering towards each end, recurved at the apex, distantly but sharply serrate and slightly revolute at the margins; dark green, smooth and shining above, much paler beneath; midrib prominent, with one or two glandular depressions on the under surface near its base. Inodorous, but emitting when bruised an odour resembling that of prussic acid.



## LIMONIS CORTEX

### Lemon Peel

Lemon Peel is the fresh outer part of the pericarp of the fruit of Citrus Medica, *Linn.*, var. *β* Limonum, *Hook. f.*

*Characters.*—Outer surface pale yellow and more or less rough; with only a small amount of the white spongy part of the pericarp on the inner surface; in transverse section numerous large oil-glands below the epidermis. Strong, characteristic and fragrant odour; taste aromatic and bitter.

See Appendix XII, page 529, Limonis Cortex Siccatus.

## LINI SEMINA

### Linseed

Linseed consists of the dried ripe seeds of Linum usitatissimum, *Linn.*

*Characters.*—Seeds small, brown, glossy, nearly flat; from about four to six millimetres long; ovate, somewhat obliquely pointed; surface glabrous and minutely pitted. Internally yellowish-white, with a narrow oily endosperm and two large oily cotyledons. Epidermal cells filled with mucilage which swells and dissolves in *water*. No odour; taste mucilaginous, oily.

## LINI SEMINA CONTUSA

### Crushed Linseed

Crushed Linseed is Linseed reduced to a coarse powder. It should be recently prepared.

*Characters and Tests.*—A coarse, brownish-yellow powder, with readily visible fragments of the brown seed-coats. Bland, not pungent or rancid, odour when mixed with warm *water*. Yields not less than 30 per cent. of oil when exhausted by *carbon disulphide*; the oil thus obtained responds to the tests described under 'Oleum Lini'; the residual powder exhibits no starch grains when examined under the microscope. Ash not more than 5 per cent.

## LINIMENTUM ACONITI

### Liniment of Aconite

Liniment of Aconite contains in 100 millilitres 0·2 gramme of the ether-soluble alkaloids of Aconite Root.

Aconite Root, in No. 40 powder . 500 grammes
Camphor
Alcohol (90 per cent.) } of each a sufficient quantity

Moisten the Aconite Root with part of the Alcohol, pack in a percolator, and percolate with more of the Alcohol until the Root is exhausted. Reserve the first seven hundred

and fifty millilitres of the percolate; evaporate the remainder to a syrup and add it to the reserved portion. Determine the weight of ether-soluble alkaloids in fifteen millilitres of the tincture thus obtained by the process described under 'Aconiti Radix.' Add to the remainder of the tincture sufficient of the Camphor and of the Alcohol to produce a Liniment of Aconite containing in 100 millilitres 0·2 gramme of the ether-soluble alkaloids of Aconite Root and 3 grammes of Camphor.

*Test.*—Examined by the foregoing process Liniment of Aconite is found to contain in 100 millilitres 0·2 gramme of the ether-soluble alkaloids of Aconite Root. *Limit of error* 0·01 gramme in excess or defect.

## LINIMENTUM AMMONIÆ

### Liniment of Ammonia

| | | |
|---|---|---|
| Solution of Ammonia . . . | 250 | millilitres |
| Almond Oil . . . . . | 250 | millilitres |
| Olive Oil . . . . . | 500 | millilitres |

Shake together.

See Appendix XII, page 529, Oleum Olivæ.

## LINIMENTUM BELLADONNÆ

### Liniment of Belladonna

| | | |
|---|---|---|
| Liquid Extract of Belladonna . | 500 | millilitres |
| Camphor . . . . | 50 | grammes |
| Distilled Water . . . . | 100 | millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 | millilitres |

Dissolve the Camphor in three hundred millilitres of the Alcohol; add the Liquid Extract of Belladonna, the Distilled Water, and sufficient of the Alcohol to produce the required volume. Set aside for twenty-four hours; filter.

## LINIMENTUM CALCIS

### Liniment of Lime

| | |
|---|---|
| Solution of Lime . . . . | 500 millilitres |
| Olive Oil . . . . . | 500 millilitres |

Shake together.

See Appendix XII, page 529, Oleum Olivæ.

## LINIMENTUM CAMPHORÆ

### Liniment of Camphor

*Synonym*—Camphorated Oil

| | |
|---|---|
| Camphor, in flowers . . . | 200 grammes |
| Olive Oil . . . . . | 800 grammes |

Dissolve the Camphor in the Olive Oil in a closed vessel.

See Appendix XII, page 529, Oleum Olivæ.

## LINIMENTUM CAMPHORÆ AMMONIATUM

### Ammoniated Liniment of Camphor

*Synonym*—Compound Liniment of Camphor

| | |
|---|---|
| Camphor . . . . . | 125 grammes |
| Oil of Lavender . . . . | 5 millilitres |
| Strong Solution of Ammonia . | 250 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve the Camphor and Oil of Lavender in six hundred millilitres of the Alcohol; add the Strong Solution of Ammonia gradually, shaking frequently; finally add sufficient of the Alcohol to produce the required volume.

## LINIMENTUM CHLOROFORMI

### Liniment of Chloroform

| | |
|---|---|
| Chloroform . . . . . | 500 millilitres |
| Liniment of Camphor . . . | 500 millilitres |

Mix.

## LINIMENTUM CROTONIS

### Liniment of Croton Oil

| | |
|---|---|
| Croton Oil . . . . . | 120 millilitres |
| Oil of Cajuput . . . . | 440 millilitres |
| Alcohol (90 per cent.) . . . | 440 millilitres |

Mix.

## LINIMENTUM HYDRARGYRI

### Liniment of Mercury

| | |
|---|---|
| Ointment of Mercury . . . | 50 grammes |
| Solution of Ammonia . . . | 40 millilitres |
| Liniment of Camphor . . . | 80 millilitres |

Shake the Solution of Ammonia with the Liniment of Camphor, and triturate the Ointment of Mercury with the mixture.

This Liniment contains approximately three-fifths of the proportion of Mercury contained in the corresponding preparation of the British Pharmacopœia, 1898.

## LINIMENTUM OPII

### Liniment of Opium

| | |
|---|---|
| Tincture of Opium. . . . | 500 millilitres |
| Liniment of Soap . . . . | 500 millilitres |

Mix; set aside for a few days; filter.

## LINIMENTUM POTASSII IODIDI CUM SAPONE

### Liniment of Potassium Iodide with Soap

| | |
|---|---|
| Curd Soap, recently prepared and in shavings | 40 grammes |
| Potassium Iodide | 30 grammes |
| Glycerin | 20 millilitres |
| Oil of Lemon | 2 millilitres |
| Distilled Water | 200 millilitres |

Mix the Curd Soap with the Distilled Water and Glycerin in a tared porcelain dish on a water-bath; when the Soap is dissolved make up to the original weight with Distilled Water; pour the liquid into a mortar containing the Potassium Iodide, previously powdered; mix briskly by trituration; continue the trituration until the mixture is cold; set aside for an hour; then add the Oil of Lemon, and again triturate the gelatinous product.

## LINIMENTUM SAPONIS

### Liniment of Soap

| | |
|---|---|
| Soft Soap | 80 grammes |
| Camphor | 40 grammes |
| Oil of Rosemary | 15 millilitres |
| Distilled Water | 170 millilitres |
| Alcohol (90 per cent.) sufficient to produce | 1000 millilitres |

Dissolve the Soap, Camphor, and Oil of Rosemary in six hundred millilitres of the Alcohol; add the Distilled Water and sufficient of the Alcohol to produce the required volume; set aside for a week; filter.

## LINIMENTUM SINAPIS

### Liniment of Mustard

| | |
|---|---|
| Volatile Oil of Mustard | 35 millilitres |
| Camphor | 55 grammes |
| Castor Oil | 125 millilitres |
| Alcohol (90 per cent.) sufficient to produce | 1000 millilitres |

Dissolve the Camphor and the Oils in the Alcohol.

## LINIMENTUM TEREBINTHINÆ

### Liniment of Turpentine

| | |
|---|---|
| Soft Soap | 75 grammes |
| Camphor | 50 grammes |
| Rectified Oil of Turpentine | 650 millilitres |
| Distilled Water sufficient to produce | 1000 millilitres |

Mix the Soft Soap with one hundred millilitres of the Distilled Water; dissolve the Camphor in the Oil of Turpentine; gradually add the latter solution to the former, triturating until the mixture becomes a thick creamy emulsion; add sufficient Distilled Water to produce the required volume.

## LINIMENTUM TEREBINTHINÆ ACETICUM

### Liniment of Turpentine and Acetic Acid

| | |
|---|---|
| Glacial Acetic Acid | 110 millilitres |
| Liniment of Camphor | 445 millilitres |
| Rectified Oil of Turpentine sufficient to produce | 1000 millilitres |

Mix.

## LIQUOR ACIDI CHROMICI

### Solution of Chromic Acid

| | |
|---|---|
| Chromic Anhydride . . . | 25 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve.

## LIQUOR ADRENALINI HYDROCHLORICUS

### Hydrochloric Solution of Adrenalin

| | |
|---|---|
| Adrenalin . . . . . | 1 gramme |
| Chloroform . . . . | 5 millilitres |
| Sodium Chloride . . . . | 9 grammes |
| Diluted Hydrochloric Acid . . | 3 millilitres |
| Distilled Water, recently boiled and cooled, sufficient to produce . . . . . | 1000 millilitres |

Dissolve the Chloroform and the Sodium Chloride in nine hundred millilitres of the Distilled Water, add the Diluted Hydrochloric Acid, dissolve the Adrenalin in the mixture, and add sufficient Distilled Water to produce the required volume. Preserve the Solution in amber glass bottles.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 decimils. | 10 to 30 minims. |

## LIQUOR AMMONIÆ

### Solution of Ammonia

Solution of Ammonia is an aqueous solution containing 10 per cent. by weight of ammonia, $NH_3$.

| | |
|---|---|
| Strong Solution of Ammonia . | 500 millilitres |
| Distilled Water . . . . | 1000 millilitres |

Mix.

*Characters and Tests.*—Specific gravity 0·959. 3 grammes require for neutralisation 17·6 millilitres of *N/1 solution of sulphuric acid.* Responds in other respects to the tests and possesses the general characters described under 'Liquor Ammoniæ Fortis.'

## LIQUOR AMMONIÆ FORTIS

### Strong Solution of Ammonia

Strong Solution of Ammonia is an aqueous solution containing 32·5 per cent. by weight of ammonia, $NH_3$. It may be obtained by heating a mixture of ammonium chloride and slaked lime, and passing the resulting ammonia into distilled water.

*Characters and Tests.*—A colourless liquid, with a characteristic, very pungent odour. Strongly alkaline. Specific gravity 0·888. 1 gramme requires for neutralisation 19·1 millilitres of *N/1 solution of sulphuric acid.* When mixed with an equal volume of *water* and a slight excess of *sulphuric acid* no colour or odour is developed (absence of tarry matters). Yields no characteristic *reactions* for aluminium, zinc, calcium, magnesium, potassium, sodium, carbonates, sulphates, or sulphides, and only the slightest *reactions* for chlorides. 0·5 millilitre of *solution of sodium sulphide* added to 50 millilitres of Strong Solution of Ammonia contained in a Nessler glass produces no change of colour (absence of copper, iron, and lead). *Arsenic limit* 0·5 part per million. Leaves no appreciable residue on evaporation.

## LIQUOR AMMONII ACETATIS

### Solution of Ammonium Acetate

| | | |
|---|---|---|
| Acetic Acid | 162·5 | millilitres |
| Ammonium Carbonate | 50·0 | grammes, |
| | or a sufficient | quantity |
| Distilled Water sufficient to produce | 1000·0 | millilitres |

Mix the Acetic Acid with five hundred millilitres of the Distilled Water; neutralise with Ammonium Carbonate; add sufficient Distilled Water to produce the required volume.

*Tests.*—Specific gravity 1·016. Mixed with an equal volume of a saturated aqueous solution of *hydrogen sulphide* not more than the slightest darkening in colour results (limit of heavy metals).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 24 mils. | 2 to 6 fluid drachms. |

Solution of Ammonium Acetate should be preserved in a vessel free from lead.

## LIQUOR AMMONII CITRATIS

### Solution of Ammonium Citrate

| | |
|---|---|
| Citric Acid . . . . | 125·0 grammes |
| Ammonium Carbonate . . | 87·5 grammes, or a sufficient quantity |
| Distilled Water sufficient to produce . . . . . | 1000·0 millilitres |

Dissolve the Citric Acid in five times its weight of Distilled Water; neutralise with Ammonium Carbonate; add sufficient Distilled Water to produce the required volume.

*Tests.*—Specific gravity 1·057. Mixed with an equal volume of a saturated aqueous solution of *hydrogen sulphide* not more than the slightest darkening in colour results (limit of heavy metals).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 24 mils. | 2 to 6 fluid drachms. |

Solution of Ammonium Citrate should be preserved in a vessel free from lead.

## LIQUOR ARSENICALIS

### Arsenical Solution

*Synonym*—Fowler's Solution

| | |
|---|---|
| Arsenious Anhydride, in powder . | 10 grammes |
| Potassium Carbonate . . . | 10 grammes |
| Compound Tincture of Lavender . | 30 millilitres |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Dissolve the Arsenious Anhydride and the Potassium Carbonate in five hundred millilitres of Distilled Water by the aid of heat; cool; add the Compound Tincture of Lavender and sufficient Distilled Water to produce the required volume.

*Characters and Tests.*—A reddish liquid, alkaline to *litmus*, and having the odour of lavender. 25 millilitres, neutralised with *hydrochloric acid*, discharge the colour of 50·4 millilitres of *N/10 solution of iodine*, the presence of a slight excess of *sodium bicarbonate* being maintained throughout the operation.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centimils. | 2 to 8 minims. |

This Solution contains 1 gramme of Arsenious Anhydride in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR ARSENICI HYDROCHLORICUS

### Hydrochloric Solution of Arsenic

| | |
|---|---|
| Arsenious Anhydride, in powder . | 10 grammes |
| Hydrochloric Acid . . . | 12 millilitres |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Dissolve the Arsenious Anhydride and the Hydrochloric Acid in five hundred millilitres of Distilled Water by the aid of heat; cool; add sufficient Distilled Water to produce the required volume.

*Characters and Tests.*—A colourless liquid; acid to *litmus*. 25 millilitres diluted with *water* discharge the colour of 50·4 millilitres of *N/10 solution of iodine*, the presence of a slight excess of *sodium bicarbonate* being maintained throughout the operation.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centimils. | 2 to 8 minims. |

This Solution contains 1 gramme of Arsenious Anhydride in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR ARSENII ET HYDRARGYRI IODIDI

### Solution of Arsenious and Mercuric Iodides

*Synonym*—Donovan's Solution

| | |
|---|---|
| Arsenious Iodide . . . . | 10 grammes |
| Red Mercuric Iodide . . . | 10 grammes |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Triturate the Arsenious Iodide and Red Mercuric Iodide with two hundred and fifty millilitres of the Distilled Water until dissolved; filter; pass through the filter sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

This Solution contains the equivalent of 1 gramme of Arsenious Iodide and 1 gramme of Red Mercuric Iodide in 100 millilitres; 110 minims contain the equivalent of 1 grain of each salt.

## LIQUOR ATROPINÆ SULPHATIS

### Solution of Atropine Sulphate

| | |
|---|---|
| Atropine Sulphate . . . . | 1 gramme |
| Distilled Water, recently boiled and cooled, sufficient to produce . . . . . | 100 millilitres |

Dissolve.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 centimils. | 1/2 to 1 minim. |

This Solution should be freshly prepared. It contains 1 gramme of Atropine Sulphate in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR BISMUTHI ET AMMONII CITRATIS

### Solution of Bismuth and Ammonium Citrate

| | |
|---|---|
| Bismuth Oxynitrate . . . | 70 grammes |
| Citric Acid . . . . . | 52 grammes |
| Solution of Ammonia, Distilled Water | of each a sufficient quantity |

Powder the Citric Acid and mix it in a mortar with the Bismuth Oxynitrate and twenty millilitres of Distilled Water. Allow the mixture to stand, with occasional stirring, for half an hour, or until a small portion is completely soluble in Solution of Ammonia. Transfer to a beaker, using four hundred millilitres of Distilled Water to rinse the mortar. Allow the precipitate to settle, remove the clear liquid by decantation, and wash the precipitate with three successive quantities, each of four hundred millilitres, of Distilled Water. Add to the washed precipitate, while moist, just sufficient Solution of Ammonia to dissolve it, and then add sufficient Distilled Water to produce one thousand millilitres of the Solution.

*Characters and Tests.*—A colourless liquid, freely miscible with *water*; taste somewhat metallic; slightly alkaline to *litmus*. Evolves ammonia when heated with *solution of sodium hydroxide*. 10 millilitres, evaporated to dryness and the residue ignited, yield not less than 0·5 gramme of bismuth oxide.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## LIQUOR CALCIS

### Solution of Lime

*Synonym*—Lime Water

| | |
|---|---|
| Calcium Hydroxide . . . . | 50 grammes |
| Distilled Water . . | a sufficient quantity |

Wash the Calcium Hydroxide with Distilled Water until free from chlorides; then shake it with five thousand millilitres of Distilled Water in a stoppered green glass bottle for two or three minutes; set aside until clear. The clear Solution may be drawn off with a siphon as required for use, and should then be transferred to a green glass bottle.

*Tests.*—24 millilitres require for neutralisation 10 millilitres of *N/10 solution of sulphuric acid*. Yields no characteristic *reactions* for lead or chlorides.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 120 mils. | 1 to 4 fluid ounces. |

This Solution contains the equivalent of rather more than 0·1 gramme of Lime, CaO, in 100 millilitres; 110 minims contain the equivalent of 1/10 grain.

## LIQUOR CALCIS CHLORINATÆ

### Solution of Chlorinated Lime

| | |
|---|---|
| Chlorinated Lime . . . . | 100 grammes |
| Distilled Water . . . . | 1000 millilitres |

Mix; transfer the mixture to a stoppered bottle; set aside for three hours, shaking occasionally; filter through calico. Preserve the filtrate in a stoppered bottle in a cool dark place.

*Test.*—If 2 millilitres are added to a solution of 1 gramme of *potassium iodide* in 25 millilitres of *water*, acidified with 2 millilitres of *hydrochloric acid*, a brownish-red solution is obtained which requires for decolorisation not less than 11·7 millilitres of *N/10 solution of sodium thiosulphate* (presence of not less than 2 per cent. of available chlorine).

When freshly prepared, this Solution yields about 3 per cent. of available chlorine.

## LIQUOR CALCIS SACCHARATUS

### Saccharated Solution of Lime

| | |
|---|---|
| Calcium Hydroxide . . . | 50 grammes |
| Refined Sugar, in powder . . | 100 grammes |
| Distilled Water . . . . | 1000 millilitres |

Mix the Calcium Hydroxide with a solution of the Refined Sugar in the Distilled Water. Set aside in a stoppered green glass bottle for a few hours, shaking occasionally; separate the clear Solution by means of a siphon, avoiding unnecessary exposure to air.

*Tests.*—Specific gravity 1·055. 20 millilitres require for neutralisation 13·2 millilitres of *N/1 solution of sulphuric acid.* Yields no characteristic *reactions* for lead.

[*For dose see over.*

LIQUOR CALCIS SACCHARATUS (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 mils. | 15 to 60 minims. |

This Solution contains the equivalent of nearly 2 grammes of Lime, CaO, in 100 millilitres; 110 minims contain nearly 2 grains.

## LIQUOR CRESOL SAPONATUS

### Solution of Cresol with Soap

*Synonym*—Compound Solution of Cresol

| | |
|---|---|
| Cresol | 500 grammes |
| Castor Oil | 350 grammes |
| Potassium Hydroxide | 80 grammes |
| Distilled Water sufficient to produce | 1000 millilitres |

Mix the Cresol with the Castor Oil and heat to 80°. Dissolve the Potassium Hydroxide in seventy millilitres of the Distilled Water. Mix the two solutions and heat the mixture until one volume of it forms a clear liquid with ten volumes of Distilled Water. Cool, and add sufficient Distilled Water to produce the required volume.

## LIQUOR EPISPASTICUS

### Blistering Liquid

| | |
|---|---|
| Cantharidin | 4 grammes |
| Castor Oil | 25 millilitres |
| Resin | 12 grammes |
| Acetone sufficient to produce | 1000 millilitres |

Dissolve.

This Blistering Liquid contains approximately the same proportion of Cantharidin as the corresponding preparation of the British Pharmacopœia, 1898.

## LIQUOR ETHYL NITRITIS

### Solution of Ethyl Nitrite

Solution of Ethyl Nitrite contains not less than 2·5 or more than 3 per cent. by weight of ethyl nitrite in a mixture of ninety-five parts by volume of Absolute Alcohol with five parts by volume of Glycerin. The ethyl nitrite may be obtained by the interaction of alcohol (90 per cent.), sodium nitrite, and diluted sulphuric acid, at a low temperature. Solution of Ethyl Nitrite should be stored in small bottles.

*Characters and Tests.*—A nearly colourless transparent liquid, of characteristic apple-like odour and taste. Specific gravity 0·823 to 0·826. When poured on an acidified strong solution of *ferrous sulphate* contained in a test-tube, a deep olive-brown coloration is produced at the surface of contact of the two liquids. Does not effervesce when shaken with *sodium bicarbonate* (absence of acid). 10 millilitres, mixed with 5 millilitres of *N/1 solution of sodium hydroxide* and 5 millilitres of *water*, do not assume a yellow colour (absence of acetaldehyde). 1 volume, shaken briskly at intervals during five minutes in a brine-charged nitrometer with 1 volume of *solution of potassium iodide* and 1 volume of *diluted sulphuric acid*, yields, at 15·5° and normal pressure, not less than 6·5 or more than 7·8 volumes of nitric oxide gas.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 mils. | 15 to 60 minims. |

## LIQUOR FERRI PERCHLORIDI

### Solution of Ferric Chloride

| | |
|---|---|
| Strong Solution of Ferric Chloride . . . . | 250 millilitres |
| Distilled Water sufficient to produce. | 1000 millilitres |

Mix.

[*For dose see over.*

LIQUOR FERRI PERCHLORIDI (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## LIQUOR FERRI PERCHLORIDI FORTIS

### Strong Solution of Ferric Chloride

| | |
|---|---|
| Iron | 70 grammes |
| Hydrochloric Acid | 410 millilitres |
| Nitric Acid | 30 millilitres |
| Distilled Water | a sufficient quantity |

Place the Iron in a flask ; add a mixture of two hundred and fifty millilitres of Hydrochloric Acid and one hundred and forty millilitres of Distilled Water ; expose to a moderate temperature until effervescence ceases ; then boil ; filter from undissolved Iron ; rinse the flask and contents with a little Distilled Water ; pour the rinsings over the filter ; add to the filtrate one hundred and forty millilitres of Hydrochloric Acid ; mix ; pour the solution in a slow continuous stream into the Nitric Acid, chemical action being promoted if necessary by gently warming ; evaporate the product until a precipitate begins to form ; add twenty millilitres of Hydrochloric Acid, and sufficient Distilled Water to produce three hundred and fifty millilitres, or to make the resulting Solution respond to the following tests.

*Characters and Tests.*—An orange-brown solution with a strong styptic taste. Miscible with *water* and with *alcohol* (90 per cent.) in all proportions. Specific gravity about 1·49. Yields the *reactions* characteristic of ferric salts and of chlorides. Yields no characteristic *reactions* for lead, copper, zinc, calcium, sodium, potassium, ammonium, or ferrous salts. On adding a clear crystal of *ferrous sulphate* to a cooled mixture of equal volumes of *sulphuric acid* and of the Strong Solution diluted with nine times its volume of *water*, the crystal

does not become brown, nor does a brownish-black colour develop around it (limit of nitrates). *Arsenic limit* 10 parts per million. 5 millilitres diluted with 80 millilitres of *water* yield, upon the addition of an excess of *solution of ammonia*, a reddish-brown precipitate, which, when well washed and incinerated, weighs 1·42 grammes.

This Solution contains 20 grammes of Iron in 100 millilitres; 110 minims contain 20 grains.

## LIQUOR FERRI PERSULPHATIS

### Solution of Ferric Sulphate

| | |
|---|---|
| Ferrous Sulphate . . . . | 400·0 grammes |
| Sulphuric Acid . . . . | 37·5 millilitres |
| Nitric Acid . . . . | 37·5 millilitres |
| Distilled Water . . . | a sufficient quantity |

Add the Sulphuric Acid to five hundred millilitres of the Distilled Water; dissolve the Ferrous Sulphate in the mixture with the aid of heat; mix the Nitric Acid with one hundred millilitres of the Distilled Water; add to this diluted acid, warmed, the solution of Ferrous Sulphate; concentrate by boiling, until, on the sudden disengagement of ruddy vapours, the liquid ceases to be black and acquires a red colour. If any ferrous salt remain in the solution, add a few drops of Nitric Acid, and boil again. When the solution is cold, add, if necessary, sufficient Distilled Water to produce five hundred and fifty millilitres.

*Characters and Tests.*—A dark-red solution. Inodorous; very astringent. Miscible in all proportions with *alcohol* (90 per cent.) and *water*. Specific gravity about 1·441. Yields the *reactions* characteristic of ferric salts and of sulphates. Yields no characteristic *reactions* for ferrous salts. *Arsenic limit* 5 parts per million. 5 millilitres diluted with 80 millilitres of *water* yield, upon the addition of excess of *solution of ammonia*, a precipitate which, when well washed and incinerated, weighs 1·04 grammes.

## LIQUOR FORMALDEHYDI

### Solution of Formaldehyde

Solution of Formaldehyde is an aqueous solution containing in 100 millilitres not less than 36 and not more than 38 grammes of formaldehyde, $CH_2O$. Formaldehyde may be obtained by the limited oxidation of methyl alcohol.

*Characters and Tests.*—A colourless liquid with a characteristic, pungent odour. Neutral or slightly acid to *litmus*. Miscible with *water* and with *alcohol* (90 per cent.) in all proportions. Caustic when applied to the skin. Specific gravity 1·079 to 1·081. Yields, when evaporated to dryness, a whitish, amorphous residue which leaves no appreciable ash on incineration. Yields with *solution of silver ammonio-nitrate* a precipitate of metallic silver. On the addition of 2 drops of the Solution to 5 millilitres of *sulphuric acid*, in which a little *salicylic acid* has been previously dissolved, a deep red coloration is produced. When 1 millilitre is mixed with 10 millilitres of *N/10 solution of iodine*, the mixture nearly decolorised with *solution of sodium hydroxide* and warmed, no yellow, crystalline precipitate is produced (absence of acetone). Diluted with four times its volume of *water* it yields no characteristic *reactions* for iron, copper, lead, calcium, chlorides, or sulphates. Contains in 100 millilitres not less than 36 and not more than 38 grammes of formaldehyde, $CH_2O$, as determined by the following process:—

To 50 millilitres of *N/1 solution of sodium hydroxide* add 3 millilitres of Solution of Formaldehyde and 50 millilitres of *solution of hydrogen peroxide* and warm on a water-bath; similarly mix 50 millilitres of *N/1 solution of sodium hydroxide* with 50 millilitres of *solution of hydrogen peroxide* and warm on a water-bath. When the reactions are complete and all effervescence has ceased, add a few drops of *solution of phenolphthalein* to each mixture and titrate with *N/1 solution of sulphuric acid*. The difference between the two titrations is not less than 36 and not more than 38 millilitres.

## LIQUOR FORMALDEHYDI SAPONATUS

### Solution of Formaldehyde with Soap

| | |
|---|---|
| Soft Soap | 400 grammes |
| Alcohol (90 per cent.) | 300 millilitres |
| Solution of Formaldehyde | 200 millilitres |
| Distilled Water sufficient to produce | 1000 millilitres |

Dissolve the Soft Soap in the Alcohol; add the Solution of Formaldehyde and sufficient Distilled Water to produce the required volume.

## LIQUOR HAMAMELIDIS

### Solution of Hamamelis

| | |
|---|---|
| Fresh Hamamelis Leaves | 1000 grammes |
| Distilled Water | 2000 millilitres |
| Alcohol (90 per cent.) | 160 millilitres |

Macerate for twenty-four hours; then distil one thousand millilitres.

## LIQUOR HYDRARGYRI NITRATIS ACIDUS

### Acid Solution of Mercuric Nitrate

| | |
|---|---|
| Mercury | 120 grammes |
| Nitric Acid | 150 millilitres |
| Distilled Water | 45 millilitres |

Mix the Nitric Acid with the Distilled Water in a tared flask; dissolve the Mercury in the mixture without the application of heat; then boil gently until the Solution weighs three hundred and sixty grammes. Preserve it in a stoppered bottle not exposed to the light.

*Tests.*—Specific gravity about 2·0. Yields no characteristic *reaction* for mercurous salts.

## LIQUOR HYDRARGYRI PERCHLORIDI

### Solution of Mercuric Chloride

| | |
|---|---|
| Mercuric Chloride . . . | 1 gramme |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Dissolve.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

This Solution should be kept protected from light. 100 millilitres contain 0·1 gramme of Mercuric Chloride; 110 minims contain 1/10 grain.

## LIQUOR HYDROGENII PEROXIDI

### Solution of Hydrogen Peroxide

Solution of Hydrogen Peroxide is an aqueous solution of hydrogen peroxide, $H_2O_2$, prepared by the interaction of water, barium peroxide, and a dilute mineral acid, at a temperature below 10°.

*Characters and Tests.*—A colourless and odourless liquid. Taste slightly acid. Decomposed by heat into water and oxygen. On adding a few drops to 10 millilitres of *water* mixed with a drop of *solution of potassium chromate*, 10 drops of *diluted sulphuric acid*, and 2 millilitres of *ether*, a blue layer appears between the ethereal and the aqueous liquid, and, after shaking, the *ether* also becomes blue. 2 millilitres vigorously shaken in a brine-charged nitrometer with 4 millilitres of *solution of copper ammonio-sulphate* liberate, at 15·5° and normal pressure, not less than 18 and not more than 22 millilitres of oxygen, corresponding to about 10 volumes of available oxygen in 1 volume of the Solution. 25 millilitres require for

neutralisation not more than 2·5 millilitres of *N/10 solution of sodium hydroxide, solution of methyl orange* being used as indicator (limit of acidity). Yields no characteristic *reactions* for barium. Evaporated to dryness on a water-bath, not more than 1 per cent. of solid residue remains.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

## LIQUOR MAGNESII BICARBONATIS

### Solution of Magnesium Bicarbonate

*Synonym*—Fluid Magnesia

| | |
|---|---|
| Magnesium Sulphate | 40 grammes |
| Sodium Carbonate | 50 grammes |
| Distilled Water | a sufficient quantity |

Dissolve the two salts separately, each in two hundred millilitres of the Distilled Water; heat the solution of Magnesium Sulphate to the boiling point; add to it the solution of Sodium Carbonate; boil until carbon dioxide ceases to be evolved; collect the precipitate on a calico filter; wash it with Distilled Water until the filtrate is free from sulphates. Mix the washed precipitate with four hundred millilitres of Distilled Water; place the mixture in a suitable apparatus; force into it pure washed carbon dioxide; let the mixture remain in contact with excess of carbon dioxide, retained under a pressure of about three atmospheres, for twenty-four hours or longer; decant the resulting solution, and again pass carbon dioxide into it. Keep the Solution in securely closed bottles.

*Characters and Tests.*—Effervesces slightly, or not at all, when the containing vessel is first opened. Yields no

characteristic *reaction* for sulphates. *Lead limit* 0·5 part per million. *Arsenic limit* 0·2 part per million. 20 millilitres evaporated to dryness yield a white residue, which after calcination weighs not less than 0·16 and not more than 0·19 gramme. This residue is insoluble in *water*, and when dissolved in a dilute acid yields the *reactions* characteristic of magnesium.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 60 mils. | 1 to 2 fluid ounces. |

This Solution contains the equivalent of about 2 grammes of the official Magnesium Carbonate in 100 millilitres; 1 fluid ounce contains the equivalent of about 10 grains.

## LIQUOR MORPHINÆ ACETATIS

### Solution of Morphine Acetate

| | |
|---|---|
| Morphine Acetate . . . . | 1 gramme |
| Diluted Acetic Acid . . . | 2 millilitres |
| Alcohol (90 per cent.) . . . | 25 millilitres |
| Distilled Water sufficient to produce . . . . . | 100 millilitres |

Mix the Alcohol with an equal volume of Distilled Water, adding the Diluted Acetic Acid; dissolve the Morphine Acetate in the mixture, and add sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 36 decimils. | 10 to 60 minims. |

This Solution contains 1 gramme of Morphine Acetate in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR MORPHINÆ HYDROCHLORIDI

### Solution of Morphine Hydrochloride

| | |
|---|---|
| Morphine Hydrochloride . . | 1 gramme |
| Diluted Hydrochloric Acid . . | 2 millilitres |
| Alcohol (90 per cent.) . . . | 25 millilitres |
| Distilled Water sufficient to produce . . . . . | 100 millilitres |

Mix the Alcohol with an equal volume of Distilled Water, adding the Diluted Hydrochloric Acid; dissolve the Morphine Hydrochloride in the mixture, and add sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 36 decimils. | 10 to 60 minims. |

This Solution contains 1 gramme of Morphine Hydrochloride in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR MORPHINÆ TARTRATIS

### Solution of Morphine Tartrate

| | |
|---|---|
| Morphine Tartrate . . . . | 1 gramme |
| Alcohol (90 per cent.) . . . | 25 millilitres |
| Distilled Water sufficient to produce . . . . . | 100 millilitres |

Mix the Alcohol with an equal volume of Distilled Water; dissolve the Morphine Tartrate in the mixture; add sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 36 decimils. | 10 to 60 minims. |

This Solution contains 1 gramme of Morphine Tartrate in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR PANCREATIS

### Pancreatic Solution

Pancreatic Solution contains the digestive principles of the fresh pancreas of the pig.

Mix two hundred and fifty millilitres of Alcohol (90 per cent.) with two hundred millilitres of Glycerin and sufficient Distilled Water to produce one thousand millilitres. In this mixture macerate for seven days two hundred and fifty grammes of the pancreas, freed from fat and external membrane, and finely divided by trituration with washed sand or powdered pumice stone; filter.

*Test.*—When 3 millilitres of the Solution together with 0·2 gramme of *sodium bicarbonate* and 20 millilitres of *water* are added to 80 millilitres of milk and the mixture kept at 45° for one hour, on placing 5 millilitres of this liquid with 5 millilitres of *ether* and 5 drops of *nitric acid* in a stoppered tube and gently inverting the tube three times, no curdy precipitate appears in the lower layer.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

## LIQUOR PICIS CARBONIS

### Solution of Coal Tar

| | |
|---|---|
| Prepared Coal Tar . . . | 200 grammes |
| Quillaia Bark, in No. 20 powder . | 100 grammes |
| Alcohol (90 per cent.) . . . | 1000 millilitres |

Exhaust the powdered Quillaia Bark with the Alcohol by the *percolation process*. To the resulting tincture add the Prepared Coal Tar, and digest the mixture at 50° for two days, stirring occasionally. Cool and decant, or filter.

## LIQUOR PLUMBI SUBACETATIS DILUTUS

### Diluted Solution of Lead Subacetate

*Synonyms*—Goulard's Lotion: Goulard Water

| | |
|---|---|
| Strong Solution of Lead Subacetate . . . . | 12·5 millilitres |
| Distilled Water, recently boiled and cooled, sufficient to produce . . . . . | 1000·0 millilitres |

Mix.

## LIQUOR PLUMBI SUBACETATIS FORTIS

### Strong Solution of Lead Subacetate

*Synonym*—Goulard's Extract

| | |
|---|---|
| Lead Acetate . . . . | 250 grammes |
| Lead Oxide, in powder . . | 175 grammes |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Dissolve the Lead Acetate in seven hundred and fifty millilitres of the Distilled Water, add the Lead Oxide, set aside for forty-eight hours, shaking occasionally; filter, and pass through the filter sufficient Distilled Water to produce the required volume.

*Characters and Tests.*—A clear colourless liquid, with a sweet astringent taste; alkaline to *litmus*. Becomes turbid by exposure to the air. Forms an opaque white jelly with *mucilage of gum acacia*. Yields the *reactions* characteristic of lead and of acetates. Specific gravity 1·275. When 1 gramme is diluted with 20 millilitres of *water* and mixed with excess of *N/1 solution of oxalic acid*, the precipitate collected, washed, transferred to a flask and decomposed with excess of *diluted sulphuric acid*, the mixture thus obtained, heated to 60°, decolorises not less

than 17 millilitres of *N/10 solution of potassium permanganate.*

## LIQUOR POTASSÆ

### Solution of Potash

Solution of Potash is an aqueous solution containing in 100 millilitres 5 grammes of pure potassium hydroxide, KOH. It should be preserved in a green glass bottle furnished with an air-tight stopper.

*Characters and Tests.*—A colourless, strongly alkaline liquid. Yields no characteristic *reactions* for lead, copper, arsenic, iron, aluminium, calcium, magnesium, sodium, or ammonium, and not more than the slightest *reactions* for carbonates, chlorides, or sulphates. Specific gravity 1·045. 20 millilitres require for neutralisation 17·8 millilitres of *N/1 solution of sulphuric acid.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 decimils, freely diluted. | 10 to 30 minims, freely diluted. |

This Solution contains 5 grammes of Potassium Hydroxide, KOH, in 100 millilitres; 110 minims contain 5 grains.

## LIQUOR POTASSII PERMANGANATIS

### Solution of Potassium Permanganate

| | |
|---|---|
| Potassium Permanganate . . | 10 grammes |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Dissolve.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 7 to 15 mils. | 2 to 4 fluid drachms. |

This Solution contains 1 gramme of Potassium Permanganate in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR SODÆ CHLORINATÆ

### Solution of Chlorinated Soda

| | |
|---|---|
| Chlorinated Lime . . . | 100 grammes |
| Sodium Carbonate . . . | 150 grammes |
| Distilled Water . . . . | 1000 millilitres |

Dissolve the Sodium Carbonate in two hundred and fifty millilitres of the Distilled Water; thoroughly triturate the Chlorinated Lime with the remainder of the Distilled Water; mix the two liquids; shake occasionally during three or four hours; filter. This Solution should be freshly prepared.

*Characters and Tests.*—A colourless alkaline liquid with a faint odour of chlorine and astringent taste. Decomposed by *hydrochloric acid*, evolving chlorine. Yields not more than slight *reactions* for calcium or carbonates. Specific gravity 1·054. If 5 millilitres are added to a solution of 1 gramme of *potassium iodide* in 100 millilitres of *water* acidified with 5 millilitres of *hydrochloric acid*, a brownish-red solution is obtained, which requires for decolorisation not less than 37·6 millilitres of *N/10 solution of sodium thiosulphate* (presence of not less than 2·5 per cent. by weight of available chlorine).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decimils. | 10 to 20 minims. |

## LIQUOR SODII ARSENATIS

### Solution of Sodium Arsenate

| | |
|---|---|
| Anhydrous Sodium Arsenate . . | 1 gramme |
| Distilled Water sufficient to produce . . . . . | 100 millilitres |

Dissolve.

[*For dose see over.*

LIQUOR SODII ARSENATIS (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centimils. | 2 to 8 minims. |

This Solution contains the equivalent of 1 gramme of Anhydrous Sodium Arsenate in 100 millilitres; 110 minims contain the equivalent of 1 grain.

## LIQUOR STRYCHNINÆ HYDROCHLORIDI

### Solution of Strychnine Hydrochloride

| | |
|---|---|
| Strychnine Hydrochloride . . | 1 gramme |
| Alcohol (90 per cent.) . . . | 25 millilitres |
| Distilled Water sufficient to produce . . . . . | 100 millilitres |

Mix the Alcohol with an equal volume of Distilled Water; dissolve the Strychnine Hydrochloride in the mixture, and add sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centimils. | 2 to 8 minims. |

This Solution contains 1 gramme of Strychnine Hydrochloride in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR TRINITRINI

### Solution of Trinitrin

*Synonym*—Solution of Nitroglycerin

| | |
|---|---|
| Trinitroglycerin of commerce . . | 1 gramme |
| Alcohol (90 per cent.) sufficient to produce . . . . | 100 millilitres |

Dissolve.

*Characters and Tests.*—A clear colourless liquid, neutral to *litmus*. Specific gravity 0·840. A mixture of 10 millilitres with an equal volume of *water*, cooled to 15·5°, remains clear, but the further admixture of 1 millilitre of *water* causes opacity (presence of a due amount of glyceryl trinitrate). On further diluting with *water* and setting aside the mixture, there is deposited a liquid of oily consistence, one drop of which, absorbed by paper and struck with a hammer on a hard surface, explodes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centimils. | 1/2 to 2 minims. |

This Solution contains 1 gramme of trinitroglycerin in 100 millilitres; 110 minims contain 1 grain.

## LIQUOR ZINCI CHLORIDI

### Solution of Zinc Chloride

| | |
|---|---|
| Granulated Zinc . . . . | 400 grammes |
| Hydrochloric Acid . . . | 1100 millilitres |
| Distilled Water . . . | a sufficient quantity |

Mix the Hydrochloric Acid with five hundred millilitres of Distilled Water in a porcelain dish; add the Zinc; apply gentle heat until gas is no longer evolved; boil for half an hour, supplying the water lost by evaporation; allow the product to cool.

Test a few drops of the resulting liquid for iron and lead. If either be present, filter the remainder of the cooled product into a bottle, and add *solution of chlorine* by degrees, with frequent shaking, until the liquid acquires a permanent odour of chlorine; add Zinc Carbonate in small quantities at a time, with renewed shaking, until the whole of the iron or lead is precipitated; filter the liquid and evaporate to one thousand millilitres.

If no iron or lead be present, filter the remainder of the cooled product and evaporate it to one thousand millilitres.

*Characters and Tests.*—A colourless liquid ; taste astringent and sweetish. Specific gravity 1·530. Yields no characteristic *reactions* for lead, copper, cadmium, arsenic, iron, aluminium, calcium, magnesium, or sulphates.

## LITHII CARBONAS

### Lithium Carbonate

Lithium Carbonate may be obtained from native silicates of lithium. It contains not less than 98·5 per cent. of pure lithium carbonate, $Li_2CO_3$.

*Characters and Tests.*—White powder, or minute crystalline grains. Taste slightly alkaline. Soluble in 80 parts of *water* ; insoluble in *alcohol* (90 per cent.). Aqueous solution alkaline to *litmus*. Soluble with effervescence in *hydrochloric acid* ; the solution evaporated to dryness leaves a residue which communicates a crimson colour to flame, and, redissolved in *water*, yields a precipitate with *solution of sodium phosphate*. 1 gramme, diffused in about 50 millilitres of *water*, requires for neutralisation not less than 26·6 or more than 27·1 millilitres of *N/1 solution of sulphuric acid*, *solution of methyl orange* being used as indicator. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, magnesium, or chlorides, and not more than the slightest *reactions* for calcium or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centigrams. | 2 to 5 grains. |

## LITHII CITRAS

### Lithium Citrate

Lithium Citrate may be obtained by the interaction of citric acid and lithium carbonate. It contains not less than 98·5 per cent. of pure lithium citrate, $Li_3C_6H_5O_7,4H_2O$.

*Characters and Tests.*—Small white crystals. Taste saline, cooling. Soluble in 2 parts of *water*. Yields the *reactions* characteristic of citrates. Heated to redness it blackens, evolving inflammable gases; and the residue, neutralised with *hydrochloric acid*, yields with *alcohol* (90 per cent.) a solution which burns with a crimson flame. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 10·5 millilitres of *N/1 solution of sulphuric acid*. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million. Free from the impurities indicated under 'Lithii Carbonas.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## LITHII CITRAS EFFERVESCENS

### Effervescent Lithium Citrate

| | |
|---|---|
| Sodium Bicarbonate, in powder . | 580 grammes |
| Tartaric Acid, in powder . . | 310 grammes |
| Citric Acid, in powder . . . | 210 grammes |
| Lithium Citrate, in powder . . | 50 grammes |

Mix the Lithium Citrate with the Citric Acid, then add the Tartaric Acid, and, lastly, the Sodium Bicarbonate, triturating thoroughly. Place the mixture in a dish or

pan of suitable form heated to between 90° and 105°. When the mixture, by the aid of careful manipulation, has assumed a granular character, separate it, by means of suitable sieves, into granules of uniform and convenient size. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## LOBELIA

### Lobelia

Lobelia is the dried flowering herb of Lobelia inflata, *Linn.*

*Characters and Test.*—Stems angular, channelled, and furnished with narrow wings; often of a purplish tint; bearing one-celled hairs and the scars of alternate leaves. Leaves irregularly toothed and hairy. Capsules inflated, two-celled, containing, when ripe, minute, oblong, reticulated, brown seeds. In transverse section of the stem, laticiferous vessels in the bast. Somewhat irritating odour; taste at first not marked, but subsequently burning and acrid. Ash not more than 12 per cent.

## LOTIO HYDRARGYRI FLAVA

### Yellow Mercurial Lotion

*Synonym*—Yellow Wash

| | |
|---|---|
| Mercuric Chloride . . . | 4·6 grammes |
| Solution of Lime . . . | 1000·0 millilitres |

**Mix.**

## LOTIO HYDRARGYRI NIGRA

### Black Mercurial Lotion

*Synonym*—Black Wash

| | |
|---|---|
| Mercurous Chloride . . . | 6·85 grammes |
| Glycerin . . . . . | 50·00 millilitres |
| Solution of Lime sufficient to produce . . . . | 1000·00 millilitres |

Triturate the Mercurous Chloride with the Glycerin and gradually add sufficient Solution of Lime to produce the required volume.

## MAGNESIA LEVIS

### Light Magnesia

*Synonyms*—Light Calcined Magnesia: Light Magnesium Oxide

Light Magnesia, MgO, is prepared by exposing Light Magnesium Carbonate to a dull red heat.

*Characters and Tests.*—A white powder differing only from 'Magnesia Ponderosa' in its bulk, the volumes corresponding to the same weight having the ratio of three and a half to one.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams (repeated). | 5 to 20 grains (repeated). |
| 2 to 4 grammes (single). | 30 to 60 grains (single). |

## MAGNESIA PONDEROSA

### Heavy Magnesia

*Synonyms*—Heavy Calcined Magnesia: Heavy Magnesium Oxide

Heavy Magnesia, MgO, is prepared by exposing Heavy Magnesium Carbonate to a dull red heat.

*Characters and Tests.*—A white powder, insoluble in *water*, but readily dissolved by acids, the solution yielding the *reactions* characteristic of magnesium. Yields no characteristic *reactions* for aluminium and copper, and not more than the slightest *reactions* for iron, calcium, carbonates, and sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Loses not more than 1 per cent. of its weight when heated to dull redness.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams (repeated). | 5 to 20 grains (repeated). |
| 2 to 4 grammes (single). | 30 to 60 grains (single). |

## MAGNESII CARBONAS LEVIS

### Light Magnesium Carbonate

Light Magnesium Carbonate is a hydrated magnesium oxycarbonate obtained by the following process:—

| | |
|---|---|
| Magnesium Sulphate . . . | 125 grammes |
| Sodium Carbonate . . . . | 150 grammes |
| Distilled Water . . . | a sufficient quantity |

Dissolve the Magnesium Sulphate and the Sodium Carbonate separately, each in one thousand millilitres of cold Distilled Water; mix the solutions; boil the mixture for

fifteen minutes; transfer the precipitate to a calico filter; wash it with boiling Distilled Water until the washings are free from sulphates, and dry at a temperature not exceeding 100°.

*Characters and Tests.*—A very light, white powder, which, when examined under the microscope, is found to consist of amorphous particles with numerous slender prisms intermixed. It otherwise possesses the general characters and responds to the tests described under 'Magnesii Carbonas Ponderosus.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams (repeated). | 5 to 20 grains (repeated). |
| 2 to 4 grammes (single). | 30 to 60 grains (single). |

## MAGNESII CARBONAS PONDEROSUS

### Heavy Magnesium Carbonate

Heavy Magnesium Carbonate is a hydrated magnesium oxycarbonate obtained by the following process:—

| | |
|---|---|
| Magnesium Sulphate . . . | 125 grammes |
| Sodium Carbonate . . . . | 150 grammes |
| Distilled Water, boiling . | a sufficient quantity |

Dissolve the Magnesium Sulphate and the Sodium Carbonate separately, each in two hundred and fifty millilitres of the Distilled Water; mix the solutions, and evaporate to dryness; digest the residue for half an hour with five hundred millilitres of the Distilled Water; collect the insoluble matter on a calico filter, wash with the Distilled Water until the washings are free from sulphates, and dry at a temperature not exceeding 100°.

*Characters and Tests.*—A white granular powder. Readily soluble, with effervescence, in the diluted mineral

acids, the solutions yielding the *reactions* characteristic of magnesium. Loses from 56 to 58 per cent. of its weight when heated to redness. Yields no characteristic *reactions* for aluminium, copper, or calcium, and not more than the slightest *reactions* for iron, chlorides, or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams (repeated). | 5 to 20 grains (repeated). |
| 2 to 4 grammes (single). | 30 to 60 grains (single). |

## MAGNESII SULPHAS

### Magnesium Sulphate

*Synonym*—Epsom Salts

Magnesium Sulphate may be obtained by the interaction of the native magnesium carbonates and diluted sulphuric acid; or by purifying the native sulphate. It contains not less than 97·4 per cent. of pure magnesium sulphate, $MgSO_4,7H_2O$.

*Characters and Tests.*—In small, colourless, transparent, rhombic prisms. Taste bitter. Soluble in 1 part of *water*. Yields the *reactions* characteristic of magnesium and of sulphates. When 0·5 gramme is dissolved in 50 millilitres of *water*, and to the solution 20 millilitres of *solution of ammonium chloride*, 20 millilitres of *strong solution of ammonia*, and excess of *solution of sodium phosphate* are added in succession, the mixture, after well stirring and setting aside for twelve hours, yields a precipitate which, when collected, washed with *strong solution of ammonia* diluted with three times its volume of *water*, dried and heated to redness, weighs not less than 0·220 and not more than 0·226 gramme. Yields no characteristic *reactions* for zinc, and not more than the slightest *reactions* for

chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million. 10 grammes dissolved in 20 millilitres of *water*, and heated on a water-bath for one hour in a closed flask, yield a clear, colourless solution (absence of insoluble impurities and of more than traces of iron).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 grammes (repeated). | 30 to 90 grains (repeated). |
| 8 to 16 grammes (single). | 120 to 240 grains (single). |

## MAGNESII SULPHAS EFFERVESCENS

### Effervescent Magnesium Sulphate

*Synonym*—Effervescent Epsom Salts

| | |
|---|---|
| Magnesium Sulphate, in crystals . | 500 grammes |
| Sodium Bicarbonate, in powder . | 360 grammes |
| Tartaric Acid, in powder . . | 190 grammes |
| Citric Acid, in powder . . . | 125 grammes |
| Refined Sugar, in powder . . | 105 grammes |

Dry the Magnesium Sulphate at about 55° until it has lost twenty-three per cent. of its weight; powder the dried product; mix it with the Refined Sugar and then with the other ingredients. Place the mixture in a dish or pan of suitable form heated to between 90° and 105°. When the mixture, by the aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 12 grammes (repeated). | 60 to 180 grains (repeated). |
| 16 to 32 grammes (single). | 240 to 480 grains (single). |

## MEL BORACIS

### Borax Honey

| | |
|---|---|
| Purified Borax, in powder . . | 10 grammes |
| Glycerin . . . . . | 5 grammes |
| Purified Honey . . . . | 85 grammes |

Mix.

## MEL DEPURATUM

### Purified Honey

Purified Honey is honey of commerce melted and strained, the specific gravity, if necessary, being adjusted to 1·36 by the addition of Distilled Water.

*Characters and Tests.*—A syrupy, translucent, pale yellowish liquid. Aromatic odour; taste at first sweet, afterwards faintly acrid. Specific gravity 1·36. *Optical rotation* at 15·5° of a solution in *water*, containing 25 grammes in 100 millilitres, decolorised by filtration with *animal charcoal*, in a tube 200 millimetres long, between 0° and −5°; 5 millilitres of the same solution when mixed with 15 millilitres of *absolute alcohol* do not become more than faintly opalescent (absence of starch sugar). When 2 grammes are dissolved in 20 millilitres of boiling *water* and cooled, the solution does not become blue on the addition of one drop of *N/10 solution of iodine* (absence of starch). Ash not more than 0·25 per cent.; solution of the ash in *water* is alkaline to *litmus*, and when it is acidified with *nitric acid* yields not more than a very faint opalescence with *solution of barium chloride*, or with *solution of silver nitrate* (limit of sulphates and of chlorides).

## MENTHOL

### Menthol

Menthol, $C_{10}H_{20}O$, is a crystalline substance obtained by cooling the oil distilled from the fresh herb of Mentha arvensis, *DC.*, *vars.*. piperascens et glabrata, *Holmes*; and probably other species of Mentha.

*Characters and Tests.*—Colourless acicular crystals or crystalline masses. Melting point 42° to 43°. Odour and taste recalling peppermint; produces a sensation of warmth on the tongue and, if air is inhaled, a sensation of cold. Entirely volatilised by the heat of a water-bath. Very slightly soluble in *water*, but readily soluble in *alcohol* (90 per cent.), the solutions being neutral to *litmus*. Boiled with *sulphuric acid* diluted with half its volume of *water*, Menthol acquires an indigo-blue or ultramarine colour, the acid becoming brown.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

## METHYL SALICYLAS

### Methyl Salicylate

Methyl Salicylate is the methyl ester of salicylic acid. It may be obtained by the interaction of methyl alcohol and salicylic acid. It contains not less than 98 per cent. of pure methyl salicylate, $CH_3C_7H_5O_3$.

*Characters and Tests.*—A colourless liquid. Characteristic, aromatic odour; taste sweetish, warm, aromatic. Slightly soluble in *water*; readily soluble in *alcohol* (90 per cent.), in *glacial acetic acid*, and in *carbon disulphide*. Specific gravity 1·185 to 1·192. Boiling

point from 219° to 221°. Optically inactive. The solution in *alcohol* (90 per cent.) is neutral or faintly acid to *litmus*. The aqueous solution is coloured violet by the addition of a drop of *T. Sol. of ferric chloride*. Contains not less than 98 per cent. of the *ester* methyl salicylate, $CH_3C_7H_5O_3$.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## METHYLSULPHONAL

### Methylsulphonal

Methylsulphonal, or diethyl-sulphone-methyl-ethyl-methane, $C_8H_{18}S_2O_4$, is an oxidation product of the mercaptol resulting from the condensation of ethyl-methyl-ketone with ethyl-mercaptan.

*Characters and Tests.*—A white crystalline powder; taste slightly bitter. Soluble in 320 parts of *water*, somewhat more soluble in dilute *alcohol*. Melting point from 76° to 76·5°. At a red heat it decomposes with evolution of sulphur dioxide. When heated with *anhydrous sodium acetate* hydrogen sulphide is liberated. When boiled with *water* no offensive odour is developed (absence of mercaptan and mercaptol). 100 millilitres of a cold saturated aqueous solution do not immediately decolorise 1 drop of an aqueous solution (1 in 1000) of *potassium permanganate* (limit of readily oxidisable substances). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decigrams. | 10 to 20 grains. |

## MISTURA AMMONIACI

### Ammoniacum Mixture

| | |
|---|---|
| Ammoniacum, in coarse powder | 30 grammes |
| Syrup of Tolu | 60 millilitres |
| Distilled Water sufficient to produce | 1000 millilitres |

Triturate the Ammoniacum thoroughly with a little of the Distilled Water so as to form a thin paste; gradually add the remainder of the Distilled Water and the Syrup of Tolu, triturating until the mixture assumes a uniform milky appearance; strain through muslin.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## MISTURA AMYGDALÆ

### Almond Mixture

| | |
|---|---|
| Compound Powder of Almonds | 125 grammes |
| Distilled Water sufficient to produce | 1000 millilitres |

Triturate the Powder with a little of the Distilled Water so as to form a thin paste; gradually add the remainder of the Distilled Water; strain through fine muslin.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## MISTURA CRETÆ

### Chalk Mixture

| | |
|---|---|
| Prepared Chalk | 30 grammes |
| Tragacanth, in powder | 5 grammes |
| Refined Sugar | 60 grammes |
| Cinnamon Water sufficient to produce | 1000 millilitres |

Triturate the Prepared Chalk with the Tragacanth and Refined Sugar, and gradually add, with constant trituration, sufficient Cinnamon Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## MISTURA FERRI COMPOSITA

### Compound Mixture of Iron

| | |
|---|---|
| Ferrous Sulphate, in powder | 6 grammes |
| Potassium Carbonate | 8 grammes |
| Myrrh | 15 grammes |
| Gum Acacia, in powder | 15 grammes |
| Glucose | 15 grammes |
| Spirit of Nutmeg | 10 millilitres |
| Rose Water sufficient to produce | 1000 millilitres |

Powder the Myrrh ; add the Potassium Carbonate, Glucose, and Gum Acacia ; triturate the mixture with a small quantity of the Rose Water so as to form a thin paste ; gradually add more Rose Water and the Spirit of Nutmeg ; continue the trituration and further addition of Rose Water until one thousand millilitres of liquid are produced ; add the Ferrous Sulphate and shake until dissolved.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## MISTURA GUAIACI

### Guaiacum Mixture

| | |
|---|---|
| Guaiacum Resin . . . . | 25 grammes |
| Refined Sugar . . . . | 25 grammes |
| Tragacanth, in powder . . | 5 grammes |
| Cinnamon Water sufficient to produce . . . . | 1000 millilitres |

Triturate the Guaiacum Resin with the Refined Sugar and the Tragacanth; add gradually, with constant trituration, sufficient Cinnamon Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 15 to 30 mils. | 1/2 to 1 fluid ounce. |

## MISTURA OLEI RICINI

### Castor Oil Mixture

| | |
|---|---|
| Castor Oil . . . . . | 375 millilitres |
| Gum Acacia, in powder . . | 100 grammes |
| Orange-flower water of commerce, undiluted . . . | 150 millilitres |
| Cinnamon Water sufficient to produce . . . | 1000 millilitres |

Triturate the Castor Oil with the Gum Acacia in a dry mortar; add, in one portion, two hundred millilitres of Cinnamon Water, and continue the trituration until the oil is completely emulsified; then, with constant trituration,

add the orange-flower water and sufficient Cinnamon Water to produce the required volume.

*Dose (as a single draught).*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 60 mils. | 1 to 2 fluid ounces. |

## MISTURA SENNÆ COMPOSITA

### Compound Mixture of Senna

*Synonym*—Black Draught

| | |
|---|---|
| Magnesium Sulphate . . . | 250 grammes |
| Liquid Extract of Liquorice . . | 50 millilitres |
| Compound Tincture of Cardamoms . . . . | 100 millilitres |
| Aromatic Spirit of Ammonia . . | 50 millilitres |
| Infusion of Senna sufficient to produce . . . . . | 1000 millilitres |

Dissolve the Magnesium Sulphate in five hundred millilitres of the Infusion of Senna; add the mixed Liquid Extract of Liquorice, Compound Tincture of Cardamoms, and Aromatic Spirit of Ammonia, and sufficient Infusion of Senna to produce the required volume.

*Dose (as a single draught).*

| *Metric.* | *Imperial.* |
|---|---|
| 30 to 60 mils. | 1 to 2 fluid ounces. |

## MORPHINÆ ACETAS

### Morphine Acetate

Morphine Acetate, $C_{17}H_{19}NO_3,C_2H_4O_2,3H_2O$, is the acetate of an alkaloid, morphine, obtained from opium.

