THE EXTRA PHARMACOPŒIA

SUPPLEMENT 1961

THE EXTRA PHARMACOPŒIA

MARTINDALE

SUPPLEMENT 1961

TO

VOLUME II TWENTY-THIRD EDITION 1955

AND

VOLUME I TWENTY-FOURTH EDITION 1958

Published by direction of the Council of
The Pharmaceutical Society of Great Britain

LONDON

THE PHARMACEUTICAL PRESS

17 BLOOMSBURY SQUARE WC1

Made and Printed in Great Britain by
Percy Lund Humphries & Co Ltd London and Bradford

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PREFACE

It has been the practice in the past to publish new editions of the two volumes of the Extra Pharmacopœia every four or five years, usually with an interval of two to three years between the publication of the first and second volumes of each new edition Volume II of the twenty third edition was published in 1955 and Volume I of the twenty fourth edition in 1958 and if the established practice had been followed the second volume of the twenty fourth edition would have appeared this year It has become desirable however, to modify this procedure due to the increasing rate at which new medicinal substances are being introduced Since the publication of the twenty fourth edition of Volume I for example, some 200 new drugs and 800 proprietary medicines have been introduced in Great Britain The chief need of the majority of users of the Extra Pharmacopœia is for information on the composition, general properties actions and uses, dosage and toxic effects of the drugs and medicinal preparations in current use and it is this information with which Volume I is almost entirely concerned that is subject to the most rapid change and is in more constant need of revision and augmentation than the ancillary information that is provided by Volume II It was decided therefore that rather than produce at this time a completely revised edition of Volume II the needs of most users of the Extra Pharmacopœia would best be served by the publication of a smaller volume providing supplementary information on those sections of Volume II that are most in need of revision together with information on the composition, dosage therapeutic applications, and toxic effects of the new drugs and proprietary medicines that have been introduced since the publication of the twenty fourth edition of Volume I This Supplement is the outcome of that decision and it is hoped that it will prove an invaluable adjunct to the main volumes

The parts of Volume II that are most in need of modification are those concerned with pharmaceutical and biochemical analysis bacteriology, sterilisation and disinfection, and the formulæ of proprietary medicines Not that the existing text, apart from the formulæ of proprietary medicines requires substantial amendment, but it is in need of expansion to cover the developments that have occurred in these aspects of the work since its publication in 1955 and it is to meet this need that the relevant sections of the Supplement have been designed

The section on *Analytical Addenda* records information on the standards for the substances and preparations that have been added to the British Pharmacopœia the British Pharmaceutical Codex, and the British Veterinary Codex since the publication of the twenty third edition of the Extra Pharmacopœia Volume II and summarises in a series of abstracts from scientific journals the recent developments in drug analysis and to a lesser extent in biochemical analysis

The supplementary *Bacteriological and Clinical Notes* review recent developments in the diagnosis control, prevention, and treatment of the diseases discussed in the corresponding section of Volume II

The sections on *Sterilisation* and *Disinfectants* review the developments since 1955 in the techniques of sterilisation of pharmaceutical products and surgical materials and in the use of disinfectants New subsections have been added on the sterilisation of plastics, on hospital sterilisation equipment and organisation, and on the disinfection of blankets and bedding

A section on *Blood Transfusion* was included in Volume I of the twenty second and twenty third editions but was omitted from the twenty-fourth edition due to lack of space The publication of this Supplement has afforded an opportunity of repairing this omission. The section has been rewritten and enlarged It gives a concise account of the clinical uses of blood transfusion, the various blood groups and their determination, compatibility tests, blood collection and preservation, the storage and handling of blood, blood transfusion practice and transfusion reactions The extension in the use of blood transfusion the great expansion in the knowledge of its various aspects and the development of new techniques during the last ten years have greatly complicated the task of confining the section within the limits set by the *Extra Pharmacopœia* Inevitably, some aspects of the subject have received no more than brief or passing mention but in its present form the section should provide adequate information to meet the needs of the pharmacist and the general medical practitioner The list of references at the end of the section will guide the reader to suitable sources of further and more detailed information

Changes in formulæ, the introduction of many new products, and the discontinuance of others since the publication of Volume II have necessitated the complete revision and expansion of the section on *Formulæ of Proprietary Medicines* The section now gives the formulæ for over 1000 'counter' proprietaries that is proprietary medicines of the type that are advertised to the public and are usually supplied over the counter on demand The formulæ are given in the form in which they appear on the labels of the products or as supplied by their manufacturers and it should be noted that in this form they do not necessarily satisfy the requirements of the Pharmacy and Medicines Act 1941 The practice has been continued of omitting the claims made for these products by their manufacturers as these claims are often not supported by the known therapeutic effects of the ingredients

The section on *New Drugs and Proprietary Medicines* is supplementary to the twenty-fourth edition of Volume I and provides information on the new drugs and 'ethical' proprietaries that have been introduced since its publication in 1958 In presenting this information on new drugs it has not been possible to describe them in the detail characteristic of the main volume or to follow its traditional arrangement A concise account is given of the therapeutic applications, toxicity, contra indications, and dosage of the new drugs, in so far as such information is at present available Abstracts from medical journals have been restricted to a minimum but references to important papers on the clinical applications of the drugs are incorporated within the relevant portions of the text The information is presented in the form of a single alphabetical list of drugs and proprietary medicines, the drugs being distinguished from the proprietary products by the use of larger type The insertion of the *Addenda* to this section (pages 275–7) after the main text went to press has permitted the inclusion of products introduced as recently as April 1961

Especial thanks are due to Dr R J Drummond for preparing the section on Blood Transfusion to Dr H J Parish and Dr D A Cannon for reading the proofs of the Bacteriological and Clinical Notes, to Dr G R Boyes for his advice on the section on New Drugs and Proprietary Medicines to Mr P H Woodnoth for checking the information relating to the Poisons Rules, and to Mr Leslie D Smith of Sangers Limited and Mr J D Clark of Boots Pure Drug Company Limited for their courtesy and co-operation in providing facilities for checking much of the information included in the section on Formulæ of Proprietary Medicines The help of the many manufacturers who have co-operated in providing information on their products is gratefully acknowledged Tribute must also be paid to the valuable assistance of the late Mr S L Ward who was closely associated with the preparation of every edition of the Extra Pharmacopœia that has been published since 1923 and who after his retirement in 1958 until his death in November 1960 continued to contribute to the work of revision

At the beginning of 1960 the task of revising the Extra Pharmacopœia including the preparation of this Supplement was assigned to an editorial section of the Department headed by R G Todd The following members of the editorial staff have assisted in the preparation of the Supplement Edith J Condon Helen S Cranston F C Highfield, L A J McGreal and Marjorie L Plear The Analytical Addenda were prepared by G R Brown with the advice of S C Jolly Assistant Director of the Department

K R Capper

Department of Pharmaceutical Sciences
The Pharmaceutical Society of Great Britain
May 1961

ABBREVIATIONS

The titles of journals are abbreviated according to the style of the 'World List of Scientific Periodicals' 3rd Edn 1952 or of 'World Medical Periodicals', 2nd Edn 1957 An exception is the *Journal of Pharmacy and Pharmacology* for which the abbreviation *J Pharm Pharmacol* is preferred.

A B P I —The Association of the British Pharmaceutical Industry
A H G —anti human globulin.
aa—*ana* 'of each'
aq —*aqua* 'water'
ATCC—American Type Culture Collection, Washington U S A

B H P—British Homœopathic Pharmacopœia 1882
b p —boiling point
B P—British Pharmacopœia All *B P* references are to the 1958 edition unless otherwise designated in the text
B P Add —Addendum 1960 to the British Pharmacopœia 1958
B P C—British Pharmaceutical Codex All *B P C* references are to the 1959 edition unless otherwise designated in the text.
B S —British Standard
B Vet C —British Veterinary Codex 1953
B Vet C Supp —Supplement 1959 to the British Veterinary Codex 1953
Belg —Belgian

c mm —cubic millimetre
Canad —*Canadian*
cm —centimetre

[D]—See Substances Subject to Restrictions Extra Pharmacopœia Vol I 24th Edn p xx
Dan —Danish
dr —drachm

E S R —erythrocyte sedimentation rate
Edn—Edition
et al —*et alii* 'and others' used when there are three or more co authors or co workers

FDA—United States Food and Drug Administration
fl dr —fluid drachm
fl oz —fluid ounce
Fr —*French*

g —gramme
Ger —German

i u.—international unit.
Ital —Italian.

Jr—Junior

kg —kilogram.

l —litre
lb —pound.

M—molar concentration.
M R C —Medical Research Council
max.—maximum

mEq —milliequivalent
mg —milligram
ml —millilitre
mm —*millimetre*
mμ—millimicron
μ—micron
μg —microgram

N—normal concentration
N N D —New and Nonofficial Drugs—an annual publication of the Council on Pharmacy and Chemistry of the American Medical Association All *N N D* references are to the 1960 edition unless otherwise designated in the text.
Ned —Dutch
Nor —Norwegian

oz —ounce
p(p) —page(s)

[P1] [P2]—See Substances Subject to Restrictions Extra Pharmacopœia Vol I 24th Edn p xx
p p m —parts per million
pH—hydrogen ion concentration
PPD—Purified Protein Derivative

q s —*quantum sufficiat* a sufficient quantity
q v —*quod vide* which see

[R]—See Substances Subject to Restrictions Extra Pharmacopœia Vol I 24th Edn, p xx
r p m —revolutions per minute

[S]—See Substances Subject to Restrictions Extra Pharmacopœia Vol I 24th Edn, p xx
[S4A]—Substances subject to restrictions in accordance with the regulations summarised under [S4] in Vol I 24th Edn p xx except that the total amount to be supplied need not be stated on the prescription in the case of a preparation contained in the British National Formulary
[S4B]—Substances which may only be obtained by the public on the prescription of a doctor dentist or veterinary surgeon or practitioner The prescription must be in writing and dated and signed by the prescriber If it is to be repeated the prescription must include a direction that it may be dispensed a stated number of times or at stated intervals
[S7]—See Substances Subject to Restrictions Extra Pharmacopœia Vol I 24th Edn p xx
Scand —Scandinavian
Span —Spanish
spp —species.
Swed —Swedish

T.A B —Typhoid Paratyphoid A and B

U.S.A —United States of America
U S N F —United States National Formulary All *U S N F* references are to the eleventh edition 1960 unless otherwise designated in the text
U S P —United States Pharmacopœia All *U S P* references are to the sixteenth revision (*U S P* XVI) 1960 unless otherwise designated in the text

v/v—volume in volume
v/w—volume in weight.
vol —volume

w/v—weight in volume
w/w—weight in weight
wt per ml.—*weight per millilitre*

Unless otherwise indicated in the text temperatures are expressed in the Centigrade thermometric scale

CORRIGENDUM

p 253 **Ristocetin** The final sentence of the first paragraph should be amended to read

'It may be administered by intravenous infusion over a period of 35 to 45 minutes as a 0 2% solution in isotonic saline or dextrose, or by direct intravenous injection over a period of not less than 5 minutes at a concentration not exceeding 1 g in 40 ml'

ANALYTICAL ADDENDA

Extra Pharmacopœia Vol II 23rd Edn pp 1–446

This section includes information on substances added to the British Pharmacopœia the British Pharmaceutical Codex and the British Veterinary Codex since the publication of the twenty third edition of the Extra Pharmacopœia Volume II Brief extracts of scientific papers are given as a guide to recent literature The subsections on barbiturates and sulphonamides have been revised to take account of the new methods of assay included in the British Pharmacopœia 1958

In appropriate instances abstracts of papers on the determination of drugs and their metabolites in body fluids and tissues are included supplementing to a limited extent the information in the section on Clinical Biochemistry (Vol II 23rd Edn p 1099)

ACETAZOLAMIDE

Acetazolamide (*B P*) $C_4H_6O_3N_4S_2$=222 3 It contains at least 99 0 per cent of acetazolamide calculated with reference to the dried substance determined spectrophotometrically the loss on drying at 105° is not more than 0 5 per cent

DETERMINATION Acetazolamide may be determined by precipitation with silver nitrate in ammoniacal solution and back titration of the excess of silver nitrate after filtration This method can be applied to tablets —P M Pankh and S P Mukherji *Indian J Pharm* 1958 *20* 179 per *Analyt Abstr* 1959 6 1911

Tablets of Acetazolamide (*B P*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of acetazolamide determined by a method similar to that of the *B P* for acetazolamide

ACINITRAZOLE

Acinitrazole (*B P et C Supp*) $C_5H_5O_3N_3S$=187 2 It contains 98 0 to the equivalent of 101 0 per cent of acinitrazole calculated with reference to the dried substance based on its nitrogen content determined by the Kjeldahl method the loss on drying at 105° is not more than 1 0 per cent A 1 cm layer of a 0 001 per cent w/v solution in alcohol (95 per cent) exhibits a characteristic light absorption having maxima at about 235 mμ and 341 mμ and a minimum at about 275 mμ the extinction of the solution at 341 mμ is about 0 59

DETERMINATION Polarographic determinations may be performed in a solution of potassium chloride in aqueous alcohol with the addition of gelatin at concentrations down to about 10 $^{-5}$M —A Danek and M Eckstein *Acta polon pharm* 1959 *16* 13

ADRENALINE

Extra Pharmacopœia Vol II 23rd Edn p 13

Injection of Noradrenaline (*B P C*) The solution contains 0 18 to 0 21 per cent w/v of noradrenaline acid tartrate (monohydrate) determined spectrophotometrically

AMINOMETRADINE

Aminometradine (*B.P.C.*) $C_9H_{13}O_2N_3$=195·2. It contains 98·0 to the equivalent of 102·0 per cent of aminometradine based on its nitrogen content *determined by the Kjeldahl method*.

AMINOSALICYLATES

Extra Pharmacopœia Vol. II, 23rd Edn., p. 39

Cachets of Sodium Aminosalicylate (*B.P.C.*). Each cachet contains *90·0 to 110·0* per cent of the stated amount of sodium aminosalicylate (calculated as dihydrate) determined bromometrically.

AMIPHENAZOLE

Amiphenazole Hydrochloride (*B.P.C.*) $C_8H_{10}N_2SCl$=227·7. It contains 99·0 to the equivalent of 101·0 per cent of amiphenazole hydrochloride, based on its nitrogen content determined by the Kjeldahl method.

STABILITY OF SOLUTIONS. In aqueous solution between pH 3 and 6 amiphenazole undergoes hydrolysis with the formation of 2-amino-4-hydroxy-5-phenylthiazole and an ammonium salt. A spectrophotometric method for determination of the decomposition products is described.—J. H. Sørensen, *Dansk Tidsskr. Farm.*, 1959, *33*, 61.

DETERMINATION. Amiphenazole may be determined by precipitation with ammonium reineckate, the precipitate being dissolved in acetone and the extinction of the solution being measured at 525 mμ.—P. Lundgren, *J. Pharm. Pharmacol.*, 1956, *8*, 185.

ANTAZOLINE
and Other Substituted Iminazolines

Extra Pharmacopœia Vol. II, 23rd Edn., p. 43

Antazoline Methanesulphonate (*B.P.C.*) $C_{18}H_{23}O_3N_3S$=361·5. It contains at least 98·0 per cent of antazoline methanesulphonate calculated with reference to the dried substance, determined acidimetrically on the extracted base; the loss on drying *in vacuo* over phosphorus pentoxide is not more than 2·5 per cent.

DETERMINATION. Antazoline may be precipitated with bismuth potassium iodide at pH 1·2 to 1·5 and the excess of reagent determined complexometrically.—B. Budešinský and E. Vaníčková, *Čsl. Farm.*, 1956, *5*, 77; per *Analyst Abstr.*, 1958, *5*, 225.

Antazoline hydrochloride may be determined colorimetrically (at 565 mμ) after treatment with an alkaline solution of sodium nitroprusside.—S. C. Slack and W. J. Mader, *J. Amer. pharm. Ass., Sci. Edn.*, 1957, *46*, 742.

Naphazoline Hydrochloride (*B.P. Add.*) (Vol. II, 23rd Edn., p. 43) $C_{14}H_{14}N_2Cl$, 246·7. *It contains* at least 98·5 per cent of naphazoline hydrochloride, calculated with reference to the dried substance, determined acidimetrically on the extracted base; the loss on drying at 105° is not more than 0·5 per cent.

DETERMINATION. Naphazoline and its hydrolytic degradation products may be determined spectrophotometrically after chromatographic separation.—M. A. Schwartz *et al.*, *J. Amer. pharm. Ass., Sci. Edn.*, 1956, *45*, 814. A modification of the elution procedure is described.—M. J. Stern, *Drug Stand.*, 1958, *26*, 158.

ANTIMONY

Extra Pharmacopœia Vol II, 23rd Edn, p 43

Sodium Antimonylgluconate (*B P*) It contains 33 0 to 38 0 per cent of total antimony, of which at least 95 0 per cent consists of trivalent antimony Total antimony is determined iodometrically and trivalent antimony is determined polarographically

BACITRACIN

Bacitracin (*B P*) One or more of the antimicrobial polypeptides produced by certain strains of *Bacillus licheniformis* and by *B subtilis* var *Tracy* and yielding on hydrolysis the amino-acids L-cysteine, D glutamic acid, L-histidine, L-isoleucine, L-leucine, L lysine, D ornithine, D phenylalanine, and DL-aspartic acid It contains at least 50 units per mg, determined by the *B P* method for the assay of antibiotics, the limits of error (P=0 95) are 80 to 125 per cent

DETERMINATION *Staphylococcus subflavus* (ATCC 7468) may be substituted for *Micrococcus flavus* (ATCC 10240) in the cup plate assay to improve precision The same organism is used in a more sensitive method applicable to biological fluids —J Wilner *et al*, *Antibiot and Chemother*, 1957, 7 542

Mixtures of bacitracin and neomycin can be assayed after separation with alcohol, which dissolves bacitracin but not neomycin sulphate The alcohol-soluble and alcohol insoluble fractions are assayed microbiologically —J Langnau and G Machek *Sci pharm* (*Wien*) 1955, *23* 234

Strains of *Micrococcus flavus* and *Sarcina lutea* resistant to dihydrostrepto mycin have been developed for the determination of bacitracin in the presence of dihydrostreptomycin in preparations and body fluids —S Friedman and A. Kirshbaum *Antibiot and Chemother*, 1954 *4* 1216

A method of determining bacitracin and other antibiotics in milk, based on their ability to inhibit reduction of nitrate to nitrite by *Staphylococcus aureus* is described —L. R. Mattick, *Dissert Abstr*, 1955, *15*, 1, per *Analyt Abstr*, 1955 *2*, 2223

BARBITONE

Extra Pharmacopœia Vol II, 23rd Edn, p 55

The *B P 1958* describes under Amylobarbitone a method of assay for barbituric acid derivatives by titration with lithium methoxide in dimethylformamide

Detection and Identification of Barbituric Acid Derivatives

See also under individual barbiturates

COLOUR REACTIONS The use of alcoholic pyridine under ultraviolet radiation in a spot test for the detection of barbituric acid and 2-thiobarbituric acid is described —H Freytag, *Z anal Chem* 1954, *142*, 12, per *Analyt Abstr* 1954 *1*, 2215 Identification of many barbituric acid derivatives by colour reactions with cobalt and copper salts and other reagents is described —*J Bucht and* K Perlia, *Pharm. Acta Helv et*, 1954, *29*, 290 Detection of barbiturates with cobalt nitrate is described —G Hubner and E Pfeil, *Hoppe-Seyl Z*, 1954, *296* 225 A colour reaction with sodium hydroxide, dimethylglyoxime and thiosemi-carbazide is described —Seiichi Okuma and Yasumasa Kido, *J pharm Soc Japan*, 1956 *76*, 894 A scheme for the identification of barbiturates by colour reactions with vanillin and sulphuric acid is described —M A Robles, *Pharm Weekbl*, 1957, *92*, 41 A microchemical method using copper-ammonia reagent is described —H M Romijn, *Pharm Weekbl*, 1957, *92*, 397 Methods for the detection of amylobarbitone, pentobarbitone and thiopentone are given —L I Rapaport, *Apt Dela*, 1957, *6*, 17 The use of copper-pyridine complexes is discussed —Hisao Tsukamoto and Minoru Yoshimura *J pharm. Soc Japan* 1958, *78*, 27

SPECTROPHOTOMETRY A method of tissue extraction is suggested and ultraviolet curves are provided for various compounds including barbiturates—G W Roche and H N Wright, *Arch industr Hyg*, 1953, *8*, 507, per *Analyt Abstr*, 1954 *1*, 1964 Barbiturates are extracted from body fluids and the ratio of optical densities determined at selected wavelengths between 228 and 320 mμ—J R Maher and R F Puckett *J Lab clin Med*, 1955, *45*, 806 Barbiturates are extracted from urine and detected by absorption measurements between 225 and 260 mμ—J W Huisman *Pharm Weekbl*, 1956 *91*, 505 Characteristic absorption spectra of barbiturates are given, and methods of eliminating interfering substances are described—P M G Broughton, *Biochem J*, 1956, *63* 207 Examination of a sample of blood by extraction and determination of ultraviolet absorption enables barbiturates to be detected and the following groups to be distinguished phenobarbitone, barbitone amylobarbitone and butobarbitone pentobarbitone and cyclobarbitone quinalbarbitone—A. S Curry, *Nature Lond*, 1959, *183*, 1052

INFRA RED METHODS Absorption spectra of barbituric acid derivatives and their copper-pyridine complexes are used for identification purposes.—L Levi and C. E Hubley, *Analyt Chem*, 1956, *28*, 1591 Similarly, infra red spectra of *p* nitrobenzyl derivatives may be used—L G Chatten and L. Levi, *Appl Spectroscopy*, 1957, *11* 177, per *Analyt Abstr*, 1958 *5* 3130 Polymorphic changes affecting infra red spectra are discussed—B Cleverley and P P Williams *Chem & Ind*, 1959, 49

X-RAY DIFFRACTION METHODS Data for allobarbitone and 5 allyl 5-ethylbarbituric acid are given—R Heiz and B Jersley, *Dansk Tidsskr Farm* 1954, *28*, 11 Data for 5-allyl 5 ethylbarbituric acid apeobarbital, barbitone, and cyclobarbitone are given—E J Hansen and B Jersley, *Dansk Tidsskr Farm*, 1954 *28*, 220 Data for several barbiturates are given.—W G Penprase and J A Biles *J Amer pharm Ass Sci Edn*, 1956, *45*, 585 *ibid*, 1958, *47*, 523 Diffraction patterns for 20 5 5 disubstituted barbituric acids are given—P P Williams *Analyt Chem*, 1959, *31*, 140 Diffraction data for *p* nitrobenzyl derivatives of 20 barbituric acid derivatives are given—J A. R Clouter and J M Manson, *Appl Spectroscopy*, 1959, *13*, 34, per *Analyt Abstr*, 1959, *6*, 4942

MICROSCOPIC METHODS Sublimates of barbiturates and their lead bismuth and copper complexes are identified by microscopic examination—J Büchi and X Perlia *Pharm Acta Helvet*, 1954 *29*, 265 Several photomicrographs of crystalline barbituric acid derivatives are given as an aid to identification—W G Penprase and J A Biles *J Amer pharm. Ass., Sci Edn*, 1956 *45* 585 L I Rapaport, *Zhur anal Khim*, 1956, *11*, 479, per *Analyt Abstr*, 1957, *4* 1654 Microscopic characteristics can be used to distinguish between phenobarbitone, barbitone, allobarbitone methylphenobarbitone, hexobarbitone, cyclobarbitone, and Irenal—H Rządkowska *Acta polon pharm*, 1956, *13*, 57 Characteristic coloured crystals are formed by reaction of copper acetate and methylamine, ethylamine or ethylenediamine with barbiturates—H M Romijn, *Pharm Weekbl*, 1959, *94* 588

CHROMATOGRAPHY R_F values are given for phenobarbitone, butobarbitone amylobarbitone pentobarbitone and quinalbarbitone in a paper chromatographic method using 0 5M sodium carbonate as the stationary solvent ethylene dichloride as the mobile solvent, and ethanolic silver nitrate as the developing reagent—F J Sabatino, *J Ass off agric Chem., Wash*, 1954, *37*, 1001 A rapid method of identifying barbiturates in small samples of blood is described.—J T Wright, *J clin Path*, 1954 *7*, 61 A method for the extraction of barbiturates from urine and their identification on a chromatogram by fluorescence in ultraviolet radiation is described—C Riebeling and H Burmeister, *Klin Wschr* 1954, *32*, 43 per *Analyt Abstr*, 1955, *2*, 726 R_F values are given for 13 barbiturates in a paper chromatographic system using isopropyl alcohol, chloroform, and ammonia solution—R Deininger, *Arzneimittel-Forsch*, 1955, *5*, 472 A paper-chromatographic method for toxicological detection of barbiturates (in some cases down to 10 μg) is described—M Ledvina *et al.*, *Cs Farm*, 1955 *4* 386, per *Analyt Abstr* 1956, *3*, 1148 A colour reaction for the

detection of β bromallylbarbiturates on paper chromatograms is described — A S Curry, *Acta pharm tox*, *Kbh*, 1957, *13*, 357 A method for the separation of barbiturates from benzoic acid and some phenolic compounds by paper chromatography is described —M Schmall *et al*, *Analyt Chem*, 1957, *29*, 791 A rapid paper chromatographic method for detection of 10 to 25 μg of a barbiturate is described —P Relyveld *Pharm Weekbl*, 1957, *92*, 621 Toxicological analysis of urine by extraction and paper chromatography is described —J Baümler, *Mitt Lebensm Hyg*, *Bern*, 1957, *48*, 135, per *Analyt Abstr*, 1958, *5*, 969 Barbiturates are separated on paper impregnated with potassium nitrate, using a pyridine water-ammonia solvent system the barbiturate being detected by addition of chlorine to the amide group —G Rentsch, *Naturwissenschaften*, 1958, *45*, 314, per *Analyt Abstr*, 1959, *6*, 2315 A method of detecting barbiturates on chromatograms is described 1-alkyl derivatives do not react in this test —V Jokl and E Janečková, *Čsl Farm*, 1958, *7*, 397, per *Analyt Abstr*, 1959 *6* 2314 Solvent systems for the separation of barbiturates, thiobarbiturates, phenytoin, and bromacylureas are suggested —Hisao Tsukamoto and Minoru Yoshimura *J pharm Soc Japan*, 1958, *78*, 23 A method suitable for detection of barbiturates in material extracted from viscera is described — Swarup Narain Tewari and Dharam Narain Tripathi, *Z anal. Chem*, 1959, *168* 86, per *Analyt Abstr*, 1960, *7* 719 R_F values are given for 18 barbiturates using butanol saturated with 5N aqueous ammonia solution —R Hilf *et al*, *J Lab clin Med*, 1959 *54*, 320 Barbiturates and their urinary metabolites may be detected and characterised by paper chromatography using a butanol-chloroform-aqueous ammonia solvent system —H H Frey *et al*, *Arzneimittel-Forsch*, 1959, *9*, 294

Determination of Barbituric Acid Derivatives

See also under individual barbiturates

Volumetric Methods. An acidimetric method is described by W Poethke and D Horn, *Arch Pharm*, *Berl* 1954, *287*, 487, per *Analyt Abstr*, 1955, *2*, 1908 Non aqueous titrations are described in the following papers lithium methoxide and dimethylformamide —J C Ryan *et al*, *J Amer pharm Ass*, *Sci Edn* 1954, *43*, 656, sodium methoxide and benzene-methyl alcohol for pentobarbitone allobarbitone and amylobarbitone —Takanobu Itai and Takuma Oka, *Bull nat Hyg Lab*, *Tokyo*, 1955, 137 per *Analyt Abstr* 1957, *4*, 2365, sodium methoxide and chloroform with polyethylene glycol 400 —C J Swartz and N E Foss, *J Amer pharm Ass*, *Sci Edn* 1955, *44* 217, sodium methoxide with pyridine —J Vacek and J Kráčmar, *Čsl Farm*, 1956, 5, 80 per *Analyt Abstr*, 1958 *5*, 218 potassium hydroxide and chloroform methanol —L G Chatten *J Pharm Pharmacol*, 1956, *8* 504, lithium methoxide and dimethylformamide —S W Goldstein and D F Dodgen, *Drug Stand*, 1958, *26* 113, sodium hydroxide, after treatment with silver nitrate in pyridine —J A Gautier *et al*, *Ann pharm franç*, 1958, *16*, 625 tetrabutylammonium hydroxide and benzene isopropyl alcohol or benzene chloroform —D E. Leavitt and J Autian, *Drug Stand* 1958 *26*, 33, sodium methoxide and dimethylformamide (after separation by ion exchange) —M C Vincent and M I Blake *J Amer pharm Ass*, *Sci Edn* 1959, *48*, 359 An iodine monochloride method suitable for the determination of allobarbitone, hexobarbitone cyclobarbitone and thiobarbituric acids in the presence of compounds such as barbitone and phenobarbitone is described —L. I Rapaport, *Zhur anal Khim*, 1957, *12*, 415, per *Analyt Abstr*, 1958 *5*, 688 Compounds containing an allyl group may be titrated potentiometrically with N bromosuccinimide —A Berka and J Zýka *Čsl Farm* 1957, *6* 212 per *Analyt Abstr*, 1958 *5* 1678 Potentiometric titration with silver nitrate is described —Ya M Perel man *Zhur anal Khim* 1956 *11* 466 per *Analyt Abstr*, 1957 *4*, 1656 A non aqueous titration applicable to mixtures of a barbiturate with amidopyrine or phenazone is described —T Jasiński *et al*, *Acta polon pharm*, 1957, *15*, 261

Gravimetric Method An extraction method for the determination of barbiturates in tablets is described —M Béguin *Pharm Acta Helvet*, 1959, *34*, 146, per *Analyt Abstr*, 1959, *6*, 2759

COLORIMETRIC METHODS The cobaltammine reaction has been investigated—H Nuppenau, *Dansk Tidsskr Farm*, 1954, *28*, 194 The barbiturate is precipitated with mercury and the mercury estimated colorimetrically with dithizone—E Pfeil and H J Goldbach, *Hoppe Seyl Z*, 1955 *302*, 263, a similar method is described—C O Björling *et al*, *Acta chem scand*, 1958, *12*, 1149 and *J Pharm Pharmacol*, 1959, *11*, 297.

SPECTROPHOTOMETRIC METHODS A compound present in liver interferes in the ultraviolet spectrophotometric determination, its detection and elimination is described—A S Curry, *Nature, Lond*, 1955, *176*, 877 The use of an automatic ratio-recording spectrophotometer is described—L. A Williams and B Zak *Clin chim Acta*, 1959, *4*, 170 L A Williams *et al*, *J Lab clin Med*, *1959, 53, 156 per Analyt Abstr*, *1959, 6, 4069 Binary mixtures of 5-methyl-5-phenylbarbituric acid, barbitone, phenobarbitone, and methylphenobarbitone are separated by partition between chloroform and an aqueous buffer and determined spectrophotometrically—R Bontemps, *Pharm Weekbl*, 1958, *93*, 61 Tablets of acetylsalicylic acid, phenacetin, caffeine barbiturate are analysed by multiple partition chromatography and spectrophotometry—R F. Heuermann and J Levine, *J Amer pharm Ass, Sci Edn*, 1958, *47*, 276.

POLAROGRAPHIC METHOD Polarographic determination of thiobarbiturates is discussed—P Zuman, *Chem Listy*, 1954, *48*, 1006 and 1020, per *Analyt Abstr*, 1955, *4*, 2212 and 2849

ION EXCHANGE METHODS Barbiturates were quantitatively adsorbed from alcoholic solutions on Amberlite IRA-400 and Lewatit MN and eluted with 0 2M acetic acid—A Jindra and F Balák, *Čsl Farm*, 1957, *6*, 148, per *Analyt Abstr*, 1958, *5*, 1677 A method using Amberlite IR-120 is described—E B L M van Nispen tot Pannerden *Pharm Weekbl*, 1958, *93*, 987 A method using ion exchange and spectrophotometry is described—E Häberli and E Beguin, *Pharm Acta Helvet*, 1959, *34*, 65

ELECTROPHORESIS Cyclohexenyl and cycloheptenyl derivatives can be separated from other derivatives of barbituric acid—A Calo' *et al*, *R C Ist sup Sanit*, 1957, *20*, 811, per *Analyt Abstr*, 1959, *6*, 4144.

VARIOUS METHODS Alkalimetry, argentimetry, and ultraviolet spectroscopy are compared—Takanobu Itai and Takuma Oka, *Bull nat Hyg Lab, Tokyo* 1955, 131, per *Analyt Abstr*, 1957, *4* 2365 Gravimetric, volumetric, and spectrophotometric methods are described—F A. Rotondaro *J. Ass off agric Chem, Wash*, 1955, *38*, 809 Volumetric methods for the determination of barbiturates in pharmaceutical mixtures are described—G. A Vatsman and L I Rapoport *Apt Delo* 1954, *3*, 17 Various methods are reviewed—H Brauniger and G Borgwardt *Pharm Zentralh*, 1954, *93*, 266, and C Stainier *et al*, *Ann pharm franç*, 1956, *14*, 384 and 476

DETERMINATION IN TISSUES AND BIOLOGICAL FLUIDS Barbiturates are separated by paper chromatography and determined by oscillopolarography, the error being ± 10 per cent—F Vorel and J Prokeš *Sondm lékařství* 1957, *2*, 129, per *Analyt Abstr*, 1958, *5* 3083 Barbiturates are identified and determined quantitatively by paper chromatography and ultraviolet spectrophotometry—G L Plaa *et al*, *J forensic Sci*, 1958, *3*, 201, per *Analyt Abstr*, 1959, *6* 4145 A spectrophotometric method is described—P Lous, *Acta pharm tox Kbh*, 1954, *10*, 134 A rapid spectrophotometric method applicable to blood and urine is described—N E W McCallum *J Pharm Pharmacol*, 1954, *6*, 733 A chromatographic method in which 10 to 25 μg of barbiturate can be detected in 1 to 10 ml of urine is described—K Kácl, *Soudm lékařství* 1957 *2*, 17, per *Analyt Abstr*, 1958, *5* 2725 A technique for extraction of barbiturates from biological materials is described—P L. Kirk and C L Brown, *Mikrochim Acta* 1957, 714, per *Analyt Abstr*, 1958 *5*, 1687 A method involving chromatography and ultraviolet spectrophotometry was found suitable for the determination of barbiturates in liver after putrefaction—L. J Algeri, *J forensic Sci*, 1957, *2*, 443, per *Analyt Abstr*, 1959, *6*, 2317 Plasma or urine is extracted and the content of barbiturate determined spectrophotometrically—R Richterich, *Clin chim Acta*, 1958, *3*, 183, per *Analyt Abstr*, 1958, *5*, 3438

Barbitone (*B P C*) (Vol II 23rd Edn, p 55) $C_8H_{12}O_3N_2$=184 2 It contains 98 0 to the equivalent of 101 0 per cent of barbitone, determined by a method similar to that of the *B P* for barbituric acid derivatives (see above p 3)

Determination Potentiometric titration with silver nitrate is described The error is less than ± 1 2 per cent —Ya M Perelman *Zhur anal Khim* 1956 *11* 241 per *Analyt Abstr* 1956 *3* 3752 Ultraviolet absorption spectra of decomposition products were investigated The interference in the determination of barbitone at 260 mμ is negligible —G R Jackson Jr *et al*, *Analyt Chem* 1954 *26* 1661

Mixtures with amidopyrine may be analysed by the Kofler micro refractometric method —A Sekera and J Pokorný *Mikrochim Acta* 1957 103 per *Analyt Abstr* 1957 *4* 3107

Determination in Serum A method of extraction and spectrophotometric determination is described Recoveries of 80 to 110 per cent are reported —R Askevold and F Løken *Scand J clin Lab Invest* 1956 *8* 1

Allobarbitone (*B P C*) (Vol II, 23rd Edn p 58) $C_{10}H_{12}O_3N_2$= 208 2 It contains 98 0 to the equivalent of 101 0 per cent of allobarbitone, determined by a method similar to that of the *B P* for barbituric acid derivatives (see above p 3)

Determination Mixtures with amidopyrine may be analysed by the Kofler micro refractometric method —A Sekera and J Pokorný *Mikrochim Acta*, 1957 103 per *Analyt Abstr* 1957 *4* 3107

Amylobarbitone (*B P*) (Vol II 23rd Edn, p 58) $C_{11}H_{18}O_3N_2$= 226 3 It contains 98 5 to the equivalent of 101 0 per cent of amylobarbitone, calculated with reference to the dried substance, determined by the *B P* method for barbituric acid derivatives (see above p 3) the loss on drying at 105° is not more than 1 0 per cent.

Identification The melting points general properties and reactions of amylobarbitone and other narcotics are given —J Baumler *Mitt Lebensm Hyg Bern* 1955 *46* 431 per *Analyt Abstr* 1956 *3* 1868 Separation of amylobarbitone from pentobarbitone and subsequent identification is described —E G Brooker *Analyst* 1957 *82* 448

Determination in the Presence of Quinalbarbitone Total barbiturate is determined spectrophotometrically and quinalbarbitone bromometrically Recoveries of 95 7 to 109 3 per cent are reported —G E Keppel *J Ass off agric Chem Wash* 1953 *36* 725

Amylobarbitone Sodium (*B P Add*) (Vol II, 23rd Edn p 58) $C_{11}H_{17}O_3N_2Na$=248 3 It contains 98 5 to the equivalent of 101 0 per cent of amylobarbitone sodium calculated with reference to the dried substance, determined by the *B P* method for barbitone sodium, each g of residue is equivalent to 1 097 g of $C_{11}H_{17}O_3N_2Na$ the loss on drying at 130° is not more than 5 0 per cent

Capsules of Amylobarbitone Sodium (*B P Add*) Each capsule contains 92 5 to 107 5 per cent of the stated amount of amylobarbitone sodium, determined by the *B P method for Tablets of Barbitone Sodium*

Injection of Amylobarbitone (*B P Add*) In the sealed container is dry powder containing 98 5 to 101 0 per cent of the stated amount of amylobarbitone sodium calculated with reference to the dried substance, determined by the *B P method for amylobarbitone sodium*

Tablets of Amylobarbitone Sodium (*B P Add*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of amylobarbitone sodium, determined by the *B.P* method for Tablets of Barbitone Sodium

Butobarbitone (*B P*) (Vol II 23rd Edn p 58) $C_{10}H_{14}O_3N_2$=212 3 It contains 98 5 to the equivalent of 101 0 per cent of butobarb tone calculated with reference to the dried substance determined by the *B P* method for barbituric ac d derivat ves (see above p 3) the loss on drying at 105° is not more than 1 0 per cent

Cyclobarbitone (*B P*) (Vol II 23rd Edn p 58) $C_{12}H_{16}O_3N_2$=236 3 It contains 98 5 to the equi alent of 101 0 per cent of cyclobarbitone calculated with reference to the dried substance determined bv the *B P* method for barb turic ac d derivatives (see above p 3) the loss on drying at 105° is not more than 0 5 per cent

Hexobarbitone (*B P C*) (Vol II 23rd Edn p 59) $C_{12}H_{16}O_3N_2$ —236 3 It contains 98 0 to the equivalent of 101 0 per cent of hexobarbitone determined by a method similar to that of the *B P* for bar b turic acid derivatives (see above p 3)

DETER. INATION Hexobarb tone may be determ ned by argent metric t tration with careful control of cond tions such as pH —G Vastagh and E Szabolcs *Arzneimittel Forsch* 1958 *8* 355

Methylphenobarbitone (*B P C*) (Vol II 23rd Edn p 59) $C_{13}H_{14}O_3N_2$=246 3 It contains 98 0 to the equivalent of 101 0 per cent of methylphenobarbitone determined by a method similar to that of the *B.P* for barbituric acid derivatives (see above p 3)

IDENTIFICATION The detection of methylphenobarb tone in adm xture with hexobarb tone by X ray analys s s descr bed —E. J Hansen and B Jerslev *Dansk Tids kr Farm* 1953 *27* 261

Identification with cobalt ace tate and ammon a is descr bed —H M Rom n *Pharm Weekbl* 1959 *94* 102

DETERM INATION Methylphenobarb tone alone or in admixture with pheno barb tone can be determined by prec p tat on w th sod ium cobaltin tr te —M Kranjčev é *Croat Chem Acta* 1958 *30* 53 per *Analyt Abstr* 1958 *5* 3506

Phenobarbitone (*B P*) (Vol II 23rd Edn p 60) $C_{12}H_{12}O_3N_2$=232 2 It contains 98 5 to the equivalent of 101 0 per cent of phenobarb tone calculated with reference to the dried substance determined by the *B.P* method for barb turic ac d derivatives (see above p 3) the loss on drying at 105° is not more than 1 0 per cent

METABOLITES Detection of a urinary metabol te of phenobarb tone is described —A S Curry *J Pharm Pharmacol* 1955 *7* 604

DETERMINATION A potent ometric t tra on n chloroform with sod um methox de is recommended for the analys s of solutions conta ning macrogol 400 —J Aut an and B F Allen *Drug Stand* 1954 *22* 164

A potentiometric titration with a lver n rate s described The n ethod may be appl ed to solutions elix rs tablets and capsules and s accurate to with n ± 0 3 per cent —J I Bod n *J Amer pharm Ass Sci Edn* 1956 *45* 185

A spectrophotometr c method appl cable to tablets, el xirs and capsules with ephedrine sulphate s described —L N Mattson *J Amer pharm Ass Sci Edn* 1954 *43* 22

By the use of the rad oact e so ope ^{203}Hg 12 5 μg may l e determ ned w hin 7 per cent or 1 μg w th n 25 per cent —M P koff and J F Cl r stian *J Amer pharm Ass Sci Edn* 1956 *45* 673

A colorim etric e hod us ng cobal n trate wl h is appl cable to the analys s of syrups po vders and p ll s s described —N S ameno a and J Al rusheva *Nauch Trud Vissh Med Inst Sofia* 1958 *5* 133 per *Analyt Abstr* 1960 *7* 2434

A rap d nephelometric method us ng mercuric perchlorate is descr bed A quant ty of 0 1 to 0 35 mg of phenobarb tone may be detern ned with an

error not greater than ± 4 per cent —K Kalinowski and H Baran, *Acta polon pharm* 1958 *15* 327 per *Analyt Abstr* 1959 *6* 2316

Mixtures with amidopyrine may be analysed by the Kofler micro refracto metric method —A Sekera and J Pokorny *Mikrochim Acta* 1957 103 per *Analyt Abstr* 1957 *4* 3107

Phenobarbitone may be determined by argentimetric t tration with careful control of condit ons such as pH —G Vastagh and E Szabolcs *Arzneimittel Forsch* 1958 *8* 355

Separation from Phenytoin A paper chromatographic method is described —A S Curry *Analyst* 1955 *80* 902. A method of separation and ultraviolet spectrophotometric determination appl cable to blood samples is described — G L Plaa and C H H ne *J Lab clin Med* 1956 *47* 649 A chromatographic separation and spectrophotometric determination is described The mean re covery of phenobarbitone from capsules was 106 7 per cent —J L Lach *et al J Amer pharm Ass Sci Edn* 1958 *47* 48

Tablets of Belladonna and Phenobarbitone *(B P C)* Each tablet contains 0 045 to 0 052 g of phenobarbitone determined by extracting an acidified solution containing sodium chloride with ether and weighing the dried extracted phenobarbitone

BEMEGRIDE

Bemegride *(B P Add)* $C_8H_{14}O_2N$=155 2 It contains at least 99 0 per cent of bemegride based on its nitrogen content determined by the Kjeldahl method

Determination A sample is d ssolved in sodium hydroxide solution d luted and titrated with silver nitrate —E Szabolcs and G Vastagh *Pharm Zentralh* 1959 *98* 410

Determination in Blood Bemegride may be extracted by shaking hepari nised blood with chloroform The determ nation is completed by extracting the chloroform with 0 04N sodium hydroxide solution at 0° and measuring the extinction at 230 mμ —K W Anderson *J Pharm Pharmacol* 1958 *10* 242

Injection of Bemegride *(B P Add)* This solution contains 0 48 to 0 52 per cent of bemegride determined by the *B P* method for bemegride

Bemegride Sodium *(B Vet C Supp)* $C_8H_{13}O_2NNa$=177 2 It contains at least 99 0 per cent of bemegride sodium based on its nitrogen content determined by the Kjeldahl method A 5 0 per cent w/v solution in carbon dioxide free water is clear and colourless or almost colourless and has a pH of 11 0 to 12 0

Injection of Bemegride Sodium *(B Vet C Supp)* In the sealed container is dry powder containing 94 0 to 105 0 per cent of the stated amount of bemegride sodium determined by the *B Vet C* method for bemegride sodium

BENACTYZINE

Benactyzine Hydrochloride *(B P C)* $C_{20}H_{22}O_3NCl$=363 9 It contains 99 0 to the equivalent of 102 0 per cent of benactyzine hydro chloride determined by titration with perchloric acid in glacial acetic acid

Identification and Determination Benactyz ne hydrochloride may be ide t fied by its ultraviolet at sorption spectrum and determ ned by hydrolysing w th s dium hydrox de f ll wed by ster d st llat on and titration f the result ing d ethylam n ethanol w th a id Benactyz ne hydrocl loride in powder or in tablets may be determined spectrophot metrically at 258 5 mμ after extracting to remove free benz lic ac d and other sources of irrelevant absorption —J I Jeffries and J I Hull ps *J Pharm Pharmacol* 1956 *8* 907

DETERMINATION Benactyzine is precipitated with ammonium *reineckate* The precipitate is dissolved in acetone and determined argentimetrically or colorimetrically —M Stereseu *et al Rev Chim, Bucharest* 1959 *10* 535 per *Analyt Abstr* 1960 7, 2437

BEPHENIUM

Bephenium Embonate (B Vet C Supp) $C_{47}H_{58}O_8N_2 \cdot H_2O = 917.1$ It contains at least 98 0 per cent of bephenium embonate monohydrate determined by the following method

Add about 1 g to 50 ml of glacial acetic acid Without waiting for complete solution titrate with N/10 perchloric acetic acid using 0 2 ml of 0 5 per cent *w/v solution of crystal* violet in glacial acetic acid as indicator Each ml of N/10 perchloric acetic acid is equivalent to 0 04585 g of bephenium embonate

The melting point is 152° to 156° The base may be identified by preparation of the picrate (melting point about 134° with decomposition) When examined in filtered ultraviolet radiation, bephenium embonate exhibits a yellow fluorescence, distinguishing this compound from bephenium hydroxynaphthoate which gives a green fluorescence

BISMUTH

Extra Pharmacopœia Vol II, *23rd Edn*, p 73

Bismuth Glycollylarsanilate (*B P C*) (Vol II, 23rd Edn p 75) $C_8H_8O_4NAsBi = 499.1$ It contains 96 0 to the equivalent of 103 0 per cent of bismuth glycollylarsanilate, 14 0 to 16 0 per cent of arsenic, As, and 38 0 to 42 5 per cent of bismuth, Bi all calculated with reference to the dried substance, the loss on drying at 105° is not more than 3 0 per cent Bismuth glycollylarsanilate is determined titrimetrically with sodium nitrite after a preliminary refluxing with hydrochloric acid, arsenic is determined iodometrically after preliminary digestion to destroy organic matter and bismuth is determined gravimetrically as the phosphate after preliminary digestion with nitric acid

BUSULPHAN

Busulphan (*B P Add*) $C_6H_{14}O_6S_2 = 246.3$ It contains at least 98 5 per cent of busulphan calculated with reference to the dried substance, determined titrimetrically with N/10 sodium hydroxide after refluxing with water, the loss on drying at 60° under reduced pressure is not more than 2 0 per cent

Tablets of Busulphan (B P Add) Each tablet contains 90 0 to 110 0 per cent of the stated amount of busulphan, based on the sulphur content, determined by extraction with acetone and wet combustion with nitric acid

CALCINED MAGNESITE

Calcined Magnesite (B Vet C Supp) It contains at least 85 0 per cent of magnesium oxide (MgO = 40 32) determined by the following method

To about 0 5 g add 25 ml of dilute hydrochloric acid, boil until a clear solution is obtained continue to boil for a further 3 minutes cool and dilute to 250 ml with water To 25 ml add 10 ml of ammonia buffer solution (ammonium chloride 13 5 g strong solution of ammonia 114 ml water to 200 ml)

and titrate with M/20 sodium edetate using 0 5 ml of solution of Solochrome Black as indicator From the quantity of M/20 sodium edetate used subtract one quarter of the volume used in the determination of calcium each ml of M/20 sodium edetate is equivalent to 0 002016 g of MgO

It contains not more than 2 5 per cent of calcium (calculated as CaO), determined by the following method

Neutralise 100 ml of the diluted solution in hydrochloric acid prepared in the assay for magnesium oxide (above) with N/1 potassium hydroxide using litmus paper as indicator add 15 ml of diethylamine 50 ml of water and 0 3 ml of calcon indicator solution and titrate with M/20 sodium edetate Each ml of M/20 sodium edetate is equivalent to 0 002804 g of CaO

It contains not more than 50 p p m of lead and not more than 250 p p m of fluoride The loss on ignition is not more than 8 0 per cent

DETERMINATION For material containing silica a sample is heated with perchloric acid and the silica filtered off and weighed Calcium and magnesium are determined in the filtrate by methods similar to those of the *B Vet C Supp* (above) —F Hobson and W H Stephenson *Analyst* 1959 *84* 520

Silica is removed and calcium determined with sodium edetate at pH 12 by using murexide as indicator and titrating to blue violet Magnesium is determined by titration with sodium edetate to the blue colour of Eriochrome Black T indicator —K Izáková *Chem Zvesti* 1957 *11* 205 per *Analyt Abstr* 1958 5 2127

CAPSICUM

Extra Pharmacopœia Vol II, 23rd Edn p 97

DETERMINATION OF THE CAPSAICIN CONTENT Capsaicin is extracted from capsicum and its pharmaceutical preparations either chromatographically or by an ether alkali partition extraction procedure and the determination is completed spectrophotometrically or colorimetrically with diazobenzenesulphonic acid The most consistent results were reported when using a spectrophotometric difference method —Report of the Joint Committee of the Pharmaceutical Society and the Society for Analytical Chemistry on Methods of Assay of Crude Drugs *Analyst* 1959 *84* 603 The following method for the assay of the drug is based on this report

Reduce a sufficient quantity of capsicum to No 30 powder and mix shake about 15 g with 80 ml of alcohol (95 per cent) for 6 hours and allow to stand for 18 hours Filter through a sintered glass filter (grade 1) washing the residue with 20 ml of alcohol (95 per cent) and dilute the mixed filtrate and washings to 100 ml To 10 ml add 15 ml of alcohol (95 per cent) 15 ml of water 2 g of sodium chloride and 5 ml of N/10 sodium hydroxide mix and extract with 3 successive portions each of 10 ml of light petroleum (b p 80°–100°) Run off the light petroleum extracts into a second separator containing 10 ml of alcohol (60 per cent) shake allow to separate and reject the light petroleum Filter the mixed alcoholic extract and washings through cotton wool washing the filter with 10 ml of alcohol (60 per cent) evaporate off the alcohol on a water bath dilute to about 50 ml with water and adjust to pH 7 5 with N/10 hydrochloric acid using phenol red solution as indicator Extract with 6 successive portions each of 20 ml of anæsthetic ether wash the mixed extracts with 10 ml of water and reject the washings add 20 ml of dehydrated methyl alcohol evaporate almost to dryness on a water bath in a fume cupboard dilute to 100 ml with dehydrated methyl alcohol add 0 1 g of decolorising charcoal shake and filter through a hardened fine grade filter paper rejecting the first 20 ml of filtrate To 20 ml of this solution add exactly 5 ml of N/10 sodium hydroxide and dilute to 25 ml with dehydrated methyl alcohol to a further 20 ml add exactly 5 ml of N/20 hydrochloric acid and dilute to 25 ml with dehydrated methyl alcohol Measure the extinction of the alkaline solution against the acid solution at the maxima at about 248 mμ and calculate the percentage of

capsaicin from the data E (1 per cent 1 cm) 248 mμ = 308 and E (1 per cent 1 cm.) 294 mμ = 116 If the two results so obtained differ by less than 10 per cent the assay is valid and the result is calculated from the extinction at the maximum at about 294 mμ.

CARBIMAZOLE

Carbimazole (*B P*) $C_7H_{10}O_2N_2S$—186 2 It contains 98 0 to the equivalent of 102 0 per cent of carbimazole determined spectrophotometrically

DETERMINATION A colorimetric procedure using 2 6 dichloroquinonechloramine is described—*R A McAllister J Pharm Pharmacol.* 1955 *7* 135

Tablets of Carbimazole (B P) Each tablet contains 90 0 to 110 0 per cent of the stated amount of carbimazole determined by the *B P* method for carbimazole

CELLULOSE

Extra Pharmacopœia Vol II, 23rd Edn, p 104

Methylcellulose 20 (*B.P C*) It contains 27 0 to 29 0 per cent of CH_3O, calculated with reference to the dried substance, determined by the *B P* method for the determination of methoxyl on about 0 05 g of methylcellulose 20 and with a 25 per cent solution of sodium acetate in the scrubber, the loss on drying at 105° is 8 0 to 10 0 per cent The viscosity determined in a 2 0 per cent aqueous solution at 20°, is 17 0 to 23 0 centistokes

CHLORAL HYDRATE

Extra Pharmacopœia Vol II, 23rd Edn, p 106

DETERMINATION OF CHLORAL HYDRATE IN MIXTURES AND SYRUPS A method involving reduction with zinc and argentimetric titration of the chloride produced based on the method of P A W Self (*Pharm J* II/1907 4) is introduced by an amendment to the *B.P C* This method is specified for Mixture and Syrup of Chloral and it is also used for Mixture of Chloral and Potassium Bromide for Infants and for Mixture of Potassium Bromide and Chloral but allowance is made for the quantity of bromide present in these mixtures The following is the method for Syrup of Chloral to 0 6 g and 2 5 g of zinc powder 15 ml of glacial acetic acid and 30 ml of water boil under a reflux condenser for 30 minutes cool filter through cotton wool wash the residue with water and to the combined filtrate and washings add 20 ml of dilute nitric acid and 30 ml of N/10 silver nitrate shake vigorously filter wash the residue with water and titrate the excess of silver nitrate in the combined filtrate and washing with N/10 ammonium thiocyanate using ferric ammonium sulphate as indicator each ml of N/10 silver nitrate is equivalent to 0 005514 g of $C_2H_3O_2Cl_3$ Determine the weight per ml and calculate the proportion of $C_2H_3O_2Cl_3$ weight in volume—Amendments to the British Pharmaceutical Codex *Pharm J* I/1961 244

Mixture of Chloral (B P C) It contains 8 60 to 9 60 per cent w/v of chloral hydrate determined by the amended *B P C* method for Syrup of Chloral (see above)

CHLORAMPHENICOL

Extra Pharmacopœia Vol II, 23rd Edn, p 107

DETERMINATION A colorimetric method based on reaction of the nitro-group with tetraethylammonium hydroxide in dimethylformamide acetone solution is described—F M Freeman *Analyst* 1956 *81* 299

An indirect method is based on hydrolysis to D(−)-*threo*-2-amino-1-*p*-nitrophenylpropane-1,3-diol and subsequent oxidation with periodate Periodate oxidation and a spectrophotometric method can be used for the detection of the biologically inactive hydrolytic product in chloramphenicol —A Valseth and A Wickstrom, *Medd norsk farm Selsk*, 1955, *17*, 345 Chloramphenicol has also been determined by hydrolysis followed by nitrometry —Masatoshi Nagawa and Hideyo Shundo *J pharm Soc Japan*, 1956, *76* 99

Chloramphenicol may be determined by hydrolysis followed by removal of dichloracetic acid and hydrochloric acid and titration with perchloric acid in glacial acetic acid A slight modification is required when applying the method to chloramphenicol palmitate —B Salvesen, *Medd norsk farm Selsk*, 1958, *20* 65

Chloramphenicol in aqueous solution (2 to 50 *μg* per ml) may be determined by boiling with a 40 per cent solution of sodium hydroxide and measuring the intensity of the yellow colour produced —W Döll, *Arzneimittel Forsch*, 1955, *5*, 97

Chloramphenicol is reduced with zinc and dilute sulphuric acid and the resulting chloride is determined argentimetrically —G A. Vaisman and M D Kislaya, *Apt Delo*, 1956, *4*, 19

Chloramphenicol may be determined by reduction of the nitro-group followed by reaction with bromine and iodometric titration of the excess of reagent Alternatively chloramphenicol may be boiled with titanous chloride and the excess titrated with ferric ammonium sulphate —W Awe and H Stohlmann, *Arzneimittel Forsch.*, 1957, *7*, 495

Low concentrations of chloramphenicol in blood may be determined colorimetrically after diazotisation and coupling —Motohiro Maruyama, *Ann Rep Takamine Lab*, 1955 7, 158 per *Analyt Abstr*, 1957, *4*, 2297

Data for the separation of chloramphenicol and its decomposition product 2-amino-1-*p* nitrophenylpropane-1,3 diol from pharmaceutical preparations by counter-current technique are given —A Brunzell, *J Pharm Pharmacol*, 1956, *8* 329

A polarographic technique suitable for estimating chloramphenicol in blood and urine at a concentration of 0 01 mg per ml is described Some decomposition products of chloramphenicol can also be determined polarographically —E Knobloch and E Svátek *Coll Czech chem Commun*, 1955, *20*, 1113

A colorimetric method based on reaction with hydroxylamine and ferric chloride is described.—Tsutou Aihara *et al*, *J pharm Soc Japan* 1957, *77*, 1318

Interfering substances are removed by paper electrophoresis, and chloramphenicol is determined by measurement of ultraviolet absorption at 278 mμ —Tsutou Aihara and Kazuo Sato, *J pharm Soc Japan*, 1957, *77*, 1322

Ear-drops of Chloramphenicol (*B P C.*) Contain 90 0 to 110 0 per cent of the stated amount of chloramphenicol, determined spectrophotometrically.

DETERMINATION A spectrophotometric method is described for the determination of chloramphenicol in the presence of benzocaine and propylene glycol —Yuki Yoneda, *Ann Rep Takamine Lab*, 1957, *9*, 87, per *Analyt Abstr*, 1958, *5*, 4283

A method for the determination of chloramphenicol in the presence of sulphonamides and propylene glycol involving separation by ion exchange followed by spectrophotometric determination, is described.—G Thomas *et al*, *Pharm Weekbl*, 1955, *90* 241

Paint of Chloramphenicol and Crystal Violet (*B Vet C. Supp.*) It contains 9 0 to 11 0 per cent w/v of chloramphenicol determined by the following method

Prepare a 0 25 per cent v/v solution of the paint in water, mix a suitable volume with an equal volume of buffer solution pH 4·0 prepared by mixing 80 ml of N/5 acetic acid with 20 ml of N/5 sodium acetate add 0 1 g of powdered thymol, transfer a quantity to a polarograph cell which has a mercury pool anode, and bubble oxygen free nitrogen, which has previously been passed

through water through the solution maintained at 25°, until deoxygenated record a polarogram to about −1 1 volt correcting the diffusion current for the residual current Prepare a solution by d ssolving 0 10 g of chloramphen col in 1 ml of alcohol (95 per cent) and diluting with equal quantities of the buffer solution and water to a strength of 125 µg per ml record the polarogram under the conditions described above and calculate the quantity of chloramphenicol in the aample by comparing the diffusion currents of the solut ons

It contains 9 5 to 11 5 per cent w/v of total solids determined by the *B P* method for total solids

Chloramphenicol Cinnamate (*B P C*) It contains 98 0 to the equivalent of 102 0 per cent of chloramphenicol cinnamate, determined spectrophotometrically

Chloramphenicol Palmitate (*B P C*) It contains 97 0 to the equivalent of 103 0 per cent of *chloramphenicol palmitate determined* spectrophotometrically

CHLORHEXIDINE

Chlorhexidine Gluconate Solution (*B P Add*) It contains 19 0 to 21 0 per cent w/v of chlorhexidine gluconate, $C_{34}H_{54}O_{14}N_{10}Cl_2$—897 8 determined by titration with perchloric acid in glacial acetic acid after evaporating to dryness and dissolving in glacial acetic acid

Chlorhexidine Hydrochloride (*B P Add*) $C_{22}H_{30}N_{10}Cl_2$=578 4 *It contains* at least 97 5 per cent of *chlorhexidine hydrochloride* calculated with reference to the dried substance determined by titration with perchloric acid in glacial acetic acid, the loss on drying at 130° is not more than 2 0 per cent

DETERMINATION OF SMALL QUANTITIES IN PHARMACEUTICAL PREPARATIONS Chlorhexidine is freed from exc pients and determ ned colorimetrically with alkaline sodium hypobrom te the precip tation of base being prevented by the addition of a surface active agent (cetrimide) —A. Holbrook *J Pharm Pharmacol* 1958 *10* 370

Cream of Chlorhexidine (*B Vet C Supp*) It contains 0 90 to 1 10 per cent of chlorhexidine gluconate determined by the following method

Transfer about 3 g to a separator using 20 ml of water add 10 ml of N/1 hydrochloric acid extract with three successive portions each of 25 ml of chloroform mixing the chloroform extracts in a second separator wash the mixed chloroform extracts with two 10 ml portions of water add ng these washings to the acid liquid in the first separator d scard the chloroform extracts and dilute the mixed acid layer and washings to 100 ml with water Transfer 5 ml of this solution to a 100 ml flask dilute to about 80 ml with water add 5 ml of solution of cetrimide and if the solution is acid sufficient N/1 sodium hydroxide to render alkal ne to litmus paper plus 0 5 ml in excess mix well add 1 ml of isopropyl alcohol to suppress the froth and place the flask in a water bath at 18° to 22° When the trmperature has reached equilibrium add 2 ml of alkaline solution of sodium hypobromite and dilute to 100 ml with water Allow to stand in the water bath for exactly twenty five minutes and immediately measure the ext nction of a 1 cm layer at 480 mµ against water Repeat the operation omitting the sample subtract the extinction from that obta ned when the sample is included and calculate the percentage of chlorhex dine gluconate in the sample for purposes of calculation use an E(1 per cent 1 cm) value of 214 for chlorhexidine gluconate

Pessaries of Chlorhexidine (*B Vet C Supp*) Each pessary contains 95 0 to 105 0 per cent of the stated amount of chlorhexidine hydrochloride determined by the following method

Dissolve as completely as possible a quantity of powder equivalent to about 0 3 g of chlorhexidine hydrochloride, in 30 ml of water and 10 ml of solution of sodium hydroxide extract with three successive portions, each of 50 ml, of chloroform, wash the combined chloroform extracts with 10 ml of water, evaporate off the chloroform dissolve the residue in 20 ml of glacial acetic acid, and titrate with N/10 perchloric-acetic acid using 1 ml of solution of α naphtholbenzein as indicator Repeat the operation omitting the sample the difference between the two titrations represents the amount of perchloric acid required by the sample Each ml of N/10 perchloric-acetic acid is equivalent to 0 01446 g of $C_{22}H_{32}N_{10}Cl_4$ Calculate the weight of chlorhexidine hydrochloride in each pessary of average weight

The pessaries comply with the following test for disintegration

Take a sample of 5 pessaries and carry out the following test Drop a pessary into 300 ml of water at 37° contained in a 500-ml wide-necked bottle, set aside, with occasional swirling and note the time for complete disintegration, the pessary disintegratea within 15 minutes All 5 pessaries should comply with the test if one pessary fails to comply, the test may be repeated using a further 5 pessaries, all of which must comply with the test

CHLORMERODRIN

Chlormerodrin (*B P C*) $C_3H_{11}O_3N_2ClHg = 367\ 2$ It contains 99 0 to the equivalent of 102 0 per cent of chlormerodrin, calculated with reference to the dried substance, based on the mercury content determined titrimetrically with ammonium thiocyanate after preliminary reduction with zinc and dissolution in nitric acid, the loss on drying at 105° is not more than 1 0 per cent

Determination in Tablets Reduction with zinc and titration with ammonium thiocyanate is satisfactory for the pure substance but gives low recoveries for tablrts containing a large proportion of excipients Reduetion in the presenee of free bromine is satisfactory —A Berggren and W Kirsten, *J Pharm Pharmacol*, 1955, 7, 183

CHLOROTHIAZIDE

Chlorothiazide (*B P Add*) $C_7H_6O_4N_3S_2Cl = 295\ 7$ It contains at least 98 0 per cent of chlorothiazide, calculated with reference to the dried substance, determined by titration with lithium methoxide in dimethylformamide, the loss on drying at 105° is not more than 1 0 per cent

Determination A sample may be dissolved in ethylenediamine and titrated with potassium hydroxide in isopropyl alcohol using o nitroaniline as indicator The standard error is ± 0 4 per cent for the substance and ± 0 47 per cent for tablets —Shu-Liang Chang *Acta pharm sinica*, 1959, 7, 295

CHLOROTRIANISENE

Chlorotrianisene (*B P C*). $C_{23}H_{21}O_3Cl = 380\ 9$ It contains 98 0 to the equivalent of 103 0 per cent of chlorotrianisene, calculated with reference to the dried substance, based on the chlorine content determined by the Stepanow method, the loss on drying at 80° is not more than 1 0 per cent

CHLORPROMAZINE

Chlorpromazine Hydrochloride (*B P*) $C_{17}H_{20}N_2SCl_2 = 355\ 3$ It contains 99 0 to the equivalent of 101 0 per cent of chlorpromazine

hydrochloride, calculated with reference to the dried substance, determined acidimetrically on the extracted base, the loss on drying at 105° is not more than 1 0 per cent

Determination

VOLUMETRIC METHODS Determination in pharmaceutical preparations by means of non aqueous titration with perchloric acid is described—J B Milne and L G Chatten *J Pharm Pharmacol*, 1957, *9*, 686

Chlorpromazine may be titrated with ceric sulphate or potassium bromate A red intermediate compound is formed, which is decolorised when oxidation is completed The end point may be determined visually, potentiometrically or by the dead-stop method—G Dušinský and O Lišková *Chem Zvesti* 1958 *12* 213 per *Analyt Abstr*, 1959, *6* 1079 G Dušinský, *Pharmazie* 1958 *13*, 478, per *Analyt Abstr*, 1959, *6* 2319

Chlorpromazine is precipitated as the insoluble reineckate, which is hydrolysed, and the resulting thiocyanate is converted into the free acid by passing through cation exchange resin (Wafatit F) in the H^+ form, and titrated with alkali—K Howorka *Pharm Zentralh* 1958, *97*, 374

Chlorpromazine may be precipitated using an excess of standard solution of cadmium iodide in the presence of potassium iodide or hydriodic acid and the excess of cadmium iodide in the filtrate determined complexometrically using xylenol orange as indicator—L Przyborowski and L Króweczyński, *Chem Anal Warsaw* 1959, *4*, 59, per *Analyt Abstr*, 1959, *6*, 4951

GRAVIMETRIC METHOD A gravimetric determination with tungstosilicic acid is described—J Blažek and Z Stejskal *Čsl Farm*, 1955 *4*, 246 per *Analyt Abstr*, 1956, *3* 530

COLORIMETRIC METHODS Chlorpromazine may be determined by reaction with phosphoric acid and iodic acid and measurement of the red colour (absorption maximum 526 mμ) Barbiturates and rauwolfia alkaloids do not interfere, but phenothiazine derivatives such as promethazine should first be separated by electrophoresis—A Calo *et al R C Ist sup Sanit*, 1957, *20*, 802 per *Analyt Abstr*, 1959 *6*, 4152

A colorimetric method using tungstophosphoric acid is described—S Farkas *Magyar Kém Folyt* 1958 *64* 209, per *Analyt Abstr*, 1959, *6* 1510

A colorimetric method based on reaction with palladium chloride is described A modification of this method permits the determination of chlorpromazine in the presence of promazine—L Cavatorta *J Pharm Pharmacol*, 1959 *11* 49

POLAROGRAPHIC METHOD A polarographic determination based on precipitation with tungstosilicic acid is described—J Blažek *Čsl Farm* 1956, *5* 210 per *Analyt Abstr*, 1958 *5*, 252

VARIOUS METHODS The acetone soluble violet complex formed with potassium chromithiocyanate is used in a spectrophotometric method and a potentiometric titration with silver nitrate Gravimetric methods using ammonium reineckate are also described—P Spacu *et al*, *Acad R P R Stud Cercet Chim* 1958 *6* 573 per *Analyt Abstr*, 1959 *6* 4576

DETERMINATION IN URINE The difficulty that arises with certain specimens of sulphuric acid (Vol II, 23rd Edn, p 1322) may be avoided by adding to the sulphuric acid 50 mg of potassium metabisulphite per litre or 2 per cent of alcohol—P Dubost and S Pascall *Ann pharm franç*, 1955, *13* 56

DETERMINATION IN BLOOD CEREBROSPINAL FLUID AND URINE Modifications to the method of Dubost and Pascall (Vol II 23rd Edn pp 1204 and 1322) are described—C Citterio and F Mattei *Lav psichiat* 1957, *20*, 189 per *Analyt Abstr* 1958 *5* 3826

DETERMINATION IN BLOOD AND URINE (Vol II 23rd Edn pp 1204 and 1322) A colorimetric method using ferric nitrate and sulphuric acid is described—H Leach and W R C Crimmin *J clin Path*, 1956 *9*, 164, per *Analyt Abstr* 1956, *3* 3139

CHOLINE THEOPHYLLINATE

Choline Theophyllinate (*B.P.C.*) $C_{12}H_{21}O_3N_5$=283 3 It contains at least 98 5 per cent of choline theophyllinate, determined by titration with perchloric acid in dioxan

CROTAMITON

Crotamiton (*B P C*) $C_{13}H_{17}ON$=203 3 It contains at least 95 0 per cent w/w of crotamiton based on the nitrogen content determined by the Kjeldahl method

CYCLIZINE

Cyclizine Hydrochloride (*B P C*) $C_{18}H_{22}N_2Cl$=302 9 It contains at least 98 0 per cent of cyclizine hydrochloride, calculated with reference to the dried substance, determined by titration with perchloric acid in glacial acetic acid the loss on drying at 130° is not more than 1 0 per cent

DERRIS

Extra Pharmacopœia Vol II 23rd Edn, p 139

DETERMINATION OF ROTENONE IN LONCHOCARPUS AND DERRIS The following method of assay for rotenone is based on the report of the Lonchocarpus and Derris Panel of the Joint Committee of the Pharmaceutical Society and the Society for Analytical Chemistry on Methods of Assay of Crude Drugs (*Analyst* 1959 *84* 740)

Reduce a sufficient quantity to No 30 powder and mix shake about 30 g with 300 ml of chloroform for 5 hours allow to stand for 16 hours shake for 30 minutes and filter Evaporate 200 ml of the filtrate to dryness dissolve the residue in 100 ml of a mixture of equal volumes of benzene and solvent ether and transfer to a separator with the aid of 20 ml of the solvent mixture The following extraction procedure must be carried out with care to avoid the formation of intractable emulsions the tendency to emulsify being particularly marked in the earlier stages The operation down to the words 'Immediately add 50 ml of water must be completed within 30 minutes Cautiously add 50 ml of a 2 per cent w/v solution of potassium hydroxide in water pouring the solution down the side of the separator mix by gentle rotation and as soon as the liquids have almost completely separated run off the clear part of the aqueous layer into a second separator containing 40 ml of the benzene solvent ether mixture Repeat the extraction using two successive portions each of 50 ml. of a 5 per cent w/v potassium hydroxide solution mixing gently with the first portion and shaking vigorously with the second and transfer each of the aqueous extracts to the second separator Immediately add 50 ml of water to the first separator and shake gently Gently shake the second separator allow to separate discard the aqueous layer and transfer the benzene solvent ether solution to the first separator Add dropwise N/1 hydrochloric acid shaking after each addition until the solution is just acid to litmus paper reject the aqueous layer wash the benzene solvent ether solution with three successive portions each of 25 ml of water and dry with 15 g of anhydrous sodium sulphate filter wash the separator and residue with 30 ml of the benzene solvent ether mixture and evaporate the combined filtrate and washings under reduced pressure with the aid of gentle heat Dissolve the residue in 15 ml of hot carbon tetrachloride evaporate to dryness under reduced pressure again dissolve the residue in 15 ml of hot carbon tetrachloride evaporate to dryness under reduced pressure and dry the residue under reduced pressure for 10 minutes Add 25 ml of a saturated solution at 0° of rotenone in carbon tetrachloride heat on a water bath under a reflux condenser until solution is complete cool in ice swirling the flask to induce crystallisation and allow to stand in ice for 16 hours filter through a No 3 sintered glass crucible previously cooled to 0° wash the residue

rapidly with three successive portions each of 5 ml, of the rotenone-carbon tetrachloride solution at 0°, maintain suction for 5 minutes and dry for one hour at 40°, and weigh Determine the optical rotation at 20°, in a 1-decimetre tube of a 4 0 per cent w/v solution of the residue in benzene The percentage of rotenone is given by the formula

$$\frac{(W_1 \times \alpha \times 16\ 26)}{W}$$

where W is the weight of sample, W_1 the weight of residue and α the optical rotation

DEXTRAN

Physico chemical Characteristics The viscosity extrapolated to zero concentration is a function of molecular weight and structure The application of viscosity data is discussed —K Zakrzewski *et al*, *Przem chem* 1954 *10*, 209 per *Analyt Abstr* 1956, *3*, 536

Fractional precipitation with methanol, light scattering photometry, and viscometry, for the evaluation of clinical dextran are reviewed and compared — J A Riddick *et al*, *Analyt Chem*, 1954, *26*, 1149

Determination of easily hydrolysable fructose units is described —C S Wise *et al*, *Analyt Chem*, 1955, *27*, 33

Determination of mean molecular weight iodometrically is described.—L Lacko and J Málek *Chem Listy*, 1957, *51* 47 per *Analyt Abstr*, 1958, *5* 127

Determination of the 1 3 and 1 4 linkages by periodate oxidation and isotope dilution is described.—J D Moyer and H S Isbell *Analyt Chem*, 1957, *29*, 1862

The rate of change of refractive index with concentration was determined at 436 mμ, 546 mμ and 578 mμ.—M Zebec *et al*, *Croat Chem Acta* 1958 *30*, 251, per *Analyt Abstr*, 1959, *6*, 4460

Determination A colorimetric method using anthrone is described —T A Scott Jr and E H Melvin, *Analyt Chem*, 1953, *25*, 1656

Determination in Blood (Vol II, 23rd Edn p 1206) The Hunt-Thorsen method (*Acta chem scand*, 1947, *1*, 803) when slightly modified is simpler and gives more consistent results than the anthrone method —H Szafranowa *et al*, *Acta polon pharm*, 1959, *16*, 35, per *Analyt Abstr*, 1959, *6*, 3656

Determination of Isopropyl Alcohol in Dextran Solutions Isopropyl alcohol is oxidised to acetone and distilled into hypoiodite with which it reacts to produce iodoform The excess of reagent is determined by acidifying and titrating the liberated iodine with sodium thiosulphate —G J Frisone *Analyt Chem* 1954, *26* 924

Injection of Dextran (B.P) It contains 5 5 to 6 5 per cent w/v of dextrans, based on the optical rotation

Veterinary Injection of Dextran (B Vet C Supp) The standards are the same as those for Injection of Dextran *B P*, except that in test B for molecular size, the upper limit of intrinsic viscosity is 0 53

DEXTRAN SULPHATE

Dextran Sulphate (*B P*) It has a potency of at least 10 units per mg, determined by the *B P* method for the biological assay of dextran sulphate, and at least 14 0 per cent of sulphur, determined alkalimetrically after precipitation with benzidine, both calculated with reference to the dried substance, the loss on drying at 60° under reduced pressure is not more than 5 0 per cent The limits of error (P = 0 95) of the biological assay are 80 to 125 per cent

Injection of Dextran Sulphate (B P) The potency determined by the *B P* method for the biological assay of dextran sulphate is 90

to 111 per cent of the stated potency the limits of error (P=0 95) are 80 to 125 per cent

DEXTROMETHORPHAN

Dextromethorphan Hydrobromide (*B P C*) $C_{18}H_{25}ONBr\,H_2O$ =370 3 It contains at least 99 0 per cent of anhydrous dextrometh orphan hydrobromide calculated with reference to the dried substance determined by titration of the extracted base with perchloric acid in dioxan the loss on drying at 80° under reduced pressure is 4 0 to 5 5 per cent

Differentiation of Optical Isomers Tests for distinguishing between racem c dextrorotatory and lævorotatory isomers of 3 methoxy *N* methyl *morphinan are described*—E *G C Clarke J Pharm Pharmacol* 1958 *10* 642

Separation from Other Organic Bases A chromatographic technique *using filter paper buffered in zones of decreas ng pH is described*—M *Schmall et al Analyt Chem* 1956 *28* 1373

DICOUMAROL

Extra Pharmacopœia Vol II 23rd Edn p 148

Cyclocoumarol (*B P C*) $C_{19}H_{18}O_4$=322 4 It contains 95 0 to the equivalent of 105 0 per cent of cyclocoumarol determined spectro photometrically

DICYCLOMINE

Dicyclomine Hydrochloride (*B P C*) $C_{19}H_{35}O_2NCl$=346 0 It contains 99 0 to the equivalent of 102 0 per cent of dicyclomine hydrochloride calculated with reference to the dried substance determined by titration with perchloric acid in glacial acetic acid the loss on drying at 105° is not more than 1 0 per cent

DIELDRIN

Dieldrin (*B Vet C Supp*) $C_{12}H_8OCl_6$=380 9 It contains 54 0 to 58 0 per cent of Cl calculated with reference to the anhydrous substance determined by the *B Vet C* method for chlorine in Benzene Hexachloride but with the period of boiling under a reflux condenser after the addition of sodium increased to 2 hours The content of water determined by the Karl Fischer method, is not more than 0 3 per cent The setting point is 115° to 120°

Determination of Dieldrin Residues in Olive Oil. 10 p p m. of dieldrin may be determined colorimetrically on material derived from 10 g of oil and 0 1 p p m can be detected using a 50 g sample of o l—L. Bonifortì and M Doretti *R.C Ist sup Sanit* 1959 *22* 189 per *Analyt Abstr* 1960 7 792

DIETHYLTHIAMBUTENE

Diethylthiambutene Hydrochloride (*B Vet C Supp*) $C_{16}H_{32}NS_2Cl$ =327 9 It contains at least 98 5 per cent of diethylthiambutene hydro chloride determined by the following method

Dissolve about 0 7 g in 20 ml of glacial acetic acid add 14 ml of solution of mercuric acetate and titrate with *N/10* perchloric acet c acid using as ind cator a 0 1 per cent w/v solution of quinaldine red in glacial acet c acid Repeat the operation omitting the sample The difference between the two

titrations represents the amount of perchloric acetic acid required by the sample each ml of N/10 perchloric acetic acid is equivalent to 0 03279 g of $C_{16}H_{22}NS_2Cl$

The melting point is 151° to 154°

DIMENHYDRINATE

Dimenhydrinate (*B.P.C.*) $C_{54}H_{68}O_8N_8Cl=470\ 0$ It contains 53 0 to 55 8 per cent of diphenhydramine ($C_{17}H_{21}ON$) and 44 0 to 47 2 per cent of theoclic acid ($C_7H_7O_2N_4Cl$) Diphenhydramine is determined by the *B P* method for diphenhydramine hydrochloride each ml of N/10 hydrochloric acid is equivalent to 0 02554 g of $C_{17}H_{21}ON$ Theoclic acid is determined by treatment with ammonia ammonium nitrate, and silver nitrate and titration of the neutralised filtrate with ammonium thiocyanate The loss on drying over phosphorus pentoxide under reduced pressure is not more than 0 5 per cent

Determination by Non aqueous Titration Diphenhydramine is determined by titration with perchloric acid in glacial acetic acid or chloroform, with α naphtholbenzein as indicator Theoclic acid is determined by titration with sodium methoxide in pyridine dimethylformamide or chloroform with thymol blue as indicator These methods can be used for tablets or suppositories —J Meulenhoff and J J M van Sonsbeek, *Pharm Weekbl* 1956 *91* 453

DIMETHICONE

Dimethicone 20 (*B P C*) No assay is described but it has a refractive index at 20° of 1 401 to 1 405, a viscosity at 20° of 19 0 to 25 0 centistokes and a wt per ml at 20° of 0 950 g to 0 965 g , 15 g dissolved in a mixture of 15 ml of toluene and 15 ml of neutralised *n* butyl alcohol requires not more than 0 1 ml of N/20 alcoholic potassium hydroxide for neutralisation to bromophenol blue

Identification of Organosilicon Compounds Infra red spectroscopy and other spectroscopic techniques are reviewed —A L Smith and J A McHard *Analyt Chem*, 1959 *31* 1174

Detection of Silicones in Textiles The textile is heated with sulphuric acid and if on shaking the acid runs off the side of the tube silicone is present if the acid wets the tube evenly silicone is absent.—G von Finck *Melliand Textilber Eng Edn* 1959 *40* 32 per *Analyt Abstr* 1959 *6* 4054

Cream of Dimethicone (*B.P.C.*) No assay is described for this preparation

Determination of Silicones in Ointments The ointment is heated under reflux with trichloroethylene the solution being evaporated and fats removed by saponification The residue is heated with sulphuric and nitric acids and weighed as silicon dioxide —R Spranger and R Herzinger *Arch Pharm Berl* 1954 *287* 204 per *Analyt Abstr* 1955 *2* 754

Suspension of Silica in Dimethicone (*B Vet C Supp*) It contains 6 0 to 8 0 per cent w/w of free silica and 79 0 to 83 0 per cent w/w of total silica determined by the following methods

For free silica Mix about 5 g with 40 ml of toluene and centrifuge decant the clear supernatant liquid and wash the residue with four successive portions each of 20 ml of toluene centrifuging and decanting the clear supernatant liquid Reserve the supernatant liquids for the determination of refractive index and weight per ml Transfer the residue to a tared dish with the aid of alcohol (95 per cent) evaporate gently to dryness on a water bath dry at 130° and ignite the residue of silica to constant weight

For total silica Ignite gently about 0 2 g with 2 ml of fuming sulphuric acid and 0 5 ml of fuming nitric acid until a dry residue is obtained and ignite the residue of silica to constant weight.

Emulsion of Dimethicone (*B Vet C Supp*) It contains 0 85 to 1 05 per cent w/v of Suspension of Silica in Dimethicone determined by the following method

Mix 50 ml with 60 ml of benzene and distil in a suitable apparatus (such as the apparatus described in the *B P* for the determination of volatile oil in drugs) until all the water has been removed Dilute the liquid remaining after distil lation to 50 ml with benzene filter transfer 15 ml to a platinum crucible and *evaporate until 1 to 2 ml remains Cool add 2 ml of fuming sulphuric acid and* 0 5 ml of fuming nitric acid and warm gently until no more white fumes are evolved Cool add a further 2 ml of fuming sulphuric acid and 0 5 ml of fuming nitric acid again warm gently until no more white fumes are evolved ignite cool and weigh Add 5 ml of hydrofluoric acid and 0 2 ml of sulphuric acid ignite and again weigh The loss in weight corresponds to the quantity of silica present in the dimethicone Each g of silica is equivalent to 1 324 g of Suspension of Silica in Dimethicone

DIPIPANONE

Dipipanone Hydrochloride (*B P C*) $C_{24}H_{31}ONCl\,H_2O=404\,0$ It contains at least 98 0 per cent of anhydrous dipipanone hydrochloride calculated with reference to the anhydrous substance determined by titration with perchloric acid in glacial acetic acid The water content determined by the Karl Fischer method is not more than 5 0 per cent

DUSTING POWDER, ABSORBABLE

Absorbable Dusting Powder (*B P*) No assay is described, but the pH of a 10 per cent *w/v* suspension in water is 9 5 to 10 8 the acid insoluble ash is not more than 0 3 per cent, the ash not more than 3 5 per cent, and the loss on drying at 105° not more than 12 0 per cent It complies with a sedimentation test and limit tests for chloride sulphate formaldehyde, and magnesium oxide

ERGOT

Extra Pharmacopœia Vol II 23rd Edn, p 159

Methylergometrine Maleate (*B P*) $C_{24}H_{29}O_5N_3=455\,5$ It con-tains 95 0 to the equivalent of 105 0 per cent of methylergometrine maleate calculated with refetence to the dried substance determined by the *B P* method fot ergometrine maleate, the loss on drying at 100° under reduced pressure is not more than 2 0 per cent Each ml of ergo metrine maleate solution is equivalent to 0 04127 mg of $C_{24}H_{29}O_5N_3$

Injection of Methylergometrine (*B P*) It contains 90 0 to 110 0 per cent of the stated amount of methylergometrine maleate determined by the *B P* method for methylergometrine maleate

ERYTHROMYCIN

Erythromycin (*B P*) It contains at least 900 units per mg deter mined by the *B P* method for the biological assay of antibiotics, the limits of error (P=0 95) are 80 to 125 per cent

Tablets of Erythromycin (B.P) The potency determined by the *B P* method for the biological assay of antibiotics is at least 90 per cent of the stated potency, the limits of error (P—0 95) are 80 to 125 per cent. (For purposes of assay and calculation the potency of erythromycin is taken to be 1000 units per mg)

ETHYLENEDIAMINE

Ethylenediamine Hydrate (*B P*) $C_2H_8N_2,H_2O$=78 12 It contains 97 5 to the equivalent of 101 5 per cent of *ethylenediamine hydrate*, determined acidimetrically

FURAZOLIDONE

Furazolidone (*B Vet C Supp*) $C_8H_7O_4N_3$=225 2 It contains 97 0 to the equivalent of 103 0 per cent of furazolidone determined by the *following* method

Dissolve about 0 02 g in 50 ml of glacial acetic acid and 25 ml of pyridine *and dilute to 250 ml with water dilute 10 ml of this solution to 100 ml. with* water and measure the extinction of a 1-cm layer at the maximum at about 367 mμ. The percentage of furazolidone is given by the formula

$$E(1\ \text{per cent}\ 1\ \text{cm}) \times 0\ 134$$

DETERMINATION IN FEEDING STUFFS Furazolidone is extracted with d methyl formamide separated chromatographically and determined colorimetrically after the addition of alcohol e potassium hydroxide —H F Beckman *J Agric Food Chem 1958 6 130 per Analyst Abstr 1958 5 3933*

GENTIAN

Extra Pharmacopœia Vol II 23rd Edn p 172

Alkaline Mixture of Gentian with Phenobarbitone (B P C) It contains 4 30 to 4 84 per cent w/v of sodium bicarbonate, determined by the *B P C* method for Alkaline Mixture of Gentian

Mixture of Gentian with Rhubarb (B.P C) It contains 4 30 to 4 84 per cent w/v of sodium bicarbonate determined by the *B P C* method for Alkaline Mixture of Gentian.

GLYCERYL TRINITRATE

Extra Pharmacopœia Vol *II*, 23rd Edn, p 177

Diluted Pentaerythritol Tetranitrate *(B P C)* It contains 18 5 to 21 5 per cent of pentaerythritol tetranitrate ($C_5H_8O_{12}N_4$=316 2), determined by extraction with acetone and weighing

DETERMINATION Nitric acid esters may be determined by potentiometric redox titration with ferrous iron *Pharmaceutical preparations may be assayed* colorimetrically with phenoldisulphonic acid—P Frauch and A Bürgin *Pharm Acta Helvet* 1958 *33* 527

Titration in isobutyl methyl ketone is described—R D *Sarson Analyt Chem* 1958 *30* 932

In methods depending on direct reduction to ammonia high results are avoided by a preliminary extraction of the ester with chloroform from a dilute solution in 20 per cent sodium chloride solution—J Büchi and R. Alther *Pharm Acta Helvet* 1956 *31* 121

Determination of pentaerythritol tetranitrate in the presence of hexahydro 1 3 5 trinitro s triazine by selective reduction with ferrous chloride is described—J Staněk and J Vacek *Chem Prumysl*, 1958 *8* 361 per *Analyt Abstr* 1959 *6* 1846

HALOTHANE

Halothane *(B P Add)* C_2HF_3ClBr=197 4 No assay is described for this preparation but it has a b p of 49° to 51°, 95 per cent v/v distilling within a range of 1° a wt per ml at 20° of 1 869 to 1 874 g and a refractive index at 20° of 1 3695 to 1 3705 It contains 0 01 per cent w/w of thymol as a preservative

DETERMINATION IN BLOOD A l ght petroleum extract of blood is heated under pressure with sodium amyloxide and the bromide formed is estimated nephelometrically as silver bromide—R R Goodall *Brit J Pharmacol* 1956 *11* 409

ANÆSTHETIC GAS ANALYSER Halothane or chloroform (0 to 4 per cent in air or oxygen) is measured by comparing the velocity of sound in the mixture before and after removal of the anæsthetic with activated charcoal A suitable transistorised circuit is described—L. Molyneux *J sci Instrum.* 1959 *36* 118 per *Analyt Abstr* 1959 *6* 5016

HEXACHLOROPHANE

Hexachlorophane *(B P C)* $C_{13}H_6O_2Cl_6$=406 9 It contains at least 98 0 per cent of hexachlorophane calculated with reference to the dried substance determined by alkalimetric titration to pH 9 0, the loss on drying for 4 hours at 105° is not more than 1 0 per cent

DETERMINATION IN SOLID AND LIQUID SOAPS EMULSIONS AND DUSTING POWDERS A spectrophotometric method is described in which irrelevant absorption due to soap is eliminated by measuring the difference between extinctions at 312 mμ at pH 3 and 8—R F Childs and L M Parks *J Amer pharm Ass Sci Edn* 1956 *45* 313 A modification of this method for which an accuracy of ± 2 per cent is claimed is described—H J van der Pol *Pharm Weekbl*, 1958 *93* 881

HOMIDIUM BROMIDE

Homidium Bromide *(B Vet C Supp)* $C_{21}H_{18}N_3Br$=394 3 It contains 96 0 to the equivalent of 102 0 per cent of homidium bromide calculated with reference to the dried substance, based on the nitrogen content determined by the following method

Transfer about 0 3 g to a long-necked flask of about 300-ml capacity, add 1 g of salicylic acid and 30 ml of nitrogen free sulphuric acid, allow to stand for about thirty minutes with occasional shaking add 5 g of sodium thiosulphate, shake until the reaction has subsided, boil gently for thirty minutes, cool, and add 9 g of anhydrous sodium sulphate and 1 g of powdered copper sulphate Heat until the solution is clear and maintain it in a state of gentle ebullition for a further four hours cool, transfer to an ammonia distillation apparatus, dilute with water to about 300 ml, make alkaline with a 40 per cent w/v solution of sodium hydroxide in water, distil the liberated ammonia into 30 ml of N/10 sulphuric acid, and titrate with N/10 sodium hydroxide using solution of methyl red as indicator Repeat the operation omitting the sample The difference between the two titrations represents the acid required to neutralise the ammonia, each ml of N/10 sulphuric acid is equivalent to 0 01314 g of $C_{21}H_{30}N_3Br$

The loss on drying at 130° is not more than 6 0 per cent,

HYALURONIDASE

Hyaluronidase (*B P*) It contains not less than 300 units per mg, and not less than 6000 units per mg of tyrosine present, The potency is determined turbidimetrically, and the tyrosine content is determined colorimetrically

DETERMINATION Methods of paper electrophoresis and paper chromatography with possible application to the analysis of hyaluronidase preparations are described —M Büchner and H -Ch Gabsch, *Pharm Zentralh*, 1958, *97*, 5

A spectrophotometric method for the determination of bacterial hyaluronidase is described —H Greiling *Hoppe Seyl Z*, 1957, *309*, 239

HYDROCHLORIC ACID

Extra Pharmacopœia Vol II, 23rd Edn, p 188

***Solution of Sodium Chloride* (*B.P C.*)** It contains 0 85 to 0 95 per cent w/v of sodium chloride, determined argentimetrically.