*Characters and Tests.*—A white, crystalline or amorphous powder. Taste bitter. Almost entirely soluble in 2·5 parts of *water*. Loses acetic acid when exposed to the air. Yields

the reactions for morphine described under 'Morphinæ Hydrochloridum,' and the *reactions* characteristic of acetates. 2 grammes form with 5 millilitres of warm *morphinated water* a slightly turbid solution which is rendered clear by the addition of 0·1 millilitre of *acetic acid*, and this solution, when mixed with a slight excess of *solution of ammonia*, yields a white precipitate which, after washing and drying as described under 'Morphinæ Hydrochloridum,' weighs from 1·41 to 1·44 grammes. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 30 milligrams. | 1/8 to 1/2 grain. |

## MORPHINÆ HYDROCHLORIDUM

### Morphine Hydrochloride

Morphine Hydrochloride, $C_{17}H_{19}NO_3,HCl,3H_2O$, is the hydrochloride of an alkaloid, morphine, obtained from opium.

*Characters and Tests.*—Acicular crystals, or a white microcrystalline powder. Taste bitter. Soluble in 25 parts of *water*. 1 drop of *solution of ammonia* added to 5 millilitres of an aqueous solution (1 in 30) produces a white crystalline precipitate easily soluble in *solution of sodium hydroxide*, but soluble with difficulty in excess of *solution of ammonia*; this precipitate yields mere traces to *benzene* (absence of certain other alkaloids). Yields, when moistened with *nitric acid*, an orange-red colour; with *T. Sol. of ferric chloride*, a dull greenish-blue. A trace added to 5 millilitres of a very dilute solution of *potassium ferricyanide* to which 1 drop of *T. Sol. of ferric chloride* has been added produces a deep blue colour. 0·1 gramme dissolves in 2 millilitres of *sulphuric acid* without coloration, or with the production of not more than a faint pink colour; if a portion of this solution is heated on a water-bath for fifteen minutes,

cooled, and treated with a few drops of *diluted nitric acid*, a violet coloration, rapidly changing to blood-red, is produced; the addition of *sodium arsenate* to another portion of the original solution produces a bluish-green colour. 1 drop of *solution of potassium carbonate* added to 5 millilitres of an aqueous solution (1 in 30) yields a pure white precipitate which does not become coloured on exposure to the air, and does not colour *chloroform* when shaken with it (distinction from and absence of apomorphine). When 0·5 millilitre of an aqueous solution (1 in 100) is mixed on a white porcelain tile with 0·5 millilitre of *mucilage of starch* in which 0·005 gramme of *iodic acid* has been dissolved, a blue coloration is immediately produced (distinction from morphine esters). Yields the *reactions* characteristic of chlorides. 2 grammes dissolved in 50 millilitres of warm *morphinated water* give, on the addition of a slight excess of *solution of ammonia*, a white, crystalline precipitate which, when washed with a little cold *morphinated water* and dried, first at 55° to 60° and finally for fifteen minutes at 115°, weighs from 1·50 to 1·52 grammes. Loses about 14 per cent. of its weight when dried at 100°. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 30 milligrams. | 1/8 to 1/2 grain. |

## MORPHINÆ TARTRAS

### Morphine Tartrate

Morphine Tartrate, $(C_{17}H_{19}NO_3)_2,C_4H_6O_6,3H_2O$, is the tartrate of an alkaloid, morphine, obtained from opium.

*Characters and Tests.*—Minute acicular crystals, efflorescent at 20°. Taste bitter. Soluble in 11 parts of *water*, forming a clear solution neutral to *litmus*. Yields the reactions for morphine described under 'Morphinæ Hydro-

chloridum,' and the *reactions* characteristic of tartrates. 2 grammes dissolved in 20 millilitres of warm *morphinated water* give, on the addition of a slight excess of *solution of ammonia*, a precipitate which, after washing and drying as described under 'Morphinæ Hydrochloridum,' weighs from 1·46 to 1·49 grammes. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 30 milligrams. | 1/8 to 1/2 grain. |

## MUCILAGO ACACIÆ

### Mucilage of Gum Acacia

| | |
|---|---|
| Gum Acacia . . . . | 100 grammes |
| Distilled Water . . . . | 150 millilitres |

Rapidly rinse the Gum Acacia with a little *water*; then dissolve it in the Distilled Water in a closed vessel and strain. The Mucilage should be recently prepared.

In India and the Eastern Divisions of the Empire, Mucilage of Indian Gum may be employed in making the official preparations for which Mucilage of Gum Acacia is directed to be used (see 'Gummi Indicum').

## MUCILAGO GUMMI INDICI

### Mucilage of Indian Gum

| | |
|---|---|
| Indian Gum . . . . | 50 grammes |
| Distilled Water . . . . | 150 millilitres |

Rapidly rinse the Indian Gum with a little *water*; then dissolve it in the Distilled Water in a closed vessel and strain. The Mucilage should be recently prepared.

In India and the Eastern Divisions of the Empire, Mucilage of Indian Gum may be employed in making the official preparations for which Mucilage of Gum Acacia is directed to be used (see 'Gummi Indicum').

## MUCILAGO TRAGACANTHÆ

### Mucilage of Tragacanth

| | |
|---|---|
| Tragacanth, in powder . . | 1·25 grammes |
| Alcohol (90 per cent.) . . | 2·50 millilitres |
| Distilled Water sufficient to produce . . . . | 100·00 millilitres |

Mix the Tragacanth with the Alcohol; add the Distilled Water as quickly as possible, and shake vigorously.

## MYRISTICA

### Nutmeg

Nutmeg is the dried kernel of the seed of Myristica fragrans, *Houtt.*

*Characters.*—Broadly oval or rounded, rarely more than twenty-five millimetres long; greyish-brown externally, marked with reticulated furrows, and minute black points and lines; internally greyish-red with darker brownish-red veins. Transverse section marbled. Strong aromatic odour; taste aromatic, warm and somewhat bitter.

## MYROBALANUM

### Myrobalans

Myrobalans are the dried immature fruits of Terminalia Chebula, *Retz.*, usually distinguished in commerce as Chebulic myrobalans.

*Characters.*—Irregularly ovoid or fusiform, from ten to thirty millimetres or more long and from five to fifteen millimetres wide; strongly shrivelled longitudinally, dark brown or nearly black; in transverse section dark,

with a small central cavity; hard. No odour; taste very astringent.

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 grammes. | 30 to 60 grains. |

## MYRRHA

### Myrrh

Myrrh is an oleo-gum-resin obtained from the stem of Commiphora Myrrha, *Holmes*, and probably other species.

*Characters and Tests.*—In rounded or irregular tears, or masses of agglutinated tears, varying much in size; reddish-brown or reddish-yellow externally, dry, and more or less covered by a fine powder; brittle, the fractured surface irregular, somewhat translucent, of a rich brown colour, oily, and frequently exhibiting whitish marks. Aromatic odour; taste aromatic, bitter, and acrid. Not more than 70 per cent. insoluble in *alcohol* (90 per cent.). The solution obtained by boiling 0·1 gramme of coarsely powdered Myrrh with 2 millilitres of *alcohol* (90 per cent.), evaporated in a porcelain dish so as to leave a thin film, yields a residue which assumes a violet colour in contact with *nitric acid* diluted with an equal volume of *water*. Ash not more than 5 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## NAPHTHOL

### Beta-naphthol

Beta-naphthol, or beta-mono-hydroxy-naphthalene, $C_{10}H_7OH$, may be obtained from naphthalene-sulphonic acid.

## MUCILAGO TRAGACANTHÆ

### Mucilage of Tragacanth

| | |
|---|---|
| Tragacanth, in powder . . | 1·25 grammes |
| Alcohol (90 per cent.) . . | 2·50 millilitres |
| Distilled Water sufficient to produce . . . . | 100·00 millilitres |

Mix the Tragacanth with the Alcohol; add the Distilled Water as quickly as possible, and shake vigorously.

## MYRISTICA

### Nutmeg

Nutmeg is the dried kernel of the seed of Myristica fragrans, *Houtt.*

*Characters.*—Broadly oval or rounded, rarely more than twenty-five millimetres long; greyish-brown externally, marked with reticulated furrows, and minute black points and lines; internally greyish-red with darker brownish-red veins. Transverse section marbled. Strong aromatic odour; taste aromatic, warm and somewhat bitter.

## MYROBALANUM

### Myrobalans

Myrobalans are the dried immature fruits of Terminalia Chebula, *Retz.*, usually distinguished in commerce as Chebulic myrobalans.

*Characters.*—Irregularly ovoid or fusiform, from ten to thirty millimetres or more long and from five to fifteen millimetres wide; strongly shrivelled longitudinally, dark brown or nearly black; in transverse section dark,

with a small central cavity; hard. No odour; taste very astringent.

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 grammes. | 30 to 60 grains. |

## MYRRHA

### Myrrh

Myrrh is an oleo-gum-resin obtained from the stem of Commiphora Myrrha, *Holmes*, and probably other species.

*Characters and Tests.*—In rounded or irregular tears, or masses of agglutinated tears, varying much in size; reddish-brown or reddish-yellow externally, dry, and more or less covered by a fine powder; brittle, the fractured surface irregular, somewhat translucent, of a rich brown colour, oily, and frequently exhibiting whitish marks. Aromatic odour; taste aromatic, bitter, and acrid. Not more than 70 per cent. insoluble in *alcohol* (90 per cent.). The solution obtained by boiling 0·1 gramme of coarsely powdered Myrrh with 2 millilitres of *alcohol* (90 per cent.), evaporated in a porcelain dish so as to leave a thin film, yields a residue which assumes a violet colour in contact with *nitric acid* diluted with an equal volume of *water*. Ash not more than 5 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## NAPHTHOL

### Beta-naphthol

Beta-naphthol, or beta-mono-hydroxy-naphthalene, $C_{10}H_7OH$, may be obtained from naphthalene-sulphonic acid.

*Characters and Tests.*—White, or nearly white, crystalline lamellæ, or in powder. Odour resembling that of phenol; taste sharp, pungent. Soluble in about 1000 parts of *water*, and in 75 parts of boiling *water*, the solutions being neutral to *litmus*; soluble in less than 2 parts of *alcohol* (90 per cent.); very soluble in *ether*, in *chloroform*, and in *solution of sodium hydroxide*. Melting point 122°. A hot saturated aqueous solution develops a blue fluorescence on the addition of 1 drop of *solution of ammonia*. A cold saturated aqueous solution yields a white turbidity with *solution of chlorine*, which, on the addition of excess of *solution of ammonia*, gives place to a green or brown coloration. 0·1 gramme dissolved in 10 millilitres of boiling *water* yields with 10 drops of an aqueous solution (1 in 30) of *ferric chloride* a white precipitate becoming brown, but not violet (absence of alpha-naphthol). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigrams. | 3 to 10 grains. |

## NUX VOMICA

### Nux Vomica

Nux Vomica consists of the dried ripe seeds of Strychnos Nux-vomica, *Linn.*

*Characters and Test.*—Seeds disc-shaped, nearly flat, but sometimes irregularly bent; rounded or somewhat acute at the margin, from a small prominence on which a raised line passes to the central hilum. Ash-grey or greenish-grey. From two to two and a half centimetres in diameter, and about six millimetres thick. Surface densely covered with short, satiny, radiately arranged and closely appressed hairs. Endosperm large and horny; cotyledon

small and leafy. Powdered Nux Vomica exhibits fragments of the endosperm, the cell-walls of which are very thick but not lignified, also slender rod-like fragments of the hairs and their thickened, pitted, lignified basal portions. No odour; taste extremely bitter. Yields not less than 1·25 per cent. of strychnine when tested by the following process :—

Shake 7·5 grammes of Nux Vomica in No. 60 powder frequently during half an hour with a mixture of 25 millilitres of *chloroform*, 50 millilitres of *ether*, and 5 millilitres of *solution of ammonia*. Transfer 50 millilitres of the clear ethereal liquid to a separator, and extract the alkaloids by shaking with three successive portions, each of 10 millilitres, of *N/1 solution of sulphuric acid*, transferring the acid solutions to a second separator. Make the acid solutions alkaline with *solution of ammonia*, and again extract the alkaloids by shaking successively with 10, 5, and 5 millilitres of *chloroform*, drawing off the chloroformic solutions into a small flask. Recover the chloroform by distillation, dissolve the residue in a mixture of 5 millilitres of *diluted sulphuric acid* and 10 millilitres of water, heat the solution to 50°, add 3 millilitres of a mixture of equal volumes of *nitric acid* and *water*, and set aside for ten minutes. Transfer the solution to a separator, rinsing the flask with a little *water*, make alkaline with *solution of sodium hydroxide*, and extract the alkaloid by shaking successively with 10, 5, and 5 millilitres of *chloroform*. Wash the mixed chloroformic solutions in a separator with 5 millilitres of *water*, transfer to a tared dish and allow the chloroform to evaporate, adding towards the end 5 millilitres of *alcohol* (90 per cent.). Evaporate to dryness, dry the residue at 100°, and weigh. This weight, multiplied by 20, is the weight of strychnine in 100 grammes of the powdered Nux Vomica.

Powdered Nux Vomica, when used for official purposes other than the production of standardised preparations, must be adjusted, if necessary, by the addition of powdered Milk Sugar to contain in 100 grammes 1·25

grammes of strychnine when tested by the foregoing process. *Limit of error* 0·05 gramme in excess or defect.

*Dose* (*in powder*).

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 25 centigrams. | 1 to 4 grains. |

## OLEUM ABIETIS

### Oil of Siberian Fir

*Synonym*—Oil of Pine

Oil of Siberian Fir is the oil distilled from the fresh leaves of Abies sibirica, *Ledeb.*

*Characters and Tests.*—Colourless or nearly so. Aromatic odour; taste pungent. Specific gravity 0·900 to 0·920; *optical rotation* — 32° to — 42°; *refractive index* at 25° about 1·474. Contains from 30 to 40 per cent. of *esters*, calculated as bornyl acetate, $C_{10}H_{17}C_2H_3O_2$.

## OLEUM AJOWAN

### Ajowan Oil

*Synonym*—Ptychotis Oil

Ajowan Oil is the oil distilled from the fruit of Carum copticum, *Benth. and Hook. f.*

*Characters and Tests.*—Colourless, with an odour and taste resembling thyme. Specific gravity 0·910 to 0·930. *Optical rotation* +1° to +2°. When 10 millilitres with 100 millilitres of *solution of potassium hydroxide* in a flask with a narrow graduated neck are heated on a water-bath, well shaken, and allowed to stand, the uncombined oil, cooled to 15·5°, measures not more than 6 millilitres (presence of not less than 40 per cent. of thymol).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM AMYGDALÆ

### Almond Oil

Almond Oil is the oil expressed from the Bitter or Sweet Almond.

*Characters and Tests.*—Pale yellow. Nearly inodorous; taste bland and nutty. Specific gravity 0·915 to 0·920. *Saponification value* 188 to 196; *iodine value* 93 to 100; *acid value* not more than 6·0; *refractive index* at 40° 1·4624 to 1·4640. Remains clear after exposure for three hours to a temperature of −10°, and does not congeal till the temperature has been reduced to about −18°. When 1 millilitre of a freshly prepared mixture of equal parts by weight of *sulphuric acid*, *fuming nitric acid*, and *water*, kept cool while cautiously mixed, is vigorously shaken with 5 millilitres of the Oil for one minute, a whitish mixture with not more than the very slightest tinge of red or brown is produced; after some hours a white solid, sometimes tinged with green, separates, the lower acid layer remaining colourless (absence of peach oil and apricot oil).

## OLEUM ANETHI

### Oil of Dill

Oil of Dill is the oil distilled from Dill Fruit.

*Characters and Tests.*—Colourless or pale yellow, darkening on keeping. Odour that of Dill Fruit; taste at first sweet and aromatic, but subsequently pungent. Specific gravity 0·900 to 0·915; *optical rotation* +70° to +80°; *refractive index* at 25° 1·483 to 1·488. Soluble in 3 parts of *alcohol* (90 per cent.).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM ANISI

### Oil of Anise

Oil of Anise is the oil distilled from Anise Fruit; or from the fruit of the star-anise, Illicium verum, *Hook. f.*

*Characters and Tests.*—Colourless or pale yellow. Odour that of Anise Fruit; taste sweet and aromatic. Specific gravity at 20° (compared with *water* at 15·5°) 0·975 to 0·990; *optical rotation* −2° to +1°; *refractive index* at 25° 1·552 to 1·558. Congeals, when stirred, at about 15·5°, and does not again liquefy below 17°. Not less than 80 per cent. distils between 225° and 235°. Soluble in 3 parts of *alcohol* (90 per cent.).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM ANTHEMIDIS

### Oil of Chamomile

Oil of Chamomile is the oil distilled from Chamomile Flowers.

*Characters and Tests.*—Blue when freshly distilled, but gradually becoming greenish or brownish-yellow under the influence of air and light. Odour that of Chamomile Flowers; taste aromatic, characteristic. Specific gravity 0·905 to 0·915. *Optical rotation* −1° to +3°; *refractive index* at 25° about 1·445. Soluble in less than 1 part of *alcohol* (90 per cent.)

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

# OLEUM ARACHIS

## Arachis Oil

*Synonyms*—Earth-nut Oil: Ground-nut Oil: Pea-nut Oil

Arachis Oil is the oil expressed from the seeds of Arachis hypogæa, *Linn.*

*Characters and Tests.*—Pale yellow or greenish-yellow. Faint, nut-like odour; taste bland, nutty. Specific gravity 0·916 to 0·921; *saponification value* 190 to 196; *iodine value* 83 to 101; *acid value* not more than 6; *refractive index* at 40° 1·4628 to 1·4645. When 1 millilitre of the Oil and 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* are boiled for twenty minutes in a flask provided with a reflux condenser, set aside for twenty-four hours at a temperature not exceeding 15·5°, and afterwards heated on a water-bath for three minutes, the solution deposits crystals on standing. When a mixture of 2 millilitres of the Oil and 1 millilitre of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute, and allowed to stand for five minutes, the acid layer does not become pink (absence of sesame oil). When 2 millilitres of the Oil are mixed with 1 millilitre of *amylic alcohol* and 1 millilitre of a solution (1 in 100) of *precipitated sulphur* in *carbon disulphide*, and the mixture heated in a test-tube immersed in boiling *water*, no red colour is developed within fifteen minutes (absence of cotton seed oil).

In India, and in the Eastern, African, and Australasian Divisions of the Empire, Arachis Oil may be employed in making the official Liniments, Ointments, Plasters, and Soaps for which Olive Oil is directed to be used.

## OLEUM CADINUM

### Oil of Cade

*Synonym*—Juniper Tar Oil

Oil of Cade is an empyreumatic oily liquid obtained by the destructive distillation of the woody portions of Juniperus Oxycedrus, *Linn.*

*Characters and Tests.*—A dark reddish-brown or nearly black, oily liquid. Empyreumatic odour; taste aromatic, bitter and acrid. Specific gravity about 0·990. Soluble in *ether*, and in *chloroform*; partially soluble in cold, almost wholly soluble in hot *alcohol* (90 per cent.); very slightly soluble in *water*, the filtered aqueous solution being almost colourless and acid to *litmus*. Yields no reaction for pine tar when tested as follows:—

Shake 1 millilitre of the Oil vigorously with 15 millilitres of *petroleum spirit*, and filter; to 10 millilitres of the filtrate add 10 millilitres of *solution of copper acetate*, shake vigorously, and set aside until separation into two layers is complete; 5 millilitres of the upper layer, when mixed with 10 millilitres of *ether*, become pale brownish-yellow, but not green (absence of pine tar).

## OLEUM CAJUPUTI

### Oil of Cajuput

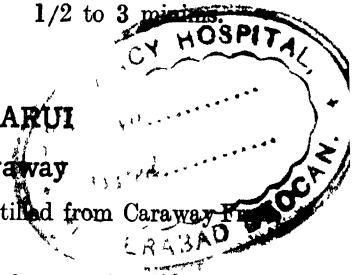
Oil of Cajuput is the oil distilled from the leaves of Melaleuca Leucadendron, *Linn.*, and other species of Melaleuca.

*Characters and Tests.*—Green or bluish-green. Agreeable, camphoraceous odour; taste aromatic, bitter and camphoraceous. Specific gravity 0·919 to 0·930; *optical rotation* not more than −4°; *refractive index* at 25° 1·460 to 1·467. When 10 millilitres of the Oil are mixed with 4 to 5 millilitres of *syrupy phosphoric acid* in a vessel sur-

rounded by a freezing mixture, and then pressed strongly in a piece of fine calico between folds of blotting-paper, the pressed cake, decomposed by warm *water* in a graduated vessel, yields an oily layer, which, on cooling to 15·5°, measures not less than 4·5 millilitres (presence of not less than 45 per cent. of cineol).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |



## OLEUM CARUI

### Oil of Caraway

Oil of Caraway is the oil distilled from Caraway Fruit and rectified.

*Characters and Tests.*—Colourless or pale yellow. Odour and taste those of Caraway Fruit. Specific gravity 0·910 to 0·920; *optical rotation* +75° to + 82°; *refractive index* at 25° 1·485 to 1·497. Soluble in 1 part of *alcohol* (90 per cent.), and in 10 parts of a mixture of equal volumes of *alcohol* (90 per cent.) and *alcohol* (70 per cent.). When fractionally distilled from a distillation flask at the rate of one drop per second, not less than 50 per cent. distils at a temperature above 200°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM CARYOPHYLLI

### Oil of Cloves

Oil of Cloves is the oil distilled from Cloves.

*Characters and Tests.*—Colourless or pale yellow when fresh, darkening with age and on exposure to air. Odour

and taste those of Cloves. Specific gravity 1·047 to 1·065; *refractive index* at 25° 1·528 to 1·540. Soluble in 3 parts of *alcohol* (70 per cent.), the solution yielding a blue colour with *T. Sol. of ferric chloride.* When 10 millilitres of the Oil are well shaken with 100 millilitres of *solution of potassium hydroxide,* heated on a water-bath in a flask with a narrow graduated neck, and then allowed to stand, the uncombined oil, cooled to 15·5°, measures not more than 1·5 millilitres (presence of not less than 85 per cent. of eugenol).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM CHAULMOOGRÆ

### Chaulmoogra Oil

*Synonym*—Gynocardia Oil

Chaulmoogra Oil is the fatty oil expressed from the seeds of Taraktogenos Kurzii, *King.*

*Characters and Tests.*—A brownish-yellow oil or soft fat. Characteristic odour; taste somewhat acrid. Melting point about 22° to 30°. Specific gravity at 45° about 0·940; *saponification value* 198 to 213; *iodine value* 96 to 104; *acid value* 21 to 27. Soluble in *ether,* in *chloroform,* and in *carbon disulphide*; partially soluble in cold *alcohol* (90 per cent.); almost entirely soluble in hot *alcohol* (90 per cent.).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decimils, gradually increased to 2 to 4 mils. | 5 to 10 minims, gradually increased to 1/2 to 1 fluid drachm |

## OLEUM CINNAMOMI
### Oil of Cinnamon

Oil of Cinnamon is the oil distilled from Cinnamon Bark.

*Characters and Tests.*—Yellow when freshly distilled, gradually becoming reddish. Odour and taste those of Cinnamon Bark. Specific gravity 1·000 to 1·030; *optical rotation* −0·5° to −1°; *refractive index* at 25° 1·565 to 1·580. Soluble in from 3 to 4 parts of *alcohol* (70 per cent.). 1 drop dissolved in 5 millilitres of *alcohol* (90 per cent.) assumes a pale green, but not a blue or brown coloration, on the addition of 1 drop of *T. Sol. of ferric chloride* (absence of cinnamon leaf oil and cassia oil). Contains from 55 to 65 per cent. of cinnamic aldehyde as determined by the following test:—

To 10 millilitres of the Oil add 70 millilitres of an aqueous solution (1 in 5) of *sodium sulphite* and sufficient *solution of phenolphthalein* to give a well marked pink coloration. Heat the mixture on a water-bath, shake well, and neutralise with *acetic acid* diluted with twice its volume of *water*; repeat the heating and neutralisation until no further pink coloration is developed, the time occupied being from thirty to forty-five minutes. The oily layer which separates on standing, cooled to 15·5°, measures not more than 4·5 or less than 3·5 millilitres (presence of 55 to 65 per cent. of cinnamic aldehyde).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM COPAIBÆ
### Oil of Copaiba

Oil of Copaiba is the oil distilled from Copaiba.

*Characters and Tests.*—Colourless or pale yellow. Odour

and taste those of Copaiba. Specific gravity 0·896 to 0·910; *optical rotation* −7° to −35°; *refractive index* at 25° 1·494 to 1·500. Distils between 250° and 275°. A solution of 1 millilitre of the Oil in 5 millilitres of *glacial acetic acid* does not develop more than a faint violet coloration on the addition of 4 drops of *nitric acid* (absence of gurjun oil). When distilled in a vacuum the first 10 per cent. of the distillate has an *optical rotation* lower than that of the original Oil (absence of oil of African copaiba).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## OLEUM CORIANDRI

### Oil of Coriander

Oil of Coriander is the oil distilled from Coriander Fruit.

*Characters and Tests.*—Colourless or pale yellow. Odour and taste those of Coriander Fruit. Specific gravity 0·870 to 0·885; *optical rotation* +8° to +14°; *refractive index* at 25° 1·463 to 1·467. Soluble in 3 parts of *alcohol* (70 per cent.)

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM CROTONIS

### Croton Oil

Croton Oil is the oil expressed from the seeds of Croton Tiglium, *Linn.*

*Characters and Tests.* — Brownish-yellow to dark

reddish-brown; viscid, slightly fluorescent. Disagreeable odour; when cautiously tasted, acrid. Blisters the skin and mucous membrane. Specific gravity 0·940 to 0·960; *saponification value* 210 to 215; *iodine value* 102 to 106. Freely soluble in *ether* and in *chloroform*. Miscible with half its volume of *absolute alcohol*. Thickens slightly but does not solidify, either completely or partially, when vigorous ly shaken with half its volume of *fuming nitric acid* and the same proportion of *water* (absence of other non-drying oils).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 centimils. | 1/2 to 1 minim. |

## OLEUM CUBEBÆ

### Oil of Cubebs

Oil of Cubebs is the oil distilled from Cubebs.

*Characters and Tests.*—Colourless, pale green, or greenish-yellow. Odour and taste those of Cubebs. Specific gravity 0·910 to 0·930; *optical rotation* −25° to −40°; *refractive index* at 25° 1·486 to 1·500. Not less than 60 per cent. distils between 250° and 280°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## OLEUM EUCALYPTI

### Oil of Eucalyptus

Oil of Eucalyptus is the oil distilled from the fresh leaves of Eucalyptus Globulus, *Labill.*, Eucalyptus dumosa, *A. Cunn.*, and other species of Eucalyptus, and rectified.

*Characters and Tests.*—Colourless or pale yellow.

Aromatic, camphoraceous odour; taste pungent, leaving a sensation of cold. Specific gravity 0·910 to 0·930; *optical rotation* −10° to +10°. Soluble in 5 parts of *alcohol* (70 per cent.). Contains not less than 55 per cent. by volume of cineol as determined by the process described under 'Oleum Cajuputi.' When 1 millilitre is mixed with 2 millilitres of *glacial acetic acid* and 5 millilitres of *petroleum spirit*, 2 millilitres of a saturated aqueous solution of *sodium nitrite* being added, and the mixture gently shaken, no crystalline precipitate forms in the upper layer (absence of oils containing much phellandrene).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM GAULTHERIÆ

### Oil of Gaultheria

*Synonym*—Oil of Wintergreen

Oil of Gaultheria is the oil distilled from the leaves of Gaultheria procumbens, *Linn.*, or from the bark of Betula lenta, *Linn.*

*Characters and Tests.*—Colourless or nearly colourless. Strong, characteristic odour; taste pungent. Specific gravity 1·180 to 1·187; *optical rotation* at 25° 0° to −1°; *refractive index* 1·537 to 1·539. Soluble in 6 parts of *alcohol* (70 per cent.) at 25°. Contains not less than 99 per cent. of *esters*, calculated as methyl salicylate, $C_8H_8O_3$

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## OLEUM GRAMINIS CITRATI

### Oil of Lemon Grass

Oil of Lemon Grass is the oil distilled from Cymbopogon citratus, *Stapf*, and Cymbopogon flexuosus, *Stapf*.

*Characters and Tests.*—Dark yellow. Odour resembling that of verbena. Specific gravity 0·880 to 0·905; *optical rotation* −3° to +3°. Contains not less than 70 per cent. of aldehydes as determined by the process described under 'Oleum Cinnamomi.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM JUNIPERI

### Oil of Juniper

Oil of Juniper is the oil distilled from the ripe fruit of Juniperus communis, *Linn.*, and rectified.

*Characters and Tests.*—Colourless or pale yellowish-green. Odour that of the fruit; taste warm, aromatic and bitter. Specific gravity 0·862 to 0·890, increasing with age; *optical rotation* −3° to −15°; *refractive index* at 25° 1·472 to 1·488. Soluble, when freshly distilled, in 4 parts of a mixture of equal volumes of *alcohol* (90 per cent.) and *absolute alcohol*, becoming less soluble with age.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM LAVANDULÆ

### Oil of Lavender

Oil of Lavender is the oil distilled from the flowers of Lavandula vera, *DC.*

*Characters and Tests.*—Pale yellow or yellowish-green. Odour that of the flowers; taste pungent, slightly bitter. Specific gravity 0·883 to 0·900; *optical rotation* −3° to −10°. Soluble in 4 parts of *alcohol* (70 per cent.). Contains from 7 to 11 per cent. of *esters* (English oil), or not less than 30 per cent. of *esters* (foreign oil), calculated as linalyl acetate, $C_{10}H_{17}C_2H_3O_2$.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM LIMONIS

### Oil of Lemon

Oil of Lemon is the oil obtained from Lemon Peel by various methods of expression.

*Characters and Tests.*—Pale yellow. Volatile; odour that of lemons; taste warm, afterwards slightly bitter. Specific gravity 0·857 to 0·860; *optical rotation* + 58° to + 64°; *refractive index* at 25° 1·473 to 1·476. Contains not less than 4 per cent. by weight of aldehydes, calculated as citral, $C_{10}H_{16}O$, as determined by the following process:—

To 20 grammes of the Oil contained in a flask add 20 millilitres of *N/2 solution of hydroxylamine hydrochloride*, 8 millilitres of *N/1 alcoholic solution of potassium hydroxide* and 20 millilitres of *alcohol* (90 per cent.). Attach a reflux condenser, boil for thirty minutes, cool, and dilute with 250

millilitres of *water*, rinsing the condensing tube into the flask with part of this quantity. Neutralise the solution thus obtained with *N/1 alcoholic solution of potassium hydroxide*, *solution of phenolphthalein* being used as indicator, and then titrate with *N/2 solution of sulphuric acid*, *solution of methyl orange* being used as indicator. Repeat the experiment, omitting the Oil of Lemon. The quantity of *N/2 solution of sulphuric acid* required in the second experiment exceeds that required in the first experiment by not less than 10·5 millilitres (presence of not less than 4 per cent. of aldehydes, calculated as citral, $C_{10}H_{16}O$).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM LINI

### Linseed Oil

Linseed Oil is the oil expressed from Linseed.

*Characters and Tests.*—Yellowish-brown. Characteristic odour; taste bland. Specific gravity 0·930 to 0·940; *saponification value* 187 to 195; *iodine value* not less than 170; *acid value* not more than 3·0; *unsaponifiable matter* not more than 1·0 per cent.; *refractive index* at 40° 1·4725 to 1·4748. Does not congeal at temperatures higher than −20°. Gradually thickens on exposure to the air, forming, when spread in thin layers, a hard transparent varnish. A mixture of 2 millilitres of the Oil with an equal volume of *acetic anhydride*, warmed and shaken, and then cooled to 15·5°, is not coloured violet by the addition of 2 drops of a cooled mixture of 2 parts by weight of *sulphuric acid* and 1 part by weight of *water* (absence of resin and resin oils).

## OLEUM MENTHÆ PIPERITÆ

### Oil of Peppermint

Oil of Peppermint is the oil distilled from fresh flowering peppermint, Mentha piperita, *Sm.*, and rectified, if necessary.

*Characters and Tests.*—Colourless, pale yellow, or greenish-yellow. Odour that of peppermint herb; taste pungent and aromatic, followed by a sensation of cold. Specific gravity 0·900 to 0·920; *optical rotation* — 20° to —35°. Soluble in 4 parts of *alcohol* (70 per cent.). Contains not less than 50 per cent. of total *alcohols*, free and combined, calculated as menthol, $C_{10}H_{20}O$, and not less than 5 per cent. of *esters*, calculated as menthyl acetate, $C_{10}H_{19}C_2H_3O_2$.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM MENTHÆ VIRIDIS

### Oil of Spearmint

Oil of Spearmint is the oil distilled from fresh flowering spearmint, Mentha viridis, *Linn.*, or Mentha crispa, *Roth.*

*Characters and Tests.*—Colourless, pale yellow, or greenish-yellow, becoming darker on keeping. Odour and taste those of spearmint herb. Specific gravity 0·925 to 0·940; *optical rotation* —30° to —50°. Soluble in 3 parts of *alcohol* (90 per cent.). Forms a clear solution with 1 part of a mixture of equal volumes of *alcohol* (90 per cent.) and *alcohol* (70 per cent.), the solution becoming turbid on further dilution.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM MORRHUÆ

### Cod-liver Oil

Cod-liver Oil is the oil expressed from the fresh liver of the cod, Gadus morrhua, *Linn.*, at a temperature not exceeding 85°, and from which solid fat has been separated by filtration at about — 5°.

*Characters and Tests.*—Pale yellow. Slight, fishlike, but not rancid odour; taste bland, fishlike. Specific gravity 0·920 to 0·930; *saponification value* 179 to 192; *iodine value* 155 to 173; *acid value* not more than 2·5; *refractive index* at 40° 1·4704 to 1·4745; *unsaponifiable matter* not more than 1·5 per cent. When exposed for three hours to a temperature of 0°, no solid fat separates.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 16 mils. | 1 to 4 fluid drachms. |

## OLEUM MYRISTICÆ

### Oil of Nutmeg

Oil of Nutmeg is the oil distilled from Nutmeg, and rectified.

*Characters and Tests.*—Colourless or pale yellow. Odour and taste those of Nutmeg. Specific gravity 0·870 to 0·925; *optical rotation* + 13° to + 30°; *refractive index* at 25° 1·474 to 1·484. Soluble in 3 parts of *alcohol* (90 per cent.). Leaves not more than 5 per cent. of residue when evaporated on a water-bath.

[*For dose see over,*

OLEUM MYRISTICÆ (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 centimils. | 1/2 to 3 minims. |

## OLEUM OLIVÆ

### Olive Oil

Olive Oil is the oil expressed from the ripe fruit of Olea europæa, *Linn.*, and refined.

*Characters and Tests.*—Pale yellow or greenish-yellow. Faint but not rancid odour; taste bland. Frequently assumes a pasty consistence when maintained for some time at a temperature of 10°, and at a lower temperature may become a soft granular mass. Specific gravity 0·915 to 0·918; *saponification value* 188 to 197; *iodine value* 79 to 87; *acid value* not more than 6·0; *refractive index* at 40° 1·4605 to 1·4635. A mixture of 2 millilitres of the Oil with 1 millilitre of *amylic alcohol* and 1 millilitre of a solution (1 in 100) of *precipitated sulphur* in *carbon disulphide*, placed in a test-tube immersed in boiling *water*, does not assume a red colour within thirty minutes (absence of cotton seed oil). When a mixture of 2 millilitres of the Oil and 1 millilitre of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute, and allowed to stand for five minutes, the acid layer does not become pink (absence of sesame oil). When 1 millilitre of the Oil and 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* are boiled for twenty minutes in a flask provided with a reflux condenser, set aside for twenty-four hours at a temperature not exceeding 15·5°, and afterwards heated on a water-bath for three minutes, the solution does not deposit crystals on standing for twenty-four hours further (absence of arachis oil).

See note 'Oleum Arachis,' page 259, and note 'Oleum Sesami,' page 275.

## OLEUM PHOSPHORATUM

### Phosphorated Oil

Phosphorated Oil contains 1 per cent. by weight of Phosphorus. It should be freshly prepared.

| | |
|---|---|
| Phosphorus . . . . . | 1 gramme |
| Almond Oil, previously heated to 150°, cooled and filtered . . | 98 grammes |
| Oil of Lemon . . . . . | 1 gramme |

Add the Phosphorus to the Almond Oil contained in a stoppered bottle capable of holding rather more than the required quantity; warm to about 80°, and shake until the Phosphorus is entirely dissolved; cool, and add the Oil of Lemon.

*Characters.*—A clear, pale-yellow liquid, phosphorescent in the dark.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centimils. | 1 to 5 minims. |

## OLEUM RICINI

### Castor Oil

Castor Oil is the oil expressed from the seeds of Ricinus communis, *Linn.*

*Characters and Tests.*—Nearly colourless, or with a yellowish tinge, viscid. Liable to solidify at low temperatures. Slight odour; taste at first bland, but afterwards acrid and unpleasant. Specific gravity 0·958 to 0·970; *saponification value* 177 to 187; *iodine value* 83 to 90; *acid value* not more than 4·0; *refractive index* at 40° 1·4695 to 1·4730. Soluble in all proportions of *absolute*

*alcohol*, and in 3·5 parts of *alcohol* (90 per cent.). 10 millilitres shaken with 7 millilitres of *petroleum spirit* in a stoppered glass cylinder form a clear mixture at 15·5°; on shaking with a further addition of 3 millilitres of *petroleum spirit* a turbid mixture is formed, which becomes clear when maintained for five minutes at 21°, but again becomes turbid when the temperature falls below 18° (absence of other fixed oils).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 30 mils. | 1 to 8 fluid drachms. |

## OLEUM ROSÆ

### Oil of Rose

*Synonym*—Otto of Rose

Oil of Rose is the oil distilled from the fresh flowers of Rosa damascena, *Linn.*

*Characters and Tests.*—A pale yellow or yellowish-green crystalline mass, semi-solid at ordinary temperatures. Strong, fragrant, rose-like odour; taste sweetish. Specific gravity at 30° (compared with *water* at 15·5°) 0·854 to 0·862; *optical rotation* — 2° to — 4°; *refractive index* at 25° 1·456 to 1·465; melting point 20° to 23°.

## OLEUM ROSMARINI

### Oil of Rosemary

Oil of Rosemary is the oil distilled from the flowering tops of Rosmarinus officinalis, *Linn.*

*Characters and Tests.*—Colourless or pale yellow. Odour that of rosemary; taste warm, camphoraceous. Specific

gravity 0·895 to 0·920; *optical rotation* — 2° to + 15°; *refractive index* at 25° 1·463 to 1·473. Soluble in 1 part of *alcohol* (90 per cent.), and in 5 to 10 parts of a mixture of equal volumes of *alcohol* (90 per cent.) and *alcohol* (70 per cent.). Contains not less than 10 per cent. of total *alcohols*, calculated as borneol, $C_{10}H_{18}O$, and not less than 1·8 per cent. of *esters*, calculated as bornyl acetate, $C_{10}H_{17}C_2H_3O_2$.

## OLEUM SANTALI

### Oil of Sandal Wood

Oil of Sandal Wood is the oil distilled from the wood of Santalum album, *Linn.*

*Characters and Tests.*—Pale yellow or nearly colourless, somewhat viscid in consistence. Aromatic odour; taste unpleasant. Specific gravity 0·973 to 0·985; *optical rotation* — 13° to — 21°; *refractive index* at 25° 1·498 to 1·508. Soluble in 6 parts of *alcohol* (70 per cent.) at 20°. Contains not less than 90 per cent. of total *alcohols*, calculated as santalol, $C_{15}H_{24}O$.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 18 decimils. | 5 to 30 minims. |

## OLEUM SESAMI

### Sesame Oil

Sesame Oil is the oil expressed from the seeds of Sesamum indicum, *Linn.*

*Characters and Tests.*—Pale yellow. Faint odour; taste

bland. Specific gravity 0·921 to 0·924; *saponification value* 189 to 193; *iodine value* 103 to 114; *acid value* not more than 8; *refractive index* at 40° 1·4650 to 1·4675. When a mixture of 2 millilitres of the Oil and 1 millilitre of *hydrochloric acid* containing 1 per cent. of *refined sugar* is shaken for half a minute, and allowed to stand for five minutes, the acid layer becomes pink. When 1 millilitre of the Oil and 15 millilitres of *N/1 alcoholic solution of potassium hydroxide* are boiled for twenty minutes in a flask provided with a reflux condenser, set aside for twenty-four hours at a temperature not exceeding 15·5°, and afterwards heated on a water-bath for three minutes, the solution does not deposit crystals on standing for a further twenty-four hours (absence of arachis oil). When 2 millilitres of the Oil are mixed with 1 millilitre of *amylic alcohol* and 1 millilitre of a solution (1 in 100) of *precipitated sulphur* in *carbon disulphide*, and the mixture heated in a test-tube immersed in boiling *water*, no red colour is developed within fifteen minutes (absence of cotton seed oil).

In India, and in the Eastern, African, and North American Divisions of the Empire, Sesame Oil may be employed in making the official Liniments, Ointments, Plasters, and Soaps for which Olive Oil is directed to be used.

## OLEUM SINAPIS VOLATILE

### Volatile Oil of Mustard

Volatile Oil of Mustard is the oil obtained by distillation from black mustard seeds, deprived of most of their fixed oil and macerated in water for several hours.

*Characters and Tests.*—Colourless or pale yellow. Intensely penetrating odour. Produces almost immediate vesication when applied to the skin. Specific gravity

1·014 to 1·025. Distils between 148° and 156°. Contains in 100 grammes not less than 92 grammes of allyl isothiocyanate, $C_3H_5NCS$, as determined by the following process :—

With *alcohol* (90 per cent.) prepare a solution containing 1 gramme of the Oil in 50 millilitres. To 5 millilitres of this solution in a 100 millilitre flask add 30 millilitres of *N/10 solution of silver nitrate* and 5 millilitres of *solution of ammonia*. Heat on a water-bath to 80° for thirty minutes, shaking frequently ; cool to 15·5°, make up to exactly 100 millilitres with *water*, and filter. To 50 millilitres of the filtrate add 4 millilitres of *nitric acid*, a few drops of *solution of ferric sulphate*, and sufficient *N/10 solution of ammonium thiocyanate* to produce a permanent red colour. Not more than 5·7 millilitres of the latter reagent are required (presence of not less than 92 grammes of allyl isothiocyanate in 100 grammes of the Oil).

## OLEUM TEREBINTHINÆ RECTIFICATUM

### Rectified Oil of Turpentine

Rectified Oil of Turpentine is the oil distilled from the oleo-resin (turpentine) obtained from various species of Pinus, and rectified.

*Characters and Tests.*—A colourless, limpid liquid. Characteristic odour ; taste pungent, somewhat bitter. Specific gravity 0·860 to 0·870 ; *refractive index* at 25° 1·465 to 1·480. Distils almost entirely between 156° and 180°, leaving no appreciable residue.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 60 centimils. | 2 to 10 minims. |

*Anthelmintic Dose.*

| | |
|---|---|
| 12 to 15 mils. | 3 to 4 fluid drachms. |

## OLEUM THEOBROMATIS

### Oil of Theobroma

*Synonym*—Cacao Butter

Oil of Theobroma is a solid fat expressed from the seeds of Theobroma Cacao, *Linn.*

*Characters and Tests.*—A yellowish-white solid, breaking with a smooth fracture. Odour resembling that of cocoa; taste bland, agreeable. Somewhat brittle at ordinary temperatures, but softening at 25°. Specific gravity 0·990 to 0·998; melting point 30° to 33°; *saponification value* 188 to 195; *iodine value* 35·5 to 37·5; *acid value* not more than 2·0; *refractive index* at 40° 1·4565 to 1·4575. In ascertaining the melting point and specific gravity, seventy-two hours should be allowed to elapse between the time of melting and the time of determining the constants. When 1 gramme is dissolved at 17° in 3 millilitres of *ether* in a test-tube, and the tube placed in *water* at 0°, the solution neither becomes turbid nor deposits a granular or flaky mass in less than three minutes; and if, after congealing, it is exposed to a temperature of 15·5°, a clear solution is gradually formed (absence of certain other fats).

## OLIVERI CORTEX

### Oliver's Bark

*Synonym*—Black Sassafras

Oliver's Bark is the dried bark of Cinnamomum Oliveri, *Bailey.*

*Characters.*—In flat pieces usually about twenty centimetres long, four centimetres wide and one centimetre thick. Cork greyish-brown, very warty. Inner surface umber-brown, satiny. Fracture short, slightly fibrous. In transverse section, umber-brown, a pale line separating the cork from the inner tissues. Aromatic odour; taste aromatic, bitter, camphoraceous.

# OPIUM

## Opium

Opium is the juice obtained by incision from the unripe capsules of Papaver somniferum, *Linn.*, inspissated by spontaneous evaporation.

Any suitable variety of opium may be employed as a source of Tincture of Opium and Extract of Opium, provided that when dry it contains not less than 7·5 per cent. of anhydrous morphine; but, when used for official purposes other than the preparation of the alkaloids or their salts, opium must be of such a strength that when dried, and powdered, the resulting powder dried at 60° yields not less than 9·5 per cent., and not more than 10·5 per cent., of anhydrous morphine. Opium yielding when dried more than 10 per cent. of anhydrous morphine must be diluted to that percentage either with powdered Milk Sugar or with any opium containing when dried between 7·5 and 10 per cent. of anhydrous morphine.

*Characters.*—Usually in rounded, irregularly formed, or flattened masses, varying in weight, but commonly weighing from about 250 to 1000 grammes. When fresh, plastic, and internally somewhat moist, coarsely granular, or nearly smooth, and reddish or chestnut-brown; but becoming harder on keeping, and darkening to blackish-brown. Strong and characteristic odour; taste bitter.

*Test.*—

| | |
|---|---|
| Opium, in No. 50 powder, dried at 60° | 8 grammes |
| Calcium Hydroxide, freshly prepared | 2 grammes |
| Ammonium Chloride | 2 grammes |
| Alcohol (90 per cent.), Ether, Distilled Water | of each a sufficient quantity |

Triturate together the Opium, *calcium hydroxide*, and 20 millilitres of *water*, in a mortar until a uniform

mixture results; add 60 millilitres of *water* and stir occasionally during half an hour. To 51 millilitres of the filtered liquid (representing 5 grammes of Opium) in a convenient vessel add 5 millilitres of *alcohol* (90 per cent.), and 25 millilitres of *ether*; shake the mixture; add the *ammonium chloride*, shake well and frequently during half an hour; set aside for twelve hours for the morphine to separate. Counterbalance two small filters; place one within the other in a small funnel in such a way that the triple fold of the inner filter shall be superposed upon the single fold of the outer filter; wet them with *ether*; remove the ethereal layer of the liquid in the vessel as completely as possible by means of a small pipette, transferring the liquid to the filter; rinse the vessel with 10 millilitres of *ether*, again transferring the ethereal layer, by means of the pipette, to the filter; wash the filter with a total of 5 millilitres of *ether*, added slowly and in portions. Let the filter dry in the air, and pour upon it the contents of the vessel in portions, in such a way as to transfer the granular crystalline morphine as completely as possible to the filter. When all the liquid has passed through, wash the remainder of the morphine from the vessel with *morphinated water*, until the whole has been removed. Wash the crystals with *morphinated water* until the washings are free from colour; allow the filter to drain, and dry it, first at 60° and finally, for two hours, at 115°. Weigh the crystals in the inner filter, counterbalancing by the outer filter. Dissolve 0·2 gramme of the crystals in 10 millilitres of *N/10 solution of sulphuric acid*, and titrate back with *N/10 solution of sodium hydroxide*, *solution of methyl orange* being used as indicator. Each millilitre of the acid neutralised by the alkaloid corresponds to 0·0285 gramme of pure anhydrous morphine. The weight of pure anhydrous morphine obtained, as indicated by the titration, plus 0·051 gramme, the average loss of morphine during the process, together amount to 0·5 gramme, representing in 100 grammes of the dry powdered Opium 10 grammes of morphine, calculated as anhydrous. *Limit of error* 0·5 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

## OXYMEL

### Oxymel

| | |
|---|---|
| Acetic Acid . . . . . | 100 millilitres |
| Distilled Water . . . . | 100 millilitres |
| Purified Honey . . . . | 500 millilitres |

Mix.

*Tests.*—Specific gravity 1·27. 25 grammes require for neutralisation not less than 32 millilitres of *N/2 solution of sodium hydroxide*. The liquid obtained by mixing 25 grammes of Oxymel with 1 millilitre of *solution of lead subacetate*, diluting to 100 millilitres with *water*, adding 1 gramme of *animal charcoal*, and filtering until bright, has an *optical rotation* at 15·5° of not more than —3·9° in a tube 200 millimetres long.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

## OXYMEL SCILLÆ

### Oxymel of Squill

| | |
|---|---|
| Vinegar of Squill . . . . | 200 millilitres |
| Purified Honey . . . . | 500 millilitres |

Mix.

*Tests.*—Specific gravity 1·29. 25 grammes require for neutralisation not less than 11·9 millilitres of *N/2 solution of sodium hydroxide*. The liquid obtained by mixing 25 grammes of Oxymel of Squill with 1 millilitre of *solution*

*of lead subacetate*, diluting to 100 millilitres with *water*, adding 1 gramme of *animal charcoal*, and filtering until bright, has an *optical rotation* at 15·5° of not more than —3·9° in a tube 200 millimetres long.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## OXYMEL URGINEÆ

### Oxymel of Urginea

| | |
|---|---|
| Vinegar of Urginea . . . | 200 millilitres |
| Purified Honey . . . . | 500 millilitres |

Mix.

*Tests.*—Specific gravity 1·29. 25 grammes require for neutralisation not less than 11·9 millilitres of *N/2 solution of sodium hydroxide*. The liquid obtained by mixing 25 grammes of Oxymel of Urginea with 1 millilitre of *solution of lead subacetate*, diluting to 100 millilitres with *water*, adding 1 gramme of *animal charcoal*, and filtering until bright, has an *optical rotation* at 15·5° of not more than —3·9° in a tube 200 millimetres long.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## PARAFFINUM DURUM

### Hard Paraffin

Hard Paraffin is a mixture of solid hydrocarbons.

*Characters and Tests.*—Colourless, crystalline, more or

less translucent; wax-like, slightly greasy to the touch. No odour or taste. Melting point 50° to 60°. 5 millilitres of *alcohol* (90 per cent.) shaken with 5 grammes of the melted Paraffin are not acid to *litmus*. 5 grammes, when heated, burn with a luminous flame, leaving no appreciable ash.

## PARAFFINUM LIQUIDUM

### Liquid Paraffin

Liquid Paraffin is a mixture of liquid hydrocarbons.

*Characters and Tests.*—Transparent, colourless, not fluorescent. No odour or taste. Specific gravity 0·860 to 0·890. A mixture of 4 millilitres of Liquid Paraffin, 2 millilitres of *absolute alcohol*, and 2 drops of a clear saturated solution of *lead oxide* in *solution of sodium hydroxide*, remains colourless when kept at 70° for ten minutes (absence of sulphur compounds). When 3 millilitres are heated with an equal volume of *sulphuric acid* in a test-tube placed in boiling *water* for ten minutes, and frequently shaken, the acid layer, after separation, is not darker than pale-brown. 10 millilitres of *alcohol* (90 per cent.) boiled with 5 millilitres of Liquid Paraffin are not acid to *litmus*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 16 mils. | 1 to 4 fluid drachms. |

## PARAFFINUM MOLLE

### Soft Paraffin

Soft Paraffin is a mixture of semi-solid hydrocarbons.

*Characters and Tests.*—White or yellow, translucent, soft, unctuous to the touch, not allowing any liquid to separ-

ate on keeping. No odour. Melting point 42° to 46°. On heating to 80° no unpleasant odour is evolved. 10 millilitres of *alcohol* (90 per cent.) boiled with 5 grammes of Soft Paraffin are not acid to *litmus*. When 10 grammes are boiled with 20 millilitres of *solution of sodium hydroxide* for ten minutes and allowed to separate, the aqueous layer yields no precipitate or oily matter when acidified with *sulphuric acid* (absence of fixed oils, fats, and resin). 5 grammes when heated burn with a luminous flame, leaving no appreciable ash.

## PARALDEHYDUM

### Paraldehyde

Paraldehyde, $C_6H_{12}O_3$, is a product of the polymerisation of acetaldehyde.

*Characters and Tests.*—A clear, colourless liquid. Characteristic, ethereal odour; taste acrid, afterwards cool. Soluble in 9 parts of *water*; less soluble in hot *water*. Miscible in all proportions with *alcohol* (90 per cent.), and with *ether*. Aqueous solution neutral or only slightly acid to *litmus*. Specific gravity 0·998 to 1·000. Solidifies at a low temperature; melting point not under 10°. Not more than 5 per cent. distils under 123°, and the remainder distils between 123° and 125°. When 5 millilitres are shaken with 5 millilitres of *solution of sodium hydroxide* and allowed to separate, the aqueous layer does not exhibit more than a faint yellow coloration within one hour (limit of acetaldehyde). An aqueous solution (1 in 10) yields no characteristic *reactions* for chlorides or for sulphates.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| **2 to 8 mils.** | **1/2 to 2 fluid drachms.** |

## PELLETIERINÆ TANNAS

### Pelletierine Tannate

Pelletierine Tannate is a mixture of the tannates of the alkaloids obtained from the bark of the root and stem of Punica Granatum, *Linn.*

*Characters and Tests.*—A light yellow, amorphous powder. Slightly soluble in *water*, more soluble in *alcohol* (90 per cent.). An aqueous solution gives with *T. Sol. of ferric chloride* a bluish-black colour; with *solution of silver nitrate* a brown colour rapidly deepening, with separation of metallic silver; and with *solution of auric chloride* a deep purple colour, with separation of metallic gold. When heated, Pelletierine Tannate turns brown at about 150°, softens at about 165°; and at a higher temperature decomposes without melting. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## PEPSINUM

### Pepsin

Pepsin is an enzyme obtained from the fresh and healthy stomach of the pig, sheep, or calf.

*Characters and Test.*—A light yellowish-brown powder, or pale yellowish, translucent scales, having a faint odour. Tested as follows it dissolves 2500 times its weight of coagulated white of egg in six hours, the resulting solution being faintly opalescent:—

Prepare some coagulated white of egg by boiling fresh eggs in water for fifteen minutes, immersing them in cold water until cool, separating the whites, at once rubbing these through a hair-sieve having 12 meshes to a centimetre,

and using the product before it has lost moisture by evaporation. Prepare also a Pepsin solution by triturating 0·25 gramme of the Pepsin with 1 gramme of *sodium chloride* in a small mortar until thoroughly mixed, adding by degrees acidified water (prepared by diluting 6·5 millilitres of *hydrochloric acid* to 1000 millilitres with *water*), continuing the trituration, transferring to a litre flask, washing the mortar with acidified water, and adding the washings to the contents of the flask until 1000 millilitres are produced, then shaking frequently during six hours, and again immediately before use. Introduce 20 millilitres of the Pepsin solution so prepared into a 250 millilitre flask. Triturate 12·5 grammes of the freshly prepared coagulated white of egg in a small mortar with 50 millilitres of acidified water until reduced to uniform granules. Transfer to the flask, rinsing the mortar with a further 50 millilitres of acidified water, adding the rinsing to the contents of the flask. Immerse the flask in a water-bath so that its contents are on a lower level than the water in the bath, and digest at a temperature between 40° and 41° for six hours, shaking at intervals of fifteen minutes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 6 decigrams. | 5 to 10 grains. |

## PHENACETINUM

### Phenacetin

Phenacetin or para-acet-phenetidin, $C_{10}H_{13}NO_2$, may be obtained by the interaction of glacial acetic acid and paraphenetidin.

*Characters and Tests.*—Small, colourless, glistening, scaly crystals. Inodorous; tasteless. Melting point 135°. Very sparingly soluble in cold *water*, more freely in boiling *water*; soluble in 21 parts of *alcohol* (90 per cent.), the solution

being neutral to *litmus*. 0·1 gramme boiled with 2 millilitres of *hydrochloric acid* for half a minute yields a liquid which, diluted with 10 times its volume of *water*, cooled and filtered, assumes a deep-red colour on the addition of *solution of chromic acid*. *Sulphuric acid* dissolves Phenacetin without coloration. A cold saturated aqueous solution does not become turbid on the addition of *solution of bromine* (absence of acetanilide). A mixture of 0·3 gramme of Phenacetin with 1 millilitre of *alcohol* (90 per cent.) does not acquire a red tint when diluted with 3 times its volume of *water*, and boiled with 1 drop of *N/10 solution of iodine* (absence of paraphenetidin). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## PHENAZONUM

### Phenazone

Phenazone, or phenyl-dimethyl-iso-pyrazolone, $C_{11}H_{12}N_2O$, may be obtained from phenyl-hydrazine by interaction with aceto-acetic ether, and the subsequent interaction of the resulting phenyl-methyl-iso-pyrazolone with methyl iodide.

*Characters and Tests.*—Small colourless, scaly crystals. No odour; taste bitter. Soluble in 1·2 parts of *water*, in 1·3 parts of *alcohol* (90 per cent.), and in 1·3 parts of *chloroform*. Melting point from 111° to 113.° Aqueous solution neutral to *litmus*. An aqueous solution (1 in 100) responds to the following tests:—Mixed with an equal volume of *nitric acid* it assumes a yellow colour passing to crimson on warming; 2 millilitres are coloured green by 2 drops of *fuming nitric acid*, and the colour is changed to red by boiling with an additional 3 or 4 drops of the *fuming nitric acid*; 12 millilitres remain nearly colourless on the addition of 0·1 gramme

of *sodium nitrite*, but turn deep green on the further addition of 1 millilitre of *diluted sulphuric acid*; 1 millilitre, diluted with 9 millilitres of *water*, is coloured deep red by *T. Sol. of ferric chloride*, the colour being nearly discharged by excess of *diluted sulphuric acid*. An aqueous solution (1 in 20) gives with *T. Sol. of mercuric chloride* a white precipitate which disappears on boiling, but reappears on cooling. Aqueous solution not affected by *hydrogen sulphide*. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## PHENOLPHTHALEINUM

### Phenolphthalein

Phenolphthalein, or dihydroxy-diphenyl-phthalide, $C_{20}H_{14}O_4$, may be obtained by heating phenol with phthalic anhydride and sulphuric acid, and purifying the product.

*Characters and Tests.*—A white, or yellowish-white, crystalline or amorphous powder. No odour or taste. Soluble in *alcohol* (90 per cent.), the solution being colourless. Almost insoluble in *water*, but soluble in *solution of sodium hydroxide*, forming an intensely red liquid. Melting point 250° to 253°. Not more than 0·1 millilitre of *N/10 solution of sodium hydroxide* is required to produce a red coloration in 250 millilitres of recently boiled and cooled *water* to which has been added 0·5 millilitre of a solution (1 in 100) of Phenolphthalein in *alcohol* (60 per cent.). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centigrams. | 2 to 5 grains. |

## PHOSPHORUS

### Phosphorus

Phosphorus is a solid non-metallic element. It may be obtained from calcium phosphate.

*Characters and Tests.*—A semi-transparent, waxlike solid, which emits white vapours and is luminous in the dark when exposed to the air. Insoluble in *water*; soluble in 350 parts of *absolute alcohol*, in 80 parts of *olive oil*, in 80 parts of *ether*, in 25 parts of *chloroform*, and in 0·5 part of *carbon disulphide*. Soft and flexible at ordinary temperatures. Melting point 44°. Ignites in the air at a temperature a little above its melting point, burns with a luminous flame, and produces dense white fumes. 1 gramme is slowly attacked and finally dissolved without residue when boiled with 10 millilitres of *nitric acid* diluted with an equal volume of *water*, and the resulting solution yields not more than the slightest *reaction* for sulphates.