HYDROGEN PEROXIDE

Extra Pharmacopœia Vol II, 23rd Edn, p 194

***Strong Solution of Hydrogen Peroxide* (*B P*)** It contains 26 0 to 28 0 per cent w/w of hydrogen peroxide, determined *titrimetrically* with potassium permanganate

DETERMINATION OF HYDROGEN PEROXIDE AND ALIPHATIC ACIDS IN MIXTURES The acids can be determined polarographically when the ratio of the concentration of hydrogen peroxide to that of acid is below a critical figure which has been *determined for formic, acetic, oxalic,* succinic, and citric acids When oxalic acid is present in large excess it is neutralised with potassium hydroxide before carrying out a polarographic determination of peroxide —B B Radak and B L Djukanović, *Bull Inst nucl Sci, Belgrade*, 1957, 7, 59, per *Analyt. Abstr*, 1958, *5*, 1780

HYDROXYCHLOROQUINE

Hydroxychloroquine Sulphate (*B P. Add*) $C_{18}H_{26}O_5N_3SCl$ 434 0 It contains at least 98 0 per cent of hydroxychloroquine sulphate, calculated with reference to the dried substance, determined gravimetrically after extracting with chloroform from a solution made alkaline with dilute ammonia *solution, the loss on drying* at 105° is not more than 2 0 per cent

DETERMINATION A study of the induced fluorescence method of Brodie *et al* (*J biol Chem* 1947 *168* 319) for determining 4-aminoquinoline antimalarials is described with special reference to the determination of hydroxychloroquine in biological materials.—E W McChesney *et al* *J Amer pharm Ass Sci Edn* 1956 *45* 640

Tablets of Hydroxychloroquine (*B P Add*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of hydroxychloroquine sulphate determined by the *B P Addendum* method for hydroxychloroquine sulphate

INSULIN

Extra Pharmacopœia Vol II 23rd Edn p 200

Insulin Zinc Suspension (*B P*) The potency is 90 to 111 per cent of the stated potency (40 or 80 units per ml) determined biologically after breaking down the complex with hydrochloric acid the limits of error (P 0 95) are 80 to 125 per cent It complies with the *B P* test for prolongation of insulin effect

Insulin Zinc Suspension (Amorphous) (*B P*) The potency is 90 to 111 per cent of the stated potency (40 or 80 units per ml) determined as for Insulin Zinc Suspension It shows little or no retardation or prolongation of insulin effect when compared with the standard preparation by the *B P* method

Insulin Zinc Suspension (Crystalline) (*B P*) The potency is 90 to 111 per cent of the stated potency (40 or 80 units per ml) determined as for Insulin Zinc Suspension It complies with the *B P* test for prolongation of insulin effect

IODINE

AND COMPOUNDS OF IODINE

Extra Pharmacopœia Vol II 23rd Edn p 201

Acetrizoic Acid (*B P C*) $C_9H_9O_3NI_2$=556 9 It contains at least 98 0 per cent of acetrizoic acid calculated with reference to the dried substance determined by the *B P* method for iodoxyl each ml of M/20 potassium iodate is equivalent to 0 01856 g of $C_9H_9O_3NI_2$ The loss on drying at 105° is not more than 1 0 per cent

Injection of Sodium Acetrizoate (*B P C*) It contains 95 0 to 105 0 per cent of the stated amount of sodium acetrizoate determined by the *B P* method for iodoxyl

Sodium Diatrizoate (*B P C*) $C_{11}H_8O_4N_2I_3Na$=635 9 It contains 98 0 to the equivalent of 102 0 per cent of sodium diatrizoate calculated with reference to the anhydrous substance determined by the *B P* method for iodoxyl each ml of M/20 potassium iodate is equivalent to 0 02120 g of $C_{11}H_8O_4N_2I_3Na$ The water content determined by the Karl Fischer method is 7 5 to 11 0 per cent

IPECACUANHA

Extra Pharmacopœia Vol II 23rd Edn p 205

Mixture of Ipecacuanha and Ammonia for Infants (*B P C*) It contains 0 85 to 0 96 per cent w/v of ammonium bicarbonate and 3 44 to 3 88 per cent w/v of sodium bicarbonate determined by the *B P C* methods for Alkaline Mixture of Ipecacuanha

IRON

Extra Pharmacopœia Vol II, 23rd Edn, p 207

Mixture of Ferrous Sulphate (B P C) It contains 2 10 to 2 50 per cent w/v of ferrous sulphate, calculated as $FeSO_4,7H_2O$, determined by the *B P C.* method for iron in Compound Ferrous Phosphate Syrup

Mixture of Ferrous Sulphate for Infants (B P C) It contains 1 70 to 2 00 per cent w/v of ferrous sulphate, calculated as $FeSO_4,7H_2O$, determined by the *B P C* method for iron in Compound Ferrous Phosphate Syrup

ISOPROPYL MYRISTATE

Isopropyl Myristate (*B P C*) $C_{17}H_{34}O_2$=270 5 It contains at least 99 0 per cent w/w of isopropyl myristate, determined by the *B P* method for the determination of esters, each ml of N/2 alcoholic potassium hydroxide is equivalent to 0 1352 g of $C_{17}H_{34}O_2$

LEVALLORPHAN

Levallorphan Tartrate (*B P C*) $C_{23}H_{31}O_7N$=433 5 It contains at least 98 0 per cent of levallorphan tartrate, determined by titration of the extracted base with perchloric acid in glacial acetic acid

LEVORPHANOL

Levorphanol Tartrate (B P C) $C_{21}H_{23}O_7N,2H_2O$=443 5 It contains 98 5 to the equivalent of 101 5 per cent of anhydrous levorphanol tartrate, calculated with reference to the dried substance, determined by extracting the base with chloroform and ether, shaking out with hydrochloric acid and back-titrating with sodium hydroxide, the loss on drying at 105° is 7 0 to 9 0 per cent

Differentiation of Optical Isomers Tests for distinguishing between racemic, dextrorotatory and lævorotatory isomers of 3 hydroxy-N-methylmorphinan are described —*E G C Clarke, J Pharm Pharmacol, 1958 10 642*

Identification and Determination The complex formed with chloroplatinic acid melts at 235° to 238°, with decomposition and it may be estimated quantitatively by titration with alcoholic sodium hydroxide in a mixture of water and acetone the end point being detected potentiometrically Infra red absorption spectra for levorphanol and its chloroplatinic complex are given — L Levi *et al*, *Bull Narcot*, 1955, 7, 43

Determination in Urine Levorphanol may be extracted from urine and determined colorimetrically with *p nitroaniline and sodium nitrite* —*H Kaiser* and H Jori *Arch Pharm, Berl*, 1954, *287*, 224 and 253, per *Analyt Abstr*, 1955 *2*, 752

Separation from Other Organic Bases A chromatographic technique using filter paper buffered in zones of decreasing pH is described —M Schmall *et al*, *Analyt Chem*, 1956, *28*, 1373

MACROGOL

Polyethylene Glycol

Extra Pharmacopœia Vol II, 23rd Edn, p 233

Macrogol, Hard (*B P C*) No assay is described, but it has a freezing point of 53° to 56° and a viscosity at 100° of 75 to 85 centistokes

Macrogol, Liquid (*B P C*) No assay is described but it has a refractive index at 20° of 1 462 to 1 466 a viscosity at 25° of 59 to 73 centistokes and a wt per ml at 20° of 1 120 to 1 130 g

DETERMINATION A method is described in which the macrogol is allowed to react with potassium ferrocyanide and the excess of reagent is determined colorimetrically—D Coppini and R Cameroni *Boll chim farm* 1953 *92* 363 per *Analyt Abstr* 1954 *1* 1963

Macrogol is precipitated with tungstophosphoric acid and converted into an insoluble complex with barium chloride in the presence of hydrochloric acid The loss in weight on ignition represents the quantity of ethylene oxide in the sample—H Etienne *Parfums Cosmet Savons* 1957 No 137 33 per *Analyt Abstr* 1959 *6* 1781

A sample is dissolved in dimethylformamide and benzene and the quantity of water required to induce turbidity is determined—L E Weeks *et al* *J Amer Oil Chem Soc* 1958 *35* 149 per *Analyt Abstr* 1959 *6* 644

MAGNESIUM TRISILICATE

Extra Pharmacopœia Vol II 23rd Edn p 237

DETERMINATION Magnesium is determined by titration with sodium edetate after removal of silica—F Hobson and W H Stephenson *Analyst* 1959 *84* 520

***Mixture of Magnesium Trisilicate and Belladonna* (*B P C*)** It contains 4 30 *to* 4 84 per cent *w/v of* sodium bicarbonate determined by the addition of hydrochloric acid and back titration with sodium hydroxide after filtration in the presence of about 50 per cent of alcohol

***Compound Tablets of Magnesium Trisilicate* (*B P C*)** Each tablet contains 0 056 to 0 084 *g* of aluminium oxide and 0 050 to 0 072 g of magnesium oxide determined titrimetrically with sodium edetate

MANNITOL

Mannitol (*B P*) $C_6H_{14}O_6$=182 2 It contains 98 0 to 102 0 per cent of mannitol calculated with reference to the dried substance determined by *oxidising* with sodium periodate *in acid solution converting* the remaining periodate to iodine by addition of potassium iodide and titrating with thiosulphate the loss on drying at 105° is not more than 0 5 per cent

MECAMYLAMINE

Mecamylamine Hydrochloride (*B P C*) $C_{11}H_{21}NCl$=203 8 It contains 98 0 to the equivalent of 102 0 per cent of mecamylamine hydrochloride calculated with reference to the dried substance determined by *extracting the base with chloroform adding sulphuric acid* evaporating off the chloroform and back titrating with sodium hydroxide the loss on drying for 1 hour at 100° under reduced pressure is not more than 1 0 per cent

MECLOZINE

Meclozine Hydrochloride (B P C) $C_{21}H_{21}N_2Cl_3$=463 9 *It* contains at least 98 0 per cent of meclozine hydrochloride calculated with reference to the anhydrous substance based on the nitrogen content determined by the Kjeldahl method The water content determined by the Karl Fischer method is not more than 5 0 per cent.

METHOXAMINE

Methoxamine Hydrochloride (*B P C*) $C_{11}H_{17}O_3NCl=247\ 7$ It contains at least 98 5 per cent of methoxamine hydrochloride, determined by titration with perchloric acid in glacial acetic acid

METHYLPENTYNOL

Methylpentynol (*B P C*) $C_8H_{14}O=98\ 15$ It contains not less than 98 0 per cent w/w of methylpentynol determined by titrating the acid liberated from silver nitrate with alkali.

NEOMYCIN

Neomycin Sulphate (*B P*) It contains at least 600 units per mg calculated with reference to the dried substance, determined by the *B P* method for the biological assay of antibiotics, the limits of error (P=0 95) are 80 to 125 per cent the loss on drying under reduced pressure at 60° is not more than 8 0 per cent

DETERMINATION A statistical study indicated that in one type of assay at a level of 20 μg per ml the standard error was 13 per cent with *Bacillus subtilis* as test organism compared with 29 per cent for *Klebsiella pneumoniæ* —E R Garrett and G M Savage *Antibiot and Chemother* 1955 *5* 273

A turbidimetric method with *Escherichia coli* (ATCC 10536) is described —D M Wintermere *et al* *Ant biot and Chemother* 1957 *7* 189

DETERMINATION OF NEOMYCINS B AND C IN NEOMYCIN SULPHATE. Methods suggested make use of (1) the difference in optical rotation of neomycins B and C and the production of furfuraldehyde on acid treatment (2) variation of optical rotation with temperature and (3) optical rotation and neutralisation equivalent —A A. Brooks *et al* *Analyt Chem* 1956 *28* 1788 Separation of acetylated neomycins B and C by paper chromatography is described —S C Pan and J D Dutcher *Analyt Chem* 1956 *28* 836

DETERMINATION IN MIXTURES WITH BACITRACIN The components are separated by extracting the bacitracin with alcohol (in which neomycin sulphate is insoluble) and each antibiotic is then determined microbiologically —J Lingnau and G Machek *Sci pharm* (*Wien*) 1955 *23* 234 per *Analyt Abstr* 1957 *4* 1014

DETERMINATION IN MIXTURES WITH DIHYDROSTREPTOMYCIN Dihydrostreptomycin is inactivated with barium hydroxide and neomycin determined by the cup plate method —J Levine *et al* *Ant biot and Chemother*, 1954 *4* 266 Neomycin may be determined by the cup plate assay using a culture of the test organism which has been rendered resistant to dihydrostreptomycin —J C DeNunzio *et al* *Antibiot and Chemother* 1954 *4* 300

NICARBAZIN

Nicarbazin (*B Vet C Supp*) $C_{19}H_{18}O_6N_6=426\ 4$ It contains 96 0 to the equivalent of 103 0 per cent of nicarbazin, calculated with reference to the dried substance, determined by the following method

Dissolve with the aid of heat about 0 08 g in 70 ml of dimethylformamide cool and dilute to 100 ml with dimethylformamide dilute 10 ml of this solution to 100 ml with dimethylformamide then dilute 5 ml of this solution to 100 ml with aldehyde free alcohol (95 per cent) and measure the extinction of a 1 cm. layer at the maximum at about 345 mμ The percentage of $C_{19}H_{18}O_6N_6$ is given by the formula $E\ (1\ per\ cent\ 1\ cm) \times 0\ 113$

The loss on drying at 100° under reduced pressure is not more than 1 0 per cent

NITROFURAZONE

Extra Pharmacopœia Vol II 23rd Edn, p 260

Nitrofurazone (*B P C*) $C_6H_6O_4N_4$=198 1 It contains 98 0 to the equivalent of 102 0 *per cent of nitrofurazone determined spectrophotometrically*

DETERMINATION A polarographic method is described the accuracy claimed is ± 2 per cent for the pure material and ± 4 per cent for preparations —*H* Marciszewski *Chem Anal Warsaw* 1959 *4* 577 per *Analyt Abstr* 1960 *7* 2951

Nitrofurazone, Veterinary Nitrofurazone *B Vet C* is now known as Veterinary Nitrofurazone

DETERMINATION IN FEEDING-STUFFS Nitrofurazone is extracted with dimethyl formamide separated chromatographically eluted with alcohol and determined *colorimetrically after the addition of alcoholic potassium hydroxide* —*H F* Beckman *J agric Food Chem* 1958 *6* 130 per *Analyt Abstr* 1958 *5* 3933

NOVOBIOCIN

Novobiocin Calcium (*B P Add*) $(C_{31}H_{35}O_{11}N_2)_2Ca\ 2H_2O$=1299 4 It contains at least 850 units per mg calculated with reference to the dried substance determined by the *B P* method for the biological assay of antibiotics the limits of error (P=0 95) are 80 to 125 per cent the loss on drying at 60° under reduced pressure is not more than 5 0 per cent

Novobiocin Sodium (*B P Add*) $C_{31}H_{35}O_{11}N_2Na$ 634 6 It contains at least 850 units per mg calculated with reference to the dried substance determined by the *B P* method for the biological assay of antibiotics, the limits of error (P=0 95) are 80 to 125 per cent the loss on drying at 60° under reduced pressure is not more than 5 0 per cent

The *sensitivity of 72 strains of micro-organisms to novobiocin both in vitro* and *in vivo* is described together with development of resistance and cross resistance —*J R* Wilkins *et al Antibiot and Chemother* 1956 *6* 149

PHYSICO-CHEMICAL PROPERTIES A comprehensive survey of the physicochemical properties of novobiocin and its salts is given including behaviour in counter-current distribution analysis ultraviolet absorption spectra at different pH values optical rotation X ray crystallographic analysis and paper chromatography in four systems together with the melting points and infra red absorption spectra *of two crystalline forms of novobiocin*.—*H* Hoeksema *et al Antibiot and Chemother* 1956 *6* 143

DETERMINATION BY CHEMICAL METHODS A modified Kjeldahl method of determination is described which gives good agreement with microbiological assay —F A Bacher *et al Analyt Chem.* 1958 *30* 1993

DETERMINATION BY MICROBIOLOGICAL METHODS A simple serial dilution method which can be made sensitive to 0 5 μg per ml in biological material, is described with *Staphylococcus aureus* as the test organism —R M Taylor *et al Antibiot and Chemother* 1956 *6* 157

A plate assay procedure with *Staphylococcus aureus* is described for the determination of novobiocin in body fluids Good agreement with the colorimetric method of Boxer (*Antibiot and Chemother* 1956 *6* 589) is obtained —B M Frost and M E Valiant *Antibiot and Chemother* 1956 *6* 648

A plate assay procedure for novobiocin in pharmaceutical preparations which is suitable for a concentration of 1 0 μg per ml is described with *Staphylococcus saprophyticus* as the test organism A turbidimetric method with *Staphylococcus aureus* is also suitable Serum concentrations of 1 5 to 80 μg per ml can be determined by a plate assay with *Sarcina lutea* —A Kirshbaum *et al Antibiot and Chemother* 1956 *6* 504

DETERMINATION IN THE PRESENCE OF ISONOVOBIOCIN Novobiocin and isonovobiocin on acid hydrolysis produce 3 *O*-carbamoylnoviose and 2 *O*-carbamoylnoviose respectively The former may be determined by periodate oxidation without interference from the latter—A A Forist *et al* *Analyt Chem* 1959 *31* 100

DETERMINATION OF NOVOBIOCIN AND DIHYDRONOVOBIOCIN IN MIXTURES. These can be determined by differential spectrophotometric measurement of their acid hydrolysis products at 250 mμ and 330 mμ Beer's Law being followed over a concentration range of 2 to 12 μg per ml—P Sensi *et al* *Analyt Chem* 1957 *29* 1611

Tablets of Novobiocin (B P Add) The tablets contain novobiocin calcium or novobiocin sodium The potency, determined by the *B.P* method for the biological assay of antibiotics is at least 85 per cent of the stated potency (For purposes of assay and calculation the potency of novobiocin is taken to be 1000 units per mg)

NUX VOMICA

Extra Pharmacopœia Vol II 23rd Edn p 261

Elixir of Nux Vomica (B P C) No assay is described but it has a wt per ml at 20° of 1 14 to 1 16 g and the alcohol content is 10 to 12 per cent v/v

Mixture of Strychnine and Iron (B P C) It contains 0 0105 to 0 0145 per cent w/v of strychnine hydrochloride determined spectrophotometrically on a solution of the extracted base in sulphuric acid and 0 56 to 0 69 per cent w/v of ferric chloride determined iodometrically

OILS

Extra Pharmacopœia Vol II, 23rd Edn p 275

Spearmint Oil (*B P C*) (Vol II 23rd Edn p 290) It contains at least 55 0 per cent w/w of carvone determined by the *B P* method It has an optical rotation at 20° of −45° to −60°, a refractive index at 20° of 1 484 to 1 491 and a wt per ml at 20° of 0 917 to 0 934 g

DETERMINATION OF CARVONE CONTENT A spectrophotometric method stated to be accurate within 1 per cent is described—R H Reitsema and W E Faas *J Amer pharm Ass Sci Edn* 1957 *46* 381

Spearmint Water, Concentrated (B.P C) No assay is described for this preparation but it has a wt per ml at 20° of 0 912 to 0 920 g and an alcohol content of 52 to 56 per cent v/v

OPIUM

Extra Pharmacopœia Vol II 23rd Edn p 306

METHODS OF ASSAY FOR OPIUM. Various methods of determining the origin of opium samples have been examined in the United Nations Programme on Opium Research. The programme is outlined in *Bull Narcot* 1958 *10* 37 and reports are published in United Nations documents ST/SOA/SER K/ A number of these reports include information on the separation and determination of alkaloids see for example Haruyo Asahina and Masako Ono ST/SOA/SER.K/50 1957 per *Analyt Abstr* 1958 *5* 1666 G Nadeau *et al* *J Chromatography* 1958 *1* 327 per *Analyt Abstr* 1959 *6* 1887 and V J Bakre *et al* *J Pharm Pharmacol* 1959 *11* 234

Compound Camphorated Mixture of Opium (*B P C*) It contains 1 14 to 1 37 per cent w/v of ammonia NH_3, determined by the *B P C* method for Mixture of Ammonia and Ipecacuanha

Papaverine Sulphate (*B P C*) (See Papaverine Vol II 23rd Edn p 316) $C_{40}H_{44}O_{12}N_2S\ 5H_2O$=867 0 It contains at least 98 0 per cent of anhydrous papaverine sulphate calculated with reference to the dried substance determined by extracting the base from an alkaline solution with carbon tetrachloride drying and weighing the loss on drying at 105° is 7 5 to 11 0 per cent

DETERMINATION A colorimetric method with formaldehyde bromine and ammonia is described —O N Soboleva *Apt Delo* 1955 *4* 37

Ion-exchange separation and spectrophotometric determination of papaverine codeine and sodium benzoate in syrups etc are described —G Thomas *et al Pharm Weekbl* 1955 *90* 241

Papaverine is precipitated quantitatively with flavianic acid —H Wachsmuth, *J Pharm Belg* 1953 *8* 76

A photometric determination at 253 7 mμ is described —H Thies *et al Naturwissenschaften* 1955 *42* 605 per *Analyt Abstr* 1956 *3* 1844

A polarographic method is described —M Součková and J Zýka *Čsl Farm* 1955 *4* 181 per *Analyt Abstr* 1956 *3* 498

DETERMINATION OF PAPAVERINE AND NOSCAPINE The total amount of alkaloid is determined by titration with perchloric acid in glacial acetic acid and noscapine is determined by infra red spectrophotometry —L Kum Tatt *et al J Pharm Pharmacol* 1958 *10* 621

SEPARATION FROM NOSCAPINE Choice of solvents for separation of papaverine and noscapine by paper chromatography is discussed —H Thies and F W Reuther *Naturwissenschaften* 1955 *42* 462 per *Analyt Abstr* 1956 *3* 1122

PARAFFIN

Extra Pharmacopœia Vol II 23rd Edn p 321

Emulsion of Liquid Paraffin with Cascara (*B P C*) It contains 42 0 to 52 0 per cent v/v of liquid paraffin determined by extraction with ether and weighing after preliminary extraction with alcohol (70 per cent)

PARAMETHADIONE

Paramethadione (*B P*) $C_7H_{11}O_3N$=157 2 It contains at least 98 0 per cent of paramethadione determined by a modified Kjeldahl method

PENICILLIN

Extra Pharmacopœia Vol II 23rd Edn p 322

Solution-tablets of Penicillin, Buffered (*B P C*) Each solution tablet contains not less than 12 750 units determined by the *B P* method for the biological assay of antibiotics the limits of error (P=0 95) are 80 to 125 per cent

Benethamine Penicillin (*B P C*) $C_{31}H_{34}O_4N_4S$=545 7 It contains 36 5 to 39 0 per cent of N benzylphenethylamine ($C_{16}H_{17}N$) determined acidimetrically after extraction of the base with ether and at least 1008 units of penicillin per mg, determined by the *B P* method for the assay of antibiotics the limits of error (P=0 95) are 80 to 125 per cent

Benzathine Penicillin (*B P*) $C_{48}H_{56}O_6N_6S_2$=909 2 It contains 25 0 to 26 5 per cent of $C_{16}H_{20}N_2$ calculated with reference to the anhydrous material determined by extracting a solution containing sodium chloride with ether and titrating the extracted base with perchloric acid in glacial acetic acid and at least 1200 units per mg calculated with reference to the anhydrous material determined by the *B P* method for the assay of antibiotics after preliminary dissolution in dimethylformamide the limits of error (P=0 95) are 80 to 125 per cent. The water content determined by the Karl Fischer method is 5 0 to 8 0 per cent

IDENTIFICATION The base can be identified by Liebermann's nitroso-reaction and the preparation of an iodo derivative—R Simoes *An Fac Farm Odont Univ S Paula* 1955 *13* 85 per *Analyt Abstr* 1958 *5* 964

DETERMINATION An iodometric method is described—G Parker and L. Donegan *J Pharm Pharmacol* 1954 *6* 167

Benzathine penicillin may be titrated with perchloric acid in glacial acetic acid containing 2 per cent of acetic anhydride with crystal violet as indicator—C Knight and W H Stephenson *J Pharm Pharmacol* 1954 *6* 1002

The penicillin is degraded quantitatively to phenylacetic acid by heating with sodium hydroxide solution and the phenylacetic acid is extracted with chloroform and determined spectrophotometrically—G B Selzer and W W Wright *Antibiot and Chemother* 1954 *4* 1196

The base may be determined by decomposing the salt with sodium hydroxide extracting the base and titrating with hydrochloric acid—R. Simões *An Fac Farm Odont Univ S Paulo* 1955 *13* 85 per *Analyt Abstr* 1958 *5* 964

Tablets of Benzathine Penicillin (B P) Each tablet contains at least 90 per cent of the stated number of units of penicillin determined by the *B P* method for the biological assay of antibiotics after preliminary dissolution in dimethylformamide the limits of error (P=0 95) are 80 to 125 per cent

Phenoxymethylpenicillin Calcium (*B P Add*) $(C_{16}H_{17}O_5N_2S)_2Ca\,2H_2O$ 774 9 It contains at least 87 0 per cent of total penicillins determined iodometrically and at least 83 0 per cent of phenoxymethylpenicillin determined spectrophotometrically both calculated with reference to the dried substance the loss on drying at 105° is not less than 1 5 per cent

DETERMINATION Phenoxymethylpenicillin may be assayed iodometrically The iodine equivalent is determined against a blank prepared with a portion of the sample inactivated with alkali or penicillinase A method for the determination of phenoxymethylpenicillin in the presence of benzylpenicillin based on the difference in their rates of inactivation at pH 2 is described In the microbiological assay of phenoxymethylpenicillin it is important to use phenoxymethylpenicillin as standard when benzylpenicillin is used as the standard the potency of phenoxymethylpenicillin appears to vary with the test organism used—R Goodey *et al J Pharm Pharmacol* 1955 *7* 692

A colorimetric method involving differential extraction may be used to estimate phenoxymethylpenicillin and phenoxyacetic acid in samples from penicillin fermentations—J Birner *Analyt Chem* 1959 *31* 271

Phenoxymethylpenicillin Potassium (*B P Add*) $C_{16}H_{17}O_5N_2SK$ 388 5 It contains at least 87 0 per cent of total penicillins determined iodometrically and at least 83 0 per cent of phenoxymethylpenicillin determined spectrophotometrically both calculated with reference to the dried substance the loss on drying at 105° is not less than 1 5 per cent

Capsules of Phenoxymethylpenicillin (*B P Add*) Each capsule contains phenoxymethylpenicillin or phenoxymethylpenicillin potassium equivalent to 92 5 to 107 5 per cent of the stated amount of phenoxymethylpenicillin determined by the *B P* method for total penicillins in phenoxymethylpenicillin

Tablets of Phenoxymethylpenicillin (*B P Add*) Each tablet contains phenoxymethylpenicillin phenoxymethylpenicillin calcium or phenoxymethylpenicillin potassium equivalent to 92 5 to 107 5 per cent of the stated amount of phenoxymethylpenicillin determined by the *B P* method for total penicillins in phenoxymethylpenicillin

PENTOLINIUM

Pentolinium Tartrate (*B P*) $C_{23}H_{43}O_{12}N_3$—538 6 It contains 99 0 to the equivalent of 101 0 per cent of pentolinium tartrate calculated with reference to the dried substance determined by titration with perchloric acid in dioxan the loss on drying at 105° is not more than 2 0 per cent

DETERMINATION A gravimetric method using ammonium reineckate is described—R Okken *Pharm Weekbl* 1956 *91* 503

Injection of Pentolinium (*B P*) It contains 95 0 to 105 0 per cent of the stated amount of pentolinium tartrate determined gravimetrically by precipitation with ammonium reineckate

Tablets of Pentolinium (*B P*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of pentolinium tartrate determined by the *B P* method for injection of pentolinium after preliminary extraction and filtration

PHENMETRAZINE

Phenmetrazine Hydrochloride (*B P C*) $C_{11}H_{16}ONCl$=213 7 It contains 98 0 to the equivalent of 101 0 per cent of phenmetrazine hydrochloride calculated with reference to the dried substance determined by titration with perchloric acid in glacial acetic acid the loss on drying at 105° is not more than 1 0 per cent

PHENOL

Extra Pharmacopœia Vol II 23rd Edn p 333

Oily Injection of Phenol (*B P C*) It contains 4 70 to 5 25 per cent w/v of phenol determined by extraction treatment with bromine addition of potassium iodide and titration of the liberated iodine with sodium thiosulphate

PHOLCODINE

Pholcodine (*B P C*) $C_{23}H_{30}O_4N_2.H_2O$=416 5 It contains at least 98 0 per cent of anhydrous pholcodine calculated with reference to the dried substance determined by dissolving in hydrochloric acid and back titrating with sodium hydroxide the loss on drying at 105° is 4 1 to 4 7 per cent

Pholcodine Tartrate (*B P C*) $C_{31}H_{41}O_{16}N_3.3H_2O$=752 7 It contains at least 98 0 per cent of anhydrous pholcodine tartrate calculated with reference to the dried substance determined by extracting the base

with chloroform dissolving in hydrochloric acid and back titrating with sodium hydroxide the loss on drying at 80° under reduced pressure is 6 5 to 8 0 per cent

DETERMINATION The base may be extracted dissolved in N/10 sulphuric acid and determined by back titration to pH 4 8 Alternatively a spectrophotometric method based on the light absorption at 283 mμ may be used.—F S Stern and D R Wood *J Pharm Pharmacol* 1959 *11* 140

SEPARATION FROM MORPHINE, CODEINE AND ETHYLMORPHINE. A chromatographic method is described—F Sabon and R Monnet, *Bull Soc Pharm Bordeaux* 1955 *94* 41

PIPERAZINE

IDENTIFICATION A micro precipitat on reaction with bismuth potassium iod de is suitable for characterising piperazine and distinguishing it from 2 5-dimethyl p perazine—B Berisso *Mikrochim Acta* 1957 296 per *Analyt Abstr* 1958 *5* 1276

DETERMINATION Precipitation with tetraphenylboron salt followed by argentimetric titration or precipitation as reineckate followed by hydrolysis and Volhard titration may be used—M Hädicke *Pharm Zentralh* 1958 *97* 365

Gravimetric determination as reineckate is described.—H Bandel *Dtsch ApothZtg* 1958 *98* 61 The reineckate is dissolved in acetone and determined colorimetrically—R V Ramath, *Indian J Pharm* 1957 *19* 289 This method may be used to determine p perazine in the presence of hexamine—Mlle Masse *Pharm Acta Helvet* 1958 *33* 80

A turbidimetric determination with Nessler s reagent is described—R P Chakravarti and N K. Dey *J Inst Chem (India)* 1959 *31* 53 per *Analyt Abstr* 1960 *7* 1555

Piperazine is treated with acetic anhydride and the diacetate extracted and determined gravimetrically or spectrophotometrically at 10 00 μ Results on standard samples agree within 1 per cent.—W R Maynard Jr *J Ass off agric Chem Wash* 1959 *42* 610

Piperazine may be determined in the presence of ethylenediamine by precip itation with copper sulphate In the presence of d ethylenetriamine potent o metric titration or a two-indicator titration can be used—L. Nebbia and B Pagani *Chim e Industr* 1959 *41* 870

Piperazine is precipitated with mercuric chloride and the excess of reagent determined complexometrically with sod um edetate—J Erben *Cs Farm* 1959 *8* 18 per *Analyt Abstr* 1959 *6* 4953

DETERMINATION IN MIXTURES. Certain mixtures of p perazine with salol codeine phosphate quinine hydrochloride papaverine hydrochloride hexamine and urea may be analysed by the Kofler micro refractometric method—V Sekera and J Pokorný *Mikrochim Acta* 1957 103 per *Analyt Abstr* 1957 *4* 3107

DETERMINATION IN FEEDS AND CONCENTRATES A method involving chromato graphic separation and gravimetric determination as dip crate is described—M L Leng *J Ass off agric Chem Wash* 1957 *40* 1059

Piperazine Adipate (*B.P*) $C_{10}H_{22}O_4N_2=232\cdot3$ It contains at least 98 5 per cent of piperazine ad pate calculated with reference to the dried substance based on the n trogen content determined by the Kjeldahl method the loss on drying at 105° is not more than 0 5 per cent

DETERMINATION A formol titrat on method is described—R Simonovici *et al Rev Chim Bucharest* 1959 *10* 105 per *Analyt Abstr* 1959 *6* 4154

Tablets of Piperazine Adipate (B P) Each tablet contains 92 5 to 107 5 per cent of the stated amount of piperazine adipate based on the nitrogen content determined by the Kjeldahl method

Picadex (*B Vet C Supp*) $C_5H_{12}N_2S_2$=162 3 It contains at least 98 0 per cent of picadex, determined by decomposing the complex with sulphuric acid, converting the carbon disulphide to potassium xanthate, and titrating with iodine

Transfer about 0 4 g to a flask fitted with a reflux condenser, a stoppered side arm, and an air leak reaching almost to the bottom of the flask, add 50 ml of water and connect the condenser to an absorption train consisting of 50 ml of solution of lead acetate and four portions, each of 50 ml of a solution prepared by dissolving 100 g of potassium hydroxide in 100 ml of water allowing the solution to cool and diluting to 1000 ml with methyl alcohol draw a current of air through the apparatus quickly add 50 ml of a mixture of 1 volume of sulphuric acid and 3 volumes of water and boil for fifteen minutes combine the potassium hydroxide solutions using water to wash the absorption vessels neutralise with glacial acetic acid using solution of phenolphthalein as indicator, and titrate with N/10 iodine using mucilage of starch as indicator Repeat the operation omitting the sample The difference between the two titrations represents the amount of N/10 iodine required by the sample each ml of N/10 iodine is equivalent to 0 01623 g of $C_5H_{12}N_2S_2$

Piperazine Citrate (*B P Add*) $C_{12}H_{34}O_{14}N_4$=642 7 It contains at least 98 5 per cent of piperazine citrate, calculated with reference to the anhydrous substance, based on the nitrogen content determined by the Kjeldahl method The water content, determined by the Karl Fischer method, is 10 0 to 14 0 per cent

Elixir of Piperazine Citrate (*B P C*) It contains 14 3 to 17 1 per cent w/v of piperazine citrate, based on the nitrogen content determined by the Kjeldahl method

Tablets of Piperazine Citrate (*B Vet C Supp*) Each tablet contains 79 5 to 95 0 per cent of the stated amount of piperazine citrate (calculated as anhydrous), determined gravimetrically as piperazine dipicrate

Piperazine Hydrate (*B P C*) $C_4H_{10}N_2$, $6H_2O$=194 2 It contains at least 98 0 per cent of piperazine hydrate, determined gravimetrically as piperazine dipicrate

Piperazine Phosphate (*B P*) $C_4H_{12}O_4N_2P$, H_2O=202 2 It contains at least 98 5 per cent of anhydrous piperazine phosphate, calculated with reference to the anhydrous substance based on the nitrogen content determined by the Kjeldahl method The water content, determined by the Karl Fischer method, is not more than 9 0 per cent

Tablets of Piperazine Phosphate (*B P*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of piperazine phosphate, based on the nitrogen content determined by the Kjeldahl method

PIPRADROL

Pipradrol Hydrochloride (*B P C*) $C_{17}H_{21}ONCl$=303 8 It contains 98 0 to 102 0 per cent of pipradrol hydrochloride, calculated with reference to the dried substance determined by titration with perchloric acid in glacial acetic acid the loss on drying at 105° is not more than 1 0 per cent

DETERMINATION The separation of the base by ion exchange is described — B Grefsgård *Medd norsk farm Selsk*, 1959 *21* 25

POLYMYXIN

Polymyxin B Sulphate (*B.P*) It contains at least 6000 units per mg, calculated with reference to the dried substance determined by the *B P* method for the biological assay of antibiotics, the limits of error (P 0 95) are 80 to 125 per cent, the loss on drying at 60° at a pressure not exceeding 5 mm of mercury for 3 hours is not more than 8 0 per cent

DETERMINATION The effect of neomycin in the plate assay for polymyxin B with *Bordetella bronchiseptica* (ATCC 4617) has been studied A nomogram is provided for correcting the results when using samples of known neomycin content—N F Knowlden and E Broomfield *Antibiot and Chemother* 1954 *4* 1167 Similarly a nomogram is provided to allow for interference due to the presence of sucrose—N Knowlden *et al J Amer pharm Ass Sci Edn* 1955 *44* 231

A plate diffusion method with *Bordetella bronchiseptica* is described together with modifications for oily solutions and ointments of polymyxin B with bacitracin A gravimetric determination based on the precipitation of polypeptide as tungstophosphates is described it may be modified for the assay of tablets and ear drops—R E A Drey *et al J Pharm Pharmacol* 1955 7, 706

Modifications which increase the sensitivity of the FDA plate assay with *Bordetella bronchiseptica* are described—B Arret and A Kirshbaum *Antibiot and Chemother* 1956 *6* 95

A general method using *Escherichia coli* (ATCC 10536) applicable to polymyxin is described—D M Wintermere *et al Antibiot and Chemother* 1957 *7* 189

A colorimetric determination based on reaction with copper sulphate in the presence of alkali is described—V D Kartseva and B P Bruns *Zhur anal Khim* 1959 *14* 628 per *Analyst Abstr* 1960 *7* 2936

SEPARATION FROM OTHER POLYMYXINS Paper chromatographic methods are described—R E A. Drey *J Pharm Pharmacol* 1955 *7* 706 and A. G Mistretta *Antibiot and Chemother* 1956 *6* 196

POLYRICINATE

Polyricinate (*B Vet C Supp*) No assay is described for this preparation but it has a kinematic viscosity at 20° of 300 to 500 centistokes determined by the *B P* method for liquid paraffin the acid value is not more than 2 and the saponification value is 130 to 140 The water content determined by the Karl Fischer method is not more than 0 2 per cent w/w

POTASSIUM PERCHLORATE

Potassium Perchlorate (*B P Add*) $KClO_4$=138 6 It contains at least 99 0 per cent of potassium perchlorate determined by titration with silver nitrate solution after fusion with ammonium chloride

***Tablets of Potassium Perchlorate* (*B.P Add*)** Each tablet contains 92 5 to 107 5 per cent of the stated amount of potassium perchlorate, determined by the *B P Addendum* method for potassium perchlorate

PRIMAQUINE

Primaquine Phosphate (*B P*) $C_{15}H_{21}O_5N_3P_2$=455 4 It contains at least 97 5 per cent of primaquine phosphate calculated with reference to the dried substance determined by titration with sodium nitrite, the loss on drying at 105° is not more than 0 5 per cent

***Tablets of Primaquine* (*B P*)** Each tablet contains 90 0 to 110 0 per cent of the stated amount of primaquine phosphate determined by titration with sodium nitrite

PRIMIDONE

Primidone (*B P*) $C_{12}H_{14}O_2N_2$=218 3 It contains at least 98 5 per cent of primidone based on the nitrogen content determined by the Kjeldahl method

***Tablets of Primidone* (*B P*)** Each tablet contains 95 0 to 105 0 per cent of the stated amount of primidone, based on the nitrogen content determined by the Kjeldahl method

PROBENECID

Probenecid (*B P Add*) $C_{13}H_{19}O_4NS$=285 4 It contains at least 98 0 per cent of probenecid calculated with reference to the dried substance determined in alcoholic solution by titration with sodium hydroxide solution the loss on drying at 105° is not more than 0 5 per cent

***Tablets of Probenecid* (*B P Add*)** Each tablet contains 95 0 to 105 0 per cent of the stated amount of probenecid determined spectrophotometrically after extraction with alcohol

Determination in Body Fluids. Probenecid may be determined after extraction into chloroform either spectrophotometrically by re extraction with alkali and measurement of the optical density of the alkali layer at 242 2 mμ or colorimetrically at 635 mμ by measurement of the intensity of the colour formed in the chloroform layer on shaking with methylene blue solution at pH 7 The colorimetric method has the advantage that it is unaffected by most medicaments and metabolites —E K Tillson *et al* *J Pharmacol* 1954 *111* 385

PROCYCLIDINE

Procyclidine Hydrochloride (*B P*) $C_{19}H_{30}ONCl$=323 9 It contains at least 99 0 per cent of procyclidine hydrochloride calculated with reference to the dried substance determined by extracting the base with ether dissolving in hydrochloric acid and back titrating with sodium hydroxide the loss on drying at 105° is not more than 0 5 per cent

Ultraviolet Spectrophotometry The importance of using narrow slits in the *B P* test for light absorption is demonstrated —A R Rogers *J Pharm Pharmacol* 1959 *11* 291

***Tablets of Procyclidine Hydrochloride* (*B P*)** Each tablet contains 90 0 to 110 0 per cent of the stated amount of procyclidine hydrochloride determined by extracting the base with ether dissolving in hydrochloric acid and back titrating with sodium hydroxide

PROMETHAZINE

Extra Pharmacopoeia Vol II 23rd Edn p 352

Determination Promethazine may be titrated polarographically with tungstosilicic acid —J Blažek *Čsl Farm* 1956 5 210

Gravimetric potentiometric and colorimetric micro methods based on the precipitation of promethazine as reineckate are described —P Spacu and E Antonescu *Acad R P R Stud Cercet Chim* 1959 7 247 per *Analyt Abstr* 1960 7 1551

Promethazine may be determined colorimetrically with palladium chloride The method may be modified for the determination of promethazine in the presence of chlorpromazine and promazine—L Cavatorta *J Pharm Pharmacol* 1959, *11* 49

The method of G Dušinsky and O Lăškova may be used for promethazine (See abstract under Chlorpromazine p 16)

Promethazine Theoclate (*B P C*) $C_{21}H_{27}O_2N_4SCl=499\ 1$ It contains 55 5 to 57 5 per cent of promethazine ($C_{17}H_{20}N_2S$), determined acidimetrically on the extracted base, and 42 0 to 44 0 per cent of theoclic acid ($C_7H_7O_2N_4Cl$), determined by precipitation with silver nitrate, filtration, and back titration with ammonium thiocyanate

PROPANTHELINE

Propantheline Bromide (*B P*) $C_{23}H_{30}O_3NBr=448\ 4$ It contains 98 0 to the equivalent of 102 0 per cent of propantheline bromide, calculated with reference to the dried substance, based on the nitrogen content determined by the Kjeldahl method, the loss on drying at 105° is not more than 2 0 per cent

DETERMINATION Propantheline bromide may be assayed by polarographic titration or gravimetrically with tungstosilicic acid The average error reported was ± 1 per cent for the pure substance, ± 2 per cent for tablets by polarography and ± 2 per cent and ± 3 5 per cent respectively by gravimetry—J Krčmar and Z Stejskal *Cs l Farm* 1957 *6* 139, per *Analyt Abstr*, 1958 5 1684

Tablets of Propantheline (*B P*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of propantheline bromide, determined by the Volhard method

PROPYLHEXEDRINE

Propylhexedrine (*B.P C*) $C_{10}H_{21}N=155\ 3$ It contains 99 0 to the equivalent of 101 0 per cent w/w of propylhexedrine, determined by dissolving in sulphuric acid and back titrating with sodium hydroxide

PROTAMINE SULPHATE

Injection of Protamine Sulphate (*B.P C*) It contains 90 0 to 110 0 per cent of the stated amount of protamine sulphate determined by a method based on neutralisation of the anticoagulant property of heparin and nitrogen equivalent to 21 0 to 25 5 per cent of the stated amount of protamine sulphate, determined by the Kjeldahl method

PYRIDOSTIGMINE

Pyridostigmine Bromide (*B P Add*) $C_9H_{13}O_2N_2Br=261\ 1$ It contains at least 98 5 per cent of pyridostigmine bromide, calculated with reference to the dried substance determined by titration with perchloric acid in dioxan, the loss on drying at 105° is not more than 2 0 per cent

Injection of Pyridostigmine (*B P Add*) It contains 95 0 to 105 0 per cent of the stated amount of pyridostigmine bromide, determined spectrophotometrically

Tablets of Pyridostigmine (*B P Add*) Each tablet contains 92 5 to 107 5 per cent of the stated amount of pyridostigmine bromide, determined spectrophotometrically

RAUWOLFIA

Extra Pharmacopœia Vol II 23rd Edn, p 361

Rauwolfia Serpentina (*U S N F*) It contains not less than 0 15 *per cent of the reserpine rescinnamine group of alkaloids*, calculated as reserpine when assayed by a method almost identical with that described below

DETERMINATION *The following method for the determination of reserpine* like alkaloids is based on the report of the Rauwolfia Panel of the Joint Committee of the Pharmaceutical Society and the Society for Analytical Chemistry on Methods of Assay of Crude Drugs (*Analyst* 1960 *85*, 755)