*Dose (in pill or solution).*

| *Metric.* | *Imperial.* |
|---|---|
| 0·6 to 2·5 milligrams. | 1/100 to 1/25 grain. |

## PHYSOSTIGMINÆ SULPHAS

### Physostigmine Sulphate

*Synonym*—Eserine Sulphate

Physostigmine Sulphate, $(C_{15}H_{21}N_3O_2)_2,H_2SO_4$, is the sulphate of an alkaloid, physostigmine, obtained from the seeds of Physostigma venenosum, *Balfour*.

*Characters and Tests.*—Minute white crystals, becoming yellowish on exposure to air and light; very deliquescent. Readily soluble in *water*, soluble in *alcohol* (90 per cent.).

Aqueous solution neutral to *litmus*; yields the *reaction* characteristic of sulphates; yields with dilute *solution of sodium hydroxide* a white precipitate turning pink and forming a red solution with excess of the reagent; when mixed with *solution of ammonia* and evaporated to dryness on a water-bath it leaves a bluish residue, the solution of which in very dilute acids is dichroic, being red by reflected and blue by transmitted light. A minute fragment dissolved in a few drops of *fuming nitric acid* forms a yellow liquid, which, on warming on a water-bath, turns orange, then blood-red, and on evaporation to dryness leaves a green residue; this residue turns violet-blue on exposure to the fumes of *nitric acid*, and when moistened with the acid gives gradually a blood-red colour, which changes to greenish-yellow on the addition of *water*. A dilute aqueous solution applied to the eye causes contraction of the pupil. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 2 milligrams. | 1/64 to 1/32 grain. |

## PICRORHIZA

### Picrorhiza

Picrorhiza is the dried rhizome of Picrorhiza Kurroa, *Royle*.

*Characters.*—In cylindrical pieces two to five centimetres long, and four to eight millimetres thick, sometimes terminating in a stem or scaly leaf-bud; brittle. Cork greyish-brown, wrinkled, with transverse leaf scars and small buds. Fracture short. In transverse section internally dark and porous, with a thin, greyish cork and narrow ring of tangentially elongated wood-bundles. No odour; taste very bitter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decigrams. | 10 to 20 grains. |

*Antiperiodic Dose.*

| | |
|---|---|
| 3 to 4 grammes. | 45 to 60 grains. |

## PILOCARPINÆ NITRAS

### Pilocarpine Nitrate

Pilocarpine Nitrate, $C_{11}H_{16}N_2O_2,HNO_3$, is the nitrate of an alkaloid, pilocarpine, obtained from the leaves of Pilocarpus microphyllus, *Stapf*, and other species of Pilocarpus.

*Characters and Tests.*—A white crystalline powder. Soluble in 8 parts of *water*. Melting point about 176°. Yields with *sulphuric acid* a colourless solution slowly becoming green on the addition of *potassium bichromate*. When a solution of 0·01 gramme in 5 millilitres of *water* is mixed with 2 drops of *diluted sulphuric acid* and then with 1 millilitre of *solution of hydrogen peroxide*, 1 millilitre of *benzene*, and 1 drop of *solution of potassium chromate*, and the mixture well shaken and allowed to separate, the benzene is coloured bluish-violet. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 milligrams. | 1/20 to 1/5 grain. |

## PILULA ALOES

### Aloes Pill

| | |
|---|---|
| Aloes, in powder | 58 grammes |
| Hard Soap, in powder | 29 grammes |
| Oil of Caraway | 3 millilitres |
| Syrup of Glucose | 10 grammes, |
| | or a sufficient quantity |

Mix to form a mass.

[*For dose see over.*

PILULA ALOES (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA ALOES ET ASAFETIDÆ

### Pill of Aloes and Asafetida

| | |
|---|---|
| Aloes, in powder | 30 grammes |
| Asafetida | 30 grammes |
| Hard Soap, in powder | 30 grammes |
| Syrup of Glucose | 10 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA ALOES ET FERRI

### Pill of Aloes and Iron

| | |
|---|---|
| Exsiccated Ferrous Sulphate | 10 grammes |
| Aloes, in powder | 20 grammes |
| Compound Powder of Cinnamon | 35 grammes |
| Syrup of Glucose | 35 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA ALOES ET MYRRHÆ

### Pill of Aloes and Myrrh

| | |
|---|---|
| Aloes, in powder | 44 grammes |
| Myrrh, in powder | 22 grammes |
| Syrup of Glucose | 34 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA COLOCYNTHIDIS COMPOSITA

### Compound Pill of Colocynth

| | |
|---|---|
| Colocynth Pulp, in powder | 20 grammes |
| Aloes, in powder | 35 grammes |
| Scammony Resin, in powder | 35 grammes |
| Potassium Sulphate, in powder | 5 grammes |
| Oil of Cloves | 5 millilitres |
| Distilled Water | a sufficient quantity |

Triturate the Oil of Cloves with the Potassium Sulphate; add the Colocynth Pulp; mix; add the Aloes and Scammony Resin; mix; add Distilled Water, and mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA COLOCYNTHIDIS ET HYOSCYAMI

### Pill of Colocynth and Hyoscyamus

| | |
|---|---|
| Compound Pill of Colocynth | 50 grammes |
| Extract of Hyoscyamus | 25 grammes |
| Distilled Water | a sufficient quantity |

Mix to form a mass.

[*For dose see over.*

PILULA COLOCYNTHIDIS ET HYOSCYAMI (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA FERRI
### Iron Pill

| | |
|---|---|
| Exsiccated Ferrous Sulphate, in powder | 33 grammes |
| Exsiccated Sodium Carbonate, in powder | 21 grammes |
| Tragacanth, in powder | 2 grammes |
| Gum Acacia, in powder | 8 grammes |
| Glucose | 31 grammes |
| Distilled Water | 2 millilitres |

Mix the Glucose, Distilled Water, and Exsiccated Ferrous Sulphate; add the Exsiccated Sodium Carbonate; mix and set aside for ten minutes, or until the reaction is complete; add the Tragacanth and Gum Acacia, and mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

This Pill contains about 22·5 per cent. of ferrous carbonate.

## PILULA HYDRARGYRI
### Mercury Pill

*Synonym*—Blue Pill

| | |
|---|---|
| Mercury | 40 grammes |
| Confection of Roses | 60 grammes |
| Liquorice Root, in powder | 20 grammes |

Triturate the Mercury with the Confection of Roses until metallic globules are no longer visible; add the Liquorice Root; mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA HYDRARGYRI SUBCHLORIDI COMPOSITA

### Compound Pill of Mercurous Chloride

*Synonyms*—Compound Calomel Pill: Plummer's Pill

| | |
|---|---|
| Mercurous Chloride | 20 grammes |
| Sulphurated Antimony | 20 grammes |
| Guaiacum Resin, in powder | 40 grammes |
| Gum Acacia, in powder | 1 gramme |
| Tragacanth, in powder | 1 gramme |
| Syrup of Glucose | 10 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA IPECACUANHÆ CUM SCILLA

### Pill of Ipecacuanha with Squill

| | |
|---|---|
| Compound Powder of Ipecacuanha | 30 grammes |
| Squill, in powder | 10 grammes |
| Ammoniacum, in powder | 10 grammes |
| Syrup of Glucose | a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

This Pill contains about 5 per cent. of Opium.

## PILULA IPECACUANHÆ CUM URGINEA

### Pill of Ipecacuanha with Urginea

| | |
|---|---|
| Compound Powder of Ipecacuanha | 30 grammes |
| Urginea, in powder | 10 grammes |
| Ammoniacum, in powder | 10 grammes |
| Syrup of Glucose | a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

This Pill contains about 5 per cent. of Opium.

## PILULA PHOSPHORI

### Phosphorus Pill

| | |
|---|---|
| Phosphorus | 1 gramme |
| Oil of Theobroma | 40 grammes |
| Wool Fat | 11 grammes |
| Kaolin | 16 grammes |
| Sodium Sulphate, dried at 100° | 32 grammes |
| Carbon Disulphide | 20 millilitres |

Dissolve the Phosphorus and 20 grammes of the Oil of Theobroma in the Carbon Disulphide. Allow the solution to evaporate in a mortar until a pasty mass is obtained. To this add the remainder of the Oil of Theobroma together with the other ingredients, and mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 25 centigrams. | 1 to 4 grains. |

This Pill contains 1 per cent. of Phosphorus. It is of one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898. It should be freshly prepared.

## PILULA PLUMBI CUM OPIO

### Pill of Lead with Opium

| | |
|---|---|
| Lead Acetate, in powder | 80 grammes |
| Opium, in powder | 12 grammes |
| Syrup of Glucose | 8 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 25 centigrams. | 2 to 4 grains. |

This Pill contains about 12 per cent. of Opium.

## PILULA QUININÆ SULPHATIS

### Pill of Quinine Sulphate

| | |
|---|---|
| Quinine Sulphate | 82 grammes |
| Tartaric Acid, in powder | 3 grammes |
| Glycerin | 12 grammes |
| Tragacanth, in powder | 3 grammes |

Triturate the Quinine Sulphate with the Tartaric Acid; add the product to the previously mixed Glycerin and Tragacanth; mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 50 centigrams. | 2 to 8 grains. |

## PILULA RHEI COMPOSITA

### Compound Rhubarb Pill

| | |
|---|---|
| Rhubarb, in powder | 25 grammes |
| Aloes, in powder | 20 grammes |
| Myrrh, in powder | 14 grammes |
| Hard Soap, in powder | 14 grammes |
| Oil of Peppermint | 2 millilitres |
| Syrup of Glucose | 25 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA SAPONIS COMPOSITA

### Compound Pill of Soap

| | |
|---|---|
| Opium, in powder | 20 grammes |
| Hard Soap, in powder | 60 grammes |
| Syrup of Glucose | 20 grammes, or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 25 centigrams. | 2 to 4 grains. |

This Pill contains about 20 per cent. of Opium.

## PILULA SCILLÆ COMPOSITA

### Compound Squill Pill

| | |
|---|---|
| Squill, in powder | 25 grammes |
| Ginger, in powder | 20 grammes |
| Ammoniacum, in powder | 20 grammes |
| Hard Soap, in powder | 15 grammes |
| Syrup of Glucose | 20 grammes, |
| | or a sufficient quantity |

Mix to form a mass.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PILULA URGINEÆ COMPOSITA

### Compound Urginea Pill

| | |
|---|---|
| Urginea, in powder | 25 grammes |
| Ginger, in powder | 20 grammes |
| Ammoniacum, in powder | 20 grammes |
| Hard Soap, in powder | 15 grammes |
| Syrup of Glucose | 20 grammes, |
| | or a sufficient quantity |

**Mix to form a mass.**

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## PIX CARBONIS PRÆPARATA

### Prepared Coal Tar

Prepared Coal Tar is obtained by maintaining commercial coal tar at a temperature of 50° in a shallow vessel for one hour, stirring frequently.

*Characters and Tests.*—A nearly black, viscous liquid, brown in very thin layers; heavier than *water*. Strongly empyreumatic characteristic odour. Almost entirely soluble in *benzene* and in *chloroform*; partially soluble in *alcohol* (90 per cent.), and in *ether*; very slightly soluble in *water*.

## PIX LIQUIDA

### Tar

Tar is a bituminous liquid, obtained by destructive distillation from the wood of Pinus sylvestris, *Linn.*, and other species of Pinus. Known in commerce as Stockholm tar.

*Characters and Tests.*—Dark brown or nearly black; semi-liquid; empyreumatic characteristic odour; heavier than *water*. *Water* shaken with it acquires a pale-brown colour, sharp empyreumatic taste, and acid reaction; very dilute *T. Sol. of ferric chloride* colours the solution red. Tar is completely soluble in ten times its volume of *alcohol* (90 per cent.).

## PLUMBI ACETAS

### Lead Acetate

*Synonym*—Sugar of Lead

Lead Acetate may be obtained by dissolving lead oxide or lead carbonate in acetic acid. It contains not less than 99·5 per cent. of pure lead acetate, $Pb(C_2H_3O_2)_2,3H_2O$.

*Characters and Tests.*—Small, white, monoclinic prisms, or crystalline masses, slightly efflorescent. Acetous odour; taste sweet, astringent. Soluble in 2·5 parts of *water*, and in 30 parts of *alcohol* (90 per cent). Aqueous solution slightly acid to *litmus*, clear, or with only a slight turbidity which disappears on the addition of *acetic acid*. Yields the *reactions* characteristic of lead and of acetates. Yields no characteristic *reactions* for silver, copper, arsenic, iron, zinc, calcium, chlorides, or nitrates. When 0·5 gramme is dissolved in *water* acidified with *acetic acid*, excess of *N/1 solution of oxalic acid* added, the precipitate collected, washed, transferred to a flask and decomposed with excess of *diluted sulphuric acid*, the mixture thus obtained, heated to 60°, decolorises not less than 26·2 millilitres of *N/10 solution of potassium permanganate* (presence of not less than 99·5 per cent. of pure lead acetate, $Pb(C_2H_3O_2)_2,3H_2O$).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centigrams. | 1 to 5 grains. |

## PLUMBI IODIDUM

### Lead Iodide

Lead Iodide, $PbI_2$, may be obtained by the interaction of aqueous solutions of lead nitrate or acetate and potassium iodide.

*Characters and Tests.*—A heavy, bright-yellow powder. Soluble in about 2000 parts of cold *water*, and in about 200 parts of boiling *water*, from which it is deposited in golden-yellow crystalline scales as the solution cools; entirely soluble in *solution of ammonium chloride*. Yields the *reactions* characteristic of lead and of iodides. Yields no characteristic *reactions* for nitrates or acetates.

## PLUMBI OXIDUM

### Lead Oxide

*Synonym*—Litharge

Lead Oxide, PbO, may be obtained by the action of air on melted lead.

*Characters and Tests.*—Heavy scales, or powder, of a pale yellowish-red colour. Soluble in *diluted nitric acid* and in *acetic acid* with but slight effervescence, leaving not more than traces of insoluble residue. Yields the *reactions* characteristic of lead. Yields no characteristic *reactions* for copper, and not more than the slightest *reactions* for iron.

## PODOPHYLLI INDICI RESINA

### Indian Podophyllum Resin

*Synonym*—Podophyllum Emodi Resin

Indian Podophyllum Resin is a powdered resin prepared by the same process as that described under 'Podophylli Resina,' employing Indian Podophyllum Rhizome in place of Podophyllum Rhizome. It possesses the characters and responds to the tests described under 'Podophylli Resina.'

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## PODOPHYLLI INDICI RHIZOMA

### Indian Podophyllum Rhizome

*Synonym*—Podophyllum Emodi Rhizome

Indian Podophyllum Rhizome is the dried rhizome and roots of Podophyllum Emodi, *Wall.*

*Characters.*—Rhizome cylindrical or flattened, contorted, earthy-brown ; usually about ten millimetres thick ; below with numerous root-scars, or with stout roots, and crowned with the short remains of aerial stems, bearing cup-shaped scars. In transverse section, pale-brown and starchy or horny, with a ring of radially elongated wood-bundles. Slight odour ; taste bitter and acrid.

## PODOPHYLLI RESINA

### Podophyllum Resin

| | |
|---|---|
| Podophyllum Rhizome, in No. 40 powder. . . . . | 1000 grammes |
| Alcohol (90 per cent.) | of each a sufficient quantity |
| Distilled Water | |
| Hydrochloric Acid | |

Exhaust the Podophyllum with the Alcohol by percolation ; recover the greater part of the alcohol by distillation ; pour the resulting liquid into eight times its volume of Distilled Water acidified with one twenty-fourth of its volume of Hydrochloric Acid, constantly stirring ; after twenty-four hours collect the deposited resin, wash with Distilled Water, and dry at a temperature not exceeding 40°.

*Characters and Tests.*—An amorphous powder, varying in colour from pale yellow to deep orange-brown. Taste bitter. Entirely or almost entirely soluble in *alcohol* (90

per cent.) and in *solution of ammonia*; precipitated from the former solution by *water*, from the latter by acids. Partly soluble in *ether*. Ash not more than 1 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 60 milligrams. | 1/4 to 1 grain. |

## PODOPHYLLI RHIZOMA

### Podophyllum Rhizome

Podophyllum Rhizome is the dried rhizome and roots of Podophyllum peltatum, *Linn.*

*Characters.*—Rhizome nearly cylindrical, of very variable length, usually about five millimetres thick; dark reddish-brown, smooth or only slightly wrinkled; enlarged at intervals of about five centimetres, the upper surface of each enlargement being marked by a depressed circular scar, below which, on the under surface, are rather stout, brittle, brown roots, or the scars corresponding to them. In transverse section, either nearly white and starchy, or pale yellowish-brown and horny. Characteristic odour; taste slightly bitter and acrid.

## POTASSA CAUSTICA

### Potassium Hydroxide

*Synonym*—Caustic Potash

Potassium Hydroxide may be obtained by the interaction of potassium carbonate and calcium hydroxide. It contains not less than 85 per cent. of pure potassium hydroxide, KOH.

*Characters and Tests.*—In hard white pencils or cakes, very deliquescent, very alkaline and corrosive. Soluble in 0·5 part of *water*, and in 3 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium. 1 gramme dissolved in *water* or in *alcohol* (90 per cent.) leaves only a slight sediment; the solution requires for neutralisation not less than 15·1 millilitres of *N/1 solution of sulphuric acid*. Yields no characteristic *reactions* for lead, copper, or arsenic.

## POTASSA SULPHURATA

### Sulphurated Potash

*Synonym*—Liver of Sulphur

Sulphurated Potash is a mixture of salts of potassium, chiefly sulphides.

| | |
|---|---|
| Potassium Carbonate, in powder . | 100 grammes |
| Sublimed Sulphur . . . . | 50 grammes |

Mix the Potassium Carbonate, previously dried, with the Sulphur; heat in a covered crucible, at first gently, afterwards to dull redness, until effervescence ceases and the mass fuses; pour it on to a clean stone slab, and, after solidification, break it into fragments and transfer to a stoppered bottle.

*Characters and Tests.*—Solid fragments, externally greenish-yellow, internally pale liver-brown, rapidly changing to greenish-yellow on exposure to the air. Odour that of hydrogen sulphide; taste alkaline and acrid. Readily soluble in *water*. Aqueous solution yellowish, opalescent; deposits only a trace of sediment on standing; evolves hydrogen sulphide freely on the addition of excess of *hydrochloric acid*, sulphur being deposited; this acid liquid, boiled and filtered, gives a yellow precipitate with *solution of platinic chloride*. Sulphurated Potash contains not less than 42 and not more than 45 per cent. of sulphur as determined by the following process:—

Dissolve 0·2 gramme in 10 millilitres of *water* in a small flask, add 5 millilitres of *solution of sodium hydroxide*, heat the liquid to boiling, and add slowly, the flask being constantly rotated, *solution of bromine As T.* until a clear solution is obtained and bromine is present in excess. Acidify with *hydrochloric acid*, boil until the excess of bromine is driven off, add excess of *solution of barium chloride*, collect the precipitate formed, wash, dry, ignite, and weigh. It weighs not less than 0·611 or more than 0·655 gramme.

## POTASSII ACETAS

### Potassium Acetate

Potassium Acetate may be obtained by fusing the product of the interaction of acetic acid and potassium carbonate. It contains not less than 90 per cent. of pure potassium acetate, $KC_2H_3O_2$.

*Characters and Tests.*—White foliaceous satiny masses, or in granules. Taste sharp, saline. Very deliquescent. Soluble in 0·5 part of *water*, and in 2 parts of *alcohol* (90 per cent.) Aqueous solution alkaline to *litmus*. Yields the *reactions* characteristic of potassium and of acetates. Yields no characteristic *reactions* for copper, iron, aluminium, calcium, magnesium, carbonates, or sulphides, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Loses not more than 10 per cent. of its weight when dried at 100°. 1 gramme, heated to redness until gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 18·3 millilitres of *N/2 solution of sulphuric acid.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 grammes. | 15 to 60 grains. |

## POTASSII BICARBONAS

### Potassium Bicarbonate

Potassium Bicarbonate may be obtained by saturating a strong aqueous solution of potassium carbonate with carbon dioxide. It contains not less than 99 per cent. of pure potassium bicarbonate, $KHCO_3$.

*Characters and Tests.*—Colourless, monoclinic, non-deliquescent prisms. Taste saline, feebly alkaline. Soluble in 4 parts of *water*, almost insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of bicarbonates. 1 gramme exposed to a low red heat leaves not less than 0·683 or more than 0·690 gramme of a white residue, which requires for neutralisation not less than 19·8 or more than 20 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, sulphates, or sodium, and not more than the slightest *reactions* for iron or chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

20 grammes of Potassium Bicarbonate are neutralised by 14 grammes of Citric Acid, and by 15 grammes of Tartaric Acid.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## POTASSII BICHROMAS

### Potassium Bichromate

*Synonym*—Potassium Dichromate

Potassium Bichromate may be obtained by roasting chrome ironstone with lime in the presence of air, and treating the resulting chromate with a potassium salt, and subsequently with an acid. It contains not less than 99 per cent. of pure potassium bichromate, $K_2Cr_2O_7$.

*Characters and Tests.*—In orange-red crystals. Soluble in 10 parts of *water*. Aqueous solution acid to *litmus*; gives a yellowish-white precipitate with *solution of barium chloride*; acquires an emerald-green colour when warmed with *sulphuric acid* and *alcohol* (90 per cent.). When 0·1 gramme is dissolved in 20 millilitres of *water* acidified with 5 millilitres of *diluted sulphuric acid*, and then 2 grammes of *potassium iodide* added, the solution thus obtained, diluted with *water*, requires for decolorisation not less than 20·1 millilitres of *N/10 solution of sodium thiosulphate* (presence of not less than 99 per cent. of pure potassium bichromate, $K_2Cr_2O_7$).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 milligrams. | 1/10 to 1/5 grain. |

## POTASSII BROMIDUM

### Potassium Bromide

Potassium Bromide may be obtained by the interaction of ferrous bromide with potassium carbonate. When dried at 100° it contains not less than 98 per cent. of pure potassium bromide, KBr.

*Characters and Tests.*—Colourless, cubical crystals. No odour; taste pungent and saline. Soluble in 2 parts of *water*, and in 200 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of bromides. Loses not more than 1 per cent. of its weight when dried at 100°; 0·5 gramme of this dried salt requires for complete precipitation not less than 41·2 or more than 42·5 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, barium, calcium, magnesium, carbonates, bromates, or iodates, and not more than the slightest *reactions* for iodides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## POTASSII CARBONAS

### Potassium Carbonate

Potassium Carbonate may be obtained by the interaction of potassium sulphate and calcium carbonate. It contains not less than 81·5 per cent. of pure potassium carbonate, $K_2CO_3$.

*Characters and Tests.*—A white crystalline powder, very deliquescent. Taste alkaline and caustic. Soluble in 1 part of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of carbonates. 1 gramme requires for neutralisation not less than 11·8 millilitres of *H/1 solution of sulphuric acid.* Loses not more than 18 5 per cent. of its weight when exposed to a red heat. Yields no characteristic *reactions* for copper, aluminium, calcium, magnesium, sodium, cyanides, nitrates, sulphates, sulphides, or thiosulphates, not more than the slightest *reactions* for iron, and no strongly marked *reactions* for chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## POTASSII CHLORAS

### Potassium Chlorate

Potassium Chlorate, $KClO_3$, may be obtained by passing chlorine into water holding lime or magnesia in suspension, treating the clarified liquid with potassium chloride, and subsequently crystallising out the potassium chlorate.

*Characters and Tests.*—Colourless monoclinic crystals. Taste cool, saline. Soluble in 16 parts of *water*. Moistened with *hydrochloric acid* it evolves a yellow gas with an odour of chlorine. Yields no characteristic *reactions* for iron, calcium, magnesium, sodium, ammonium, or nitrates, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

## POTASSII CITRAS

### Potassium Citrate

Potassium Citrate may be obtained by the interaction of citric acid and potassium carbonate. It contains not less than 99 per cent. of pure potassium citrate, [illegible]

*Characters and Tests.*—A white, granular, or crystalline powder. Taste saline, feebly acid. Soluble in 1 part of *water*. Yields the *reactions* characteristic of potassium and of citrates. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 18·3 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for iron, calcium, magnesium, sodium, carbonates, or tartrates, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 grammes. | 15 to 60 grains. |

## POTASSII IODIDUM

### Potassium Iodide

Potassium Iodide may be obtained by adding a slight excess of iodine to a strong solution of potassium hydroxide, evaporating to dryness, fusing with charcoal, and purifying by crystallisation. When dried at 100° it contains not less than 99 per cent. of pure potassium iodide, KI.

*Characters and Tests.*—Colourless, generally opaque, cubic crystals. Taste saline, slightly bitter. Soluble in less than 1 part of *water*, and in 12 parts of *alcohol* (90 per cent.). Usually slightly alkaline to *litmus*. Yields the *reactions* characteristic of potassium and of iodides. Loses not more than 1 per cent. of its weight when dried at 100°; 0·5 gramme of this dried salt requires for complete precipitation not less than 29·8 or more than 30·5 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, aluminium, calcium, magnesium, bromates, cyanides, or nitrates, and not more than the slightest *reactions* for bromides, iodates, carbonates, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## POTASSII NITRAS

### Potassium Nitrate

*Synonym*—Purified Nitre

Potassium Nitrate, $KNO_3$, may be obtained by the interaction of sodium nitrate and potassium chloride.

*Characters and Tests.*—White crystalline masses, or

colourless fragments of six-sided rhombic prisms. Taste cool, saline. Soluble in 4 parts of *water*. Yields the *reactions* characteristic of potassium and of nitrates. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, calcium, magnesium, sodium, ammonium, chlorides, iodides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## POTASSII PERMANGANAS

### Potassium Permanganate

Potassium Permanganate may be obtained by the interaction of potassium chlorate, potassium hydroxide, and manganese dioxide. It contains not less than 99 per cent. of pure potassium permanganate, $KMnO_4$.

*Characters and Tests.*—Dark purple, slender, prismatic, iridescent crystals. Taste sweet, astringent. Soluble in 20 parts of *water*. Aqueous solution neutral to *litmus*. The crystals heated to redness decrepitate, evolve oxygen, and leave a black residue from which *water* extracts potassium hydroxide, the resulting solution yielding the *reactions* characteristic of potassium. Yields no characteristic *reactions* for lead, arsenic, iron, sodium, ammonium, chlorides, nitrates, or sulphates. 1 gramme dissolved in *water*, acidified with 5 millilitres of *diluted sulphuric acid*, and heated to about 60°, requires for complete decolorisation not less than 31·3 millilitres of *N/1 solution of oxalic acid*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

## POTASSII SULPHAS

### Potassium Sulphate

Potassium Sulphate may be obtained by the interaction of sulphuric acid and potassium chloride or certain other potassium salts. It contains not less than 99 per cent. of pure potassium sulphate, $K_2SO_4$.

*Characters and Tests.*—Colourless, hard rhombic prisms terminated by six-sided pyramids. Taste saline, slightly bitter. Decrepitates strongly when heated. Soluble in 10 parts of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of sulphates. 1 gramme dissolved in water acidified with *hydrochloric acid* gives, with *solution of barium chloride*, a white precipitate, which, when washed and dried, weighs not less than 1·326 grammes. Yields no characteristic *reactions* for copper, iron, calcium, magnesium, sodium, ammonium, or nitrates, and not more than the slightest *reactions* for chlorides. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million. Aqueous solution neutral to *litmus* (absence of acid potassium sulphate).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 3 grammes. | 15 to 45 grains. |

## POTASSII TARTRAS

### Potassium Tartrate

Potassium Tartrate may be obtained by neutralising Acid Potassium Tartrate with potassium carbonate. It contains not less than 99 per cent. of pure potassium tartrate, $(K_2C_4H_4O_6)_2\ H_2O$.

*Characters and Tests.*—Small, colourless, four or six-

sided prisms. Taste saline, cooling. Soluble in 1 part of *water*. Yields the *reactions* characteristic of potassium and of tartrates. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 16·8 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, or iron, and not more than the slightest *reactions* for calcium, magnesium, sodium, chlorides, or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 2 parts per million. Aqueous solution neutral to *litmus* (absence of acid potassium tartrate).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 16 grammes. | 30 to 240 grains. |

## POTASSII TARTRAS ACIDUS

### Acid Potassium Tartrate

*Synonym*—Purified Cream of Tartar

Acid Potassium Tartrate may be obtained from the crude cream of tartar deposited during the fermentation of grape juice. It contains not less than 99 per cent. of pure potassium hydrogen tartrate, $KHC_4H_4O_6$.

*Characters and Tests.*—A gritty white powder, or fragments of crystalline cakes. Taste acid. Soluble in 220 parts of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of potassium and of tartrates. 1 gramme requires for neutralisation not less than 10·5 millilitres of *N/2 solution of sodium hydroxide*. Yields no characteristic *reactions* for copper, or iron, and not more than the slightest *reactions* for calcium, magnesium, sodium, chlorides, or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 grammes. | 15 to 60 grains. |

## PRUNI VIRGINIANÆ CORTEX

### Wild Cherry Bark

*Synonym*—Virginian Prune Bark

Wild Cherry Bark is the bark of Prunus serotina, *Ehrh.*, collected in autumn.

*Characters.*—In curved pieces or irregular fragments not more than three millimetres thick. Frequently covered with a smooth, thin, reddish-brown, papery cork, or, if this has been removed, exhibiting a greenish-brown cortex; marked with transversely elongated lenticels. Fracture short, granular; fractured surface reddish-grey. Inner surface reddish-brown, striated or reticulately fissured. In the bark numerous groups of sclerenchymatous cells of characteristic shape, but no typical bast fibres; in the parenchymatous cells minute starch grains and prismatic crystals of calcium oxalate. Slight odour; taste astringent, aromatic and bitter, recalling that of bitter almonds.

## PTEROCARPI LIGNUM

### Red Sanders Wood

*Synonym*—Red Sandal Wood

Red Sanders Wood is the heart-wood of Pterocarpus santalinus, *Linn. f.*

*Characters.*—Imported in irregular logs or billets, freed from the pale sapwood; reddish-brown or blackish-brown externally, deep blood-red internally; hard, but easily split longitudinally. In transverse section, narrow, closely

approximated, reddish medullary rays traversing a nearly black wood with scattered, large, isolated vessels. Colouring matter readily soluble in *alcohol* (90 per cent.), but almost insoluble in *water*. Odour of the warmed Wood faintly aromatic; taste very slightly astringent.

## PULVIS AMYGDALÆ COMPOSITUS

### Compound Powder of Almonds

| | |
|---|---|
| Sweet Almonds . . . . | 60 grammes |
| Refined Sugar, in powder . . . | 30 grammes |
| Gum Acacia, in powder . . . | 10 grammes |

Blanch and dry the Almonds; reduce them to a coarse powder; mix the Gum Acacia and Sugar; add to the powdered Almonds; mix.

## PULVIS ANTIMONIALIS

### Antimonial Powder

| | |
|---|---|
| Antimonious Oxide . . . . | 25 grammes |
| Calcium Phosphate . . . | 50 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 decigrams. | 3 to 6 grains. |

## PULVIS BUTEÆ SEMINUM

### Powder of Butea Seeds

Soak Butea Seeds in Distilled Water; carefully remove the integuments; dry and powder the kernels.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decigrams. | 10 to 20 grains. |

## PULVIS CATECHU COMPOSITUS

### Compound Powder of Catechu

| | |
|---|---|
| Catechu, in powder | 40 grammes |
| Kino, in powder | 20 grammes |
| Krameria Root, in powder | 20 grammes |
| Cinnamon Bark, in powder | 10 grammes |
| Nutmeg, in powder | 10 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PULVIS CINNAMOMI COMPOSITUS

### Compound Powder of Cinnamon

*Synonym*—Pulvis Aromaticus

| | |
|---|---|
| Cinnamon Bark, in powder | 25 grammes |
| Cardamom Seeds, in powder | 25 grammes |
| Ginger, in powder | 25 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PULVIS CRETÆ AROMATICUS

### Aromatic Powder of Chalk

| | |
|---|---|
| Cinnamon Bark, in powder | 10 grammes |
| Nutmeg, in powder | 8 grammes |
| Cloves, in powder | 4 grammes |
| Cardamom Seeds, in powder | 3 grammes |
| Refined Sugar, in powder | 50 grammes |
| Prepared Chalk | 25 grammes |

Mix.

[*For dose see over.*

PULVIS CRETÆ AROMATICUS (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PULVIS CRETÆ AROMATICUS CUM OPIO

### Aromatic Powder of Chalk with Opium

| | |
|---|---|
| Aromatic Powder of Chalk . . | 97·5 grammes |
| Opium, in powder . . . | 2·5 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

This Powder contains 2·5 per cent. of Opium.

## PULVIS GLYCYRRHIZÆ COMPOSITUS

### Compound Powder of Liquorice

| | |
|---|---|
| Senna Leaves, in powder . . . | 16 grammes |
| Liquorice Root, in powder . . | 16 grammes |
| Fennel Fruit, in powder . . . | 8 grammes |
| Sublimed Sulphur . . . . | 8 grammes |
| Refined Sugar, in powder . . | 52 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## PULVIS IPECACUANHÆ COMPOSITUS

### Compound Powder of Ipecacuanha

*Synonym*—Dover's Powder

| | |
|---|---|
| Ipecacuanha Root, in powder | 10 grammes |
| Opium, in powder | 10 grammes |
| Potassium Sulphate, in powder | 80 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

This Powder contains 10 per cent. of Opium.

## PULVIS JALAPÆ COMPOSITUS

### Compound Powder of Jalap

| | |
|---|---|
| Jalap, in powder | 30 grammes |
| Acid Potassium Tartrate, in powder | 60 grammes |
| Ginger, in powder | 10 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PULVIS KALADANÆ COMPOSITUS

### Compound Powder of Kaladana

| | |
|---|---|
| Kaladana, in powder | 30 grammes |
| Acid Potassium Tartrate, in powder | 60 grammes |
| Ginger, in powder | 10 grammes |

Mix.

[*For dose see over.*

PULVIS KALADANÆ COMPOSITUS (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PULVIS KINO COMPOSITUS

### Compound Powder of Kino

| | |
|---|---|
| Kino, in powder | 75 grammes |
| Opium, in powder | 5 grammes |
| Cinnamon Bark, in powder | 20 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

This Powder contains 5 per cent. of Opium.

## PULVIS OPII COMPOSITUS

### Compound Powder of Opium

| | |
|---|---|
| Opium, in powder | 10 grammes |
| Black pepper of commerce, in powder | 15 grammes |
| Ginger, in powder | 30 grammes |
| Caraway Fruit, in powder | 42 grammes |
| Tragacanth, in powder | 3 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decigrams. | 5 to 15 grains. |

This Powder contains 10 per cent. of Opium.

## PULVIS RHEI COMPOSITUS

### Compound Powder of Rhubarb

*Synonym*—Gregory's Powder

| | |
|---|---|
| Rhubarb, in powder . . . . | 22 grammes |
| Light Magnesia . . . . | 66 grammes |
| Ginger, in powder . . . . | 12 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PULVIS SCAMMONIÆ COMPOSITUS

### Compound Powder of Scammony

| | |
|---|---|
| Scammony Resin, in powder . . | 50 grammes |
| Jalap, in powder . . . . | 35 grammes |
| Ginger, in powder . . . . | 15 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decigrams. | 10 to 20 grains. |

## PULVIS SODÆ TARTARATÆ EFFERVESCENS

### Effervescent Tartarated Soda Powder

*Synonym*—Seidlitz Powder

| | | |
|---|---|---|
| No. 1 | Sodium Potassium Tartrate, in dry powder . . . | 7·5 grammes |
| | Sodium Bicarbonate, in dry powder . . . . | 2·5 grammes |

Mix.

No. 2 Tartaric Acid, in dry powder . . . . 2·5 grammes

Put No. 1 in blue paper, and put No. 2 in white paper.

*Dose* (*as a single draught*).

No. 1 dissolved in cold or warm water, and No. 2 then added.

## PULVIS TRAGACANTHÆ COMPOSITUS

### Compound Powder of Tragacanth

| | |
|---|---|
| Tragacanth, in powder . . . | 15 grammes |
| Gum Acacia, in powder . . . | 20 grammes |
| Starch, in powder . . . . | 20 grammes |
| Refined Sugar, in powder . . | 45 grammes |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 40 decigrams. | 10 to 60 grains. |

## PYRETHRI RADIX

### Pyrethrum Root

Pyrethrum Root is the dried root of Anacyclus Pyrethrum, *DC.*

*Characters.*—Usually from five to ten centimetres long, and from ten to fifteen millimetres thick; unbranched, nearly cylindrical, or frequently tapering towards both extremities; the crown often bearing a tuft of nearly colourless hairs. Outer surface brown and longitudinally wrinkled. Fracture short. In transverse section, numerous, narrow, yellowish wood-bundles alternating with wider, brownish-grey medullary rays; in the cortex and

medullary rays scattered, yellowish-brown oleo-resin ducts; in the parenchymatous tissue inulin, but no starch. Characteristic odour; taste pungent, salivant.

## PYROXYLINUM

### Pyroxylin

| | |
|---|---|
| Cotton | 10 grammes |
| Sulphuric Acid | 50 millilitres |
| Nitric Acid | 50 millilitres |
| Distilled Water | a sufficient quantity |

Mix the Acids in a porcelain mortar; immerse the Cotton in the mixture, and after it is thoroughly wetted by the Acids stir it for three minutes with a glass rod; transfer it to Distilled Water, wash until free from acid, drain, and dry the Pyroxylin in a warm room.

*Characters and Test.*—Resembles cotton-wool, but is somewhat harsher to the touch. Highly inflammable. Readily soluble in a mixture of equal volumes of *alcohol* (90 per cent.) and *ether* (distinction from gun-cotton).

## QUASSIÆ LIGNUM

### Quassia Wood

Quassia Wood is the wood of the trunk and branches of Picræna excelsa, *Lindl.*

*Characters.*—In logs of varying length, or in chips or raspings; yellowish white, tough and dense, but easily split. In longitudinal section, elongated cells containing single crystals of calcium oxalate; in transverse section, medullary rays mostly two or three cells wide. No odour; taste intensely bitter.

## QUILLAIÆ CORTEX

### Quillaia Bark

Quillaia Bark is the dried inner part of the bark of Quillaja Saponaria, *Molina*.

*Characters and Test.*—In flat pieces, from three to eight millimetres thick, but varying considerably in length and width. Outer surface brownish-white, or, where the outer bark has been incompletely removed, reddish or blackish-brown, and longitudinally striated. Inner surface white or yellowish-white and smooth. Fracture splintery and laminated, the tangential surfaces of the laminæ often exhibiting glistening prismatic crystals of calcium oxalate. In transverse section, chequered with delicate radial and tangential lines; medullary rays four cells wide; numerous irregular groups of bast fibres of varying size; scattered starch grains from four to six microns in diameter. Powdered Quillaia Bark is strongly sternutatory; *water* vigorously shaken with it forms copious persistent froth. Odour not marked; taste astringent and acrid. Ash not more than 15 per cent.

## QUININÆ HYDROCHLORIDUM

### Quinine Hydrochloride

Quinine Hydrochloride, $C_{20}H_{24}N_2O_2,HCl,2H_2O$, is the hydrochloride of an alkaloid, quinine, obtained from the bark of various species of Cinchona.

*Characters and Tests.*—White silky crystals, efflorescent in warm air. No odour; taste very bitter. Soluble in 36 parts of *water*, and in 2 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of chlorides. When to 10 millilitres of an aqueous solution (1 in 1000) 0·5 millilitre of *solution of bromine* and, after well shaking, 1 drop of *strong solution of ammonia* are added, a deep green

coloration is produced. When 2 grammes are dissolved in a warm mortar in 20 millilitres of *water* at 60°, 1 gramme of powdered non-effloresced *sodium sulphate* added, the mixture triturated, cooled, allowed to stand at exactly 15° for half an hour with occasional stirring, the crystals of quinine sulphate pressed, and the expressed liquid filtered, 5 millilitres of this filtrate, transferred to a dry test-tube and brought to a temperature of 15°, yield, on the gradual addition of 6 millilitres of *solution of ammonia*, also at a temperature of 15°, a precipitate which redissolves on rotating the tube (limit of other cinchona alkaloids). Dissolves in *sulphuric acid* and in *nitric acid* without coloration. 1 gramme dissolves in 7 millilitres of a mixture of 2 volumes of *chloroform* and 1 volume of *absolute alcohol*. Loses not more than 9·1 per cent. of its weight when dried at 100°. Yields no characteristic *reactions* for barium or for sulphates. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 60 centigrams. | 1 to 10 grains. |

## QUININÆ HYDROCHLORIDUM ACIDUM

### Acid Quinine Hydrochloride

Acid Quinine Hydrochloride, $C_{20}H_{24}N_2O_2,2HCl$, is the acid hydrochloride of an alkaloid, quinine, obtained from the bark of various species of Cinchona.

*Characters and Tests.*—A white amorphous powder. No odour; taste intensely bitter. Soluble in less than 1 part of *water*. Aqueous solution acid to *litmus*. Yields the *reactions* characteristic of chlorides. Yields not more than the slightest characteristic *reaction* for sulphates. 1 gramme dissolved in 20 millilitres of *water* requires for neutralisation not more than 5·0 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. Yields

a green coloration when tested as described under ' Quininæ Hydrochloridum.' Loses not more than 3 per cent. of its weight when dried at 100°. When 2 grammes are dissolved in 15 millilitres of *water*, the solution neutralised with *N/1 solution of sodium hydroxide*, mixed with 1 gramme of powdered non-effloresced *sodium sulphate*, and further treated as described under ' Quininæ Hydrochloridum,' the precipitate produced on the addition of *solution of ammonia* redissolves on rotating the tube (limit of other cinchona alkaloids). No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 60 centigrams. | 1 to 10 grains. |

## QUININÆ SULPHAS

### Quinine Sulphate

Quinine Sulphate, $(C_{20}H_{24}N_2O_2)_2,H_2SO_4,7\frac{1}{2}H_2O$, is the sulphate of an alkaloid, quinine, obtained from the bark of various species of Cinchona.

*Characters and Tests.*—Small, light, white, silky crystals. No odour; taste intensely bitter. Soluble in 800 parts of *water*, and in 65 parts of *alcohol* (90 per cent.). Aqueous solution exhibits a blue fluorescence. Entirely soluble in *water* acidified with a mineral acid. Yields the *reaction* characteristic of sulphates. When to 10 millilitres of an aqueous solution (1 in 1000) 0·5 millilitre of *solution of bromine* and, after well shaking, 1 drop of *strong solution of ammonia* are added, a deep green coloration is produced. Exposed to dry air the crystals effloresce until the water of crystallisation is reduced from $7\frac{1}{2}$ molecules to 2 molecules. Aqueous solution yields with *solution of ammonia* a precipitate soluble in *ether*. When 2 grammes, weighed after drying at 50°, are digested at 60° to 65° in a stoppered test-tube with 20 millilitres of *water* for half an hour, repeatedly shaken, then allowed

to cool to 15°, kept at that temperature for half an hour, stirred from time to time, the crystals pressed, and the expressed liquid filtered, then 5 millilitres of this filtrate, transferred to a dry test-tube and brought to a temperature of 15°, yield, on the gradual addition of 6 millilitres of *solution of ammonia*, also at a temperature of 15°, a precipitate which redissolves on rotating the tube (limit of other cinchona alkaloids). 1 gramme dissolves in 7 millilitres of a mixture of 2 volumes of *chloroform* and 1 volume of *absolute alcohol*. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 60 centigrams. | 1 to 10 grains. |

## RESINA

### Resin

Resin is the residue left after the distillation of the oil of turpentine from the crude oleo-resin (crude turpentine) of various species of Pinus.

*Characters and Tests.*—Translucent, of a light amber colour, compact, brittle, pulverisable; fracture shining; odour and taste faintly terebinthinate. Soluble in *alcohol* (90 per cent.), in *ether*, *benzene*, and *carbon disulphide*. Readily fusible; burns with a dense yellow flame and much smoke, leaving no appreciable ash.

## RESORCINUM

### Resorcin

*Synonym*—Resorcinol

Resorcin, or meta-dihydroxy-benzene, $C_6H_6O_2$, may be obtained by the interaction of fused sodium hydroxide and sodium metabenzene-disulphonate.

*Characters and Tests.*—Colourless, shining, acicular or prismatic crystals. Faint odour; taste pungent and sweetish, followed by bitterness. Soluble in less than 1 part of *water*, or of *alcohol* (90 per cent.); very soluble in *ether*, and in *glycerin*; soluble in *olive oil*; slightly soluble in *chloroform*. Melting point 110° to 111°; at a higher temperature sublimes without residue and without evolving an odour of phenol. Alkaline solutions darken in colour and exhibit a strong greenish fluorescence. A concentrated aqueous solution is colourless (absence of empyreumatic substances), and neutral or only slightly acid to *litmus*; it is unaffected by the addition of *solution of lead acetate* (absence of catechol). A weak aqueous solution is coloured bluish-violet by *T. Sol. of ferric chloride*, the colour changing to brownish-yellow on the addition of *solution of ammonia* (distinction from catechol and quinol). When 0·5 gramme is mixed with 2 millilitres of *solution of formaldehyde* and 2 millilitres of *solution of sodium hydroxide*, and the mixture heated to boiling, a deep red coloration is gradually developed.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 30 centigrams. | 1 to 5 grains. |

## RHEI RHIZOMA

### Rhubarb

Rhubarb is the rhizome of Rheum officinale, *Baill.*, and other species of Rheum, collected in China and Thibet, deprived of most of the cortex, and dried.

*Characters and Test.*—In compact, firm, cylindrical, barrel-shaped, conical or plano-convex pieces, often perforated, the perforation sometimes containing a fragment of cord. Surface rounded or slightly angular, but not shrunken, marked with reddish-brown lines embedded in a whitish ground-substance; usually covered with a

bright brownish-yellow powder. Fracture granular and uneven, the pinkish-brown fractured surface exhibiting numerous reddish-brown points and lines on a white ground-substance. For a short distance within the cambium the structure is radiate; within this there is a more or less distinct ring of closely approximated vascular bundles with central bast and radiating, reddish-brown medullary rays; in the parenchymatous cells abundant starch grains, an amorphous yellow substance and very large cluster-crystals of calcium oxalate. In powdered Rhubarb large cluster-crystals of calcium oxalate, often more than 100 microns in diameter, simple or compound starch grains, the single grains seldom exceeding 20 microns in diameter, fragments of reticulated vessels and of parenchymatous tissue, and small yellowish masses and globules which assume a reddish-pink colour with *solution of ammonia*; it is free from added starch and from sclerenchymatous cells and fibres. Characteristic, somewhat aromatic odour; taste bitter, slightly astringent. Ash not more than 15 per cent.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigràms (repeated). | 3 to 10 grains (repeated). |
| 1 to 2 grammes (single). | 15 to 30 grains (single). |

## RHŒADOS PETALA

### Red-Poppy Petals

Red-Poppy Petals are the fresh petals of Papaver Rhœas, *Linn.*

*Characters.*—Transversely elliptical, about five centimetres wide, bright scarlet, smooth and lustrous; margin entire. Characteristic, somewhat unpleasant odour; taste slightly bitter.

## ROSÆ GALLICÆ PETALA

### Red-Rose Petals

Red-Rose Petals are the fresh or dried unexpanded petals of Rosa gallica, *Linn.*; obtained from cultivated plants.

*Characters.*—Usually in little cone-like masses, or sometimes separate and more or less crumpled. Petals velvety, deep purplish-red passing into brownish-yellow towards the base. Fragrant odour; taste slightly astringent.

## SACCHARUM LACTIS

### Milk Sugar

*Synonym*—Lactose

Milk Sugar is a crystallised sugar, $C_{12}H_{22}O_{11},H_2O$, obtained from the whey of milk.

*Characters and Tests.*—A white powder, or in crystalline masses; no odour, taste slightly sweet. Soluble in 7 parts of cold *water* and in about 1 part of boiling *water*. 5 grammes dissolved in *water* require for neutralisation not more than 1·5 millilitres of *N/10 solution of sodium hydroxide* (limit of acidity). When 5 grammes are well shaken with 20 millilitres of *alcohol* (90 per cent.) and filtered, the filtrate leaves no appreciable residue on evaporation (absence of sucrose). Ash not more than 0·25 per cent.

## SACCHARUM PURIFICATUM

### Refined Sugar

*Synonym*—Sucrose

Refined Sugar is a crystallised sugar, $C_{12}H_{22}O_{11}$, obtained from the juice of the sugar-cane, sugar-beet, and other plants.

*Characters and Tests.*—Colourless and inodorous crystals, or in crystalline masses. Readily and completely soluble in half its weight of *water*, forming a clear, colourless and odourless syrup which does not develop an unpleasant odour when acidified with *hypophosphorous acid* and allowed to stand for twenty-four hours; the syrup, heated to about 82° with *solution of potassio-cupric tartrate*, does not yield more than a trace of a red or yellow precipitate (absence of glucose). Yields no *reactions* for barium, strontium, calcium, chlorides, or sulphates. Ash not more than 0·05 per cent.

## SALICINUM

### Salicin

Salicin, $C_{13}H_{18}O_7$, is a crystalline glucoside, which may be obtained from the bark of various species of Salix, and of Populus.

*Characters and Tests.*—Colourless, shining, trimetric, tabular crystals, or white, crystalline powder. Taste very bitter. Soluble in 28 parts of *water*, and in 80 parts of *alcohol* (90 per cent.); insoluble in *ether*. Melting point from 200° to 201°. Coloured red by *sulphuric acid*. When 0·1 gramme is gently heated with 0·2 gramme of *potassium bichromate* and 2 millilitres of *diluted sulphuric acid* an odour recalling meadow-sweet is developed. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## SALOL

### Salol

Salol, or phenyl salicylate, $C_{13}H_{10}O_3$, may be obtained by the interaction of salicylic acid and phenol.

*Characters and Tests.*—Colourless crystals, or crystalline powder. Aromatic odour; taste slight. Almost insoluble in *water*; soluble in 15 parts of *alcohol* (90 per cent.), in 0·3 part of *ether* or of *chloroform*, and in fixed and volatile oils. Melting point from 42° to 43°. Alcoholic solution neutral to *litmus*; yields a white precipitate with *solution of bromine*, and a violet coloration with dilute *T. Sol. of ferric chloride*. When 0·2 gramme is boiled with 5 millilitres of *solution of sodium hydroxide*, and the cooled solution acidified with *hydrochloric acid*, the odour of phenol is developed and a crystalline precipitate is formed. *Water* which has been shaken with Salol is not affected by *T. Sol. of ferric chloride* (absence of free salicylic acid and of readily soluble salicylates), and yields no characteristic *reactions* for sulphates or chlorides. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## SANTONINUM

### Santonin

Santonin, $C_{15}H_{18}O_3$, is a crystalline principle which may be obtained from santonica, the dried unexpanded flower-heads of Artemisia maritima, *var.* Stechmanniana, *Besser.*

*Characters and Tests.*—Colourless, flat, rhombic prisms. Taste slightly bitter. Almost insoluble in *water*; soluble in 2·5 parts of *chloroform*, and in 50 parts of *alcohol* (90 per cent.). Melting point 170°. Sunlight renders it yellow. Added to warm *alcoholic solution of potassium hydroxide* it yields a violet-red colour. Insoluble in diluted mineral acids. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

## SAPO ANIMALIS

### Curd Soap

Curd Soap is soap made from sodium hydroxide and purified animal fats consisting principally of stearin ; it contains not more than 30 per cent. of water.

*Characters and Tests.*—Yellowish-white or greyish-white ; nearly inodorous ; easily moulded when heated, becoming horny and pulverisable when dried. Sparingly soluble in cold *water* ; completely soluble in hot *water* ; soluble in *alcohol* (90 per cent.). When 5 grammes of the dried and powdered Soap are dissolved in 50 millilitres of boiling *alcohol* (90 per cent.), and the solution filtered while hot, the filter being thoroughly washed with more of the boiling *alcohol*, the filtrate is neutral to *solution of phenolphthalein* (absence of alkaline hydroxides and free fatty acids), and if the filter is then washed with hot *water*, the washings require for neutralisation not more than 5 millilitres of *N/10 solution of sulphuric acid, solution of methyl orange* being used as indicator (limit of alkaline carbonates). Does not impart a greasy stain to white unglazed paper (absence of free fats). Loses not more than 30 per cent. of its weight when dried at 110°. Ash not deliquescent (absence of potassium soap).

## SAPO DURUS

### Hard Soap

Hard Soap is soap made from sodium hydroxide and olive oil ; it contains not more than 30 per cent. of water.

*Characters and Tests.*—Greyish-white, yellowish-white, or greenish-white ; becoming horny and pulverisable when dried. Nearly inodorous. Soluble in 20 parts of cold *water*, and in 1·5 parts of hot *water* ; soluble in *alcohol* (90 per cent.), more readily when warmed. Responds to

the tests for alkaline hydroxides and carbonates and for free fatty acids described under 'Sapo Animalis.' Does not impart a greasy stain to white unglazed paper (absence of free oil). Loses not more than 30 per cent. of its weight when dried at 110°. Ash not deliquescent (absence of potassium soap). The absence of fatty acids derived from oils other than Olive Oil is determined by the following process :—

Dissolve the Soap in hot *water*, add a slight excess of *hydrochloric acid* and heat on a water-bath until the liberated fatty acids form a transparent layer. Separate the fatty acids on a wet filter-paper, and wash with hot *water* until the washings are neutral to *solution of methyl orange*. Filter the oily layer through a dry filter paper in a warm oven. The fatty acids thus separated possess the following characters :—*Iodine value* 83 to 92 ; *acid value* 195 to 205 ; melting point 21° to 28° ; *refractive index* at 40° 1·4540 to 1·4580.

See Appendix XII, page 529, Oleum Olivæ.

## SAPO MOLLIS

### Soft Soap

Soft Soap is soap made from potassium hydroxide and olive oil.

*Characters and Tests.*—Yellowish-white to green ; of an unctuous consistence. Nearly inodorous. Readily soluble in *alcohol* (90 per cent.), leaving not more than 3 per cent. of insoluble residue. Responds to the tests for alkaline hydroxides and carbonates and for free fatty acids described under 'Sapo Animalis.' Does not impart a greasy stain to white unglazed paper (absence of free oil). Ash very deliquescent, and yields no characteristic *reactions* for copper. The mixed fatty acids, liberated and treated as described under 'Sapo Durus,' possess the characters there specified.

See Appendix XII, page 529, Oleum Olivæ.

## SAPPAN

### Sappan

Sappan is the heart-wood of Cæsalpinia Sappan, *Linn.*

*Characters and Test.*—In hard, heavy pieces of variable size, or in orange-red chips. In transverse section, well-marked concentric rings, numerous narrow medullary rays, and large vessels. No odour; taste slightly astringent. It communicates to *alcohol* (90 per cent.) and to *water* a red colour, which becomes carmine-red, but not purple, upon the addition of *solution of sodium hydroxide* (distinction from Logwood).

## SCAMMONIÆ RADIX

### Scammony Root

Scammony Root is the dried root of Convolvulus Scammonia, *Linn.*

*Characters and Test.*—Brownish-grey or yellowish-grey, tapering or nearly cylindrical, varying usually from two to eight centimetres, or more, in diameter. Frequently contorted and longitudinally furrowed; enlarged at the crown, and bearing the remains of slender aerial stems. Fracture very coarsely fibrous; internally light or dark grey. In transverse section, numerous rounded wood-bundles distributed throughout a paler ground-tissue in which dark resin cells can be distinguished with a lens; in the parenchymatous tissue abundant, characteristic starch grains. Characteristic odour; taste at first somewhat sweet, afterwards slightly acrid. Yields to *alcohol* (90 per cent.) a resin which has the properties described under 'Scammoniæ Resina.'

## SCAMMONIÆ RESINA

### Scammony Resin

Scammony Resin is a mixture of resins obtained from Scammony Root or from Orizaba Jalap Root.

Exhaust the coarsely powdered Root with Alcohol (90 per cent.). Recover most of the alcohol by distillation; pour the concentrated solution thus obtained into eight times its volume of Distilled Water; allow the resin that separates to subside, wash it with Distilled Water, and dry at a gentle heat.

*Characters and Tests.*—Brownish, translucent, brittle fragments, breaking with a resinous fracture; readily reduced to a pale-brown powder. Characteristic, agreeable odour; taste acrid. Readily soluble in *alcohol* (90 per cent.). When 1 gramme of the powdered Resin is triturated with 20 millilitres of *water* and filtered, the filtrate is almost colourless. A solution of 0·1 gramme in 10 millilitres of *solution of sodium hydroxide*, boiled for a few moments, and cooled, when acidified with *hydrochloric acid*, may become opalescent but not immediately turbid (absence of certain other resins). Not less than 75 per cent. soluble in *ether*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 25 to 50 centigrams. | 4 to 8 grains. |

## SCILLA

### Squill

Squill is the bulb of Urginea Scilla, *Steinh.*, divested of its dry membranous outer scales, cut into slices, and dried. When powdered should be kept quite dry over quicklime.

*Characters and Test.*—In curved, yellowish-white, somewhat translucent strips, from about two and a half to five centimetres long, frequently tapering towards both ends; tough and slightly flexible while moist, but brittle and easily pulverisable when dry. Almost inodorous; taste disagreeably bitter. Ash not more than 5 per cent.

*Dose (in powder).*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

## SCOPARII CACUMINA

### Broom Tops

Broom Tops are the fresh and the dried tops of Cytisus scoparius, *Link.*

*Characters.*—Stem dark green, with long, straight, slender, alternate branches; the latter, like the upper part of the stem, winged, tough, flexible, and glabrous. Leaves, when present, small, sessile, and simple above, stalked and trifoliate below. Odour of the fresh tops, especially when bruised, characteristic; the dry tops almost inodorous.

## SENEGÆ RADIX

### Senega Root

Senega Root is the dried root of Polygala Senega, *Linn.*

*Characters.*—Greyish or brownish-yellow, slender, usually from five to ten centimetres long, with a knotty crown bearing the bases of numerous, slender, aerial stems; frequently curved or contorted, sparingly branched, keeled, sometimes transversely wrinkled. Fracture short. In transverse section, a horny translucent cortex free from

starch grains and a white, often irregularly developed, wood. Characteristic odour; taste at first sweet, afterwards acrid.

## SENNÆ FOLIA

### Senna Leaves

Senna Leaves are the dried leaflets of Cassia acutifolia, *Delile*, and of Cassia angustifolia, *Vahl*. Known in commerce as Alexandrian senna, and Tinnevelly senna.

*Characters and Test.*—Pale greyish-green or yellowish-green, thin, brittle; usually from two to four centimetres long, the leaflets of Alexandrian senna being usually smaller than those of Tinnevelly senna; lanceolate, or oval-lanceolate, acute, entire, and unequal at the base. Surface finely pubescent or nearly glabrous; veins on the under surface distinct. Epidermis of both surfaces consisting of polygonal cells and bearing one-celled, thick-walled, warty hairs together with stomata, each stoma being enclosed between two cells with their long axes parallel to the ostiole. The powdered Leaves greenish-yellow, exhibiting, in addition to the characteristic epidermis, stomata, and hairs, elongated palisade cells and grouped sclerenchymatous fibres accompanied by prismatic crystals of calcium oxalate. Ash not more than 12 per cent.

## SENNÆ FRUCTUS

### Senna Pods

Senna Pods are the dried ripe fruits of Cassia acutifolia, *Delile*, and of Cassia angustifolia, *Vahl*.

*Characters.*—About five centimetres long, and from two to two and a half centimetres wide; broadly oblong or somewhat reniform; pale green; brownish in the

centre above the seeds; very flat; rounded at the base, slightly mucronate at the apex. Pericarp papery. Seeds obovate-cuneate, flattened. Odour and taste slight.