Accurately weigh a suitable quantity (2 5 g of Rauwolfia serpentina or R tomitoria root or 1 g of R tomitoria root bark in No 60 powder) and triturate with 10 ml of acetic acid solution (5 per cent v/v in alcohol 95 per cent) Allow to stand stirring occasionally and extract with alcohol (95 per cent) for 4 hours in a Soxhlet apparatus protecting the apparatus from light, cool the extract and dilute to 100 ml with alcohol (95 per cent) Transfer 20 ml of this extract to a separator containing 200 ml of 0 5N sulphuric acid and extract with three successive quantities each of 25 ml of trichloroethane washing each of the trichloroethane solutions with the same 50 ml of 0 5N sulphuric acid contained in a second separator and discard the trichloroethane solutions Extract the main sulphuric acid solution with successive quantities of 20 15 15 15 15 and 15 ml of chloroform washing each chloroform extract with the sulphuric acid contained in a second separator Filter the chloroform extracts through cotton wool and dilute to 100 ml with chloroform Place 20 ml of this solution in a boiling tube evaporate to dryness on a water bath in a current of warm air protecting the tube from light add 10 ml of alcohol (95 per cent) and 2 ml of 0 5N sulphuric acid warm to dissolve the residue and add 2 ml of a 0 3 per cent w/v aqueous solution of sodium nitrite Warm in a water bath at 55° for 30 minutes protecting the solution from light cool add 1 ml of a 5 per cent w/v aqueous solution of sulphamic acid transfer the contents of the tube to a 20 ml flask and dilute to 20 ml with alcohol (95 per cent) Determine the extinction of a 1-cm layer of this solution at 390 mμ against a control solution prepared by similarly treating 20 ml of the chloroform solution but omitting the sodium nitrite For many purposes results may be calculated from an E(1 per cent 1 cm) value of 400 for reserpine A standard curve may be prepared using standard solutions containing 100 200 and 300μg of reserpine in 10 ml of alcohol (95 per cent)

Information on assays based on extraction of the alkaloids followed by gravimetric or volumetric determination, is given in the following papers L Hörhammer and S B Rao *Arch Pharm Berl* 1954 *287* 75 per *Analyst Abstr* 1954 *1* 1340 P P Pillay *et al Indian J Pharm* 1955 *17* 95 F Neuwald and W Loges *Arch Pharm Berl* 1956 *289* 226 per *Analyst Abstr* 1957 *4* 1323 B Bose *J Inst Chem (India)* 1957 *29* 166 per *Analyst Abstr* 1958 *5* 1331 B K Moza *J Inst Chem (India)* 1958 *30* 113 per *Analyst Abstr* 1959 *6* 700

Information on colorimetric methods using nitrite is given in the following papers D Banes *et al J Amer pharm Ass Sci Edn* 1956 *45*, 708 D Banes *Drug Stand* 1957 *25* 61 D Banes *et al J Amer pharm Ass, Sci Edn* 1958 *47* 625 A colorimetric method using ammonium reineckate is given by H Wunderlich *Pharm Zentralh* 1957 *96* 68

The following methods of assay have also been reported chromatography hydrolysis and spectrophotometric determination of the liberated trimethoxybenzoic and trimethoxycinnamic acids —D Banes and J Carol *J Ass off agric Chem Wash* 1955 *38* 861 J Carol *et al J Amer pharm Ass Sci Edn* 1956 *45* 200 electrophoresis and fluorimetry or gravimetry —K A Hameed and V M Bakshi *Indian J Pharm* 1956 *18* 190 determination of total alkaloids free from reserpine by change in blood pressure in hypotensive dogs —R B Arora and V N Bhargava *Indian J Pharm* 1956 *18* 243

paper chromatography and fluorimetry—B P Korzun *et al* *J Amer pharm Ass Sci Edn* 1957 *46* 720 extraction of *reserp ne by counter-current d stri* but on and spectrophotometric determination—D A A Kidd and P G W Scott *J Pl arm Pharmacol* 1957 *9* 176

SEPARATION AND IDENTIFICATION OF ALKALOIDS A method of paper elec trophores s is described—Kazutaka Yamaguchi *et al* *J pharm Soc Japan* 1957 *77* 337 a paper chromatographic method is descr bed—A. Hameed Khan *Pak st J sci ind str Res* 1958 *1* 194 per *Analyt Abstr* 1959 *6* 3158 a m cro method us ng paper electrophoresis and *multi buffered paper* chromatography is described—H dehiko Kaneko *J pharm Soc Japan* 1958 *78* 512

INFRA RED SPECTRA Differences in the infra red spectra of reserpine and reserpine conta n ng 20 per cent of deserpidine are described and illustrated—W C Evans *Pharm J* 1958 129

Reserpine (*B P*) $C_{33}H_{40}O_9N_2$—608 7 It contains 98 5 to the equivalent of 101 5 per cent of reserpine calculated with reference to the dried substance determined by titration with perchloric acid in glacial acetic acid the loss on drying for 2 hours at 60° under reduced pressure is not more than 1 0 per cent

DETECTION OF HYDROLYSIS PRODUCTS A chromatographic method is de scribed—M Langejan and H F N L efferink *Pharm Weekbl* 1956 *91* 847

DETERMINATION Information on colorimetric or fluorimetric methods is given—R. C d A de C Bonino *Rev Asoc b oquim argent* 1955 *22* 229 D Banes *J Amer pharm Ass Sci Edn* 1955 *44* 408 R E Booth ibid 1955 *44* 568 E B Deehene ibid 1955 *44* 657 J Re chelt, *Csl Farm* 1956 *5* 516 pee *Analyt Abstr* 1957 *4* 2768 C R Szalkowski and W J Mader *J Amer pharm Ass Sci Edn* 1956 *45* 613 W A. Mannell and M G Allmark *Drug Stand* 1956 *24* 6 Z Jung *Csl Farm* 1957 *6* 299 per *Analyt Abstr* 1958 *5* 1964 D Banes *J Amer pl arm Ass Sci Edn* 1957 *46* 601 K G Kneba and N Futscher *Dtsch ApothZtg* 1958 *98* 1341 E B Deehene *J Amer pharm Ass Sci Edn* 1958 *47* 757 E and M Kahane *Ann pharm franç* 1958 *16* 726 G L Szendey *Arch Pharm Berl* 1958 *291* 215 per *Analyt Abstr* 1959 *6* 1070 E A De Fel ce *Experientia*, 1958, *14* 159 per *Analyt Abstr* 1959 *6* 1069 V Scarsella *Boll Soc ital B ol sper* 1958 *34* 1132 per *Analyt Abstr* 1959 *6* 4133 A W M Indemans *Pharm Weekbl* 1959 *94* 1

Information on spectrophotometric methods (w th chromatograph c sep aration where appropriate) is g ven—E H Sakal and E J Merrill *J Amer pharm Ass Sci Edn* 1954 *43* 709 D Banes *et al* ibid 1955 *44* 640 W F Bartelt and E E Hamlow *J A ner pharm Ass Sci Edn* 1955 *44* 660 J Bayer *Magyar Kém Foly* 1956 *62* 355 per *Analyt Abstr* 1957 *4* 2767 W R Maynard Jr *J Ass off agric Chem Wash* 1958 *41* 676 A L Hayden *et al* *J Amer pharm Ass Sci Edn* 1958 *47* 157

Chromatograph c separation of reserp ne from related compounds is de scribed—R J Boscott and A B Kac *Nature Lond* 1955 *176*, 1077 F Machovičová *Csl Farm* 1957 *6* 310 pee *Analyt Abstr* 1958 *5* 2367 F Machovičová *et al* ib d 1957 *6* 584 pee *Analyt Abstr* 1958 *5* 1965

A spectrophotofluorimetric method for the determinat on of reserpine in admixture with rescinnamine is described The erroc is less than ± 3 per cent—R P Haycock *et al* *J Amer pharm Ass Sci Edn* 1959 *48* 479

A spectrophotometric method is descr bed It may be applied to the deter m nation of reserp ne *in tablets and crude root extracts with an error of* about ± 4 per cent—B C Bose and R Vijayvargiya *J Pharm Pharmacol* 1959 *11* 456

DETERMINATION IN TISSUE AND PLASMA. A fluorimetric method using sele nous acid is described—S M Hesa *et al* *J Pharmacol* 1956 *118* 84

Tablets of Reserpine (*B P*) Each tablet contains 90 0 to 115 0 per cent of the stated amount of reserpine determined spectrophotometrically

SALICYLIC ACID

Extra Pharmacopœia Vol II 23rd Edn p 364

Application of Salicylic Acid and Sulphur (*B P C*) It contains 1 9 to 2 3 per cent of salicylic acid determined bromometrically and 1 9 to 2 3 per cent of sulphur, determined by the *B P* method for sulphur ointment

SODIUM CALCIUMEDETATE

Sodium Calciumedetate (*B P C*) $C_{10}H_{12}O_8N_2CaNa_2$=374 3 It contains 97 0 to 103 0 per cent of sodium calciumedetate calculated with reference to the dried substance determined by titration with ferric chloride the loss on drying at 130° is 8 0 to 11 0 per cent

Determination Calcium is determined by igniting dissolving in hydrochloric acid and titrating with disodium edetate with Eriochrome Black T indicator Calcium plus sodium is determined by igniting dissolving in perchloric acid in propionic anhydride and titrating with pyridine in propionic acid to the yellow green end point of malachite green —C Hennart and E Merlin *Chim anal* 1958 *40* 345 per *Analyt Abstr* 1959 *6* 2217

Determination of Edetic Acid in Urine and Serum The quantity of nickel which combines with edetic acid in the sample is determined colorimetrically with dimethylglyoxime —D C Smith and S C Tompsett *J clin Path* 1958 *11* 365

Injection of Sodium Calciumedetate (*B P C Supp*) It contains 22 5 to 27 3 per cent w/v of sodium calciumedetate determined by titration with lead nitrate

SODIUM RADIO IODIDE

Sodium Radio iodide (^{131}I) *Injection* (*B P*) It contains 95 0 to 105 0 per cent of the stated amount of iodine 131 (as iodide) at the stated time determined by comparison with a standardised iodine-131 solution using a suitable Geiger Müller counter

Sodium Radio iodide (^{131}I) *Solution* (*B P*) It contains 95 0 to 105 0 per cent of the stated amount of iodine 131 (as iodide) at the stated time determined by comparison with a standardised iodine 131 solution using a suitable Geiger Muller counter

Determination Methods of assessing the radioactivity by absolute measurements and by comparison with standard preparations are described —J J Hanaghan and J E Christian *J Amer pharm Ass Sci Edn* 1955 *44* 631

Determination of Iodine 131 in Thyroid Glands A method of extraction and determination of β activity is described in the United Kingdom Atomic Energy Report IGO AM/W 114 (1958)

Determination of Iodine 131 in Serum and Plasma Paper chromatographic methods are described —R J Block *et al* *Arch Biochem Biophys* 1958 *73* 9 per *Analyst Abstr* 1958 *5* 3432 Samples of blood in which cells are labelled with chromium 51 and plasma is labelled with iodine 131 may be assayed by determining the γ activities due to the two isotopes with a two channel pulse-height analyser —R Adams *et al* *J Lab clin Med* 1958 *52* 754

Determination of Iodine 131 in Urine A method of extraction and β counting is described Recoveries of 75 1 to 82 per cent are reported —J F Marriott *Analyst* 1959 *84* 33

SODIUM RADIOPHOSPHATE

Sodium Radiophosphate (^{32}P) Injection (*B P*) It contains 95 0 to 105 0 per cent of the stated amount of phosphorus 32 (as phosphate), at the stated time, determined by comparison with a standardised phosphorus-32 solution using a suitable Geiger-Müller counter

Sodium Radiophosphate (^{32}P) Solution (*B P*) It contains 95 0 to 105 0 per cent of the stated amount of phosphorus-32 (as phosphate), at the stated time, determined by comparison with a standardised phosphorus-32 solution using a suitable Geiger-Müller counter

SULPHONAMIDES

Extra Pharmacopœia Vol II, 23rd Edn, p 389

In the *B P 1958* method for the assay of sulphonamides the end-point is determined electrometrically instead of using starch-iodide paper as external indicator, and the directions to adjust the temperature to 15° and titrate slowly, which appeared in the previous edition, have been omitted

Isolation and Identification

See also under individual sulphonamides

COLOUR REACTIONS AND PREPARATION OF DERIVATIVES Colour reactions with cupric acetate are described —A Gaudswaard, *Pharm Weekbl*, 1957, *92*, 913 Melting points and equivalent weights are given for N^4-acetyl derivatives of 12 sulphonamides and melting points are given for amines obtained by hydrolysis or pyrolysis of sulphonamides —H Baggesgaard Rasmussen *et al. Dansk Tidsskr Farm.*, 1957, *31*, 53 The preparation of Schiff's bases with 5-bromo-, 3 5-dibromo 5-chloro , and 3,5-dichloro-salicylaldehyde, is suggested for the identification of sulphonamides —Takeo Tsukamoto and Kennosuke Yuhi, *J pharm Soc Japan*, 1958, *78*, 706 Photomicrographs of crystals produced by reaction with copper acetate and amines are given —H M Romijn, *Pharm Weekbl*, 1959, *94*, 617

CHROMATOGRAPHY The separation and identification of sulphadimidine, sulphasomidine, sulphapyridine sulphacetamide and sulphanilylurea is described —A Wankmuller, *Naturwissenschaften*, 1953 *40* 57, per *Analyt Abstr*, 1954, *1*, 138 Paper chromatography using butanol, acetic acid and water and butanol saturated with ammonia solution is described —J Pucher *Farm polska* 1954 *10*, 15 Separation of sulphonamides by partition chromatography on buffered paper is described —D Rybář *et al*, *Chem Listy*, 1954, *48* 1532 per *Analyt Abstr*, 1956, *3*, 533 Paper-chromatographic methods are described for the identification of parathion and a number of sulphonamides in mixtures obtained in the course of toxicological investigations —W Paulus and H J Mallach, *Arzneimittel-Forsch.*, 1957, *7*, 520 Aqueous butanol either neutral, acidified with acetic acid or rendered alkaline with ammonia, is used as the solvent in the paper chromatographic separation of sulphonamides in preparations Spots are coloured bright yellow with a 1 per cent solution of *p*-dimethylaminobenzaldehyde containing 1 per cent of HCl —H Rafalowska *et al*, *Chem Anal Warsaw* 1957, *2*, 366, per *Analyt Abstr*, 1958 *5* 1345 A circular-paper-chromatographic technique is described —Swarup Narain Tewari and Dharam Narain Tripathi *Z anal Chem*, 1959 *166* 356 per *Analyt Abstr*, 1959 *6* 4948 A paper-chromatographic method for the identification of sulphonamides in pharmaceutical preparations is described —E Sophoulis, *Ann pharm franç*, 1959, *17* 446

ELECTROPHORESIS Separation of a number of commercial sulphonamides is described —A. Okáč and V Jokl *Čsl Farm*, 1955, *4* 219 per *Analyt Abstr*, 1956 *3*, 535 Paper chromatography and electrophoresis are used for the separation of sulphanilamide, sulphaguanidine, sulphamethizole sulphathiazole

sulphasolucin and sulphadimidine —M Cormier *et al. Ann pharm franç* 1957 *15* 176 The separation and identification of sulphanilamide sulphaguanidine sulphadiazine sulphamerazine sulphathiazole phthalylsulphathiazole acetanilide and phenacetin, are described.—Yahyoe Kinoshita *et al. Japan Analyst*, 1957, *6* 219 per *Analyt Abstr* 1958 *5* 692

Determination

See also under individual sulphonamides

Volumetric Methods Bromometric and nitrite titration methods are compared —P L de Reeder *Analyt chim acta* 1953 *9* 314 per *Analyt Abstr* 1954 *1* 570 Non aqueous titration with sodium methoxide in benzene-methanol or pyridine gives results in agreement with the nitrite titration method for sulphathiazole sulphadiazine sulphamerazine sulphadimidine and succinyl sulphathiazole —J S Faber *J Pharm Pharmacol* 1954 *6* 187 Thymolphthalein is a suitable indicator for acidimetric titration of sulphonamides and their sodium salts in aqueous solution The SO_2NH group can be titrated in butylamine with sodium methoxide *p*-nitrophenylazoresorcinol being used as indicator Some sulphonamides can be determined argentimetrically —P L de Reeder *Analyt chim acta* 1954 *10* 413 per *Analyt Abstr* 1954 *1* 1960. A nitrometric determination is described —Masaharu Yamagishi and Makoto Yokoo *J pharm. Soc Japan* 1954 *74* 961 *N*[1] 3 4-dimethylbenzoylsulphanilamide sulphafurazole and sulphadimidine may be titrated with sodium methoxide in pyridine or benzene methanol the standard deviation of the mean is about ± 0 3 per cent.—Yoshio Tajika and Makoto Aikawa *J pharm Soc Japan* 1954 *74* 1125 Conductimetric titration of sulphonamides dissolved in alcohol or acetone against sodium hydroxide iodic acid and silver nitrate is described —C G Macarovici *Rev Chim Bucharest* 1956 *7* 79 per *Analyt Abstr* 1957 *4* 1965 A modified Van Slyke method suitable for sulphonamides is described —Daizo Shimoe *Japan Analyst* 1956 *5* 617 per *Analyt Abstr* 1957 *4* 3019 The end point of the nitrite titration of sulphonamides may be detected with test paper impregnated with dimethylaminobenzaldehyde —Kuchiro Kakemi *et al J pharm Soc Japan* 1956 *76* 1331 Diphenylamine is a suitable internal indicator in titrations of sulphonamides with nitrite —Tao Duenn *Acta pharm sinica* 1957, *5* 97 An acetylation method for the determination of sulphonamides in powders tablets and injections is described —K N Gaind and D P Punn *Ind an J Pharm* 1957 *19* 279 Volumetric and gravimetric methods using silver nitrate are described —Lee Kum Tatt *Analyst* 1957 *82* 185 Under suitable conditions dead stop titration of sulphanilamide with nitrite may be carried out with an error of about 1 per cent.—Takehisa Enoki and Katsuaki Monzaka *J pharm. Soc Japan* 1958 *78* 432 Determination of sulphonamides with perchloric acid in glacial acetic acid by back titration is described.—J Meulenhoff *Pharm Weekbl* 1958 *93* 262

Sulphacetamide (*B P C*) (Vol II 23rd Edn, p 391) $C_8H_{10}O_3N_2S$ =214 3 It contains at least 98 5 per cent of sulphacetamide determined titrimetrically with sodium nitrite as in the *B P* method for sulphonamides (see above p 44)

Determination Sulphacetamide sulphanilylurea sulphafurazole and phthalylsulphathiazole may be determined with an average error less than ±0 3 per cent by titration with sodium methoxide in pyridine.—J Vacek and J Kráčmar *Čsl Farm* 1956 *5* 80 per *Analyt Abstr* 1958 *5* 218

Sulphacetamide Sodium (*B P*) $C_8H_9O_3N_2SNa\,H_2O$ =254 2 It contains 99 0 to the equivalent of 101 0 per cent of anhydrous sulphacetamide sodium calculated with reference to the dried substance, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44), the loss on drying at 150° is 6 0 to 8·0 per cent

Determination Sulphacetamide sodium sulphanilamide and procaine may be determined colorimetrically to within ±5 per cent by reaction with

sodium nitrite and 8 hydroxyquinoline —N I Krukova *Med Prom S S S R* 1956 41 per *Analyt Abstr* 1957 *4* 2783

DIFFUSION FROM OINTMENTS A cylinder plate method is described —E M Plein and J B Plein *J Amer pharm Ass Sci Edn* 1957 *46* 716

Eye Ointment of Sulphacetamide (*B P*) (Vol II 23rd Edn p 391) It contains 94 0 to 106 0 per cent of the stated amount of sulphacetamide sodium (monohydrate) determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44) after preliminary extraction with dilute hydrochloric acid from a solution of the ointment in light petroleum and solvent ether

Sulphadiazine (*B P*) (Vol II, 23rd Edn p 391) $C_{10}H_{10}O_2N_4S = 250\ 3$ *It contains at least 99 0 per cent of sulphadiazine* calculated with reference to the dried substance determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44) the loss on drying at 105° is not more than 0 5 per cent

IDENTIFICATION The characteristic crystal form and intense fluorescence of the Schiff s bases with anisaldehyde or *p* hydroxybenzaldehyde may be used for the identification of sulphadiazine —I Tschudi Steiner *Pharm Acta Helvet* 1958 *33* 105

DETERMINATION Sulphadiazine sulphapyridine and sulphasomidine may be determined by anodic polarography with a reproducib lity of about ±2 per cent In the presence of blood or urine the method is unsatisfactory —J D Voorhies and R N Adams *Analyt Chem* 1958 *30* 346

Tablets of Sulphadiazine (*B P*) (Vol II, 23rd Edn p 392) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphadiazine determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44)

Sulphadiazine Sodium (*B P C*) $C_{10}H_9O_2N_4SNa = 272\ 3$ *It contains at least 98 5 per cent of sulphadiazine sodium* determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44)

Sulphadimidine (*B P*) (Vol II, 23rd Edn p 393) $C_{12}H_{14}O_2N_4S = 278\ 3$ It contains at least 99 0 per cent of sulphadimidine calculated with reference to the dried substance determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44) the loss on drying at 105° is not more than 0 5 per cent

IDENTIFICATION The characteristic crystal form and intense fluorescence of the Schiff's base with *p* dimethylaminobenzaldehyde may be used for the identification of sulphadimidine —I Tschudi Steiner *Pharm Acta Helvet*, 1958 *33* 105

DETERMINATION Sulphadimidine may be determined within ±2 per cent by heating with an alcoholic solution of salicylaldehyde and measuring the colour produced —C G Butler and P H B Ingle *J Pharm Pharmacol* 1954 *6* 806 Sulphadimidine is converted to the di iodo derivative by treatment with a known amount of iodine monochloride and the excess of reagent determined iodometrically —Ts I Shakh *Apt Delo* 1957 *6* 22 A similar method based on bromination in acetic acid solution and determination of the excess of bromine iodometrically is described it can be applied to sulphadimidine sulphaguanidine sulphanilamide and sulphathiazole —B Miszczuk Lucka and H Taborska *Przem chem* 1955 *11* 706 Sulphadimidine sulphathiazole and phthalylsulphathiazole may be determined in tablets by argent metric titration Stearates interfere but a method for removing them is indicated The error is 0 to +0 3 per cent —M Bégu n *Pharm Acta Helvet* 1957 *32* 13

Mixture of Sulphadimidine for Infants (*B P C*) It contains 12 8 to 14 5 per cent w/v of sulphadimidine, determined by the following method

Dissolve 5 g by warming gently in 75 ml of water and 10 ml of hydrochloric acid, cool and titrate with M/10 sodium nitrite determining the end point electrometrically each ml of M/10 sodium nitrite is equivalent to 0 02783 g of $C_{12}H_{14}O_2N_4S$ Determine the weight per ml and calculate the proportion of $C_{12}H_{14}O_2N_4S$ weight in volume

Tablets of Sulphadimidine (*B P*) (Vol II, 23rd Edn, p 393) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphadimidine, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

Sulphadimidine Sodium (*B P*) (Vol II, 23rd Edn, p 393) $C_{12}H_{13}O_2N_4SNa=300$ 3 It contains 98 0 to the equivalent of 101 0 per cent of sulphadimidine sodium, calculated with reference to the dried substance, determined titrimetrically with sodium nitrite by the *B.P* method for sulphonamides (see above, p 44), the loss on drying at 105° is not more than 2 0 per cent

Injection of Sulphadimidine (*B.P*) It contains 94 0 to 105 0 per cent of the stated amount of sulphadimidine sodium, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

Sulphafurazole (*B.P C*) (Vol II, 23rd Edn, p 393) $C_{11}H_{14}O_2N_3S$ =267 3 It contains 98 5 to the equivalent of 101 0 per cent of sulphafurazole, determined by titration with lithium methoxide in dimethyl formamide

Determination Sulphafurazole may be determined by titration with silver nitrate in the presence of sodium borate The method may be applied to tablets and solutions for injection and is stated to be accurate to within ±1 6 per cent —J Blažek and Z Stejskal *Cs l Farm* 1956, *5* 27 per *Analyt Abstr*, 1956, *3* 2557

Sulphafurazole may be acetylated with acetic anhydride in pyridine and the precipitated acetylsulphafurazole dissolved in acetone and titrated with sodium nitrite Direct titration of sulphafurazole with sodium nitrite is not satisfactory —Toyozo Uno *et al*, *J pharm Soc Japan* 1959 *79*, 113 See also abstract under Sulphacetamide

Determination in Blood and Plasma The method of Bratton and Marshall (*J biol Chem* 1939 *128*, 537, see also Vol II, 23rd Edn p 1224–5) is applied to trichloroacetic acid extracts of blood and serum and a correction factor applied to allow for loss by adsorption —H L Rosenthal and L. Jud *J Lab clin Med*, 1959, *54* 461

Tablets of Sulphafurazole (*B Vet C Supp*) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphafurazole, determined by titration with lithium methoxide in dimethylformamide with thymol blue as indicator

Sulphaguanidine (*B P*) (Vol II, 23rd Edn, p 393) $C_7H_{10}O_2N_4S$, H_2O=232 3 It contains at least 99 0 per cent of anhydrous sulphaguanidine, calculated with reference to the dried substance, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44), the loss on drying at 105° is 5 0 to 8 0 per cent

Determination See abstract under Sulphadimidine p 46

Tablets of Sulphaguanidine (*B P*) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphaguanidine (monohydrate),

determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

Sulphamerazine (*B P*) (Vol II, 23rd Edn, p 394) $C_{11}H_{12}O_2N_4S$ =264 3 It contains 99 0 to 101 0 per cent of sulphamerazine, calculated with reference to the dried substance, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44), the loss on drying at 105° is not more than 0 5 per cent

IDENTIFICATION X ray powder diffraction patterns are given for sulphamerazine sulphapyridine and sulphathiazole sodium —D H Lennox, *Analyt Chem*, 1957 *29*, 1433 The characteristic crystal form and intense fluorescence of the Schiff's bases with anisaldehyde *p* dimethylaminobenzaldehyde or salicylaldehyde may be used for the identification of sulphamerazine —I Tschudi Steiner, *Pharm Acta Helvet*, 1958, *33* 105

Tablets of Sulphamerazine (B P) (Vol II, 23rd Edn, p 394) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphamerazine, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

Sulphanilamide (*B P C*) (Vol II, 23rd Edn, p 389) $C_6H_8O_2N_2S$= 172 2 It contains at least 98 5 per cent of sulphanilamide, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

DETERMINATION Titration in pyridine may be used —R K Mautmeyer *et al*, *Mikrochim Acta*, 1959 177, per *Analyt Abstr*, 1959 *6* 4464 See also abstracts under Sulphacetamide Sodium, p 45, and Sulphadimidine p 46

DETERMINATION IN BLOOD SERUM An ultra micro method based on diazotisation and coupling with *N*-1-naphthylethylenediamine is described —R P MacDonald and J Ploompuu *Mikrochim Acta* 1958 147 per *Analyt Abstr*, 1958 *5*, 3439

Sulphapyridine (*B P C*) (Vol II, 23rd Edn, p 394) $C_{11}H_{11}O_2N_3S$= 249 3 It contains 98 5 to the equivalent of 101 0 per cent of sulphapyridine, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

IDENTIFICATION See abstract under Sulphamerazine

DETERMINATION See abstract under Sulphadiazine p 46

Tablets of Sulphapyridine (B P C) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphapyridine, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

Sulphasomidine (*B P C*) (Vol II, 23rd Edn, p 395) $C_{12}H_{14}O_3N_4S$ =278 3 It contains 99 0 to the equivalent of 101 0 per cent of sulphasomidine, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

IDENTIFICATION The characteristic crystal form and intense fluorescence of the Schiff s base with *p* hydroxybenzaldehyde may be used for the identification of sulphasomidine —I Tschudi-Steiner, *Pharm Acta Helvet* 1958 *33* 105

DETERMINATION See abstract under *Sulphadiazine*, p 46

Sulphathiazole (*B P C*) (Vol II, 23rd Edn, p 395) $C_9H_9O_2N_3S_2$= 255 3 It contains 98 5 to the equivalent of 101 0 per cent of sulphathiazole, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

IDENTIFICATION An X ray powder-diffraction pattern for the sodium salt is given —D H Lennox, *Analyt Chem*, 1957, *29*, 1433

DETERMINATION A modified Dumas nitrogen determination is described — Ikuchiro Hozumi and Shigeo Kinoshita *J pharm Soc Japan* 1956 *76* 1167

Determination of sulphathiazole during the manufacturing process in the presence of chlorides and sulphanilic acid may be carried out by extraction followed by titration with silver acetate — A Miss and S Iancu *Acad R P R Stud Cercet Chim* 1959 *7* 125 per *Analyt Abstr* 1960 *7* 1164

See also abstracts under Sulphadimidine p 46

Tablets of Sulphathiazole (B P C) *Each tablet contains 95 0 to 105 0 per cent of sulphathiazole, determined titrimetrically with sodium nitrite by the B P method for sulphonamides (see above, p 44)*

Trisulphonamide Tablets (B P C) Each tablet contains 0 47 to 0 53 g of sulphonamides calculated as sulphathiazole, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44)

DETERMINATION OF MIXTURES OF SULPHONAMIDES Calculation of the composition of a mixture from the results of elementary analysis is discussed — P L de Reeder *Analyt chim acta* 1953 *9* 140 per *Analyt Abstr* 1954 *1* 139

Estimations of sulphonamides alone and in mixtures by bromometric and nitrite titration methods are compared — P L de Reeder *Analyt chim acta* 1953 *9*, 314 per *Analyt Abstr* 1954 *1* 570

Phthalylsulphathiazole (*B P*) (Vol II 23rd Edn, p 397) $C_{17}H_{13}O_4N_3S_2$=403 4 It contains 98 5 to the equivalent of 102 5 per cent of phthalylsulphathiazole calculated with reference to the dried substance, determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44) the loss on drying at 105° is not more than 2 0 per cent

DETERMINATION See abstracts under Sulphacetamide p 45 and Sulphadimidine p 46

Tablets of Phthalylsulphathiazole (B P) Each tablet contains 95 0 to 105 0 per cent of the stated amount of phthalylsulphathiazole determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44)

Succinylsulphathiazole (*B P*) (Vol II, 23rd Edn p 397) $C_{13}H_{13}O_4N_3S_2.H_2O$=373 4 It contains 99 0 to the equivalent of 101 0 per cent of anhydrous succinylsulphathiazole calculated with reference to the dried substance determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above, p 44) after preliminary refluxing with dilute hydrochloric acid the loss on drying at 105° is 4 0 to 5 5 per cent

Mixture of Succinylsulphathiazole for Infants (B P C) It contains 12 2 to 14 0 per cent w/v of anhydrous succinylsulphathiazole determined by the following amended method

Dissolve 5 g in 10 ml of sodium hydroxide solution and heat on a water bath for two hours cool neutralise to litmus paper with hydrochloric acid add 5 ml of 5N hydrochloric acid and 75 ml of water and titrate with M/10 sodium nitrite determining the end point electrometrically each ml of M/10 sodium nitrite is equivalent to 0 03554 g of $C_{13}H_{13}O_4N_3S_2$ Determine the weight per ml and calculate the proportion of $C_{13}H_{13}O_4N_3S_2$ weight in volume

Tablets of Succinylsulphathiazole (B P) (Vol II, 23rd Edn p 397) Each tablet contains 95 0 to 105 0 per cent of the stated amount of sulphathiazole (monohydrate) determined titrimetrically with sodium nitrite by the *B P* method for sulphonamides (see above p 44) after preliminary heating with sodium hydroxide solution

SUPRARENAL CORTEX

AND CORTICOSTEROIDS

Extra Pharmacopœia Vol II 23rd Edn p 401

Corticotrophin (*B P Add*) The potency is 80 to 125 per cent of the stated potency, determined biologically on hypophysectomised rats by one of the *B P Addendum* methods the limits of error (P—0 95) are 64 to 156 per cent By the *intravenous method* it contains at least 8 units per mg (ox material) or at least 15 units per mg (pig material) By the *subcutaneous method* it contains at least 24 units per mg (ox material) or at least 45 units per mg (pig material)

Injection of Corticotrophin (*B P Add*) The potency is 80 to 125 per cent of the stated potency determined by the *B P Addendum* subcutaneous method for corticotrophin the limits of error (P—0 95) are 64 to 156 per cent

Injection of Corticotrophin Gelatin (*B P Add*) The potency is 80 to 125 per cent of the stated potency determined by the *B.P Addendum* subcutaneous method for corticotrophin the limits of error (P 0 95) are 64 to 156 per cent

Injection of Corticotrophin Zinc Hydroxide (*B.P Add*) The potency is 80 to 125 per cent of the stated potency determined by the *B P Addendum* subcutaneous method for corticotrophin the limits of error (P 0 95) are 64 to 156 per cent

Fludrocortisone Acetate (*B P C*) $C_{23}H_{31}O_6F$ 422 5 It contains 4 1 to 4 9 per cent of F, calculated with reference to the dried substance determined by combustion and titration with M/400 thorium nitrate the loss on drying at 100° under reduced pressure for 2 hours is not more than 3 0 per cent

Hydrocortisone (*B P*) $C_{21}H_{30}O_5$=362 5 It contains 96 0 to the equivalent of 104 0 per cent of hydrocortisone calculated with reference to the dried substance determined spectrophotometrically, the loss on drying at 105° is not more than 1 0 per cent

DETERMINATION Hydrocortisone and related steroids may be determined colorimetrically after reaction with d phenylamine in sulphuric acid Hydrocortisone gives a green colour—I Clark *Nature Lond* 1955 *175* 123

The use of paper chromatography in conjunct on with spectrophotometry etc is described—H J Pazdera *et al Analyt Chem* 1957 *29* 1649

A colorimetric method based on reaction with 2 6 di t butyl *p* cresol in alkal ne solution is described—E P Schulz and J D Neusa *Analyt Chem* 1957 *29* 1662

DETERMINATION IN URINE The bismuthate oxidation techn que is sat s factory for the determination of the total 17 oxogenic stero d content of urine—H *Schreiters* and W *Korus*, *Hoppe-Seyl Z* 1958 *313* 5 0 per *Analyt Abstr* 1959 *6* 4115

SEPARATION FROM OTHER CORTICOSTEROIDS A chromatograph c technique employing a double reversed phase system is described—T Di Perri *et al Boll. Soc ital Biol sper* 1959 *35* 570 per *Analyt Abstr* 1960 *7* 717

Eye Ointment of Hydrocortisone (*B P C*) It contains 90 0 to 110 0 per cent of the stated amount of hydrocortisone acetate determined by the *B P* method for hydrocortisone acetate ointment.

Injection of Hydrocortisone (*B P*) This solution conta ns 0·45 to 0 55 per cent of w/v of hydrocortisone determined by the *B P* method for hydrocortisone

Ointment of Hydrocortisone **(*B P*)** It contains 92 5 to 107 5 per cent of the stated amount of hydrocortisone determined colori metrically after treatment with triphenyltetrazolium chloride and tetramethylammonium hydroxide

Hydrocortisone Acetate (*B P*) $C_{23}H_{32}O_6$=404 5 It contains 96 0 to 104 0 per cent of hydrocortisone acetate calculated with reference to the dried substance determined spectrophotometrically the loss on drying at 105° is not more than 1 0 per cent

DETERMINATION A colorimetric method based on reaction with hydroxyl amine and ferric perchlorate may be applied to several steroid esters Reaction conditions for hydrocortisone acetate and cyclopentylpropionate are indicated — A A Forist and S Theal *J Amer pharm Ass Sci Edn 1958 47 520*

Injection of Hydrocortisone Acetate **(*B P*)** It contains 90 0 to 110 0 per cent of the stated amount of hydrocortisone acetate determined spectrophotometrically

Ointment of Hydrocortisone Acetate **(*B P*)** It contains 92 5 to 107 5 per cent of hydrocortisone acetate determined by the *B P* method for hydrocortisone ointment

Hydrocortisone Hydrogen Succinate (*B P Add*) $C_{25}H_{34}O_8$ =462 5 It contains 96 0 to the equivalent of 104 0 per cent of hydrocortisone hydrogen succinate calculated with reference to the dried substance determined spectrophotometrically the loss on drying at 100° under reduced pressure is not more than 5 0 per cent.

Hydrocortisone Sodium Succinate (*B P Add*) $C_{25}H_{33}O_8Na$ =484 5 It contains 96 0 to the equivalent of 104 0 per cent of hydrocortisone sodium succinate calculated with reference to the dried substance, determined spectrophotometrically the loss on drying at 100° under reduced pressure is not more than 3 0 per cent

Injection of Hydrocortisone Sodium Succinate **(*B P Add*)** In the sealed container is dry powder containing 92 5 to 107 5 per cent of the stated amount of hydrocortisone sodium succinate determined spectrophotometrically

Prednisolone (*B P*) $C_{21}H_{28}O_5$=360 5 It contains 96 0 to 104 0 per cent of prednisolone calculated with reference to the dried substance, determined spectrophotometrically the loss on drying at 105° is not more than 1 0 per cent

DETERMINATION Prednisolone and prednisone may be assayed spectrophotometrically at 292 mμ after reaction with semicarbazide — J B Jensen *Dansk Tidsskr Farm 1956 30 293*

A method of extraction chromatographic separation and spectrophotometric determination is described. Interference by tablet excipients and degradation products is almost completely eliminated but the method is too tedious for routine use — P D Meister *et al J Amer pharm Ass Sci Edn 1958 47 576*

Tablets may be assayed colorimetrically using 2,3 5 triphenyltetrazolium chloride A preliminary extraction with chloroform is necessary — J G Wagner *et al J Amer pharm Ass Sci Edn 1958 47 580*

Prednisolone may be determined by infra red spectrophotometry using the potassium bromide disk technique The usual grinding technique does not yield suitable spectra but heating the disk at 100° for 5 minutes yields satisfactory results — J B Jensen *Dansk Tidsskr Farm 1958 33 205* and *221*

Prednisolone Acetate (*B P*) $C_{23}H_{32}O_6$=402 5 It contains 96 0 to 104 0 per cent of prednisolone acetate, calculated with reference to the dried substance, determined spectrophotometrically, the loss on drying at 105° is not more than 0 5 per cent

Unit cell dimensions and X ray powder data are given —R A Pasternak, *Analyt Chem* 1959 *31* 959

DETERMINATION A colorimetric method using hydroxylamine and ferric perchlorate is described —A A Forist and S Theal *J Amer pharm Ass Sci Edn* 1958 *47*, 520

Tablets of Prednisolone (B P) Each tablet contains prednisolone or prednisolone acetate equivalent to 90 0 to 110 0 per cent of the stated amount of prednisolone determined spectrophotometrically

Prednisone (*B P*) $C_{21}H_{26}O_5$=358 4 It contains 96 0 to the equivalent of 104 0 per cent of prednisone, calculated with reference to the dried substance, determined spectrophotometrically, the loss on drying at 105° is not more than 1 0 per cent

DETERMINATION A polarographic method which may be used to assay single 5 mg tablets with an accuracy of ±1 per cent is described —H P Deys and J A C van Pinxteren *Pharm Weekbl* 1958 *93* 760

Prednisone Acetate (*B P*) $C_{23}H_{28}O_6$=400 5 It contains 96 0 to the equivalent of 104 0 per cent of prednisone acetate, calculated with reference to the dried substance, determined spectrophotometrically, the loss on drying at 105° is not more than 1 0 per cent.

Tablets of Prednisone (B P) Each tablet contains prednisone or prednisone acetate equivalent to 90 0 to 110 0 per cent of the stated amount of prednisone, determined spectrophotometrically

TETRACYCLINES

Extra Pharmacopœia Vol II 23rd Edn, p 406

Chlortetracycline Hydrochloride (*B P*) $C_{22}H_{23}O_8N_2Cl\,HCl$ =515 4 Aureomycin Hydrochloride (Vol II 23rd Edn, p 406)

Determination

VOLUMETRIC METHODS Tetracyclines may be dissolved in nitromethane formic acid and benzene and determined by non-aqueous titration with perchloric acid in dioxan *The method may be applied to tablets capsules or* suppositories —F Yokoyama and L G Chatten *J Amer pharm Ass Sci Edn* 1958 *47* 548

COLORIMETRIC METHODS A colorimetric determination with ammonium molybdate is described —Kuchiro Kakemi *J pharm Soc Japan* 1955 *75* 192

Two colorimetric methods based on the chelation of quadrivalent thorium ions are described —Takeichi Sakaguchi and Kiyomi Taguchi *Pharm Bull Japan* 1955 *3* 166

A colorimetric method with boric acid and sulphuric acid is described —Takeichi Sakaguchi *Pharm Bull. Japan* 1955, *3* 170 Determination of chlortetracycline in urine may be completed by this method after a preliminary separation using ion exchange resin (Amberlite IR 112) —Takeichi Sakaguchi and Akira Hanaki *J pharm Soc Japan* 1956 *76* 172

A colorimetric method with molybdophosphoric acid which can be applied to tablets capsules and other pharmaceutical products is described —L J Ravin and A E James *J Amer pharm Ass Sci Edn* 1955 *44* 215

A simultaneous determination of chlortetracycline and tetracycline is based on the different rates of inactivation of the two compounds with 0·2M trisodium phosphate the amount remaining after 30 minutes being determined colorimetrically after treatment with hydrochloric acid —J Doskočil *Čsl Farm* 1956 *5* 321 per *Analyt Abstr* 1957 *4* 2773 A modification is described —A Saucine *et al* *Rev Chim Bucharest* 1958 *9* 339 per *Analyt Abstr* 1959 *6* 1501

A colour reaction with zinc chloride may be used to distinguish between chlortetracycline oxytetracycline and tetracycline —A Fouchet *Ann pharm franç* 1956 *14* 281 The same reaction has been applied to the quantitative determination of the tetracyclines —A. Fouchet *Ann pharm franç* 1956 *14* 553

In alkaline solution chlortetracycline shows a blue fluorescence which may be used for assay purposes Small quantities of tetracycline give rise to a yellow colour which provides a means of quantitative determination of this compound if present —F S Chiccarelli *et al* *J Amer pharm Ass Sci Edn* 1956 *45* 418 A fluorimetric method based on degradation of chlortetracycline to isochlortetracycline is described —D H Feldman *et al* *Analyt Chem* 1957 *29* 1697

A method based on colour development with amidopyrine sodium hydroxide and potassium ferricyanide can be used in the presence of up to 20 per cent of oxytetracycline or tetracycline —Kuehiro Kakemi *et al* *J pharm Soc Japan* 1956 *76* 903

Chlortetracycline reacts with sodium bisulphite and hydrochloric acid under certain conditions to form a coloured solution of anhydrochlortetracycline and under other conditions to form isochlortetracycline These reactions are used to prepare coloured solutions and blanks for the colorimetric determination of chlortetracycline in feed supplements veterinary medicines and food preservatives —F S Chiccarelli *et al* *J Ass off agric Chem Wash* 1957 *40* 922 A similar method is used to determine chlortetracycline and tetracycline in pharmaceutical preparations —F S Chiccarelli *J Amer pharm Ass Sci Edn*, 1959 *48* 263

A colorimetric determination with hydrochloric acid is described —L B Senyavina and B P Bruns *Zhur anal Khim* 1958 *13* 613 per *Analyt Abstr* 1959 *6* 1502

A colorimetric determination with *p* dimethylaminobenzaldehyde is described —E Hannig and H Heyroth Straube Kögler *Pharm Zentralh* 1959 *98* 383

SPECTROPHOTOMETRIC METHOD A spectrophotometric method for the simultaneous determination of tetracycline oxytetracycline and chlortetracycline is described.—R Intonti and F Cotta Ramusino *Ann Chim Roma* 1954 *44* 437 per *Analyt Abstr* 1955 *2* 451

CHROMATOGRAPHIC METHOD A paper chromatographic separation applicable to the direct determination of chlortetracycline in fermentation liquors is described —M Dohnal and J Bialá *Chem Listy* 1954 *48* 1261 per *Analyt Abstr* 1955 *2* 2846

MICROBIOLOGICAL METHODS A cylinder plate method for the quantitative determination of diffusion of chlortetracycline from ointments is described —F M Plein and J B Plein *J Amer pharm Ass Sci Edn* 1957 *46* 716

A turbidimetric assay applicable to chlortetracycline and some other antibiotics with *Escherich a coli* (ATCC 10536) is described —D M Wintermere *et al* *Ant biot and Chemother* 1957 *7* 189

The incubation period in cup plate assays with *Bacillus subtilis* (FDA 6633) may be shortened by adding DL aspartic acid folic acid indol 3 ylacetic acid and lactose to the medium to stimulate growth of the organism —V László *Nature Lond* 1958 *181* 648

For the assay of chlortetracycline in commercial animal feeds a 3 level cylinder plate test with *Bacillus mycoides* (ATCC 9634) is recommended —A L. Tanguay *et al.* *Ant b ot and Chemother* 1959 *9* 167

DETERMINATION IN MILK A method of determining chlortetracycline and some other antibiotics based on inhibition of the reduction of nitrate to nitrite by *Staphylococcus aureus* is described—L. R. Mattick *Dissert. Abstr.* 1955 *15* 1.

SEPARATION FROM TETRACYCLINES Separation of chlortetracycline from oxytetracycline by counter current distribution and paper chromatography is described—R. J. Hickey and W. F. Phillips *Analyt. Chem.* 1954 *26* 1640. A paper chromatographic method applicable to medicated feeds is described—A. V. Stiffkey and W. L. Williams *J. Ass. off. agric. Chem. Wash.* 1955 *38* 870.

Separation of tetracycline and chlortetracycline from culture fluids may be effected by chromatography on paper buffered to pH 2.53 and by using as solvent a mixture of butanol, acetic acid and water—I. I. Belousova and L. A. Popova *Antibiotiki* 1958 *3* 24 per *Analyst Abstr.* 1959 *6* 2312.

Separation of chlortetracycline, oxytetracycline and tetracycline by a counter current distribution method is described—A. G. Mistretta and P. P. Minieri *Antibiot. and Chemother.* 1956 *6* 13. A paper chromatographic procedure is described—H. Fishbach and J. Levine *Antibiot. and Chemother.* 1955 *5* 640. A paper chromatographic procedure applicable to the pure compounds or to fermentation liquors is described—H. L. Bird Jr. and C. T. Pugh *Antibiot. and Chemother.* 1954 *4* 750.

Veterinary Powder of Chlortetracycline (*B. Vet. C. Supp.*) The potency determined by the *B.P.* method for the biological assay of antibiotics is at least 85 per cent of the stated potency, the limits of error (P=0.95) are 80 to 125 per cent. (For purposes of assay and calculation the potency of chlortetracycline hydrochloride is taken to be 1000 units per mg.)

Veterinary Tablets of Chlortetracycline (*B. Vet. C. Supp.*) The potency determined by the *B.P.* method for biological assay of antibiotics is at least 85 per cent of the stated potency; the limits of error (P=0.95) are 80 to 125 per cent. (For purposes of assay and calculation the potency of chlortetracycline hydrochloride is taken to be 1000 units per mg.)

Oxytetracycline Dihydrate (*B.P.*) $C_{22}H_{24}O_9N_2.2H_2O=496.5$. It contains at least 94.0 per cent of oxytetracycline dihydrate determined spectrophotometrically and at least 870 units per mg determined by the *B.P.* method for the biological assay of antibiotics, the limits of error (P=0.95) are 80 to 125 per cent.

IDENTIFICATION A method is described by A. Fouchet (see under Chlortetracycline, p. 53). Other methods of distinguishing between tetracyclines are given—O. N. Yalcindag *Amer. J. Pharm.* 1955 *127* 362.

DETERMINATION A polarographic method is described—T. Noto and G. Matsuoka *Japan Analyst* 1955 *4* 30 per *Analyt. Abstr.* 1955 *2* 2531.

A solution of oxytetracycline is boiled with Fehling's solution and the precipitated cuprous oxide is determined by dissolution in ferric sulphate and sulphuric acid and titration with potassium permanganate—N. E. Indacochea O. *Acta Cienc. Venezuela* 1956 *7* 64 per *Analyt. Abstr.* 1957 *4* 1650.

A modification of one of the colorimetric methods proposed by Sakaguchi and Taguchi for chlortetracycline (see p. 52) is described—Takeichi Sakaguchi *et al. Japan Analyst* 1957 *6* 782.

A turbidimetric method is described—D. M. Wintermere *et al.* (see under Chlortetracycline, p. 53).

A modified cup plate assay is described—N. László (see under Chlortetracycline, p. 53).

Oxytetracycline may be determined by high frequency titration with perchloric acid in glacial acetic acid—F. Oehme *Z. Analyt.* 1958 *136* 462 per *Analyt. Abstr.* 1959 *6* 4139.

Ferric chloride is added to form a complex and the excess of ferric ions is determined complexometrically with edetic acid —K. Hochmann and I Bayer *Z anal Chem* 1959 *166* 88 per *Analyt Abstr* 1959 *6* 4141

DETERMINATION IN MILK A method is described —L. R. Matick (see under Chlortetracycline p 54)

SEPARATION FROM CHLORTETRACYCLINE See under Chlortetracycline p 54

Capsules of Oxytetracycline (*B Vet C Supp*) Each capsule contains at least 90 0 per cent of the stated amount of oxytetracycline hydrochloride determined by the following method

Dilute a quantity of the filtrate obtained in the test for potency with 49 times its volume of solution of standard pH 2 0 and measure the extinction of a 1 cm layer at 353 mμ For purposes of calculation use an $E^{1}_{1\,cm}$ (1 per cent 1 cm) value of 284 for oxytetracycline hydrochloride

The potency determined by the B P method for the biological assay of antibiotics after preliminary extraction with diluted hydrochloric acid and filtration is at least 90 per cent of the stated potency the limits of error (P=0 95) are 80 to 125 per cent (For purposes of assay and calculation the potency of oxytetracycline hydrochloride is taken to be 927 units per mg)

Tablets of Oxytetracycline (*B P*) Each tablet contains at least 90 0 per cent of the stated amount of oxytetracycline dihydrate determined spectrophotometrically The potency is not less than 90 per cent of the stated potency, determined by the *B P* method for the biological assay of antibiotics the limits of error (P=0 95) are 80 to 125 per cent (For purposes of assay and calculation the potency of oxytetracycline dihydrate is taken to be 927 units per mg)

Veterinary Tablets of Oxytetracycline (*B Vet C Supp*) Each tablet contains at least 90 per cent of the stated amount of oxytetracycline hydrochloride and the potency is at least 90 per cent of the stated potency, determined by the *B Vet C Supp* method for Capsules of Oxytetracycline the limits of error (P=0 95) are 80 to 125 per cent

Tetracycline Hydrochloride (*B P*) $C_{22}H_{24}O_8N_2Cl = 480\,9$ It contains at least 900 units per mg, determined by the *B P* method for the biological assay of antibiotics the limits of error (P=0 95) are 80 to 125 per cent

DETERMINATION A colorimetric method with ammonium molybdate may be applied in the presence of oxytetracycline Another colorimetric method with sodium tungstate and hydrogen peroxide may be used in the presence of chlortetracycline. The error is stated to be less than 2 per cent —Iuchiro Hakemi *et al J pharm Soc Japan* 1955 75 970 and 973

A colorimetric method which may be used for the determination of tetracycline in the presence of up to 20 per cent of chlortetracycline is described —M H Woolford Jr and F S Chiccarelli *J Amer pharm Ass Sci Edn* 1956 *45* 400

Colorimetric methods with zirconium oxychloride and diazo reagent are described —H Vogt *Arch Pharm Berl* 1956 *289* 502

A colorimetric method with boric acid in sulphuric acid is described The coefficient of variation is not more than ±5 per cent —Keiji Sekiguchi *J pharm Soc Japan* 1958 *78* 965

A spectrophotometric method for the determination of tetracycline in cultures is described —Shigehara Inoue *et al*, *J agric chem Soc Japan* 1956 *30* 591 per *Analyt Abstr* 1957 *4*, 2361

A turbidimetric assay applicable to tetracycline and some other antibiotics with *Escherichia coli* (ATCC 10536) is described—D. M. Wintermere *et al. Antibiot. and Chemother.* 1957, **7**, 189.

Some other abstracts relevant to tetracycline appear under Chlortetracycline, pp. 52–4.

Determination in Body Fluids. Tetracycline in serum, urine, cerebrospinal fluid, etc., is determined by measurement of zones of inhibition in a spore suspension of *Bacillus mycoides*. The method can also be used for chlortetracycline and oxytetracycline.—T. Dimling, *Arzneimittel Forsch.* 1957, **7**, 684.

Capsules of Tetracycline (B.P.) The potency is at least 85 per cent of the stated potency determined by the *B.P.* method for the biological assay of antibiotics; the limits of error (P = 0·95) are 80 to 125 per cent. (For purposes of assay and calculation the potency of tetracycline hydrochloride is taken to be 1000 units per mg.)

Tablets of Tetracycline (B.P.) The potency is at least 85 per cent of the stated potency determined by the *B.P.* method for the biological assay of antibiotics; the limits of error (P = 0·95) are 80 to 125 per cent. (For purposes of assay and calculation the potency of tetracycline hydrochloride is taken to be 1000 units per mg.)

TETRAETHYLAMMONIUM SALTS

and the Quaternary Ammonium Detergents

Extra Pharmacopœia Vol. II, 23rd Edn., p. 407.

Solution of Benzalkonium Bromide (B.P.C.) It contains 48·5 to 51·5 per cent. w/v of alkylbenzyldimethylammonium bromides calculated as $C_{22}H_{40}NBr$, determined by the *B.P.C.* method for acriflavine; each ml. of M/10 potassium ferricyanide is equivalent to 0·1195 g. of $C_{22}H_{40}NBr$.

Paper electrophoretic separation of benzalkonium and benzethonium chlorides is described.—Harutada Negoro and Setsuya Seno, *Ann. Rep. Takamine Lab.* 1956, *8*, 119; per *Analyt. Abstr.* 1958, *5*, 4219.

Chromatographic separation of benzalkonium chloride and other quaternary ammonium compounds with a solvent containing pyridine, benzene, acetic acid and water is described.—I. Garcia and J. Couerbe, *Chim. anal.* 1956, *38*, 432; per *Analyt. Abstr.* 1957, *4*, 2368.

Cetrimide Emulsifying Ointment (B.P.C.) It contains 2·5 to 3·3 per cent. of cetrimide calculated as $C_{14}H_{33}(CH_3)_3NBr$, determined by the *B.P.C.* method for Cetrimide Emulsifying Wax.

Cetrimide Emulsifying Wax (B.P.C.) It contains 8·8 to 10·5 per cent. of cetrimide calculated as $C_{14}H_{33}(CH_3)_3NBr$, determined by reaction with sodium lauryl sulphate and back titration with M/1000 cetrimide, bromophenol blue being used as indicator.

Dequalinium Chloride (B.P.C.) $C_{30}H_{40}N_4Cl_2$—527·6. It contains at least 95·0 per cent. of dequalinium chloride, calculated with reference to the anhydrous substance, determined by titration with perchloric acid in dioxan. The water content determined by the Karl Fischer method is not more than 5·0 per cent.

THYROID

Extra Pharmacopœia Vol II, 23rd Edn, p 412

Liothyronine Sodium (*B P Add*) $C_{15}H_{11}O_4NI_3Na$—673 0 It contains 95 0 to the equivalent of 101 0 per cent of liothyronine sodium calculated with reference to the dried substance determined by the *B.P* method for chiniofon sodium each ml of N/10 sodium thiosulphate is equivalent to 0 003739 g of $C_{15}H_{11}O_4NI_3Na$ the loss on drying at 105° is not more than 5 0 per cent

***Tablets of Liothyronine* (*B P Add*)** Each tablet contains 85 0 to 115 0 per cent of the stated amount of liothyronine sodium determined by a method similar to that of the *B P* for chiniofon sodium

TOLBUTAMIDE

Tolbutamide (*B P Add*) $C_{12}H_{18}O_3N_2S$=270 4 It contains 99 0 to the equivalent of 101 0 per cent of tolbutamide calculated with reference to the dried substance based on the nitrogen content determined by the Kjeldahl method the loss on drying at 105° is not more than 1 0 per cent

Determination Tolbutamide is titrated with sodium methoxide in anhydrous acetone or pyridine with phenolphthalein as indicator or in benzene and methyl alcohol with thymol blue as indicator The average error is ±1 per cent for the pure substance and ±2 per cent for tablets —J Krážmarová and J Kráčmar *Čsl Farm* 1958 *7* 566 per *Analyt Abstr* 1959 *6* 2766 A similar method with pyridine as solvent, sodium methoxide as titrant and thymol blue as indicator is described. The error is less than ±1 per cent —J B Dave and J L Patel *Indian J Pharm* 1959 *21* 226 Tolbutamide may be dissolved in acetone and titrated with sodium hydroxide with cresol red as indicator Alternatively it may be hydrolysed by heating with ethylene glycol and hydrochloric acid and the resulting amine distilled from alkaline solution and determined by titration The maximum error is ±1 per cent —R Simionovici and I Conu *Rev Chim Bucharest* 1959 *10* 107 per *Analyt Abstr* 1959 *6* 4149

Tolbutamide may be determined by treating with an excess of silver nitrate filtering and determining the excess by titrating with ammonium thiocyanate —P M Parikh and S P Mukherji *Indian J Pharm* 1959 *21* 110

Determination in Serum A spectrophotometric method is described —H Spengler and F Kaiser *Arzneimittel Forsch* 1956 *6* 760

A colorimetric method with 1 fluoro-2 4 dinitrobenzene is described —H Spengler *Klin Wschr* 1957 *35* 533 per *Analyt Abstr* 1957 *4* 3729

A spectrophotometric method including a chromatographic separation is described Recoveries of 103 ±5 per cent from serum are reported —E. Bladh and A Nordén *Acta pharm tox Kbh* 1958 *14* 188

A spectrophotometric method giving a recovery of 100 4 ±5 2 per cent from plasma is described —T Chulski *J Lab clin Med* 1959 *53* 490

***Tablets of Tolbutamide* (*B P Add*)** Each tablet contains 92 5 to 107 5 per cent of the stated amount of tolbutamide, determined by the *B P Addendum* method for tolbutamide

TRIMETAPHAN

Trimetaphan Camphorsulphonate (*B P C*) $C_{31}H_{48}O_8N_2S_2$=596 8 It contains 98 5 to the equivalent of 101 0 per cent of trimetaphan camphorsulphonate determined gravimetrically as the picrate

DETERMINATION A polarographic titration with picric acid is described The mean error under the conditions described is ±1 per cent —J Kráčmar, *Čsl Farm*, 1956, *5*, 578, per *Analyt Abstr*, 1957, *4* 4112

TRIPELENNAMINE

Tripelennamine Hydrochloride (*B P Add*) $C_{16}H_{22}N_3Cl = 291\ 8$ It contains at least 98 0 per cent of tripelennamine hydrochloride, calculated with reference to the dried substance, determined by titration with perchloric acid in glacial acetic acid, the loss on drying at 105° is not more than 1 0 per cent

TRIPROLIDINE

Triprolidine Hydrochloride (*B P C*) $C_{19}H_{22}N_2Cl,H_2O = 332\ 9$ It contains at least 98 0 per cent of anhydrous triprolidine hydrochloride, calculated with reference to the anhydrous substance, determined by titration with perchloric acid in glacial acetic acid The water content, determined by the Karl Fischer method, is not more than 6 0 per cent

TUBOCURARINE

Extra Pharmacopœia Vol II, 23rd Edn, p 417

Suxamethonium Bromide (*B P*) $C_{14}H_{30}O_4N_2Br_2,2H_2O = 486\ 3$ It contains 99 0 to the equivalent of 101 0 per cent of anhydrous suxamethonium bromide, calculated with reference to the dried substance, determined by titration with perchloric acid in dioxan, the loss on drying at 105° is 5 0 to 8 0 per cent

Injection of Suxamethonium Bromide (*B P*) In the sealed container is dry power containing 99 0 to the equivalent of 101 0 per cent of anhydrous suxamethonium bromide, calculated with reference to the dried substance, determined by the *B P* method for suxamethonium bromide

VITAMINS

and Related Substances

Extra Pharmacopœia Vol II, 23rd Edn, p 424

Compound Tablets of Aneurine (*B P C*) Each tablet contains 0 9 to 1 1 mg of aneurine hydrochloride, determined fluorimetrically, 0 9 to 1 1 mg of riboflavine, determined spectrophotometrically, and 13 5 to 16 5 mg of nicotinamide, determined by the *B P* method for nicotinamide

Strong Compound Tablets of Aneurine (*B P C*) Each tablet contains 4 5 to 5 5 mg of aneurine hydrochloride, determined fluorimetrically, 1 8 to 2 2 mg of riboflavine, determined spectrophotometrically, 18 to 22 mg of nicotinamide, determined by the *B P* method for nicotinamide, and 1 8 to 2 2 mg of pyridoxine hydrochloride, determined microbiologically

Menaphthone Sodium Bisulphite (*B P*) $C_{11}H_8O_5SNa\ 3H_2O = 330\ 3$ It contains at least 94 0 per cent of menaphthone sodium bisulphite, calculated with refereoce to the dried substance, determined by the *B P* method for menaphthone after preliminary treatment with

alkali, and extraction, the loss on drying for 3 hours at 100° under reduced pressure is 11 0 to 16 5 per cent

DETERMINATION Polarographic determination is described —Yutaka Asahi *J pharm Soc Japan* 1956 *76* 365

A colorimetric method based on a reaction with ethyl cyanoacetate and ammonia is described It may be applied to the assay of injections and tablets —Yuan Yau Chou and Ju Cheng Hsu *Acta pharm sinica* 1957 *5* 29

Injection of Menaphthone Sodium Bisulphite (*B P*) It contains 90 0 to 110 0 per cent of the stated quantity of menaphthone sodium bisulphite determined by the *B P* method for menaphthone sodium bisulphite

Phytomenadione (*B P Add*) $C_{31}H_{46}O_2$=450 7 It contains 97 0 to the equivalent of 102 0 per cent w/w of phytomenadione, determined spectrophotometrically after chromatographic purification

DETERMINATION A colorimetric method is described and also a preliminary chromatographic separation which is necessary when analysing samples of plant material —K Schilling and H Dam *Acta chem scand* 1958 *12* 347 and 348

Capsules of Phytomenadione (*B P Add*) Each capsule contains 90 0 to 120 0 per cent of the stated amount of phytomenadione determined by the *B P Addendum* method for phytomenadione

Injection of Phytomenadione (*B P Add*) It contains 90 0 to 115 0 per cent of the stated amount of phytomenadione determined by the *B P Addendum* method for phytomenadione

Vitamin A

DETERMINATION Methods of determining vitamin A in cod liver oil are reviewed —S Erbe *Pharm Zentralh* 1957 *96* 611

COLORIMETRIC METHODS A colorimetric method using antimony trichloride in chloroform with acetyl chloride is described —G Cavina *R C Ist sup Sanit* 1957 *20* 913 per *Analyt Abstr* 1959 *6* 4177 Causes of error in the Carr Price method are discussed —W Krauss *et al Z anal Chem* 1957 *154* 333 per *Analyt Abstr* 1957 *4* 2403 Vitamin A may be determined in unsaponifiable matter from fish oils foods and vitamin concentrates by treating with a catalyst to convert the vitamin to anhydrovitamin and measuring the colour at 399 mμ —P Budowski and A Bondi *Analyst* 1957 *82* 751 A method based on measurement of the red colour formed by reaction with tungstophosphoric acid and acetic anhydride is described —I M Jakovljevic *Pharm Weekbl* 1958 *93* 585 The use of various chlorhydrins in a colorimetric determination is described —S Erbe *Z anal Chem* 1958 *159* 327 per *Analyt Abstr* 1958 *5* 3532

SPECTROPHOTOMETRIC METHODS Nomograms are provided for calculating the Morton Stubbs correction in the spectrophotometric determination of vitamin A alcohol and acetate A method of checking the validity of the correction is described —G Pancrazio and V Duse, *Analyst* 1958 *83* 579 Losses occurring in the spectrophotometric determination of vitamin A in oils may be prevented by the use of dark glass and an atmosphere of nitrogen during treatment with potassium hydroxide —V Špringer *Farmácia Bratislava* 1959 *28* 44 per *Analyt Abstr* 1959 *6* 4597

CHROMATOGRAPHIC METHODS *The loss of vitamin A during chromatography* on alumina is reduced to about 2 per cent by the use of 200 μg of γ or δ tocopherols per 1000 units of vitamin A —G Lambertsen and O R Braekkan *Acta chem scand* 1958 *12* 360 A partition method is described which is claimed to give acceptable recovery and reproducibility in the assay of vitamin A tablets —J B Wilkie *et al J Ass off agric Chem Wash* 1959 *42* 422

SEPARATION OF FREE ALCOHOL AND ESTERS A chromatographic technique is described The percentage recovery is 91 to 94 for free alcohol 96 to 98 for acetate and 79 to 82 for palmitate —G Rindi *Int Z Vitaminforsch* 1957 *28* 191 per *Analyt Abstr* 1958 *5* 4322 A chromatographic separation of vitamin A from its esters and from vitamins D_2 E and K_1 is described —O Wiss and U Gloor *Hoppe Seyl Z* 1958 *310* 260

OXIDATION PRODUCTS A method of chromatography on circular paper saturated with liquid paraffin is recommended for separation of oxidation products and determination of the purity of crystalline vitamin A —J Čelkovsky and A Maly *Prumysl Potravin* 1957 *8* 368 per *Analyt Abstr* 1958 *5* 1997

Vitamin D

DETERMINATION A chromatographic method for purification of vitamin D_2 and D_3 and removal of vitamin A and tachysterol is described —E E Bruchmann *Branntweinwirtschaft* 1954 *76* 184 per *Analyt Abstr* 1955 *2* 3501 A colorimetric determination using antimony trichloride and acetyl chloride in ethylene dichloride is recommended for the assay of solution of calciferol *B P* Solutions containing 2000 to 4500 units per g in olive or arachis oil are determined within ±3 per cent A similar colorimetric method is recommended for tablets of calciferol —A R Rogers *J Pharm Pharmacol* 1954 *6* 780 *ibid* 1955 *7* 731 Methods of assay with antimony trichloride acetyl chloride are described which are claimed to give good agreement with results of biological assays for tablets and solutions of calciferol *B P* For low potency oily solutions a preliminary chromatographic step is necessary to remove phytosterols —P S Stross and L Brealey *J Pharm Pharmacol* 1955 *7* 739 Extraction procedures for various pharmaceutical products animal feed supplements foods, and milks are described and percentage recoveries of vitamin D are reported —L Friedman and G M Shue *J Ass off agric Chem Wash* 1955 *38* 165 Chromatographic separation of calciferol from its oxidation products and from vitamin A is described —Katsutoshi Miwa *Vitamins Japan* 1956 *11* 202, per *Analyt Abstr* 1959 *6* 362 Vitamins D_2 and D_3 may be determined in various products by saponification extraction removal of tachysterol by maleic anhydride addition removal of interfering steroids by digitonin precipitation colorimetry with antimony trichloride reagent and correction for residual colour —F J Mulder *et al Rec Trav chim Pays Bas* 1957 *76* 733 In the colorimetric determination of vitamin D in pharmaceutical preparations the concentration of acetyl chloride in the antimony trichloride-chloroform reagent should be 2 5 to 3 0 per cent, and extinction readings should be taken at 30-second intervals for six minutes —P N Luthra and J N Tayal *J Pharm Pharmacol* 1957 *9* 784 A method for the assay of pharmaceutical products with a reproducibility of about ±2 per cent for syrups and ±10 per cent for capsules is described The method involves extraction chromatography and colorimetric determination with antimony trichloride acetyl chloride ethylene dichloride reagent —J B Wilkie *et al J Amer pharm Ass Sci Edn* 1958 *47* 385 Separation of vitamin D from multivitamin mixtures by partition chromatography is described The coefficient of variation reported in triplicate analyses of multivitamin tablets with minerals was ±1 6 per cent —J G Thevagi and D J Campbell *Analyt Chem* 1959 *31* 1375

Other Vitamins and Mixtures

DETERMINATION In mixtures containing ascorbic acid and nicotinic acid ascorbic acid is determined iodometrically and total acid titrimetrically Aneurine may be determined in the presence of ascorbic acid by a modified argentimetric method —G A Vaisman and S G Rzhitskaya *Apt Del* 1955 *4* 16 A spectrophotometric method for the determination of aneurine riboflavine nicotinic acid folic acid pyridoxine and cyanocobalamin is described —S S Schaffino *et al J Ass off agric Chem Wash* 1956 *39* 180 A spectrophotometric method for the determination of aneurine riboflavine pyridoxine and nicotinamide in mixtures is described —K Capek and R Hloch *Pharm Acta Helvet* 1958 *33* 163 *Sci Pharm* (Wien) 1958 *26* 168

ZINC

Extra Pharmacopœia Vol II, 23rd Edn, p 442

Dusting powder of Zinc, Starch and Talc (*B P C*) It contains 23 6 to 26 6 per cent of zinc oxide, determined gravimetrically after extraction with hydrochloric acid precipitation with sodium carbonate, and ignition

DETERMINATION OF ZINC *An isotope-dilution method giving an accuracy of ±1 per cent in the assay of dusting powders and ointments is described* —J Tölgyessy *et al Čsl. Farm* 1959 *8* 565 per *Analyt Abstr* 1960 7 2958

BACTERIOLOGICAL AND CLINICAL NOTES

with Reference to Special Diseases

The following notes are supplementary to those of the relevant section of the Extra Pharmacopœia Volume II, 23rd *Edition*

Anthrax

Extra Pharmacopœia Vol II, 23rd Edn, p 802

Numerous cases of human anthrax due to bone meal or other bone products have been reported and have received mention in the Reports of the Ministry of Health (1949 and 1952) and in the Reports of the Chief Inspector of Factories (1950–3) Davies and Harvey (*Lancet*, ii/1953, 880) recorded the occurrence of 14 cases of human anthrax arising in a chemical factory using imported crushed bones as raw material, and in a second paper (*Lancet*, ii/1955, 86) they recorded the isolation of *Bacillus anthracis* from 5 of 41 cargoes of imported crushed bone The organism has also been isolated from sacks previously containing bones and such sacks have been incriminated in the spread of anthrax According to Lamb (*Lancet*, ii/1958, 151) bone meal fertiliser is a well known source of anthrax infection in animals and occasionally in man, and he describes four cases of cutaneous anthrax occurring among workers in a bone meal factory Four further cases of anthrax attributable to handling bone meal fertiliser 3 in farm workers and 1 in a seedsman, are reported by Green and Jamieson (*Lancet*, ii/1958, 153) Unfortunately the heat treatment of crushed bones is insufficient to destroy anthrax spores and, apart from this such treatment is incompatible with the use of bones as the raw material for gelatin manufacture (Harvey, *Brit med J*, ii/1958 1040)

Anthrax infection in dock-workers due to the handling of imported hides is relatively rare according to Semple and Hobday (*Lancet*, ii/1959, 507) At the port of Liverpool, which over a 10 year period imported a yearly average of 289,000 cwt of dry hides, there were only 7 cases during the years 1954–8, and in spite of the fact that samples taken from over 1000 hides showed about 1 in 4 of the hides had the anthrax organism on it To explain this low incidence of the disease in relatively unprotected workers they suggest that the natural human resistance to anthrax must be greater than is generally supposed and that under normal conditions the anthrax bacillus is unable to attack human tissue successfully If the occasional case of anthrax is due to a failure of resistance in a particular individual or to an unusual virulence in the attacking bacteria better results may perhaps be obtained by raising the immunity of the workers rather than by the extension of physical precautions Darlow *et al* (*Lancet* ii/1956, 476) showed that antibodies neutralising anthrax toxin can be demonstrated in the blood of persons immunised by anthrax inoculation and that reactions to immunisation (including booster doses) are never severe enough to cause absence from work Semple and Hobday (loc cit) suggest that this form of protection might well be offered to all who normally work with hides and other material known to be a source of anthrax

The Report of the Committee of Inquiry on Anthrax (Nov 1959, H M Stationery Office, Cmd 846) makes a number of recommendations designed to retain or tighten control on imports It recommends that

dockers should be warned of any anthrax risk and carry a prescribed anthrax card It makes recommendations regarding general precautions in factories and special arrangements in industry for early detection and treatment It advises that anthrax should be made a notifiable disease under the Public Health Acts for cases occurring outside the scope of the Factories Acts

Chagas' Disease

Extra Pharmacopœia Vol II, 23rd Edn p 810

Although Chagas disease is known to exist throughout the Americas except in Canada and probably Cuba ignorance of the magnitude of the problem is the main obstacle in the way of organising and justifying suitable control programmes in countries where mortality and morbidity from other diseases are apparently greater The World Health Organisation's Study Group on Chagas Disease has roughly estimated (*World Hlth Org techn Rep Ser* 1960, No 202) that at least 35 million people are exposed to the risk of infection with *Trypanosoma cruzi* and that, on the assumption from epidemiological surveys of an average infection rate of 20 per cent at least 7 million people are infected (*World Hlth Org Chron* 1960 *14* 469)

Diagnosis An improved method for carrying out the complement fixation test for the diagnosis of Chagas disease is described by Chaffee *et al* (*Amer J trop Med Hyg* 1956 *5* 763) The fluid overlays of cultures of *Trypanosoma cruzi* in diphasic medium (blood agar + Locke s solution) were concentrated by repeated centrifugation and washing of saline suspensions of the sediments the final trypanosomes containing sediment being frozen and dehydrated The finished antigen was prepared by extracting the dried trypanosomes with anhydrous ether at −15° to −18° continuing the extraction in an alkaline buffer centrifuging the resultant suspension pouring the supernatant fluid into 10-ml ampoules freezing in solid CO_2 dehydrating sealing and storing in the cold For use the antigen was rehydrated with 1 ml of distilled water The antigen was tested with sera from the following sources (a) 96 patients suffering from Chagas d sease (b) 21 patients with American cutaneous leishmaniasis (c) 50 healthy donors and (d) 50 syphilitic patients Complement fixing antibody was demonstrated in 98 per cent of the sera from cases of Chagas d sease and in 19 per cent of those with leishmaniasis but not in the sera of normal or syphilitic subjects

Control and Prevention For prevention it is essential to improve housing and promote hygienic habits Gamma benzene hexachloride and dieldrin have so far proved to be the most effective insecticides against triatomes and it has been demonstrated that gamma benzene hexachloride has satisfactory triatomicidal effects without having the drawbacks of dieldrin which is highly toxic to man and domestic animals Health education is most important and should aim at spreading knowledge of the harmful activity of triatomes and convincing the population that it is important to exterminate them The complement fixation test should be applied to all blood donors in or from endemic areas since it has been proved that Chagas disease can be transmitted through blood transfusion The prevention of congenital transmission presents great practical difficulties and it is necessary to study the conditions which favour it (*World Hlth Org Chron*, 1960 *14* 469)

Cholera

Extra Pharmacopœia Vol II, 23rd Edn p 813

Diagnosis Numerous fluid media have been devised for enrichment purposes in the isolation of the cholera vibrio from stools especially when the specimen

is taken a week or more after the onset of symptoms or when the specimen has been taken from a person showing no symptoms of the disease Among the more successful of these is the potassium-tellurite medium described by Gohar and Makkawi (*J Egypt med Ass*, 1948, *31*, 462) This is prepared as follows peptone water, containing peptone 1 per cent and sodium chloride 0 5 per cent, is treated with sodium carbonate to give a reaction of pH 9 0 and to this 0 5 per cent of sodium taurocholate is added Three series of cultures are made in this medium to which potassium tellurite has been added to give concentrations of 1 100 000, 1 200 000 and 1 400,000 This medium was used successfully in the Egyptian epidemic of 1947

Another fluid medium which has given good results according to Felsenfeld *et al* (*J Bact*, 1951, *62*, 175), is alkaline selenite F broth, prepared by adding enough 10 per cent aqueous sodium carbonate solution to selenite F broth to bring the pH of the fluid to the desired alkalinity (e g pH 6 9 to 7 1, 7 4 to 7 6, or 7 8 to 8 0) The selenite-F broth ('Diagnostic Procedure and Reagents', Amer Publ Hlth Ass, 1945) is prepared by dissolving peptone 5 g, lactose 4 g anhydrous sodium phosphate 10 g, and sodium acid selenite 4 g, in 1 litre of water

Comparative laboratory tests showed that the modified bismuth sulphite medium of Wilson and Reilly (*J Hyg, Camb*) 1940, *40*, 532) gave results far below those obtained by enrichment in any of the above-mentioned media At the same time the efficacy of the bismuth sulphite medium for the selective enrichment of *Vibrio choleræ* under actual conditions has been amply demonstrated so that there is no reason to doubt its adequacy for practical cholera laboratory work (Pollitzer, *Bull World Hlth Org* 1956 *14* 705)

If any of these preliminary enrichment methods in fluid media are used it is *doubtful whether it is necessary to use in addition the highly selective solid* media which are now available for subcultivation and the use of plain alkaline agar plates is therefore still continued

Prophylaxis Dealing with the epidemiology of cholera Rogers (*Brit med J*, *ii*/1957, *1193*) *draws attention to the remarkable fall in the death rate over the* years 1939–54 In 1930–9 the death rate averaged 0 65 per 1000 and in 1954–5 it was 0 05 This fall, he considers, could be due only to the cumulative effect *of the compulsory anti cholera inoculations carried out during this period*, amounting to approximately 300 million All the indications go to suggest that the cholera incidence as a whole is gradually being brought under control by the *general adoption of compulsory inoculation of pilgrims*.

Coccidioidomycosis

Extra Pharmacopœia Vol II, 23rd Edn, p 814

Diagnosis. The risk of infection through inhalation of the spores of *Coccidioides immitis*, *i e when handling cultures of this fungus may* be avoided by the following technique described by Huppert (*J Lab clin Med*, 1957, *50*, 138) The culture medium is contained in a screw capped culture bottle, the cap of *which has a circular opening closed by a rubber diaphragm* The stock cultures are transferred through the front of a sealed transfer chamber The rubber diaphragm is painted with 3 per cent tincture of iodine Cotton wool soaked in *70 per cent alcohol is loosely wrapped round the syringe needle and the point of* penetration Suspensions of cultures are made by injecting 5 ml of sterile isotonic saline into the bottle and, after shaking, some of the emulsified culture is withdrawn, care being taken to keep the needle point covered with the soaked cotton wool to prevent accidental discharge of any infective material The contents of the syringe are injected into mice in 0 5 ml doses for identification of the fungus in its parasitic form and the residue is used to make a subculture The original culture is sterilised by injecting 0 5 ml of an 8 per cent solution of formaldehyde through the diaphragm, and after 24 hours' incubation at 37° it is safe for direct microscopical examination

Glandular Fever

Extra Pharmacopœia Vol II, 23rd Edn p 837

Evidence of widespread visceral disease in glandular fever has accumulated in recent years Hepatic cardiac, or neurological symptoms may predominate Jaundice is a well known development in proved cases and it has been shown by serial liver biopsies that non icteric hepatitis is present in most cases Rennie and Wroblewski (*New Engl J Med*, 1957 *257* 547) found that alterations in serum glutamic pyruvate transaminase (S G P T) reflected most sensitively the presence and extent of hepatic infection the subjective symptoms of the disease appeared to coincide with the S G P -T levels suggesting that fluctuations and variations in the symptoms of the disease might be partly explained by the extent of hepatic inflammation

Diagnosis Caird and Holt (*Brit med J* 1/1958 85) suggest that the enanthem of glandular fever may prove helpful in diagnosis The characteristic enanthem is a palatal eruption of multiple pin point petechiæ, usually at the junction of the soft and the hard palate Caird and Holt consider that the finding of these palatal petechiæ in the absence of petechiæ elsewhere or other palatal lesions is strong clinical evidence of glandular fever if rubella can be excluded If the petechiæ are few the sign is suggestive only

A slide test for the diagnosis of glandular fever is described by Lovrie (*Lancet* 1/1961 142)

Influenza

Extra Pharmacopœia Vol II, 23rd Edn, p 841

Antigenic Variations The influenza epidemic of 1957, which became known as 'Asian 'flu, originated in China in February 1957, its causative organism was identified as a new variant of influenza virus A The epidemic reached Great Britain during the summer months reached its peak in October and had virtually disappeared by the end of November It is estimated that 12 million people were attacked in Britain and that the epidemic was directly or indirectly responsible for about 16 000 deaths two thirds of the fatalities being in persons over the age of 55 The incidence of pulmonary complications principally pneumonia was low (3 5 to 5 0 per cent) A survey by the Public Health Laboratory Service of 477 fatal cases of pneumonia during this period (*Brit med J*, 1/1958, 915)—in a majority of which influenza virus was demonstrated when looked for—showed that staphylococci were present in the lung and sputum of 62 per cent of all cases with a high percentage among children of school age and a much lower percentage in old persons A fulminating course, leading to death within 2 days of admission was commonest in children under 5 and least common after the age of 45 It would appear that secondary staphylococcal infection was the most dangerous complication in this epidemic In 148 virologically confirmed fatal cases of Asian influenza in the Netherlands (Hers *et al*, *Lancet*, 11/1958, 1141) *Staphyloccus aureus* was found to be the most common secondary invader occurring in about 60 per cent of cases

Leprosy

Extra Pharmacopœia Vol II 23rd Edn p 848

Diagnosis To prevent loss of mycobacteria from the surface of diagnostic films a surface coat of 5 per cent serum is first applied to the slide and dried on

this the smear is made After drying the slide is placed on a hot plate over boiling water for 30 seconds and carbol fuchsin applied for 30 to 60 seconds the slide is then rinsed gently in water The preparation is differentiated for 30 to 60 seconds with sulphuric acid 4 per cent containing methylene blue 0 2 per cent (final concentrations) and rinsed gently in water Sulphuric acid was found preferable to acid alcohol for differentiation showing more acid fast bacilli in leprosy smears in the proportion of 70 100 (Hanks *Amer Rev Tuberc* 1956 *74* 597)

Lepromin Test. The lepromin in common use is made by grinding 1 g of autoclaved bacteriologically positive tissue in 20 ml of isotonic saline The intradermal injection of 0 1 ml is followed in most non lepromatous subjects by a tuberculin like response in 24 to 48 hours This rapidly subsides and is succeeded by a nodular infiltration area on the skin reaching a maximum in 3 to 4 weeks (the late Mitsuda reaction) This late reaction is more reliable than the early response and is used in classification and prognosis In general those with a weak response (infiltration of less than 5 mm in diameter) develop the more serious and infectious lesions while the strong reactors (infiltration of 5 mm or n ore) develop the milder self healing ones The present lepromin test cannot be widely used because the supply of antigen is insufficient. It also has the disadvantage that the strongest reactors (t e the ones least at risk) develop indolent ulcers at the site of injection A modification of the test using a 1/100 depot lepromin and employing the Heaf multi puncture apparatus instead of intradermal injection is described by Kinnear Brown and Stone (*Lancet* 1/1959 1260) The depot medium consists of 1 part anhydrous lanolin and 8 parts of light liquid paraffin to which is added 20 per cent of isotonic saline solution. In lepromin positive pat ents when this 1/100 depot lepromin was used by multi puncture the normal sequel was the formation of a ring of 6 small papules (one at the site of each puncture) which reached their maximum at the end of the third week A reaction with fewer than 6 papules was usually the result of uneven pressure of the end plate of the apparatus on the skin The reactions were definite and unmistakable but smaller than with tuberculin The scale of comparison adopted was as follows Grade I—4 or more papules and d screte papules Grade II—4 or mote prominent and discrete papules Grade III—4 or more prominent papules with pin point vesiculation or 4 or more papules tending to coalesce The reactions to the 1/100 depot lepromin were if anything more emphatic than those to 1/100 normal lepromin It was found possible to get 25 multi puncture tests from 0 1 ml of 1/100 depot lepromin Thus 1 g of autoclaved tissue would provide enough depot lepromin of this strength for more than 20 000 tests compared with 200 by the intradermal injection—a great economy where discovery of the weak reactor is the main objective Moreover the test produced neither ulceration scars nor any other unpleasant sequel e It was shown that depot lepromin remained in the skin long enough to indicate convers on after subsequent B C G vaccination

Plague

Extra Pharmacopœia Vol II, 23rd Edn, p 856

Staining According to Baltazard *et al* (*Bull World Hlth Org* 1956 *14* 457) the following are particularly suitable for staining plague smears and are recommended for field work

Phenol Thionin Add 10 ml of a saturated solution of thionin in alcohol (50 per cent) to 100 ml of a 2 per cent solution of phenol in d stilled water apply for 1 minute and wash off

Wayson s Stain (1) Dissolve fuchsin 0 2 g and methylene blue 0 75 g each in 10 ml amounts of dehydrated alcohol (2) add the combined solutions to 200 ml of a 5 per cent solution of phenol in distilled water Apply for a few seconds and wash thoroughly with water

Poliomyelitis

Extra Pharmacopœia Vol II, 23rd Edn, p. 861

Formolised Vaccines. As the result of extensive field trials carried out over recent years, especially in America and in Great Britain, it is now generally agreed that a full course of formolised vaccine affords substantial but not complete protection against paralytic poliomyelitis.