## SERPENTARIÆ RHIZOMA

### Serpentary Rhizome

Serpentary Rhizome is the dried rhizome and roots of Aristolochia Serpentaria, *Linn.*, and of Aristolochia reticulata, *Nutt.*

*Characters and Test.*—Rhizome of Aristolochia Serpentaria tortuous and slender, about two centimetres long and three millimetres thick; on the upper surface the remains of slender, aerial stems, and on the under surface numerous wiry interlacing roots, often about seven centimetres long. Both rhizome and roots dull yellowish-brown. Characteristic odour; taste strong, camphoraceous, bitter. Ash not more than 10 per cent.

Rhizome and roots of Aristolochia reticulata resemble the foregoing, but are longer and thicker, and the roots are straighter.

## SEVUM BENZOATUM

### Benzoated Suet

| | |
|---|---|
| Prepared Suet . . . . | 1000 grammes |
| Benzoin, in coarse powder . . | 30 grammes |

Melt the Suet, add the Benzoin, and maintain at a temperature of 60° for one hour, stirring frequently; strain, and stir until nearly cold.

In India, Benzoated Suet should be employed in making the official preparations for which Benzoated Lard (Adeps Benzoatus) is directed to be used.

## SEVUM PRÆPARATUM
### Prepared Suet

Prepared Suet is the purified internal fat of the abdomen of the sheep, Ovis aries, *Linn.*

*Characters and Tests.*—Firm, white, unctuous. Nearly inodorous; taste bland. *Saponification value* 192 to 195; *iodine value* 33 to 46; *acid value* not more than 2·0; melting point 45° to 50°; *refractive index* at 60° 1·4490 to 1·4510.

In India, Prepared Suet should be employed in making the official preparations for which Prepared Lard (Adeps Præparatus) is directed to be used.

## SODII ARSENAS ANHYDROSUS
### Anhydrous Sodium Arsenate

Anhydrous Sodium Arsenate is obtained by exposing to a temperature of 150° crystallised sodium arsenate, which may be prepared by treating with water the product of the fusion of arsenious anhydride with sodium nitrate and sodium carbonate. It contains not less than 98 per cent. of pure anhydrous di-sodium hydrogen arsenate, $Na_2HAsO_4$.

*Characters and Tests*—A white powder. Soluble in 6 parts of *water*; slightly soluble in *alcohol* (90 per cent.). Aqueous solution alkaline to *litmus*. Yields the *reactions* characteristic of sodium and of arsenates. When 0·25 gramme is dissolved in 25 millilitres of *water*, and to the solution 3 grammes of *potassium iodide* and 25 millilitres of *hydrochloric acid* are added, not less than 26·3 millilitres of *N/10 solution of sodium thiosulphate* are required to decolorise the iodine liberated. Yields no characteristic *reactions* for lead, copper, iron, aluminium, calcium, carbonates, chlorides, nitrates, or sulphates. Loses not more than 2 per cent. of its weight when dried at 150° (limit of moisture).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1·5 to 6 milligrams. | 1/40 to 1/10 grain. |

## SODII BENZOAS

### Sodium Benzoate

Sodium Benzoate may be obtained by neutralising benzoic acid with sodium carbonate. It contains not less than 96 per cent. of pure sodium benzoate, $NaC_7H_5O_2$.

*Characters and Tests.*—A white subcrystalline, or amorphous powder. Inodorous, or with a faint odour of benzoin; taste unpleasant, sweetish, saline. Soluble in 2 parts of *water*, and in 24 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium. An aqueous solution (1 in 10) is slightly alkaline to *litmus*, gives a pale reddish precipitate with *T. Sol.* of *ferric chloride*, and yields with *diluted hydrochloric acid* a crystalline precipitate of benzoic acid. Loses not more than 4 per cent. of its weight when dried at 110°. 1 gramme of this dried salt heated to redness till gases cease to be evolved leaves an alkaline residue which, treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 13·7 or more than 13·9 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, iron, potassium, or carbonates, and not more than the slightest *reactions* for chlorides or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## SODII BICARBONAS

### Sodium Bicarbonate

Sodium Bicarbonate may be obtained by exposing crystals of sodium carbonate to carbon dioxide, or by the interaction of sodium chloride and ammonium bicarbonate.

It contains not less than 98·5 per cent. of pure sodium hydrogen carbonate, $NaHCO_3$.

*Characters and Tests.*—A white powder, or small, opaque, monoclinic crystals. Taste saline. Soluble in 11 parts of *water*. Yields the *reactions* characteristic of sodium and of bicarbonates. 1 gramme requires for neutralisation not less than 11·7 or more than 11·9 millilitres of *N/1 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, iron, aluminium, calcium, sulphites, or thiosulphates,and not more than the slightest *reactions* for chlorides, sulphates, or ammonium. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million. When 1 gramme of Sodium Bicarbonate is dissolved in 20 millilitres of cold *water*, without shaking, and 0·2 millilitre of *N/1 solution of sulphuric acid* and 2 drops of *solution of phenolphthalein* are added, no red colour is immediately developed (limit of carbonate). The addition of *T. Sol. of ferric chloride* to the aqueous solution acidified with *hydrochloric acid* causes no red coloration (absence of thiocyanates).

20 grammes of Sodium Bicarbonate are neutralised by 16·7 grammes of Citric Acid, and by 17·8 grammes of Tartaric Acid.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## SODII BROMIDUM

### Sodium Bromide

Sodium Bromide may be obtained in the same manner as Potassium Bromide, sodium carbonate being used in place of potassium carbonate. When dried at 110° it contains not less than 99 per cent. of pure sodium bromide, NaBr.

*Characters and Tests.*—Small, white, cubic crystals, or a white granular powder, somewhat deliquescent. Taste

saline, somewhat bitter. Soluble in 1·5 parts of *water*, and in 16 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium and of bromides. Loses not more than 5 per cent. of its weight when dried at 110°. 0·5 gramme of this dried salt, dissolved in *water*, requires for complete precipitation not less than 48·1 or more than 48·9 millilitres of *N/10 solution of silver nitrate*. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, calcium, magnesium, potassium, ammonium, carbonates, cyanides, bromates, or iodates, and not more than the slightest *reactions* for chlorides, iodides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## SODII CARBONAS

### Sodium Carbonate

Sodium Carbonate may be obtained from sodium chloride by interaction with ammonium bicarbonate, ignition, and subsequent crystallisation. It contains not less than 99 per cent. of pure sodium carbonate, $Na_2CO_3,10H_2O$.

*Characters and Tests.*—Transparent, colourless, rhombic crystals, efflorescent. Taste strongly alkaline. Soluble in 2 parts of *water*. Aqueous solution strongly alkaline to *litmus*. Free from the impurities enumerated under 'Sodii Bicarbonas.' When heated it liquefies and then dries, losing 62·9 per cent. of its weight. 1 gramme requires for neutralisation not less than 13·8 millilitres of *N/2 solution of sulphuric acid*. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million.

20 grammes of Sodium Carbonate are neutralised by 9·8 grammes Citric Acid, and by 10·5 grammes of Tartaric Acid.

[*For dose see over.*

SODII CARBONAS (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## SODII CARBONAS EXSICCATUS

### Exsiccated Sodium Carbonate

Exsiccated Sodium Carbonate is obtained by heating Sodium Carbonate until it loses nearly 63 per cent. of its weight. It contains not less than 95 per cent. of pure anhydrous sodium carbonate, $Na_2CO_3$.

*Characters and Tests.*—A whitish powder. Taste strongly alkaline. Yields the *reactions* characteristic of sodium and of carbonates. 1 gramme requires for neutralisation not less than 17·9 millilitres of *N/1 solution of sulphuric acid*. *Lead limit* 25 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigrams. | 3 to 10 grains. |

## SODII CHLORIDUM

### Sodium Chloride

Sodium Chloride, NaCl, may be obtained by purifying common salt.

*Characters and Tests.*—Small, white, crystalline grains, or transparent, cubic crystals, free from moisture. Taste saline. Soluble in 3 parts of *water*. Yields the *reactions* characteristic of sodium and of chlorides. Yields no characteristic *reactions* for potassium, bromides, or iodides, and not more than slight *reactions* for calcium, magnesium, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. 20 millilitres of an aqueous solution (1 in 20) are not immediately coloured blue by 0·5 millilitre of *solution of potassium ferrocyanide* (limit of iron).

## SODII CITRO-TARTRAS EFFERVESCENS

### Effervescent Sodium Citro-Tartrate

| | |
|---|---|
| Sodium Bicarbonate, in powder | 510 grammes |
| Tartaric Acid, in powder | 270 grammes |
| Citric Acid, in powder | 180 grammes |
| Refined Sugar, in powder | 150 grammes |

Mix the powders thoroughly; place the mixture in a dish or pan of suitable form heated to between 90° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes. | 60 to 120 grains. |

## SODII ET POTASSII TARTRAS

### Sodium Potassium Tartrate

*Synonyms*—Soda Tartarata: Tartarated Soda: Tartrate of Potassium and Sodium: Rochelle Salt

Sodium Potassium Tartrate may be obtained by neutralising Acid Potassium Tartrate with Sodium Carbonate. It contains not less than 98 per cent. of pure sodium potassium tartrate, $NaKC_4H_4O_6,4H_2O$.

*Characters and Tests.*—Trimetric prisms with hemihedral facets. Taste saline, cooling. Soluble in 1·5 parts of *water*; aqueous solution neutral to *litmus*. Yields the *reactions* characteristic of potassium, of sodium, and of tartrates. 1 gramme, heated to redness till gases cease to be evolved, leaves an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution

requiring for neutralisation not less than 13·9 millilitres of *N/2 solution of sulphuric acid*. Yields no characteristic *reactions* for copper, iron, calcium, ammonium, chlorides, or sulphates. *Lead limit* 20 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 8 to 16 grammes. | 120 to 240 grains. |

## SODII HYPOPHOSPHIS

### Sodium Hypophosphite

Sodium Hypophosphite may be obtained by the interaction of sodium carbonate and calcium hypophosphite. When dried at 110° it contains not less than 97 per cent. of pure sodium hypophosphite, $NaPH_2O_2$.

*Characters and Tests.*—White granules, deliquescent. Taste bitter, nauseous. Soluble in 1 part of *water* and in 30 parts of *alcohol* (90 per cent.); insoluble in *ether*. Yields, when heated, spontaneously inflammable hydrogen phosphide and hydrogen. Yields the *reactions* characteristic of sodium. Rapidly attacked by oxidising agents. Its solution yields with a warm aqueous solution of *copper sulphate* a red precipitate of cuprous hydride, which on boiling evolves hydrogen. Yields no characteristic *reactions* for copper, iron, aluminium, zinc, calcium, magnesium, potassium, or ammonium, and not more than the slightest *reactions* for carbonates, chlorides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million. Loses not more than 2 per cent. of its weight when dried at 110°. When the salt thus dried is assayed by the process described under 'Calcii Hypophosphis' not more than 28 millilitres of *N/10 solution of sodium thiosulphate* are required to decolorise the iodine liberated, corresponding to not less than 97 per cent. of pure sodium hypophosphite, $NaPH_2O_2$.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigrams. | 3 to 10 grains. |

## SODII IODIDUM

### Sodium Iodide

Sodium Iodide may be obtained from iodine and sodium hydroxide by a process similar to that employed in making Potassium Iodide, the salt being crystallised at a temperature not lower than 20°. When dried at 110° it contains not less than 99 per cent. of pure sodium iodide, NaI.

*Characters and Tests.*—A white crystalline powder, deliquescent. Taste saline and somewhat bitter. Soluble in less than 1 part of *water* and in 3 parts of *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium and of iodides. Loses not more than 5 per cent. of its weight when dried at 110°; 0·5 gramme of this dried salt requires for complete precipitation not less than 33·0 or more than 33·9 millilitres of *N/10 solution of silver nitrate.* Yields no characteristic *reactions* for copper, iron, aluminium, calcium, magnesium, potassium, ammonium, bromates, cyanides, carbonates, or iodates, and not more than the slightest *reactions* for bromides, chlorides, or sulphates. *Lead limit* 10 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## SODII NITRIS

### Sodium Nitrite

Sodium Nitrite may be obtained by fusing sodium nitrate with metallic lead. It contains not less than 95 per cent. of pure sodium nitrite, $NaNO_2$.

*Characters and Tests.*—A white crystalline powder, deliquescent. Taste saline. Soluble in 1·5 parts of *water*. Yields the *reactions* characteristic of sodium and of nitrites. 0·1 gramme dissolved in *water* decolorises not less than 27·5 millilitres of *N/10 solution of potassium permanganate*, the solution being maintained slightly acid. Aqueous solution neutral or only slightly alkaline to *litmus*; gives no precipitate on the addition of *diluted sulphuric acid* (absence of lead). *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

## SODII PHOSPHAS

### Sodium Phosphate

*Synonym*—Di-sodium Hydrogen Phosphate

Sodium Phosphate may be obtained by the interaction of sodium carbonate and the solution of acid calcium phosphate produced on mixing bone-ash and sulphuric acid. It contains not less than 99·5 per cent. of pure di-sodium hydrogen phosphate, $Na_2HPO_4,12H_2O$.

*Characters and Tests.*—Transparent, colourless, rhombic prisms, efflorescent. Taste saline. Soluble in 7 parts of *water*, the solution being slightly alkaline to *litmus*. Yields the *reactions* characteristic of sodium and of phosphates. 5 grammes dissolved in 50 millilitres of *water* require for neutralisation not less than 13·9 millilitres of *N/1 solution of sulphuric acid, solution of methyl orange* being used as indicator. Yields no characteristic *reactions* for potassium, ammonium, carbonates, or chlorides, and not more than the slightest *reaction* for sulphates. *Lead limit* 5 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 grammes (repeated). | 30 to 120 grains (repeated). |
| 10 to 16 grammes (single). | 150 to 240 grains (single). |

## SODII PHOSPHAS ACIDUS

### Acid Sodium Phosphate

*Synonyms*—Sodium Di-hydrogen Phosphate: Sodium Biphosphate

Acid Sodium Phosphate may be obtained by the combination of di-sodium hydrogen phosphate with phosphoric acid. It contains not less than 70 per cent. of pure sodium di-hydrogen phosphate, $NaH_2PO_4$.

*Characters and Tests.*—Transparent, colourless, rhombic crystals, or in crystalline powder. Taste saline, acid. Readily soluble in *water*, the solution being acid to *litmus*. Yields the *reactions* characteristic of sodium and of phosphates. 1 gramme dissolved in a mixture of 10 millilitres of *water* and 10 millilitres of *glycerin* requires for neutralisation not less than 5·8 millilitres of *N/1 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. Yields no characteristic *reactions* for potassium and ammonium, and not more than the slightest *reactions* for sulphates or chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 grammes. | 30 to 60 grains. |

## SODII PHOSPHAS EFFERVESCENS

### Effervescent Sodium Phosphate

| | |
|---|---|
| Sodium Phosphate, in crystals . | 500 grammes |
| Sodium Bicarbonate, in powder . | 500 grammes |
| Tartaric Acid, in powder . . | 270 grammes |
| Citric Acid, in powder . . . | 180 grammes |

Dry the Sodium Phosphate until it has lost about 60 per cent. of its weight; powder the dried salt and mix it with the other ingredients. Place the whole in a dish or pan of suitable form heated to between 90° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes (repeated). | 60 to 120 grains (repeated). |
| 10 to 16 grammes (single). | 150 to 240 grains (single). |

## SODII SALICYLAS

### Sodium Salicylate

Sodium Salicylate may be obtained by the interaction of salicylic acid and sodium carbonate. It contains not less than 99·5 per cent. of pure sodium salicylate, $NaC_7H_5O_3$.

*Characters and Tests.*—Small colourless scales, or tabular crystals with a pearly lustre. No odour; taste sweetish, unpleasant, saline. Soluble in 1 part of *water*, but this solution, when allowed to stand, is liable to deposit crystals of the salt containing 6 molecules of water of crystallisation;

soluble in 6 parts of *alcohol* (90 per cent.). Solutions neutral or faintly acid to *litmus*. Carbonises when heated, leaving finally a white ash which effervesces with acids and imparts an intense yellow colour to flame. *T. Sol. of ferric chloride* colours a dilute solution violet. 2 grammes, heated to redness till gases cease to be evolved, leave an alkaline residue which, when treated with *water*, filtered, and well washed, yields a clear solution requiring for neutralisation not less than 24·8 millilitres of *N/2 solution of sulphuric acid*. When to a concentrated aqueous solution excess of *diluted nitric acid* is added, a precipitate is produced which, collected, washed, and dried, responds to the tests described under 'Acidum Salicylicum,' and the filtrate yields not more than the slightest *reactions* for sulphates or chlorides. *Lead limit* 10 parts per million. *Arsenic limit* 2 parts per million. 50 to 100 grammes kept in a closed vessel for several days do not evolve the slightest odour of phenol. Dissolves without coloration or effervescence in *sulphuric acid* (absence of certain organic impurities and of carbonates).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 decigrams. | 10 to 30 grains. |

## SODII SULPHAS

### Sodium Sulphate

*Synonym*—Glauber's Salt

Sodium Sulphate, $Na_2SO_4,10H_2O$, may be obtained by the interaction of sodium chloride with sulphuric acid.

*Characters and Tests.*—In transparent monoclinic prisms; efflorescent. Taste bitter, saline. Soluble in 3 parts of *water*; insoluble in *alcohol* (90 per cent.). Loses about 55·9 per cent. of its weight when dried at 100°. Yields

the *reactions* characteristic of sodium and of sulphates. 1 gramme dissolved in *water* acidified with *hydrochloric acid* yields, on the addition of excess of *solution of barium chloride*, a white precipitate which, washed and dried, weighs about 0·724 gramme. Yields no characteristic *reactions* for iron, magnesium, potassium, ammonium, or carbonates, and not more than the slightest *reactions* for chlorides. *Lead limit* 5 parts per million. *Arsenic limit* 2 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 grammes (repeated). | 30 to 120 grains (repeated). |
| 10 to 16 grammes (single). | 150 to 240 grains (single). |

## SODII SULPHAS EFFERVESCENS

### Effervescent Sodium Sulphate

| | |
|---|---|
| Sodium Sulphate, in crystals . . | 500 grammes |
| Sodium Bicarbonate, in powder . | 500 grammes |
| Tartaric Acid, in powder . . | 270 grammes |
| Citric Acid, in powder . . . | 180 grammes |

Dry the Sodium Sulphate until it has lost about 55 per cent. of its weight; powder the dried salt, and mix it with the other ingredients. Place the whole in a dish or pan of suitable form, heated to between 90° and 105°. When the mixture, by aid of careful manipulation, has assumed a granular character, separate it into granules of uniform and convenient size by means of suitable sieves. Dry the granules at a temperature not exceeding 55°. The product weighs about one thousand grammes.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 grammes (repeated). | 60 to 120 grains (repeated). |
| 10 to 16 grammes (single). | 150 to 240 grains (single). |

## SODII SULPHIS

### Sodium Sulphite

Sodium Sulphite may be obtained by the interaction of sulphurous acid and sodium carbonate. It contains not less than 94 per cent. of pure sodium sulphite, $Na_2SO_3,7H_2O$.

*Characters and Tests.*—Colourless, transparent, monoclinic prisms, efflorescent in dry air. Inodorous; taste saline and sulphurous. Soluble in 2 parts of *water*; insoluble in *alcohol* (90 per cent.). Yields the *reactions* characteristic of sodium and of sulphites. Aqueous solution neutral or faintly alkaline to *litmus*; on the addition of *hydrochloric acid* evolves sulphur dioxide, but does not become cloudy (absence of thiosulphate). 0·3 gramme dissolved in 30 millilitres of *N/10 solution of iodine* yields a solution which requires for complete decolorisation not more than 7·6 millilitres of *N/10 solution of sodium thiosulphate*. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## SPIRITUS ÆTHERIS

### Spirit of Ether

| | |
|---|---|
| Ether . . . . . | 500 millilitres |
| Alcohol (90 per cent.) . . . | 1000 millilitres |

Mix.

*Test.*—Specific gravity 0·802 to 0·806.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 25 decimils (repeated). | 20 to 40 minims (repeated). |
| 4 to 6 mils (single). | 60 to 90 minims (single). |

## SPIRITUS ÆTHERIS NITROSI

### Spirit of Nitrous Ether

*Synonym*—Sweet Spirit of Nitre

Spirit of Nitrous Ether is an alcoholic solution containing not less than 1·52 or more than 2·66 per cent. by weight of ethyl nitrite, together with aldehyde and other allied substances. It should be kept in well-closed vessels ; preferably in a cool dark place, and in small amber bottles.

| | |
|---|---|
| Nitric Acid . . . . . | 150 millilitres |
| Sulphuric Acid . . . . | 100 millilitres |
| Copper of commerce, in wire or turnings . . . . . | 100 grammes |
| Alcohol (90 per cent.) . . | a sufficient quantity |

To one thousand millilitres of the Alcohol add gradually the Sulphuric Acid, and then one hundred and twenty-five millilitres of the Nitric Acid, stirring constantly. Transfer the mixture to a retort or flask, in which the fragments of copper have been placed, and to which is attached an efficient condenser with a receiver containing one thousand millilitres of the Alcohol. Surround the receiver with ice-cold water and distil gently at a temperature which is at first about 77°, and rises to 80°, but does not exceed 82°, until the volume of liquid in the receiver has been increased to sixteen hundred millilitres. Then allow the contents of the retort to cool, introduce the remaining twenty-five millilitres of Nitric Acid, and resume the distillation as before, until the liquid in the receiver has been increased to seventeen hundred millilitres. Mix this liquid with one thousand millilitres of the Alcohol, or with as much as will make the product contain 2·66 per cent. by weight of ethyl nitrite when tested as described in the following paragraph.

*Characters and Tests.*—A transparent liquid, having a very faint yellowish tinge. Peculiar penetrating apple-like odour ; taste characteristic. Specific gravity 0·838 to 0·842. When Spirit of Nitrous Ether is carefully

poured on an acidified strong aqueous solution of *ferrous sulphate* contained in a test-tube, a deep olive-brown coloration is produced at the surface of contact of the two liquids, widening as the tube is gently shaken. Does not effervesce, or only very slightly, when shaken with *sodium bicarbonate* (limit of acid). 10 millilitres mixed with 5 millilitres of *N/1 solution of sodium hydroxide* and 5 millilitres of *water*, assume a yellow colour, which does not become brown on standing twelve hours (limit of aldehyde). 1 volume. shaken briskly at intervals during five minutes in a brine-charged nitrometer, with 1 volume of *solution of potassium iodide* and 1 volume of *diluted sulphuric acid*, yields at 15·5° and normal pressure not less than 4 or more than 7 volumes of nitric oxide gas, corresponding to not less than 1·52 or more than 2·66 parts by weight of ethyl nitrite in 100 parts by weight of the Spirit.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 mils. | 15 to 60 minims. |

## SPIRITUS AMMONIÆ AROMATICUS

### Aromatic Spirit of Ammonia

*Synonym*—Spirit of Sal Volatile

| | |
|---|---|
| Ammonium Carbonate . . . | 100 grammes |
| Strong Solution of Ammonia . . | 200 millilitres |
| Oil of Nutmeg . . . . | 15 millilitres |
| Oil of Lemon . . . . | 20 millilitres |
| Alcohol (90 per cent.) . . . | 3000 millilitres |
| Distilled Water . . . . | 1500 millilitres |

Place the Oil of Lemon, Oil of Nutmeg, and Alcohol with the Distilled Water in a retort; distil three thousand five hundred millilitres; then distil and separately collect an additional two hundred and twenty-five millilitres. Place the latter, together with the Ammonium Carbonate and the

Strong Solution of Ammonia, in a bottle holding rather more than five hundred millilitres; securely cork the bottle and gently warm it in a water-bath to 60°, shaking from time to time until all the salt has dissolved. Filter the resulting solution when cold through cotton wool, and gradually mix the filtrate with the portion first distilled.

*Characters and Tests.*—A nearly colourless transparent liquid. Odour and taste pungent and ammoniacal. Specific gravity 0·888 to 0·893. 20 millilitres require for neutralisation 25·4 millilitres of *N/1 solution of sulphuric acid*, corresponding to 2·16 grammes of ammonia, $NH_3$, in 100 millilitres of the Spirit. When 20 millilitres are mixed with 50 millilitres of *water* and excess of *solution of barium chloride*, the mixture heated to 70°, the precipitate collected, washed until free from alkali, and dissolved in 20 millilitres of *N/1 solution of hydrochloric acid*, the solution thus obtained, after being boiled and cooled, requires for neutralisation not less than 7·2 or more than 8 millilitres of *N/1 solution of sodium hydroxide*, corresponding to not less than 2·35 or more than 2·51 grammes of acid ammonium carbonate and ammonium carbamate, calculated together as $N_3H_{11}C_2O_5$, in 100 millilitres of the Spirit.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 25 decimils (repeated). | 20 to 40 minims (repeated). |
| 4 to 6 mils largely diluted (single). | 60 to 90 minims largely diluted (single). |

## SPIRITUS AMMONIÆ FETIDUS

### Fetid Spirit of Ammonia

| | |
|---|---|
| Asafetida . . . . . | 75 grammes |
| Strong Solution of Ammonia . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Break the Asafetida into small pieces, and macerate it in a closed vessel in seven hundred and fifty millilitres of the Alcohol for twenty-four hours; distil until alcoholic vapours cease to be condensed; mix the distillate with the Strong Solution of Ammonia, and add sufficient Alcohol to produce the required volume.

*Characters and Tests.*—A nearly colourless, transparent liquid with a strong odour of ammonia and of asafetida. Specific gravity 0·842 to 0·850. 25 millilitres require for neutralisation not less than 40 millilitres of *N/1 solution of sulphuric acid*, corresponding to not less than 2·72 grammes of ammonia, $NH_3$, in 100 millilitres of the Spirit.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 25 decimils (repeated). | 20 to 40 minims (repeated). |
| 4 to 6 mils largely diluted (single). | 60 to 90 minims largely diluted (single). |

## SPIRITUS ANISI

### Spirit of Anise

| | |
|---|---|
| Oil of Anise . . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## SPIRITUS ARMORACIÆ COMPOSITUS

### Compound Spirit of Horseradish

| | |
|---|---|
| Horseradish Root, scraped . . | 125 grammes |
| Dried Bitter-Orange Peel, bruised . | 125 grammes |
| Nutmeg, bruised . . . . | 3 grammes |
| Alcohol (90 per cent.) . . . | 625 millilitres |
| Distilled Water . . . . | 750 millilitres |

Macerate the Horseradish Root in the Distilled Water for one hour, add the other ingredients, and distil one thousand millilitres.

*Test.*—Specific gravity 0·917 to 0·927.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

## SPIRITUS CAJUPUTI

### Spirit of Cajuput

| | |
|---|---|
| Oil of Cajuput . . . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## SPIRITUS CAMPHORÆ

### Spirit of Camphor

| | |
|---|---|
| Camphor . . . . . | 100 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve.

*Tests.*—Specific gravity, 0·845 to 0·850. *Optical rotation* at 15·5° not less than + 4°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## SPIRITUS CHLOROFORMI

### Spirit of Chloroform

*Synonyms*—Chloric Ether; Spirit of Chloric Ether

| | |
|---|---|
| Chloroform . . . . . | 50 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils (repeated). | 5 to 20 minims (repeated). |
| 20 to 25 decimils (single). | 30 to 40 minims (single). |

## SPIRITUS CINNAMOMI

### Spirit of Cinnamon

| | |
|---|---|
| Oil of Cinnamon. . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce. . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## SPIRITUS JUNIPERI

### Spirit of Juniper

| | |
|---|---|
| Oil of Juniper . . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

This Spirit is of twice the strength of the corresponding preparation of the British Pharmacopœia, 1898.

## SPIRITUS LAVANDULÆ

### Spirit of Lavender

| | |
|---|---|
| Oil of Lavender . . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| **3** to 12 decimils. | 5 to 20 minims. |

## SPIRITUS MENTHÆ PIPERITÆ

### Spirit of Peppermint

| | |
|---|---|
| Oil of Peppermint . . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| **3** to 12 decimils. | 5 to 20 minims. |

## SPIRITUS MYRISTICÆ

### Spirit of Nutmeg

| | |
|---|---|
| Oil of Nutmeg . . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

[*For dose see over.*

SPIRITUS MYRISTICÆ (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decimils. | 5 to 20 minims. |

## SPIRITUS RECTIFICATUS

### Alcohol (90 per cent.)

*Synonym*—Rectified Spirit

Alcohol (90 per cent.) is a mixture of ethyl hydroxide and water, containing in 100 parts by volume 90 parts by volume of ethyl hydroxide, $C_2H_5OH$; and is obtained by the distillation of fermented saccharine liquids.

*Characters and Tests.*—A colourless, transparent, very mobile and inflammable liquid. Characteristic pleasant odour; taste strongly spirituous, burning. Specific gravity 0·8337. Contains 85·68 per cent. by weight of ethyl hydroxide, $C_2H_5OH$, and 14·32 per cent. by weight of water. Burns with a blue smokeless flame. Leaves no residue on evaporation (absence of non-volatile matter). Remains clear when mixed with *water* (absence of oily or resinous substances). A little exposed on clean white filter paper leaves no unpleasant smell after the alcohol has evaporated (absence of fusel oil and allied impurities). 100 millilitres, with 2 millilitres of *N/10 solution of silver nitrate*, exposed for twenty-four hours to bright light and then decanted from the black powder which has formed, undergo no further change when again exposed to light with more *N/10 solution* of *silver nitrate* (absence of more than traces of amylic alcohol and of other organic impurities). When mixed with half its volume of an aqueous solution (1 in 5) of *sodium hydroxide*, the mixture does not immediately darken in colour (absence of more than traces of aldehyde). No immediate darkening in colour is caused by the addition

of *solution of ammonia* (absence of tannin, excess of aldehyde, and other organic impurities).

On mixing Alcohol (90 per cent.) and *water*, contraction of volume and rise of temperature occur. When such a mixture is prescribed in the British Pharmacopœia, the cooled liquid should be employed.

## Diluted Alcohols

The four official liquids obtained by diluting Alcohol (90 per cent.) with Distilled Water, contain, respectively, seventy, sixty, forty-five, and twenty per cent. of ethyl hydroxide by volume. They may be prepared as described in the following paragraphs.

1. Alcohol (70 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix three hundred and ten and a half (310·5) millilitres of Distilled Water. Specific gravity 0·8899.

2. Alcohol (60 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix five hundred and thirty-six and a half (536·5) millilitres of Distilled Water. Specific gravity 0·9134.

3. Alcohol (45 per cent.).—With one thousand millilitres of Alcohol (90 per cent.) mix one thousand and fifty-three and a half (more accurately 1053·4) millilitres of Distilled Water. Specific gravity 0·9435.

4. Alcohol (20 per cent.)—With one thousand millilitres of Alcohol (90 per cent.) mix three thousand five hundred and fifty-eight (3558·0) millilitres of Distilled Water. Specific gravity 0·9760.

For a Table of proportions relating to the preparation of Diluted Alcohols, see Appendix XIII, p. 530.

## SPIRITUS ROSMARINI

### Spirit of Rosemary

| | |
|---|---|
| Oil of Rosemary . . . | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve. When not clear, shake with a little *powdered talc* and filter.

## STAPHISAGRIÆ SEMINA

### Stavesacre Seeds

Stavesacre Seeds are the dried ripe seeds of Delphinium Staphisagria, *Linn.*

*Characters.*—Irregularly triangular or obscurely quadrangular, arched, blackish-brown when fresh, but becoming dull greyish-brown on keeping. Surface wrinkled and deeply pitted; kernel soft, whitish, oily. No marked odour; taste nauseous, bitter and acrid.

## STRAMONII FOLIA

### Stramonium Leaves

Stramonium Leaves are the dried leaves of Datura Stramonium, *Linn.*

*Characters and Test.*—Ovate, petiolate, usually from ten to fifteen centimetres long, often unequal at the base; margin sinuate-dentate, apex acuminate. Upper surface dark greyish-green; under surface paler, and minutely

wrinkled. Walls of the epidermal cells sinuous; stomata on both surfaces; on the lower surface, especially of young leaves, curved multicellular hairs with thin, warty walls, and also glandular hairs with unicellular or multicellular stalks; in the mesophyll numerous cluster-crystals of calcium oxalate. Characteristic odour; taste bitter, unpleasant. Ash not more than 18 per cent.

## STRONTII BROMIDUM

### Strontium Bromide

Strontium Bromide may be obtained by neutralising dilute hydrobromic acid with strontium carbonate, evaporating and crystallising. It contains not less than 97 per cent. of pure strontium bromide, $SrBr_2,6H_2O$.

*Characters and Tests.*—White acicular crystals, deliquescent. Taste saline, slightly bitter. Soluble in less than 1 part of *water*, and in *alcohol* (90 per cent.). Yields the *reactions* characteristic of bromides; an aqueous solution slowly deposits a crystalline precipitate on the addition of *solution of calcium sulphate*. A solution of 1 gramme in *water*, to which 5 millilitres of *solution of sodium acetate* and 3 millilitres of *acetic acid* have been added, does not become cloudy on the addition of 1 millilitre of *solution of potassium chromate* (absence of barium). 1 gramme dissolved in *water* requires for complete precipitation not less than 54·6 or more than 57 millilitres of *N/10 solution of silver nitrate*. 0·5 gramme moistened with *sulphuric acid* and gently ignited leaves a white residue weighing not less than 0·250 gramme. *Lead limit* 20 parts per million. *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 20 decigrams. | 5 to 30 grains. |

## STROPHANTHI SEMINA

### Strophanthus Seeds

Strophanthus Seeds are the dried ripe seeds of Strophanthus Kombé, *Oliver*, freed from the awns.

*Characters and Test.*—Oval, acuminate, about fifteen millimetres long and four millimetres broad; flattened, narrowed towards the base, which is obtuse; covered with silky appressed hairs; provided on one side with a longitudinal ridge running from the centre to the apex; of a greenish-fawn colour. Kernel white and oily; cotyledons straight; endosperm narrow; in the seed-coats not more than an occasional crystal of calcium oxalate. Characteristic odour; taste very bitter. *Sulphuric acid* diluted with one-fifth of its volume of *water* colours the endosperm, and sometimes the cotyledons, dark green (presence of strophanthin).

## STRYCHNINA

### Strychnine

Strychnine, $C_{21}H_{22}N_2O_2$, is an alkaloid, obtained from the seeds of Strychnos Nux-vomica, *Linn.*, and other species of Strychnos.

*Characters and Tests.*—Colourless, transparent, prismatic crystals, permanent in the air. Very slightly soluble in *water*, but sufficiently soluble to impart an intensely bitter taste; soluble in about 150 parts of *alcohol* (90 per cent.). *Sulphuric acid* forms with it a colourless solution which, on the addition of *nitric acid*, acquires not more than a faint pink colour (limit of brucine). When a small fragment is dissolved in 2 or 3 drops of *sulphuric acid* on a white porcelain plate and a crystal of *potassium bichromate* is slowly moved through the solution, an intense violet colour is produced, passing to red and yellow. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 milligrams. | 1/64 to 1/16 grain. |

## STRYCHNINÆ HYDROCHLORIDUM

### Strychnine Hydrochloride

Strychnine Hydrochloride, $C_{21}H_{22}N_2O_2,HCl,2H_2O$, is the hydrochloride of the alkaloid strychnine.

*Characters and Tests.*—Small, colourless, prismatic crystals. Soluble in 60 parts of *water*. Aqueous solution neutral to *litmus*; taste intensely bitter. Loses from 7 to 9 per cent. of its weight when dried at 110°. Responds to the tests enumerated under 'Strychnina,' and yields the *reactions* characteristic of chlorides. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 1 to 4 milligrams. | 1/64 to 1/16 grain. |

## STYRAX PRÆPARATUS

### Prepared Storax

Prepared Storax is a viscid balsam obtained from the wounded trunk of Liquidambar orientalis, *Mill.*, purified by solution in alcohol, filtration, and evaporation of the solvent.

*Characters and Tests.*—Brownish-yellow, viscous, transparent in thin layers. Entirely soluble in *alcohol* (90 per cent.) and in *ether*. Odour and taste agreeable and balsamic. Boiled with *solution of potassium chromate* and *sulphuric acid* it evolves an odour of benzaldehyde. Loses not more than 5 per cent. of its weight when heated in a thin layer

on a water-bath for one hour. *Acid value* not less than 60 or more than 90; *ester value* not less than 100 or more than 146. Yields not less than 20 per cent. by weight of cinnamic acid when tested by the following process:—

Dissolve 2·5 grammes of the Storax in 25 millilitres of *N/2 alcoholic solution of potassium hydroxide*, boil for one hour under a reflux condenser, neutralise with *N/2 solution of sulphuric acid*, remove the alcohol by evaporation, and dissolve the residue in 50 millilitres of *water*. Shake this aqueous solution with 20 millilitres of *ether*; after separation remove the ethereal layer, wash it with 5 millilitres of *water* and add the washings to the aqueous solution, rejecting the ethereal liquid. Acidify the aqueous solution with *diluted sulphuric acid* and shake it with four successive portions, each of 20 millilitres, of *ether*. Mix the ethereal solutions, wash with a few millilitres of *water*, transfer to a flask and distil off the ether. To the residue add 100 millilitres of *water* and boil vigorously for fifteen minutes under a reflux condenser. Filter the solution while hot, cool to 15·5°, and collect on a tared filter the crystals of cinnamic acid that have separated. Repeat the extraction of the residue with the filtrate at least three times, or until no more cinnamic acid is removed. Press the filter paper and crystals between blotting paper, dry in a desiccator over *sulphuric acid*, and weigh. Add to the weight of the crystals so ascertained 0·03 gramme (representing the average amount of cinnamic acid remaining dissolved in the aqueous liquid). The total weight is not less than 0·5 gramme.

## SUCCUS LIMONIS

### Lemon Juice

Lemon Juice is the freshly expressed juice of the ripe fruit of Citrus Medica, *Linn.*, var. β Limonum, *Hook. f.*

*Characters and Tests.*—A slightly turbid, yellowish

liquid. Taste sharply acid. Specific gravity 1·030 to 1·040. 20 millilitres require for neutralisation not less than 20 and not more than 25·7 millilitres of *N/1 solution of sodium hydroxide*, corresponding to a proportion of not less than 7 and not more than 9 grammes of citric acid in 100 millilitres. The residue obtained on evaporation, dried at 110°, yields not more than 3 per cent. of ash.

100 millilitres of Lemon Juice are neutralised by about 11·4 grammes of Potassium Bicarbonate, by about 9·5 grammes of Sodium Bicarbonate, and by about 16·5 grammes of Sodium Carbonate.

## SUCCUS SCOPARII

### Juice of Broom

Bruise fresh Broom Tops ; press out the juice ; to every three volumes of juice add one volume of Alcohol (90 per cent.) ; set aside for seven days ; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

## SUCCUS TARAXACI

### Juice of Taraxacum

Bruise Taraxacum Root ; press out the juice ; to every three volumes of juice add one volume of Alcohol (90 per cent.) ; set aside for seven days ; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 8 mils. | 1 to 2 fluid drachms. |

## SULPHONAL

### Sulphonal

Sulphonal, or dimethyl - methane - diethyl - sulphone, $C_7H_{16}S_2O_4$, may be obtained by oxidising mercaptol.

*Characters and Tests.*—Colourless prismatic crystals. No odour; nearly tasteless. Soluble in 450 parts of cold *water*, in 15 parts of boiling *water*, and in 80 parts of *alcohol* (90 per cent.). Melting point 125°. Aqueous solution neutral to *litmus*. When mixed with an equal weight of *potassium cyanide* and heated, the odour of mercaptan is evolved, and when to the solution of the product in *water* excess of *hydrochloric acid* and a few drops of *T. Sol. of ferric chloride* are added, a reddish colour is developed. Evolves hydrogen sulphide when gradually heated with *anhydrous sodium acetate*. Yields no characteristic *reactions* for chlorides or sulphates. No appreciable ash.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 decigrams. | 10 to 30 grains. |

## SULPHUR PRÆCIPITATUM

### Precipitated Sulphur

*Synonym*—Milk of Sulphur

Precipitated Sulphur is obtained by the action of hydrochloric acid upon a solution prepared by boiling together sulphur and lime in water.

*Characters and Tests.*—A greyish-yellow, soft powder, free from grittiness and from the odour of hydrogen sulphide. Under the microscope it is seen to consist of opaque globules, without any admixture of crystalline matter.

Burns with a blue flame, forming sulphur dioxide, and leaving not more than 0·5 per cent. of fixed residue. When 10 grammes are mixed with *water*, filtered, and thoroughly washed, the mixed filtrate and washings require for neutralisation not more than 2 millilitres of *N/10 solution of sodium hydroxide* (limit of acidity). *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 40 decigrams. | 20 to 60 grains. |

## SULPHUR SUBLIMATUM

### Sublimed Sulphur

*Synonym*—Flowers of Sulphur

Sublimed Sulphur may be obtained from native sulphur or sulphides.

*Characters and Tests.*—A slightly gritty powder of a bright greenish-yellow colour. Odourless and tasteless. Under the microscope it is seen to consist of irregular angular particles mixed with almost opaque globules. Burns with a blue flame, forming sulphur dioxide, and leaving not more than 0·25 per cent. of fixed residue. When 10 grammes are mixed with *water*, filtered, and thoroughly washed, the mixed filtrate and washings require for neutralisation not more than 5 millilitres of *N/10 solution of sodium hydroxide* (limit of acidity). *Arsenic limit* 5 parts per million.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 40 decigrams. | 20 to 60 grains. |

## SUPPOSITORIA ACIDI CARBOLICI

### Phenol Suppositories

| | |
|---|---|
| Phenol | 0·8 gramme |
| White Beeswax | 0·5 gramme |
| Oil of Theobroma | a sufficient quantity for twelve suppositories each weighing about one gramme |

Dissolve the Phenol in the Oil of Theobroma, previously melted, add the White Beeswax, and pour the melted mixture into suitable moulds ; or let the mixture cool and then divide it into twelve equal parts, and press each into a conical or other convenient form for a suppository.

Each of these Suppositories contains 0·067 gramme (about 1 grain) of Phenol.

See Appendix XII, page 529, Suppositoria.

## SUPPOSITORIA ACIDI TANNICI

### Tannic Acid Suppositories

| | |
|---|---|
| Tannic Acid | 2·4 grammes |
| Oil of Theobroma | a sufficient quantity for twelve suppositories each weighing about one gramme |

Melt the Oil of Theobroma ; triturate the Tannic Acid intimately with a little of the Oil, and add to the remainder ; stir well ; as the mixture begins to thicken pour it into suitable moulds ; or let the mixture cool and then divide it into twelve equal parts, and press each into a conical or other convenient form for a suppository.

Each of these Suppositories contains 0·2 gramme (about 3 grains) of Tannic Acid.

See Appendix XII, page 529, Suppositoria.

## SUPPOSITORIA BELLADONNÆ

### Belladonna Suppositories

| | |
|---|---|
| Liquid Extract of Belladonna | 1·7 millilitres |
| Oil of Theobroma | a sufficient quantity for twelve suppositories each weighing about one gramme |

Evaporate the Liquid Extract of Belladonna to a syrupy consistence; mix with the Oil of Theobroma, previously melted; as the mixture begins to thicken pour it into suitable moulds; or let the mixture cool and then divide it into twelve equal parts, and press each into a conical or other convenient form for a suppository.

Each of these Suppositories contains, approximately, 0·001 gramme (about 1/60 grain) of the alkaloids of Belladonna Root.

See Appendix XII, page 529, Suppositoria.

## SUPPOSITORIA GLYCERINI

### Glycerin Suppositories

| | |
|---|---|
| Gelatin, cut small | 14 grammes |
| Glycerin | 70 grammes |
| Distilled Water | a sufficient quantity |

Soak the Gelatin in the Distilled Water for five minutes, or until thoroughly softened; drain well, add the Glycerin, dissolve on a water-bath and evaporate until the mixture weighs one hundred grammes. Pour the product into suitable moulds having capacities corresponding to two, four, or eight grammes of the Suppository, or of such other capacities as may be required.

Each of these Suppositories contains 70 per cent. by weight of Glycerin.

## SUPPOSITORIA IODOFORMI

### Iodoform Suppositories

| | |
|---|---|
| Iodoform, in powder | 2·4 grammes |
| Oil of Theobroma | a sufficient quantity for twelve suppositories each weighing about one gramme |

Proceed as directed for Suppositoria Acidi Tannici.

Each of these Suppositories contains 0·2 gramme (about 3 grains) of Iodoform.

See Appendix XII, page 529, Suppositoria.

## SUPPOSITORIA MORPHINÆ

### Morphine Suppositories

| | |
|---|---|
| Morphine Hydrochloride | 0·2 gramme |
| Oil of Theobroma | a sufficient quantity for twelve suppositories each weighing about one gramme |

Proceed as directed for Suppositoria Acidi Tannici.

Each of these Suppositories contains 0·017 gramme (about 1/4 grain) of Morphine Hydrochloride.

See Appendix XII, page 529, Suppositoria.

## SUPPOSITORIA PLUMBI COMPOSITA

### Compound Lead Suppositories

| | |
|---|---|
| Lead Acetate, in powder | 2·4 grammes |
| Opium, in powder | 0·8 gramme |
| Oil of Theobroma | a sufficient quantity for twelve suppositories each weighing about one gramme |

Proceed as directed for Suppositoria Acidi Tannici.

Each of these Suppositories contains 0·2 gramme (about 3 grains) of Lead Acetate, and 0·067 gramme (about 1 grain) of Opium.

See Appendix XII, page 529, Suppositoria.

## SYRUPUS

### Syrup

| | |
|---|---|
| Refined Sugar . . . . | 1000 grammes |
| Distilled Water sufficient to produce . . . . . | 1500 grammes |

Heat together until dissolved; add sufficient Distilled Water to produce the required weight.

*Tests.*—Specific gravity 1·330. *Optical rotation* + 56° to + 58°.

## SYRUPUS ACIDI HYDRIODICI

### Syrup of Hydriodic Acid

| | |
|---|---|
| Diluted Hydriodic Acid . . | 100 grammes |
| Distilled Water . . . . | 50 millilitres |
| Syrup sufficient to produce . . | 1000 millilitres |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS AROMATICUS

### Aromatic Syrup

| | |
|---|---|
| Tincture of Orange . . . | 250 millilitres |
| Cinnamon Water . . . . | 250 millilitres |
| Syrup . . . . . | 500 millilitres |

Mix the Tincture of Orange and Cinnamon Water; shake the mixture with a little *powdered talc*; filter; add the Syrup.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS AURANTII

### Syrup of Orange

| | |
|---|---|
| Tincture of Orange . . . | 125 millilitres |
| Syrup sufficient to produce . . | 1000 millilitres |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS AURANTII FLORIS

### Syrup of Orange-flower

| | |
|---|---|
| Orange-flower water of commerce, undiluted . . . | 150 millilitres |
| Refined Sugar . . . . | 300 grammes |
| Syrup sufficient to produce . . | 1000 millilitres |

Mix the orange-flower water with the Refined Sugar in a closed vessel; stand in a moderately warm place, shaking occasionally till dissolved; then add sufficient Syrup to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS CALCII LACTOPHOSPHATIS

### Syrup of Calcium Lactophosphate

| | |
|---|---|
| Calcium Lactate . . . | 75 grammes |
| Concentrated Phosphoric Acid . | 45 millilitres |
| Orange-flower water of commerce, undiluted . . | 25 millilitres |
| Refined Sugar . . . . | 700 grammes |
| Distilled Water sufficient to produce . . . . | 1000 millilitres |

Mix the Calcium Lactate with four hundred millilitres of the Distilled Water, add the Concentrated Phosphoric Acid and stir until solution is complete, then add the orange-flower water, dissolve the Refined Sugar in the mixture without the aid of heat, and add sufficient Distilled Water to produce the required volume; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS CASCARÆ AROMATICUS

### Aromatic Syrup of Cascara

| | |
|---|---|
| Liquid Extract of Cascara Sagrada . . . . | 400 millilitres |
| Tincture of Orange . . . | 100 millilitres |
| Alcohol (90 per cent.) . . . | 50 millilitres |
| Cinnamon Water . . . . | 150 millilitres |
| Syrup sufficient to produce . . | 1000 millilitres |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

## SYRUPUS CHLORAL

### Syrup of Chloral

| | |
|---|---|
| Chloral Hydrate . . . . | 200 grammes |
| Distilled Water . . . . | 200 millilitres |
| Syrup sufficient to produce . . | 1000 millilitres |

Dissolve the Chloral Hydrate in the Distilled Water; add sufficient Syrup to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

10 millilitres of this Syrup contain 2 grammes of Chloral Hydrate; 1 fluid drachm contains 10·9 grains.

## SYRUPUS CODEINÆ PHOSPHATIS

### Syrup of Codeine Phosphate

| | |
|---|---|
| Codeine Phosphate . . . | 5 grammes |
| Distilled Water . . . . | 15 millilitres |
| Syrup sufficient to produce . . | 1000 millilitres |

Dissolve the Codeine Phosphate in the Distilled Water; add sufficient Syrup to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms |

10 millilitres of this Syrup contain 0·05 gramme of Codeine Phosphate; 1 fluid drachm contains 0·27 grain.

## SYRUPUS FERRI IODIDI

### Syrup of Ferrous Iodide

| | |
|---|---|
| Iron, in wire . . . . | 15·0 grammes |
| Iodine . . . . . | 41·4 grammes |
| Distilled Water . . . . | 75·0 millilitres |
| Glucose . . . . . | 100·0 grammes |
| Syrup sufficient to produce . | 1000·0 grammes |

Add the Iron and the Iodine to fifty millilitres of the Distilled Water in a flask; shake occasionally, cooling if necessary. When the reaction is completed add the Glucose, heat on a water-bath for five minutes, mix, and while still hot filter into a tared vessel containing part of the Syrup. Rinse the flask and wash the filter-paper with the remaining twenty-five millilitres of the Distilled Water heated to boiling; add sufficient Syrup to produce the required weight.

*Test.*—When 5 grammes of the Syrup are diluted with 20 millilitres of *water*, acidified with *nitric acid* and mixed with 20 millilitres of *N/10 solution of silver nitrate*, not less than 3·5 or more than 4·2 millilitres of *N/10 solution of ammonium thiocyanate* are required to produce a permanent red coloration, *solution of ferric sulphate* being used as indicator, corresponding to not less than 4·9 and not more than 5·1 grammes of ferrous iodide, $FeI_2$, in 100 grammes of the Syrup.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

10 millilitres of this Syrup contain about 0·7 gramme of ferrous iodide; 1 fluid drachm contains 3·75 grains. It is of the strength required by the International Agreement, and is approximately of two-thirds the strength of the corresponding preparation of the British Pharmacopœia, 1898.

## SYRUPUS FERRI PHOSPHATIS

### Syrup of Ferrous Phosphate

| | |
|---|---|
| Iron, in wire . . . . | 8·6 grammes |
| Concentrated Phosphoric Acid . | 62·5 millilitres |
| Syrup . . . . . | 700·0 millilitres |
| Distilled Water sufficient to produce . . . . | 1000·0 millilitres |

Dilute the Concentrated Phosphoric Acid with an equal volume of Distilled Water in a small flask; add the Iron and heat very gently until dissolved. Filter into the Syrup, and pass sufficient Distilled Water through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

10 millilitres of this Syrup contain 0·18 gramme of anhydrous ferrous phosphate; 1 fluid drachm contains 1 grain.

## SYRUPUS FERRI PHOSPHATIS CUM QUININA ET STRYCHNINA

### Syrup of Phosphate of Iron with Quinine and Strychnine

| | |
|---|---|
| Iron, in wire . . . . | 8·60 grammes |
| Concentrated Phosphoric Acid . | 62·50 millilitres |
| Strychnine, in powder . . | 0·57 gramme |
| Quinine Sulphate . . . | 14·80 grammes |
| Syrup . . . . . | 700·00 millilitres |
| Distilled Water sufficient to produce . . . . | 1000·00 millilitres |

Dilute the Concentrated Phosphoric Acid with an equal

volume of Distilled Water in a small flask; add the Iron and heat very gently until dissolved; add the solution to the Strychnine and Quinine Sulphate previously triturated with thirty millilitres of the Distilled Water; when solution is complete filter into the Syrup, and pass sufficient Distilled Water through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

10 millilitres of this Syrup contain 0·18 gramme of anhydrous ferrous phosphate, 0·148 gramme of Quinine Sulphate, and 0·0057 gramme of Strychnine; 1 fluid drachm contains 1 grain of anhydrous ferrous phosphate, 4/5 grain of Quinine Sulphate, and 1/32 grain of Strychnine.

## SYRUPUS GLUCOSI

### Syrup of Glucose

| | |
|---|---|
| Glucose . . . . . | 250 grammes |
| Syrup . . . . . | 500 grammes |

Mix, by the aid of gentle heat.

## SYRUPUS LIMONIS

### Syrup of Lemon

| | |
|---|---|
| Lemon Peel, in thin slices or grated . . . . | 20 grammes |
| Alcohol (90 per cent.) | a sufficient quantity |
| Lemon Juice . . . . . | 500 millilitres |
| Refined Sugar . . . . | 760 grammes |

Macerate the Lemon Peel in thirty millilitres of the

Alcohol for seven days ; press ; filter ; add sufficient of the Alcohol to produce forty millilitres. In the Lemon Juice, clarified by subsidence or filtration, dissolve the Refined Sugar by the aid of gentle heat ; cool ; add the forty millilitres of alcoholic liquid ; mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

See Appendix XII, page 529, Limonis Cortex Siccatus.

## SYRUPUS PRUNI VIRGINIANÆ

### Syrup of Wild Cherry

*Synonym*—Syrup of Virginian Prune

| | |
|---|---|
| Wild Cherry Bark, in No. 20 powder | 150 grammes |
| Refined Sugar, in coarse powder | 750 grammes |
| Glycerin | 65 millilitres |
| Distilled Water sufficient to produce | 1000 millilitres |

Moisten the Wild Cherry Bark with Distilled Water ; set aside for twenty-four hours in a closed vessel ; pack in a percolator ; percolate with Distilled Water until four hundred and fifty millilitres have been collected ; dissolve the Refined Sugar in the percolated liquid, without heat ; add the Glycerin and sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS RHEI

### Syrup of Rhubarb

| | |
|---|---|
| Rhubarb, in No. 20 powder | 70·0 grammes |
| Oil of Coriander | 0·5 millilitre |
| Refined Sugar | 840·0 grammes |
| Alcohol (90 per cent.) | 280·0 millilitres |
| Distilled Water, sufficient to produce | 1000·0 millilitres |

Mix two hundred and seventy millilitres of the Alcohol with three times its volume of Distilled Water. Moisten the Rhubarb with seventy millilitres of this diluted alcohol and set aside for twenty-four hours in a closed vessel; pack in a percolator; pass the remainder of the diluted alcohol slowly through the moistened powder; evaporate the percolate to four hundred and seventy-five grammes; filter; dissolve the Refined Sugar in the filtrate by the aid of heat; cool; add the Oil of Coriander dissolved in ten millilitres of the Alcohol; mix, and finally add sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

## SYRUPUS RHŒADOS

### Syrup of Red-Poppy

| | |
|---|---|
| Red-Poppy Petals | 260 grammes |
| Refined Sugar | 720 grammes |
| Alcohol (90 per cent.) | 50 millilitres |
| Distilled Water sufficient to produce | 1000 millilitres |

Add the Red-Poppy Petals gradually to four hundred

millilitres of Distilled Water kept hot upon a water-bath; stir frequently, and afterwards, the vessel being removed, infuse for twelve hours. Then press out the liquid; strain; add the Refined Sugar, and dissolve by the aid of heat. When nearly cold, add the Alcohol, and sufficient Distilled Water to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

See Appendix XII, page 530, Syrupus Rhœados.

## SYRUPUS ROSÆ

### Syrup of Rose

| | |
|---|---|
| Dried Red-Rose Petals | 50 grammes |
| Refined Sugar | a sufficient quantity |
| Distilled Water, boiling | 500 millilitres |

Infuse the Red-Rose Petals in the Distilled Water for two hours; strain; press; heat the infusion to the boiling point; filter; add to the filtrate twice its weight of Refined Sugar and dissolve by the aid of heat.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS SCILLÆ

### Syrup of Squill

| | |
|---|---|
| Vinegar of Squill | 175 millilitres |
| Refined Sugar | 650 grammes |
| Distilled Water sufficient to produce | 1000 grammes |

Mix the Vinegar of Squill with an equal volume of Distilled Water. In the mixture dissolve the Refined Sugar by the aid of gentle heat; add sufficient Distilled Water to produce the required weight.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS SENNÆ

### Syrup of Senna

| | |
|---|---|
| Senna Leaves . . . . | 440·0 grammes |
| Oil of Coriander . . . . | 0·2 millilitre |
| Alcohol (90 per cent.) . . . | 2·0 millilitres |
| Refined Sugar . . . . | 540·0 grammes |
| Alcohol (20 per cent.) . . | 760·0 millilitres |

Moisten the Senna Leaves with four hundred and forty millilitres of the Alcohol (20 per cent.); pack tightly in a vessel which can afterwards be closed; set aside for three days; press strongly; reserve the liquid obtained; break up the marc; moisten it with one hundred and sixty millilitres of the Alcohol (20 per cent.); set aside for twenty-four hours; press strongly; add the liquid obtained to the portion previously reserved; break up the marc; mix it with the remainder of the Alcohol (20 per cent.); set aside for three hours; press again; evaporate the resulting liquid until it is reduced to such a volume that when added to the reserved liquid the whole measures four hundred and forty millilitres. Mix the evaporated liquid with the reserved liquid; heat the product in a covered vessel to 82° for a few minutes; set aside for twenty-four hours; filter, and pass Distilled Water through the filter until the filtrate measures four hundred and forty millilitres; add the Refined Sugar, and dissolve in a covered vessel by the aid of gentle heat; cool; add the Oil of Coriander dissolved in the Alcohol (90 per cent.); mix.

[*For dose see over.*

SYRUPUS SENNÆ (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 8 mils. | 1/2 to 2 fluid drachms. |

## SYRUPUS TOLUTANUS
### Syrup of Balsam of Tolu

| | |
|---|---|
| Balsam of Tolu . . . . | 25 grammes |
| Refined Sugar . . . . | 660 grammes |
| Distilled Water sufficient to produce . . . . . | 1000 grammes |

Add four hundred grammes of the Distilled Water, boiling, to the Balsam of Tolu ; cover lightly and heat on a water-bath for half an hour, stirring frequently. Remove ; add Distilled Water, if necessary, so that the liquid, when cold, measures four hundred millilitres. Filter the solution, add the Refined Sugar, dissolve by the aid of a water-bath, and finally add sufficient Distilled Water to produce the required weight.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS URGINEÆ
### Syrup of Urginea

| | |
|---|---|
| Vinegar of Urginea . . . | 175 millilitres |
| Refined Sugar . . . . | 650 grammes |
| Distilled Water sufficient to produce . . . . | 1000 grammes |

Mix the Vinegar of Urginea with an equal volume of Distilled Water. In the mixture dissolve the Refined Sugar by the aid of gentle heat ; add sufficient Distilled Water to produce the required weight.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## SYRUPUS ZINGIBERIS

### Syrup of Ginger

| | |
|---|---|
| Ginger, in powder . . . | 25 grammes |
| Alcohol (90 per cent.) . . | a sufficient quantity |
| Syrup sufficient to produce . . | 1000 millilitres |

Prepare fifty millilitres of a strong tincture of the Ginger by the *process of percolation* with the Alcohol. To this add sufficient of the Syrup to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TABELLÆ TRINITRINI

### Trinitrin Tablets

*Synonym*—Tablets of Nitroglycerin

Trinitrin Tablets are tablets of chocolate each weighing 0·300 gramme and containing 0·0005 gramme (0·5 milligram) of the trinitroglycerin of commerce.

*Dose.*

1 or 2 tablets.

Each of these Tablets contains 0·5 milligram (approximately 1/130 grain) of the trinitroglycerin of commerce.

## TAMARINDUS

### Tamarinds

Tamarinds are the fruits of Tamarindus indica, *Linn.*, freed from the brittle outer part of the pericarp and preserved with sugar.

*Characters and Test.*—A reddish-brown, moist, sugary mass, containing strong branched fibres, and brown, shining seeds, each enclosed in a tough membrane. Taste agreeable, subacid. The pulp yields no characteristic *reactions* for copper.

## TARAXACI RADIX

### Taraxacum Root

Taraxacum Root is the fresh root of Taraxacum officinale, *Wiggers*. Collected in the autumn.

*Characters.*—Fresh root frequently three decimetres or more long, and twelve millimetres or more thick, smooth and yellowish-brown externally, whitish within. Fracture short, the exposed surface showing a small yellow porous wood, surrounded by a thick nearly white cortex exhibiting a variable number of irregular concentric rings, from which a milky juice exudes. Inodorous; taste bitter.

## TEREBENUM

### Terebene

Terebene is a mixture of dipentene and other hydrocarbons, obtained by shaking oil of turpentine with successive quantities of sulphuric acid until optically inactive, and then distilling in a current of steam.

*Characters and Tests.*—A colourless liquid. Agreeable odour; taste aromatic and terebinthinate. Specific gravity from 0·862 to 0·866. Soluble in 5 parts of *alcohol* (90 per cent.). *Optical rotation* at 15·5°, + 1° to −1°. Distils between 156° and 180°, leaving only a slight viscous residue (absence of excess of resin). Not more than 15 per cent. distils below 165°.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TEREBINTHINA CANADENSIS

### Canada Turpentine

Canada Turpentine is the oleo-resin obtained from Abies balsamea, *Mill.*

*Characters and Test.*—Pale yellow or greenish-yellow, transparent, viscous. Agreeable terebinthinate odour; taste feebly bitter and acrid. Dries very slowly to a transparent varnish when exposed to the air. Solidifies when mixed with about one-sixth of its weight of *heavy magnesia* moistened with a little *water.*

## THEOBROMINÆ ET SODII SALICYLAS

### Theobromine and Sodium Salicylate

Theobromine and Sodium Salicylate, $Na_2C_{14}H_{12}N_4O_5$, may be obtained by combining sodium hydroxide, theobromine, and sodium salicylate in molecular proportions. Should be preserved in stoppered, amber-coloured bottles.

*Characters and Tests.*—A white amorphous powder. No odour; taste sweetish and alkaline. Soluble in 1 part of *water*; soluble in *alcohol* (90 per cent.); insoluble in

*ether*, and in *chloroform*. Aqueous solution (1 in 4) alkaline to *litmus* and colourless; when acidified with *acetic acid* yields a violet coloration with *T. Sol. of ferric chloride*; when neutralised with *hydrochloric acid* gives a white precipitate of theobromine, and the filtrate from this, on the addition of more of the acid, gives a precipitate of salicylic acid; the precipitated theobromine, washed with a little *water*, yields, when treated with *potassium chlorate* and *hydrochloric acid* as described under 'Caffeina,' a purple colour. The aqueous solution also yields precipitates with *T. Sol. of mercuric chloride*, with solutions of alkaloidal salts, and with *N/10 solution of iodine*. Yields not less than 40 per cent. of theobromine and 35 per cent. of salicylic acid when tested by the following process :—

Dissolve 2 grammes of the Salicylate of Theobromine and Sodium in 10 millilitres of warm *water*, slightly acidify with *diluted hydrochloric acid*, add *solution of ammonia* until the reaction is faintly alkaline, and set aside for three hours at about 15·5°, stirring frequently. Collect the precipitated theobromine on a tared filter, wash twice with 10 millilitres of *water*, dry at 100°, and weigh the precipitate; it weighs not less than 0·8 gramme. Acidify the filtrate and washings with *hydrochloric acid*, shake with two successive quantities, each of 10 millilitres, of *ether*, evaporate the mixed ethereal solutions, dry the residue at 60°, and weigh; it weighs not less than 0·7 gramme.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 decigrams. | 10 to 20 grains. |

## THYMOL

### Thymol

Thymol, or isopropyl-metacresol, $C_{10}H_{14}O$, is a substance obtained from the volatile oils of Thymus vulgaris, *Linn.*, Monarda punctata, *Linn.*, and Carum copticum,

*Benth. and Hook. f.* Purified by recrystallisation from alcohol.

*Characters and Tests.*—Large, oblique prismatic crystals, sinking in water at 15·5°. Melting point from 50° to 51°. Completely volatilised on a water-bath. Odour recalling that of thyme; taste pungent, aromatic. Almost insoluble in *water*; freely soluble in *alcohol* (90 per cent.), in *ether*, and in *solution of sodium hydroxide*. A solution of Thymol in half its volume of *glacial acetic acid*, warmed with an equal volume of *sulphuric acid*, assumes a reddish-violet colour.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 centigrams. | 1/2 to 2 grains. |

*Anthelmintic Dose.*

| | |
|---|---|
| 1 to 2 grammes. | 15 to 30 grains. |

## THYROIDEUM SICCUM

### Dry Thyroid

Dry Thyroid is a powder prepared from the fresh and healthy thyroid glands of the sheep.

Remove the external fat and connective tissue from the thyroid glands taken from the sheep immediately after killing. Cut the glands across, and reject any which contain cysts, are hypertrophied, or are otherwise abnormal. Mince finely the healthy glands, and dry at a temperature of 30° to 40°; powder the dried product; remove all fat by washing with *petroleum spirit*; again dry the residue.

*Characters.*—A light, dull-brown powder, with a very faint meat-like odour and taste; free from any flavour of putrescence. Liable to become damp on exposure to the air, and to deteriorate.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 25 centigrams. | 1/2 to 4 grains. |

## TINCTURA ACONITI

### Tincture of Aconite

Tincture of Aconite contains in 100 millilitres 0·04 gramme of the ether-soluble alkaloids of Aconite Root.

| | |
|---|---|
| Aconite Root, in No. 40 powder | 150 grammes |
| Alcohol (70 per cent.) | a sufficient quantity |

Moisten the powder with seventy-five millilitres of the Alcohol, and produce, by the *percolation process*, one thousand millilitres of a strong tincture. Determine the proportion of ether-soluble alkaloids present in this strong tincture, by evaporating one hundred millilitres to dryness in a shallow porcelain evaporating basin, and proceeding as directed under 'Aconiti Radix.' Dilute the remainder of the strong tincture with sufficient of the Alcohol to produce a Tincture of Aconite containing 0·04 gramme of ether-soluble alkaloids in 100 millilitres of the Tincture.

*Test.*—Examined by the foregoing process Tincture of Aconite is found to contain in 100 millilitres 0·04 gramme of the ether-soluble alkaloids of Aconite Root. *Limit of error* 0·002 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centimils. | 2 to 5 minims. |

This Tincture is of approximately the same strength as the Tinctura Aconiti of the International Agreement, and about twice as strong as the corresponding preparation of the British Pharmacopœia, 1898.

## TINCTURA ALSTONIÆ

### Tincture of Alstonia

| | |
|---|---|
| Alstonia, in No. 20 powder | 125 grammes |
| Alcohol (60 per cent.) | 1000 millilitres |

Prepare by the *maceration process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA ARNICÆ FLORUM

### Tincture of Arnica Flowers

| | |
|---|---|
| Arnica Flowers, in No. 20 powder . . . . . | 100 grammes |
| Alcohol (45 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA ASAFETIDÆ

### Tincture of Asafetida

| | |
|---|---|
| Asafetida, bruised . . . | 200 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Macerate the Asafetida in a closed vessel with seven hundred and fifty millilitres of the Alcohol for seven days, shaking occasionally ; filter ; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA AURANTII

### Tincture of Orange

| | |
|---|---|
| Fresh Bitter-Orange Peel, cut small . . . . . | 250 grammes |
| Alcohol (90 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA BELLADONNÆ

### Tincture of Belladonna

Tincture of Belladonna contains in 100 millilitres 0·035 gramme of the alkaloids of Belladonna Leaves.

| | |
|---|---|
| Belladonna Leaves, dried and in No. 20 powder . . . | 100 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the Belladonna Leaves with one hundred millilitres of the Alcohol, and complete the *percolation process.* Determine the proportion of alkaloids contained in the tincture so prepared by the following process :—

Evaporate 100 millilitres in an evaporating basin on a water-bath until it measures about 10 millilitres, add, if necessary, sufficient *alcohol* (90 per cent.) to dissolve any separated substance and transfer to a separator, rinsing the

dish with a little *water*. Add 10 millilitres of *water*, 20 millilitres of *chloroform*, and 2 millilitres of *solution of ammonia*. Shake well and separate the chloroformic layer. Repeat the extraction with two successive portions of 10 millilitres of *chloroform*. Mix the chloroformic solutions, and shake them with 10 millilitres of *N/1 solution of sulphuric acid* diluted with twice its volume of *water*. Separate the chloroformic solution. Repeat the shaking with a further 10 millilitres of the acidified water. Mix the acid solutions, add 20 millilitres of *chloroform* and 4 millilitres of *solution of ammonia*. Shake well, draw off the chloroformic solution into a beaker, and repeat the extraction with two further portions, each of 10 millilitres, of *chloroform*. Allow the mixed chloroformic solutions to evaporate, dry the residue on a water-bath for thirty minutes, dissolve it in 10 millilitres of *N/20 solution of sulphuric acid* and titrate with *N/20 solution of sodium hydroxide*, using *tincture of cochineal* as indicator. Deduct the number of millilitres of alkaline solution required from 10, and multiply the difference by 0·01446; the product will be the weight in grammes of the alkaloids contained in 100 millilitres of the tincture. This quantity should be not less than 0·035 gramme. Should the tincture contain more than this proportion it must be diluted with the necessary quantity of Alcohol (70 per cent.).

*Test.*—Examined by the foregoing process, Tincture of Belladonna is found to contain in 100 millilitres 0·035 gramme of the alkaloids of Belladonna Leaves. *Limit of error* 0·002 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Tincture contains seven-tenths of the proportion of alkaloids contained in the Tincture of Belladonna of the British Pharmacopœia, 1898. It may be used when the Tinctura Belladonnæ of the International Agreement is required.

## TINCTURA BENZOINI COMPOSITA

### Compound Tincture of Benzoin

*Synonym*—Friars' Balsam

| | |
|---|---|
| Benzoin, in powder . . . | 100 grammes |
| Prepared Storax . . . . | 75 grammes |
| Balsam of Tolu . . . . | 25 grammes |
| Aloes . . . . . | 20 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . | 1000 millilitres |

Macerate the Benzoin, Storax, Balsam of Tolu, and Aloes with eight hundred millilitres of the Alcohol in a closed vessel for two days, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA BERBERIDIS

### Tincture of Berberis

| | |
|---|---|
| Berberis, in No. 60 powder . . | 100 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA BUCHU

### Tincture of Buchu

| | |
|---|---|
| Buchu Leaves, in No. 20 powder . | 200 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CALUMBÆ

### Tincture of Calumba

| | |
|---|---|
| Calumba Root, in No. 20 powder. | 100 grammes |
| Alcohol (60 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CAMPHORÆ COMPOSITA

### Compound Tincture of Camphor

*Synonyms*—Paregoric ; Paregoric Elixir

| | |
|---|---|
| Tincture of Opium . . . | 50 millilitres |
| Benzoic Acid . . . . | 5 grammes |
| Camphor . . . . . | 3 grammes |
| Oil of Anise . . . . | 3 millilitres |
| Alcohol (60 per cent.) sufficient to produce . . . | 1000 millilitres |

Dissolve the Benzoic Acid, Camphor, and Oil of Anise in nine hundred millilitres of the Alcohol; add the Tincture of Opium and sufficient of the Alcohol to produce the required volume; filter if necessary.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

This Compound Tincture contains in 10 millilitres 5 milligrams (0·005 gramme) of morphine, calculated as anhydrous; and in each fluid drachm about one thirty-seventh of a grain of the same. It contains approximately one-tenth more morphine than the Tinctura Opii Benzoica of the International Agreement, and one-tenth more than was contained in the corresponding preparation of the British Pharmacopœia, 1898.

## TINCTURA CANNABIS INDICÆ
### Tincture of Indian Hemp

| | |
|---|---|
| Extract of Indian Hemp . . | 50 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA CANTHARIDINI
### Tincture of Cantharidin

| | |
|---|---|
| Cantharidin . . . . | 0·1 gramme |
| Chloroform . . . . | 10·0 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000·0 millilitres |

Dissolve the Cantharidin in the Chloroform, and add sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centimils. | 2 to 5 minims. |

This Tincture contains approximately one-seventh of the proportion of Cantharidin contained in the Tinctura Cantharidis of the International Agreement; it contains approximately the same proportion of Cantharidin as the Tinctura Cantharidis of the British Pharmacopœia, 1898.

## TINCTURA CAPSICI

### Tincture of Capsicum

| | |
|---|---|
| Capsicum, in No. 20 powder . | 50 grammes |
| Alcohol (60 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA CARDAMOMI COMPOSITA

### Compound Tincture of Cardamoms

| | |
|---|---|
| Cardamom Seeds, in No. 20 powder . . . . . | 14 grammes |
| Caraway Fruit, in No. 20 powder . . . . . | 14 grammes |
| Cinnamon Bark, in No. 20 powder . . . . . | 28 grammes |
| Cochineal, in No. 20 powder . | 7 grammes |
| Glycerin . . . . . | 100 millilitres |
| Alcohol (45 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the mixed powders with fifty millilitres of the

Alcohol, and prepare, by the *percolation process*, eight hundred and fifty millilitres of tincture. Add the Glycerin and sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CASCARILLÆ

### Tincture of Cascarilla

| | |
|---|---|
| Cascarilla, in No. 40 powder . | 200 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred and fifty millilitres of the Alcohol, and complete the *percolation process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CATECHU

### Tincture of Catechu

| | |
|---|---|
| Catechu, in powder . . . | 200 grammes |
| Cinnamon Bark, bruised . . | 50 grammes |
| Alcohol (45 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CHIRATÆ

### Tincture of Chiretta

| | |
|---|---|
| Chiretta, in No. 40 powder . . | 100 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CHLOROFORMI ET MORPHINÆ COMPOSITA

### Compound Tincture of Chloroform and Morphine

| | |
|---|---|
| Chloroform . . . . . | 75 millilitres |
| Morphine Hydrochloride . . | 10 grammes |
| Diluted Hydrocyanic Acid . . | 50 millilitres |
| Tincture of Capsicum . . . | 25 millilitres |
| Tincture of Indian Hemp . . | 100 millilitres |
| Oil of Peppermint . . . | 2 millilitres |
| Glycerin . . . . . | 250 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Mix the Chloroform, Tincture of Capsicum, Tincture of Indian Hemp, Oil of Peppermint, and Glycerin, with four hundred and fifty millilitres of the Alcohol, and dissolve the Morphine Hydrochloride in the mixture; add the Diluted Hydrocyanic Acid, and sufficient of the Alcohol to produce the required volume.

[*For dose see over.*

TINCTURA CHLOROFORMI ET MORPHINÆ COMPOSITA (*contd.*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Compound Tincture contains in 1 millilitre 7·5 centimils of Chloroform, 1 centigram of Morphine Hydrochloride, and 5 centimils of Diluted Hydrocyanic Acid; it contains in 10 minims 3/4 minim of Chloroform, 1/11 grain of Morphine Hydrochloride, and 1/2 minim of Diluted Hydrocyanic Acid.

## TINCTURA CINCHONÆ

### Tincture of Cinchona

Tincture of Cinchona contains in 100 millilitres 1 gramme of the alkaloids of Red Cinchona Bark.

| | |
|---|---|
| Red Cinchona Bark, in No. 40 powder . . . . . | 200 grammes |
| Alcohol (70 per cent.) . . | a sufficient quantity |

Moisten the powder with two hundred millilitres of the Alcohol; set aside for seven days in a closed vessel; percolate with more of the Alcohol, until seven hundred millilitres of percolate have been collected; press the marc; add the expressed liquid to the percolate; set aside for twenty-four hours; filter.

Take ten millilitres of the strong tincture so prepared, and determine the proportion of alkaloids contained in it by the process described under 'Extractum Cinchonæ Liquidum.'

Add to the bulk of the strong tincture such a quantity of the Alcohol that 100 millilitres of the resulting Tincture contain 1 gramme of the alkaloids of Red Cinchona Bark.

*Test.*—Examined by the process described under 'Extractum Cinchonæ Liquidum' Tincture of Cinchona is found to contain in 100 millilitres 1 gramme of the alka-

loids of Red Cinchona Bark. *Limit of error* 0·05 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CINCHONÆ COMPOSITA

### Compound Tincture of Cinchona

Compound Tincture of Cinchona contains in 100 millilitres 0·5 gramme of the alkaloids of Red Cinchona Bark.

| | |
|---|---|
| Dried Bitter-Orange Peel, bruised . | 50 grammes |
| Serpentary Rhizome, in No. 40 powder . . . . . | 25 grammes |
| Cochineal, in powder . . . | 3 grammes |
| Tincture of Cinchona . . . | 500 millilitres |
| Alcohol (70 per cent.) sufficient to produce . . . | 1000 millilitres |

Mix the solid ingredients with five hundred millilitres of the Alcohol; set aside in a closed vessel for seven days, shaking frequently; strain, and then press; mix the two liquids thus obtained; add the Tincture of Cinchona, and sufficient of the Alcohol to produce the required volume; set aside for twenty-four hours; filter.

*Test.*—Examined by the process described under 'Extractum Cinchonæ Liquidum' Compound Tincture of Cinchona is found to contain in 100 millilitres 0·5 gramme of the alkaloids of Red Cinchona Bark. *Limit of error* 0·05 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA CINNAMOMI

### Tincture of Cinnamon

| | |
|---|---|
| Cinnamon Bark, in No. 40 powder | 200 grammes |
| Alcohol (70 per cent.) sufficient to produce | 1000 millilitres |

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA COCCI

### Tincture of Cochineal

| | |
|---|---|
| Cochineal, in powder | 100 grammes |
| Alcohol (45 per cent.) | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA COLCHICI

### Tincture of Colchicum

| | |
|---|---|
| Colchicum Seeds, in No. 30 powder | 100 grammes |
| Alcohol (70 per cent.) sufficient to produce | 1000 millilitres |

Moisten the powder with fifty millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Tincture is of approximately the same strength as the Tinctura Colchici of the International Agreement, and is of one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898.

## TINCTURA CUBEBÆ

### Tincture of Cubebs

| | |
|---|---|
| Cubebs, in No. 20 powder . . | 200 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA DATURÆ SEMINUM

### Tincture of Datura Seeds

| | |
|---|---|
| Datura Seeds, in No. 20 powder . | 250 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the bruised Datura Seeds with two hundred millilitres of the Alcohol, and complete the *percolation process.*

[*For dose see over.*

TINCTURA DATURÆ SEMINUM (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA DIGITALIS

### Tincture of Digitalis

| | |
|---|---|
| Digitalis Leaves, in No. 20 powder . . . . | 100 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Tincture is of approximately the same strength as the Tinctura Digitalis of the International Agreement, and is of four-fifths the strength of the corresponding preparation of the British Pharmacopœia, 1898.

## TINCTURA ERGOTÆ AMMONIATA

### Ammoniated Tincture of Ergot

| | |
|---|---|
| Ergot, in No. 20 powder . . | 250 grammes |
| Solution of Ammonia . . . | 100 millilitres |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Mix the Solution of Ammonia with nine hundred millilitres of the Alcohol; moisten the powder with one hundred millilitres of this mixture, and percolate with the remainder; press the marc; mix the expressed liquid with the percolate; add sufficient of the Alcohol to produce the required volume; set aside for twenty-four hours; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA FERRI PERCHLORIDI

### Tincture of Ferric Chloride

| | |
|---|---|
| Strong Solution of Ferric Chloride . . . . | 250 millilitres |
| Alcohol (90 per cent.) . . . | 250 millilitres |
| Distilled Water sufficient to produce . . . . . | 1000 millilitres |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA GELSEMII

### Tincture of Gelsemium

| | |
|---|---|
| Gelsemium Root, in No. 40 powder . . . . . | 100 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with fifty millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA GENTIANÆ COMPOSITA

### Compound Tincture of Gentian

| | |
|---|---|
| Gentian Root, cut small and bruised | 100·0 grammes |
| Dried Bitter-Orange Peel, bruised | 37·5 grammes |
| Cardamom Seeds, in powder | 12·5 grammes |
| Alcohol (45 per cent.) | 1000·0 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA GUAIACI AMMONIATA

### Ammoniated Tincture of Guaiacum

| | |
|---|---|
| Guaiacum Resin, in powder | 200 grammes |
| Oil of Nutmeg | 3 millilitres |
| Oil of Lemon | 2 millilitres |
| Strong Solution of Ammonia | 75 millilitres |
| Alcohol (90 per cent.) sufficient to produce | 1000 millilitres |

Mix the Strong Solution of Ammonia with seven hundred millilitres of the Alcohol; add the Guaiacum Resin; set aside in a closed vessel for forty-eight hours, shaking frequently; filter; dissolve the Oil of Lemon and Oil of Nutmeg in the filtrate, and pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA HAMAMELIDIS

### Tincture of Hamamelis

| | |
|---|---|
| Hamamelis Bark, in No. 20 powder . . . . . | 100 grammes |
| Alcohol (45 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with fifty millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA HYDRASTIS

### Tincture of Hydrastis

| | |
|---|---|
| Liquid Extract of Hydrastis . | 100 millilitres |
| Alcohol (60 per cent.) sufficient to produce . . . | 1000 millilitres |

Mix.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA HYOSCYAMI

### Tincture of Hyoscyamus

| | |
|---|---|
| Hyoscyamus Leaves, in powder | No. 20 100 grammes |
| Alcohol (70 per cent.) sufficient to produce | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA IODI FORTIS

### Strong Tincture of Iodine

| | |
|---|---|
| Iodine | 100 grammes |
| Potassium Iodide | 60 grammes |
| Distilled Water | 100 millilitres |
| Alcohol (90 per cent.) sufficient to produce | 1000 millilitres |

Dissolve the Potassium Iodide and the Iodine in the Distilled Water; add sufficient of the Alcohol to produce the required volume.

*Test.*—5 millilitres of the Tincture, diluted with 20 millilitres of *water*, require for decolorisation not less than 38·4 or more than 39·6 millilitres of *N/10 solution of sodium thiosulphate.*

This Strong Tincture contains 0·1 gramme of Iodine in each millilitre; 1 minim contains about 1/11 grain. It is of approximately the same strength as the Tinctura Iodi of the International Agreement. It contains approximately the same proportion of Iodine as the Liquor Iodi Fortis of the British Pharmacopœia, 1898.

## TINCTURA IODI MITIS

### Weak Tincture of Iodine

| | |
|---|---|
| Iodine | 25 grammes |
| Potassium Iodide | 25 grammes |
| Distilled Water | 25 millilitres |
| Alcohol (90 per cent.) sufficient to produce | 1000 millilitres |

Dissolve the Potassium Iodide and Iodine in the Distilled Water; add sufficient of the Alcohol to produce the required volume.

*Test.*—10 millilitres of the Tincture, diluted with 20 millilitres of *water*, require for decolorisation not less than 19·2 or more than 19·8 millilitres of *N/10 solution of sodium thiosulphate.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centimils. | 2 to 5 minims. |

This Weak Tincture contains 0·025 gramme of Iodine in each millilitre; 1 minim contains about 1/44 grain. It is not of the same strength as the Tinctura Iodi of the International Agreement. It contains the same proportion of Iodine as the Tinctura Iodi of the British Pharmacopœia, 1898.

## TINCTURA JALAPÆ

### Tincture of Jalap

| | |
|---|---|
| Jalap, in No. 40 powder | 200 grammes |
| Alcohol (70 per cent.) | a sufficient quantity |

Moisten the powder with one hundred millilitres of the Alcohol; pack in a percolator; gradually add more of the Alcohol until six hundred millilitres of percolate have

been collected; press the marc; add the expressed liquid to the percolate; set aside for twenty-four hours; filter.

Determine the amount of Jalap Resin present in ten millilitres of the strong tincture so prepared by the process described under 'Jalapæ Resina,' and dilute the remainder of the strong tincture with sufficient of the Alcohol to produce a Tincture of Jalap containing 1·5 grammes of the Resin in 100 millilitres.

*Test.*—When 10 millilitres of the Tincture, concentrated by evaporation, are mixed with eight times their volume of *water*, the resin thus separated, washed with *water* and dried at a gentle heat, weighs not less than 0·145 or more than 0·155 gramme.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA JALAPÆ COMPOSITA

### Compound Tincture of Jalap

| | |
|---|---|
| Jalap, in No. 40 powder . . | 80 grammes |
| Scammony Resin, in powder . | 15 grammes |
| Turpeth, in No. 40 powder . . | 10 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the mixed powders with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA KALADANÆ

### Tincture of Kaladana

| | |
|---|---|
| Kaladana, in No. 40 powder . | 200 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA KINO

### Tincture of Kino

| | |
|---|---|
| Kino, in powder . . . . | 100 grammes |
| Glycerin . . . . . | 150 millilitres |
| Distilled Water . . . . | 250 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Mix the Glycerin and the Distilled Water; rub the Kino in a mortar with a sufficient quantity of the mixture to form a smooth paste, gradually adding the remainder of the mixture; transfer to a closed vessel; add five hundred millilitres of the Alcohol; set aside for twelve hours, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA KRAMERIÆ

### Tincture of Krameria

*Synonym*—Tincture of Rhatany

| | |
|---|---|
| Krameria Root, in No. 40 powder | 200 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA LAVANDULÆ COMPOSITA

### Compound Tincture of Lavender

| | |
|---|---|
| Oil of Lavender . . . | 5·0 millilitres |
| Oil of Rosemary . . . | 0·5 millilitre |
| Cinnamon Bark, bruised . . | 10·0 grammes |
| Nutmeg, bruised . . . | 10·0 grammes |
| Red Sanders Wood, rasped . | 20·0 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . | 1000·0 millilitres |

Macerate the solid ingredients and the Oils with nine hundred millilitres of the Alcohol for seven days, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA LIMONIS

### Tincture of Lemon

| | |
|---|---|
| Lemon Peel, cut small . . . | 250 grammes |
| Alcohol (90 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

See Appendix XII, page 529, Limonis Cortex Siccatus.

## TINCTURA LOBELIÆ ÆTHEREA

### Ethereal Tincture of Lobelia

| | |
|---|---|
| Lobelia, in No. 40 powder . . | 200 grammes |
| Spirit of Ether sufficient to produce . . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Spirit of Ether, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA MYRRHÆ

### Tincture of Myrrh

| | |
|---|---|
| Myrrh, in coarse powder . . | 200 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Macerate the Myrrh with eight hundred millilitres of the

Alcohol in a closed vessel for seven days, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA NUCIS VOMICÆ

### Tincture of Nux Vomica

Tincture of Nux Vomica contains in 100 millilitres 0·125 gramme of strychnine.

| | |
|---|---|
| Liquid Extract of Nux Vomica . | 50 millilitres |
| Distilled Water . . . . | 150 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 600 millilitres |

Mix; filter if necessary.

*Test.*—Examined by the process described under 'Extractum Nucis Vomicæ Liquidum,' Tincture of Nux Vomica is found to contain in 100 millilitres 0·125 gramme of strychnine. *Limit of error* 0·005 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

This Tincture contains in each millilitre 1·25 milligrams of strychnine; each fluid drachm contains about 1/16 grain. It contains approximately the same proportion of strychnine as the Tinctura Nucis Vomicæ of the International Agreement, and one-half of that contained in the corresponding preparation of the British Pharmacopœia, 1898.

## TINCTURA OLIVERI CORTICIS

### Tincture of Oliver's Bark

| | |
|---|---|
| Oliver's Bark, in No. 40 powder . | 100 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with fifty millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA OPII

### Tincture of Opium

*Synonym*—Laudanum

Tincture of Opium contains in 100 millilitres 1 gramme of morphine, calculated as anhydrous.

| | |
|---|---|
| Opium . . . . . | 200 grammes |
| Alcohol (90 per cent.) } Distilled Water } | of each a sufficient quantity |

Rub the Opium to a paste with five hundred millilitres of Distilled Water, previously heated to at least 90°; set aside for six hours; add five hundred millilitres of the Alcohol; mix thoroughly; set aside in a covered vessel for twenty-four hours; strain, and then press; mix the two liquids thus obtained; set aside for twenty-four hours; filter.

Determine the proportion of morphine, calculated as anhydrous, in the strong tincture so prepared by the following process:—

Pour 40 millilitres of the liquid into a porcelain dish; evaporate on a water-bath until the volume is reduced to about 10 millilitres; mix the residual liquid in a mortar

with 1 gramme of freshly slaked *lime*; dilute the mixture with *water* to 41 millilitres; set aside for half an hour, stirring from time to time. Filter off 25 millilitres of the liquid (representing 25 millilitres of the strong tincture) through a plaited filter, having a diameter of about one decimetre, into a convenient vessel; add 2·5 millilitres of *alcohol* (90 per cent.) and 15 millilitres of *ether*; shake the mixture; add 1 gramme of *ammonium chloride*; shake well and frequently during half an hour; set aside for twelve hours for the morphine to separate. Counterbalance two small filters; place one within the other in a small funnel in such a way that the triple fold of the inner filter shall be superposed upon the single fold of the outer filter; wet them with *ether*; remove the ethereal layer of the liquid in the vessel as completely as possible by means of a small pipette, and transfer it to the filter; rinse the vessel with 8 millilitres of *ether*, again transferring the ethereal layer, by means of the pipette, to the filter; wash the filter with a total amount of 5 millilitres of *ether* added slowly, and in portions; let the filter dry in the air; pour upon it the liquid in the bottle, in portions, in such a way as to transfer the granular crystalline morphine as completely as possible to the filter. When all the liquid has passed through, wash the remainder of the morphine from the vessel with *morphinated water*. Wash the crystals with *morphinated water* until the washings are free from colour; allow the filter to drain and dry it, first at 60°, and finally at 115° for two hours. Weigh the crystals in the inner filter, counterbalancing by the outer filter. Take 0·2 gramme of the crystals, and titrate, with *N/10 solution of sulphuric acid*, as directed under 'Opium.' Add to the weight of anhydrous morphine obtained, as indicated by the titration, 0·025 gramme, a proportion representing the average loss of morphine during the process.

Having thus ascertained the proportion of morphine, calculated as anhydrous, present in 25 millilitres of the strong tincture, dilute the remainder of the latter with sufficient of a mixture of Alcohol (90 per cent.) and Distilled Water, in equal volumes, to produce Tincture of Opium con-

taining 1 gramme of morphine, calculated as anhydrous, in 100 millilitres.

*Test.*—Examined by the foregoing process, Tincture of Opium is found to contain in 100 millilitres 1 gramme of morphine, calculated as anhydrous. *Limit of error* 0·05 gramme in excess or defect.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils (repeated). | 5 to 15 minims (repeated). |
| 12 to 18 decimils (single). | 20 to 30 minims (single). |

This Tincture contains in 100 millilitres 1 gramme of morphine, calculated as anhydrous; 110 minims contain 1 grain of the same. It is of approximately the same strength as the Tinctura Opii of the International Agreement, and is about one-third stronger than the corresponding preparation of the British Pharmacopœia, 1898.

Tincture of Opium may be prepared with any variety of opium containing a known percentage of morphine, calculated as anhydrous, provided that the percentage is not less than seven and a half, and provided that the resulting Tincture of Opium responds to the foregoing test.

## TINCTURA OPII AMMONIATA

### Ammoniated Tincture of Opium

| | |
|---|---|
| Tincture of Opium . . . | 100 millilitres |
| Benzoic Acid . . . . | 20 grammes |
| Oil of Anise . . . . | 5 millilitres |
| Solution of Ammonia . . . | 200 millilitres |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve the Oil of Anise and the Benzoic Acid in six hundred millilitres of the Alcohol; add the Tincture of Opium and the Solution of Ammonia; mix; filter; add sufficient of the Alcohol to produce the required volume.

[*For dose see over.*

TINCTURA OPII AMMONIATA (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | ½ to 1 fluid drachm. |

This Tincture contains in 100 millilitres 0·1 gramme of morphine, calculated as anhydrous ; 110 minims contain about 1/10 grain of the same. It contains approximately one-tenth less morphine than that contained in the corresponding preparation of the British Pharmacopœia, 1898.

## TINCTURA PICRORHIZÆ
### Tincture of Picrorhiza

| | |
|---|---|
| Picrorhiza, cut small and bruised . | 250 grammes |
| Alcohol (45 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

This Tincture is of twice the strength of the corresponding preparation of the Indian and Colonial Addendum, 1900.

## TINCTURA PODOPHYLLI
### Tincture of Podophyllum

| | |
|---|---|
| Podophyllum Resin . . . | 36·5 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000·0 millilitres |

Add the Podophyllum Resin to nine hundred millilitres of the Alcohol, and set aside for twenty-four hours, shaking occasionally ; filter ; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA PODOPHYLLI INDICI

### Tincture of Indian Podophyllum

| | |
|---|---|
| Indian Podophyllum Resin . | 36·5 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000·0 millilitres |

Add the Indian Podophyllum Resin to nine hundred millilitres of the Alcohol, and set aside for twenty-four hours, shaking occasionally; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA PRUNI VIRGINIANÆ

### Tincture of Wild Cherry

*Synonym*—Tincture of Virginian Prune

| | |
|---|---|
| Wild Cherry Bark, in No. 20 powder . . . . . | 200 grammes |
| Alcohol (90 per cent.) . . . | 565 millilitres |
| Distilled Water . . . . | 365 millilitres |
| Glycerin . . . . . | 100 millilitres |

Mix the powder with the Distilled Water; set aside in a closed vessel for twenty-four hours; add the Alcohol, and complete the *maceration process*; add the Glycerin to the product.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA PYRETHRI

### Tincture of Pyrethrum

| | |
|---|---|
| Pyrethrum Root, in No. 40 powder | 200 grammes |
| Alcohol (70 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred and fifty millilitres of the Alcohol, and complete the *percolation process.*

## TINCTURA QUASSIÆ

### Tincture of Quassia

| | |
|---|---|
| Quassia Wood, rasped . . . | 100 grammes |
| Alcohol (45 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA QUILLAIÆ

### Tincture of Quillaia

| | |
|---|---|
| Quillaia Bark, in No. 20 powder . | 50 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with twenty-five millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA QUININÆ

### Tincture of Quinine

| | |
|---|---|
| Quinine Hydrochloride . . . | 20 grammes |
| Tincture of Orange . . . | 1000 millilitres |

Dissolve.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA QUININÆ AMMONIATA

### Ammoniated Tincture of Quinine

| | |
|---|---|
| Quinine Sulphate . . . . | 20 grammes |
| Solution of Ammonia . . . | 100 millilitres |
| Alcohol (60 per cent.) . . . | 900 millilitres |

Mix the Solution of Ammonia with the Alcohol; add the Quinine Sulphate; shake until a clear solution is produced; set aside for three days; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA RHEI COMPOSITA

### Compound Tincture of Rhubarb

| | |
|---|---|
| Rhubarb, in No. 20 powder. . | 100·0 grammes |
| Cardamom Seeds, in No. 20 powder | 12·5 grammes |
| Coriander Fruit, in No. 20 powder | 12·5 grammes |
| Glycerin . . . . . | 100·0 millilitres |
| Alcohol (45 per cent.) sufficient to produce . . . . | 1000·0 millilitres |

Moisten the solid ingredients with one hundred millilitres of the Alcohol, and prepare, by the *percolation process*, eight hundred and fifty millilitres of tincture. Add the Glycerin, and sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils (repeated). | 1/2 to 1 fluid drachm (repeated). |
| 8 to 16 mils (single). | 2 to 4 fluid drachms (single). |

## TINCTURA SCILLÆ

### Tincture of Squill

| | |
|---|---|
| Squill, bruised . . . . | 200 grammes |
| Alcohol (60 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA SENEGÆ

### Tincture of Senega

| | |
|---|---|
| Senega Root, in No. 40 powder . | 200 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA SENNÆ COMPOSITA

### Compound Tincture of Senna

| | |
|---|---|
| Senna Leaves, in No. 20 powder . | 200 grammes |
| Caraway Fruit, in No. 20 powder . | 25 grammes |
| Coriander Fruit, in No. 20 powder | 25 grammes |
| Glycerin . . . . . | 100 millilitres |
| Alcohol (45 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the solid ingredients with two hundred and fifty millilitres of the Alcohol, and prepare, by the *percolation process*, eight hundred and fifty millilitres of tincture. Add the Glycerin and sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils (repeated). | 1/2 to 1 fluid drachm (repeated). |
| 8 to 16 mils (single). | 2 to 4 fluid drachms (single). |

## TINCTURA SERPENTARIÆ

### Tincture of Serpentary

| | |
|---|---|
| Serpentary Rhizome, in No. 40 powder . . . . . | 200 grammes |
| Alcohol (60 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process*.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA STRAMONII

### Tincture of Stramonium

| | |
|---|---|
| Stramonium Leaves, in No. 20 powder | 200 grammes |
| Alcohol (45 per cent.) sufficient to produce | 1000 millilitres |

Moisten the powder with two hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA STROPHANTHI

### Tincture of Strophanthus

| | |
|---|---|
| Strophanthus Seeds, in No. 30 powder, dried at 45° | 100 grammes |
| Ether | a sufficient quantity |
| Alcohol (70 per cent.) sufficient to produce | 1000 millilitres |

Pack the powder in a percolator; moisten with the Ether, and macerate for twenty-four hours; then allow percolation to proceed, continuing the addition of the Ether until the liquid passes through colourless. Remove the marc from the percolator, and dry it, gradually heating it to 50°. Again reduce it to powder, repack in the percolator, and moisten with the Alcohol. Macerate for forty-eight hours, then pour on successive quantities of the Alcohol, percolating slowly, until five hundred millilitres of percolate are obtained; add sufficient of the Alcohol to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 12 to 30 centimils. | 2 to 5 minims. |

This Tincture is made with four times the proportion of Strophanthus Seeds ordered for the corresponding preparation of the British Pharmacopœia, 1898. It is of approximately the same strength as the Tinctura Strophanthi of the International Agreement, but in the case of the latter Tincture, the seeds are not treated with ether for the removal of fat and resins.

## TINCTURA TOLUTANA

### Tincture of Balsam of Tolu

| | |
|---|---|
| Balsam of Tolu . . . . | 100 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Dissolve the Balsam of Tolu in eight hundred millilitres of the Alcohol; filter; pass sufficient of the Alcohol through the filter to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA URGINEÆ

### Tincture of Urginea

| | |
|---|---|
| Urginea, bruised . . . . | 200 grammes |
| Alcohol (60 per cent.) . . . | 1000 millilitres |

Prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 10 decimils. | 5 to 15 minims. |

## TINCTURA VALERIANÆ AMMONIATA

### Ammoniated Tincture of Valerian

| | |
|---|---|
| Valerian Rhizome, in No. 40 powder | 200 grammes |
| Oil of Nutmeg | 3 millilitres |
| Oil of Lemon | 2 millilitres |
| Solution of Ammonia | 100 millilitres |
| Alcohol (60 per cent.) | 900 millilitres |

Mix the liquid ingredients, and, using the mixture as a menstruum, prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA VALERIANÆ INDICÆ AMMONIATA

### Ammoniated Tincture of Indian Valerian

| | |
|---|---|
| Indian Valerian Rhizome, in No. 40 powder | 200 grammes |
| Oil of Nutmeg | 3 millilitres |
| Oil of Lemon | 2 millilitres |
| Solution of Ammonia | 100 millilitres |
| Alcohol (60 per cent.) | 900 millilitres |

Mix the liquid ingredients, and, using the mixture as a menstruum, prepare by the *maceration process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TINCTURA ZINGIBERIS

### Tincture of Ginger

| | |
|---|---|
| Ginger, in No. 40 powder . . | 100 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . | 1000 millilitres |

Moisten the powder with one hundred millilitres of the Alcohol, and complete the *percolation process.*

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 4 mils. | 1/2 to 1 fluid drachm. |

## TRAGACANTHA

### Tragacanth

Tragacanth is a gummy exudation obtained by incision from Astragalus gummifer, *Labill.*, and some other species of Astragalus. Known in commerce as Syrian tragacanth.

*Characters and Tests.*—Thin flattened flakes, irregularly oblong, or more or less curved, marked on the surface by concentric ridges. Frequently two and a half centimetres long, and twelve millimetres wide. White or pale yellowish-white, somewhat translucent. Horny, fracture short. Inodorous; almost tasteless. Sparingly soluble in *water*, but swelling into a gelatinous mass, which may be tinged violet or blue by *N/10 solution of iodine.* Ash not more than 4 per cent.

## TROCHISCUS ACIDI BENZOICI

### Benzoic Acid Lozenge

| | |
|---|---|
| Benzoic Acid . . . . . | 0·03 gramme |

Mix with the *Fruit Basis* to form a Lozenge.

## TROCHISCUS ACIDI CARBOLICI

### Phenol Lozenge

| | |
|---|---|
| Phenol, in powder . . . | 15 grammes |
| Refined Sugar, in powder . . | 500 grammes |
| Gum Acacia, in powder . . . | 45 grammes |
| Tragacanth, in powder . . . | 15 grammes |
| Lemon Juice . . . . . | 45 millilitres |

Mix. Divide into five hundred lozenges. Dry them in a hot-air chamber at a moderate temperature.

Each Lozenge contains 0·03 gramme of Phenol, or approximately 1/2 grain. It is of one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898.

## TROCHISCUS ACIDI TANNICI

### Tannic Acid Lozenge

| | |
|---|---|
| Tannic Acid . . . . . | 0·03 gramme |

Mix with the *Tolu Basis* to form a Lozenge.

## TROCHISCUS BISMUTHI COMPOSITUS

### Compound Bismuth Lozenge

| | |
|---|---|
| Bismuth Oxycarbonate . . . | 0·15 gramme |
| Heavy Magnesium Carbonate . . | 0·15 gramme |
| Precipitated Calcium Carbonate . | 0·30 gramme |

Mix with the *Rose Basis* to form a Lozenge.

## TROCHISCUS CATECHU

### Catechu Lozenge

| | |
|---|---|
| Catechu . . . . . | 0·06 gramme |

Mix with the *Fruit Basis* to form a Lozenge.

## TROCHISCUS FERRI REDACTI

### Reduced Iron Lozenge

Reduced Iron . . . . 0·06 gramme

Mix with the *Simple Basis* to form a Lozenge.

## TROCHISCUS GUAIACI RESINÆ

### Guaiacum Resin Lozenge

Guaiacum Resin . . . . 0·2 gramme

Mix with the *Fruit Basis* to form a Lozenge.

## TROCHISCUS IPECACUANHÆ

### Ipecacuanha Lozenge

Ipecacuanha Root, in powder . 0·015 gramme

Mix with the *Simple Basis* to form a Lozenge.

## TROCHISCUS KINO EUCALYPTI

### Eucalyptus Kino Lozenge

*Synonyms*—Red Gum Lozenge: Eucalyptus Gum Lozenge

Eucalyptus Kino . . . . 0·06 gramme

Mix with the *Fruit Basis* to form a Lozenge.

## TROCHISCUS KRAMERIÆ

### Krameria Lozenge

*Synonym*—Rhatany Lozenge

| | |
|---|---|
| Extract of Krameria . . . | 0·06 gramme |

Mix with the *Fruit Basis* to form a Lozenge.

## TROCHISCUS KRAMERIÆ ET COCAINÆ

### Krameria and Cocaine Lozenge

*Synonym*—Rhatany and Cocaine Lozenge

| | |
|---|---|
| Extract of Krameria . . . | 0·060 gramme |
| Cocaine Hydrochloride . . . | 0·003 gramme |

Mix with the *Fruit Basis* to form a Lozenge.

This Lozenge contains 0·003 gramme of Cocaine Hydrochloride, or approximately 1/20 grain.

## TROCHISCUS MORPHINÆ

### Morphine Lozenge

| | |
|---|---|
| Morphine Hydrochloride . . | 0·002 gramme |

Mix with the *Tolu Basis* to form a Lozenge.

This Lozenge contains 0·002 gramme of Morphine Hydrochloride, or approximately 1/32 grain.

## TROCHISCUS MORPHINÆ ET IPECACUANHÆ

### Morphine and Ipecacuanha Lozenge

| | |
|---|---|
| Morphine Hydrochloride . . | 0·002 gramme |
| Ipecacuanha Root, in powder . | 0·006 gramme |

Mix with the *Tolu Basis* to form a Lozenge.

This Lozenge contains 0·002 gramme of Morphine Hydrochloride, or approximately 1/32 grain.

## TROCHISCUS POTASSII CHLORATIS

### Potassium Chlorate Lozenge

| | |
|---|---|
| Potassium Chlorate . . . . | 0·2 gramme |

Mix with the *Rose Basis* to form a Lozenge.

## TROCHISCUS SANTONINI

### Santonin Lozenge

| | |
|---|---|
| Santonin . . . . . | 0·06 gramme |

Mix with the *Simple Basis* to form a Lozenge.

## TROCHISCUS SULPHURIS

### Sulphur Lozenge

| | |
|---|---|
| Precipitated Sulphur . . . | 150 grammes |
| Acid Potassium Tartrate, in powder . . . . . | 30 grammes |
| Refined Sugar, in powder . . | 275 grammes |
| Gum Acacia, in powder . . . | 30 grammes |
| Tincture of Orange . . . | 30 millilitres |
| Mucilage of Gum Acacia . . | 30 millilitres |

Mix the Tincture of Orange with the powders ; add the Mucilage of Gum Acacia to form a suitable mass. Divide into five hundred Lozenges. Dry them in a hot-air chamber at a moderate temperature.

Each Lozenge contains 0·3 gramme of Precipitated Sulphur, or approximately 5 grains.

## TURPETHUM

### Turpeth

Turpeth is the dried root and stem of Ipomœa Turpethum, *R.Br.*

*Characters.*—In cylindrical pieces of varying length, from one to five centimetres wide, often split on one side and deprived of the central portion; longitudinally furrowed; dull grey or brown. Fracture of the bark short, of the wood fibrous; internally usually pale grey. In transverse section, a porous wood surrounded by a thick bark in which abnormal wood-bundles are frequently present. Slight odour; taste nauseous, slowly developed.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 3 to 12 decigrams. | 5 to 20 grains. |

## UNGUENTUM ACIDI BORICI

### Boric Acid Ointment

| | |
|---|---|
| Boric Acid, in powder . . . | 10 grammes |
| Paraffin Ointment, white . . . | 90 grammes |

Melt the Paraffin Ointment; sift in the Boric Acid; stir until cold.

## UNGUENTUM ACIDI CARBOLICI

### Phenol Ointment

| | |
|---|---|
| Phenol . . . . . | 3 grammes |
| Paraffin Ointment, white . . . | 97 grammes |

Melt the Paraffin Ointment; in it dissolve the Phenol; stir until cold.

## UNGUENTUM ACIDI SALICYLICI

### Salicylic Acid Ointment

| | |
|---|---|
| Salicylic Acid, in powder . . . | 2 grammes |
| Paraffin Ointment, white . . . | 98 grammes |

Melt the Paraffin Ointment; sift in the Salicylic Acid; stir until cold.

## UNGUENTUM ACONITINÆ

### Aconitine Ointment

| | |
|---|---|
| Aconitine. . . . . | 2 grammes |
| Oleic Acid . . . . . | 16 grammes |
| Prepared Lard . . . . | 82 grammes |

Triturate the Aconitine with the Oleic Acid, and gently warm the mixture until dissolved; add the Prepared Lard; mix.

This Ointment contains 2 per cent. of Aconitine.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM AQUÆ ROSÆ

### Rose Water Ointment

| | |
|---|---|
| Rose Water . . . . . | 20·0 millilitres |
| White Beeswax . . . . | 18·0 grammes |
| Purified Borax . . . . | 1·0 gramme |
| Almond Oil . . . . . | 61·0 grammes |
| Oil of Rose . . . . . | 0·1 millilitre |

Melt the White Beeswax in the Almond Oil; add, with constant stirring, the Borax previously dissolved in the

Rose Water; add the Oil of Rose, and continue to stir until cold.

See Appendix XII, page 530, Unguenta.

## UNGUENTUM ATROPINÆ

### Atropine Ointment

| | |
|---|---|
| Atropine . . . . . | 2 grammes |
| Oleic Acid . . . . . | 8 grammes |
| Prepared Lard . . . . . | 90 grammes |

Triturate the Atropine with the Oleic Acid, and gently warm the mixture until dissolved; add the Prepared Lard; mix.

This Ointment contains 2 per cent of Atropine.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM BELLADONNÆ

### Belladonna Ointment

| | |
|---|---|
| Liquid Extract of Belladonna . . | 80 millilitres |
| Benzoated Lard . . . . | 60 grammes |
| Wool Fat . . . . . | 20 grammes |

Evaporate the Liquid Extract of Belladonna on a water-bath until it is reduced to twenty grammes; mix with the Benzoated Lard and Wool Fat.

This Ointment contains 0·6 per cent. of the alkaloids of Belladonna Root.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM CANTHARIDINI

### Cantharidin Ointment

| | |
|---|---|
| Cantharidin . . . . . | 0·1 gramme |
| Chloroform . . . . . | 10·0 millilitres |
| Benzoated Lard . . . . | 290·0 grammes |

Dissolve the Cantharidin in the Chloroform; add the solution to the Benzoated Lard, previously melted; stir until cold.

This Ointment contains 0·033 per cent. of Cantharidin, which is approximately two-thirds of the proportion of Cantharidin contained in the Unguentum Cantharidis of the British Pharmacopœia, 1898.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM CAPSICI

### Capsicum Ointment

| | |
|---|---|
| Capsicum Fruit, bruised . . . | 25 grammes |
| Hard Paraffin . . . . . | 10 grammes |
| Soft Paraffin . . . . . | 75 grammes |
| Prepared Lard . . . . | 10 grammes |

Digest on a water-bath for one hour, stirring occasionally; strain; stir until cold.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM CETACEI

### Spermaceti Ointment

| | |
|---|---|
| Spermaceti . . . . . | 20 grammes |
| White Beeswax . . . . | 8 grammes |
| Liquid Paraffin . . . . | 72 grammes |

Melt together, and stir until cold.

See Appendix XII, page 530, Unguenta.

## UNGUENTUM CHAULMOOGRÆ

### Chaulmoogra Ointment

*Synonym*—Gynocardia Ointment

| | |
|---|---|
| Chaulmoogra Oil | 10 grammes |
| Hard Paraffin | 40 grammes |
| Soft Paraffin, white | 50 grammes |

Melt the Hard and Soft Paraffins together; add the Chaulmoogra Oil; stir until cold.

## UNGUENTUM CHRYSAROBINI

### Chrysarobin Ointment

| | |
|---|---|
| Chrysarobin, in powder | 4 grammes |
| Soft Paraffin | 96 grammes |

Triturate the Chrysarobin with a portion of the Soft Paraffin until smooth; gradually add the remainder, mixing thoroughly by trituration.

## UNGUENTUM COCAINÆ

### Cocaine Ointment

| | |
|---|---|
| Cocaine | 4 grammes |
| Oleic Acid | 16 grammes |
| Prepared Lard | 80 grammes |

Triturate the Cocaine with the Oleic Acid, and gently warm the mixture until the alkaloid is dissolved; add the Prepared Lard; mix.

This Ointment contains 4 per cent. of Cocaine.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM CREOSOTI

### Creosote Ointment

| | |
|---|---|
| Creosote | 10 grammes |
| Hard Paraffin | 40 grammes |
| Soft Paraffin, white | 50 grammes |

Melt the Hard and Soft Paraffins together; add the Creosote; stir until cold.

## UNGUENTUM EUCALYPTI

### Eucalyptus Ointment

| | |
|---|---|
| Oil of Eucalyptus | 10 grammes |
| Hard Paraffin | 40 grammes |
| Soft Paraffin, white | 50 grammes |

Melt the Hard and Soft Paraffins together; add the Oil of Eucalyptus; stir until cold.

## UNGUENTUM GALLÆ

### Gall Ointment

| | |
|---|---|
| Galls, in powder | 20 grammes |
| Benzoated Lard | 80 grammes |

Triturate the Galls with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM GALLÆ CUM OPIO
### Gall and Opium Ointment

| | |
|---|---|
| Gall Ointment | 92·5 grammes |
| Opium, in powder | 7·5 grammes |

Triturate the Opium with a portion of the Gall Ointment until smooth; gradually add the remainder, mixing thoroughly by trituration.

This Ointment contains 7·5 per cent. of Opium.

## UNGUENTUM HAMAMELIDIS
### Hamamelis Ointment

| | |
|---|---|
| Liquid Extract of Hamamelis | 10 millilitres |
| Wool Fat | 60 grammes |
| Soft Paraffin | 30 grammes |

Mix by trituration in a warm mortar.

## UNGUENTUM HYDRARGYRI
### Mercury Ointment

| | |
|---|---|
| Mercury | 30 grammes |
| Benzoated Lard | 65 grammes |
| Prepared Suet | 5 grammes |

Triturate until metallic globules cease to be visible.

This Ointment is of approximately three-fifths the strength of the corresponding preparation of the British Pharmacopœia, 1898; it is of the same strength as the Unguentum Hydrargyri of the International Agreement.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM HYDRARGYRI AMMONIATI

### Ammoniated Mercury Ointment

*Synonym*—White Precipitate Ointment

| | |
|---|---|
| Ammoniated Mercury, in powder | 5 grammes |
| Benzoated Lard | 95 grammes |

Triturate the Ammoniated Mercury with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

This Ointment is of approximately one-half the strength of the corresponding preparation of the British Pharmacopœia, 1898.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM HYDRARGYRI COMPOSITUM

### Compound Mercury Ointment

| | |
|---|---|
| Mercury Ointment | 40 grammes |
| Yellow Beeswax | 24 grammes |
| Olive Oil | 24 grammes |
| Camphor, in flowers | 12 grammes |

Mix the Yellow Beeswax, Olive Oil, and Mercury Ointment with the aid of heat; add the Camphor; triturate until cold.

This Ointment is of approximately three-fifths the strength of the corresponding preparation of the British Pharmacopœia, 1898.

See Appendix XII, page 530, Unguenta, and page 529, Oleum Olivæ.

## UNGUENTUM HYDRARGYRI IODIDI RUBRI

### Red Mercuric Iodide Ointment

*Synonym*—Ointment of Mercuric Iodide

| | |
|---|---|
| Red Mercuric Iodide, in powder | 4 grammes |
| Benzoated Lard | 96 grammes |

Triturate the Red Mercuric Iodide with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM HYDRARGYRI NITRATIS

### Mercuric Nitrate Ointment

*Synonym*—Ointment of Nitrate of Mercury

| | |
|---|---|
| Mercury | 10 grammes |
| Nitric Acid | 30 millilitres |
| Prepared Lard | 40 grammes |
| Olive Oil | 70 grammes |

Dissolve the Mercury in the Nitric Acid without the aid of heat, shaking gently from time to time. Heat the Prepared Lard and Olive Oil together on a sand-bath, so that the mixture when transferred to a heated earthen jar, capable of holding ten times the quantity, is at a temperature of about 150°. Add the cold mercurial solution very gradually, stirring constantly with a glass or wooden spatula to promote the disengagement of fumes. Keep the mixture at a temperature of not less than 90° until frothing ceases, then stir until cold.

See Appendix XII, page 530, Unguenta, and page 529, Oleum Olivæ.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM HYDRARGYRI NITRATIS DILUTUM

### Diluted Mercuric Nitrate Ointment

*Synonym*—Diluted Ointment of Nitrate of Mercury

| | |
|---|---|
| Mercuric Nitrate Ointment . . | 20 grammes |
| Soft Paraffin, yellow . . . | 80 grammes |

Mix by trituration.

## UNGUENTUM HYDRARGYRI OLEATI

### Mercuric Oleate Ointment

| | |
|---|---|
| Oleated Mercury . . . . | 25 grammes |
| Benzoated Lard . . . . | 75 grammes |

Mix by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM HYDRARGYRI OXIDI FLAVI

### Yellow Mercuric Oxide Ointment

| | |
|---|---|
| Yellow Mercuric Oxide, in powder . | 2 grammes |
| Soft Paraffin, yellow . . . | 98 grammes |

Triturate the Yellow Mercuric Oxide with a portion of the Soft Paraffin until smooth; gradually add the remainder, mixing thoroughly by trituration.

## UNGUENTUM HYDRARGYRI OXIDI RUBRI

### Red Mercuric Oxide Ointment

*Synonym*—Red Precipitate Ointment

| | |
|---|---|
| Red Mercuric Oxide, in powder . | 10 grammes |
| Paraffin Ointment, yellow . . | 90 grammes |

Melt the Paraffin Ointment; sift in the Red Mercuric Oxide; stir until cold.

## UNGUENTUM HYDRARGYRI SUBCHLORIDI

### Mercurous Chloride Ointment

*Synonym*—Calomel Ointment

| | |
|---|---|
| Mercurous Chloride . . . . | 20 grammes |
| Benzoated Lard . . . . | 80 grammes |

Triturate the Mercurous Chloride with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

This Ointment is of twice the strength of the corresponding preparation of the British Pharmacopœia, 1898.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM IODI

### Iodine Ointment

| | |
|---|---|
| Iodine . . . . . | 4 grammes |
| Potassium Iodide . . . . | 4 grammes |
| Glycerin . . . . . | 12 grammes |
| Prepared Lard . . . . | 80 grammes |

Triturate the Iodine, Potassium Iodide, and Glycerin in a glass or porcelain mortar; add the Prepared Lard; mix thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM IODOFORMI

### Iodoform Ointment

| | |
|---|---|
| Iodoform, in powder | 10 grammes |
| Prepared Lard | 90 grammes |

Triturate the Iodoform with a portion of the Prepared Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM LANÆ COMPOSITUM

### Compound Wool Fat Ointment

*Synonym*—Emollient Ointment

| | |
|---|---|
| Prepared Lard | 40 grammes |
| Wool Fat | 40 grammes |
| Paraffin Ointment | 20 grammes |

Melt together; stir until cold.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM MYROBALANI
### Myrobalan Ointment

| | |
|---|---|
| Myrobalans, in powder . . . | 20 grammes |
| Benzoated Lard . . . . | 80 grammes |

Triturate the Myrobalans with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM MYROBALANI CUM OPIO
### Myrobalan and Opium Ointment

| | |
|---|---|
| Myrobalan Ointment . . . | 92·5 grammes |
| Opium, in powder . . . | 7·5 grammes |

Triturate the Opium with a portion of the Myrobalan Ointment until smooth; gradually add the remainder, mixing thoroughly by trituration.

This Ointment contains 7·5 per cent. of Opium.

## UNGUENTUM PARAFFINI
### Paraffin Ointment

| | |
|---|---|
| Hard Paraffin . . . . . | 27 grammes |
| Soft Paraffin . . . . . | 70 grammes |
| White Beeswax . . . . | 3 grammes |

Melt together; stir until cold.

When Paraffin Ointment is used as the basis of white ointments it should be prepared with the white variety of Soft Paraffin; and when used for coloured ointments it should be prepared with the yellow variety of Soft Paraffin.

See Appendix XII, page 530, Unguenta.

## UNGUENTUM PICIS LIQUIDÆ
### Tar Ointment

| | |
|---|---|
| Tar | 70 grammes |
| Prepared Lard | 5 grammes |
| Yellow Beeswax | 25 grammes |

Melt together; stir until cold.