A review of the results of poliomyelitis vaccination in England and Wales from its introduction in 1956 until August 1958 was undertaken by Geffen and Spicer (*Lancet*, II/1960, 87) By August 1958 almost half the eligible population had had one or more doses of vaccine (out of 10,740,000 children, 4,980,000 had had two or more doses, and a further 360,000 had had one dose) During the year there were among the 15-year-old population 232 cases of poliomyelitis in the vaccinated population and 1155 cases in the unvaccinated, respective incidence rates of 4 3 and 21 4 per 100,000 Thirty five children under 15 died from acute poliomyelitis during the year, 3 had had vaccine and 32 had not had vaccine The figures also showed that while the proportion of paralytic to non-paralytic cases was similar in the unvaccinated and in those who had had only a single dose of vaccine, it was about half as great in those who had had two or more doses This difference gave further support for the efficacy of the vaccine provided that two or more doses are given Further evidence in favour of the protective action of the vaccine has been provided in a comparison by Geffen (*Mon Bull Minist Hlth Lab Serv*, 1960, *19*, 196) between the incidence of poliomyelitis in vaccinated and unvaccinated individuals under 15 years old, based on provisional information about the cases in the United Kingdom in 1959 He reports that the incidence rates were 2 3 per 100,000 in individuals who had received two or more doses of vaccine compared with 17 1 per 100,000 in the unvaccinated or, for paralytic cases only, 1 4 per 100,000 compared with 12 4 per 100,000

With regard to the persistence of antibodies, it has been shown (Kendall *et al*, *Brit med J*, I/1960, 1689, Logan *et al*, ibid, 1692) that, while there are notable differences between individuals, the average fall in titre is about fivefold in two years following a booster dose Kendall *et al* conclude that titres of at least 1/100 are required after a third dose to ensure adequate protection for five years and a satisfactory response to a booster dose With the vaccines at present available, a fourth dose is recommended two years after the third, at least for specially exposed groups (such as young adults going overseas) The value of a fourth dose was also emphasised by A D Langmuir in a report on the efficacy of Salk vaccine in the U S A submitted to the 5th International Poliomyelitis Conference (1960) In general, the vaccine appeared to give about 80 per cent protection in those given three doses and 90 per cent after four doses, protection being better in young than in older children

On the other hand it is not yet known how long immunity to poliomyelitis lasts in those given a full course of killed vaccine consisting of two or three primary doses and a booster dose while antibodies to the primary course persist Moreover, it appears that formolised vaccine offers little protection against non paralytic poliomyelitis. Studies in *America show that Salk vaccine may produce little if any immunity to* alimentary infection Not only are vaccinated people as liable to infection as unvaccinated but the duration of excretion and the quantity of virus

in the stools appear to be unmodified so that, however extensive the programme using formolised vaccine, it is unlikely to reduce the reservoir of virulent virus in the community A further disadvantage of formolised vaccine is that because it must be given in three or more widely spaced doses to be fully effective, it is only of limited use as an emergency measure in epidemic control

Persistence of Immunity For a discussion on the persistence of immunity after the administration of formalin treated poliovirus vaccine see Salk *Lancet* ii/1960 715

Live Oral Vaccines Research into the production of a safe and effective living attenuated vaccine is proceeding intensively in many quarters The advantages of such vaccines over formolised vaccines are that they are easier and cheaper to make and easier to administer and that they give a broader type of immunity which will prevent or modify subsequent infection of the alimentary tract with poliovirus (Dick and Dane, *Brit med J*, ii/1958, 1184) The vaccine viruses given orally multiply in the alimentary tract like natural polioviruses and the vaccinated subjects develop an immunity probably similar to that following an infection with one of the naturally invasive, naturally occurring strains There is reason to think that the vaccine virus can do this very soon after its ingestion so that widespread use of such a vaccine might interfere with the epidemic spread of virulent strains and ultimately displace such strains from the community The possible danger is to contacts who may become infected from the vaccinated persons, since living attenuated virus can pass by natural means from children who have ingested it to family contacts and others If such strains remain attenuated then their dissemination among the population might supplant the wild virulent strains and raise the general immunity Dick (*Brit med J*, i/1959 618) however, has shown that although the vaccine viruses given by mouth are avirulent they show an increase in virulence after multiplication in the gut of some people and the excreted viruses cannot always be differentiated from the less virulent naturally occurring strains

Although the poliovirus strains incorporated in current living vaccines have all been selected for their apparent lack of neurotropism when inoculated into the central nervous system of monkeys, it has been generally found that virus isolated from the faeces of those who have been infected with such vaccines commonly possesses rather more neurotropism than that of the vaccine itself, though it is agreed that the observed increase in neurotropism is small Sabin (*Brit med J*, i/1959, 663) states that no untoward reactions in either the children or their contacts have so far resulted from treatment with oral vaccines derived from large batches prepared in December 1956 with the most highly attenuated currently available strains of each of the three types Spread of the vaccine virus to others is an accepted fact and is being carefully studied

Large scale vaccination projects with live vaccines are being conducted in America (Colombia Costa Rica, Nicaragua and Mexico), and in Bulgaria, Czechoslovakia, Hungary, Poland, and the U S S R. At the 5th International Poliomyelitis Conference, held in Copenhagen in July 1960, Chumakov (*Lancet*, ii/1960 311) reported that by the end of 1959 over 15 million people in the U S S R had been given vaccine, prepared from Sabin's strains, and by the end of 1960 it was proposed

to vaccinate the whole population between the ages of 2 months and 21 years, altogether 77 million people, this project was nearing completion, so far without untoward results American reports also attested to the safety of the vaccine In Russia the schedule of vaccination most widely used (*Brit med J*, 1/1960, 1729) is to feed each type of vaccine separately in the order type 1, 3 and 2, with an interval of 4 to 6 weeks between the feedings, followed by trivalent vaccine 3 to 18 months later For children up to 8 months of age liquid vaccine is given in fruit juice, water, or milk, but for older children and adults the vaccine is fed in the form of sugar dragees weighing about 1 g and representing one dose of vaccine The degree of protection afforded by the vaccine, as judged by antibody formation in the population, was satisfactory, and poliomyelitis has receded from the areas where the vaccine has been used Short term assessment of the efficacy of the vaccine seemed to suggest that vaccines of this type promise eventual 'eradication of the disease' (*Brit med J*, II/1960, 202)

Although a vast amount of work remains to be done, and there may be many pitfalls ahead, there is a rapidly increasing trend in favour of developing and using live vaccine, which will be given further impetus by the announcement of the U S Public Health Service that the Sabin vaccine has been found suitable for use in the United States

National experiences with inactivated and live poliovirus vaccines are reviewed and the problems associated with the production of vaccines and with the various aspects of vaccination are discussed in the third report of the *World Health* Organisation s Expert Committee on Poliomyelitis (*World Hlth Org techn Rep Ser*, 1960 No 203)

Rabies

Extra Pharmacopœia Vol II, 23rd Edn, p 866

Many workers throughout the world have been engaged for some time in attempts to overcome the serious drawbacks associated with existing rabies vaccines The most important drawbacks are (1) failure to prevent death especially following severe exposures where the incubation period is short (2) paralytic accidents apparently resulting from a reaction to the nervous tissue in the vaccine, and (3) the necessity for a prolonged and unpleasant course of treatment usually consisting of 14 to 21 daily inoculations Much of the work has been centred on the evaluation of the Flury vaccine The Flury strain of rabies virus was isolated in 1940 from a girl of that name who died after an illness of 4 days, the strain was eventually adapted to growth in chick embryos by Koprowski and Cox in 1958 By the 50th serial embryo passage the strain was sufficiently avirulent to permit its use, which is now widespread for canine immunisation By the 182nd embryo passage the strain lost its ability to produce fatal encephalitis in cerebrally inoculated adult mice and ceased to cause disease on extraneural inoculation of cattle This high egg passage (HEP) virus was chosen for experimental immunisation of man HEP Flury vaccines have now been used in more than 1000 persons and no reactions attributable to the Flury virus *per se* have been observed

An investigation into the antibody response to serum and vaccine inoculations was carried out in *1955 by Atanasiu et al (Bull World Hlth Org*, 1956 *14* 593) Eleven groups, each of 10 adult volunteers previously unexposed to rabies and with no history of rabies vaccination

were inoculated according to different schedules with phenolised inactivated vaccine or Flury vaccine with or without one inoculation of hyperimmune serum or (one group) with hyperimmune serum alone Serum specimens were studied for antibody up to the 28th day following the first inoculation of the vaccines and serum The best protection as indicated by early and continuous antibody levels was obtained in the group which received hyperimmune serum (one injection of 0 5 ml per kg body weight intramuscularly) followed by 12 daily injections of 0 5 ml of phenolised vaccine the first inoculation being given 24 hours after the first injection of serum The antibody levels in this group were comparable to those observed in man treated effectively with antiserum vaccine combination after severe exposure to rabies One intramuscular injection of 3 ml of Flury vaccine did not produce any detectable antibody and the use of Flury vaccine following hyperimmune serum made no appreciable difference to the antibody levels when compared with those following the use of the serum alone

As the result of primary immunisation of 387 persons with various courses of HEP Flury vaccine and of 54 persons with Harris or Semple type vaccines Fox *et al* (*Bull World Hlth Org* 1957 *17*, 869) found that while antibody response to the Flury vaccine was as rapid as that to the conventional type it fell short in uniformity and level of response They concluded that the living state of the virus seemed of little practical importance as the evidence suggested that it did not multiply in man this meant that its antigenic effect depended entirely on the original viral antigen present in the vaccine On the other hand the level of antibody response might not be of critical importance and it was possible that the absence of really demonstrable antibody did not necessarily signify lack of protection They were of the opinion that the most promising course involved a 4 dose schedule given by intradermal injection at 5 day intervals Excellent results were also achieved with a 4 dose course of Semple vaccine similarly spaced

A study of recipients of Pasteur treatment indicated that antibody commonly persists for at least 5 years after a single course and for 15 years or more after re treatment The ability to respond to a booster dose of Flury vaccine persists for at least 25 years the response is prompt and usually equal to that resulting from a full primary course It is suggested that previously treated persons need not receive more than a single booster dose on re exposure and that Pasteur treatment provides a solid basis for long sustained immunity

Sharpless *et al* (*Bull World Hlth Org* 1957 *17* 905) agree with the view that the response to HEP Flury vaccine is directly related to its virus content and that the preparation must therefore be sufficiently stable to guarantee that its living virus content at the time of use is high While there is no conclusive evidence that excess embryo tissue interferes with antibody production there is clear evidence that good antibody response can be elicited without the presence of excess embryo tissue This tissue can be removed by centrifugation Three intracutaneous injections of 0 2 ml of this centrifuged vaccine given at intervals of 5 to 7 days (*reduced to one injection in subjects who had had a previous course* of rabies vaccine) elicited an antibody titre comparable to that obtained by Fox *et al* (loc. cit.) after a similar number of subcutaneous injections of Semple vaccine The use of this centrifuged vaccine also reduced the number of local reactions such as suppuration at the site of injection and

painful swelling of the forearm, as compared with the use of the filtered vaccine

A comparison was made by Greenberg and Childress (*J Amer med Ass*, 1960, *173* 333) in the antirabies clinics of the New York City Department of Health of the general and local reactions and the antibody titres produced in 127 patients given injections of Semple brain tissue rabies vaccine and 123 patients given injections of a vaccine, prepared in embryonated duck eggs infected with fixed virus to which β propiolactone 1 4000 had been added Alternate patients were given 14 daily injections subcutaneously either of Semple vaccine 0 5 ml (20 per cent suspension) or of duck embryo vaccine 1 ml The results indicated that rabies neutralising antibodies developed sooner after injection of duck embryo vaccine than after injection of Semple vaccine, but the differences between the two groups in the 11 to 15-day period was not statistically significant Booster effects were obtained readily with both vaccines Local reactions were about the same after each type of vaccine though they were somewhat more severe after the Semple vaccine The complication of encephalomyelitis did not occur after the duck-embryo vaccine but did occur in 2 patients who received the Semple vaccine The authors recommend that the duck-embryo vaccine supplant the brain-tissue vaccine for the prophylaxis of rabies

Diagnosis Goldwasser *et al* (*Bull World Hlth Org* 1959 *20* 579) describe a method of staining with fluorescent antibody street rabies antigens in smears made from the salivary glands of rabid animals The fluorescent agent used was fluorescein isothiocyanate This technique combined the advantages of speed and specificity Tissues can be processed stained and examined in one day The average time required for the examination of a slide was 10 minutes, and in the majority of cases where virus was present in the salivary gland it was only necessary to examine a very few fields Out of some 300 slides prepared from 100 rabid animals only one false positive diagnosis was made while in the case of 49 animals from whose salivary glands virus was isolated by animal inoculation 48 were diagnosed by this technique and the one missed contained only a trace of virus

Staphylococcal Infections

Extra Pharmacopœia Vol II, 23rd Edn p 881

The increasing incidence of outbreaks of staphylococcal infections of an epidemic nature in hospitals all over the world associated with the emergence of antibiotic resistant strains of staphylococci has led during recent years to intensive research into the epidemiology of staphylococcal disease

A valuable aid to research workers in this field is a method of bacteriophage typing similar to that employed for the differentiation of the typhoid bacilli A series of approximately 20 basic phages is usually employed for routine typing On the basis of their reactions to these phages three main groups of staphylococci are recognised corresponding approximately to Cowan's three main serological groups The phages usually show pattern reactions rather than type specific reactions A culture of *Staphylococcus aureus* may be susceptible to a number of phages each of which may enter into several different patterns on other cultures The patterns in any series of cultures may be numerous and overlapping so phage typing is not strictly a method of classification it does however serve a most useful purpose in the study of sets of cultures isolated from related sources (Blair, *Bull World Hlth Org*, 1958, *18*, 291) In such

sets, close relationship between the cultures is suggested by similar or identical phage patterns while differences between the cultures are indicated by distinct differences in their patterns

During the years 1954–7 the Staphylococcus Reference Laboratory at Colindale received for type identification some 3803 strains of staphylococci which had been isolated from septic lesions in hospital patients during investigations of epidemics of hospital infection (Williams *Lancet*, i/1959, 190) Almost all the strains from the maternity wards came from septic skin and eye lesions among babies, while the strains from surgical and other units were mostly from septic wounds Altogether well over 200 different phage patterns possibly representing different types of staphylococci were recognised but 20 types or small groups of related types occurred ten times or more There was a striking difference between the distribution of strains from maternity and surgical units strains of phage group I were predominant in maternity units and strains of phage group III in surgical units Both in maternity and in surgical units there was a clear indication of the existence of epidemic types of staphylococci Indeed four types (80 52A/79 71, and 7/47/53/54/75) were responsible for 50 per cent of the maternity unit outbreaks and three types (80 75/77, and 47/53/75/77) were responsible for 50 per cent of the outbreaks in the surgical wards Of the specific epidemic types, type 80 is the one which has given rise to the greatest concern The specific phage for this strain was first isolated by Rountree in Australia in 1953 Shortly afterwards a very similar phage type 81, was described in Canada Most type 80 strains seen in Britain are also lysed by phage 81 and are to be regarded as the same type as the 81 or 80/81 of the Canadian and United States reports

Since its isolation in 1953 type 80 81 has become virtually a pandemic strain (*Lancet* i/1959 298) and is becoming increasingly responsible for staphylococcal epidemics Thus of the epidemics investigated by Williams, 16 per cent were caused by type 80/81 in 1954 and 42 per cent in 1957 This strain has now been responsible for more recorded epidemics than any other type and (like other group I strains) it commonly generates a high rate of carriage (and often a high incidence of skin lesions) among hospital staffs It has an extraordinary ability to colonise the noses of the hospital staff and once established in the nose it usually remains for a long period as the carried strain whereas other hospital staphylococci though frequently picked up, usually remain in the nose for only a short time Such dangerous and persistent strains of epidemic staphylococci, and especially type 80/81 may be readily disseminated among the general population by patients after discharge from hospital or by those visiting or having contact with hospitals Williams considers that routine treatment of carriers of epidemic strains is probably indicated in maternity units and, in the case of type 80 81 carriers also in surgical units

Diagnosis Deep seated staphylococcal infection is not readily diagnosed bacteriologically since the organisms often multiply in tissues from which recovery is difficult e g in spinal lesions On the other hand it is known that the serum of patients with staphylococcal infection may contain an measurable quantity antibodies to a number of antigens of the staphylococcus Towers and Gladstone (*Lancet* ii/1958 1192) have devised two serological tests based on the assay of two of these antigens anti alpha hæmolysin and anti Panton Valentine leucocidin The use of either test alone may lead to error but a combination of the two tests is of diagnostic value a rise in titre of both anti alpha hæmolysin and

anti Panton Valentine leucocidin being indicative of recent staphylococcal infection or reinfection Details of the tests are given together with six case reports indicating the value of this diagnostic procedure

A screen test and selective medium for the rapid detection of epidemic strains of *Staph aureus* has been devised by Moore (*Lancet* II/1960, 453) based on the finding that staphylococci of phage types known to be associated with hospital infection are more resistant to mercuric salts than non epidemic strains A series of 505 staphylococcal strains received for phage typing from various laboratories were divided into mercury resistant and mercury sensitive groups on the basis of growth or absence of growth on peptone agar containing mercuric chloride 1 in 27 500 In a series of 210 staphylococci falling into phage-group I 137 (95 1 per cent) of 144 strains of phage type 80 or 52/52A/80 were mercury resistant Phage group I strains without an 80 in their phage pattern were all mercury sensitive Only 3 (5 9 per cent) out of phage group II strains were mercury resistant all 3 were type 71 strains isolated from wounds Of 171 group III strains 69 (40 per cent) were mercury resistant the mercury resistant strains in this group belonged mainly to phage types associated with epidemic infection The property of mercury resistance paralleled in general that of antibiotic resistance The test should prove useful in the day to-day control of infection on the basis of rapid recognition and segregation of sources of infection in a hospital population

***Staphylococcus albus* Septicæmia** While coagulase-negative *Staph albus* (*Staph saprophyticus*) in blood cultures in particular is almost always assumed to be a contaminant Smith *et al* (*Arch intern Med*, 1958 *102* 375) show that it may sometimes be present in the blood stream as a pathogen They have collected over 90 reported cases of *Staph albus* septicæmia and describe 5 cases of their own 4 following mitral valvotomy Apart from the cases associated with cardiac surgery, which seem to be becoming commoner (*Lancet* II/1958 891) Smith *et al* state that *Staph albus* septicæmia is seen most often as part of an endocarditis arising when this organism infects valves previously damaged by acute rheumatism Clinically the disease closely resembles subacute bacterial endocarditis caused by *Streptococcus viridans* Cases of *Staph albus* septicæmia without endocardial involvement are found almost exclusively in patients debilitated by severe disease in women post partum or in the newborn It is important to recognise them since the disease which untreated has a high mortality rate can usually be cured by early treatment with an antibiotic to which the organism is sensitive

Syphilis

Extra Pharmacopœia Vol II, 23rd Edn, p 884

Serological Diagnosis

The most recent additions to laboratory aids in the diagnosis of syphilis include the *Treponema pallidum* immobilisation (TPI) test, the *T pallidum* agglutination (TPA) test and the *T pallidum* Immune adherence (TPIA) test All these are serological tests but such tests employing treponemal antigens detect an antibody that differs from the reagin which causes a positive reaction in the older types of procedure While it is true that the discovery of serological procedures using killed *T pallidum* antigens or extracts thereof is of great importance it is generally accepted (Rein and Reyn *Bull World Hlth Org* 1956 *14* 193) that it is not feasible to discard the routine serological tests now in common use The present tests have attained a high degree of sensitivity and specificity even though the antigens employed are not really specific in the true biological sense In addition these routine tests show up what are later seen to be false positive reactions even before the clinical manifestations of the diseases or conditions responsible for them have developed

It is the view of Harris and Olansky (*Bull World Hlth Org*, 1956 *14* 219) that the complexity and cost of the TPI test militate against its adoption as a primary test for the detection of syphilis The TPA and TPIA are less complex

than TPI and may later be adopted as primary tests but their efficiency requires further proof

***Treponema pallidum* Immobilisation (TPI) Test.** The TPI test was first described by Nelson and Mayer (*J exp Med*, 1949 *89* 369) It can be carried out either qualitatively or quantitatively although owing to the technical difficulties of the quantitative test this is little used Live pathogenic treponemas constitute the antigen by means of which serum is checked for immobilising antibody Together with active guinea pig serum as complement a mixture of antigen and antibody is incubated under anaerobic conditions at 35° for 18 to 24 hours. The mixture is then examined by dark field microscopy and if antibody is present in the serum the incubation results in an immobilisation of the treponemas The immobilising antibody demonstrated in the test is different from the antibody or antibodies demonstrated in tests using lipoidal agents In the qualitative test the results are generally interpreted as *positive* if motility determinations reveal a difference of more than 50 per cent between the tubes containing active and inactive complement as *doubtful* if the difference is between 50 per cent and 20 per cent and as *negative* if the difference is less than 20 per cent

The general sensitivity of the test is higher than that of the usual serological tests approaching 100 per cent in untreated syphilis including congenital syphilis Exceptions are primary and to a lesser degree early secondary cases in which the TPI may be negative and the usual tests positive In treated syphilis the sensitivity is also very high, being about 85 per cent of all categories together Only primary and early secondary TPI positive cases become negative in response to treatment and this response is generally taken as a sign of cure

The specificity of the test as measured in sera from normal individuals is nearly 100 per cent In biologically false positive sera and sera from patients suffering from diseases other than syphilis, it also appears to be about 100 per cent. The low frequency of TPI positive reactions in leprosy and malaria is also an indication of the specificity of the test

To sum up according to Nielsen and Reyn (*Bull World Hlth Org*, 1956 *14* 263) the TPI is mainly a diagnostic test and at its present stage of development, is not yet fit to be used as a test of cure except perhaps in early syphilis The main application of the test is to cases with persistent and unexpectedly positive reactions to the usual serological tests the diagnosis here being either latent syphilis or chronic biologically false positive reactions

***Treponema pallidum* Agglutination (TPA) Tests** In order to obviate some of the difficulties and complexities of the TPI test a number of attempts have been made to use *T pallidum* as an antigen in agglutination tests but a number of technical difficulties have yet to be overcome including the difficulty of obtaining satisfactory antigen suspensions Magnuson and McLeod (*Bull World Hlth Org* 1956 *14* 289) consider that these tests do not yet possess the diagnostic value of the TPI test and that the immunological interpretation of results is by no means clear

Torulosis

Extra Pharmacopœia Vol II, 23rd Edn, p 889

In the view of Symmers and Wimer (*Lancet*, 1/1959, 943) the aspect of torulosis which is of most practical diagnostic importance is its occurrence as a complication of diseases of the lymphoreticular system Although this complication is rare in relation to the overall incidence of Hodgkin's disease and other malignant diseases of the lymphoreticular system, and of sarcoidosis, these conditions account for something like a third of all cases of torulosis The possibility of torulosis should always be considered whenever a patient with any disease of the lymphoreticular system develops any sign of neurological disease (particularly meningitis), or of the onset of pulmonary disease (or alteration in existing pulmonary lesions), or of osteitis, or of ulceration of the skin or mucous membranes In laboratory diagnosis cryptococci may be mistaken for lymphocytes in cerebrospinal fluid unless the centrifuge deposit is mixed with nigrosin or Indian ink to show the characteristic capsule as a broad clear zone between the cell body of the yeast and the dark background On the other hand, when the yeasts are numerous in ordinary preparations they are more likely to be confused with red blood cells than with lymphocytes Until recently there was no effective treatment for torulosis, unless the disease was eradicable by surgery, and the outcome was fatal in all except rare cases The prognosis has now, however, been improved greatly by the introduction of amphotericin B, but even this is not an unfailing cure and it is essential to start treatment early

Trypanosomiasis

Extra Pharmacopœia Vol II, 23rd Edn, p 892

It is common knowledge that the E S R. is high in patients suffering from trypanosomiasis According to Gall *et al* (*Ann trop Med Parasit*, 1957, *51*, 136) it is particularly high in virulent cases of the disease during its febrile periods Determination of the E S R in a series of rural and urban control subjects in Nigeria gave a median one-hour rate of sedimentation of 15 to 76 mm *In 377 parasitically positive untreated cases* of sleeping sickness (*Trypanosoma gambiense*) the sedimentation rates were strikingly high the median one hour rate being 114 mm Such a figure would normally be associated with extensive tissue destruction, with advanced malignant disease, or with blood-protein changes as in myelomatosis Marked blood protein changes were shown to occur with trypanosomal infection The E S R rises early in the disease and thereafter falls as the disease progresses with increasing changes in the cerebrospinal fluid During treatment with Melarsen or with suramin and tryparsamide, the E S R soon falls to half its initial value and during the next year continues to fall to about a quarter of the maximum Relapse of the disease after treatment is not associated with a further rise in the E S R and repetition of the treatment does not again alter the E S R The increase in the E S R is closely associated with the red-cell clumping evident in trypanosomiasis *which has been called* 'auto-agglutination' or 'pseudo-agglutination'

Tuberculosis

Extra Pharmacopœia Vol II 23rd Edn p 894

The World Health Organisation's programme for the control of tuberculosis is reviewed in the seventh report of the Organisation's Expert Committee on Tuberculosis (*World Hlth Org techn Rep Ser*, 1960, No 195) The Committee was of the opinion that specific control measures had been effective and were being increasingly influential, and its considerations and recommendations are largely confined to such specific measures The programme suggested by the World Health Organisation underlines the importance of the community or public health approach The problems arising from this approach have been studied by the Committee and are discussed in the report

Direct Methods of Diagnosis

Examination of Sputum In a report by a working party of the Public Health Laboratory Service on the Laboratory Diagnosis of Tuberculosis (*Mon Bull. Minist Hlth Lab Serv* 1958 *17* 99) the following are recommended as the two best methods for homogenising sputum

(1) *Nassau's 1953 Modification of Jungmann and Gruschka's Original Method Solution A* ferrous sulphate ($FeSO_4.7H_2O$) 20 g sulphuric acid 20 per cent (vol per cent) 100 ml *Solution B* hydrogen peroxide solution (20 vol) 5 ml double glass distilled water 95 ml (Solution B is made up freshly as required)

To 1 ml of sputum in a universal container add 0 6 ml of Solution A and shake well then add 0 6 ml of Solution B Shake the container for 30 seconds and allow to stand for 20 minutes shaking at intervals Add 5 per cent sterile sodium citrate solution to the shoulder of the container shake and centrifuge for 30 minutes at 3000 r p m Decant the supernatant fluid

(2) *Sodium Hydroxide Method* To 1 ml of sputum in a universal container add an equal volume of a 4 per cent solution of sodium hydroxide and incubate at 37° shaking at 5 minute intervals As soon as homogenisation appears to be complete fill the container to the shoulder with double distilled water After centrifugation at a relative centrifugal force of 1500 to 1800 times gravity for 30 minutes decant the supernatant fluid Add 1 drop of sterile phenol red indicator to the deposit and adjust the pH to 7 0 to 7 2 by means of 8 per cent hydrochloric acid.

An investigation of the effect of centrifugation on cultures from sputum treated by the sodium hydroxide method showed that such centrifugation left an appreciable proportion of tubercle bacilli in the supernatant fluid Centrifugation usually concentrated the bacilli in the deposit but cultures made from the deposit were more often contaminated than those made from the uncentrifuged homogenised sputum The numbers of tubercle bacilli remaining in suspension after centrifugation were often sufficient to yield positive cultures The best results were obtained by culturing part of the homogenised material before centrifugation as well as the centrifuged deposit of the remainder (2 ml of the uncentrifuged homogenised material to 10 ml of liquid culture medium appeared to be the maximum practicable inoculum) When the volume of sputum available for culture does not exceed 1 ml culture of the whole of the homogenised specimen uncentrifuged is recommended Whichever method is employed Kirchner's medium with added penicillin (see below) is likely to give a higher proportion of positive results than the medium of Löwenstein and Jensen.

Kirchner's Medium with Penicillin Dissolve 1 ampoule of 100 000 units of benzylpenicillin (sodium salt) in 10 ml of autoclaved *M/15* phosphate buffer pH 6 8 in glass distilled water (this will keep for 4 weeks in a cold store) One part of this solution is added to 9 parts of filtered horse serum One ml of the serum penicillin mixture is added to 9 ml of Kirchner's basic medium in 1-ounce screw-capped bottles the final concentration of penicillin being 100 units per ml of culture medium

Kirchner's Medium (Kirchner 1932) Modified is prepared as follows monopotassium phosphate (KH_2PO_4) 2 g disodium phosphate ($Na_2HPO_4 12H_2O$) 1·9 g magnesium sulphate 0·6 g sodium citrate 2·5 g asparagine 5·0 g, glycerin 20 ml distilled water 1000 ml Add 3 ml of 0·4 per cent phenol red per litre Dispense in 9 ml quantities in 1 ounce screw-capped bottles The solution is autoclaved and the pH is kept at 6·9 to 7·2 Filtered horse serum is added to the base in the proportion of 1 to 9 preferably the day before use and the bottles incubated overnight

Indirect Methods of Diagnosis (Extra Pharmacopœia Vol II 23rd Edn, p 898)

Tuberculin Tests A study was conducted during the period 1950–8 under the auspices of the World Health Organisation (Nyboe *Bull World Hlth Org.*, 1960 *22* 5) in 33 countries in Africa America Asia and Europe to determine whether it is always justified to take a tuberculin reaction over a certain size as indicative of infection with tubercle bacilli and reactions below the limit as indicative of absence of such infection About 190 000 persons were tested of whom 44 per cent were school children and the remainder general population groups of all ages Intradermal (Mantoux) 5 and 100 TU (PPD) tests were employed and the resulting distribution of reactions according to size subjected to statistical analysis It was demonstrated that the pattern of tuberculin sensitivity varies widely between populations but follows a definite geographical trend In temperate and subtropical countries almost all test reactions are either clearly positive or clearly negative indicating that the test is highly efficient. In tropical regions on the other hand a large proportion of the reactions are intermediate in size and distinction between the two kinds of reaction is therefore difficult The data strongly suggest that the cause of the intermediate reactions is that the population is being massively exposed to certain unidentified sensitising agents possibly other types of mycobacteria producing cross reactions to tuberculin Until the tuberculin test is improved for use in tropical countries a clear-cut distinction between tuberculosis infected and uninfected cannot be made in these areas by means of the present test

Undulant Fevers

Extra Pharmacopœia Vol II 23rd Edn p 901

Cultivation The growth of *Brucella* cells in a mixture of culture medium (peptone type) and blood is not due to growth promoting constituents in the medium but to the presence of agents that inactivate the bacterial growth inhibiting factor usually present in normal blood Huddleson (*Bull World Hlth Org* 1957 *16* 929) shows that this inactivation may be accomplished by lowering the pH of the blood and culture medium or that of the blood alone to 6·0 to 6·2 Since cation exchange resins (H^+) accomplish this purpose when used in blood alone peptone culture media may be eliminated from any procedure that involves the growth of *Brucella* in the presence of blood Rapid growth of all types and species of *Brucella* may be obtained in cow human and horse blood alone by the addition of such a cation exchange resin In the presence of salts in the blood the resin behaves like an acid in lowering the pH to the desired level If conditions are created in a closed container so that CO_2 is released from the $NaHCO_3$ normally present in blood other measures such as the artificial addition of CO_2 are rendered unnecessary for the growth of CO_2 dependent strains of *Br abortus* in the presence of blood

The procedure that was adopted for the rapid growth of any type of species of *Brucella* in blood without culture medium is as follows. To a 50-ml serum bottle is added 0·5 g of a cation exchange resin (Duolite C 3) and 2 ml of 5 per cent sodium citrate The bottle is stoppered with cotton wool and autoclaved at 120° for 20 minutes (bottles so prepared may be closed with a sterile rubber stopper and kept indefinitely) Blood is collected aseptically either

with or without sodium citrate and 10 ml is added to the bottle The blood and resin are mixed well and the bacterial cells suspended in 0 3 ml of diluting fluid are added The bottle is closed immediately with a sterile rubber stopper and incubated at 37°

Yellow Fever

Extra Pharmacopœia Vol II 23rd Edn p 906

Immunisation In an appreciation of the present position of vaccination by scarification with the 17D strain Meers (*Trans R Soc trop Med Hyg* 1957 51 338) finds that bearing in mind considerations of safety economy and ease of administration this is the method of choice for the immunisation of large populations at risk in relatively undeveloped areas so that epidemics are prevented and the population protected from accidental sylvan infection The method is not at present intended to replace immunisation by inoculation for purposes of international travel or the protection of persons such as Europeans in whom the disease runs a much more fulminant course than in people living in endemic areas

The best diluent for the vaccine is a sterile 2 per cent solution of acacia Two drops of vaccine are applied over the deltoid and one cross hatched scratch of about 1 cm in length is made through each drop the vaccine being rubbed into the scratches with the flat of the needle without drawing blood Either chick embryo or mouse brain vaccine may be used A mouse brain vaccine has been satisfactorily employed for 17 years in French West Africa without the occurrence of any incident attributable to a viral contamination in the vaccine

From the results of trials covering 42 490 vaccinations by scarification (using either chick embryo or mouse brain vaccine) it is claimed that 85 per cent ±5 per cent of persons vaccinated by this method are solidly protected against yellow fever and this figure is considered highly satisfactory for the raising of immunity levels in populations exposed to the risk of epidemics To maintain the immunity level of an area above 50 per cent it is recommended that revaccination should be done after 4 years and later revaccinations at longer intervals

STERILISATION

Extra Pharmacopœia Vol II, 23rd Edn, pp 911–25

Methods of Sterilisation

Extra Pharmacopœia Vol II, 23rd Edn, p 912

Sterilisation of Rubber Closures The British Pharmacopœia methods of treating rubber closures have been criticised as inadequate by Royce and Sykes (*J Pharm Pharmacol* 1957, *9*, 814) due to the absorption of bacteriostatics from multiple dose injections They found that phenol and benzyl alcohol are the most satisfactory bacteriostatics and that the absorption by rubber closures of phenylmercuric salts from solutions for injection is considerable (e g 95 per cent absorption for 1 g of rubber to 3 ml of 0 002 per cent solution of phenylmercuric nitrate after one month at room temperature)

According to A B Nielsen (*Dansk Tidsskr Farm* 1958, *32* 109 per *J Pharm Pharmacol*, 1959, *11*, 56) polyvinyl chloride caps backed with rubber absorb phenol and chlorocresol more readily than rubber caps and cannot therefore be recommended for injections containing phenolic bacteriostatics

Standards for rubber closures British Standard (B S 3263 1960) specifies requirements for vulcanised rubber closures for use with injectable products and suitable for steam sterilisation Standards are laid down for materials and workmanship of rubber wads plugs and caps Tests have been devised for measuring penetrability fragmentation self sealability water extract, acidity and alkalinity permeability to water vapour and compatibility of the rubber with injectable products

Gaseous Sterilisation (Vol II, 23rd Edn, p 917) Most of the earlier work on gaseous sterilisation was done using *ethylene oxide* The principal *disadvantage of ethylene oxide is that it forms explosive* mixtures with air but this was overcome by employing a 10 per cent mixture of the gas with carbon dioxide Recently other gases have been used in place of carbon dioxide notably certain fluorinated hydrocarbons, which also form non inflammable mixtures with ethylene oxide Mixtures of dichlorodifluoromethane and trichlorofluoromethane with 9 to 11 *per cent w/w of ethylene oxide have been most commonly employed* The advantages of these mixtures over the carbon dioxide mixture are *that they permit a higher partial pressure of ethylene oxide in the exposure chamber at the same total pressure and that the liquefied mixture* can be stored in containers of a much lighter weight (e g small disposable cans) than the steel cylinders required for the carbon dioxide mixture

The principal factors on which sterilisation by ethylene oxide depends are exposure time, temperature, humidity, and the concentration or, more precisely, the partial pressure of the ethylene oxide in the exposure chamber, the concentration being expressed as the amount of ethylene oxide in a given space and not as the amount of ethylene oxide compared with the total amount of all gases present in that space Ethylene oxide is an effective sterilising agent at normal room temperatures but its bactericidal action is accelerated by increase of temperature and it has been found that a temperature of about 55° can be used for most thermolabile materials A minimum concentration of 450 mg of ethylene oxide per litre at 54° for 5 hours is said to be satisfactory for most applications If the concentration is increased to 850 to 900 mg per litre at 54° the exposure time may be reduced to 3 hours Moisture is essential for

effective sterilisation by ethylene oxide and Kaye and Phillips (*Amer J Hyg* 1949, *50* 296) have shown that the gas is most effective at a relative humidity of about 30 per cent Many materials particularly plastics rubber and leather absorb ethylene oxide freely during the exposure period and time has to be allowed for the dissipation of the absorbed gas, which is highly toxic before the sterilised materials can be used

For reports on the experimental use of ethylene oxide in the sterilisation of instruments equipment and powders, see Skeehan *et al* (*Amer J Ophthal* 1956 *42* 424) Royce (*Chem & Drugg* 1959 *171* 509) and Grundy *et al* (*J Amer pharm Ass Sci Edn* 1957 *46* 439) For an account of a bacteriological investigation of the effectiveness of ethylene oxide see Barwell and Freeman (*Lancet* 1/1959 917)

An indicator control device for ethylene oxide sterilisation is described by Royce and Bowler (*J Pharm Pharmacol* 1959 *11* 294 T)

During the last few years methods of sterilisation using other gases have also been investigated notably β *propiolactone* vapour and *propylene oxide* Suitable apparatus for promoting vaporisation of β propiolactone by heating the liquid in an air stream, by atomisation or by drawing a vacuum is described by Allen and Murphy (*J Amer med Ass* 1960 *172* 1759) Contact between adjacent surfaces must be avoided and articles must be unwrapped

β Propiolactone which is a colourless liquid at room temperatures is twenty five times more active as a vapour phase disinfectant than formaldehyde and four thousand times more active than ethylene oxide when used under conditions of maximum effectiveness In its vapour state it is neither inflammable nor explosive and in aqueous solution it hydrolyses to products which are not toxic but which are no longer bactericidal

β Propiolactone requires a relative humidity of 75 per cent or more for rapid sterilisation It is not suitable for sterilising nylon and polystyrene which disintegrate and polyvinyl chloride which is deformed after long exposure The vapour does not corrode common metals and alloys or affect acrylic, melamine and polyurethane plastics and there is no change in tensile strength It is most useful for sterilising instruments and rubber closures and for disinfecting large enclosed areas

Propylene oxide which is a colourless liquid at room temperatures has been used for the purposes of steril sation but its activity is only about half that of ethylene oxide

Talc with 5 per cent of boric acid containing 5 per cent of water in a sealed can was subjected to 3 per cent propylene oxide injected into the can by means of a hypodermic syringe and stored at 49° The powder became sterile after one day and was free of the odour of propylene oxide after seven days *B subtilis* was used as the test organism (*Mfg Chem* 1958 *29* 338)

The penetrating quality of a gas makes it possible to sterilise packaged materials under controlled conditions where speed is of no importance in the manufacturing process Sterilisation can be carried out at normal or slightly elevated temperatures and the gas can be completely removed from the sterilised material at the end of the process Although gaseous sterilisation has a limited value as a means of producing sterile materials it is applicable to the sterilisation of non reactive thermolabile substances and has been found to be particularly suitable for the sterilisation of instruments and apparatus

For information on the sterilisation of blankets by formaldehyde and on the steril sation of bedding by ethylene oxide see page 92

Sterilisation by Ionising Radiations (Vol II, 23rd Edn, p 918) Methods of using ionising radiations for the sterilisation of food and pharmaceutical products have been investigated on an increasing scale during the last few years but, so far, such methods have not found wide application in the pharmaceutical industry in Great Britain In 1956, the Association of British Pharmaceutical Industry set up a working party to investigate the use of gamma radiation sources for the sterilisation of pharmaceutical products and the report of this working party was published in June 1960 As a result of their investigations, they concluded that a dose of $2\,5 \times 10^6$ rad, which appears adequate to achieve sterility, produces unacceptable changes in many substances used in pharmacy They considered that the probable cost of sterilisation by irradiation might limit its pharmaceutical application but that the process might be utilised for controlling contamination at some stages in production and for sterilising containers

Before material is sterilised by radiation there are several factors which must be investigated There must be no resultant change in colour, texture, or activity, or alteration in physical properties such as the rate and clarity of solution No toxic products must be formed nor must there be a pyrogenic or allergenic effect from irradiated bacteria Any traces of breakdown products from irradiation must be identified and their pharmacological action determined It is necessary to study the effect of prolonged or excessive treatment with the irradiated drug For these reasons all preparations in the U S A so sterilised are regarded in law as new drugs within the meaning of the Federal Food, Drug and Cosmetic Act Completely new tests and standards are required for irradiated products

Sterilisation by ionising radiations is suitable for substances of a relatively simple chemical structure which are thermolabile, since there is a negligible rise in temperature The actual sterilising dose required depends strictly on the number of organisms originally present Only rarely, when initial contamination is exceptionally high, is it found that organisms survive a dose of $2\,0 \times 10^6$ rad and, as stated above, the A B P I working party employed a dose of $2\,5 \times 10^6$ rad to effect sterility For the dosage necessary to kill various specific organisms see *Mfg Chem*, 1959, *30*, 435

One of the effects of irradiating materials in their final containers is that glass, especially soft glass, discolours and the effect on its alkalinity is unknown Aluminium is not affected Exposure to gamma radiation for long periods reduces the tensile strength of cotton and rayon, and the tensile strength of wool is reduced by some 10 per cent after a dose of 25×10^6 rad In general, it is not possible to sterilise plastics by gamma radiation Polyisobutylene and methyl methacrylate (Perspex) are degraded Polythene loses its solubility in some solvents and the melting-point is affected This is also true of nylon, polychloroprene (Duprene), natural rubber, and co-polymers of butadiene and styrene

Of the substances examined by the A B P I working party, it was found that ergometrine maleate discoloured and lost potency in solution but not in powder, procaine hydrochloride discoloured but did not show any loss of potency in powder or solution, ascorbic acid in powder was not affected, but in solution it deepened in colour and lost strength; talc was very little affected by radiation except for an increase in acid-soluble matter, substances adversely affected were atropine sulphate, cyanocobalamin injection, heparin, hyaluronidase, insulin, mersalyl,

morphine sulphate, pentobarbitone sodium, progesterone, thiopentone sodium, and most sulphonamides The results of irradiating eight antibiotics are also given in the working party's report The substances examined were benzathine penicillin, dihydrostreptomycin sulphate neomycin sulphate, phenoxymethylpenicillin, polymyxin sulphate, sodium benzylpenicillin, streptomycin sulphate, and zinc bacitracin It was found that with doses of both 2.5×10^6 rad and 2.5×10^6 rad there was some alteration of potency (usually a loss), a darkening of the sample, and also a development of odour in the case of polymyxin sulphate

Tests on oxytetracycline, streptomycin potassium chloride complex, chlortetracycline, chloramphenicol, and dry potassium benzylpenicillin, have shown that a dosage of 2×10^6 rad produces sterility and, although there is a slight greying of the powder, there is no change in solubility or potency (Horne, *Pharm J*, 1/1956 27) Sterilisation by gamma irradiation is also suitable for hormones such as corticotrophin and cortisone (*Pharm J*, 1/1957, 165)

Plasma, aortic grafts, and bone grafts have been sterilised by this method which has also been used successfully for certain types of dressings (Horne, loc cit) Gamma irradiation is particularly suitable for sterilising disposable plastic syringes and rubber Rubber catheters are being sterilised commercially using spent fuel elements as a source of gamma radiation (*Mfg Chem*, 1960, *31*, 373). Irradiation also has a possible application in the sterilisation of suspensions and powders (*Mfg Chem*, 1959, *30*, 435)

Sterilisation can also be effected by the use of high speed electrons which have, however, less penetrating power than gamma rays This method of sterilisation is already being used commercially in U S A in the sterilisation of sutures packed in 90 per cent isopropyl alcohol in aluminium foil using a dose of 2.5×10^6 rad (*Mfg Chem*, 1959, *30*, 437) An ophthalmic ointment similarly sterilised has also been marketed in U S A (*Pharm J*, 1/1956, 49)

An important industrial advantage of sterilisation by gamma radiation is that the process can readily be adapted to automation Cost, however, is still the principal limiting factor in the investigation and development of suitable methods To assist industry in the investigation of sterilisation by gamma radiation, a cobalt-60 gamma irradiation plant has been installed by the United Kingdom Atomic Energy Authority at the Wantage Research Laboratory This plant permits automatic handling of standard packages through an irradiation process providing doses of 10 000 rad to 5×10^6 rad and enables industry to investigate sterilisation by irradiation on full scale trial runs For a diagram and description of this gamma irradiation plant see *Pharm J*, 1/1960 533

The Preparation of Eye-drops

The eye-drops of the British Pharmaceutical Codex are usually prepared with a fungistatic vehicle such as Solution for Eye-drops, filtered, placed in the final containers, closed, and maintained at 98° to 100° for thirty minutes If the medicament is not heat stable, the eye-drops are prepared with aseptic precautions Provided that the resulting product

is identical with that produced by the method of the British Pharmaceutical Codex, it is still permissible to use another method of preparation, e g aseptic technique or autoclaving Jolly (*Pharm J*, ii/1960 587) has emphasised that, whatever the method, the eye-drops must still be freshly prepared i e dispensed within 24 hours of making since neither an aseptic technique nor the heating procedure described in the *B P C is certain to remove or kill all living* micro-organisms, and the containers and preservatives at present in use cannot be relied upon to maintain sterility even if this is attained initially He draws attention to some practical aspects of steaming eye-drops

In an article on the preparation and preservation of eye drops Runti (*Boll chim farm* 1960 *99* 286 and 376) reviews methods of sterilisation and the use of bacteriostatics

For a description of various apparatus for steaming eye-drops see *Chem. & Drugg* i/1961 11

Sterilisation of Surgical Dressings

Extra Pharmacopœia Vol II, 23rd Edn, p 920

The methods and equipment employed in hospitals for the sterilisation of surgical dressings and other surgical materials have been subjected to *much criticism in recent years notably by Bowie (Pharm J*, i/1955, 473), by Howie and Tunbury (*Lancet*, ii/1956, 669) and in a report to the Medical Research Council by its working party on pressure steam sterilisers (*Lancet*, i/1959 425) A report of the Nuffield Provincial Hospitals Trust on *Present Sterilising Practice in Six Hospitals* (1958) includes criticisms of apparatus, procedure, checking of sterility and responsibility of personnel

Bowie considers that failure in sterilisation is more commonly due to faults in design, installation, and maintenance of sterilisers than to faulty technique and he contends that the majority of sterilisers used in Britain's hospitals and pharmacies are of obsolete design The M R C report discusses the main faults affecting the efficiency of sterilisers used for surgical dressings such as the use of wet steam, incomplete penetration of the load incorrect timing recontamination after sterilisation as well as defects in operational technique installation and maintenance But the report emphasises that most faults apply only to the operation of the downward displacement type of equipment commonly in use and not to modern high vacuum *sterilisers*

Quality of Steam The report of the M R C working party on pressure steam sterilisers (*Lancet*, i/1959 425) states that the most effective way of killing bacterial spores is by means of steam at high temperature which will condense into their substance and moisten them thoroughly Bowie (*Pharm J* i/1955 473) emphasises that sterilisation depends upon four properties of dry saturated steam viz high temperature, wealth of latent heat the ability to form water of condensation and the instantaneous *contraction in volume which occurs during* the process of condensation These four properties are available at optimum level only in steam on the phase boundary between itself and condensate at the same temperature Steam effects sterilisation in the act of crossing this boundary When the steam condenses upon a surface its latent heat is transmitted entirely to that surface and the lethal quality of the steam resides in this

latent heat and the wetting of the surface by the condensate The steri lisation of dressings depends on their being completely permeated by dry saturated steam on the phase boundary The penetrating power of steam is due to the enormous contraction in volume and consequent potential negative pressure at the site of condensation Steam must be at a pressure so high that in spite of its high temperature (120° to 130°) it is close to the point of condensation steam containing 10 per cent or less by weight of water is suitable for sterilisation In a downward displacement steriliser wet steam is usually caused by inadequate lagging inadequate trapping of the condensate during sterilisation or inadequate separation in the supply pipe

Removal of Air The first essential in efficient steam sterilisation is the removal of air and this is difficult to achieve in the sterilisation of surgical dressings since it is not easy to remove air from the pores of closely packed fibrous material The M R C working party on pressure steam sterilisers (loc cit) considers that the most effective method of achieving this is with a high vacuum steriliser from which the air is removed by a powerful pump which reduces the absolute pressure of air in the chamber to a value of a few millimetres of mercury before steam is admitted The report emphasises that this is the only method that can overcome the effects of bad packing or overloading of the steriliser

In a downward displacement steriliser the air is removed from the load by gravity the denser cool air being gradually forced downwards out of the load by the incoming steam The M R C report emphasises that this method will render contaminated material sterile *only* if the steriliser is skilfully operated carefully packed and not overloaded The load must be loosely packed and arranged so that no pockets of cool air can form within it Dressings drums and similar containers must be packed loosely with the articles laid flat and placed so that the folds of fabric run vertically and steam can flow through the open ports from top to bottom Surfaces of non permeable material should be separated by permeable fabric

Timing In an efficient well packed downward displacement steriliser, allowing for steam to permeate the load and raise it to the required temperature, the following exposure times are recommended in the M R C report

	15 lb per square inch (121°)	*20 lb per square inch (126°)*
Fabric packs	30 minutes	20 minutes
Dressings drums	45 minutes	30 minutes

The run is timed from the point at which a thermometer placed in the discharge line reaches a temperature within 2° to 3° of that corresponding to the chamber pressure With high vacuum equipment the total sterilisation time can be greatly reduced since the penetration time is minimal and higher temperatures can be employed

Drying and Danger of Recontamination A load of sterile dressings can be recontaminated during drying either by the use of an inad equate air filter or through a faulty non return valve in the chamber drain In breaking the vacuum air must be drawn from a clean source through a bacteriological filter The air filter may be a metal cup filled with a dry sterile plug of non absorbent cotton wool which should be replaced daily and never allowed to become wet A continuous flow of condensate from the chamber discharge channel indicates that the

discharge channel is open If the channel drains into a tun-dish, this will be evident and the air-break will prevent the possibility of liquid reflux contamination from the drain Tests for recontamination with unsterile air through a faulty filter or a faulty non return valve may be made by culturing clean swabs placed in the outermost layers of packs or drums.

In further comments by the M R C working party on pressure steam sterilisers (*Pharm J*, 11/1960, 546) recommendations have been made on air filters. They may consist of suitable spun glass which should be held firmly between metal grills in a stout non corrosive canister Such a filter might be expected to have a life of at least 12 months, and they consider that the use of cotton wool as suggested in their earlier report cannot be regarded as more than an interim measure They do not comment however, on the difficulty of sterilising such a glass-fibre filter without damaging it —See editorial comment on the working party's investigations of pressure steam sterilisers, *Pharm J*, 11/1960, 603

Heat Penetration (Vol II, 23rd Edn, p 921) In a report to the Medical Research Council working party on pressure steam sterilisers, Kelsey (*Lancet*, 1/1958, 306) has demonstrated that the use of spores in routine testing of sterilisers can be misleading because the heat resistance of strains and batches can vary The report on sterilisation by steam under increased pressure (*Lancet*, 1/1959, 425) recommends that spore preparations of known resistance to heat should only be used for assessing new techniques or equipment for research purposes The report states that Browne s tubes, type I, are suitable for routine tests of sterilisation of dressings and gloves in a downward displacement steriliser Once a sterilisation procedure with a high-vacuum steriliser has been laid down and checked with suitable spore preparations, the temperature record should be adequate As a safeguard, the heat treatment is satisfactory if Browne s tubes, type II, turn green

Browne's tubes (Albert Browne Ltd, Chancery St, Leicester) are used as sterilisation indicators

Type I turns from amber to green after heating to 115° foe 3 minutes.
Type II turns from amber to green aftee heating to 115° for 15 minutes
Type III turns from amber to green aftee heating to 160° for 1 hour

For an investigation of the efficiency of Browne's tubes and some other sterilisation indicators see Brown and Ridout (*Pharm J*, 1/1960, 5)

Sterilisation of Syringes

Extra Pharmacopœia Vol II, 23rd Edn, p 922

There has been criticism of autoclaving as a method of sterilising syringes since steam is unlikely to penetrate between barrel and plunger Of the two methods recommended by the Medical Research Council War Memorandum No 15, heating in a hot-air oven at 160° for not less than one hour is better In a report to the Medical Research Council working party on the sterilisation of syringes, Darmady *et al* (*Lancet*, 11/1958, 766) have proposed new standards for dry-heat sterilisation After investigating the thermal death times of *Clostridium tetani* dried spore bearing soil, and *Bacillus stearothermophilus* at temperatures of 150° to 190°, they recommend that the sterilising temperature be maintained for one and a half times as long as would be necessary to kill all spores of *Cl tetani* at a temperature 10° lower

Subsequent to the publication of the *Report on the Planning and Organisation of Central Syringe Services*, Nuffield Provincial Hospitals Trust, 1957, a number of sterile syringe services have been inaugurated

These depend for their efficiency on dismantling and adequate cleaning of used syringes inspection of the needles for sharpness drying lubrication of the syringe barrel (e g with 10 per cent silicone MS 550 in light petroleum), and reassembly The report suggests that syringes should be dried at 110° to 120° and that the hot air oven used for sterilising should be fitted with a fan and automatic time-control The Medical Research Council emphasises that the safest syringes and needles are produced by a central service and that there should be a separate sterile syringe and needle for each injection

A radiation method of sterilising syringes has been devised by Darmady *et al* (*J clin Path* 1957, *10* 291) The syringes are loaded in a single layer on trays passing at the rate of 4 inches a minute on a moving belt through a chamber containing electric infra red projectors Various containers are used to equalise the time taken for different types of syringes to reach the sterilising temperature A temperature of 180° for at least 11 minutes ensures sterility

A forced convection gas fired oven suitable for sterilising syringes instruments and containers is described by Patrick *et al* *J clin Path* 1961 *14* 62

Sterilisation of Transfusion and Infusion Assemblies The United States *Pharmacopoeia* specifies that samples from each batch of sterilised disposable transfusion and infusion assemblies of tubing shall be tested for sterility freedom from pyrogens and freedom from toxicity

Sterilisation of Rubber Gloves and Instruments The report to the Medical Research Council by the working party on pressura steam sterilisers (*Lancet* 1/1959 425) recommends that gloves packed with slips of gauze inside the wrists and placed edgewise in fabric envelopes in suitable containers be sterilised by maintaining at 126° (20 lb per square inch) for 15 minutes The recommended sterilising time for instruments is 15 minutes at 121° to 123° or 3 minutes at 132° to 134° In a later communication (*Pharm J* 11/1960 546) the working party have stated that information so far available has indicated that gloves may be sterilised along with dressings in a high vacuum steriliser at 130° to 134° without suffering undue damage

A high vacuum infra red steriliser suitable for sterilising operating instruments is described by Darmady *et al* *J clin Path* 1961 *14* 38

Sterilisation of Plastics

The sterilisation of most plastics presents some difficulty since they cannot be sterilised by dry heat at 150° and many cannot be autoclaved

Jenkins *et al* (*Lancet* 1/1959 139), working with a disposable plastic transfusion giving set made almost entirely of polyvinyl chloride with a piercing needle assembly filter, and adaptors of nylon have recommended sterilisation by autoclaving at 15 to 17 lb per square inch at a temperature of 121° to 123° for at least 30 minutes

Walters (*Pharm J* 11/1960 304) has stated that plastic surfaces may be sterilised by immersion for one hour in a solution containing 100 parts per million of available chlorine provided they are clean and in good condition

Nylon bottles are said to be capable of repeated sterilisation by autoclaving at 120° and nylon syringes may also be sterilised by autoclaving at temperatures up to 120° Polypropylene may also be sterilised by autoclaving (*Chem & Drugg* 11/1960 706)

Immersion in solutions of quaternary ammonium salts has been recommended by Farquhar and Lewis for the sterilisation of polythene (*Lancet*, 11/1948, 244) They do not recommend sterilisation by prolonged

immersion in Dettol since polythene increases in weight due to absorption of the oils in the antiseptic Polythene can be boiled, but tubing loses its shape unless mechanically supported, cannulas may be placed in glass tubes and autoclaved at 104° for 30 minutes (*Colker and Norman, Pharm J*, II/1954, 165) On prolonged exposure to sunlight polythene may become oxidised Bottles of irradiated polythene are stated to be sterilisable by heat as they retain the flexibility of polythene itself and do not melt at temperatures up to 175°.

Immersion for 24 hours in solutions of benzalkonium chloride 1 per cent, cetrimide 1 per cent, or chlorhexidine gluconate 0 02 per cent, has been recommended for the sterilisation of methyl methacrylate (Perspex)

From a recent investigation of the interaction of bacteriostatic agents with plastic syringes by Marcus, Kim, and Autian (*J. Amer pharm Ass, Sci Edn*, 1959, *48*, 457) it is evident that immersion in a bactericide is unlikely to be a suitable method of sterilisation of some plastics They have shown that nylon syringes react with methyl hydroxybenzoate, propyl hydroxybenzoate, phenol, and chlorocresol, which appear to diffuse into the nylon Syringes of polythene and polystyrene do not so react In later work on the interaction of weak organic acids with plastic syringes, Kim and Autian (*J Amer pharm Ass, Sci. Edn*, 1960, *49*, 227) have shown that nylon syringes also bind benzoic acid

Further information on the sterilisation of plastics is included in the sections on ethylene oxide, page 80, β propiolactone, page 81, and ionising radiations page 82

Hospital Sterilising Equipment and Organisation

Types of Equipment and Use. The report to the Medical Research Council by the working party on pressure steam sterilisers (*Lancet*, I/1959, 425) lists the existing equipment and draws attention to the defects in installation and maintenance of sterilisers (see under Sterilisation of Surgical Dressings, page 84) The report recommends that instruments and utensils should be sterilised in downward displacement steam sterilisers or high-vacuum sterilisers with automatic control, and that boilers or tank forms of autoclaves for the sterilisation of water and saline should be replaced by rectangular downward-displacement sterilisers and the fluids sterilised in bottles Downward-displacement sterilisers are best employed in ward preparation rooms, laboratories, and pharmacies New sterilisers for dressings and packaged equipment should be of an automatically controlled high vacuum type

Standards Two British Standards for hospital sterilising equipment have been published (B S 3219 1960 and B S 3220 1960) They deal with automatically controlled high vacuum dressings sterilisers downward displacement instrument and utensil sterilisers, and sterilisers for bottled fluids, all operating on saturated steam

A British Standard (B S 3213 1960) has been issued for hospital pressure-sterilisers for water and another British Standard (B S 3233 1960) specifies requirements for pressure steam sterilisers of small size and independent steam supply, used for the rapid sterilisation of unwrapped instruments and utensils

Central Sterile Supply Departments The Ministry of Health and the Department of Health for Scotland have approved the principle of central sterile supply departments, and the first to be set up under the National Health Service is at Musgrave Park Hospital, Belfast For a

detailed account see *Brit med J* ii/1960, 772 The establishment of central sterile supply departments which overcome the need for having expensive items of equipment such as high vacuum steam sterilisers dispersed throughout a number of hospitals provides advantages not only of economy but also of greater mechanisation and efficiency and adequate supervision by trained personnel It is generally accepted that central sterile supply departments will deal with all sterile articles except bedpans bowls theatre instruments and sterile pharmaceuticals For further information see *Lancet* i/1960 661 ii/1960 353 and i/1961, 152 *Brit med J* ii/1960 793 and *J clin Path* 1961 *14* 69

For an account of the scope function and organisation of the central sterile supply department in the Portsmouth Group Hospitals see Darmady *et al Hospital* 1960 *56* 824 See also Hopkins *Publ Pharm* 1961 *18* 78 on the planning and organisation of a central sterile supply department

For a discussion of the role of the pharmacist as the co-ordinator in the establishment of central sterile supply departments see *Pharm J* ii/1960 316

Tests for Sterility

Sampling (Vol II 23rd Edn p 924) In testing liquids suspensions and solids for sterility the *U S P* directs that 10 or more units from each steriliser load should be taken and 20 or more units from each batch of other products The units must be selected at regular intervals under specified conditions when dealing with aseptically filled products

Methods (Vol II 23rd Edn p 924) The use of membrane filters has an application in the technique of sterility testing The method consists of filtering a known volume of sample through a suitable membrane and culturing the membrane either on the surface of a nutrient agar plate or by immersion in a nutrient liquid medium The membrane can be washed free from inhibitory and interfering substances and substances with a bacteriostatic action such as streptomycin and neomycin can be removed Other strongly absorbed bacteriostatics such as quaternary ammonium compounds can be inactivated on the membrane where there is little chance of absorption or transfer of the inactivator to the culture medium The method can be utilised for the sterility testing of oils For further information see Sykes and Hooper *J Pharm Pharmacol*, 1959 *11* 235 T

Recent Developments in the Sterilisation of Surgical Materials

Recent developments in the sterilisation of surgical materials including surgical dressings syringes and packaging materials with particular reference to radiation sterilisation gaseous sterilisation sterility tests and hospital organisation including central sterile supply services are described and discussed in a Report on a Symposium held at the School of Pharmacy University of London April 1961 on *Recent Developments in the Sterilisation of Surgical Materials* (London The Pharmaceutical Press 1961)

DISINFECTANTS

Extra Pharmacopœia Vol II, 23rd Edn pp 926–42

Disinfection of the Skin

Extra Pharmacopœia Vol II, 23rd Edn p 934

The most recent investigations on disinfection of the skin have mainly been carried out on chlorhexidine, quaternary ammonium compounds and hexachlorophane

In an eighteen month trial in a maternity hospital, Murray and Calman (*Brit med J*, i/1955, 81) found that the use of a hand cream containing 1 per cent of chlorhexidine reduced the incidence of staphylococcal infection In a comparison of the antiseptic activity of chlorhexidine, domiphen bromide, phenoctide, Dettol, cetrimide, and benzalkonium chloride (*Brit med J* ii/1956, 200) they found dilutions which were necessary for a complete kill of *Clostridium welchii Cl tetani Pseudomonas æruginosa, Escherichia coli Staphylococcus aureus,* and *Streptococcus pyogenes* in 48-hour and 2½ minute tests None of the antiseptics killed tetanus spores in 2½ minutes at the dilutions recommended for obstetrics On the basis of the results, chlorhexidine was selected for use as a 1 in 2000 solution and as an obstetric cream and hand cream containing 1 per cent Lowbury (*Practitioner* 1957, *179*, 489) recommends pre operative skin sterilisation with a 0 5 per cent solution of chlorhexidine in 70 per cent alcohol

Staphylococcal cross infection was reduced in a maternity hospital by using an umbilical dusting powder containing approximately 0 33 per cent of hexachlorophane and by the nurses' use of a hand-cream containing 1 per cent of chlorhexidine (Gillespie *et al*, *Lancet*, ii/1958 1075)

In a comparison of several methods of hand disinfection, Lowbury and Lilly (*Brit med J* i/1960, 1445) made a count of viable bacteria emerging through pinholes in surgical rubber gloves and deposited inside the gloves Viable counts were approximately halved after 5 minutes surgical scrub with soap and water and usually further reduced to less than one tenth by the inclusion of 5 mg each of neomycin and bacitracin per gramme of glove powder, by a three minute rinse with 70 per cent alcohol with and without the addition of 0 5 per cent of chlorhexidine, and by using hexachlorophane soap or Phisohex for the scrub and for all ablutions during the week before the experiment Phisohex was found to be better for disinfection of the hands than hexachlorophane soap and 70 per cent alcohol more effective with the addition of chlorhexidine The regular use of hexachlorophane soap reduced counts of viable bacteria by about two thirds

In an investigation on the disinfection of the skin of operation sites Lowbury and Lilly (*Brit med J*, ii/1960, 1039) tested a number of disinfectants for their action on transient organisms and deeper resident organisms One per cent iodine in 70 per cent alcohol and 0 5 per cent chlorhexidine gluconate in 70 per cent alcohol were found to be equally effective in reducing the resident flora by approximately 80 per cent and in removing superficial *Pseudomonas æruginosa* Chlorhexidine did not appear to cause sensitisation, whereas some patients have been reported to be sensitive to iodine It was found that the following drugs were less effective in reducing the resident flora 70 per cent alcohol Aqueous Iodine Solution, an aqueous 0 5 per cent solution of chlorhexidine, and

Virac (a preparation of the iodophore undecoylium chloride iodine which is a complex of a quaternary ammonium compound and iodine, the preparation used contained 0·2 per cent available iodine) All the disinfectants were however, equally effective in removing staphylococci from the skin except 1 per cent and 2 per cent aqueous solution of cetrimide and a 0·1 per cent aqueous solution of Penotrane which were found to be less satisfactory

Disinfection of Air

Extra Pharmacopœia Vol II, 23rd Edn p 935

FUMIGATION In a survey of the practical aspects of formaldehyde fumigation (*Mon Bull Minist Hlth Lab Serv* 1958 *17*, 270) the following method is given for the disinfection of unoccupied rooms For every 2000 cubic feet 500 ml of Formaldehyde Solution is put into each of two two litre jars placed in buckets or on large trays To liberate formaldehyde gas 170 g of potassium permanganate is added to each jar The room should be well sealed and its temperature should be maintained above 18° if possible The exposure time should never be less than 3 hours preferably it should be more than 4 hours It is better if fabrics are removed and sterilised separately

β Propiolactone has been used experimentally by Feazel and Lang (*Soap & chem Specialties* October 1959 *35* 113) in the decontamination of a building at a concentration of 5 mg per litre of air at 24° and a relative humidity of 80 per cent Test spores of *Bacillus subtilis* var *niger* were killed after 2 hours There was no damage to paint or metal and the building was habitable after 2 days airing

Disinfection of Blankets and Bedding

Many workers have reported streptococcal and staphylococcal contamination of hospital blankets and recent studies of hospital infections have emphasised the desirability of disinfecting hospital mattresses and blankets Most methods evolved have been aimed at the removal of gross contamination they diminish the risk of cross infection but do not produce a blanket which is completely sterile The most satisfactory methods utilise a non ionic detergent and a quaternary ammonium compound and it is possible thereby to remove more than 99 per cent of the organisms originally present (Thomas *et al* *Guy's Hosp Rep* 1959 *108* 446) Care must be taken to see that the quaternary ammonium compounds are not neutralised by residual soap or anionic detergents in the laundry machinery After frequent washing with quaternary ammonium compounds the inhibitory effect of the blanket fibres on bacterial growth appears to increase These compounds are however ineffective against *Mycobacterium tuberculosis* *Pseudomonas aeruginosa* and bacterial spores. For descriptions of methods of laundering blankets with non ionic detergents and quaternary ammonium compounds see Steingold *et al* *J appl Bact* 1954 *17* 159 Blowers and Wallace *Lancet* i/1955 1250 Schwabacher *et al* *Lancet* ii/1958 709 and Gillespie and Robinson *J clin Path* 1959 *12*, 351

All non sporing organisms and some sporing organisms may be destroyed by boiling, blankets under controlled conditions The Wool Research Laboratories of the Commonwealth Scientific and Industrial

Research Organisation (*Progress Report*, 1959, per *An Interim Report on the Cleansing and Sterilisation of Hospital Blankets*, King Edward's Hospital Fund for London, 1959 52) state that wool can be boiled safely under acid conditions the pH of maximum stability being about 3

Investigations are being made to find a process for heavily contaminated blankets which will guarantee final sterility Although formaldehyde vapour has been widely used for this purpose, the process takes time and cannot be regarded as completely effective Caplan (*Lancet*, 1/1959, 1088) devised a method for the regular disinfection of woollen blankets and bedside curtains using formaldehyde vapour in vacuo at a temperature of 40° to 60° for 20 minutes A report of a Committee on Formaldehyde Disinfection of the Public Health Laboratory Service (*J Hyg*, *Camb*, 1958, *56*, 488) states that formaldehyde disinfection is most effective in high concentrations at high temperatures and at a relative humidity of 80 to 90 per cent The Committee considers that formaldehyde gas cannot be recommended for the disinfection of fabrics contaminated with smallpox virus, anthrax spores, or tubercle bacilli.

A process of dry-cleaning and disinfecting blankets whereby it is claimed that blankets can be both cleaned and sterilised without physical or chemical deterioration of the fabrics, has been described by Finch (*Pharm J*, II/1958, 491) Disinfection is effected by dispersing a solution of formaldehyde and a quaternary ammonium compound in the dry cleaning fluid used in the process Larkin *et al* (*J clin Path*, 1961, *14* 80) have described a method of disinfecting blankets with a mixture of halogenated alkyl and aryl phenols

Ethylene oxide may also be used to sterilise bedding but authorities disagree on the concentration necessary Foter (*Soap & chem Specialties* April 1960, *36*, 73) states that it requires 2 hours at a concentration of 1000 mg per litre at a temperature of 54° to 57° and a relative humidity of 30 to 50 per cent but Thomas *et al* (*Guy's Hosp Rep*, 1959, *108*, 446) found that *Staphylococcus aureus* and *Salmonella typhi* survived 12 hours' exposure to a concentration of 14 per cent by volume when protected by two layers of blanket Experiments have been made using β propiolactone which, however is slower in penetrating porous materials

In an investigation of disinfectants for bedding, Foter (loc. cit) compared a number of different methods in current use Spores in cotton-felt mattresses survived dry heat at 110° for 2 hours Foam rubber was affected by dry heat at 110° and by autoclaving at 120° but could be sterilised by subjecting to formaldehyde vapour at a concentration of 376 mg per cubic foot of air for 6 hours at a temperature of 65° to 75° and 60 to 70 per cent moisture

To prevent recontamination of sterile blankets McGilvray and Hall (*Lancet*, 1/1960, 1353) consider that the most economical method is to store them in cellophane bags in a fibre case in a cupboard where there is no used bedding, they state that blankets so stored remain bacteriologically clean for at least 12 weeks

For further information see *An Interim Report on the Cleansing and Sterilisation of Hospital Blankets*, King Edward's Hospital Fund for London, 1959

BLOOD TRANSFUSION

Clinical Uses. Blood transfusion may be indicated for anæmia due to depletion of erythrocytes, for diminished blood volume (oligæmia) due to bleeding, or for plasma loss in crush injury or burns, it may be useful in disorders of clotting, e g hæmophilia and hypofibrinogenæmia Deficiency anæmias, e g pernicious anæmia, or anæmia due simply to lack of iron, are best treated respectively with vitamin B_{12} or iron For such anæmias transfusion is seldom, if at all, indicated and, moreover, is risky because the heart muscle, enfeebled by chronic anoxia, may be unable to deal with the added burden of transfusion so that circulatory failure, perhaps fatal, ensues Some anæmias especially if chronic, are ideally treated by transfusion of concentrated red cells, particularly if the recipient does not require the donor plasma The fluid of choice for correcting depleted blood volume due to hæmorrhage is whole blood, but an excellent substitute for whole blood is human plasma Blood substitutes, such as dextran or acacia, are best only used if blood or plasma is not available Plasma is advantageous in that in the dried state it keeps satisfactorily for several years, does not require refrigeration and, moreover, blood grouping and compatibility tests are unnecessary In hæmorrhage the need for transfusion is determined by the volume of blood lost and the severity of injury In severe hæmorrhage the blood pressure is very often a reliable clinical guide to transfusion Blood loss in excess of 2 pints is likely to prove serious if uncorrected, particularly in the seriously ill and debilitated subject In burns and in crush injury much plasma may be lost into the damaged tissues so that hæmo-concentration results, hence transfusion of plasma is required However, in burns, when there has been destruction of the patient's red cells, transfusion of whole blood is also of value The chronic hypoproteinæmia of inanition, as in chronic disease of the alimentary tract, should be treated by a high protein diet since transfusion is of little value In hæmophilia the transfusion of fresh plasma is often of value as, also, fresh blood Fresh plasma for hæmophiliacs may be stored frozen but not longer than 12 weeks since, after that time, its anti hæmophilic globulin deteriorates Hypofibrinogenæmia of serious degree may be encountered, rarely, in lung surgery and in parturition. In this condition severe bleeding develops and may be controllable by transfusion of human fibrinogen (2 or 3 g), but transfusion of blood or plasma, or both, will be needed in addition to restore blood volume Hæmolytic disease of the newborn may require treatment by exchange transfusion, though some infants may be treated simply by transfusion of concentrated red cells

The value of whole blood transfusion lies essentially in the transference of red cells and of plasma proteins to the recipient Fresh blood transfusion for giving leucocytes and platelets to the pstient is not effective with conventional rubber glass apparatus, since these bodies either do not survive in citrate solution or they disintegrate on contact with the water-wettable surfaces It is as yet doubtful whether plastic or siliconed apparatus is effective for transfusion of leucocytes or platelets The transfusion of plasma from patients convalescent from chickenpox, measles, rubella and mumps is a valuable protective measure for persons who have never had these diseases and have recently been exposed to them, the convalescent plasma must be collected not sooner than 3 weeks, and not later than 12 weeks, after the onset of the illness

In a transfusion the donor corpuscles must be compatible with the recipient's serum and the donor plasma must not contain antibodies harmful for the recipient's erythrocytes The golden rule should be to transfuse homologous blood, i e the donor's blood group should be the same as that of the recipient However, it may occasionally be expedient, even necessary, to transfuse group O blood to a recipient not of group O Again, Rh negative blood, because of lack of Rh+ blood, may have to be given to an Rh positive (Rh+) patient, but transfusion of Rh+ blood to Rh-negative patients, especially females, is to be avoided as harmful or potentially so The injection of Rh+ blood to Rh-negative recipients, whether by the intravenous route or otherwise, is likely to sensitise the recipient, male or female, to the Rh factor Transfusion of Rh+ blood to Rh-sensitised recipients will be incompatible and, therefore, dangerous The consequences of Rh-sensitisation for Rh-negative mothers on childbearing are likely to prove serious, or disastrous, since any Rh+ offspring born to them are likely to be affected, probably seriously, with hæmolytic disease and, in fact, will often be stillborn It is clearly important in all transfusions that recipients receive blood of the same ABO and Rh groups as themselves

HUMAN BLOOD GROUPS

Eleven genetically independent antigen systems in human erythrocytes are known No linkage, i e carriage on the same chromosome, has been encountered among the known blood group systems, nor has linkage between them and the sex character been detected In transfusion the ABO and Rhesus (Rh) systems are the most important Very rarely, antigens other than those of the ABO and Rh systems may cause trouble in transfusion, e g the Duffy, Kell, or S antigens The blood group systems in man at present known are the following, namely ABO, Diego, Duffy, Kell, Kidd, Lewis, Lutheran, MNS, P, Rhesus, and Sutter

THE ABO BLOOD GROUP SYSTEM

The ABO blood groups are determined by two agglutinogens A and B, the presence or absence of which on the red cells gives rise to the four groups AB, A, B, and O Group O is recognised by absence of A and B There are two specific isoagglutinins, namely anti-A and anti-B, the former being specific for agglutinogen A and the latter for agglutinogen B, the agglutinins are present in the serum These agglutinogens are inherited according to Mendel's laws The agglutinins (or isoantibodies) are nowadays expressed in terms of the agglutinogen (or antigen) with which they react Thus, in the ABO system, anti-A reacts only with the A agglutinogen while, in the Rh system, anti-E reacts only with the E antigen, etc The terms alpha (α) for anti-A and beta (β) for anti-B are no longer used Table I shows the composition of the ABO system

Since the serum of group AB persons contains neither anti A nor anti B isoagglutinins such persons are termed 'universal recipients' since they may safely receive the red cells from persons of any ABO group Group AB red cells may only be given to group AB recipients and not to recipients of any other group Erythrocytes of group O, since they lack the agglutinogens A and B, are not agglutinated by the isoagglutinins anti-A and anti B, so may be safely transfused to persons of any group Accordingly, group O is the so-called 'universal donor', but this term

TABLE 1

Blood Group	Agglutinogen content of erythrocytes	Isoagglutinin content of serum
AB	A and B	None
B	B	anti A
A	A	anti B
O	O (i.e. lacks A & B)	anti A & anti B

The percentage distribution of the groups varies in different races as shown in Table 2

TABLE 2

People	Blood Group			
	O	A	B	AB
Gypsies (Europe)	31	27	35	7
Maoris (Polynesians)	40	56	3	1
English	47	42	8	3
S. American Indians	100	0	0	0

is an unsatisfactory one for it applies only to the red cells. About 20 per cent of group O donors have potent anti A or anti B isoagglutinins and may in addition have hæmolysins for A or B cells. These hæmolysins are apt to appear in the sera of persons who have had prophylactic inoculations of Tetanus Toxoid or T.A.B. Vaccine since such may contain A or B substance of animal origin. Horse serum naturally contains an A antigen which may therefore be present in sera made by immunising horses against tetanus or diphtheria. Group O whole blood having potent anti A or anti B antibody may destroy red cells of recipients of groups other than O and this may prove fatal. The group O donor whose serum contains potent anti A or anti B antibodies including A or B hæmolysins is designated a dangerous group O donor and such group O blood is unsafe for transfusion to patients not of group O. For the reasons stated the term universal donor is best abandoned. Some group A or B donors may also have potent antibodies in their serum and their whole blood should not be transfused to group AB recipients. The serum antibodies occur in the globulin fraction and in hypogammaglobulinæmia the serum may lack the expected anti A and anti B or contain only traces of them.

In transfusion it is important that antibodies in the donor plasma shall not be sufficiently potent to cause destruction of the recipient's red cells e.g. as when group O blood is given to AB, A or B recipients. Subject to this group A persons may receive A or O blood but can only donate to A or AB recipients. Group B persons may receive B or O blood but can only donate to B or AB. The blood of A, B and O donors may be given to group AB recipients but group AB blood may be transfused

independently of them Secretor genes do not influence the ABH antigens on the red cells, it is the ABO genes which determine the corresponding antigens in cells, body fluids, and secretions For example a group B non-secretor father may have a group B secretor child, the latter inheriting the secretor gene, or trait, from its secretor mother Apparently absence of Se, or presence of se se, interferes with the formation of water soluble blood group substance so that it does not appear in the saliva

Group A secretors secrete A substance, group B secretors secrete B substance, while group AB persons secrete both A and B substance If group substance is absent from an individual's saliva it is absent also from other secretions e g gastric juice seminal fluid, and tears Group O *secretors have no* O *antigen substance in their saliva* but they secrete a soluble antigen substance called H

Anti-H and Anti-O *Antisera* which detect H substance are called anti-H, but they are not anti O since they do not react specifically with the O antigen Anti H, therefore, does not distinguish between A_1A_2 and A_1O Almost all human red cells contain H substance and, to some extent, react with anti H Group O and A_2 cells react better with anti H than do group B or A_1 cells *All secretors, irrespective of ABO group, have H substance in their saliva sufficient to neutralise anti H No A, B or H substance is found in saliva of non secretors though they have it on their red cells* Group A *secretors secrete both* A and H *substance* in the saliva, while group O secretors secrete only H substance, etc Sera formerly termed anti A_2 are now classified as anti O or anti H Distinction between anti H and anti O depends on neutralisation of anti H by H substance in secretor saliva whereas anti O is not so neutralised Human sera containing anti-O which react with most group O bloods are occasionally found A specific anti O serum would react with all bloods containing the O antigen (i e OO, AO, and BO), but such antibody occurs very rarely, if at all

Detection of ABH Substances The ABH substances in body fluids or secretions are detected by inhibition tests For example, if group A saliva (boiled or autoclaved to destroy enzymes) from a secretor is mixed with an equal volume of group B or O serum, the anti A agglutinins may be partially or totally neutralised, as shown by testing the treated serum with red cells of the appropriate group This test, using suitable dilutions of saliva and serum, is used for detection of secretors

Anti H occurs in the serum of some animals, e g cats, dogs, and eels and, also, in saline extracts of certain seeds, e g *Ulex europæus*, rarely anti H occurs in the serum of group A_1B persons *Ulex europæus* anti H is satisfactory for detection of H substance H substance in saliva is tested for by an inhibition technique similar to that used for detecting A or B substances Secretors of any ABO group will have H substance in both saliva and red cells Saliva of all secretors will neutralise, or inhibit, anti H agglutinin, so that it no longer agglutinates O cells

Antigenic Properties of Human Saliva. Group A or B substance in saliva of secretors of groups A, B and AB is antigenic Thus, injection of saliva (boiled to destroy enzymes) of group A secretor persons into group O or B subjects enhances the titre of the recipient's anti A agglutinin Similarly, injection of saliva of group B secretors into group A or O persons evokes a rise in titre of the anti B agglutinin. In this way high

titre sera suitable for ABO grouping tests have been produced but better results accrue from the use of commercial blood group substances

Commercial Blood Group Substances Polysaccharides closely resembling human blood group substances occur widely in the animal kingdom Commercial group specific substance A is prepared from hog stomach and AB substance is prepared from horse stomach such purified group substance is antigenic since its injection into recipients of the appropriate ABO group evokes marked immune response Thus A substance injected into group B or O recipients evokes not only a marked rise in titre of the anti A agglutinin but also increases its avidity Group specific substances may be used to neutralise anti A or anti B agglutinins e g in the plasma of group O whole blood for transfusion to recipients of groups AB A or B but such practice is not recommended This is because the group specific substances added to blood may not all be absorbed by the isoagglutinins and therefore a recipient of such treated blood if of appropriate ABO group may respond by making immune anti A or anti B antibodies Accordingly it is inadvisable to give such treated blood to females who may bear children since immune anti A or anti B made by a mother may attack the red cells of her fœtus if they have the relevant A or B antigen and cause haemolytic disease

Agglutinogen A or B Substance in Plasma or Serum Most group AB A or B persons have A or B agglutinogen substance in their serum (or plasma) and this substance will neutralise or partially inhibit the corresponding agglutinin For example if group B serum is mixed with an equal volume of group A serum the B substance in the group B serum will either totally or partially inhibit the anti B agglutinin of the group A serum and vice versa In a transfusion in which the recipient is group AB A or B and the donor's plasma contains incompatible agglutinins anti A or anti B any agglutinogen substance A or B present in the recipient's plasma will to some extent neutralise the introduced incompatible agglutinin thus affording some protection to the recipient's erythrocytes However the degree of protection afforded necessarily depends on the amount or strength of blood group substance present in the recipient's plasma and also on the potency of the introduced incompatible agglutinins The latter if potent and if introduced in sufficient amount are not likely to be sufficiently inhibited by agglutinogen substances in the recipient's plasma to obviate harm to the recipient's red cells

The agglutinogen substance A or B in human plasma or serum is antigenic Thus group B plasma (or serum) free of red cells and Seitz filtered will when transfused to a group A or O recipient cause a rise in the titre of the anti B agglutinin of the recipient Such immune response may obtain even though tests *in vitro* do not reveal A or B agglutinogen substance in the donor plasma Apparently human plasma or serum may contain blood group substances A or B whether or not the subject is a secretor There appears to be little difference in the amount of group substance found in the serum of secretors as compared with non secretors

Modifying Genes. Very rarely seeming anomalies in the inheritance of the ABO groups are encountered these being explicable by what are termed modifying genes such genes interfere with the expression of other genes

The X-x genes influence the placing of B or H antigen on cells and in saliva, but it is not known whether the A gene is influenced Apparently in the homozygous state xx the B antigen is not placed on the red cells The influence of these modifying genes may be revealed by family studies, as in the following example A mating of a group O, Xx husband with a group B (BO or BB) Xx wife could result in offspring who inherited the B gene but did not have the B antigen on the red cells such offspring would, therefore, be apparently group O and, presumably, homozygous xx Such an 'O female, mated with a male of group A_1, Xx type, would, by bearing offspring of group A_1B, Xx and OO, Xx reveal that she has the B gene Of great interest is the rare type of blood termed 'Bombey' (where it was discovered) Red cells of 'Bombay' blood are not agglutinated by anti A, anti B, or anti H sera, while the serum contains anti A, anti-B, and anti H, in such blood the expected B and H antigens are absent from red cells (and saliva)

Expression of the A gene is influenced by a gene termed Y and its allele y The rare gene y, in the homozygous combination yy, inhibits development of the A antigen in red cells and, to a lesser extent, in saliva Apparently the gene Y does not affect the B and H antigens

Blood Group Chimæras Bovine twins, *in utero*, may have vascular anastomoses and consequently, primordial red cells of one twin may pass to, and take root, i e become grafted in the tissues of its twin Haemopoietic tissue so grafted survives and produces red cells throughout life and, therefore, if the twins are of different blood groups, the twin having the graft will evidently, when grouped, have red cells of two different groups Moreover the two blood groups may be incompatible This paradox is explicable on the grounds that embryonic cells are apparently unable to produce antibody Hence, if foreign antigen is introduced into an embryo before a critical point is attained in its development, the embryo tolerates it and continues to do so in adult life, this is termed acquired immunological tolerance An individual with such a mixture of blood groups is termed a 'chimæra' and a few examples have been discovered in human twins Those reported thus fer have all been mixtures of groups O and A The person harbouring the graft transmits in the gametes only the genes of his or her, inherited blood group, but cannot transmit the genes for the antigens of the acquired or grafted group

Blood Group Antigens in Disease Rarely seriously ill subjects afflicted with chronic disease e g cancer may acquire temporarily a B like antigen on their erythrocytes so that these then react with anti B sera though not with anti B in their own serum In some diseases e g leukæmia occasional group A patients have been encountered the agglutinability of whose red cells by anti A serum became much reduced These phenomena are transient and are apparently in some way due to the patient s disease, but they are of importance since they may result in errors in blood grouping of the erythrocytes

Immune Anti-A and Anti-B Anti A and anti B agglutinins may have immune properties and these may result from (a) injection of incompatible red cells, (b) transfusion of group A, B or AB plasma into recipients lacking the A or B antigens, (c) passage of red cells or antigens of the fœtus into the maternal circulation, e g infant group A and mother group O, (d) injection of group specific substances as in human saliva extract of human ovarian cyst fluid, or commercial blood group substances, and (e) injection of Tetanus Toxoid or T.A B Vaccine containing A or B substances of animal origin Some persons may, however, have anti A

or anti-B with immune properties for which the stimulus is not known Immune antibody due to injection of incompatible blood is usually transient, lasting only a few weeks, but that following injection of commercial group specific substances is more enduring Immune anti-A or anti-B may pass from mother to fœtus and cause ABO hæmolytic disease

Immune properties which may be shown by anti-A and anti-B antibodies are as follows Immune antibody reacts better at 37° than at room temperature The agglutinin active in saline may be of high titre, i e 512 or more Most immune sera have hæmolysins *in vitro* for group A or B, but not O, cells Immune sera may have higher titre in protein media than in saline Anti-A or anti-B agglutinins active in saline may be neutralised by group specific substance (as in saliva or commercial group substance) and such neutralised immune serum may not agglutinate cells in saline but may still do so in serum Further, neutralised immune serum may sensitise group A or B cells so that they react positively in the indirect anti-human-globulin test of Coombs (see p 111) Immune serum may show prozone on titration, i e such serum used undiluted may cause little or no agglutination but, when diluted, causes distinct agglutination. Further, undiluted serum which zones may block or coat cells so that they will not be agglutinable by serum containing agglutinins active in saline, but such blocked cells will, after washing, be agglutinated by anti-human-globulin serum

Hæmolysins. Immune antibodies may be dangerous in transfusion because of hæmolysins for cells containing A or B antigen and, therefore, the serum of all group O, A, and B donors should be tested for hæmolysins A suitable test is to mix in a tube equal volumes of serum and washed red-cell suspension (5 per cent strength in saline), the tests should include group A, B, and O cells, the latter as controls The cells should, preferably, be fresh and never older than 24 hours Serum should not be older than 24 hours since, thereafter, complement may be lacking If the serum is older than 24 hours, complement may be provided by adding a little fresh group O serum which lacks hæmolysins and has low titre agglutinins The mixture should be incubated at 37° for an hour Hæmolysin is indicated by hæmolysis, partial or complete, of the group A or B cells, or both, but there must be no hæmolysis of the O cells

Tests for High Titre Agglutinins. In order to provide serum for ABO blood grouping the serum of all group A, B, and O donors should be tested for high titre agglutinins For large numbers of sera a screening test is necessary, but if only a few sera are to be tested the screening test may be omitted and they may be titrated directly In the screening test the serum is diluted 1 in 20 in normal saline and three drops of diluted serum are then mixed in a tube with an equal volume of a 3 per cent red-cell suspension in saline After 2 hours the test is read by sharply flicking the tube with a finger and, if agglutination is visible macroscopically, the serum probably has strong agglutinins and, therefore, is titrated in saline A serum is suitable for grouping if the titre, as read macroscopically, is not less than 1/32 with A_1 cells, 1/4 with A_2 cells, and 1/16 with B cells Blood containing high titre anti-A or anti-B agglutinins in saline may, in transfusion, destroy the recipient's red cells if incompatible with them Therefore, apart from finding high titre sera suitable for blood grouping, it is also necessary to know which group A, B, or O bloods

contain high titre agglutinins in saline since such bloods should be used only for strictly homologous transfusion

Hæmagglutinins from Plants Saline extracts of certain seeds agglutinate human red cells These extracts are known as lectins or phytagglutinins and some give specific reactions The agglutinating substance is not a true agglutinin. Extract of *Vicia cracca* diluted agglutinates group A cells but not B or O cells Moreover its reactions are stronger with A_2 than A_1 cells while group B or O cells do not absorb the agglutinin for A cells The Lima beans *Phaseolus limensis* and *Phaseolus lunatus* yield the best anti A Extracts of *Dolichos biflorus* are rich in anti A and will precipitate saliva of A_1 but not A_2 secretors Some seeds contain anti B e g *Bandeiræa simplicifolia* but no good anti B from seeds has yet been found Good anti H can be extracted from seeds of *Ulex europæus* Anti H may be extracted also from seeds of *Cytisus sessilifolius* *Lotus tetragonolobus* and *Laburnum alpinum* Anti N occurs in saline extracts of seeds of *Vicia graminea* and *Bauhinia purpurea*

Polyagglutinability Very rarely samples of red cells are encountered which are agglutinated by normal sera with which they should be compatible Polyagglutinable cells are not agglutinated by the subject's own serum This polyagglutinable property is transient lasting but a few weeks or months and has usually been found in diseases due to bacterial infection but it has also been observed in apparently normal persons In order to diagnose polyagglutinability fresh sterile blood samples must be used since infected red cells may become agglutinable by any serum (Thomsen phenomenon—see below) Also sera infected with certain bacteria may become capable of agglutinating all samples of red cells

DETERMINATION OF ABO BLOOD GROUPS

Blood Samples Whole clotted blood is used Blood samples for grouping should be fresh and, preferably not older than 24 hours At least 2 ml of blood is necessary For blood collection dry sterile syringes should be used Syringes and needles which have been kept in spirit, or other antiseptics should not be used, since mere traces of these substances may cause hæmolysis For newborn infants cord blood suffices Alternatively blood can be collected from a baby by stabbing the heel from the side (but avoiding the bone) using a large needle having a cutting edge If red cells only are to be used, the blood may be collected into citrate solution Aged hæmolysed, or infected blood samples are unsuitable for grouping tests Infected red cells may become agglutinable by any serum (Thomsen phenomenon of panagglutination)

Glassware Clean glassware well washed in tap water and dried is essential In the cleaning process the tubes should have been boiled If a detergent is used it is essential to ensure that no trace of it remains in the tubes since certain detergents may cause hæmolysis or may inhibit agglutination.

Selection of Blood Grouping Sera In selecting sera for use in blood grouping the following points are important

1 **Specificity** The serum must be specific e g group B (anti A) serum must react only with group A cells

2 **Titre** The serum must have high titre (i e potent) agglutinins

3 **Avidity** Grouping sera must be avid i e react rapidly and well with red cells having the corresponding agglutinogen Tests for avidity are done on a tile or glass slide A drop of serum is mixed with a drop of 10 per cent suspension of washed red cells in saline and the tile or slide is then gently rocked *A suitable serum* causes good agglutination in less than 30 seconds Some potent sera may cause only feeble agglutination by this test because of prozone and are clinically would not be suitable for blood grouping It is essential that group B (anti A)

serum react with the A_1 and A_2 agglutinogen in A_1, A_2, A_1B and A_2B bloods. Likewise group O (anti A plus anti B) serum must react with A_2 as well as with A_1 blood. An anti A serum which fails to react with the A_2 agglutinogen is unsuitable for blood grouping purposes.

4 *Undesirable Properties.* *Grouping serum must not cause rouleaux, must not contain auto- or cold agglutinin, must not contain 'extra' agglutinins such as anti P, anti Rh, etc., must not show prozone and must not contain hæmolysins.* However, potent sera containing A or B hæmolysins and/or which show prozone may, after inactivation or suitable dilution, be satisfactory for blood grouping.

5 *Fat and Turbidity.* *Fatty or turbid sera are unsuitable.* However, *some fatty sera may often be cleared by filtration through a No. 1 Whatman filter paper.* Turbidity due to fibrin particles may be cleared by centrifuging.

6 **Bacterial Contamination.** Bacteria may rapidly multiply in serum, particularly at room temperature. Profuse growth of bacteria may cause serum to have a milky appearance and may render it malodorous. Infected serum may cause *false positive reactions and may agglutinate all bloods (Thomsen phenomenon of panagglutination). Alternatively infected sera may lose titre and may then cause false negative reactions.*

Storage and Handling of Sera. Sera selected for grouping should be inactivated by heating for 20 minutes at 55° in a water-bath. Grouping serum is best Seitz filtered into sterile containers (small bottles fitted with metal screw caps are best) to ensure sterility. Filtration causes little or no loss in titre. Serum should be dispensed in amounts not exceeding 2 ml. per container and the container should be so sealed, e.g. with Viscap, that the seal must be broken in order to open the container or to sample its contents. Each container must be labelled as to its contents (e.g. group B (anti A) serum), identification number, date prepared, conditions of storage, etc.

Contamination of grouping serum must be avoided and therefore a dry sterile pipette should be used for taking serum from its container. Liquid serum must be stored frozen since at little above freezing point certain bacteria may multiply in serum. Serum preserves well for long periods if stored at −20°. Frozen serum must, after thawing, be well mixed, otherwise a dense layer of serum protein remains at the bottom of the container. Serum when in use should only be out of cold storage for a brief interval. Dried grouping serum may be kept at room temperature but once reconstituted must be stored frozen. Dried sera keep well for a year or more. The addition of an antiseptic, e.g. phenol, to serum as a preservative is not recommended since this does not ensure good preservation.

Method of Tests. Blood grouping tests should be done only by trained workers, or under their supervision, since errors are very apt to be made by inexpert workers. Mistakes may result in incompatible transfusions which may prove fatal. Grouping sera used are anti-A (i.e. group B) serum, anti-B (i.e. group A serum) and anti-A plus anti-B (i.e. group O serum). The group of an unknown blood is determined by mixing its red cells with anti-A and with anti B serum. Group O red cells lack the A and B agglutinogens, so will not be agglutinated by either of these sera but, on the other hand, group AB cells will be agglutinated by both sera. Group A cells are agglutinated by anti A serum, but not by anti-B serum. Group B cells are agglutinated by anti B serum but not by anti A serum. The agglutination reactions are shown in Table 5, p. 104.