See Appendix XII, page 530, Unguenta.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM PLUMBI IODIDI
### Lead Iodide Ointment

| | |
|---|---|
| Lead Iodide, in powder | 10 grammes |
| Benzoated Lard | 90 grammes |

Triturate the Lead Iodide with a portion of the Benzoated Lard until smooth; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM PLUMBI SUBACETATIS
### Lead Subacetate Ointment

| | |
|---|---|
| Strong Solution of Lead Subacetate | 12·5 grammes |
| Wool Fat | 25·0 grammes |
| Hard Paraffin | 12·5 grammes |
| Soft Paraffin | 50·0 grammes |

Melt together the Wool Fat and the Hard and Soft Paraffins; stir until nearly cold; add the Strong Solution of Lead Subacetate, and continue to stir until cold.

## UNGUENTUM POTASSII IODIDI

### Potassium Iodide Ointment

| | |
|---|---|
| Potassium Iodide | 10·0 grammes |
| Potassium Carbonate | 0·6 gramme |
| Distilled Water | 9·4 grammes |
| Benzoated Lard | 80·0 grammes |

Dissolve the Potassium Iodide and Potassium Carbonate in the Distilled Water; mix the solution, gradually, with the Benzoated Lard, in a slightly warmed mortar.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM RESINÆ

### Resin Ointment

| | |
|---|---|
| Resin | 26 grammes |
| Yellow Beeswax | 26 grammes |
| Olive Oil | 26 grammes |
| Prepared Lard | 22 grammes |

Melt together; strain; stir until cold.

See Appendix XII, page 530, Unguenta, and page 529, Oleum Olivæ.

In India, Prepared Suet (Sevum Præparatum) should be employed instead of Prepared Lard in making this Ointment.

## UNGUENTUM STAPHISAGRIÆ

### Stavesacre Ointment

| | |
|---|---|
| Stavesacre Seeds | 20 grammes |
| Yellow Beeswax | 10 grammes |
| Benzoated Lard | 85 grammes |

Crush the Stavesacre Seeds ; digest the crushed seeds with the Benzoated Lard on a water-bath for two hours ; strain and press through calico ; melt the Beeswax in the liquid mixture ; stir until cold.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM SULPHURIS

### Sulphur Ointment

| | |
|---|---|
| Sublimed Sulphur . . . . | 10 grammes |
| Benzoated Lard . . . . | 90 grammes |

Triturate the Sublimed Sulphur with a portion of the Benzoated Lard until smooth ; gradually add the remainder, mixing thoroughly by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM ZINCI

### Zinc Ointment

| | |
|---|---|
| Zinc Oxide . . . . . | 15 grammes |
| Benzoated Lard . . . . | 85 grammes |

Mix by trituration.

See Appendix XII, page 530, Unguenta.

In India, Benzoated Suet (Sevum Benzoatum) should be employed instead of Benzoated Lard in making this Ointment.

## UNGUENTUM ZINCI OLEATIS

### Zinc Oleate Ointment

| | |
|---|---|
| Zinc Sulphate | 30 grammes |
| Hard Soap, in shavings | 90 grammes |
| Distilled Water, boiling | of each a sufficient quantity |
| Soft Paraffin, white | |

Dissolve the Zinc Sulphate in sixty millilitres of the Distilled Water. Dissolve the Hard Soap in six hundred millilitres of the Distilled Water. Mix the solutions; heat to boiling; allow the melted zinc oleate so produced to rise to the surface; cool until it solidifies; pour off the aqueous liquid; boil the zinc oleate with successive quantities of Distilled Water until the washings afford not more than a slight *reaction* for sulphates; reduce the cake thus obtained to a coarse powder; dry at a temperature below 60°; melt on a water-bath with an equal weight of the Soft Paraffin; stir until cold.

## URGINEA

### Urginea

*Synonym*—Indian Squill

Urginea consists of the younger bulbs of Urginea indica, *Kunth*, collected soon after the plants have flowered, divested of their dry, outer, membranous coats, cut into slices, and dried. When powdered should be kept quite dry over quicklime.

*Characters.*—Curved or sickle-shaped strips, separated or connected, several together, to a portion of the shortened axis; usually one to five centimetres long and five to ten millimetres wide; yellowish-white, fleshy, often longitudinally ribbed; tough when slightly moist, but brittle and pulverisable when dry. No odour; taste bitter and acrid.

*Dose (in powder).*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

## UVÆ URSI FOLIA

### Bearberry Leaves

Bearberry Leaves are the dried leaves of Arctostaphylos Uva-ursi, *Spreng.*

*Characters.*—Obovate or spathulate, about two centimetres long, yellowish-green, coriaceous, entire, shortly petiolate. Upper surface glabrous, shining, reticulate; veinlets depressed. Slight odour; taste very astringent.

## VALERIANÆ INDICÆ RHIZOMA

### Indian Valerian Rhizome

Indian Valerian Rhizome is the dried rhizome and roots of Valeriana Wallichii, *DC.*

*Characters.*—Rhizome curved, about five centimetres long, from five to ten millimetres thick, dull brown, with raised transverse leaf-scars, numerous prominent root-scars and a few thick roots; the crown bearing the remains of petioles. Fracture short. In transverse section, dark with a large pith and diffuse ring of small wood-bundles. Strong, characteristic, disagreeable odour; taste unpleasant, camphoraceous.

## VALERIANÆ RHIZOMA

### Valerian Rhizome

Valerian Rhizome is the dried rhizome and roots of Valeriana officinalis, *Linn.* Collected in the autumn.

*Characters and Test.*—Rhizome short, erect, entire or sliced, dark yellowish-brown externally, whitish internally. Roots numerous, about seven to ten centimetres long, of the same colour as the rhizome, slender, brittle. Strong, characteristic, disagreeable odour; taste unpleasant, camphoraceous, slightly bitter. Ash not more than 10 per cent.

## VIBURNUM

### Black Haw

Black Haw is the dried bark of Viburnum prunifolium, *Linn.*

*Characters.*—In quills or curved pieces, one to four millimetres thick; dull brown or reddish-brown. Outer surface longitudinally wrinkled or, in older bark, with shallow fissures and scaly; inner surface longitudinally striated, reddish-brown. Fracture granular. In transverse section, a dark brown outer portion and a whitish or reddish bast with numerous groups of sclerenchymatous cells. Slight odour; taste astringent and bitter.

## VINUM ANTIMONIALE

### Antimonial Wine

| | |
|---|---|
| Tartarated Antimony . . . | 4 grammes |
| Distilled Water, boiling . . . | 40 millilitres |
| Sherry sufficient to produce . | 1000 millilitres |

Dissolve the Tartarated Antimony in the Distilled Water, and add sufficient Sherry to produce the required volume.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 decimils. | 10 to 30 minims. |

*Emetic Dose.*

| | |
|---|---|
| 8 to 16 mils. | 2 to 4 fluid drachms. |

## VINUM AURANTII
### Orange Wine

Orange Wine is made by the fermentation of a saccharine solution to which Fresh Bitter-Orange Peel has been added.

*Characters and Tests.*—A vinous liquid, having a golden sherry colour, and a taste and aroma derived from the Bitter-Orange Peel. Contains from 12 to 14 per cent. by volume of ethyl hydroxide. Not more than slightly acid to *litmus*. When 50 millilitres are made alkaline with *solution of sodium hydroxide*, evaporated to a small bulk, acidified with *hydrochloric acid*, and shaken with *benzene*, the residue obtained on evaporating the benzene solution, when dissolved in *water*, does not assume a violet colour on the addition of a drop of *T. Sol. of ferric chloride* (absence of salicylic acid). Yields not more than the slightest characteristic *reactions* for sulphites.

## VINUM COLCHICI
### Colchicum Wine

| | |
|---|---|
| Colchicum Corm, in No. 20 powder | 200 grammes |
| Sherry . . . . . | 1000 millilitres |

Prepare by the *maceration process.*

[*For dose see over.*

VINUM COLCHICI (*continued*).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 decimils. | 10 to 30 minims. |

## VINUM FERRI
### Iron Wine

| | |
|---|---|
| Iron, in wire . . . . | 50 grammes |
| Sherry . . . . . | 1000 millilitres |

In a closed vessel partially immerse the Iron in the Sherry; continue the maceration until the filtered liquid responds to the following test:—

Evaporate 50 millilitres to dryness, incinerate the residue, heat the ash with *hydrochloric acid* diluted with an equal volume of *water*, filter, wash the filter paper with *water*, and add to the mixed filtrate and washings excess of *solution of ammonia*. Collect the precipitate, wash, dry and ignite; the residue weighs not less than 0·089 or more than 0·215 gramme, representing a proportion of not less than 0·125 or more than 0·300 gramme of iron, calculated as iron, Fe, in 100 millilitres of the Wine.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 16 mils. | 1 to 4 fluid drachms. |

## VINUM FERRI CITRATIS
### Wine of Iron Citrate

| | |
|---|---|
| Iron and Ammonium Citrate . | 18 grammes |
| Orange Wine sufficient to produce . . . . . | 1000 millilitres |

Dissolve. Shake occasionally for three days; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 4 to 16 mils. | 1 to 4 fluid drachms. |

## VINUM IPECACUANHÆ

### Ipecacuanha Wine

| | |
|---|---|
| Liquid Extract of Ipecacuanha . | 50 millilitres |
| Sherry . . . . . | 950 millilitres |

Mix; set aside for forty-eight hours; filter.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 18 decimils. | 10 to 30 minims. |

*Emetic Dose.*

| | |
|---|---|
| 16 to 24 mils. | 4 to 6 fluid drachms. |

## VINUM QUININÆ

### Quinine Wine

| | |
|---|---|
| Quinine Hydrochloride . . . | 2 grammes |
| Orange Wine . . . . | 875 millilitres |

Dissolve; filter if necessary.

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 16 to 30 mils. | 1/2 to 1 fluid ounce. |

## VINUM XERICUM

### Sherry

Sherry is a Spanish wine.

*Characters and Tests.*—Pale yellowish-brown, containing not less than 16 per cent. by volume of ethyl hydroxide. Contains in 100 millilitres not less than 0·1 or more than 0·2 gramme of volatile acids, calculated as acetic acid, $HC_2H_3O_2$, and not less than 0·3 or more than 0·45 gramme of fixed acids, calculated as tartaric acid, $H_2C_4H_4O_6$, when tested by the following process :—

(1) Titrate 25 millilitres of the Sherry with *N/5 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator, and note the number (*a*) of millilitres of the former solution required.

(2) Introduce 25 millilitres of the Sherry with 25 millilitres of *water* into a flask capable of holding 200 millilitres and attach a condenser; add 0·5 gramme of *tannic acid*, and distil gently until about 25 millilitres have been collected. Then pass a current of steam through the residual liquid in the flask, and continue the distillation until about 200 millilitres in all have been collected. Titrate the distillate with *N/5 solution of sodium hydroxide, solution of phenolphthalein* being used as indicator. The number (*b*) of millilitres of the former solution required is not less than 2·1 or more than 4·2, representing a proportion of not less than 0·1 or more than 0·2 gramme of volatile acids, calculated as acetic acid, $HC_2H_3O_2$, in 100 millilitres of the Sherry. Deduct the number (*b*) of millilitres required in (2) from the number (*a*) of millilitres required in (1). The difference is not less than 5 or more than 7·5, representing a proportion of not less than 0·3 or more than 0·45 gramme of fixed acids, calculated as tartaric acid, $H_2C_4H_4O_6$, in 100 millilitres of the Sherry.

When 50 millilitres of the Sherry are made alkaline with *solution of sodium hydroxide*, evaporated to a small bulk, acidified with *hydrochloric acid* and shaken with *benzene*, the residue obtained on evaporating the benzene solution,

when dissolved in *water*, does not assume a violet colour on the addition of a drop of *T. Sol. of ferric chloride* (absence of salicylic acid).

## ZINCI ACETAS

### Zinc Acetate

Zinc Acetate, $Zn(C_2H_3O_2)_2,2H_2O$, may be obtained by neutralising acetic acid with zinc carbonate.

*Characters and Tests.*—Thin, translucent, colourless, crystalline plates, of a pearly lustre. Taste sharp and unpleasant. Soluble in 2·5 parts of *water*. Yields the *reactions* characteristic of zinc and of acetates. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, chlorides, or sulphates. *Arsenic limit* 5 parts per million. 0·5 gramme, tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 12 centigrams. | 1 to 2 grains. |

## ZINCI CARBONAS

### Zinc Carbonate

Zinc Carbonate is a hydrated zinc carbonate, and may be obtained by the interaction of zinc sulphate and sodium carbonate.

*Characters and Tests.*—White amorphous powder. No odour or taste. Insoluble in *water*; entirely soluble in *diluted nitric acid*. Yields the *reactions* characteristic

of zinc and of carbonates. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, or ammonium, and not more than the slightest *reactions* for chlorides or sulphates. *Arsenic limit* 10 parts per million. 0·2 gramme, dissolved in *diluted sulphuric acid*, and tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

## ZINCI CHLORIDUM

### Zinc Chloride

Zinc Chloride, $ZnCl_2$, may be obtained by the interaction of hydrochloric acid and zinc.

*Characters and Tests.*—Colourless opaque rods or tablets, or in granules; very deliquescent and caustic. Almost entirely soluble in *water*, in *alcohol* (90 per cent.), and in *ether*. Yields the *reactions* characteristic of zinc and of chlorides. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, or sulphates. *Arsenic limit* 5 parts per million. 0·25 gramme, tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

## ZINCI OLEOSTEARAS

### Zinc Oleostearate

| | |
|---|---|
| Hard Soap | 200 grammes |
| Curd Soap | 100 grammes |
| Zinc Sulphate | 100 grammes |
| Distilled Water | a sufficient quantity |

Dissolve the Soaps in one thousand five hundred milli-

litres of the Distilled Water by the aid of heat; add to the solution the Zinc Sulphate previously dissolved in two hundred millilitres of the Distilled Water. Collect the precipitate, wash it with Distilled Water until the washings are free from sulphates, dry it, and reduce it to a fine powder.

*Characters and Tests.*—A white amorphous powder. Odour faint, resembling that of fat. Insoluble in *water*, in *alcohol* (90 per cent.), and in *ether*. Ash about 13 per cent. The ash, dissolved in *hydrochloric acid* and the solution neutralised, yields the *reactions* characteristic of zinc. When 0·5 gramme is heated with 0·5 millilitre of *hydrochloric acid* diluted with 0·5 millilitre of *water*, a mixture of fatty acids is liberated and floats on the surface of the aqueous liquid; this aqueous liquid, filtered, neutralised with *solution of ammonia*, treated with excess of *solution of ammonium hydrosulphide*, again filtered, evaporated to dryness, and the product gently ignited, leaves no appreciable residue (absence of fixed alkalies and of alkaline earths).

## ZINCI OXIDUM

### Zinc Oxide

Zinc Oxide, ZnO, may be obtained from metallic zinc by combustion in air.

*Characters and Tests.*—A soft, white or nearly white, amorphous powder, becoming pale yellow when heated. No odour or taste. Yields the *reactions* characteristic of zinc. Soluble in *diluted hydrochloric acid* without the separation of any black particles. Yields no characteristic *reactions* for copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, and only slight *reactions* for lead and carbonates. *Arsenic limit* 10 parts per million. 0·2 gramme, dissolved

in *diluted sulphuric acid*, and tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 2 to 6 decigrams. | 3 to 10 grains. |

## ZINCI SULPHAS

### Zinc Sulphate

Zinc Sulphate, $ZnSO_4,7H_2O$, may be obtained by the interaction of diluted sulphuric acid and zinc.

*Characters and Tests.*—Colourless, transparent, prismatic crystals. Taste metallic, styptic. Soluble in less than 1 part of *water*. Yields the *reactions* characteristic of zinc and of sulphates. Yields no characteristic *reactions* for lead, copper, cadmium, aluminium, calcium, magnesium, sodium, potassium, ammonium, or acetates, and not more than the slightest *reactions* for iron or chlorides. *Arsenic limit* 5 parts per million. When 0·5 gramme is dissolved in *water*, excess of *solution of ammonia* added, and the mixture allowed to stand, any precipitate that is obtained being filtered off and dissolved in *diluted nitric acid*, then this acid solution, diluted with *water* to about 15 millilitres and heated to boiling, does not acquire more than a faint pink coloration on the addition of 1 millilitre of *N/10 solution of silver nitrate* and 10 millilitres of an aqueous solution (1 in 10) of *ammonium persulphate* (limit of manganese).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

*Emetic Dose.*

| | |
|---|---|
| 6 to 20 decigrams. | 10 to 30 grains. |

## ZINCI VALERIANAS

### Zinc Valerianate

Zinc Valerianate, $Zn(C_5H_9O_2)_2$, $2H_2O$, may be obtained by saturating iso-valerianic acid with zinc carbonate, or by the interaction of zinc sulphate and sodium iso-valerianate.

*Characters and Tests.*—White, pearly, tabular crystals. Disagreeable odour; taste metallic. Very slightly soluble in cold *water*, or in *ether*; soluble in hot *water*, and in *alcohol* (90 per cent.). Yields, when heated to redness, after moistening with a small quantity of *nitric acid*, not less than 26 or more than 27 per cent. of zinc oxide. Yields no characteristic *reactions* for lead, copper, cadmium, iron, aluminium, calcium, magnesium, sodium, potassium, ammonium, acetates, or carbonates, and not more than the slightest *reactions* for chlorides or sulphates. *Arsenic limit* 5 parts per million. When heated in a retort with *diluted sulphuric acid* it yields a distillate which, when added to *solution of copper acetate*, does not immediately become turbid or opalescent, but forms after a short time oily drops, which gradually pass into a bluish-white crystalline deposit (absence of butyrates). 0·2 gramme of the zinc oxide obtained on incineration, dissolved in *diluted sulphuric acid*, and tested as described under 'Zinci Sulphas,' yields a solution with not more than a faint pink coloration (limit of manganese).

*Dose.*

| *Metric.* | *Imperial.* |
|---|---|
| 6 to 20 centigrams. | 1 to 3 grains. |

## ZINGIBER

### Ginger

Ginger is the scraped and dried rhizome of Zingiber officinale, *Roscoe*.

*Characters and Tests.*—In flattish, irregularly branched pieces, usually from seven to ten centimetres long; each branch marked at its summit by a depressed scar. Fracture short with projecting fibres. Agreeable, aromatic odour; taste pungent. When 5 grammes of powdered Ginger are shaken with 100 millilitres of *alcohol* (90 per cent.) occasionally during twenty-four hours and filtered, 20 millilitres of the filtrate yield on evaporation not less than 0·050 gramme of residue dried at 100°; and when 5 grammes are similarly treated with 100 millilitres of *water*, 20 millilitres of the filtrate yield not less than 0·085 gramme of residue dried at 100°. Ash not more than 6 per cent.; and after deduction of that portion of the ash which is insoluble in *water* not less than 1·5 per cent.

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# APPENDICES

## APPENDIX I

### *ARTICLES AND REAGENTS EMPLOYED IN CHEMICAL TESTING*

Acetic Acid of the British Pharmacopœia.

Acetic Acid, Diluted, of the British Pharmacopœia.

Acetic Acid, Glacial, of the British Pharmacopœia.

Acetic Anhydride, $C_4H_6O_3$, of commerce, pure.

Acetone of the British Pharmacopœia.

Albumen, the liquid white of fresh eggs.

Alcohol, Absolute, of the British Pharmacopœia.

Alcohol (90 per cent.) of the British Pharmacopœia.

Alcohol (70 per cent.) of the British Pharmacopœia.

Alcohol (20 per cent.) of the British Pharmacopœia.

Alum, Purified, of the British Pharmacopœia.

Ammonium Chloride of the British Pharmacopœia.

Ammonium Molybdate $(NH_4)_2MoO_4$, of commerce, pure.

Ammonium Oxalate $(NH_4)_2C_2O_4,H_2O$, of commerce, pure.

Ammonium Persulphate, $NH_4SO_4$, of commerce, pure.

**Ammonium Thiocyanate**, $NH_4SCN$, of commerce, pure.

**Amylic Alcohol** is a liquid consisting principally of iso-primary amylic alcohol, $C_5H_{11}OH$, and may be prepared by shaking commercial fusel oil with a saturated solution of common salt, separating the oily layer, submitting it to distillation, and collecting and reserving the fraction which distils between 125° and 143°.

**Aniline** of commerce, redistilled.

**Animal Charcoal** of commerce, purified.

**Auric Chloride** of commerce, pure.

**Barium Chloride**, $BaCl_2$, $2H_2O$, of commerce, pure.

**Barium Hydroxide**, $Ba(OH)_2$,$8H_2O$, of commerce, pure.

**Benzene** of the British Pharmacopœia.

**Benzolated Amylic Alcohol**

| | |
|---|---|
| Benzene . . . . . | 3 parts by volume |
| Amylic Alcohol . . . . | 1 part by volume |

Mix; decant from any deposited water.

**Bismuth Oxynitrate** of the British Pharmacopœia.

**Borax, Purified**, of the British Pharmacopœia.

**Bromine** of commerce, pure.

**Cadmium Iodide**, $CdI_2$, of commerce, pure.

**Calcium Carbonate**, the pure white marble, or calc spar, of commerce.

**Calcium Hydroxide** of the British Pharmacopœia.

**Calcium Oxide**, the Lime of the British Pharmacopœia.

**Calcium Sulphate**, $CaSO_4$,$2H_2O$, native, pure.

**Carbon Disulphide** of the British Pharmacopœia.

**Carbon Tetrachloride**, $CCl_4$, of commerce, pure.

**Chlorine**, a gas prepared by the interaction of hydrochloric acid and manganese peroxide, and purified by passing through a small quantity of water contained in a wash bottle.

**Chloroform** of the British Pharmacopœia.

**Chloroform Water** of the British Pharmacopœia.

**Citric Acid** of the British Pharmacopœia.

**Collodion** of the British Pharmacopœia.

**Copper** in foil, wire, or turnings.

**Copper Acetate**, $Cu(C_2H_3O_2)_2,H_2O$, of commerce, crystalline, pure.

**Copper Carbonate**, precipitated, of commerce.

**Copper Sulphate** of the British Pharmacopœia.

**Ether** of the British Pharmacopœia.

**Ferric Ammonium Sulphate**, $Fe_2(SO_4)_3,(NH_4)_2SO_4,24H_2O$ of commerce, pure.

**Ferric Chloride** of commerce, pure, anhydrous.

**Ferrous Sulphate** of the British Pharmacopœia.

**Fuchsin** of commerce, pure.

**Glycerin** of the British Pharmacopœia.

**Hydrochloric Acid** of the British Pharmacopœia.

**Hydrochloric Acid, Diluted,** of the British Pharmacopœia.

**Hydrochloric Acid, Gaseous,** HCl, dry, prepared by the interaction of sulphuric acid and common salt.

**Hydrogen Sulphide,** *Synonym*—Sulphuretted Hydrogen. A gas prepared by the action of hydrochloric acid on commercial ferrous sulphide. It will be sufficiently pure after passing through two wash-bottles containing water. A solution of the gas in *water* may also be employed, but only if it smells strongly of the gas, and yields an abundant black precipitate with *solution of lead acetate.*

**Hydroxylamine Hydrochloride,** $NH_2OH,HCl$, of commerce pure.

**Hypophosphorous Acid** of commerce, specific gravity 1·137.

**Indigo,** a blue pigment prepared from various species of Indigofera, *Linn.*

**Iodic Acid,** $HIO_3$, of commerce, pure.

**Iodine** of the British Pharmacopœia.

**Iron** of the British Pharmacopœia.

**Isinglass,** the swimming bladder or sound of various species of Acipenser, *Linn.*, prepared, and cut into shreds.

**Lead Acetate** of the British Pharmacopœia.

**Lead Nitrate,** $Pb(NO_3)_2$, of commerce, pure.

**Lead Oxide** of the British Pharmacopœia.

**Lead Peroxide,** $PbO_2$, of commerce, pure.

**Lime** of the British Pharmacopœia.

**Litmus,** a blue pigment prepared from various species of Roccella, *DC.* Litmus is used in several forms; for

example, Solution of Litmus (Appendix II); Blue Litmus Paper, made by impregnating unglazed white paper with a solution of litmus; and Red Litmus Paper, made by impregnating the paper with the solution reddened by the previous addition of a very minute quantity of sulphuric acid. Litmus may also be employed in the solid form.

**Magnesia, Heavy,** of the British Pharmacopœia.

**Manganese Peroxide,** $MnO_2$, the powdered native pyrolusite.

**Mercurous Chloride** of the British Pharmacopœia.

**Methyl Orange,** pure sodium dimethyl-amido-azo-benzene-sulphonate, $NaC_{14}H_{14}N_3SO_3$, of commerce.

**Milk of Lime**

| | |
|---|---|
| Lime . . . . . | 100 grammes |
| Distilled Water . . . . . | 200 millilitres |

Mix.

**Morphinated Water,** prepared by digesting pure *Morphine* in Chloroform Water for seven days at a temperature of 15·5°, shaking occasionally so as to obtain a saturated solution of the alkaloid, and filtering from the undissolved morphine.

**Morphine,** the precipitate obtained on adding *solution of ammonia*, in slight excess, to the solution of a pure morphine salt in *water*, the precipitate being washed with *water* until free from ammonium salt.

**Mucilage of Gum Acacia** of the British Pharmacopœia.

**Mucilage of Starch.** Triturate 1 gramme of Starch with a small quantity of Distilled Water to form a smooth paste; add more Distilled Water, gradually, to produce 50 millilitres of mixture; boil for a few minutes, constantly stirring; cool.

**Mucilage of Starch must be recently prepared.**

GREENOCK HOSPITAL No.....

**Nitric Acid** of the British Pharmacopœia.

**Nitric Acid, Diluted,** of the British Pharmacopœia.

**Nitric Acid, Fuming,** of commerce, specific gravity 1·5.

**Oil of Turpentine** of the British Pharmacopœia.

**Olive Oil** of the British Pharmacopœia.

**Oxalic Acid,** $H_2C_2O_4,2H_2O$, of commerce, pure.

**Paraffin, Soft,** of the British Pharmacopœia.

**Petroleum Spirit,** *Synonym*—Petroleum Ether. A colourless, very volatile and highly inflammable liquid obtained from petroleum, and consisting of a mixture of the lower members of the paraffin series of hydrocarbons. Boiling point 50° to 60°. Specific gravity 0·670 to 0·700.

**Phenol** of the British Pharmacopœia.

**Phenol-Disulphonic Acid.** Heat 3 grammes of Phenol with 20 millilitres of Sulphuric Acid on a water-bath for six hours. Transfer the resulting liquid to a stoppered bottle.

**Phenolphthalein** of the British Pharmacopœia.

**Phosphoric Acid, Concentrated,** of the British Pharmacopœia.

**Phosphoric Acid, Syrupy,** of commerce, specific gravity 1·750.

**Picric Acid** of the British Pharmacopœia.

**Platinic Chloride** of commerce, pure.

**Potassium Bichromate** of the British Pharmacopœia.

**Potassium Chlorate** of the British Pharmacopœia.

**Potassium Chromate**, $K_2CrO_4$, of commerce, pure.

**Potassium Cyanide** of commerce. Contains not less than 90 per cent. of pure potassium cyanide, KCN.

**Potassium Ferricyanide**, $K_6Fe_2C_{12}N_{12}$, of commerce, pure.

**Potassium Ferrocyanide**, $K_4FeC_6N_6,3H_2O$, of commerce, pure.

**Potassium Hydrogen Sulphite**, *Synonym*—Acid Potassium Sulphite, $KHSO_3$, of commerce, pure.

**Potassium Hydroxide** of the British Pharmacopœia.

**Potassium Iodide** of the British Pharmacopœia.

**Potassium Nitrate** of the British Pharmacopœia.

**Potassium Permanganate** of the British Pharmacopœia.

**Potassium Sulphate** of the British Pharmacopœia.

**Resorcin** of the British Pharmacopœia.

**Salicylic Acid** of the British Pharmacopœia.

**Sodium Acetate**, $NaC_2H_3O_2,3H_2O$, of commerce, pure.

**Sodium Acetate, Anhydrous**, $NaC_2H_3O_2$, of commerce, pure.

**Sodium Arsenate, Anhydrous**, of the British Pharmacopœia.

**Sodium Bicarbonate** of the British Pharmacopœia.

**Sodium Carbonate** of the British Pharmacopœia.

**Sodium Carbonate, Exsiccated**, of the British Pharmacopœia.

**Sodium Chloride** of the British Pharmacopœia.

**Sodium Hydrogen Sulphite**, *Synonym*—Acid Sodium Sulphite, $NaHSO_3$, of commerce, pure.

**Sodium Hydroxide** of commerce, purified by means of alcohol.

**Sodium Nitrite** of the British Pharmacopœia.

**Sodium Potassium Tartrate** of the British Pharmacopœia.

**Sodium Sulphate** of the British Pharmacopœia.

**Sodium Sulphate, Anhydrous**, the Sodium Sulphate of the British Pharmacopœia, rendered anhydrous by heat.

**Sodium Sulphide**, $Na_2S,9H_2O$, of commerce, pure.

**Sodium Sulphite** of the British Pharmacopœia.

**Sodium Thiosulphate**, $Na_2S_2O_3,5H_2O$, of commerce, pure.

**Sugar, Refined**, of the British Pharmacopœia.

**Sulphur, Precipitated**, of the British Pharmacopœia.

**Sulphuric Acid** of the British Pharmacopœia.

**Sulphuric Acid, Diluted**, of the British Pharmacopœia.

**Talc, Powdered**, a natural magnesium silicate, powdered and purified by boiling with dilute hydrochloric acid, washing with distilled water until neutral to *litmus*, and drying.

**Tartaric Acid** of the British Pharmacopœia.

**Tin**, granulated by letting drops of the metal in the molten state fall into water. Yields no characteristic *reactions* for lead, copper, iron, or zinc.

**Turmeric**, the dried rhizome of Curcuma longa, *Linn.* It is usually employed in the form of a tincture prepared, by

the process of maceration, from the bruised rhizome, in the proportion of 1 gramme to 6 millilitres of Alcohol (90 per cent.), or in the form of paper prepared by steeping unglazed white paper in the tincture and drying.

**Water**, the Distilled Water of the British Pharmacopœia.

**Zinc**, the laminated or granulated metal. Completely dissolved by *diluted hydrochloric acid*, the solution yielding no characteristic *reactions* for lead, copper, cadmium, arsenic, tin, or iron.

**Zinc Carbonate** of the British Pharmacopœia.

## APPENDIX II

### *SOLUTIONS EMPLOYED IN CHEMICAL TESTING*

**Solution of Albumen**

| | |
|---|---|
| Albumen | 20 millilitres |
| Distilled Water | 80 millilitres |

Mix by trituration in a mortar, and filter through clean tow previously moistened with Distilled Water.

Solution of Albumen must be recently prepared. The strength of the Solution may be adjusted to suit particular requirements.

**Solution of Ammonia** of the British Pharmacopœia.

**Solution of Ammonia, Strong,** of the British Pharmacopœia.

**Solution of Ammonium Acetate** of the British Pharmacopœia.

**Solution of Ammonium Carbonate**

| | |
|---|---|
| Ammonium Carbonate | 5·0 grammes |
| Solution of Ammonia | 7·5 millilitres |
| Distilled Water sufficient to produce | 100·0 millilitres |

Dissolve; filter if necessary.

### Solution of Ammonium Chloride

| | |
|---|---|
| Ammonium Chloride . . . . | 10 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Ammonium Chloride (Nessler's)

| | |
|---|---|
| Ammonium Chloride . . . | 3·15 grammes |
| Distilled Water, free from ammonia, sufficient to produce. . . | 1000·00 millilitres |

Dissolve.

### Solution of Ammonium Chloride, Dilute (Nessler's)

| | |
|---|---|
| Solution of Ammonium Chloride (Nessler's) . . . . . | 10 millilitres |
| Distilled Water, free from ammonia, sufficient to produce . . . | 1000 millilitres |

Mix.

### Solution of Ammonium Citrate of the British Pharmacopœia.

### Solution of Ammonium Hydrosulphide

Saturate one hundred and twenty millilitres of Solution of Ammonia with washed Hydrogen Sulphide; add eighty millilitres of Solution of Ammonia.

This Solution must be recently prepared.

### Solution of Ammonium Molybdate

| | |
|---|---|
| Ammonium Molybdate . . . | 10 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Ammonium Oxalate

| | |
|---|---|
| Ammonium Oxalate . . . | 2·5 grammes |
| Distilled Water sufficient to produce . | 100·0 millilitres |

Dissolve; filter if necessary.

### Solution of Auric Chloride

| | |
|---|---|
| Auric Chloride . . . . . | 2 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Dissolve; filter if necessary.

**Solution of Barium Chloride**

| | |
|---|---|
| Barium Chloride, in crystals . . | 10 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Dissolve; filter if necessary.

**Solution of Barium Hydroxide**

| | |
|---|---|
| Barium Hydroxide . . . . | 3 grammes |
| Distilled Water, recently boiled, sufficient to produce . . . | 100 millilitres |

Dissolve; filter if necessary.

**Solution of Boric Acid**

| | |
|---|---|
| Boric Acid . . . . . | 2·5 grammes |
| Alcohol (90 per cent.) sufficient to produce . . . . . | 100·0 millilitres |

Dissolve; filter if necessary.

**Solution of Bromine**

A saturated solution of Bromine in Distilled Water.

**Solution of Cadmium Iodide**

| | |
|---|---|
| Cadmium Iodide . . . . | 5 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Dissolve; filter if necessary.

**Solution of Calcium Chloride**

| | |
|---|---|
| Calcium Chloride . . . . | 10 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Dissolve; filter if necessary.

**Solution of Calcium Sulphate**

A saturated solution of Calcium Sulphate in Distilled Water.

**Solution of Chlorinated Soda** of the British Pharmacopœia.

**Solution of Chlorine**

A saturated solution of Chlorine in Distilled Water.

This Solution must be recently prepared.

**Solution of Chromic Acid** of the British Pharmacopœia.

### Solution of Copper Acetate

| | |
|---|---|
| Copper Acetate | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Copper Acetate, Diluted

| | |
|---|---|
| Solution of Copper Acetate | 1 millilitre |
| Distilled Water sufficient to produce | 100 millilitres |

Mix.

### Solution of Copper Ammonio-Sulphate

| | |
|---|---|
| Copper Sulphate | 5 grammes |
| Solution of Ammonia | a sufficient quantity |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve the Copper Sulphate in about seventy-five millilitres of the Distilled Water, and cautiously add the Solution of Ammonia to the liquid until the precipitate first formed is nearly dissolved; filter the product; finally add to the filtrate sufficient of the Distilled Water to produce the required volume.

### Solution of Copper Oxide, Ammoniacal

| | |
|---|---|
| Copper Carbonate | 5 grammes |
| Strong Solution of Ammonia | 100 millilitres |

Shake together occasionally during twelve hours; set aside for twenty-four hours, and pour off the clear liquid.

This Solution must be recently prepared.

### Solution of Copper Sulphate

| | |
|---|---|
| Copper Sulphate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Ferric Sulphate of the British Pharmacopœia.

### Solution of Ferrous Sulphate

| | |
|---|---|
| Ferrous Sulphate | 2 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

This Solution must be recently prepared.

**Solution of Formaldehyde** of the British Pharmacopœia.

**Solution of Fuchsin, Decolorised**

Dissolve one gramme of Fuchsin in five hundred millilitres of hot Distilled Water; add slowly twenty millilitres of a saturated aqueous solution of Acid Sodium Sulphite, and then, also slowly, ten millilitres of Hydrochloric Acid, the mixture being kept well shaken. Cool and add sufficient Distilled Water to produce one thousand millilitres.

**Solution of Hydrogen Peroxide** of the British Pharmacopœia.

**Solution of Indigo Sulphate**

| | |
|---|---|
| Indigo, dry and in fine powder . | 0·1 gramme |
| Sulphuric Acid . . . . . | 100·0 millilitres |

Mix the Indigo with one millilitre of the Sulphuric Acid in a small test-tube, and heat in boiling water for an hour; pour the product into the remainder of the Sulphuric Acid; shake the mixture; decant the clear liquid.

**Solution of Isinglass**

| | |
|---|---|
| Isinglass . . . . . | 2 grammes |
| Distilled Water sufficient to produce . | 100 millilitres |

Mix, and digest for half an hour on a water-bath with repeated shaking; filter through clean tow previously moistened with Distilled Water.

This Solution must be recently prepared.

**Solution of Lead Acetate**

| | |
|---|---|
| Lead Acetate . . . . . | 10 grammes |
| Distilled Water, recently boiled, sufficient to produce . . . . | 100 millilitres |

Dissolve; filter if necessary.

**Solution of Lead Subacetate**, the Strong Solution of Lead Subacetate of the British Pharmacopœia, diluted, if necessary, with Distilled Water.

**Solution of Lime**, *Synonym*—Solution of Calcium Hydroxide, of the British Pharmacopœia.

### Solution of Litmus

| | |
|---|---|
| Litmus, in powder | 10 grammes |
| Alcohol (90 per cent.) | 100 millilitres |
| Distilled Water | 100 millilitres |

Boil the Litmus with forty millilitres of the Alcohol for one hour; pour away the clear liquid; repeat this operation with thirty millilitres of the Alcohol, and a third time with the remainder of the Alcohol. Digest the washed Litmus in the Distilled Water, and filter.

### Solution of Magnesium Ammonio-Sulphate

| | |
|---|---|
| Magnesium Sulphate | 10 grammes |
| Ammonium Chloride | 20 grammes |
| Solution of Ammonia | 42 millilitres |
| Distilled Water | 80 millilitres |

Dissolve the Magnesium Sulphate and Ammonium Chloride in the Distilled Water; add the Solution of Ammonia, and set the mixture aside for a few days in a well-closed bottle; decant and filter.

### Solution of Magnesium Sulphate

| | |
|---|---|
| Magnesium Sulphate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Mercurous Nitrate

| | |
|---|---|
| Mercury | 2 grammes |
| Nitric Acid | 1 millilitre |
| Distilled Water | a sufficient quantity |

To the Mercury, in a small dish, add one millilitre of Distilled Water and the Nitric Acid, and set the whole aside for twenty-four hours in a cool dark place; drain the resulting crystals; dissolve them in two hundred millilitres of Distilled Water.

### Solution of Mercury Nitrate, *Synonym*—Millon's Reagent

| | |
|---|---|
| Mercury | 3 millilitres |
| Fuming Nitric Acid | 27 millilitres |
| Distilled Water | a sufficient quantity |

Dissolve the Mercury in the Fuming Nitric Acid without heat; dilute the solution with an equal volume of Distilled Water.

This Solution must be recently prepared.

**Solution of Methyl Orange**

| | |
|---|---|
| Methyl Orange | 0·2 gramme |
| Alcohol (90 per cent.) | 25·0 millilitres |
| Distilled Water sufficient to produce | 100·0 millilitres |

Dissolve.

**Solution of Phenolphthalein**

| | |
|---|---|
| Phenolphthalein | 0·2 gramme |
| Alcohol (90 per cent.) | 60·0 millilitres |
| Distilled Water sufficient to produce | 100·0 millilitres |

Dissolve.

**Solution of Picric Acid**

| | |
|---|---|
| Picric Acid | 0·66 gramme |
| Distilled Water sufficient to produce | 100·00 millilitres |

Dissolve.

**Solution of Platinic Chloride**

| | |
|---|---|
| Platinic Chloride | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve.

**Solution of Potassio-Cupric Tartrate,** *Synonym*—Fehling's Solution

No. 1.

| | |
|---|---|
| Copper Sulphate, in crystals | 34·64 grammes |
| Sulphuric Acid | 0·50 millilitre |
| Distilled Water sufficient to produce | 500·00 millilitres |

Dissolve.

No. 2.

| | |
|---|---|
| Sodium Potassium Tartrate | 176 grammes |
| Sodium Hydroxide | 77 grammes |
| Distilled Water sufficient to produce | 500 millilitres |

Dissolve.

Mix equal volumes of the solutions No. 1 and No. 2 at the time of using.

**Solution of Potassio-Mercuric Iodide,** *Synonym*—Mayer's Reagent

| | |
|---|---|
| Mercuric Chloride | 1·355 grammes |
| Potassium Iodide | 5·000 grammes |
| Distilled Water sufficient to produce | 100·000 millilitres |

Dissolve the Mercuric Chloride in sixty millilitres of the Distilled Water; dissolve the Potassium Iodide in twenty millilitres of the Distilled Water; mix the two solutions, and add sufficient Distilled Water to produce the required volume.

### Solution of Potassio-Mercuric Iodide, Alkaline

*Synonym*—Nessler's Reagent

| | |
|---|---|
| Potassium Iodide | 3·5 grammes |
| Mercuric Chloride | sufficient quantity |
| Sodium Hydroxide | 12·0 grammes |
| Distilled Water sufficient to produce | 100·0 millilitres |

Dissolve the Potassium Iodide and one and a quarter grammes of Mercuric Chloride in eighty millilitres of Distilled Water; to this liquid add a cold saturated aqueous solution of Mercuric Chloride, with constant stirring, until a slight red precipitate remains; add the Sodium Hydroxide and dissolve; then add a little more of the aqueous solution of Mercuric Chloride, and sufficient Distilled Water to produce the required volume.

### Solution of Potassium Acetate

| | |
|---|---|
| Potassium Acetate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary

### Solution of Acid Potassium Tartrate

A saturated solution of Acid Potassium Tartrate in Distilled Water.

### Solution of Potassium Carbonate

| | |
|---|---|
| Potassium Carbonate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Potassium Chromate

| | |
|---|---|
| Potassium Chromate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Potassium Cyanide

| | |
|---|---|
| Potassium Cyanide | 10 grammes |
| Distilled Water | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Potassium Ferricyanide

| | |
|---|---|
| Potassium Ferricyanide, in crystals | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

This Solution must be recently prepared.

### Solution of Potassium Ferrocyanide

| | |
|---|---|
| Potassium Ferrocyanide, in crystals | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Potassium Hydroxide, the Solution of Potash of the British Pharmacopœia.

### Solution of Potassium Hydroxide, Alcoholic

| | |
|---|---|
| Potassium Hydroxide | 10 grammes |
| Alcohol (90 per cent.) sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Potassium Iodide

| | |
|---|---|
| Potassium Iodide | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Potassium Permanganate of the British Pharmacopœia.

### Solution of Pyroxylin, the Collodion of the British Pharmacopœia.

### Solution of Silver Ammonio-Nitrate

| | |
|---|---|
| Silver Nitrate, in crystals | 2·5 grammes |
| Solution of Ammonia | 10·0 millilitres, or a sufficient quantity |
| Distilled Water sufficient to produce | 100·0 millilitres |

Dissolve the Silver Nitrate in eighty millilitres of the Distilled Water, and cautiously add the Solution of Ammonia to the liquid until the precipitate first formed is nearly dissolved; set aside; decant; finally add sufficient Distilled Water to produce the required volume.

### Solution of Silver Nitrate

| | |
|---|---|
| Silver Nitrate | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve.

### Solution of Sodium Acetate

| | |
|---|---|
| Sodium Acetate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Sodium Carbonate

| | |
|---|---|
| Sodium Carbonate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Sodium Hydroxide

| | |
|---|---|
| Sodium Hydroxide | 20 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Sodium Phosphate

| | |
|---|---|
| Sodium Phosphate, in crystals | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Sodium Sulphate

| | |
|---|---|
| Sodium Sulphate | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary

### Solution of Sodium Sulphide

| | |
|---|---|
| Sodium Sulphide | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Stannous Chloride

| | |
|---|---|
| Tin, granulated | 20 grammes |
| Hydrochloric Acid | 60 millilitres |
| Distilled Water sufficient to produce | 100 millilitres |

Dilute the Hydrochloric Acid with twenty millilitres of the Distilled Water, and, having added the Tin, apply heat gently until gas ceases to be evolved; add sufficient Distilled Water to produce the required volume, allowing the undissolved Tin to remain in the Solution.

### Solution of Sulphurous Acid, the Sulphurous Acid of the British Pharmacopœia.

### Solution of Tannic Acid

| | |
|---|---|
| Tannic Acid | 10 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve

This Solution must be recently prepared.

### Solution of Tartarated Antimony

| | |
|---|---|
| Tartarated Antimony | 5 grammes |
| Distilled Water, boiling, sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Solution of Tartaric Acid

| | |
|---|---|
| Tartaric Acid, in crystals | 12·5 grammes |
| Alcohol (90 per cent.) | 25·0 millilitres |
| Distilled Water sufficient to produce | 100·0 millilitres |

Dissolve the Tartaric Acid in sixty millilitres of the Distilled Water; add the Alcohol; add sufficient Distilled Water to produce the required volume.

### Test-Solution of Ferric Chloride (T. Sol.)

| | |
|---|---|
| Ferric Chloride | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

### Test-Solution of Mercuric Chloride (T. Sol.)

| | |
|---|---|
| Mercuric Chloride | 5 grammes |
| Distilled Water sufficient to produce | 100 millilitres |

Dissolve; filter if necessary.

## APPENDIX III

### *SOLUTIONS EMPLOYED IN VOLUMETRIC DETERMINATIONS*

#### Solution of Ammonium Thiocyanate, N/10

Ammonium Thiocyanate dissolved in Distilled Water to contain in 1000 millilitres 7·612 grammes of ammonium thiocyanate, $NH_4SCN$.

#### Solution of Hydrochloric Acid, N/1, N/10

Hydrochloric Acid diluted with Distilled Water to contain in 1000 millilitres the following quantities of hydrochloric acid, HCl:

| | |
|---|---|
| for N/1 . . . . | 36·468 grammes HCl |
| for N/10 . . . . | 3·646 grammes HCl |

#### Solution of Hydroxylamine Hydrochloride, N/2

Hydroxylamine Hydrochloride dissolved in a mixture of equal volumes of Alcohol (90 per cent.) and Alcohol (70 per cent.) to contain in 1000 millilitres 34·751 grammes of hydroxylamine hydrochloride, $NH_2OH,HCl$.

#### Solution of Iodine, N/10

Iodine and Potassium Iodide dissolved in Distilled Water to contain in 1000 millilitres 12·692 grammes of iodine, I, and 18 grammes of Potassium Iodide.

#### Solution of Oxalic Acid, N/1, N/10

Oxalic Acid dissolved in Distilled Water to contain in 1000 millilitres the following quantities of oxalic acid, $H_2C_2O_4,2H_2O$:

| | |
|---|---|
| for N/1 . . | 63·024 grammes $H_2C_2O_4,2H_2O$ |
| for N/10 . . | 6·302 grammes $H_2C_2O_4,2H_2O$ |

#### Solution of Potassium Bichromate, N/1, N/10

Potassium Bichromate dissolved in Distilled Water to contain in 1000 millilitres the following quantities of potassium bichromate, $K_2Cr_2O_7$:

| | |
|---|---|
| for N/1 . . . | 49·033 grammes $K_2Cr_2O_7$ |
| for N/10 . . . | 4·903 grammes $K_2Cr_2O_7$ |

### Solution of Potassium Hydroxide, Alcoholic, N/1, N/2, N/10

Potassium Hydroxide dissolved in Alcohol (90 per cent.) to contain in 1000 millilitres the following quantities of potassium hydroxide, KOH:

| | |
|---|---|
| for N/1 . . . . | 56·108 grammes KOH |
| for N/2 . . . . | 28·054 grammes KOH |
| for N/10 . . . . | 5·610 grammes KOH |

These Solutions are colourless, or not more than faintly yellow.

### Solution of Potassium Permanganate, N/10

Potassium Permanganate dissolved in Distilled Water to contain in 1000 millilitres 3·161 grammes of potassium permanganate, $KMnO_4$.

### Solution of Silver Nitrate, N/10

Silver Nitrate dissolved in Distilled Water to contain in 1000 millilitres 16·989 grammes of silver nitrate, $AgNO_3$.

### Solution of Sodium Hydroxide, N/1, N/2, N/5, N/10, N/20

Sodium Hydroxide dissolved in Distilled Water to contain in 1000 millilitres the following quantities of sodium hydroxide, NaOH:

| | |
|---|---|
| for N/1 . . . . | 40·008 grammes NaOH |
| for N/2 . . . . | 20·004 grammes NaOH |
| for N/5 . . . . | 8·001 grammes NaOH |
| for N/10 . . . . | 4·000 grammes NaOH |
| for N/20 . . . . | 2·000 grammes NaOH |

### Solution of Sodium Thiosulphate, N/10

Sodium Thiosulphate dissolved in Distilled Water to contain in 1000 millilitres 24·822 grammes of sodium thiosulphate, $Na_2S_2O_3,5H_2O$.

### Solution of Sulphuric Acid, N/1, N/2, N/10, N/20, N/100

Sulphuric Acid diluted with Distilled Water to contain in 1000 millilitres the following quantities of sulphuric acid, $H_2SO_4$:

| | |
|---|---|
| for N/1 . . . . | 49·043 grammes $H_2SO_4$ |
| for N/2 . . . . | 24·521 grammes $H_2SO_4$ |
| for N/10 . . . | 4·904 grammes $H_2SO_4$ |
| for N/20 . . . | 2·452 grammes $H_2SO_4$ |
| for N/100 . . . | 0·490 gramme $H_2SO_4$ |

INDICATORS OF THE TERMINATION OF REACTIONS IN VOLUMETRIC DETERMINATIONS

**Mucilage of Starch** gives an intensely blue colour with iodine, at ordinary temperatures.

**Solution of Ferric Sulphate** of the British Pharmacopœia, gives a deep red colour with ammonium thiocyanate.

**Solution of Litmus** gives a red colour with acids and a blue colour with alkalies. Carbon dioxide, if present in the solution, must be previously expelled by boiling.

**Solution of Methyl Orange** gives a pink colour with mineral acids and a yellow colour with alkalies.

**Solution of Phenolphthalein** gives with alkalies a red colour, which is discharged by acids.

**Solution of Potassium Ferricyanide** gives an intensely blue precipitate or coloration with ferrous salts, but none with ferric salts.

**Tincture of Cochineal** of the British Pharmacopœia, gives a purple colour with alkalies and a brownish-yellow colour with acids.

## APPENDIX IV

### *REACTIONS AND TESTS FOR SUBSTANCES MENTIONED IN THE TEXT OF THE BRITISH PHARMACOPŒIA*

#### Acetates

Neutral acetates are decomposed by heat, yielding vapours which possess a characteristic acetous odour.

Hydrogen acetate and ethyl acetate have characteristic odours. Acetates when warmed with *sulphuric acid* yield vapours of hydrogen acetate ; or, when warmed with *sulphuric acid* and a small quantity of *alcohol* (90 per cent.), yield ethyl acetate.

*T. Sol. of ferric chloride* produces a deep-red coloration with neutral or faintly acid acetates, and the resulting liquid on boiling yields a reddish-brown precipitate. On adding *hydrochloric acid* the red solution turns yellow.

## Aluminium

*Solution of ammonia* or *solution of ammonium hydrosulphide* produces a white gelatinous precipitate, soluble in *hydrochloric acid*, in *acetic acid*, and in *solution of sodium hydroxide*, but nearly insoluble in *solution of ammonia* and in solutions of ammonium salts, and quite insoluble when the solutions are boiled.

## Ammonium Salts

Ammonium salts volatilise when strongly heated, generally without residue. When heated with *solution of sodium hydroxide*, ammonia is evolved, recognisable by its odour.

*Solution of platinic chloride* produces with ammonium salts acidified with *hydrochloric acid* a yellow crystalline precipitate, especially in the presence of alcohol. On ignition, this precipitate leaves a residue of platinum only.

## Antimony

*Hydrogen sulphide* produces, in slightly acid solutions, an orange-coloured precipitate, soluble in *solution of sodium hydroxide*, and *of ammonium hydrosulphide*, and in warm *hydrochloric acid* with evolution of hydrogen sulphide, but almost insoluble in solution of Ammonium Carbonate.

Nascent hydrogen, generated by the interaction of *zinc* and *diluted sulphuric acid*, partially converts antimony compounds into hydrogen antimonide. A cold porcelain tile held in the flame of this gas acquires a dark metallic deposit which is not appreciably dissolved by *solution of chlorinated soda*. Nascent hydrogen, generated by the interaction of *zinc* and *solution of sodium hydroxide*, does not convert antimony into hydrogen antimonide. If one end of a strip or rod of *zinc* be allowed to rest on a platinum capsule containing an acidified solution of an antimony compound, the other end being in the solution, the antimony is precipitated on the platinum as a black, adherent, non-granular stain, insoluble in *hydrochloric acid*.

Bright *copper* foil precipitates antimony from solutions, and the antimony may be volatilised by heat in an open tube, condensing as a white amorphous sublimate of oxides of antimony near to the copper.

## Arsenic

*Hydrogen sulphide* produces in solutions containing *hydrochloric acid* a yellow precipitate, soluble in *solution of sodium hydroxide*, and *of ammonium hydrosulphide*, and in solution of Ammonium Carbonate, but reprecipitated on addition of *hydrochloric acid*. The precipitate is insoluble in *hydrochloric acid*.

Nascent hydrogen, generated by the interaction of *zinc* and *diluted sulphuric acid*, converts arsenic compounds into hydrogen arsenide. A cold porcelain tile held in the flame of this gas acquires a dark metallic deposit, which is readily dissolved by *solution of chlorinated soda*.

Nascent hydrogen, generated by the interaction of *zinc* and *solution of sodium hydroxide*, converts arsenic compounds into hydrogen arsenide. This gas gives a black stain to filter-paper soaked with *solution of silver nitrate* and placed as a cap over the tube in which the test is being performed.

Bright *copper* foil precipitates arsenic from solutions acidified by *hydrochloric acid*, and the arsenic may be volatilised by heat in an open tube, and condenses, at some distance from the copper, as a white sublimate of characteristic octahedral crystals of arsenious oxide.

ARSENITES.—Solutions of arsenites yield a yellow precipitate with *solution of silver ammonio-nitrate*.

ARSENATES.—Solutions of arsenates yield a reddish-chocolate precipitate with *solution of silver ammonio-nitrate*. *Solution of magnesium ammonio-sulphate* produces a white crystalline precipitate.

## Bicarbonates. *See* "Carbonates."

## Bismuth

*Hydrogen sulphide* produces a brownish-black precipitate, insoluble in *solution of sodium hydroxide*, in *diluted hydrochloric acid*, and in *solution of ammonium hydrosulphide*, but soluble in warm *nitric acid*.

*Solution of sodium hydroxide*, or of *ammonia*, except in the presence of citrates, produces a white precipitate insoluble in excess of the precipitant.

Dilute solution of *sodium chloride* in large excess produces in solutions which are not too acid a white precipitate, insoluble in *solution of tartaric acid*.

## Bromates

From bromates *solution of sulphurous acid* liberates bromine, recognisable by its odour and appearance.

After ignition with charcoal bromates are converted into bromides, and the latter yield their characteristic reactions.

## Bromides

*Solution of silver nitrate* produces a yellowish curdy precipitate, somewhat soluble in strong but almost insoluble in diluted *solution of ammonia*, and insoluble in *nitric acid*.

*Solution of chlorine* liberates bromine, soluble in two or three drops of *carbon disulphide* or of *chloroform*, and forming a reddish solution.

Bromine is liberated when a bromide is heated with *sulphuric acid* and *manganese peroxide*, or *potassium bichromate*, the vapour giving an orange-yellow colour to filter-paper soaked in *mucilage of starch*.

In testing for bromides in the presence of iodides, all iodine should first be removed by boiling the aqueous solution with excess of *lead peroxide*.

## Cadmium

*Hydrogen sulphide* produces a yellow precipitate, insoluble in cold *diluted hydrochloric acid*, in *solution of ammonium hydrosulphide*, and in *solution of sodium hydroxide*, but soluble in *nitric acid*, in hot *diluted hydrochloric acid*, and in hot *diluted sulphuric acid*.

*Solution of sodium hydroxide* produces a white precipitate insoluble in excess.

*Solution of ammonia* produces a white precipitate readily soluble in excess.

## Calcium

*Solution of ammonium carbonate* produces a white precipitate which, after well boiling and allowing to cool, is insoluble in *solution of ammonium chloride*.

*Solution of ammonium oxalate* produces a white precipitate, soluble in *hydrochloric acid* but insoluble in *acetic acid*.

*Solution of potassium chromate* produces no precipitate.

### Carbonates and Bicarbonates

Dilute acids liberate carbon dioxide; the escaping gas is odourless, and produces a white precipitate in *solution of lime.*

Soluble carbonates produce a brownish-red precipitate with *T. Sol. of mercuric chloride,* bicarbonates a whitish precipitate; the former produce a white precipitate with cold *solution of magnesium sulphate,* the latter do not.

### Chlorides

*Solution of silver nitrate* produces a white curdy precipitate, soluble in *solution of ammonia,* but insoluble in *nitric acid.*

A solid chloride or hydrochloride, when subjected to distillation with *sulphuric acid* and *potassium bichromate,* yields a reddish-brown distillate, which is decomposed by *water.* The resulting solution when nearly neutralised produces a yellow precipitate with *solution of lead acetate.*

Heated with *manganese peroxide* and *sulphuric acid,* chlorides yield chlorine, recognisable by its odour and by giving a blue colour with *solution of potassium iodide* and *mucilage of starch.*

### Citrates

Citrates become charred when heated.

*Solution of calcium chloride* added in excess produces, when boiled with a neutral solution of a citrate, a white precipitate.

*Solution of silver nitrate* produces in solutions of neutral citrates a white precipitate soluble in *solution of ammonia.* A mirror is not formed on the sides of the tube when the ammoniacal solution is warmed.

### Copper

*Hydrogen sulphide* produces a brownish-black precipitate, insoluble in *diluted hydrochloric acid* and in *solution of sodium hydroxide,* almost insoluble in *solution of ammonium hydrosulphide,* but decomposed and dissolved by boiling *nitric acid.*

*Solution of sodium hydroxide* produces a bulky light-blue precipitate which becomes brownish-black on boiling.

*Solution of ammonia* added in small quantity to a neutral solution of a copper salt produces a greenish-blue precipitate

which readily dissolves in excess of the precipitant, forming a deep-blue solution.

*Solution of potassium ferrocyanide* produces a reddish-brown precipitate, or in very dilute solutions a reddish-brown coloration.

### Cyanides

*Solution of silver nitrate* produces a white curdy precipitate, soluble in *solution of potassium cyanide*, in *solution of ammonia*, and in boiling *nitric acid*.

When to a soluble cyanide there are added a few drops of a mixed solution of ferrous and ferric salts, then of *solution of sodium hydroxide*, and lastly excess of *hydrochloric acid*, a blue precipitate is produced. Mercury cyanide and silver cyanide decompose when heated, evolving (highly poisonous) cyanogen, which burns with a pink flame.

### Iodates

*Solution of silver nitrate* produces a white precipitate, sparingly soluble in *water* and in *diluted nitric acid*, but readily dissolved by *solution of ammonia*. *Solution of sulphurous acid* when added to the ammoniacal solution produces a pale yellow precipitate.

A mixed *solution of potassium iodide* and *tartaric acid* added to a solution of an iodate liberates iodine, which produces a blue colour with *mucilage of starch*.

*Solution of barium chloride* produces a white precipitate nearly insoluble in *water* and soluble with difficulty in *diluted nitric acid*.

On the addition of *mucilage of starch* and *solution of sulphurous acid* a blue colour is produced.

### Iodides

*Solution of silver nitrate* produces a curdy yellow precipitate, insoluble in *nitric acid* and almost insoluble in *solution of ammonia*.

*T. Sol. of mercuric chloride* produces a scarlet precipitate, slightly soluble in excess of this reagent, and very soluble in *solution of potassium iodide*.

A small quantity of *solution of chlorine* added to a solution of an iodide liberates iodine, which colours *carbon disulphide* violet and *mucilage of starch* deep blue.

Heated with *sulphuric acid* and *manganese peroxide* or *potassium bichromate* violet vapours of iodine are evolved.

## Iron

Reaction common to Ferrous and Ferric salts :

*Solution of ammonium hydrosulphide* produces, in neutral solutions, a black precipitate soluble in cold *diluted hydrochloric acid* with evolution of hydrogen sulphide.

Reactions characteristic of Ferrous salts :

*Solution of potassium ferrocyanide* produces a white precipitate, rapidly turning blue, insoluble in *diluted hydrochloric acid.*

*Solution of potassium ferricyanide* produces a dark-blue precipitate, insoluble in *diluted hydrochloric acid* ; decomposed by *solution of sodium hydroxide.*

*Solution of sodium hydroxide* produces a dull-green precipitate.

Reactions characteristic of Ferric salts :

*Solution of ammonium thiocyanate* produces a blood-red coloration which is discharged on the addition of *T. Sol. of mercuric chloride.*

*Solution of potassium ferricyanide* produces a reddish-brown coloration but no precipitate.

*Solution of potassium ferrocyanide* produces a dark-blue precipitate, insoluble in *diluted hydrochloric acid.*

*Solution of sodium hydroxide* produces a reddish-brown precipitate, soluble in solution of *citric acid* or *tartaric acid,* and not formed in the presence of citrates or tartrates.

## Lead

*Hydrochloric acid* produces, except in very weak solutions, a white precipitate, soluble in boiling *water,* but re-deposited in crystals on cooling.

*Hydrogen sulphide,* in not very strongly acid solutions, produces a black precipitate insoluble in *diluted hydrochloric acid, solution of potassium hydroxide,* and *solution of ammonium hydrosulphide.* but soluble in hot *diluted nitric acid.*

*Diluted sulphuric acid* produces a white precipitate almost insoluble in *water,* and still less soluble in *diluted sulphuric acid* or in *alcohol* (90 per cent.), but soluble in *solution of ammonium acetate.*

*Solution of potassium chromate* produces a yellow precipitate readily soluble in *solution of sodium hydroxide,* in hot *nitric acid,* sparingly soluble in *diluted nitric acid,* insoluble in *acetic acid.*

## Magnesium

*Solution of ammonium carbonate,* in the presence of *solution of ammonium chloride,* produces no precipitate.

*Solution of sodium phosphate* in the presence of ammonium salts and *solution of ammonia,* produces a white crystalline precipitate.

*Solution of sodium hydroxide* produces a white precipitate, insoluble in excess of the reagent, but soluble in *solution of ammonium chloride.*

## Mercury

Reactions common to Mercurous and Mercuric salts :

*Hydrogen sulphide* produces a black precipitate, insoluble in *solution of ammonium hydrosulphide* and in boiling *diluted nitric acid.*

Bright *copper* foil immersed in a solution free from excess of nitric acid becomes coated with a deposit of mercury which on rubbing becomes bright ; the mercury may be volatilised from the foil by heat and obtained in globules.

Reaction characteristic of Mercurous salts :

*Hydrochloric acid* produces a white precipitate insoluble in *water,* and blackened by *solution of ammonia.*

Reactions characteristic of Mercuric salts :

*Solution of sodium hydroxide* produces a yellow precipitate.

*Solution of potassium iodide* produces in neutral solutions a scarlet precipitate, soluble in excess of the precipitant, and in a considerable excess of the solution of the mercuric salt.

## Nitrates

*Ferrous sulphate* and *sulphuric acid,* when added to a solution of a nitrate in such a way that the acid forms a stratum below the aqueous solution, produce a brown coloration at the junction of the two liquids.

Nitrates liberate red fumes when warmed with *sulphuric acid* and *copper.*

## Nitrites

On the addition, to a solution of a nitrite, of a few drops of *diluted sulphuric acid, solution of potassium iodide,* and *mucilage of starch,* a blue colour is produced.

*Diluted sulphuric acid* produces red fumes.

*Solution of ferrous sulphate* produces a deep-brown colour.

### Oxalates

*Solution of calcium chloride* produces a white precipitate, soluble in *hydrochloric acid* but insoluble in *acetic acid*.

*Solution of silver nitrate* produces a white precipitate, soluble in *solution of ammonia* and in *diluted nitric acid*.

Oxalates do not char when heated with *sulphuric acid*, but yield carbon monoxide and carbon dioxide.

### Phosphates (Ortho-)

*Solution of silver ammonio-nitrate* produces in solutions of ortho-phosphates a light-yellow precipitate readily soluble in *solution of ammonia* and in cold *diluted nitric acid*.

*Solution of magnesium ammonio-sulphate* produces a white crystalline precipitate.

Excess of *solution of ammonium molybdate* containing much *nitric acid*, produces, on warming, a yellow precipitate.

### Potassium

*Solution of platinic chloride* produces with moderately strong solutions of potassium chloride (or with other potassium salts if hydrochloric acid be present) a yellow crystalline precipitate, which, upon ignition, leaves a residue of potassium chloride and platinum.

Potassium compounds moistened with *hydrochloric acid* when introduced, on platinum wire, into the flame of a Bunsen burner, communicate to the flame a violet coloration.

### Selenium and Tellurium

Selenium and Tellurium may occur in compounds of bismuth. To detect these elements, dissolve the compound in *nitric acid*, add solution of *sodium chloride* or *solution of ammonium chloride*, and dilute freely with *water*. The filtrate from the precipitate, mixed with excess of an aqueous solution of *sodium sulphite*, produces no precipitate or coloration even after twelve hours.

### Silica

Silica, after exposure to a red heat, is insoluble in acids, and is not dissolved in a bead of *purified borax* when heated to fusion in the blowpipe flame. The result of its fusion with

*sodium carbonate* is soluble in water, the solution yielding a gelatinous precipitate on the addition of *hydrochloric acid.*

### Silver

*Hydrochloric acid* and other chlorides produce a white curdy precipitate, soluble in *solution of ammonia* but insoluble in *nitric acid.*

*Solution of potassium chromate* produces a red precipitate, soluble in *nitric acid.*

### Sodium

Sodium compounds, moistened with *hydrochloric acid,* when introduced, on platinum wire, into the flame of a Bunsen burner, communicate to the flame a yellow coloration.

### Strontium

*Solution of ammonium carbonate* produces a white precipitate, insoluble in *solution of ammonium chloride.*

*Solution of ammonium oxalate* produces a white precipitate, insoluble in *acetic acid* but soluble in *hydrochloric acid.*

*Solution of potassium chromate* produces a light-yellow precipitate, soluble in *acetic acid.*

*Solution of calcium sulphate* produces a white precipitate.

### Sulphates

*Solution of barium chloride* produces a white precipitate insoluble in *hydrochloric acid.*

### Sulphides

The official sulphides, hydrosulphides, and sulphurated compounds evolve hydrogen sulphide when boiled with *hydrochloric acid.*

### Sulphites

*Hydrochloric acid* liberates sulphur dioxide, a colourless gas with a pungent smell of burning sulphur.

*Solution of barium chloride* produces a white precipitate soluble in *hydrochloric acid.*

Sulphites decolorise *N/10 solution of iodine.*

## Tartrates

Tartrates become charred when heated.

*Solution of calcium chloride* added in excess to a solution of a neutral tartrate produces, even when cold, a white granular precipitate, soluble in *acetic acid.*

*Solution of silver nitrate* produces a white precipitate, soluble in *solution of ammonia* and in *nitric acid.* The ammoniacal solution, on heating, deposits metallic silver as a mirror on the sides of the test-tube.

When to a solution of tartaric acid in *water*, or of a tartrate acidified with *acetic acid*, a drop of *solution of ferrous sulphate*, then a few drops of *solution of hydrogen peroxide*, and finally an excess of *solution of sodium hydroxide* are added, a purple or violet colour is produced.

## Tellurium. *See* "Selenium."

## Thiosulphates

*Hydrochloric acid* produces a yellow precipitate and liberates sulphur dioxide, recognisable by its odour.

*Solution of barium chloride* produces no precipitate in dilute solutions; on the further addition of *solution of bromine* a white precipitate is produced.

Thiosulphates decolorise *N/10 solution of iodine.*

## Tin

Metallic *zinc* placed in a solution of any tin salt acidified with *hydrochloric acid* precipitates the tin in metallic scales or as a grey sponge. The metal, separated from the liquid, is soluble in boiling *hydrochloric acid*, and the solution, which then contains stannous chloride, produces with *T. Sol. of mercuric chloride* a white precipitate which becomes grey if excess of the tin salt is present.

## Zinc

*Solution of ammonium hydrosulphide* produces in neutral, and *hydrogen sulphide* in alkaline solutions, a white precipitate, soluble in *hydrochloric acid* but insoluble in *acetic acid.*

*Solution of sodium hydroxide* or *solution of ammonia* produces a white precipitate, soluble in excess of either reagent.

*Solution of potassium ferrocyanide* produces a white precipitate, insoluble in *diluted hydrochloric acid.*

## APPENDIX V

### *QUANTITATIVE LIMIT-TEST FOR LEAD*

#### Apparatus

(All glass apparatus used must be lead-free.)

**Nessler Glasses.** Thin, and of lead-free glass. About 150 millimetres long, and of such diameter that the mark indicating a content of 50 millilitres is at the height of 100 millimetres from the base.

#### Solutions and Reagents

The special solutions and reagents for the Quantitative Limit-Test for lead are distinguished by the letters "Pb T."

**Strong Solution of Lead Pb T.** Dissolve 0·16 gramme of Lead Nitrate in Distilled Water, adding 50 millilitres of Nitric Acid, and dilute with Distilled Water to 100 millilitres. This solution contains 0·001 gramme of lead in 1 millilitre.

**Dilute Solution of Lead Pb T.** Dilute 1 millilitre of the Strong Solution of Lead Pb T., measured from a burette, with Distilled Water so that the resulting solution measures 100 millilitres. This solution contains 0·00001 gramme of lead in 1 millilitre.

**Solution of Potassium Cyanide Pb T.** Dissolve 10 grammes of Potassium Cyanide in Distilled Water, add 2 millilitres of Solution of Hydrogen Peroxide and make up to 100 millilitres with Distilled Water. This solution, after being allowed to stand, when tested by the quantitative limit-test for lead, gives no colour with the Dilute Solution of Lead Pb T.

**Solution of Sodium Sulphide Pb T.** Dissolve 10 grammes of Sodium Sulphide in Distilled Water and make up to 100 millilitres with Distilled Water.

#### Mode of Testing (General)

Two solutions of the substance under examination are made in hot Distilled Water:

(1) The primary solution containing 12 grammes of the substance.

(2) The auxiliary solution containing 2 grammes of the substance.

Each solution is filtered (if necessary), made alkaline with *solution of ammonia*, and treated with 1 millilitre of the solution of potassium cyanide Pb T. If the colours of the solutions differ much, the difference may be rectified by the cautious addition of a highly diluted solution of burnt sugar. Then, by the method of trial and error (well known in water analysis as "Nesslerizing"), is determined the quantity of the dilute solution of lead Pb T. which must be added to the auxiliary solution, in order that there may be equal colorations produced upon the addition of 2 drops of the solution of sodium sulphide Pb T. to both the primary and the auxiliary solution, after dilution to the 50 millilitre mark. In these circumstances, each millilitre of the dilute solution of lead Pb T. required corresponds to 1 part per million of lead in the substance examined. The colorations may be viewed by light reflected from a horizontal white tile through the Nessler glasses inclined at an angle to the observer.

*Note.*—In some cases, 7 or 4 grammes only are used in the primary solution. In these cases each millilitre of the dilute solution of lead PbT. required will represent 2 or 5 parts per million of lead respectively.

| Substance. | Primary Solution of Substance: Grammes employed. | Auxiliary Solution of Substance: Grammes employed. | Dilute Solution of Lead PbT.: Millilitres employed. | Limit of Lead: Parts per Million. |
|---|---|---|---|---|
| Acidum Acetylsalicylicum | 7[a] | 2[a] | 5 | 10 |
| Acidum Boricum . . | 7[a] | 2[a] | 12·5 | 25 |
| Acidum Citricum . . | 7 | 2 | 10 | 20 |
| Acidum Hydriodicum Dilutum . . . . | 7 | 2 | 5 | 10 |
| Acidum Hydrobromicum | 12 | 2 | 5 | 5 |
| Acidum Hydrochloricum | 12 | 2 | 10 | 10 |
| Acidum Lacticum . . | 7 | 2 | 5 | 10 |
| Acidum Nitricum . . | 7 | 2 | 10 | 20 |
| Acidum Phosphoricum Concentratum . . | 12 | 2 | 10 | 10 |

[a] Solution effected by the addition of *solution of ammonia*.

| Substance. | Primary Solution of Substance: Grammes employed. | Auxiliary Solution of Substance: Grammes employed. | Dilute Solution of Lead PbT.: Millilitres employed. | Limit of Lead: Parts per Million. |
|---|---|---|---|---|
| Acidum Sulphuricum . | 7 | 2 | 10 | 20 |
| Acidum Sulphurosum . | 12 | 2 | 10 | 10 |
| Acidum Tartaricum . | 7 | 2 | 10 | 20 |
| Ammonii Benzoas . . | 7 | 2 | 5 | 10 |
| Ammonii Bromidum . | 12 | 2 | 10 | 10 |
| Ammonii Carbonas . | 12[b] | 2 | 5 | 5 |
| Ammonii Chloridum . | 12 | 2 | 5 | 5 |
| Borax Purificatus . . | 7 | 2 | 2·5 | 5 |
| Calcii Carbonas Præcipitatus . . . . . | 7[c] | 2[c] | 5 | 10 |
| Calcii Chloridum . . | 7[d] | 2[d] | 10 | 20 |
| Calcii Hydras . . . | 7[c] | 2[c] | 10 | 20 |
| Calcii Hypophosphis . | 7[d] | 2[d] | 5 | 10 |
| Calcii Lactas . . . | 7[d] | 2[d] | 5 | 10 |
| Liquor Magnesii Bicarbonatis . . . | Special | process[e] | 5 | 0·5 |
| Lithii Carbonas. . . | 7[c] | 2[c] | 5 | 10 |
| Lithii Citras. . . . | 12 | 2 | 5 | 5 |
| Magnesia Levis. . . | 4[c] | 2[c] | 4 | 20 |
| Magnesia Ponderosa . | 4[e] | 2[c] | 4 | 20 |
| Magnesii Carbonas Levis . . . . . | 7[c] | 2[c] | 10 | 20 |
| Magnesii Carbonas Ponderosus . . . | 7[c] | 2[c] | 10 | 20 |

[b] Primary solution boiled down to measure 50 millilitres.

[c] Solutions prepared by dissolving in excess of *acetic acid*, boiling to expel any carbon dioxide present, then making alkaline with *solution of ammonia* and adding solution of potassium cyanide PbT.

[d] *Acetic acid* added to each solution before making alkaline with *solution of ammonia*.

[e] Primary solution prepared by treating 200 millilitres with excess of *acetic acid* and concentrating so that the solution (after being made alkaline with *solution of ammonia* and treated with solution of potassium cyanide PbT.) measures 50 millilitres. Auxiliary solution—100 millilitres similarly treated.

| Substance. | Primary Solution of Substance: Grammes employed. | Auxiliary Solution of Substance: Grammes employed. | Dilute Solution of Lead PbT.: Millilitres employed. | Limit of Lead: Parts per Million. |
|---|---|---|---|---|
| Magnesii Sulphas . . | 12 | 2 | 5 | 5 |
| Potassii Acetas . . . | 12 | 2 | 10 | 10 |
| Potassii Bicarbonas . | 12 | 2 | 5 | 5 |
| Potassii Bromidum . | 12 | 2 | 10 | 10 |
| Potassii Carbonas . . | 12 | 2 | 5 | 5 |
| Potassii Chloras . . | 7 | 2 | 5 | 10 |
| Potassii Citras . . . | 12 | 2 | 10 | 10 |
| Potassii Iodidum . . | 12 | 2 | 10 | 10 |
| Potassii Nitras . . . | 12 | 2 | 10 | 10 |
| Potassii Sulphas . . | 7 | 2 | 10 | 20 |
| Potassii Tartras . . | 7 | 2 | 10 | 20 |
| Potassii Tartras Acidus | 7[a] | 2[a] | 10 | 20 |
| Sodii Benzoas . . . | 7 | 2 | 5 | 10 |
| Sodii Bicarbonas . . | 7[t] | 2 | 2·5 | 5 |
| Sodii Bromidum . . | 12 | 2 | 10 | 10 |
| Sodii Carbonas . . . | 12 | 2 | 10 | 10 |
| Sodii Carbonas Exsiccatus | 7 | 2 | 12·5 | 25 |
| Sodii Chloridum . . | 12 | 2 | 10 | 10 |
| Sodii et Potassii Tartras | 7 | 2 | 10 | 20 |
| Sodii Hypophosphis . | 7 | 2 | 5 | 10 |
| Sodii Iodidum . . . | 12 | 2 | 10 | 10 |
| Sodii Phosphas . . . | 12 | 2 | 5 | 5 |
| Sodii Phosphas Acidus . | 12 | 2 | 5 | 5 |
| Sodii Salicylas . . . | 12 | 2 | 10 | 10 |
| Sodii Sulphas . . . | 12 | 2 | 5 | 5 |
| Strontii Bromidum . | 7[d] | 2[d] | 10 | 20 |

[a] Solution effected by the addition of *solution of ammonia*.
[d] *Acetic acid* added to each solution before making alkaline with *solution of ammonia*.
[t] Solution effected by boiling.

## APPENDIX VI

### *QUANTITATIVE LIMIT-TEST FOR ARSENIC*

*Note.*—In the quantitative limit-test for arsenic the amount of arsenic present per million is calculated as arsenious oxide, $As_4O_6$.

APPARATUS.—A wide-mouthed bottle capable of holding about 120 millilitres and fitted with a rubber cork through which passes a glass tube. The latter, made from ordinary soft glass tubing, has a total length of 200 millimetres and an internal diameter of 5 millimetres (external diameter 7 millimetres) and is open at both ends. The upper end is slightly widened to a diameter of 8 millimetres, while the lower end is drawn out to about 1 millimetre in diameter, and a hole about 2 millimetres in diameter blown in the side of the tube where it is constricted.

LEAD PAPERS are pieces of thin white filter paper 100 millimetres × 40 millimetres, soaked in *solution of lead acetate* and dried.

MERCURIC CHLORIDE PAPERS are circles of smooth white filter paper 5·5 centimetres in diameter soaked in a saturated aqueous solution of mercuric chloride and dried.

*Note.*—The mercuric chloride papers should be stored in a stoppered bottle in the dark. Mercuric chloride papers that have been exposed to sunlight afford a lighter-coloured stain when employed in an arsenic test.

#### REAGENTS

The special reagents for the quantitative limit-test for arsenic are distinguished by the letters "As T."

**Brominated Hydrochloric Acid As T.**

| | |
|---|---|
| Solution of Bromine As T. . . . | 1 millilitre |
| Hydrochloric Acid As T. sufficient to produce . . . . . | 100 millilitres |

Mix.

**Calcium Hydroxide** As T. 10 grammes tested as described under "Calcii Hydras," page 510, give no visible stain.

**Citric Acid** As T. 10 grammes tested as described under "Acidum Aceticum," page 505, give no visible stain.

**Hydrochloric Acid** As T. contains not more than 0·1 part per million of arsenic, as shown by the *Control Test*, and is free from iron.

**Nitric Acid** As T. 10 millilitres treated as described under "Acidum Nitricum," page 506, give no visible stain.

**Potassium Chlorate** As T. 5 grammes tested as described under "Potassii Chloras," page 516, give no visible stain.

**Solution of Arsenic** As T.

| | |
|---|---|
| Hydrochloric Solution of Arsenic . . | 1 millilitre |
| Distilled Water sufficient to produce . . | 1000 millilitres |

Mix.

This solution must be freshly prepared. 1 millilitre contains 0·00001 gramme (=one-hundredth of one milligram) of arsenic.

**Solution of Bromine** As T.

| | |
|---|---|
| Bromine. . . . . | 30 grammes |
| Potassium Bromide. . . . . | 30 grammes |
| Distilled Water sufficient to produce . . | 100 millilitres |

Dissolve. It contains not more than 1 part per million of arsenic, as shown by the *Control Test.*

**Solution of Stannous Chloride** As T. is prepared from the Solution of Stannous Chloride, Appendix II, page 483, by adding an equal volume of Hydrochloric Acid, boiling down to the original bulk and filtering. It contains not more than 1 part per million of arsenic, as shown by the *Control Test.*

**Stannated Hydrochloric Acid** As T.

| | |
|---|---|
| Solution of Stannous Chloride As T. . | 1 millilitre |
| Hydrochloric Acid As T. sufficient to produce . . . . . | 100 millilitres |

Mix.

**Sulphuric Acid** As T. 10 grammes, tested as described under "Acidum Sulphuricum," page 507, but omitting the stannated hydrochloric acid As T. and adding 0·2 millilitre of solution of stannous chloride As T., give no visible stain.

**Zinc** As T. is granulated zinc which conforms to the arsenic requirement involved in the *Control Test*, and is free from iron.

## Method of Performing the Quantitative Test for Arsenic

By a variable method of procedure suitable to the particular needs of each case there is prepared from the substance to be tested a solution, which may or may not contain the substance to be treated, but in every case contains the whole of the arsenic (if any) originally in that substance. It is this solution —hereinafter referred to as "the solution to be examined" —which is introduced into the actual test.

**General Test.** A strip of the lead paper is rolled up and placed in the glass tube so that the upper end is not less than 2 centimetres below the top of the tube. A piece of the mercuric chloride paper is now placed over the top of the tube and secured by means of a rubber ring. The tube is inserted in the rubber cork. The solution to be examined, prepared as specified, is placed in the wide-mouthed bottle and 10 grammes of zinc As T. added. The rubber cork with glass tube attached is quickly placed in position so that the lower end of the tube is clear above the surface of the liquid, and the hole in the constricted portion of the tube is clear below the bottom of the cork. The action should be allowed to proceed for thirty to forty minutes, the mercuric chloride paper not being exposed to strong sunlight. The yellow stain which is produced on the mercuric chloride paper if arsenic be present is compared, by daylight, with stains produced by operating in a similar manner with known quantities of the solution of arsenic As T. The comparison of the stains should be made at the completion of the test and those used for comparison should be freshly prepared. The stains fade upon keeping.

*Note.*—The action may be accelerated by standing the apparatus on a hot plate, care being taken that the mercuric chloride paper remains quite dry throughout the duration of the test.

**Standard Stain.** Prepare a solution by adding to 50 millilitres of hot *water*, 10 millilitres of stannated hydrochloric acid As T. and 1 millilitre of solution of arsenic As T. The resulting solution when treated as described in the "General Test" will yield a stain on the mercuric chloride paper hereinafter referred to as the "Standard Stain."

CONTROL TESTS FOR REAGENTS AS T.

**Hydrochloric Acid** As T. To 50 millilitres of the hydrochloric acid to be tested add 0·2 millilitre of solution of bromine As T., evaporate on a water-bath until reduced to 16 millilitres, add 50 millilitres of hot *water* and 5 drops of solution of stannous chloride As T. and with this solution carry out the "General Test" described above. The stain produced on the mercuric chloride paper is not deeper than that given by 10 millilitres of the same hydrochloric acid with 5 drops of solution of stannous chloride As T., 0·4 millilitre of solution of arsenic As T. and 50 millilitres of hot *water*, showing that the proportion of arsenic present does not exceed 0·1 part per million.

**Solution of Bromine** As T. Evaporate 10 millilitres of the solution of bromine on a water-bath nearly to dryness, add 50 millilitres of hot *water*, 10 millilitres of hydrochloric acid As T., and sufficient solution of stannous chloride As T. to reduce the remaining bromine, and with this solution carry out the "General Test" described above. The stain produced on the mercuric chloride paper is not deeper than the Standard Stain, showing that the proportion of arsenic present does not exceed 1 part per million.

**Solution of Stannous Chloride** As T. To 10 millilitres of the solution of stannous chloride add 6 millilitres of *water* and 10 millilitres of hydrochloric acid As T., and distil 16 millilitres. To the distillate add 50 millilitres of hot *water* and a few drops of solution of stannous chloride As T. and with this solution carry out the "General Test" described above. The stain produced on the mercuric chloride paper is not deeper than the Standard Stain, showing that the proportion of arsenic present does not exceed 1 part per million.

**Zinc** As T. Add 10 millilitres of stannated hydrochloric acid As T. to 50 millilitres of hot *water*, and with this solution and 10 grammes of zinc As T. proceed as with the "General Test," but allow the action to continue for one hour. No visible stain is produced on the mercuric chloride paper (limit of arsenic in the zinc).

The following Table shows the varying methods of preparing the "solution to be examined." The quantities are so arranged that, when tested according to the "General Test" described above, the stain produced on the mercuric chloride paper is not deeper than the Standard Stain, showing that the proportion of arsenic present does not exceed the permissible limit.

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| Acidum Aceticum | 5 grammes in 50 millilitres of hot *water*, adding 10 millilitres of stannated hydrochloric acid As T. | 2 |
| Acidum Acetylsalicylicum | 5 grammes made into a paste in a porcelain dish with 2 grammes of calcium hydroxide As T. and 5 millilitres of *water*, drying and gently igniting, dissolving residue in 16 millilitres of brominated hydrochloric acid As T. and 45 millilitres of hot *water*, and finally removing excess of bromine by a few drops of solution of stannous chloride As T. | 2 |
| Acidum Benzoicum | 5 grammes treated as described under "Acidum Acetylsalicylicum." | 2 |
| Acidum Boricum | 2 grammes with 4 grammes of citric acid As T. in 50 millilitres of hot *water*, adding 10 millilitres of stannated hydrochloric acid As T. | 5 |
| Acidum Citricum | 7 grammes treated as described under "Acidum Aceticum." | 1·4 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| Acidum Hydriodicum Dilutum | 2 grammes with 50 millilitres of hot *water*, adding 0·5 millilitre of solution of bromine As T. and 10 millilitres of hydrochloric acid As T., allowing it to stand for five minutes, and removing excess of bromine by a few drops of solution of stannous chloride As T. | 5 |
| Acidum Hydrobromicum Dilutum | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Acidum Hydrochloricum | 2 grammes with 50 millilitres of hot *water* and 8 millilitres of stannated hydrochloric acid As T. | 5 |
| Acidum Lacticum | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Acidum Nitricum | 2 grammes heated in a porcelain dish with 2 millilitres of sulphuric acid As T. until white fumes are evolved, then cooling, adding 2 millilitres of *water*, again heating until white fumes are evolved, again cooling and adding to the residue 50 millilitres of hot *water* and 10 millilitres of stannated hydrochloric acid As T. | 5 |
| Acidum Phosphoricum Concentratum | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Acidum Salicylicum | 5 grammes treated as described under "Acidum Acetylsalicylicum." | 2 |

| Substance. | Solution to be examined. | Limit of Arsenic: Parts per million. |
|---|---|---|
| Acidum Sulphuricum | 2 grammes mixed with 10 millilitres of *water*, adding 40 millilitres of hot *water* and 8 millilitres of stannated hydrochloric acid As T. | 5 |
| Acidum Sulphurosum | 2 grammes mixed in the cold with 0·5 gramme of potassium chlorate As T. and 11 millilitres of hydrochloric acid As T., warming to expel excess of chlorine, then adding 50 millilitres of hot *water* and a few drops of solution of stannous chloride As T. | 5 |
| Acidum Tartaricum | 7 grammes treated as described under "Acidum Aceticum." | 1·4 |
| Alumen Purificatum | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Ammonii Benzoas | 5 grammes treated as described under "Acidum Acetylsalicylicum." | 2 |
| Ammonii Bromidum | 2 grammes in 50 millilitres of hot *water*, adding 12 millilitres of stannated hydrochloric acid As T. | 5 |
| Ammonii Carbonas | 5 grammes in 50 millilitres of hot *water*, boiled gently until the greater part of the ammonium carbonate is volatilised, then adding 15 millilitres of brominated hydrochloric acid As T. and removing excess of bromine by a few drops of solution of stannous chloride As T. | 2 |

| Substance. | Solution to be examined. | Limit of Arsenic: Parts per million. |
|---|---|---|
| **Ammonii Chloridum** | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| **Antimonium Sulphuratum** | 0·01 gramme dissolved by boiling in a small flask with 0·2 gramme of calcium hydroxide As T. and 5 millilitres of *water*, then adding 2 millilitres of solution of bromine As T. and again gently boiling, then adding 17 millilitres of hydrochloric acid As T. and 5 millilitres of *water* and boiling until most of the bromine is volatilised, the last traces being removed by adding a slight excess of solution of stannous chloride As T., connecting to a condenser and distilling 20 millilitres, then washing the condenser and flask, returning the distillate to the flask, adding 1 drop of solution of stannous chloride As T. and redistilling 16 millilitres, then adding to the distillate 45 millilitres of hot *water* and a few drops of solution of stannous chloride As T. | 1000 |
| **Bismuthi Carbonas** | 5 grammes dissolved in a small flask in 5 millilitres of *water* and 20 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T., connecting to a condenser and distilling 18 millilitres, then adding | 2 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | to the distillate 40 millilitres of hot *water* and 3 drops of solution of stannous chloride As T. | |
| **Bismuthi Salicylas** | 5 grammes made into a paste in a porcelain dish with 1 gramme of calcium hydroxide As T. and 5 millilitres of *water*, drying and gently igniting, dissolving the residue in 20 millilitres of brominated hydrochloric acid As T. and 10 millilitres of *water*, transferring to a small flask and adding sufficient solution of stannous chloride As T. to remove the excess of bromine, connecting to a condenser and distilling 20 millilitres, then adding to the distillate 40 millilitres of hot *water* and 3 drops of solution of stannous chloride As T. | 2 |
| **Bismuthi Subnitras** | 5 grammes heated in a porcelain dish with 2 millilitres of sulphuric acid As T. until white fumes are evolved, cooling, adding 5 millilitres of *water* and again heating until white fumes are evolved, dissolving the residue when cold in 20 millilitres of *water* and 10 millilitres of stannated hydrochloric acid As T., transferring to a small flask, connecting to a condenser and distilling 20 millilitres, adding to the distillate a little solution of bro- | 2 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | mine As T. to oxidise any sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., and adding 40 millilitres of hot *water*. | |
| **Borax Purificatus** | 2 grammes with 4 grammes of citric acid As T. in 50 millilitres of hot *water*, adding 12 millilitres of stannated hydrochloric acid As T. | 5 |
| **Calcii Carbonas Præcipitatus** | 2 grammes in 14 millilitres of brominated hydrochloric acid As T. and 45 millilitres of hot *water*, removing excess of bromine by a few drops of solulution of stannous chloride As T. | 5 |
| **Calcii Chloridum** | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| **Calcii Hydras** | 2 grammes in 16 millilitres of brominated hydrochloric acid As T. and 45 millilitres of hot *water*, removing excess of bromine by a few drops of solution of stannous chloride As T. | 5 |
| **Calcii Hypophosphis** | 2 grammes mixed in the cold with 2 grammes of potassium chlorate and 18 millilitres of hydrochloric acid As T., then warming to expel excess of chlorine, adding 40 millilitres of hot *water* and a few drops of solution of stannous chloride As T. | 5 |

| Substance. | Solution to be examined. | Limit of Arsenic: Parts per million. |
|---|---|---|
| Calcii Lactas | 2 grammes treated as described under "Ammonii Bromidum." | 5 |
| Calcii Phosphas | 2 grammes in 50 millilitres of hot *water* and 14 millilitres of stannated hydrochloric acid As T. | 5 |
| Calx | 2 grammes in 18 millilitres of brominated hydrochloric acid As T. and 40 millilitres of *water*, removing excess of bromine by a few drops of solution of stannous chloride As T. | 5 |
| Creta Præparata | 2 grammes treated as described under "Calcii Carbonas Præcipitatus." | 5 |
| Cupri Sulphas | 1 gramme dissolved in a small flask with 10 millilitres of *water* and 15 millilitres of hydrochloric acid As T., adding 5 drops of solution of stannous chloride As T., connecting to a condenser and distilling 20 millilitres, adding a little solution of bromine As T. to the distillate to oxidise any sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., finally adding 40 millilitres of hot *water*. | 10 |
| Ferri Carbonas Saccharatus | 2 grammes made into a paste with 1 gramme of calcium hydroxide As T. and 2 millilitres of *water* in a porcelain dish, drying and gently igniting, dissolving the residue in | 5 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | 20 millilitres of brominated hydrochloric acid As T. and 10 millilitres of *water*, transferring to a small flask, adding solution of stannous chloride As T. until the yellow colour disappears, then connecting to a condenser and distilling 24 millilitres, finally adding to the distillate 35 millilitres of hot *water* and 3 drops of solution of stannous chloride As T. | |
| Ferri et Ammonii Citras | 2 grammes treated as described under "Ferri Carbonas Saccharatus." | 5 |
| Ferri et Potassii Tartras | 2 grammes treated as described under "Ferri Carbonas Saccharatus." | 5 |
| Ferri et Quininæ Citras | 2 grammes treated as described under "Ferri Carbonas Saccharatus." | 5 |
| Ferri Phosphas Saccharatus | 2 grammes treated as described under "Ferri Carbonas Saccharatus." | 5 |
| Ferri Sulphas | 5 grammes dissolved in a small flask with 10 millilitres of *water* and 15 millilitres of hydrochloric acid As T., adding solution of stannous chloride As T. until the yellow colour disappears, connecting to a condenser and distilling 20 millilitres, adding a little solution of bromine As T. to the distillate to oxidise any | 2 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., and finally adding 40 millilitres of hot *water*. | |
| Ferri Sulphas Exsiccatus | 2 grammes treated as described under " Ferri Sulphas." | 5 |
| Ferrum | 0·05 gramme mixed in a small flask with 0·1 gramme of potassium chlorate As T. and 7 millilitres of *water*, adding 11 millilitres of hydrochloric acid As T. and, when the reaction has ceased and all the iron is dissolved, boiling gently to expel chlorine, then adding solution of stannous chloride As T. until the yellow colour disappears, connecting to a condenser and distilling 14 millilitres, finally adding to the distillate 50 millilitres of hot *water* and a few drops of solution of stannous chloride As T. | 200 |
| Ferrum Redactum | 0·05 gramme treated as described under " Ferrum." | 200 |
| Glucosum | 5 grammes treated as described under " Acidum Hydriodicum Dilutum." | 2 |
| Glycerinum | 2·5 grammes treated as described under " Acidum Aceticum." | 4 |
| Liquor Ammoniæ Fortis | 20 grammes evaporated on a water-bath until reduced to 5 | 0·5 |

| Substance. | Solution to be examined. | Limit of Arsenic: Parts per million. |
|---|---|---|
| | millilitres, adding 40 millilitres of *water* and 15 millilitres of brominated hydrochloric acid As T., and removing excess of bromine by a few drops of solution of stannous chloride As T. | |
| **Liquor Ferri Perchloridi Fortis** | **1** gramme heated in a porcelain dish with 1 millilitre of sulphuric acid As T. until white fumes are evolved, cooling, adding an equal volume of *water* and again heating until white fumes are evolved, dissolving the residue in 10 millilitres of *water* and 15 millilitres of hydrochloric acid As T., transferring to a small flask, adding solution of stannous chloride As T. until the yellow colour disappears, connecting to a condenser and distilling 20 millilitres, adding to the distillate a little solution of bromine As T. to oxidise any sulphurous acid, removing excess of bromine by a few drops of solution of stannous chloride As T., and then adding 40 millilitres of hot *water*. | **10** |
| **Liquor Ferri Persulphatis** | **2** grammes treated as described under "Liquor Ferri Perchloridi Fortis." | **5** |
| **Liquor Magnesii Bicarbonatis** | **50** millilitres with 13 millilitres of brominated hydrochloric acid As T., removing excess | **0·2** |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | of bromine by a few drops of solution of stannous chloride As T. | |
| Lithii Carbonas | 2 grammes treated as described under "Calcii Hydras." | 5 |
| Lithii Citras | 5 grammes in 45 millilitres of hot *water*, adding 15 millilitres of stannated hydrochloric acid As T. | 2 |
| Magnesia Levis | 2 grammes with 40 millilitres of *water* and 20 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T. | 5 |
| Magnesia Ponderosa | 2 grammes treated as described under "Magnesia Levis." | 5 |
| Magnesii Carbonas Levis | 2 grammes in 45 millilitres of hot *water* and 15 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T. | 5 |
| Magnesii Carbonas Ponderosus | 2 grammes treated as described under "Magnesii Carbonas Levis." | 5 |
| Magnesii Sulphas | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Potassii Acetas | 2 grammes treated as described under "Ammonii Bromidum." | 5 |
| Potassii Bicarbonas | 2 grammes in 50 millilitres of hot *water*, adding 12 millilitres of brominated hydrochloric | 5 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T. | |
| **Potassii Bromidum** | 2 grammes treated as described under "Ammonii Bromidum." | 5 |
| **Potassii Carbonas** | 5 grammes in 50 millilitres of hot *water*, adding 16 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T. | 2 |
| **Potassii Chloras** | 2 grammes mixed in the cold with 10 millilitres of *water* and 20 millilitres of hydrochloric acid As T. and, when the reaction is complete, warming to expel chlorine, then adding a few drops of solution of stannous chloride As T. and 30 millilitres of hot *water*. | 5 |
| **Potassii Citras** | 5 grammes treated as described under "Lithii Citras." | 2 |
| **Potassii Iodidum** | 2 grammes treated as described under "Ammonii Bromidum." | 5 |
| **Potassii Nitras** | 2 grammes heated in a porcelain dish with 2 millilitres of sulphuric acid As T. and 5 millilitres of *water* until white fumes are evolved, cooling, adding 3 millilitres of *water* and again heating until white fumes are evolved, finally cooling and adding to the residue 50 millilitres of hot *water* and | 5 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| | 10 millilitres of stannated hydrochloric acid As T. | |
| Potassii Sulphas | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Potassii Tartras | 5 grammes treated as described under "Calcii Phosphas." | 2 |
| Potassii Tartras Acidus | 5 grammes in 50 millilitres of hot *water* and 13 millilitres of brominated hydrochloric acid As T., removing excess of bromine by a few drops of solution of stannous chloride As T. | 2 |
| Sodii Benzoas | 5 grammes gently heated in a porcelain dish, until inflammable vapours cease to be evolved, dissolving the residue (ignoring any carbon) in 14 millilitres of brominated hydrochloric acid As T. and 50 millilitres of hot *water* and removing excess of bromine by a few drops of solution of stannous chloride As T. | 2 |
| Sodii Bicarbonas | 5 grammes treated as described under "Potassii Carbonas." | 2 |
| Sodii Bromidum | 2 grammes treated as described under "Ammonii Bromidum." | 5 |
| Sodii Carbonas | 5 grammes in 50 millilitres of hot *water*, adding 14 millilitres of brominated hydrochloric acid As T. and removing excess of bromine by a few drops of solution of stannous chloride As T. | 2 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| Sodii Carbonas Exsiccatus | 2 grammes treated as described under "Sodii Carbonas." | 5 |
| Sodii Chloridum | 5 grammes treated as described under "Acidum Aceticum." | 2 |
| Sodii et Potassii Tartras | 5 grammes treated as described under "Calcii Phosphas." | 2 |
| Sodii Hypophosphis | 2 grammes treated as described under "Calcii Hypophosphis." | 5 |
| Sodii Iodidum | 2 grammes in 50 millilitres of hot *water*, adding 11 millilitres of stannated hydrochloric acid As T. | 5 |
| Sodii Nitris | 2 grammes treated as described under "Potassii Nitras." | 5 |
| Sodii Phosphas | 2 grammes treated as described under "Acidum Aceticum." | 5 |
| Sodii Phosphas Acidus | 5 grammes treated as described under "Acidum Aceticum." | 2 |
| Sodii Salicylas | 5 grammes treated as described under "Sodii Benzoas." | 2 |
| Sodii Sulphas | 5 grammes treated as described under "Acidum Aceticum." | 2 |
| Sodii Sulphis | 2 grammes with 0·5 gramme of potassium chlorate As T. in 5 millilitres of warm *water*, adding 12 millilitres of hydrochloric acid As T., then warming to expel excess of chlorine and adding 45 millilitres of hot *water* and a few drops of solution of stannous chloride As T. | 5 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| Strontii Bromidum | 2 grammes treated as described under " Ammonii Bromidum." | 5 |
| Sulphur Præcipitatum | 2 grammes digested for one hour on a water-bath with 50 millilitres of *water* and 5 millilitres of solution of ammonia, filtering and evaporating the filtrate to low bulk, adding 10 millilitres of nitric acid As T. and boiling to oxidise any sulphur, then adding 2 millilitres of sulphuric acid As T. and heating until white fumes are evolved, cooling, adding 2 millilitres of *water* and again heating until white fumes are evolved, finally adding 50 millilitres of hot *water* and 10 millilitres of stannated hydrochloric acid As T. | 5 |
| Sulphur Sublimatum | 2 grammes treated as described under " Sulphur Præcipitatum." | 5 |
| Zinci Acetas | 2 grammes treated as described under " Ammonii Bromidum." | 5 |
| Zinci Carbonas | 1 gramme treated as described under " Potassii Carbonas." | 10 |
| Zinci Chloridum | 2 grammes treated as described under " Acidum Aceticum." | 5 |
| Zinci Oxidum | 1 gramme treated as described under " Potassii Carbonas." | 10 |
| Zinci Sulphas | 2 grammes treated as described under " Acidum Aceticum." | 5 |

| Substance. | Solution to be examined. | Limit of Arsenic : Parts per million. |
|---|---|---|
| Zinci Valerianas | 2 grammes made into a paste in a porcelain dish with 2 grammes of calcium hydroxide As T. and 5 millilitres of *water*, drying and gently igniting, then dissolving the residue in 18 millilitres of brominated hydrochloric acid As T. and 40 millilitres of hot *water* and removing excess of bromine by a few drops of solution of stannous chloride As T. | 5 |

## APPENDIX VII

### *DETERMINATION OF THE ACID VALUE OF FIXED OILS, FATS, WAXES, AND RESINS*

The acid value of a fixed oil, fat, or wax (the number of milligrams of potassium hydroxide required to neutralise the free acid in 1 gramme of the substance) is determined as follows :—

Mix 10 grammes of the substance with 50 millilitres of *alcohol* (90 per cent.), previously neutralised with *solution of potassium hydroxide*, add 1 millilitre of *solution of phenolphthalein*, heat until the fat or wax is melted and titrate with *N/10 solution of potassium hydroxide*, shaking constantly. Note the number of millilitres required (*a*). Calculate the acid value from the following formula :—

$$\text{Acid value} = \frac{a \times 0{\cdot}0056 \times 1000}{\text{weight (in grammes) of substance taken}}$$

The acid value of a resin is determined by dissolving from 1 to 5 grammes of the substance in 50 millilitres of *alcohol* (90 per cent.), previously neutralised, and titrating and calculating as above directed.

## *DETERMINATION OF THE SAPONIFICATION VALUE OF FIXED OILS, FATS, WAXES, AND RESINS*

The saponification value of a fixed oil, fat, wax, or resin (the number of milligrams of potassium hydroxide required for the complete saponification of 1 gramme of the substance) is determined as follows :—

Dissolve 40 grammes of *potassium hydroxide* in 1000 millilitres of *alcohol* (90 per cent.), previously neutralised; allow the solution to stand for twenty-four hours and filter. Weigh from 1·5 to 2 grammes of the substance in a flask having a capacity of about 200 millilitres; add 25 millilitres of the alcoholic solution of potassium hydroxide, attach a reflux condenser and heat on a water-bath for thirty minutes; add 1 millilitre of *solution of phenolphthalein* and titrate the excess of alkali with *N/2 solution of hydrochloric acid.* Note the number of millilitres required (*a*). At the same time treat 25 millilitres of the alcoholic solution of potassium hydroxide in a similar manner. Note the number of millilitres required (*b*). Calculate the saponification value from the following formula :—

$$\text{Saponification value} = \frac{(b-a) \times 0{\cdot}028 \times 1000}{\text{weight (in grammes) of substance taken}}$$

## *DETERMINATION OF THE IODINE VALUE OF FIXED OILS AND FATS*

The iodine value of a fixed oil or fat (the proportional weight of iodine absorbed by 100 parts by weight of the oil or fat under the conditions specified) is determined as follows :—

### Solution to be Prepared.

Iodine Solution.—Dissolve 13 grammes of *iodine* in 1000 millilitres of *glacial acetic acid.* Titrate the solution with *N/10 solution of sodium thiosulphate,* note the proportion required and pass *chlorine,* washed and dried, through the remainder of the iodine solution until this proportion is exactly doubled. Keep the solution in a stoppered amber bottle in a cool, dark place.

### Weight of substance to be taken.

| | |
|---|---|
| Lard, Suet, and Oil of Theobroma | 0·8 to 1·0 gramme |
| Almond Oil, Castor Oil, and Olive Oil | 0·3 to 0·4 gramme |
| Cod-liver Oil, and Linseed Oil | 0·15 to 0·18 gramme |

**Time to be allowed for absorption.**

| | |
|---|---|
| Lard, Suet, and Oil of Theobroma<br>Almond Oil, Castor Oil, and Olive Oil | 1 hour |
| Cod-liver Oil and Linseed Oil | 2 hours |

**Method of Procedure.**—Place the specified weight of oil or fat in a stoppered bottle having a capacity of 800 millilitres, add 10 millilitres of *carbon tetrachloride* and dissolve. Add 25 millilitres of the iodine solution, insert the stopper, previously moistened with *solution of potassium iodide*, and keep in a dark place at a temperature of about 17° for the specified time Then add 20 millilitres of *solution of potassium iodide* and 500 millilitres of *water*. Shake, and titrate with *N/10 solution of sodium thiosulphate*, using *mucilage of starch* as indicator. Note the number of millilitres required (*a*). At the same time treat 25 millilitres of the solution of iodine in a similar manner and note the number of millilitres of *N/10 solution of sodium thiosulphate* required (*b*). Calculate the iodine value from the following formula :—

$$\text{Iodine value} = \frac{(b-a) \times 0{\cdot}01269 \times 100}{\text{weight (in grammes) of oil or fat taken}}$$

## *DETERMINATION OF THE UNSAPONIFIABLE MATTER IN FIXED OILS AND FATS*

The percentage of unsaponifiable matter in a fixed oil or fat is determined as follows :—

Boil 5 grammes of the oil or fat with 50 millilitres of *N/1 alcoholic solution of potassium hydroxide* in a flask provided with a reflux condenser on a water-bath for thirty minutes. Transfer the contents of the flask to a porcelain dish and evaporate the alcohol on a water-bath. Dissolve the resulting soap in about 100 millilitres of hot water, cool and transfer to a separator. Add 50 millilitres of *ether*, mix thoroughly and allow to separate. Transfer the soap solution to another separator and again extract with 50 millilitres of *ether*. Mix the ethereal solutions, wash with three portions, each of 20 millilitres, of *water*, transfer to a tared flask, evaporate the ether, dry the residue at 100° and weigh. The weight (in grammes) of the residue multiplied by 20 gives the percentage of unsaponifiable matter.

## *DETERMINATION OF THE ESTERS IN VOLATILE OILS*

The percentage of esters present in a volatile oil is determined as follows :—

Dissolve from 2 to 5 grammes of the oil in 25 millilitres of alcohol (90 per cent.) and neutralise the solution, if necessary, with *N/1 alcoholic solution of potassium hydroxide*. Then add 25 millilitres of *N/1 alcoholic solution of potassium hydroxide*, boil in a flask provided with a reflux condenser on a water-bath for one hour, and titrate the excess of alkali with *N/1 solution of sulphuric acid*. Note the number of millilitres required (*a*). At the same time treat 25 millilitres of *alcohol* (90 per cent.) in a similar manner and note the number of millilitres of acid required (*b*). Calculate the percentage of esters in the oil from the following formula :—

$$\text{Percentage of esters} = \frac{(b-a) \times \text{molecular weight of ester}}{\text{weight (in grammes) of oil taken} \times 10}$$

## *DETERMINATION OF THE ALCOHOLS IN VOLATILE OILS*

The percentage of alcohols present in a volatile oil is determined as follows :—

Heat 10 millilitres of the oil with 10 millilitres of *acetic anhydride* and 2 grammes of *anhydrous sodium acetate* in an acetylation flask for two hours ; add 100 millilitres of *water*, transfer to a separator and, after separation, remove the aqueous layer and wash the oily layer free from acidity with successive quantities, each of 100 millilitres, of *water*, thoroughly shaking and allowing to separate each time. Dry the acetylated oil with *anhydrous sodium sulphate* and filter. Then treat from 2 to 5 grammes of the acetylated oil according to the process for the determination of the esters present in volatile oils. Calculate the percentage of alcohols present in the oil from the following formula :—

$$\text{Percentage of alcohols} = \frac{\frac{1}{10} \times (b-a) \times \text{molecular weight of the alcohol}}{\text{weight (in grammes) of acetylated oil taken} - 0{\cdot}042\,(b-a)}$$

### *ALKALOIDAL ASSAYS: LIMIT OF ERROR*

Successive assays of the same substance may yield numerical results varying within narrow limits, which are taken to be the range of "error." When an average of successive assays shows a deviation from the prescribed standard which is beyond the "limit of error," in excess or defect, the preparation examined does not conform to the requirements of the British Pharmacopœia.

## APPENDIX VIII

### *DETERMINATION OF MELTING POINTS*

Prepare some thin-walled glass tubes having an internal diameter of about one millimetre by heating thick-walled, soft glass tubing in a blow-pipe flame, drawing out the heated portion until it has the required diameter, then allowing a small flame to play against the middle of this tube so as to make and seal two tubes which are finally to be cut off to suitable lengths; these tubes should be freshly made; if stored they should be carefully protected from moisture.

Dry a very small quantity of the powdered substance at 100° for fifteen minutes; transfer a portion to one of these tubes, shaking the powder down to the sealed extremity. Attach the tube to a thermometer so that the substance is near the middle of the bulb. Heat a suitable liquid, such as *sulphuric acid*, to which *nitric acid* in the proportion of about 4 drops to 100 millilitres has been added, in a beaker or boiling tube about 3 centimetres in diameter, to about 5° below the expected melting point of the substance; this point, if not known, being determined by a preliminary experiment. Then introduce the thermometer with the attached tube, and slowly heat, efficiently stirring, and note the temperature at which the substance first shows visible change; this temperature is regarded as the uncorrected melting point of the substance. The whole of the mercury column of the thermometer should be immersed in the liquid, but as this is seldom practicable the following correction is to be applied :—

To the thermometer attach a second thermometer in such a position that its bulb is near the middle of the emergent column of mercury, and observe thereby the mean temperature of the column. Calculate the corrected melting point of the substance from the following formula :—

Corrected melting point = T + 0·000143 (T − t) N, in which
T = the uncorrected melting point;
t = the mean temperature of the emergent column;
N = the number of scale degrees in the emergent column.

The melting point of solid fats, fatty acids, and waxes is determined by running a small quantity of the melted substance into an unsealed melting point tube, allowing it to cool for twenty-four hours, and then, using *water* in the place of sulphuric acid, determining in the manner described the temperature at which the substance becomes a clear liquid; this temperature is to be taken as the uncorrected melting point.

### *DETERMINATION OF BOILING POINTS*

Place the liquid under examination in a distillation flask having a side tube for conveying the vapour to a condenser, while a thermometer passes through a cork inserted in the neck. The bulb of the thermometer should be opposite the entrance of the side tube, and not immersed in the liquid or exposed to splashes of it, and the whole of the column of mercury should, if possible, be surrounded by the vapour; the temperature is read off as soon as the liquid is distilling freely. If any considerable length of the column of mercury is not surrounded by the vapour, the mean temperature of the emergent column should be ascertained as directed under the "Determination of Melting Points," and the like correction applied.

### *DETERMINATION OF REFRACTIVE INDICES*

The refractive index of a substance should be determined in a suitable apparatus as nearly as possible at the temperature specified. Should the temperature be either above or below the specified temperature, the following correction is to be applied:—

For each degree below the specified temperature subtract 0·00038 from the observed refractive index; for each degree above the specified temperature add 0·00038.

### *DETERMINATION OF OPTICAL ROTATION*

The optical rotation, unless otherwise specified, is the angle through which the plane of polarisation is turned when

a layer of the liquid substance one decimetre in thickness and at a temperature of 20° is examined by polarised sodium light.

The specific rotation of a substance in solution may be calculated from the formula $\frac{a \times 100}{l \times c}$, where $a$ is the observed optical rotation, $l$ the thickness in decimetres of the layer examined, and $c$ the number of grammes of substance contained in 100 millilitres of the solution.

### *DETERMINATION OF SPECIFIC GRAVITY*

The specific gravity of a substance is the weight of a given volume of that substance at 15·5° as compared with the weight of an equal volume of distilled water, at the same temperature unless otherwise specified.

## APPENDIX IX

### *PROCESS OF PERCOLATION*

Moisten the solid materials with the prescribed quantity of menstruum, set aside for four hours in a well-closed vessel, pack in a percolator and add sufficient of the menstruum to saturate the materials and leave a layer of liquid above. Macerate for twenty-four hours; then allow percolation to proceed slowly until the percolate measures about three-fourths of the volume required for the finished tincture. Press the marc, mix the expressed liquid with the percolate, and add sufficient of the menstruum to produce the required volume. Clarify by subsidence or filtration, if necessary.

### *PROCESS OF REPERCOLATION*

Take one hundred parts by weight of the drug and divide it into five equal portions. Moisten the first portion with the menstruum, set aside in a closed vessel for four hours and pack in a percolator. Add sufficient of the menstruum to saturate the drug and leave a layer of liquid above. Macerate for twenty-four hours, then allow percolation to proceed slowly, collecting the percolate in fractions of twenty parts.

Moisten the second portion of the drug with the first fraction of the percolate collected. Set aside, pack in a percolator, macerate and percolate as before, using as menstruum the successive fractions of percolate collected from the portion first treated. Again collect the percolate in fractions of twenty parts.

In turn, treat in the manner described above the third, fourth, and fifth portions of the drug with the fractions of percolate obtained in the percolation of the portion immediately preceding, using the successive fractions of percolate in order, until a liquid extract is obtained of the required strength.

### *PROCESS OF MACERATION*

Place the solid materials with the whole of the menstruum in a closed vessel; shake occasionally during seven days; strain; press the marc; mix the liquids obtained. Clarify by subsidence or filtration if necessary.

## APPENDIX X

### *PROCESS FOR PREPARATION OF DISCS (LAMELLÆ)*

Discs are prepared by the following process :—

| | |
|---|---|
| Gelatin. . . . . | 18 grammes |
| Glycerin . . . . . | 2 grammes |
| Distilled Water . . . . . | 88 grammes |

Mix the Glycerin with the Distilled Water, allow the Gelatin to soak in the mixture till soft, and then dissolve by a gentle heat; cool the basis so produced.

Take the prescribed quantity of the above basis, melt it by a gentle heat, add the prescribed quantity of medicament, dissolve and mix. Pour the melted and medicated basis upon a sheet of plate glass 10 centimetres square, previously thinly coated with White Beeswax, in such a manner that the solution is evenly distributed. Dry at a temperature not exceeding 36°, and from the film thus obtained cut discs 3 millimetres nearly (1/8 inch) in diameter.

## APPENDIX XI

### *PROCESSES FOR PREPARATION OF LOZENGES (TROCHISCI)*

#### With Fruit Basis

Take five hundred times the quantity of the drug ordered for one lozenge. Mix with it 6·5 grammes of Tragacanth and 26 grammes of Refined Sugar, both in fine powder. Add sufficient of the black-currant paste of commerce to produce 650 grammes, beat into a uniform mass, divide into 500 equal lozenges and dry in a hot-air chamber at a moderate temperature.

#### With Rose Basis

Take five hundred times the quantity of the drug ordered for one lozenge. Treat it as described under "Preparation with Simple Basis," previously mixing with the Refined Sugar 0·025 millilitre of Oil of Rose.

#### With Simple Basis

Take five hundred times the quantity of the drug ordered for one lozenge, mix it with 496 grammes of Refined Sugar and 19·5 grammes of Gum Acacia, both in fine powder. Make the mixture into a paste with 35 millilitres of Mucilage of Gum Acacia and a sufficient quantity of Distilled Water, divide into 500 equal lozenges and dry in a hot-air chamber at a moderate temperature.

#### With Tolu Basis

Take five hundred times the quantity of the drug ordered for one lozenge; dissolve such salts of alkaloids as may be ordered in 10 millilitres of Distilled Water; mix the solution with 482 grammes of Refined Sugar and 19·5 grammes of Gum Acacia, both in fine powder. Incorporate 10 millilitres of Tincture of Balsam of Tolu, and any other drugs ordered for the lozenges. Make into a paste with 35·5 millilitres of Mucilage of Gum Acacia and a sufficient quantity of Distilled Water; divide into 500 equal lozenges and dry in a hot-air chamber at a moderate temperature.

## APPENDIX XII

### *ALTERNATIVE PREPARATIONS SANCTIONED FOR USE IN TROPICAL, SUBTROPICAL, AND OTHER PARTS OF THE BRITISH EMPIRE*

**Aquæ Olei Anethi, Anisi, Carui, Cinnamomi, Fœniculi, Menthæ Piperitæ, Menthæ Viridis.**—Each of these Waters may be prepared by triturating the corresponding Oil with twice its weight of Calcium Phosphate and five hundred times its volume of Distilled Water and filtering the mixture. In tropical and subtropical parts of the Empire these Aquæ Olei may be used in place of the corresponding Aquæ of the Text of the Pharmacopœia.

**Emplastra.**—In tropical and subtropical parts of the Empire, more or less Hard Soap, Resin, or Yellow Beeswax, may be employed in the preparation of the Plasters of the Text of the Pharmacopœia, when prevailing high temperatures otherwise render the basis too soft for convenient use ; but the official proportion of the active ingredient must in all cases be maintained.

**Extracta Liquida.**—Any Liquid Extract, defined in the Text of the Pharmacopœia, containing less than one-fourth of its weight of Alcohol (90 per cent.), may have the proportion of Alcohol (90 per cent.) increased to an amount not exceeding one-fourth of the weight of the Extract, in tropical and subtropical parts of the Empire where otherwise the preparation would be liable to ferment.

**Limonis Cortex Siccatus.**—In tropical and subtropical parts of the Empire, when fresh Lemon Peel cannot be obtained, Dried Lemon Peel may be used in preparing Compound Infusion of Orange Peel, Compound Infusion of Gentian, Syrup of Lemon, and Tincture of Lemon.

**Oleum Olivæ.**—In India, and in the Eastern, African, Australasian, and North American Divisions of the Empire, Arachis Oil or Sesame Oil, but no other oil or fat, may be employed in making the official Liniments, Plasters, Ointments, and Soaps for which Olive Oil is directed to be used.

**Suppositoria.**—More or less White Beeswax, according to prevailing temperatures, may be used in place of an equivalent amount of Oil of Theobroma in tropical and subtropical

parts of the Empire, when otherwise the Suppositories of the Text of the Pharmacopœia would be too soft for convenient use.

**Syrupus Rhœados.**—In tropical and subtropical parts of the Empire, when prevailing high temperatures render this preparation liable to ferment, the proportion of Alcohol (90 per cent.) may be increased, but not to more than double the proportion stated in the Text of the Pharmacopœia, an equivalent quantity of Distilled Water being omitted.

**Unguenta.**—In tropical and subtropical parts of the Empire more or less Benzoated Lard, Prepared Lard, Benzoated Suet, Prepared Suet, Yellow Beeswax, or White Beeswax, may be employed in the preparation of the Ointments of the Text of the Pharmacopœia when prevailing high temperatures otherwise render the basis too soft for convenient use; but the official proportion of the active ingredient must in all cases be maintained.

## APPENDIX XIII

### *TABLE OF PROPORTIONS RELATING TO THE PREPARATION OF DILUTED ALCOHOLS*

Volume of Alcohol (90 per cent.) to be diluted with Distilled Water to 1000 millilitres at 15·5° in order to give the Diluted Alcohols of the British Pharmacopœia.

| Alcohol Required. | Specific Gravity. | Volume of Alcohol (90 per cent.). |
|---|---|---|
| 70 per cent. | 0·8899 | 777·8 millilitres |
| 60 per cent. | 0·9134 | 666·7 millilitres |
| 45 per cent. | 0·9435 | 500·0 millilitres |
| 20 per cent. | 0·9760 | 222·2 millilitres |

## APPENDIX XIV

*NAMES, SYMBOLS, AND ATOMIC WEIGHTS OF THE CHIEF ELEMENTS MENTIONED IN THE BRITISH PHARMACOPŒIA; O = 16*

| Name. | Symbol. | Atomic Weight. |
|---|---|---|
| Aluminium | Al | 27·1 |
| Antimony | Sb | 120·2 |
| Arsenic | As | 74·96 |
| Barium | Ba | 137·37 |
| Bismuth | Bi | 208·0 |
| Boron | B | 11·0 |
| Bromine | Br | 79·92 |
| Calcium | Ca | 40·07 |
| Carbon | C | 12·00 |
| Chlorine | Cl | 35·46 |
| Chromium | Cr | 52·0 |
| Copper | Cu | 63·57 |
| Gold | Au | 197·2 |
| Hydrogen | H | 1·008 |
| Iodine | I | 126·92 |
| Iron | Fe | 55·84 |
| Lead | Pb | 207·10 |
| Lithium | Li | 6·94 |
| Magnesium | Mg | 24·32 |
| Manganese | Mn | 54·93 |
| Mercury | Hg | 200·6 |
| Nitrogen | N | 14·01 |
| Oxygen | O | 16·00 |
| Phosphorus | P | 31·04 |
| Platinum | Pt | 195·2 |
| Potassium | K | 39·10 |
| Silver | Ag | 107·88 |
| Sodium | Na | 23·00 |
| Strontium | Sr | 87·63 |
| Sulphur | S | 32·07 |
| Tin | Sn | 119·0 |
| Zinc | Zn | 65·37 |

## APPENDIX XV

### *WEIGHTS AND MEASURES OF THE BRITISH PHARMACOPŒIA*

### *METRIC SYSTEM*

#### Measures of Mass (Weights)

| | | | | |
|---|---|---|---|---|
| 1 Milligram | (Mg) | = the 1000th part of | 1 gramme | or 0·001 G |
| 1 Centigram | (Cg) | = the 100th ,, | ,, | or 0·01 G |
| 1 Decigram | (Dg) | = the 10th ,, | ,, | or 0·1 G |
| 1 Gramme | (G) | = the 1000th part of the Standard or International Kilogram (Kg) | | |

#### Measures of Capacity (Volumes)

| | | | | |
|---|---|---|---|---|
| 1 Centimil | (Cl) | = the vol. at 4° of | 1 centigram | of water |
| 1 Decimil | (Dl) | = ,, ,, | 1 decigram | of water |
| 1 Millilitre or Mil | (Ml) | = ,, ,, | 1 gramme | of water |
| 1 Litre | (Lit) | = ,, ,, | 1 kilogram | of water |

#### Measures of Length

| | | | | |
|---|---|---|---|---|
| 1 Micron | ($\mu$) | = the 1000th part of | 1 millimetre | or 0·001 mm |
| 1 Millimetre | (mm) | = the 1000th part of | 1 metre | or 0·001 m |
| 1 Centimetre | (cm) | = the 100th ,, | ,, | or 0·01 m |
| 1 Decimetre | (dm) | = the 10th ,, | ,, | or 0·1 m |
| 1 Metre | (m) | | | 1·0 m |

### *IMPERIAL SYSTEM*

#### Measures of Mass (Weights)

| | | | |
|---|---|---|---|
| 1 Grain | (gr.) | | |
| 1 Ounce (Avoir.) | (oz.) | = | 437·5 grains |
| 1 Pound (Avoir.) | (lb.) | = | 7000·0 grains |

#### Measures of Capacity (Volumes)

| | | | |
|---|---|---|---|
| 1 Minim | (min.) | | |
| 1 Fluid Drachm | (fl. dr.) | = | 60 min. |
| 1 Fluid Ounce | (fl. oz.) | = | 8 fl. dr. |
| 1 Pint | (O.) | = | 20 fl. oz. |

### Relation of Capacity to Mass (Imperial)

1 Minim = the vol. at 16·7° (62° F.) of 0·9114583 gr. of water

1 Fluid Drachm = the vol. at 16·7° (62° F.) of 54·6875 gr. of water

1 Fluid Ounce = the vol. at 16·7° (62° F.) of 1 oz. or 437·5 gr. of water

109·7143 Minims[1] = the vol. at 16·7° (62° F.) of 100 gr. of water

### Relations of Metric and Imperial Measures

*Mass*

| | | | |
|---|---|---|---|
| 1 Milligram | (Mg) | = | 0·015 grain nearly |
| 1 Centigram | (Cg) | = | 0·154 grain nearly |
| 1 Decigram | (Dg) | = | 1·543 grains nearly |
| 1 Gramme | (G) | = | 15·4323564 grains |
| 1 Kilogram | (Kg) | = | 15432·3564 grains, or 35·274 ounces nearly, or 2·2046 pounds nearly |

| | | | |
|---|---|---|---|
| 1 Grain | (gr.) | = | 0·0648 gramme nearly |
| 1 Ounce (Avoir.) | (oz.) | = | 28·350 grammes nearly |
| 1 Pound (Avoir.) | (lb.) | = | 453·59 grammes nearly |

*Capacity*

| | | | |
|---|---|---|---|
| 1 Centimil | (Cl) | = | 0·169 minim nearly |
| 1 Decimil | (Dl) | = | 1·69 minims nearly |
| 1 Millilitre or Mil | (Ml) | = | 16·9 minims nearly |
| 1 Litre | (Lit) | = | 1·75980 pints, or 35·196 fluid ounces nearly |

| | | | |
|---|---|---|---|
| 1 Minim | (min.) | = | 0·0592 mil nearly |
| 1 Fluid Drachm | (fl. dr.) | = | 3·5515 mils nearly |
| 1 Fluid Ounce | (fl. oz.) | = | 28·4123 mils nearly |
| 1 Pint | (O.) | = | 568·2454 mils nearly, or 0·5682 litre nearly |

*Length*

| | | | |
|---|---|---|---|
| 1 Micron | (μ) | = | 0·00003937 inch |
| 1 Millimetre | (mm) | = | 0·039370 inch |
| 1 Centimetre | (cm) | = | 0·39370 inch |
| 1 Decimetre | (dm) | = | 3·9370 inches |
| 1 Metre | (m) | = | 39·370113 inches |

| | | | |
|---|---|---|---|
| 1 Inch | (in.) | = | 25·3999 millimetres |

[1] Taken as 110 minims throughout the Pharmacopœia.

## APPENDIX XVI

### *TABLE OF APPROXIMATE EQUIVALENCES ADOPTED IN STATING DOSES (IMPERIAL AND METRIC) IN THE BRITISH PHARMACOPŒIA*

### WEIGHTS

| *Imperial* Grains | *Metric* Milligrams |
|---|---|
| 1/200 | 0·3 |
| 1/100 | 0·6 |
| 1/64 | 1 |
| 1/40 | 1·5 |
| 1/32 | 2 |
| 1/25 | 2·5 |
| 1/20 | 3 |
| 1/16 | 4 |
| 1/10 | 6 |
| 1/8 | 8 |
| 1/5 | 12 |
| 1/4 | 16 |
| 1/2 | 30 |
| **Grains** | **Centigrams** |
| 1 | 6 |
| 2 | 12 |
| 3 | 20 |
| 4 | 25 |
| 5 | 30 |
| 8 | 50 |
| 10 | 60 |

| *Imperial* Grains | *Metric* Decigrams |
|---|---|
| 3 | 2 |
| 5 | 3 |
| 8 | 5 |
| 10 | 6 |
| 15 | 10 |
| 20 | 12 |
| 30 | 20 |
| 60 | 40 |
| **Grains** | **Grammes** |
| 15 | 1 |
| 30 | 2 |
| 45 | 3 |
| 60 | 4 |
| 120 | 8 |
| 150 | 10 |
| 180 | 12 |
| 240 | 16 |
| 480 | 32 |

### VOLUMES

| Minims | Centimils |
|---|---|
| 1/2 | 3 |
| 1 | 6 |
| 2 | 12 |
| 3 | 18 |
| 5 | 30 |
| 8 | 50 |
| **Minims** | **Decimils** |
| 5 | 3 |
| 10 | 6 |
| 15 | 10 |
| 20 | 12 |
| 30 | 18 |
| 60 | 36 |

| Minims | Mils |
|---|---|
| 15 | 1 |
| 30 | 2 |
| 45 | 3 |
| 60 | 4 |
| 90 | 6 |
| **Fluid drachms** | **Mils** |
| 1/2 | 2 |
| 1 | 4 |
| 2 | 8 |
| 6 | 24 |
| **Fluid ounces** | **Mils** |
| 1/2 | 15 |
| 1 | 30 |
| 2 | 60 |
| 4 | 120 |

## APPENDIX XVII

### *ABBREVIATED LATIN NAMES OF OFFICIAL DRUGS AND PREPARATIONS ADOPTED IN THE INDEX OF THE BRITISH PHARMACOPŒIA*

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Acac. Cort. | Acaciæ Cortex |
| Acac. Gum. | Acaciæ Gummi |
| Acet. Cantharidin. | Acetum Cantharidini |
| Acet. Scill. | Acetum Scillæ |
| Acet. Urgin. | Acetum Urgineæ |
| Acid. Acet. | Acidum Aceticum |
| Acid. Acet. Dil. | Acidum Aceticum Dilutum |
| Acid. Acet. Glac. | Acidum Aceticum Glaciale |
| Acid. Acetylsal. | Acidum Acetylsalicylicum |
| Acid. Arsen. | Acidum Arseniosum |
| Acid. Benz. | Acidum Benzoicum |
| Acid. Bor. | Acidum Boricum |
| Acid. Carbol. | Acidum Carbolicum |
| Acid. Carbol. Liq. | Acidum Carbolicum Liquefactum |
| Acid. Chrom. | Acidum Chromicum |
| Acid. Cit. | Acidum Citricum |
| Acid. Hydriod. Dil. | Acidum Hydriodicum Dilutum |
| Acid. Hydrobrom. Dil. | Acidum Hydrobromicum Dilutum |
| Acid. Hydrochl. | Acidum Hydrochloricum |
| Acid. Hydrochl. Dil. | Acidum Hydrochloricum Dilutum |
| Acid. Hydrocyan. Dil. | Acidum Hydrocyanicum Dilutum |
| Acid. Lact. | Acidum Lacticum |
| Acid. Nit. | Acidum Nitricum |
| Acid. Nit. Dil. | Acidum Nitricum Dilutum |
| Acid. Nitro-hydrochl. Dil. | Acidum Nitro-Hydrochloricum Dilutum |
| Acid. Oleic. | Acidum Oleicum |
| Acid. Phosph. Conc. | Acidum Phosphoricum Concentratum |
| Acid. Phosph. Dil. | Acidum Phosphoricum Dilutum |
| Acid. Picr. | Acidum Picricum |
| Acid. Salicyl. | Acidum Salicylicum |
| Acid. Sulph. | Acidum Sulphuricum |
| Acid. Sulph. Aromat. | Acidum Sulphuricum Aromaticum |
| Acid. Sulph. Dil. | Acidum Sulphuricum Dilutum |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Acid. Sulphuros. . . | Acidum Sulphurosum |
| Acid. Tann. . . . | Acidum Tannicum |
| Acid. Tart. . . . | Acidum Tartaricum |
| Acon. Rad. . . . | Aconiti Radix |
| Aconitin. . . . | Aconitina |
| Adeps Benz. . . . | Adeps Benzoatus |
| Adeps Lanæ Hydr. . | Adeps Lanæ Hydrosus |
| Adeps Præp. . . . | Adeps Præparatus |
| Adrenal. . . . | Adrenalinum |
| Æth. . . . . | Æther |
| Æth. Acet. . . . | Æther Aceticus |
| Æth. Pur. . . . | Æther Purificatus |
| Agropyr. . . . | Agropyrum |
| Alcoh. Absol. . . | Alcohol Absolutum |
| Alston. . . . | Alstonia |
| Alum. Exsic. . . | Alumen Exsiccatum |
| Alum. Pur. . . . | Alumen Purificatum |
| Ammoniac. . . . | Ammoniacum |
| Ammon. Benz. . . | Ammonii Benzoas |
| Ammon. Brom. . . | Ammonii Bromidum |
| Ammon. Carb. . . | Ammonii Carbonas |
| Ammon. Chlor. . . | Ammonii Chloridum |
| Amygd. Amar. . . | Amygdala Amara |
| Amygd. Dulc. . . | Amygdala Dulcis |
| Aneth. Fruct. . . | Anethi Fructus |
| Anis. Fruct. . . . | Anisi Fructus |
| Anthem. Flor. . . | Anthemidis Flores |
| Antim. Oxid. . . | Antimonii Oxidum |
| Antim. Sulphur. . . | Antimonium Sulphuratum |
| Antim. Tart. . . | Antimonium Tartaratum |
| Apomorph. Hydrochl. . | Apomorphinæ Hydrochloridum |
| Aq. Aneth. . . . | Aqua Anethi |
| Aq. Anis. . . . | Aqua Anisi |
| Aq. Aurant. Flor. . . | Aqua Aurantii Floris |
| Aq. Camph. . . . | Aqua Camphoræ |
| Aq. Carui . . . | Aqua Carui |
| Aq. Chlorof. . . . | Aqua Chloroformi |
| Aq. Cinnam. . . . | Aqua Cinnamomi |
| Aq. Dest. . . . | Aqua Destillata |
| Aq. Fœnic. . . . | Aqua Fœniculi |
| Aq. Laurocer. . . | Aqua Laurocerasi |
| Aq. Menth. Pip. . . | Aqua Menthæ Piperitæ |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Aq. Menth. Vir. | Aqua Menthæ Viridis |
| Aq. Ros. | Aqua Rosæ |
| Ararob. | Araroba |
| Argent. Nit. | Argenti Nitras |
| Argent. Nit. Indur. | Argenti Nitras Induratus |
| Argent. Nit. Mitig. | Argenti Nitras Mitigatus |
| Armor. Rad. | Armoraciæ Radix |
| Arnic. Flor. | Arnicæ Flores |
| Arsen. Iod. | Arsenii Iodidum |
| Asafet. | Asafetida |
| Atrop. | Atropina |
| Atrop. Sulph. | Atropinæ Sulphas |
| Aurant. Cort. Ind. | Aurantii Cortex Indicus |
| Aurant. Cort. Rec. | Aurantii Cortex Recens |
| Aurant. Cort. Sicc. | Aurantii Cortex Siccatus |
| Bals. Peruv. | Balsamum Peruvianum |
| Bals. Tolut. | Balsamum Tolutanum |
| Belæ Fruct. | Belæ Fructus |
| Bellad. Fol. | Belladonnæ Folia |
| Bellad. Rad. | Belladonnæ Radix |
| Benzamin. Lact. | Benzaminæ Lactas |
| Benzoin. | Benzoinum |
| Berber. | Berberis |
| Bism. Carb. | Bismuthi Carbonas |
| Bism. Salicyl. | Bismuthi Salicylas |
| Bism. Subnit. | Bismuthi Subnitras |
| Borax Pur. | Borax Purificatus |
| Buchu Fol. | Buchu Folia |
| Buteæ Gum. | Buteæ Gummi |
| Buteæ Sem. | Buteæ Semina |
| Butyl-Chloral Hydr. | Butyl-Chloral Hydras |
| Caffein. | Caffeina |
| Caffein. Cit. | Caffeinæ Citras |
| Caffein. Cit. Eff. | Caffeinæ Citras Effervescens |
| Calc. Carb. Præc. | Calcii Carbonas Præcipitatus |
| Calc. Chlor. | Calcii Chloridum |
| Calc. Hydr. | Calcii Hydras |
| Calc. Hypophosph. | Calcii Hypophosphis |
| Calc. Lact. | Calcii Lactas |
| Calc. Phosph. | Calcii Phosphas |
| Calumb. Rad. | Calumbæ Radix |
| Calx Chlorin. | Calx Chlorinata |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Calx Sulphur. | Calx Sulphurata |
| Camph. | Camphora |
| Cannab. Ind. | Cannabis Indica |
| Cantharidin. | Cantharidinum |
| Capsic. Fruct. | Capsici Fructus |
| Carbo Lign. | Carbo Ligni |
| Carbon. Disulph. | Carbonis Disulphidum |
| Cardam. Sem. | Cardamomi Semina |
| Carui Fruct. | Carui Fructus |
| Caryoph. | Caryophyllum |
| Casc. Sagr. | Cascara Sagrada |
| Cascarill. | Cascarilla |
| Cass. Fruct. | Cassiæ Fructus |
| Cass. Pulp. | Cassiæ Pulpa |
| Catech. | Catechu |
| Catech. Nigr. | Catechu Nigrum |
| Cera Alb. | Cera Alba |
| Cera Flav. | Cera Flava |
| Cetac. | Cetaceum |
| Chirat. | Chirata |
| Chloral Formam. | Chloral Formamidum |
| Chloral Hydr. | Chloral Hydras |
| Chlorof. | Chloroformum |
| Chrysarob. | Chrysarobinum |
| Cinch. Rubr. Cort. | Cinchonæ Rubræ Cortex |
| Cinnam. Cort. | Cinnamomi Cortex |
| Cocain. | Cocaina |
| Cocain. Hydrochl. | Cocainæ Hydrochloridum |
| Cocc. | Coccus |
| Codein. | Codeina |
| Codein. Phosph. | Codeinæ Phosphas |
| Colch. Corm. | Colchici Cormus |
| Colch. Sem. | Colchici Semina |
| Collod. | Collodium |
| Collod. Flex. | Collodium Flexile |
| Collod. Vesic. | Collodium Vesicans |
| Colocyn. Pulp. | Colocynthidis Pulpa |
| Conf. Piper. | Confectio Piperis |
| Conf. Ros. Gall. | Confectio Rosæ Gallicæ |
| Conf. Senn. | Confectio Sennæ |
| Conf. Sulphur. | Confectio Sulphuris |
| Copaib. | Copaiba |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Coriand. Fruct. . . | Coriandri Fructus |
| Creosot. . . . | Creosotum |
| Cret. Præp. . . . | Creta Præparata |
| Cubeb. Fruct. . . | Cubebæ Fructus |
| Cucurb. Sem. Præp. . | Cucurbitæ Semina Præparata |
| Cupr. Sulph.. . . | Cupri Sulphas |
| Datur. Fol. . . . | Daturæ Folia |
| Datur. Sem. . . . | Daturæ Semina |
| Dec. Acac. Cort. . . | Decoctum Acaciæ Corticis |
| Dec. Agropyr. . . | Decoctum Agropyri |
| Dec. Aloes Co. . . | Decoctum Aloes Compositum |
| Dec. Gossyp. Rad. Cort.. | Decoctum Gossypii Radicis Corticis |
| Dec. Hæmatox. . . | Decoctum Hæmatoxyli |
| Dec. Ispagh. . . . | Decoctum Ispaghulæ |
| Dec. Sappan . . . | Decoctum Sappan |
| Diamorph. Hydrochl. . | Diamorphinæ Hydrochloridum |
| Digit. Fol. . . . | Digitalis Folia |
| Embel. . . . | Embelia |
| Emp. Bellad.. . . | Emplastrum Belladonnæ |
| Emp. Calefac. . . | Emplastrum Calefaciens |
| Emp. Cantharidin.. . | Emplastrum Cantharidini |
| Emp. Hydrarg. . . | Emplastrum Hydrargyri |
| Emp. Menth.. . . | Emplastrum Menthol |
| Emp. Plumb. . . | Emplastrum Plumbi |
| Emp. Res. . . . | Emplastrum Resinæ |
| Emp. Sap. . . . | Emplastrum Saponis |
| Ergot. . . . . | Ergota |
| Ethyl Chlor. . . . | Ethyl Chloridum |
| Euonym. Cort. . . | Euonymi Cortex |
| Ext. Agropyr. Liq.. . | Extractum Agropyri Liquidum |
| Ext. Aloes . . . | Extractum Aloes |
| Ext. Belæ Liq. . . | Extractum Belæ Liquidum |
| Ext. Bellad. Liq. . . | Extractum Belladonnæ Liquidum |
| Ext. Bellad. Sicc. . . | Extractum Belladonnæ Siccum |
| Ext. Cannab. Ind. . . | Extractum Cannabis Indicæ |
| Ext. Casc. Sagr. Liq. . | Extractum Cascaræ Sagradæ Liquidum |
| Ext. Casc. Sagr. Sicc. . | Extractum Cascaræ Sagradæ Siccum |
| Ext. Cinch. Liq. . . | Extractum Cinchonæ Liquidum |
| Ext. Colch. . . . | Extractum Colchici |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Ext. Coloc. Co. | Extractum Colocynthidis Compositum |
| Ext. Ergot. | Extractum Ergotæ |
| Ext. Ergot. Liq. | Extractum Ergotæ Liquidum |
| Ext. Euonym. | Extractum Euonymi |
| Ext. Filic. Liq. | Extractum Filicis Liquidum |
| Ext. Gent. | Extractum Gentianæ |
| Ext. Glycyrrh. | Extractum Glycyrrhizæ |
| Ext. Glycyrrh. Liq. | Extractum Glycyrrhizæ Liquidum |
| Ext. Gossyp. Rad. Cort. Liq. | Extractum Gossypii Radicis Corticis Liquidum |
| Ext. Grindel. Liq. | Extractum Grindeliæ Liquidum |
| Ext. Hamam. Liq. | Extractum Hamamelidis Liquidum |
| Ext. Hydrast. Liq. | Extractum Hydrastis Liquidum |
| Ext. Hyoscy. | Extractum Hyoscyami |
| Ext. Ipecac. Liq. | Extractum Ipecacuanhæ Liquidum |
| Ext. Kavae Liq. | Extractum Kavæ Liquidum |
| Ext. Kramer. | Extractum Krameriæ |
| Ext. Nuc. Vom. Liq. | Extractum Nucis Vomicæ Liquidum |
| Ext. Nuc. Vom. Sicc. | Extractum Nucis Vomicæ Siccum |
| Ext. Opii Liq. | Extractum Opii Liquidum |
| Ext. Opii Sicc. | Extractum Opii Siccum |
| Ext. Picrorh. Liq. | Extractum Picrorhizæ Liquidum |
| Ext. Rhei | Extractum Rhei |
| Ext. Strophanth. | Extractum Strophanthi |
| Ext. Tarax. | Extractum Taraxaci |
| Ext. Viburn. Liq. | Extractum Viburni Liquidum |
| Fel Bov. Pur. | Fel Bovinum Purificatum |
| Ferr. Carb. Sacch. | Ferri Carbonas Saccharatus |
| Ferr. et Ammon. Cit. | Ferri et Ammonii Citras |
| Ferr. et Pot. Tart. | Ferri et Potassii Tartras |
| Ferr. et Quin. Cit. | Ferri et Quininæ Citras |
| Ferr. Phosph. Sacch. | Ferri Phosphas Saccharatus |
| Ferr. Sulph. | Ferri Sulphas |
| Ferr. Sulph. Exsic. | Ferri Sulphas Exsiccatus |
| Ferr. | Ferrum |
| Ferr. Redact. | Ferrum Redactum |
| Fœnic. Fruct. | Fœniculi Fructus |
| Gall. | Galla |
| Gelsem. Rad. | Gelsemii Radix |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Gent. Rad. | Gentianæ Radix |
| Glucos. | Glucosum |
| Glycer. | Glycerinum |
| Glycer. Acid. Bor. | Glycerinum Acidi Borici |
| Glycer. Acid. Carbol. | Glycerinum Acidi Carbolici |
| Glycer. Acid. Tann. | Glycerinum Acidi Tannici |
| Glycer. Alum. | Glycerinum Aluminis |
| Glycer. Amyli | Glycerinum Amyli |
| Glycer. Borac. | Glycerinum Boracis |
| Glycer. Pepsin. | Glycerinum Pepsini |
| Glycer. Plumb. Subacet. | Glycerinum Plumbi Subacetatis |
| Glycer. Trag. | Glycerinum Tragacanthæ |
| Glycyrrh. Rad. | Glycyrrhizæ Radix |
| Gossyp. Rad. Cort. | Gossypii Radicis Cortex |
| Gossyp. | Gossypium |
| Grindel. | Grindelia |
| Guaiac. Lign. | Guaiaci Lignum |
| Guaiac. Res. | Guaiaci Resina |
| Guaiacol Carb. | Guaiacol Carbonas |
| Gum. Ind. | Gummi Indicum |
| Hæmatox. Lign. | Hæmatoxyli Lignum |
| Hamam. Cort. | Hamamelidis Cortex |
| Hamam. Fol. | Hamamelidis Folia |
| Homatrop. Hydrobrom. | Homatropinæ Hydrobromidum |
| Hydrarg. Iod. Rubr. | Hydrargyri Iodidum Rubrum |
| Hydrarg. Oxid. Flav. | Hydrargyri Oxidum Flavum |
| Hydrarg. Oxid. Rubr. | Hydrargyri Oxidum Rubrum |
| Hydrarg. Perchlor. | Hydrargyri Perchloridum |
| Hydrarg. Subchlor. | Hydrargyri Subchloridum |
| Hydrarg. | Hydrargyrum |
| Hydrarg. Ammon. | Hydrargyrum Ammoniatum |
| Hydrarg. c. Cret. | Hydrargyrum cum Creta |
| Hydrarg. Oleat. | Hydrargyrum Oleatum |
| Hydrast. Rhiz. | Hydrastis Rhizoma |
| Hyoscin. Hydrobrom. | Hyoscinæ Hydrobromidum |
| Hyoscy. Fol. | Hyoscyami Folia |
| Hyoscyamin. Sulph. | Hyoscyaminæ Sulphas |
| Inf. Alston. | Infusum Alstoniæ |
| Inf. Aurant. | Infusum Aurantii |
| Inf. Aurant. Co. | Infusum Aurantii Compositum |
| Inf. Buchu | Infusum Buchu |
| Inf. Calumb. | Infusum Calumbæ |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Inf. Caryoph. | Infusum Caryophylli |
| Inf. Cascarill. | Infusum Cascarillæ |
| Inf. Chirat. | Infusum Chiratæ |
| Inf. Cinch. Acid. | Infusum Cinchonæ Acidum |
| Inf. Digit. | Infusum Digitalis |
| Inf. Ergot. | Infusum Ergotæ |
| Inf. Gent. Co. | Infusum Gentianæ Compositum |
| Inf. Kramer. | Infusum Krameriæ |
| Inf. Quass. | Infusum Quassiæ |
| Inf. Rhei | Infusum Rhei |
| Inf. Ros. Acid. | Infusum Rosæ Acidum |
| Inf. Scopar. | Infusum Scoparii |
| Inf. Seneg. | Infusum Senegæ |
| Inf. Senn. | Infusum Sennæ |
| Inf. Uv. Urs. | Infusum Uvæ Ursi |
| Inject. Apomorph. Hyp. | Injectio Apomorphinæ Hypodermica |
| Inject. Cocain. Hyp. | Injectio Cocainæ Hypodermica |
| Inject. Ergot. Hyp. | Injectio Ergotæ Hypodermica |
| Inject. Morph. Hyp. | Injectio Morphinæ Hypodermica |
| Inject. Strych. Hyp. | Injectio Strychninæ Hypodermica |
| Iodof. | Iodoformum |
| Ipecac. Rad. | Ipecacuanhæ Radix |
| Ipom. Rad. | Ipomœæ Radix |
| Ispagh. | Ispaghula |
| Jalap. | Jalapa |
| Jalap. Res. | Jalapæ Resinæ |
| Kalad. | Kaladana |
| Kalad. Res. | Kaladanæ Resina |
| Kavæ Rhiz. | Kavæ Rhizoma |
| Kino Eucalyp. | Kino Eucalypti |
| Kramer. Rad. | Krameriæ Radix |
| Lam. Atrop. | Lamellæ Atropinæ |
| Lam. Cocain. | Lamellæ Cocainæ |
| Lam. Homatrop. | Lamellæ Homatropinæ |
| Lam. Physostig. | Lamellæ Physostigminæ |
| Laurocer. Fol. | Laurocerasi Folia |
| Limon. Cort. | Limonis Cortex |
| Lini Sem. | Lini Semina |
| Lini Sem. Contus. | Lini Semina Contusa |
| Lin. Acon. | Linimentum Aconiti |
| Lin. Ammon. | Linimentum Ammoniæ |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Lin. Bellad. | Linimentum Belladonnæ |
| Lin. Calc. | Linimentum Calcis |
| Lin. Camph. | Linimentum Camphoræ |
| Lin. Camph. Ammon. | Linimentum Camphoræ Ammoniatum |
| Lin. Chlorof. | Linimentum Chloroformi |
| Lin. Croton. | Linimentum Crotonis |
| Lin. Hydrarg. | Linimentum Hydrargyri |
| Lin. Opii | Linimentum Opii |
| Lin. Pot. Iod. c. Sap. | Linimentum Potassii Iodidi cum Sapone |
| Lin. Sap. | Linimentum Saponis |
| Lin. Sinap. | Linimentum Sinapis |
| Lin. Tereb. | Linimentum Terebinthinæ |
| Lin. Tereb. Acet. | Linimentum Terebinthinæ Aceticum |
| Liq. Acid. Chrom. | Liquor Acidi Chromici |
| Liq. Adrenal. Hydrochl. | Liquor Adrenalini Hydrochloricus |
| Liq. Ammon. | Liquor Ammoniæ |
| Liq. Ammon. Fort. | Liquor Ammoniæ Fortis |
| Liq. Ammon. Acet. | Liquor Ammonii Acetatis |
| Liq. Ammon. Cit. | Liquor Ammonii Citratis |
| Liq. Arsen. | Liquor Arsenicalis |
| Liq. Arsen. Hydrochl. | Liquor Arsenici Hydrochloricus |
| Liq. Arsen. et Hydrarg. Iod. | Liquor Arsenii et Hydrargyri Iodidi |
| Liq. Atrop. Sulph. | Liquor Atropinæ Sulphatis |
| Liq. Bism. et Ammon. Cit. | Liquor Bismuthi et Ammonii Citratis |
| Liq. Calcis | Liquor Calcis |
| Liq. Calcis Chlorin. | Liquor Calcis Chlorinatæ |
| Liq. Calcis Sacch. | Liquor Calcis Saccharatus |
| Liq. Cresol Sap. | Liquor Cresol Saponatus |
| Liq. Epispast. | Liquor Epispasticus |
| Liq. Ethyl Nitrit. | Liquor Ethyl Nitritis |
| Liq. Ferr. Perchlor. | Liquor Ferri Perchloridi |
| Liq. Ferr. Perchlor. Fort. | Liquor Ferri Perchloridi Fortis |
| Liq. Ferr. Persulph. | Liquor Ferri Persulphatis |
| Liq. Formaldehyd. | Liquor Formaldehydi |
| Liq. Formaldehyd. Sap. | Liquor Formaldehydi Saponatus |
| Liq. Hamam. | Liquor Hamamelidis |
| Liq. Hydrarg. Nit. Acid. | Liquor Hydrargyri Nitratis Acidus |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Liq. Hydrarg. Perchlor. | Liquor Hydrargyri Perchloridi |
| Liq. Hydrog. Perox. | Liquor Hydrogenii Peroxidi |
| Liq. Mag. Bicarb. | Liquor Magnesii Bicarbonatis |
| Liq. Morph. Acet. | Liquor Morphinæ Acetatis |
| Liq. Morph. Hydrochl. | Liquor Morphinæ Hydrochloridi |
| Liq. Morph. Tart. | Liquor Morphinæ Tartratis |
| Liq. Pancreat. | Liquor Pancreatis |
| Liq. Pic. Carbon. | Liquor Picis Carbonis |
| Liq. Plumbi Subacet. Dil. | Liquor Plumbi Subacetatis Dilutus |
| Liq. Plumbi Subacet. Fort. | Liquor Plumbi Subacetatis Fortis |
| Liq. Potass. | Liquor Potassæ |
| Liq. Pot. Permang. | Liquor Potassii Permanganatis |
| Liq. Sodæ Chlorin. | Liquor Sodæ Chlorinatæ |
| Liq. Sod. Arsen. | Liquor Sodii Arsenatis |
| Liq. Strych. Hydrochl. | Liquor Strychninæ Hydrochloridi |
| Liq. Trinitrin. | Liquor Trinitrini |
| Liq. Zinc. Chlor. | Liquor Zinci Chloridi |
| Lith. Carb. | Lithii Carbonas |
| Lith. Cit. | Lithii Citras |
| Lith. Cit. Eff. | Lithii Citras Effervescens |
| Lobel. | Lobelia |
| Lot. Hydrarg. Flav. | Lotio Hydrargyri Flava |
| Lot. Hydrarg. Nigr. | Lotio Hydrargyri Nigra |
| Mag. Lev. | Magnesia Levis |
| Mag. Pond. | Magnesia Ponderosa |
| Mag. Carb. Lev. | Magnesii Carbonas Levis |
| Mag. Carb. Pond. | Magnesii Carbonas Ponderosus |
| Mag. Sulph. | Magnesii Sulphas |
| Mag. Sulph. Eff. | Magnesii Sulphas Effervescens |
| Mel Borac. | Mel Boracis |
| Mel Depur. | Mel Depuratum |
| Mist. Ammoniac. | Mistura Ammoniaci |
| Mist. Amygd. | Mistura Amygdalæ |
| Mist. Cret. | Mistura Cretæ |
| Mist. Ferr. Co. | Mistura Ferri Composita |
| Mist. Guaiac. | Mistura Guaiaci |
| Mist. Ol. Ricin. | Mistura Olei Ricini |
| Mist. Senn. Co. | Mistura Sennæ Composita |
| Morph. Acet. | Morphinæ Acetas |
| Morph. Hydrochl. | Morphinæ Hydrochloridum |
| Morph. Tart. | Morphinæ Tartras |
| Mucil. Acac. | Mucilago Acaciæ |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Mucil. Gum. Ind. | Mucilago Gummi Indici |
| Mucil. Trag. | Mucilago Tragacanthæ |
| Myrist. | Myristica |
| Myrobal. | Myrobalanum |
| Myrrh. | Myrrha |
| Nux Vom. | Nux Vomica |
| Ol. Abiet. | Oleum Abietis |
| Ol. Ajowan | Oleum Ajowan |
| Ol. Amygd. | Oleum Amygdalæ |
| Ol. Aneth. | Oleum Anethi |
| Ol. Anis. | Oleum Anisi |
| Ol. Anthem. | Oleum Anthemidis |
| Ol. Arach. | Oleum Arachis |
| Ol. Cadin. | Oleum Cadinum |
| Ol. Cajup. | Oleum Cajuputi |
| Ol. Carui | Oleum Carui |
| Ol. Caryoph. | Oleum Caryophylli |
| Ol. Chaulmoog. | Oleum Chaulmoogræ |
| Ol. Cinnam. | Oleum Cinnamomi |
| Ol. Copaib. | Oleum Copaibæ |
| Ol. Coriand. | Oleum Coriandri |
| Ol. Croton. | Oleum Crotonis |
| Ol. Cubeb. | Oleum Cubebæ |
| Ol. Eucalyp. | Oleum Eucalypti |
| Ol. Gaulth. | Oleum Gaultheriæ |
| Ol. Gram. Citrat. | Oleum Graminis Citrati |
| Ol. Junip. | Oleum Juniperi |
| Ol. Lavand. | Oleum Lavandulæ |
| Ol. Limon. | Oleum Limonis |
| Ol. Lini | Oleum Lini |
| Ol. Menth. Pip. | Oleum Menthæ Piperitæ |
| Ol. Menth. Vir. | Oleum Menthæ Viridis |
| Ol. Morrh. | Oleum Morrhuæ |
| Ol. Myrist. | Oleum Myristicæ |
| Ol. Oliv. | Oleum Olivæ |
| Ol. Phosphor. | Oleum Phosphoratum |
| Ol. Ricin. | Oleum Ricini |
| Ol. Ros. | Oleum Rosæ |
| Ol. Rosmarin. | Oleum Rosmarini |
| Ol. Santal. | Oleum Santali |
| Ol. Sesam. | Oleum Sesami |
| Ol. Sinap. Vol. | Oleum Sinapis Volatile |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Ol. Tereb. Rectif. . . | Oleum Terebinthinæ Rectificatum |
| Ol. Theobrom. . . | Oleum Theobromatis |
| Oliver. Cort. . . . | Oliveri Cortex |
| Oxymel Scill. . . | Oxymel Scillæ |
| Oxymel Urgin. . . | Oxymel Urgineæ |
| Paraff. Dur. . . . | Paraffinum Durum |
| Paraff. Liq. . . . | Paraffinum Liquidum |
| Paraff. Moll. . . . | Paraffinum Molle |
| Pellet. Tann. . . | Pelletierinæ Tannas |
| Pepsin. . . . | Pepsinum |
| Phenacet. . . . | Phenacetinum |
| Phosphor. . . . | Phosphorus |
| Physostig. Sulph. . . | Physostigminæ Sulphas |
| Picrorh. . . . | Picrorhiza |
| Pilocarp. Nit. . . | Pilocarpinæ Nitras |
| Pil. Aloes . . . | Pilula Aloes |
| Pil. Aloes et Asafet. . | Pilula Aloes et Asafetidæ |
| Pil. Aloes et Ferr. . . | Pilula Aloes et Ferri |
| Pil. Aloes et Myrrh. . | Pilula Aloes et Myrrhæ |
| Pil. Colocyn. Co. . . | Pilula Colocynthidis Composita |
| Pil. Colocyn. et Hyoscy. . | Pilula Colocynthidis et Hyoscyami |
| Pil. Ferr. . . . | Pilula Ferri |
| Pil. Hydrarg. . . | Pilula Hydrargyri |
| Pil. Hydrarg. Subchlor. Co. | Pilula Hydrargyri Subchloridi Composita |
| Pil. Ipecac. c. Scill. . | Pilula Ipecacuanhæ cum Scilla |
| Pil. Ipecac. c. Urgin. . | Pilula Ipecacuanhæ cum Urginea |
| Pil. Phosphor. . . | Pilula Phosphori |
| Pil. Plumb. c. Opio . | Pilula Plumbi cum Opio |
| Pil. Quin. Sulph. . . | Pilula Quininæ Sulphatis |
| Pil. Rhei Co. . . | Pilula Rhei Composita |
| Pil. Sap. Co. . . . | Pilula Saponis Composita |
| Pil. Scill. Co. . . | Pilula Scillæ Composita |
| Pil. Urgin. Co. . . | Pilula Urgineæ Composita |
| Pix Carbon. Præp. . . | Pix Carbonis Præparata |
| Pix Liq. . . . | Pix Liquida |
| Plumb. Acet. . . | Plumbi Acetas |
| Plumb. Iod. . . . | Plumbi Iodidum |
| Plumb. Oxid. . . | Plumbi Oxidum |
| Podoph. Ind. Res. . . | Podophylli Indici Resina |
| Podoph. Ind. Rhiz. . | Podophylli Indici Rhizoma |
| Podoph. Res. . . | Podophylli Resina |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Podoph. Rhiz. | Podophylli Rhizoma |
| Potass. Caust. | Potassa Caustica |
| Potass. Sulphur. | Potassa Sulphurata |
| Pot. Acet. | Potassii Acetas |
| Pot. Bicarb. | Potassii Bicarbonas |
| Pot. Bichrom. | Potassii Bichromas |
| Pot. Brom. | Potassii Bromidum |
| Pot. Carb. | Potassii Carbonas |
| Pot. Chloras | Potassii Chloras |
| Pot. Cit. | Potassii Citras |
| Pot. Iod. | Potassii Iodidum |
| Pot. Nit. | Potassii Nitras |
| Pot. Permang. | Potassii Permanganas |
| Pot. Sulph. | Potassii Sulphas |
| Pot. Tart. | Potassii Tartras |
| Pot. Tart. Acid. | Potassii Tartras Acidus |
| Prun. Virgin. Cort. | Pruni Virginianæ Cortex |
| Pterocarp. Lign. | Pterocarpi Lignum |
| Pulv. Amygd. Co. | Pulvis Amygdalæ Compositus |
| Pulv. Antim. | Pulvis Antimonialis |
| Pulv. Buteæ Sem. | Pulvis Buteæ Seminum |
| Pulv. Catech. Co. | Pulvis Catechu Compositus |
| Pulv. Cinnam. Co. | Pulvis Cinnamomi Compositus |
| Pulv. Cret. Aromat. | Pulvis Cretæ Aromaticus |
| Pulv. Cret. Aromat. c. Opio | Pulvis Cretæ Aromaticus cum Opio |
| Pulv. Glycyrrh. Co. | Pulvis Glycyrrhizæ Compositus |
| Pulv. Ipecac. Co. | Pulvis Ipecacuanhæ Compositus |
| Pulv. Jalap. Co. | Pulvis Jalapæ Compositus |
| Pulv. Kalad. Co. | Pulvis Kaladanæ Compositus |
| Pulv. Kino Co. | Pulvis Kino Compositus |
| Pulv. Opii Co. | Pulvis Opii Compositus |
| Pulv. Rhei Co. | Pulvis Rhei Compositus |
| Pulv. Scammon. Co. | Pulvis Scammoniæ Compositus |
| Pulv. Sodæ Tart. Eff. | Pulvis Sodæ Tartaratæ Effervescens |
| Pulv. Trag. Co. | Pulvis Tragacanthæ Compositus |
| Pyreth. Rad. | Pyrethri Radix |
| Quass. Lign. | Quassiæ Lignum |
| Quill. Cort. | Quillaiæ Cortex |
| Quin. Hydrochl. | Quininæ Hydrochloridum |
| Quin. Hydrochl. Acid. | Quininæ Hydrochloridum Acidum |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Quin. Sulph. | Quininæ Sulphas |
| Res. | Resina |
| Rhei Rhiz. | Rhei Rhizoma |
| Rhœad. Pet. | Rhœados Petala |
| Ros. Gall. Pet. | Rosæ Gallicæ Petala |
| Sacch. Lact. | Saccharum Lactis |
| Sacch. Pur. | Saccharum Purificatum |
| Santonin. | Santoninum |
| Sap. Animal. | Sapo Animalis |
| Sap. Dur. | Sapo Durus |
| Sap. Moll. | Sapo Mollis |
| Scammon. Rad. | Scammoniæ Radix |
| Scammon. Res. | Scammoniæ Resina |
| Scill. | Scilla |
| Scopar. Cacum. | Scoparii Cacumina |
| Seneg. Rad. | Senegæ Radix |
| Senn. Fol. | Sennæ Folia |
| Senn. Fruct. | Sennæ Fructus |
| Serpent. Rhiz. | Serpentariæ Rhizoma |
| Sev. Benz. | Sevum Benzoatum |
| Sev. Præp. | Sevum Præparatum |
| Sod. Arsen. Anhydr. | Sodii Arsenas Anhydrosus |
| Sod. Benz. | Sodii Benzoas |
| Sod. Bicarb. | Sodii Bicarbonas |
| Sod. Brom. | Sodii Bromidum |
| Sod. Carb. | Sodii Carbonas |
| Sod. Carb. Exsic. | Sodii Carbonas Exsiccatus |
| Sod. Chlor. | Sodii Chloridum |
| Sod. Citro-Tart. Eff. | Sodii Citro-Tartras Effervescens |
| Sod. et Pot. Tart. | Sodii et Potassii Tartras |
| Sod. Hypophosph. | Sodii Hypophosphis |
| Sod. Iod. | Sodii Iodidum |
| Sod. Nitris | Sodii Nitris |
| Sod. Phosph. | Sodii Phosphas |
| Sod. Phosph. Acid. | Sodii Phosphas Acidus |
| Sod. Phosph. Eff. | Sodii Phosphas Effervescens |
| Sod. Salicyl. | Sodii Salicylas |
| Sod. Sulph. | Sodii Sulphas |
| Sod. Sulph. Eff. | Sodii Sulphas Effervescens |
| Sod. Sulphis | Sodii Sulphis |
| Sp. Æth. | Spiritus Ætheris |
| Sp. Æth. Nitros. | Spiritus Ætheris Nitrosi |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Sp. Ammon. Aromat. | Spiritus Ammoniæ Aromaticus |
| Sp. Ammon. Fet. | Spiritus Ammoniæ Fetidus |
| Sp. Anis. | Spiritus Anisi |
| Sp. Armor. Co. | Spiritus Armoraciæ Compositus |
| Sp. Cajup. | Spiritus Cajuputi |
| Sp. Camph. | Spiritus Camphoræ |
| Sp. Chlorof. | Spiritus Chloroformi |
| Sp. Cinnam. | Spiritus Cinnamomi |
| Sp. Junip. | Spiritus Juniperi |
| Sp. Lavand. | Spiritus Lavandulæ |
| Sp. Menth. Pip. | Spiritus Menthæ Piperitæ |
| Sp. Myrist. | Spiritus Myristicæ |
| Sp. Rectif. | Spiritus Rectificatus |
| Sp. Rosmarin. | Spiritus Rosmarini |
| Staphisag. Sem. | Staphisagriæ Semina |
| Stramon. Fol. | Stramonii Folia |
| Stront. Brom. | Strontii Bromidum |
| Strophanth. Sem. | Strophanthi Semina |
| Strych. | Strychnina |
| Strych. Hydrochl. | Strychninæ Hydrochloridum |
| Styrax Præp. | Styrax Præparatus |
| Succ. Limon.. | Succus Limonis |
| Succ. Scopar. | Succus Scoparii |
| Succ. Tarax. | Succus Taraxaci |
| Sulphur Præc. | Sulphur Præcipitatum |
| Sulphur Sublim. | Sulphur Sublimatum |
| Supp. Acid. Carbol. | Suppositoria Acidi Carbolici |
| Supp. Acid. Tann. | Suppositoria Acidi Tannici |
| Supp. Bellad. | Suppositoria Belladonnæ |
| Supp. Glycer. | Suppositoria Glycerini |
| Supp. Iodof. | Suppositoria Iodoformi |
| Supp. Morph. | Suppositoria Morphinæ |
| Supp. Plumb. Co. | Suppositoria Plumbi Composita |
| Syr. | Syrupus |
| Syr. Acid. Hydriod. | Syrupus Acidi Hydriodici |
| Syr. Aromat.. | Syrupus Aromaticus |
| Syr. Aurant. | Syrupus Aurantii |
| Syr. Aurant. Flor. | Syrupus Aurantii Floris |
| Syr. Calc. Lactophosph. | Syrupus Calcii Lactophosphatis |
| Syr. Casc. Aromat. | Syrupus Cascaræ Aromaticus |
| Syr. Chloral | Syrupus Chloral |
| Syr. Codein. Phosph. | Syrupus Codeinæ Phosphatis |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Syr. Ferr. Iod. | Syrupus Ferri Iodidi |
| Syr. Ferr. Phosph. | Syrupus Ferri Phosphatis |
| Syr. Ferr. Phosph. c. Quin. et Strych. | Syrupus Ferri Phosphatis cum Quinina et Strychnina |
| Syr. Glucos. | Syrupus Glucosi |
| Syr. Limon. | Syrupus Limonis |
| Syr. Prun. Virgin. | Syrupus Pruni Virginianæ |
| Syr. Rhei | Syrupus Rhei |
| Syr. Rhœad. | Syrupus Rhœados |
| Syr. Ros. | Syrupus Rosæ |
| Syr. Scill. | Syrupus Scillæ |
| Syr. Senn. | Syrupus Sennæ |
| Syr. Tolut. | Syrupus Tolutanus |
| Syr. Urgin. | Syrupus Urgineæ |
| Syr. Zingib. | Syrupus Zingiberis |
| Tab. Trinitrin. | Tabellæ Trinitrini |
| Tarax. Rad. | Taraxaci Radix |
| Tereb. Canad. | Terebinthina Canadensis |
| Theobrom. et Sod. Salicyl. | Theobrominæ et Sodii Salicylas |
| Thyroid. Sicc. | Thyroideum Siccum |
| Tr. Acon. | Tinctura Aconiti |
| Tr. Alston. | Tinctura Alstoniæ |
| Tr. Arnic. Flor. | Tinctura Arnicæ Florum |
| Tr. Asafet. | Tinctura Asafetidæ |
| Tr. Aurant. | Tinctura Aurantii |
| Tr. Bellad. | Tinctura Belladonnæ |
| Tr. Benzoin. Co. | Tinctura Benzoini Composita |
| Tr. Berber. | Tinctura Berberidis |
| Tr. Buchu | Tinctura Buchu |
| Tr. Calumb. | Tinctura Calumbæ |
| Tr. Camph. Co. | Tinctura Camphoræ Composita |
| Tr. Cannab. Ind. | Tinctura Cannabis Indicæ |
| Tr. Cantharidin. | Tinctura Cantharidini |
| Tr. Capsic. | Tinctura Capsici |
| Tr. Cardam. Co. | Tinctura Cardamomi Composita |
| Tr. Cascarill. | Tinctura Cascarillæ |
| Tr. Catech. | Tinctura Catechu |
| Tr. Chirat. | Tinctura Chiratæ |
| Tr. Chlorof. et Morph. Co. | Tinctura Chloroformi et Morphinæ Composita |
| Tr. Cinch. | Tinctura Cinchonæ |
| Tr. Cinch. Co. | Tinctura Cinchonæ Composita |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Tr. Cinnam. . . . | Tinctura Cinnamomi |
| Tr. Cocc. . . . | Tinctura Cocci |
| Tr. Colch. . . . | Tinctura Colchici |
| Tr. Cubeb. . . . | Tinctura Cubebæ |
| Tr. Datur. Sem. . . | Tinctura Daturæ Seminum |
| Tr. Digit. . . . | Tinctura Digitalis |
| Tr. Ergot. Ammon. . | Tinctura Ergotæ Ammoniata |
| Tr. Ferr. Perchlor. . . | Tinctura Ferri Perchloridi |
| Tr. Gelsem. . . . | Tinctura Gelsemii |
| Tr. Gent. Co.. . . | Tinctura Gentianæ Composita |
| Tr. Guaiac. Ammon. . | Tinctura Guaiaci Ammoniata |
| Tr. Hamam. . . . | Tinctura Hamamelidis |
| Tr. Hydrast. . . | Tinctura Hydrastis |
| Tr. Hyoscy. . . . | Tinctura Hyoscyami |
| Tr. Iodi Fort. . . | Tinctura Iodi Fortis |
| Tr. Iodi Mit. . . . | Tinctura Iodi Mitis |
| Tr. Jalap. . . . | Tinctura Jalapæ |
| Tr. Jalap. Co. . . | Tinctura Jalapæ Composita |
| Tr. Kalad. . . | Tinctura Kaladanæ |
| Tr. Kino . . . | Tinctura Kino |
| Tr. Kramer. . . . | Tinctura Krameriæ |
| Tr. Lavand. Co. . . | Tinctura Lavandulæ Composita |
| Tr. Limon. . . . | Tinctura Limonis |
| Tr. Lobel. Æth. . . | Tinctura Lobeliæ Ætherea |
| Tr. Myrrh. . . . | Tinctura Myrrhæ |
| Tr. Nuc. Vom. . . | Tinctura Nucis Vomicæ |
| Tr. Oliver. Cort. . . | Tinctura Oliveri Corticis |
| Tr. Opii . . . | Tinctura Opii |
| Tr. Opii Ammon. . . | Tinctura Opii Ammoniata |
| Tr. Picrorh. . . . | Tinctura Picrorhizæ |
| Tr. Podoph. . . . | Tinctura Podophylli |
| Tr. Podoph. Ind. . . | Tinctura Podophylli Indici |
| Tr. Prun. Virgin. . . | Tinctura Pruni Virginianæ |
| Tr. Pyreth. . . . | Tinctura Pyrethri |
| Tr. Quass. . . . | Tinctura Quassiæ |
| Tr. Quill. . . . | Tinctura Quillaiæ |
| Tr. Quin. . . . | Tinctura Quininæ |
| Tr. Quin. Ammon. . | Tinctura Quininæ Ammoniata |
| Tr. Rhei Co. . . . | Tinctura Rhei Composita |
| Tr. Scill. . . . | Tinctura Scillæ |
| Tr. Seneg. . . . | Tinctura Senegæ |
| Tr. Senn. Co.. . . | Tinctura Sennæ Composita |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Tr. Serpent. . . . | Tinctura Serpentariæ |
| Tr. Stramon.. . . | Tinctura Stramonii |
| Tr. Strophanth. . . | Tinctura Strophanthi |
| Tr. Tolut. . . . | Tinctura Tolutana |
| Tr. Urgin. . . . | Tinctura Urginæ |
| Tr. Valer. Ammon. . | Tinctura Valerianæ Ammoniata |
| Tr. Valer. Ind. Ammon. . | Tinctura Valerianæ Indicæ Ammoniata |
| Tr. Zingib. . . . | Tinctura Zingiberis |
| Trag. . . . . | Tragacantha |
| Troch. Acid. Benz.. . | Trochiscus Acidi Benzoici |
| Troch. Acid. Carbol. . | Trochiscus Acidi Carbolici |
| Troch. Acid. Tann.. . | Trochiscus Acidi Tannici |
| Troch. Bism. Co. . . | Trochiscus Bismuthi Compositus |
| Troch. Catech. . . | Trochiscus Catechu |
| Troch. Ferr. Redact. . | Trochiscus Ferri Redacti |
| Troch. Guaiac. Res. . | Trochiscus Guaiaci Resinæ |
| Troch. Ipecac. . . | Trochiscus Ipecacuanhæ |
| Troch. Kino Eucalyp. . | Trochiscus Kino Eucalypti |
| Troch. Kramer. . . | Trochiscus Krameriæ |
| Troch. Kramer. et Cocain. | Trochiscus Krameriæ et Cocainæ |
| Troch. Morph. . . | Trochiscus Morphinæ |
| Troch. Morph. et Ipecac. | Trochiscus Morphinæ et Ipecacuanhæ |
| Troch. Pot. Chlorat. . | Trochiscus Potassii Chloratis |
| Troch. Santonin. . . | Trochiscus Santonini |
| Troch. Sulphur. . . | Trochiscus Sulphuris |
| Turpeth. . . . | Turpethum |
| Ung. Acid. Bor. . . | Unguentum Acidi Borici |
| Ung. Acid. Carbol. . . | Unguentum Acidi Carbolici |
| Ung. Acid. Salicyl.. . | Unguentum Acidi Salicylici |
| Ung. Aconitin. . . | Unguentum Aconitinæ |
| Ung. Aq. Ros. . . | Unguentum Aquæ Rosæ |
| Ung. Atrop. . . . | Unguentum Atropinæ |
| Ung. Bellad. . . . | Unguentum Belladonnæ |
| Ung. Cantharidin. . . | Unguentum Cantharidini |
| Ung. Capsic. . . . | Unguentum Capsici |
| Ung. Cetac. . . . | Unguentum Cetacei |
| Ung. Chaulmoog. . . | Unguentum Chaulmoogræ |
| Ung. Chrysarob. . . | Unguentum Chrysarobini |
| Ung. Cocain. . . | Unguentum Cocainæ |
| Ung. Creosot. . . | Unguentum Creosoti |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Ung. Eucalyp. . . | Unguentum Eucalypti |
| Ung. Gall. . . . | Unguentum Gallæ |
| Ung. Gall. c. Opio . . | Unguentum Gallæ cum Opio |
| Ung. Hamam. . . | Unguentum Hamamelidis |
| Ung. Hydrarg. . . | Unguentum Hydrargyri |
| Ung. Hydrarg. Ammon. . | Unguentum Hydrargyri Ammoniati |
| Ung. Hydrarg. Co. . | Unguentum Hydrargyri Compositum |
| Ung. Hydrarg. Iod. Rubr. | Unguentum Hydrargyri Iodidi Rubri |
| Ung. Hydrarg. Nit. . | Unguentum Hydrargyri Nitratis |
| Ung. Hydrarg. Nit. Dil. . | Unguentum Hydrargyri Nitratis Dilutum |
| Ung. Hydrarg. Oleat. . | Unguentum Hydrargyri Oleati |
| Ung. Hydrarg. Oxid. Flav. | Unguentum Hydrargyri Oxidi Flavi |
| Ung. Hydrarg. Oxid. Rubr. | Unguentum Hydrargyri Oxidi Rubri |
| Ung. Hydrarg. Subchlor. | Unguentum Hydrargyri Subchloridi |
| Ung. Iodi . . . | Unguentum Iodi |
| Ung. Iodof. . . . | Unguentum Iodoformi |
| Ung. Lanæ Co. . . | Unguentum Lanæ Compositum |
| Ung. Myrobal. . . | Unguentum Myrobalani |
| Ung. Myrobal. c. Opio . | Unguentum Myrobalani cum Opio |
| Ung. Paraff. . . . | Unguentum Paraffini |
| Ung. Pic. Liq. . . | Unguentum Picis Liquidæ |
| Ung. Plumb. Iod. . . | Unguentum Plumbi Iodidi |
| Ung. Plumb. Subacet. . | Unguentum Plumbi Subacetatis |
| Ung. Pot. Iod. . . | Unguentum Potassii Iodidi |
| Ung. Res. . . . | Unguentum Resinæ |
| Ung. Staphisag. . . | Unguentum Staphisagriæ |
| Ung. Sulphur. . . | Unguentum Sulphuris |
| Ung. Zinc. . . . | Unguentum Zinci |
| Ung. Zinc. Oleat. . . | Unguentum Zinci Oleatis |
| Urgin. . . . . | Urginea |
| Uv. Urs. Fol. . . | Uvæ Ursi Folia |
| Valer. Ind. Rhiz. . . | Valerianæ Indicæ Rhizoma |
| Valer. Rhiz. . . . | Valerianæ Rhizoma |
| Viburn. . . . | Viburnum |
| Vin. Antim. . . . | Vinum Antimoniale |

| Abbreviated Latin Name | Full Latin Name |
|---|---|
| Vin. Aurant. . . . | Vinum Aurantii |
| Vin. Colch. . . . | Vinum Colchici |
| Vin. Ferr. . . . | Vinum Ferri |
| Vin. Ferr. Cit. . . | Vinum Ferri Citratis |
| Vin. Ipecac. . . . | Vinum Ipecacuanhæ |
| Vin. Quin. . . . | Vinum Quininæ |
| Vin. Xeric. . . . | Vinum Xericum |
| Zinc. Acet. . . . | Zinci Acetas |
| Zinc. Carb. . . . | Zinci Carbonas |
| Zinc. Chlor. . . . | Zinci Chloridum |
| Zinc. Oleost. . . . | Zinci Oleostearas |
| Zinc. Oxid. . . . | Zinci Oxidum |
| Zinc. Sulph. . . . | Zinci Sulphas |
| Zinc. Valer. . . . | Zinci Valerianas |
| Zingib. . . . | Zingiber |

# INDEX

The Text of the Pharmacopœia is arranged according to the alphabetical order of the Latin names of the official drugs and preparations: the Index according to that of the English names.

Under each drug whose English name is printed in **thick type** are given the abbreviated Latin names of the official preparations of which the drug is an important ingredient.

Acetates, carbonates, nitrates, sulphates and similar salts are indexed under the names of their metals.

Synonyms appear with cross references.

*Italic* figures refer to the Appendices.

The letters I.A. are affixed to the Latin names and synonyms proposed in the International Agreement of 1906 where these differ from those adopted in the British Pharmacopœia. In each such case reference is given to the official drug or preparation approximately corresponding to that named in the Agreement.


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