It is advantageous to group red cells not only with group A and group B sera but, also, with group O serum. Group B and O sera must be tested to ensure that they react with the weakly reacting agglutinogen A_2 (see p. 105). It is a useful precaution to test the cells of every blood with group O serum (see pp. 104–5) particularly when many bloods are grouped.

same way as with the test with group B serum just described The erroneous classification as group O of bloods containing weakly reacting A agglutinogen will be revealed if the cells of all bloods grouped as O are further similarly tested with potent anti A of group B and with group O serum and the tests read as just described

Anti A_1 Some 2 per cent of group A_2 persons and 25 per cent of A_2B have anti A_1 in their serum Anti A_1 reacts with the A_1 agglutinogen but not with A_2 A_3 or A_4 agglutinogen The interpretation of a grouping test may be rendered difficult by the presence of anti A_1 in the subject s serum Thus an A_2 blood having anti A_1 in its serum may seem from the tests on its serum to be group O since its serum reacts with the A_1 and B control cells used in the tests The difficulty will be cleared up by testing the serum with A_1 and A_2 cells for the latter will not be agglut nated Moreover if the tests for weak A agglutinogen as described are applied the correct interpretation of the group will invariably be assured

Errors in Grouping False positive readings may be due to con taminat on of cells or serum or to wrong interpretation of auto or cold agglutination roulesux or simple aggregation of red cells as true agglu tinat on False negative readings may be due to (a) use of sera which have lost ability to agglutinate (e g from ageing or infection) (b) failure to detect a weak agglutinogen (e g A_2 in A_2B blood) (c) use of unsuitable (e g aged or infected) blood samples and (d) use of sera having low avidity or which show prozone Errors will generally be revealed by the use of controls The most frequent source of error, however is clerical and not technical The utmost care should be taken in the labelling or marking of tubes and in the recoeding of results A mix up in tubes or addition of serum to the wrong tube may result in an error e g a blood of group A being read as group B

THE RHESUS FACTOR

Rh Antigens and Antibodies The Rhesus or Rh factor is very important in transfus on The Rh group is determined by a complex of antigens present on the red cells Rh groups are independent of the ABO groups and like them are inherited accoeding to Mendel s laws and are not sex linked Racial distribution of the Rh groups like the ABO groups varies The Fisher Race classification originally postulated six Rh antigens namely C D E and their alternat ves c d and e As originally postulated each individual has one pair of homologous chromosomes which carry the Rh genes that is one Rh bearing chromosome is derived from each parent There are three loci for the Rh genes on these chromo-somes and these loci are respectively occupied by the genes D or d C or c and E or e That is each locus bears only one or other but never both of the allelomorphs of each pair of genes The genes on the chromosomes determine the Rh antigens on the erythrocytes and the antigens can be identified by the correspond ng Rh antibody It seems the Rh genes lie closely together on the chromosome and in the order DCE or their respective alleles Linkage is so close that the Rh gene complex is in herited as a unit one from each parent Thus an individual may derive DCe from one parent and dce from the other and the formula for such a blood would be *DCe/dce*

The most important Rh antigen is D Blood having D is termed D positive Rh positive or Rh+ Blood which lacks D is termed D neg ative or more loosely Rh negative Some 83 per cent of white Europeans

to give D+ blood to D-negative recipients, it is almost invariably safe to give D-negative blood to D+ recipients Nevertheless, the transfusion of D-negative blood, particularly Rh-negative (cde/cde), to D+ recipients should be avoided, since D negative blood is scarce (only 17 per cent of persons are D negative)

Any Rh-sensitised person, whether sensitised by transfusion or pregnancy, who subsequently receives blood containing the sensitising Rh-antigen will respond by destroying abnormally rapidly the red cells of the transfused blood If strong Rh antibodies are present in the recipient s blood when the Rh incompatible blood is transfused the donor corpuscles may be so abruptly destroyed that hæmoglobinuria and jaundice occur However, if Rh sensitisation occurred many years previously, and there has not since been any Rh-incompatible transfusion or pregnancy, only a mild febrile reaction may occur but the transfused Rh incompatible red cells will be abnormally rapidly eliminated, in such cases the donor corpuscles may survive only a few days, or a week or two, instead of the normal period of about 120 days

When an unsensitised Rh negative person is given Rh+ blood no apparent reaction occurs and the donor corpuscles may survive normally, that is they survive in the recipient's circulation for some 120 days However, in about 50 per cent of such transfusions the recipient becomes Rh sensitised and the effect of this may be to shorten appreciably the normal survival *in vivo* of the transfused red cells, e g to about 60 days, or less In such cases there is no apparent clinical reaction and the abnormally rapid elimination of the donor cells is termed 'inapparent hæmolysis' Rh antibodies will not, as a rule, be detectable in the recipient's serum so long as the sensitising Rh+ cells are surviving in the recipient's circulation It is to be noted that a single transfusion, or injection, of D+ blood to a D negative recipient may suffice to sensitise the recipient. Once sensitisation has occurred to D any further transfusions of D+ blood will be incompatible The same applies to any other antigen and its corresponding antibody From what has been stated it will be clear that *for safety in transfusion, and to avoid sensitising females of childbearing or pre childbearing age, the golden rule must be that Rh negative, or D-negative, persons must only be transfused with blood of exactly the same group as themselves, they must not be given D+ blood* In transfusions of Rh+ (D+) blood to Rh+ (D+) recipients it is rare for sensitisation to any other Rh antigen to occur, though why this is so is not understood The same applies in pregnancies of D+ mothers with D+ fœtuses It is very seldom necessary, therefore, when giving D+ blood to a D+ recipient, to take account of the Rh antigens other than D In about 14 per cent of matings in Britain the husband is D+ and the wife D-negative and in roughly one in every ten pregnancies the mother will be Rh negative and the fœtus Rh positive About one in twenty Rh-negative women bearing children by Rh+ men will be Rh sensitised, but only about one in thirty Rh-negative women will, regardless of the Rh type of the husband, ever bear children affected with hæmolytic disease of the newborn In 93 per cent of cases of Rh sensitisation through pregnancy the mother is sensitised to D, usually by itself, though sometimes with other Rh antigens such as C or E In the remaining 7 per cent of cases the mother is D+ and sensitised to antigens such as E, c, C, C^w, or e (the last three very rarely)

In a mating of a D negative wife with a D+ husband not all the infants will be D+ If the husband is D/D all offspring will be D+, i.e

D/d If the husband is of genotype D/d then half the offspring will be D+ (D/d) and half will be D negative (dd) If the antibody in the mother s serum is anti D then only the D+ infants will have hæmolytic disease This disease is rare in first babies, unless the mother has been previously sensitised by transfusion to an antigen present on her infant s red cells Once a mother has been Rh sensitised whether through transfusion or pregnancy, all subsequent infants carrying the peccant blood group antigens will have hæmolytic disease The commonest cause of jaundice in the newborn is hæmolytic disease due to the Rh factor For the clinical aspects and treatment of the disease textbooks of medicine should be consulted Here it will suffice to say that the disease is responsible for many stillbirths and that live born severely affected infants may only be saved by transfusion usually exchange transfusion

Rh Grouping Clotted blood as for ABO grouping, should be provided so that the cells may be Rh typed and the serum investigated for irregular antibodies In routine Rh grouping only anti D serum is used Control tests are necessary with O Rh+ cells and with Rh negative cells of A, B, and O groups to ensure the specificity of the serum Control tests in saline of the red cells of every blood being tested should also be included Since Rh grouping is complementary to the routine of ABO grouping the tests for auto (or cold) agglutinins rouleaux and irregular antibodies in the serum of the blood being grouped will have been done Small precipitin tubes of 5 or 6 mm internal diameter and 50 mm in length are suitable for Rh typing Since Rh sera are scarce it is necessary to use small volumes in Rh typing tests It is usual to use a unit volume of one drop, or 0 02 ml One volume of anti D serum (which is active in saline) is mixed in a tube with one volume of a 3 per cent strength of washed red-cell suspension in normal saline and the cell serum mixture is then incubated at 37° for one hour or preferably, two hours In a strong positive reaction the agglutinated cells settle out in a characteristic way at the bottom of the tube and when examined with a hand lens show a typical wrinkled or crenated appearance the stronger the serum the more typical the appearance (a like finding is seen in agglutination caused by anti A and anti B antibodies) When a negative reaction is examined with the hand lens the sediment of cells is seen to be circular and smooth and, if the tube is held at an angle the cells may slide downwards—the so-called cascade effect. The red-cell sediment of bloods giving apparent negative reactions, as read with the hand lens, should be examined under the microscope for agglutination Some workers do not read with the hand lens but routinely examine all tests by microscopy Hand lens reading does however facilitate work when large numbers of bloods are tested It is emphasised here that reading of tests whether by hand lens or by microscopy requires considerable experience

Many anti D sera contain only incomplete anti D, so do not react with cells in saline but agglutinate them in albumin. Most Rh(D) grouping is done with incomplete anti D The procedure with albumin is simple A suspension of washed red cells of 6 per cent strength in normal saline is prepared and 1 volume of this is mixed in a tube with 2 volumes of 30 per cent bovine albumin One volume of this albumin suspension of cells is then mixed in another tube with one volume of anti D (incomplete) serum One volume of cells is also tested in another tube against one volume of its own serum, or AB serum, to exclude auto-agglutination The tests are incubated for one hour, preferably two hours, at 37°, and

are then read in the way described The albumin test is very reliable and will as a rule detect most D+ bloods However any test giving a negative reading in tests with anti D antibody (whether active in saline or in albumin) should be regarded as presumptive D negative *Bloods giving negative reactions with anti D by the saline or albumin technique should be further tested with potent anti D serum by the anti human-globulin test of Coombs (see p 111) to ensure that weak D or D^u^ antigen is detected*

In ordinary hospital practice it is usually only necessary to use anti D serum A blood which is negative with anti D may be regarded as Rh negative if transfusion is urgently needed Otherwise every blood classified as D negative with anti D serum ought to be further tested if need be in a transfusion laboratory with other potent anti D sera and also with anti C and anti E sera Potent anti D sera should be used for testing the cells by the anti human globulin technique to detect the D^u^ variant of the D antigen Failure to detect D^u^ may result in bloods being erroneously classified as D negative A blood containing D^u^ should be regarded as D+ or Rh+ since D^u^ like D may evoke anti D in D negative individuals It should however be noted that some persons who lack D in their blood but have low grade D^u^ antigen may make anti D either through receiving D+ blood or through pregnancy with a D+ fœtus Such persons particularly if females who need transfusion should be given Rh negative blood However persons having high grade D^u^ without D may receive D+ blood as such blood does not cause them to make anti D If both D and D^u^ are present in a blood it is not possible serologically to distinguish the latter No technique has so far been devised which will separate anti D^u^ from anti D

A donor blood should only be certified as Rh negative if it reacts negatively with anti D D^u^ C and E sera and D^u^ has been shown to be absent by the indirect anti human globulin test A blood found negative with anti D serum and not tested with anti C and anti E sera, should simply be classified as D negative A blood reacting with anti D serum is classified as Rh positive Rh+ or simply D+ Rh antisera other than anti D are usually available only in transfusion laboratories being too scarce for general issue textbooks on Rh serology should be consulted for the reactions given by them

Production, Selection and Preparation of Rh Sera Anti Rh sera may be produced by immunising rabbits with Rhesus monkey red cells but such sera being technically difficult to prepare are not nowadays used The usual source of Rh sera is persons sensitised either through transfusion or through pregnancy Only seldom are persons encountered nowadays who are sensitised by transfusion since transfusions of D+ blood to D negative persons are generally avoided Almost all Rh sera are nowadays obtained from mothers sensitised in pregnancy *In order to ensure regular supplies of anti Rh sera all mothers should be tested for Rh sensitisation in every pregnancy regardless of whether they are Rh+ or Rh negative Rh investigations are best done about the 32nd week of pregnancy* Criteria of suitability of Rh sera for use in grouping are much as for ABO grouping sera. Most Rh sera have only incomplete antibody and this will only agglutinate red cells suspended in bovine albumin or cells treated with an enzyme such as ficin or papain Some Rh sera react with cells suspended either in saline or albumin An Rh serum may be absorbed of anti A or anti B agglutinins and if done this should be stated on the

label affixed to the container of the serum Dispensing of sera is done in the same way as for ABO sera and the precautions as to handling and storage are also the same

The Anti Human Globulin Test. Some antibodies including Rh may sensitise erythrocytes but not agglutinate them either in saline or in albumin Such sensitisation may be recognised by the anti human globulin test of Coombs and Race Agglutination proceeds in two stages (a) cells acquire antibody and (b) cells then agglutinate Red cells sensitised or coated with non agglutinating antibody may be made to agglutinate by treatment with anti human globulin serum Anti human globulin serum or more shortly A H G serum may be made by injecting rabbits or goats with human serum Animal A H G serum must be freed of species agglutinins by absorption Such animal A.H G serum will if mixed with sensitised red cells cause them to agglutinate, whether they were sensitised *in vivo* or *in vitro* By definition the direct A H G test is that applied to cells which have been sensitised *in vivo* (see below) In the indirect A H G test the cells are first mixed *in vitro* with serum containing sensitising antibody of non agglutinating type left for one hour and then treated with A H G serum In the direct and indirect A H G tests it is essential that before the cells are mixed with A H G serum they be well washed by centrifuging three times or more in large volumes of saline Washing must remove all free serum since mere traces of this may inhibit the A H G serum Textbooks on Rh serology should be consulted for technical details of A H G tests and for the methods of preparing and standardising A H G sera

Storage of A H G sera should be at -20° otherwise they lose titre A H G sera should be dispensed in small amounts e g 1 ml per container The dilution at which an A H G serum is most effective is determined by experiment A H G serum should only be diluted immediately before use The diluted reagent will usually be effective for about 12 hours if kept in cold storage diluted serum should always be discarded after a day's work

In tests with A H G sera control tests are essential sensitised and unsensitised cells being included The A H G test whether direct or indirect is extremely sensitive and a positive reaction is certain evidence of sensitisation of the red cells

Sensitisation *in vivo* of Red Cells Red cells may acquire antibody *in vivo* the classic examples being hæmolytic disease of the newborn and acquired hæmolytic anæmia (acholuric jaundice) In the former the infant's red cells are sensitised by Rh or other antibody transmitted from the mother while in the latter the patient makes auto-antibodies which sensitise his, or her own red cells. Erythrocytes sensitised *in vivo* will if subjected to the A H G test agglutinate i.e will give a positive result in the direct A.H G test A direct positive Coombs test on the red cells of newborn infants is diagnostic of hæmolytic disease It is therefore sound procedure to submit all cord bloods to this test If Rh incompatible red cells are transfused to an Rh sensitised individual and a sample of the patient's blood be taken soon after such transfusion the red cells of the post transfusion sample of the patient's blood may give a positive reaction in the direct A H G test and if so agglutination will be partial since only the incompatible transfused red cells but not those of the recipient, will be agglutinated.

BLOOD GROUP SYSTEMS OTHER THAN ABO AND Rh

A number of blood group systems independent of each other and of the ABO and Rh systems are now known Some of these may, very occasionally, cause hæmolytic disease or be responsible for incompatibility in transfusion As in the case of the ABO and Rh antigens inheritance is according to Mendel's laws Those best understood are the Duffy Kell, Kidd, Lutheran, P, and MNS systems These systems are, mostly, not yet fully elucidated and there are sundry blood group antigens whose position in the scheme of blood group systems is not yet settled Necessarily, the determination of the antigen of any blood group system must depend upon the finding of the corresponding antibody, otherwise the presence of an antigen may only be inferred For example, if only anti-Kell (anti K) serum is available then any blood not agglutinated by such serum may be inferred to be homozygous for k which is the allele of K

Blood Grouping with Enzymes In recent years increasing use has been made of enzymes in blood grouping and tests for incomplete antibodies Effective enzymes are trypsin papain and ficin. The tests with enzymes are very sensitive, but false positive reactions may be troublesome Enzyme grouping tests may detect antigens in red cells or antibodies in serum which are not detectable by the conventional tests in saline or albumin or by the A H G tests For details of enzyme techniques textbooks on blood grouping should be consulted It is possible that enzyme techniques may in due course come into general use.

COMPATIBILITY TESTS

Routine Methods The purpose of a compatibility or cross matching test is to show that the donor blood is compatible with that of the patient. Since errors in compatibility tests may result in incompatible blood transfusion, which may prove fatal, it is mandatory that these tests be done only by trained experienced workers Sensitive techniques are essential, otherwise incompatibility due to weak or to incomplete antibody may not be detected Accordingly tube techniques should be used since tests on a tile or on glass slides are not so reliable Tests on a tile or slides, if used, should only be screening tests No completely reliable cross matching technique has yet been devised but nevertheless, techniques as already described for blood grouping will, in the vast majority of cases suffice In difficult cases, e g when the patient's serum has such antibodies as anti e, or mixtures of antibodies, the finding of compatible blood may be a research problem for specialist workers A compatibility test consists in (a) matching the donor corpuscles against the patient's serum and (b) matching the donor plasma against the recipient's corpuscles

It is essential to demonstrate that there is no ABO incompatibility of the donor cells since this is the most dangerous Also it must be shown that there is no incompatibility in systems other than the ABO groups, e g Rh, Duffy, Kell, etc The following three tests generally suffice (1) One volume of the patient's serum is tested with one volume of donor cells in saline at room temperature as in ABO grouping, to exclude ABO incompatibility (2) The patient's serum is tested at 37° against the donor cells by the albumin technique, *as in Rh grouping to exclude* Rh incompatibility Both these tests should stand for one hour, but preferably two hours Delicate technique is essential when tests are read, so the tubes must not be shaken, the sediment of cells should be carefully

smeared on a slide and examined by microscopy The albumin test will nearly always exclude Rh incompatibility but may not reveal incompatability due to Duffy antibody, etc (3) The recipient's serum is tested by the indirect anti-human-globulin test against the donor red cells The serum-cell mixture should be incubated at 37° for one hour before washing the cells for the A H G test. This test will exclude incompatibility due to most incomplete antibodies, but may fail with the rarer Rh and some Lewis antibodies The combination of these three tests will, nearly always, suffice For this reason some workers do not bother to match the donor plasma against the recipient's cells, but this test is simple and is a useful additional safety measure One volume of donor plasma is mixed in a tube with one volume of a washed 3 per cent suspension of recipient's red cells in saline and left at room temperature for one or two hours Then, without shaking the tube, the cell sediment is smeared on a slide and examined by microscopy This test may reveal a mistake in ABO grouping For example, a patient having weakly reacting A agglutinogen may, in consequence, have been wrongly grouped as O and, if the donor is group O, the patient's cells may be agglutinated by the anti-A of the donor Again, if group B donor blood is selected for an A_2B patient erroneously grouped as B, the error may be revealed when the donor plasma is tested with the patient's cells since these may be agglutinated by the anti A in the donor plasma When group O blood is selected for transfusion to recipients of groups other than O, and when group A or B blood is selected for AB recipients, the donor plasma will, of course, agglutinate the recipient's cells In such cases a test for A or B hæmolysins (as already described) should be done since, if hæmolysins be present in the donor plasma, they may, in transfusion, destroy the recipient's cells with, perhaps, fatal effect However, such tests for hæmolysins are unnecessary if the donor blood has been certified free of hæmolysins In recent years some workers have used enzyme tests in cross-matching but such tests may be over sensitive and so may be troublesome to work with It will be clear from what has been stated that accurate grouping of both donor and patient is essential so that, so far as is practicable, strict homologous transfusion may be practised, i e the patient receives blood of the same group as that to which he, or she, belongs

Urgent Transfusions Cases may occur in which prompt transfusion is essential to save life Where possible the patient should be resuscitated with plasma and, if this is not available, a blood substitute such as dextran or acacia should be given and, in the interim, grouping and compatibility tests should be done usually this is feasible However, when plasma or plasma substitute does not suffice, and the need for transfusion is immediate, blood may have to be transfused unmatched It is best then to give group O blood, even if the recipient's ABO group is known In such cases, if the recipient's Rh(D) group is known then blood of the same Rh group should be given If the Rh group of the patient is unknown then males who have not previously been transfused may be given Rh+ blood, but females of any age are best given Rh-negative blood If the patient is a male of unknown group who has already had a transfusion the possibility may arise that he is D-negative and has received D+ blood, with consequent sensitisation to D In such cases it may be desirable in the interests of safety to give Rh-negative blood. The practicability of these measures necessarily depends upon availability

of Rh negative blood which is scarce Thus in every 100 persons in the British Isles only about 7 will be group O Rh negative 6 group A Rh-negative while those who are group B and AB Rh negative together total only 2 It is justifiable when Rh negative blood is not available to use D negative blood of subgroups Cde or cdE as Rh negative blood but, otherwise, blood of strictly homologous group should be used When the recipient is of an ABO group other than O it is justifiable to give *uncatched* blood of the same ABO group as that of the patient only if group O blood is not available and the patient likely to die if not immediately given blood. It is mandatory that compatibility tests be set up in respect of all blood transfused and this should be done even if the blood was perforce given unmatched If incompatibility is detected there may still be time to stop the transfusion and appropriate treatment can at once be instituted.

It is incumbent on clinicians to allow laboratory workers as much time as possible for compatibility tests The greater the haste the greater the liability to error The minimum time which should be allowed for urgent compatibility tests is 20 minutes For rapid grouping and cross matching in urgent cases the following techniques may be used but, whatever emergency technique is used it is well to supplement these tests later by the sensitive techniques already described

Assuming that grouped donor blood is available the following tests may be used in an emergency (1) The patient's blood is ABO grouped on cells and on serum by the centrifuge method described in the section on ABO grouping (2) The patient is Rh(D) grouped and tests for compatibility between the patient's serum and donor cells are done by the rapid tube or slide method described below Usually but not always the patient will be correctly D typed by these rapid methods which also will usually reveal incompatibility caused by anti D in the patient's serum However, incompatibility due to the rarer Rh antibodies and antibodies such as anti Duffy may not be revealed by these methods. *Rapid D typing is done in tubes by the centrifuge method* The patient's cells are suspended in albumin and mixed in a tube with strong incomplete anti D serum as in routine Rh typing The cell serum mixture is incubated at 37° (preferably in a water bath) for 10 minutes longer if possible and then centrifuged at 1000 r p m for a minute The packed cell sediment is then gently withdrawn smeared in a drop of saline which has been placed on a glass slide and then examined by microscopy Alternatively the patient's D group can be determined by the sandwich method of Stratton One volume each of strong undiluted anti D serum (active in albumin) 30 per cent bovine albumin and of washed packed cells of the patient, are mixed on a glass slide. Another slide is *then lowered gently on to* the mixture which then spreads by capillary action underneath the slide A control test in like manner is put up using group AB serum *instead* of anti D serum Control tests with Rh negative and Rh positive cells must also be included (whatever the techniques used) The sandwich tests are incubated at 37° for 10 minutes and then read under the microscope gentle pressure on the upper slide may cause movement of the cells which may assist in microscopy

The patient's ABO and D groups having been ascertained homologous blood for transfusion is then selected and a sample of its red cells well washed *in* large volumes *of saline in preparation for* the cross matching tests The donor cells are then tested with the recipient's serum to *exclude* ABO and Rh *incompatibility* using the rapid methods described ABO compatibility is tested for by mixing the patient's serum with the

donor cells in saline and then centrifuging after 5 minutes, as described for rapid ABO grouping Using donor cells suspended in albumin, Rh incompatibility is tested for by the centrifuge method described or by Stratton's 'sandwich' technique Since these rapid albumin methods may fail to reveal the rarer forms of Rh incompatibility, and that due to antibodies such as Duffy or S, it is necessary to cross match also by the indirect A.H G test This is done by the technique already described, except that the mixture of recipient s serum and donor corpuscles is incubated at 37° for only 15 minutes, but the longer the better When a weak incomplete antibody is present in the patient's serum a shortened incubation period may result in a false negative reading whereas, if incubation for an hour is allowed, the result will, or may, be positive It will be clear that rapid techniques are more liable to error than techniques in which adequate time is allowed

Fallacies in Compatibility Tests. *In compatibility tests done soon* after incompatible transfusion an important fallacy may arise When much incompatible blood is given, e g group A blood to a group B recipient, the donor corpuscles may absorb all the corresponding antibody in the recipient's serum Consequently, if the donor blood, or blood of like group, be cross matched against the serum of the patient collected during the first few days after the incompatible transfusion, the donor cells may appear to be compatible when, in fact, they are not. However, about the fourth day onwards after the incompatible transfusion antibody reappears in the patient's serum, replacing or supplementing the antibody which was absorbed. Moreover, the antibody will in a few days be more potent than originally, because of the *immunising* effect of the incompatible blood. If, at this stage, the recipient s serum be matched against the cells of the donor of the incompatible blood they will be sensitised or agglutinated and, moreover, if ABO incompatibility be involved, hæmolysis of the incompatible red *cells may occur* The *immunising* effect of the incompatible blood may cause the titre of the corresponding antibody in the recipient s serum to rise, the maximum titre being attained about the 21st day or so after the mishap If the recipient s serum be titrated at this time the immune antibody may exhibit prozone and, in ABO incompatibility, may cause marked hæmolysis Such sera are, therefore, best inactivated before use and some recommend that because of prozone the cross-matching with cells in saline and in albumin be done by titration When little incompatible blood is transfused the corresponding antibody in the recipient's serum will be little, if at all, absorbed

In respect of every proposed transfusion a fresh sample (at least 3 ml clotted blood) of the recipient s blood must be submitted *It is a fallacious and dangerous practice to submit initially a sample of the recipient s blood and then use the serum of this sample for compatibility tests in a series of transfusions spread over several days or weeks* This is because harmful (immune) antibodies may appear in the recipient's blood after the first, or subsequent, blood transfusion It is, however, very useful when a series of transfusions are to be given, to keep for reference the first and subsequent samples of the patient's serum Since antibodies caused by *trans* fusion may not be detectable for a brief while after transfusion it is best to take samples of the patient s blood for use in compatibility tests shortly before each proposed *transfusion* When a febrile transfusion reaction occurs it may be fallacious to assume that incompatibility cannot be involved simply because the donor blood was certified compatible by

sensitive tests In fact the transfused blood may have been incompatible and either the tests failed to reveal the incompatibility or it was latent and so not detectable

Conservation of Blood Samples It should be routine procedure to conserve for 3 days in refrigeration the blood samples which were used in the compatibility tests—(a) samples of red cells and serum (or plasma) of the donor and (b) a pre transfusion sample of the patient a blood (cells and serum) These samples may prove invaluable in elucidating the cause of a transfusion reaction, particularly if incompatibility be involved.

Hæmolytic Anæmias. The cross matching of blood for infants affected with hæmolytic disease, and for patients with acquired hæmolytic anæmia presents special difficulties In hæmolytic disease the red cells of the fœtus are damaged by antibodies Rh or other, derived from its mother Therefore, red cells for transfusion to the infant must not be destroyed by the harmful antibody which the infant has derived from its mother Also, the donor corpuscles should if possible, be compatible in the ABO system with the infant a blood The first step is the identification of the harmful antibody of the mother and commonly this will be anti *D* Having identified the antibody, blood of suitable group is tested for compatibility with the mother s antibody Difficulties, however may arise here e g if the infant is of group A or B and its mother is group O Obviously group A or B red cells cannot be matched against group O serum and, in such cases it may be best to give the infant group O blood which is compatible with the Rh, or other, antibody of the mother However, if time permits the anti A or anti B agglutinins may be absorbed from the mother s serum by using group *A* or *B* cells of appropriate *Rh* group This is practicable providing the harmful antibodies in a sensitised mother s serum are identified with certainty, as can usually be done, so ensuring that cells may be selected for absorbing anti A or anti B from the mother s serum and which will not, in addition, remove the harmful antibodies A difficulty, however, is that sundry mothers may be sensitised to antigens of more than one system e.g a mother may have in her serum *Rh* antibodies with *in addition*, antibodies such as *Kell* or *Duffy* Such additional antibodies may escape detection unless a comprehensive panel of red-cell antigens is used when testing the mother a serum for harmful antibodies These additional antibodies may be removed by the *A* or *B* cells used for absorbing anti A or anti B from the mother s serum and, in that case donor erythrocytes which are in fact, incompatible with these additional antibodies will seem compatible when matched against the *absorbed serum of the mother The anti A or anti B in the mother s* serum may be neutralised by commercial group specific substances or by saliva but this procedure does not always effect complete inhibition of these antibodies If doubt arises about the desirability of transfusing the baby with red cells having the antigens *A* or *B*, because of inability to cross match versus the mother s serum, then it is best to transfuse group O cells In cross matching blood for babies with hæmolytic disease the three techniques described, particularly the indirect A H G test, should be used and at least one hour, preferably two hours should be allowed for the tests In cases of hæmolytic disease due to ABO incompatibility it is best to give the infant washed group O red cells since anti A or anti B in the donor plasma may be harmful to the *recipient s cells*

The cross matching of blood for transfusion to patients having acquired hæmolytic anæmia may be difficult. In this disease potent agglutinins, of 'cold or 'warm type, may be present in the patient s serum and

a direct A H G test on the patient's cells, as in hæmolytic disease of the newborn, may give a positive reaction Moreover, such patients may make antibodies, e g anti-e, active against their own red-cell antigens It will first be necessary to establish the ABO and Rh(D) group (probably Rh genotype as well) of the patient but, before this can be done, the patient's red cells must be washed completely free of auto-agglutinins Washing the erythrocytes many times in warm normal saline at 37° may be necessary to effect this The auto agglutinin may be removed from the serum by repeated absorption of a sample of the patient's serum with the patient's own red cells, the latter being freed of the antibody by washing in warm saline (at 37°) after each absorption and being then used for further absorptions. Often the bulk of auto-agglutinins from the serum will be absorbed onto the cells if a sample of clotted blood (at least 10 ml) is left in refrigeration at 4° to 6° for 12 hours or so All compatibility tests must be done at 37° and readings made on warm slides At least an hour, or longer, must be allowed for the incubation of donor cells with recipient's serum If the patient's serum has a specific antibody, e g anti-e, which is active against the patient's own cells, the blood to be transfused must lack this antigen In some cases of acquired hæmolytic anæmia the cross-matching of blood may be a research problem for specialist workers in transfusion

Complement-binding Antibodies. Transfused red cells may be destroyed by complement-binding antibodies present in the recipient's serum and such destruction may, or may not, be symptomless It may be difficult to find blood compatible for patients whose sera contain complement-binding antibodies Complement-binding antibodies are rare but, since they can destroy transfused red cells, they should be tested for (a) when a patient's serum contains irregular agglutinins such as anti-P or anti-Lewis, (b) when the expected rise in red cell count does not follow transfusion of donor red cells which are apparently compatible when tested in saline, in albumin, and by the indirect A H G test, with the patient's serum Sera containing antibodies which, *in vitro*, agglutinate erythrocytes at temperatures up to 30°, but not above, do not apparently cause destruction of these red cells when transfused However, certain antibodies, e g of P and Lewis systems, which agglutinate cells in saline at 30°, or higher, may bind complement Again, some antibodies, e g anti-Kidd, bind complement at 37°, though usually failing to agglutinate the cells in saline These complement-binding antibodies are important because *in vivo* they may rapidly destroy all, or a fair proportion, of the red cells with which they react *in vitro* Therefore, it is important to ascertain in the compatibility tests whether these antibodies sensitise red cells at 37°, so that they react positively in the indirect A H G test. *However, only if sera containing complement-binding antibodies are fresh, or if fresh serum be added in the test to provide complement, will they sensitise cells so that they give a positive reaction in the indirect A H G test* Some P and Lewis antibodies seem to be non-gamma globulins since the cells they have sensitised react with the anti-non-gamma-globulin component of the A H G. serum

Compatibility Tests with Isotopes When a serum agglutinates red cells at 30°, and it proves difficult to find blood which is compatible at this temperature, the problem of whether or not the donor red cells may safely be transfused may be decided by labelling a very small volume (1 ml) of the cells with a radioactive isotope, then injecting the labelled red cells into the recipient a

circulation and following their survival *in vivo* the radioactive isotope of chromium (^{51}Cr) is suitable for labelling the erythrocytes This test will rapidly reveal whether or not abnormal destruction of the transfused tagged red cells occurs *in vivo* and therefore, whether or not they may safely be transfused When there is incompatibility e g as with some Lewis antibodies, the tagged cells may be so rapidly destroyed that within half an hour most of them are eliminated from the patient's circulation

BLOOD COLLECTION

Selection of Donors It is essential that only persons of good physique and enjoying normal health be accepted as donors Persons under the age of 18 years and over 65 years are not acceptable In the case of volunteers under 21 years of age, the consent of parents (or the husband of a young woman) is legally required Those who have had, or who have, certain diseases are unacceptable for blood donation A medical examination, including X ray, is unnecessary Simple inspection and careful questioning serve to eliminate almost all those who are not suitable It is usual to ask volunteers to read through a questionnaire which lists diseases or conditions which exclude from blood donation Conditions which permanently exclude are allergic disorders, cardiovascular disease (including pathological high blood pressure), cerebral disease (including stroke, epilepsy, and mental breakdown), blood disease, cancer, diabetes, undulant fever, thyroid gland disease, rheumatic fever, tuberculosis renal disease, and jaundice due to infective (virus) hepatitis In the case of those who have had malaria there is always risk of transmitting the malarial parasite However, the blood of those who have had malaria may be used for preparation of blood derivatives which are Seitz filtered or dried Temporary exclusion may be necessary in those who have such conditions as boils or carbuncles, influenza, tonsillitis, laryngitis and certain infectious illnesses, they should not donate blood until fully recovered Those recently inoculated with living or attenuated virus (smallpox and yellow fever) or bacteria (B C G) are temporarily not suitable as donors Some persons may have to be rejected because of occupational hazards, e g those handling toxic chemicals Women should not donate blood during pregnancy, nor until a year has elapsed since confinement Blood may be donated during menstruation Those who have, or have had, venereal disease should be rejected A volunteer, having been screened on the questionnaire and passed as suitable, must then be tested for anæmia by a simple screening test In this test the specific gravity of the volunteer's blood is tested with copper sulphate solution, this being routine procedure in Britain The solution used for women is coloured blue (for recognition) and has a specific gravity of 1 053, which corresponds to a haemoglobin of 85 per cent That used for men is coloured green and has a specific gravity of 1 055, the equivalent of a hæmoglobin of 90 per cent Female volunteers must not have a hæmoglobin under 85 per cent and males not under 90 per cent The hæmoglobin standard is 100 per cent, which is equivalent to 14 8 *g* per 100 ml. Those failed on the screening test should have their haemoglobin estimated by a more exact method High blood pressure, when it occurs is usually found in middle life onwards and, therefore it is sound procedure in the case of those aged 40 years, or more, to estimate the *blood pressure* lest there be unsuspected high blood pressure Every time a donor is bled a test for syphilis must be done and only blood which gives a negative result may be transfused

Technique of Blood Collection The donor must lie recumbent The arm is constricted at the biceps muscle with a sphygmomanometer cuff at a pressure of 60 to 90 mm Hg The skin is first cleaned with ether to remove skin grease and is then swabbed with surgical spirit after which about 3 drops of 2 per cent procaine solution is injected at the site for venepuncture The needle is then inserted into the vein Blood taken should not exceed 440 ml and the collection of this amount will take about 8 minutes The blood should flow by gravity and suction should not be used since it may be dangerous (see below) The rate of flow may be accelerated by the donor clenching and unclenching the fist The skin must not be cut or even nicked with a knife Cannulation of a donor s vein is not permissible Continuous shaking of the bottle during blood collection is essential otherwise large clots may form which might cause a breakdown in transfusion In Great Britain donors are not remunerated and should therefore receive every consideration A donor should l e recumbent for 20 minutes after donat on when light refreshment should be given Donors should not be bled soon after a heavy meal.

Blood Collection Apparatus Rubber glass or plastic equipment may be used The standard needle used in Britain is 19/10 (1 e nineteen tenths of a millimetre) Larger needles are unnecessary and moreover unjustifiable being prone to cause bleeding and bruising after phleb otomy It is fundamental that air escapes freely from the container as the blood flows into it This precaution is vital otherwise mounting air pressure in the container consequent on the inflow of blood may eventually drive a r into the donor s vein and cause air embolism with perhaps fatal effect Blood withdrawal by suction e g with a suction pump or by using vacuumed bottles is unnecessary and dangerous Thus very rapid with drawal of blood from the donor may cause alarming symptoms and collapse and syncope may ensue

THE LIFE OF THE TRANSFUSED ERYTHROCYTE

The life of the normal erythrocyte is 120 days as estimated by differ ential agglutination In th s method differences of blood groups between recipient and donor are exploited For example after transfusion of group O blood to a group B recipient the recipient s blood is a mixture of O and B red cells If after transfusion a suitable suspension in saline of the rec pient s erythrocytes be mixed with potent anti B serum all the group B cells will be agglut nated but the group O cells w ll of course not be agglutinated and so can be counted Differences in other systems e g Rh MN etc can also be exploited Using the differential agglu tination method it has been found that normal red cells survive after transfusion in a normal rec pient s circulation for about 120 days Ac cordingly 120 days is taken as the normal life of the erythrocyte In certain diseases e g acquired hæmolytic anæmia the life of normal transfused red cells may be so shortened that they survive as little as a day or two in the recipient s circulation. In hæmolytic d sease due to Rh(D) incompatibil ty if the infant be transfused D+ cells soon after birth the transfused D+ cells will survive only a brief interval perhaps only a very few days in the infant s circulation The life span of transfused red cells can also be studied by injecting a very small volume of isotope (e g chromium 51) tagged red cells and then following their survival in vivo

BLOOD PRESERVATION

Dextrose is vital for the preservation of red cells in stored blood. The red cells of citrated blood stored without dextrose for periods longer than a week are rapidly eliminated from the recipient's circulation Citrated blood preserved with dextrose will, when storage is as long as 21 *days, give a survival in vivo little inferior* to that of fresh blood For each day of storage of dextrose preserved blood about 1 per cent of the transfused red cells will, within a few hours of transfusion, be eliminated from the recipient's circulation Accordingly, dextrose preserved blood should not be used after 21 days of storage An anticoagulant, e g sodium citrate *or heparin is not a blood preservative* Dextrose *will* preserve red cells but it is not an anticoagulant The final concentration of dextrose in the mixture of blood and anticoagulant preservative solution should be about 0 6 per cent Stored blood may be simply citrated blood or it may be dextrose-citrated Blood stored with added dextrose is termed 'dextrose preserved' blood

The only satisfactory criterion of an anticoagulant or blood preservation solution is that normal blood kept in it will, when transfused, survive normally in the normal recipient s circulation Tests such as fragility of erythrocytes in saline, spontaneous hæmolysis, and mechanical fragility of the erythrocytes, are of little value as criteria of the suitability of solutions for blood preservation *A solution causing hæmolysis in vitro* would obviously be of no use The solution in which blood is collected must not harm the red cells Blood stored in a good preservative solution survives well when transfused Dextrose is essential for the metabolism of erythrocytes Various sugars have been tried for red-cell preservation and dextrose has proved to be the best Blood taken into sodium citrate solution without dextrose can safely be stored for 7 days and its survival *in vivo* is about as good as that of fresh blood but, after 7 days' storage, the red cells soon deteriorate and become unsafe for transfusion *Dextrose must be added if blood is to be stored longer than 7 days* A 3 per cent solution of trisodium citrate is a suitable *anticoagulant* and 100 ml of this is mixed with 420 ml of blood A satisfactory *preservative* solution is a mixture of 100 ml of a 3 per cent trisodium citrate solution with 20 ml of a 15 per cent dextrose solution, to this mixture is added 420 ml of blood The disadvantage of this mixture is that the citrate and dextrose components must be autoclaved separately, otherwise caramelisation is marked It is more convenient to use acid citrate-dextrose solution, since the components may be autoclaved together with negligible caramelisation Therefore the standard preservative solution used in Britain is 100 ml of 2 5 per cent disodium citrate solution mixed with 20 ml of 15 per cent dextrose solution to this mixture is added 420 ml of blood The acid citrate dextrose solution gives optimum pH for preservation of red cells The red cells of blood stored 3 weeks in dextrose citrate solution survive well when transfused

Preparation of Solutions Pyrogen free distilled water must be used Solutions are sterilised at 20 lb pressure (126°) for 30 minutes in bottles having their caps screwed tightly down, some workers, however, only screw the caps tightly *down after sterilisation* The sterilisation causes slight caramelisation It is well to open the steriliser slightly immediately after the sterilising run is completed, otherwise the prolonged heating causes more marked caramelisation The various precautions which ensure that the steriliser operates efficiently during sterilisation must

be observed and hereon textbooks on sterilisation should be consulted A useful routine after sterilisation is to incubate the solutions at 37° for one or two days and then keep them at room temperature for a further week After this time the solutions are inspected and they should be crystal clear and have no deposit. Bottles must be tested for leakage and any which leak must be rejected Bottles must be labelled to show their contents and date of sterilisation The expiry date is usually set at one year from the date of sterilisation

Blood for Use in Heart Lung Machines The most suitable anticoagulant for blood used in heart lung machines is E D T A (ethylenediamine tetra acetic acid) It has a marked capacity for binding Ca ions and is a more potent anticoagulant than sodium citrate E D T A. with dextrose preserves red cells as well as citrate-dextrose solution The E.D T A mixture is sterilised in siliconed bottles For perfusion the blood in E D T A. preservative solution must be converted by adding heparin and mixing A small amount of 10 per cent solution of calcium chloride is then added to restore the level of ionised calcium to normal

Frozen Blood. Recent work has shown that glycerol protects erythrocytes from damage at temperatures well below 0° Providing glycerol treated red cells are stored at very low temperature i e —80° to —120° they will preserve well for 2 years or more and will have good survival in vivo when transfused Glycerol must be removed before transfusion otherwise hæmolysis of the glycerol treated red cells will occur when they are transfused Preservation of red cells in glycerol at low temperatures is very advantageous since it ensures that samples of blood of rare groups can be stored and so be available as required for investigation of unidentified irregular antibodies etc. Blood may also be stored at low temperature by treating it with dextrose and then spraying it into liquid nitrogen red cells recovered from blood treated in this way survive well when transfused

STORAGE AND HANDLING OF BLOOD

Storage Blood should not be out of refrigeration longer than 30 minutes except when in use The storage temperature is 4° to 6° and the deviation should not exceed 2° Freezing must not occur since hæmolysis results If blood which has been frozen is thawed and transfused a severe hæmolytic reaction perhaps fatal may ensue Therefore blood must never be put into a freezing cabinet Blood which has been left unduly long out of cold storage survives poorly in vivo Refrigerators used for blood storage must be tested to ensure that they are efficient and should be fitted with automatic temperature recording devices A blood bank refrigerator must not be used for storage of food or pathological samples as these may introduce contaminating bacteria

Blood Bank Records Registers should be kept in which are recorded the fate of every bottle of blood identity of recipient results of grouping and compatibility tests etc. A plasma register also should be kept The information recorded in these registers may be of assistance in the investigation of transfusion reactions and also in the tracing of donors whose blood is suspected to have transmitted the virus of serum hepatitis

Handling of Blood Immediately after collection bottles of blood should be sealed so that it can be seen at a glance whether the bottle has been opened or sampled Blood is self sterilising Providing scrupulous aseptic technique and sterilised equipment is used contamination rarely occurs. Addition of antibiotics or chemicals (sulphonamides etc.) to

blood to prevent growth of organisms is unnecessary Blood should never be left long out of refrigeration as in warm blood any organisms present may multiply Very dangerous contaminants are those which grow at low temperature, hence the need for aseptic technique and for ensuring that all equipment used in blood collection is sterile. The transfusion of infected blood, particularly if there is heavy growth of organisms, may cause a serious reaction and may have a lethal effect. In warm blood glycolysis is expedited and, when the supply of glucose is exhausted, the red cells soon deteriorate Blood left out of refrigeration longer than one hour should be labelled 'dangerous for transfusion' It is safe to transfuse blood cold from refrigeration, and warming it as a preliminary to transfusion is unnecessary Overheating of blood damages the red cells Transfusion of blood which has been overheated will result in a severe hæmolytic reaction which may prove fatal Blood which is transported by train or car, etc., should be sent in an insulated box with an ice insert to ensure that the blood is kept at a low temperature.

Appearance of Stored Blood Citrated blood settles out in a day or so into an upper layer of plasma and a lower layer of red cells, the volume of plasma being ultimately rather more than that of the red cells The leucocytes aggregate in a thin greyish white, or buffy, layer on top of the red cell layer Plasma may be clear and is usually of a pale straw or yellowish colour The plasma of a donor bled soon after a fatty meal may be quite opaque and have a milky or pale creamy yellow appearance from the presence of fine particles of fats (lipoids) The fats later form a cream like whitish layer on the top of the plasma Such fatty blood is safe for transfusion Sometimes fibrin clots, small or large, may be seen at the top of the plasma layer and these clots will, in transfusion, be trapped by the filter of the giving set Sometimes the clot consists of a frothy web or pellicle which may adhere to the bottle If blood is well shaken during collection clots do not usually form Before blood is used it should be inspected for staining with hæmoglobin (hæmolysis) If staining of the plasma with hæmoglobin is seen either throughout the plasma or just above the red-cell layer, the blood is unfit for transfusion However, blood may be unfit for use, e g time expired, yet there may be no discernible hæmolysis as above described

Changes in Stored Blood. Red cells require glucose for their metabolism Glycolysis is very slow in chilled blood but is rapid in warm blood Leucocytes and platelets rapidly deteriorate in stored blood Potassium diffuses from the red cells into the plasma and, as a rule, this causes no harm in transfusion In stored citrated blood small clots may sometimes be found amongst the red cells as, also some fibrin slime this may occur even if the blood was well shaken during collection The plasma proteins, agglutinins, and red-cell antigens, undergo no significant change in blood collected into a suitable preservative and kept in refrigeration for 3 or 4 weeks In stored blood the components of the plasma such as prothrombin and anti-hæmophilic globulin soon decline

Period of Storage Blood collected into citrate solution without dextrose is unsafe for transfusion after 7 days storage Dextrose-citrated blood may be used when stored up to 21 days, though some workers use such blood when storage has been as long as 28 days For each day of

storage about 1 per cent of the erythrocytes become effete and in transfusion the effete red cells are rapidly eliminated from the patient's circulation Therefore, when 21 day old dextrose preserved blood is transfused, some 20 per cent of the donor corpuscles will be rapidly eliminated from the recipient's circulation Obviously it is not desirable to give several bottles of such aged blood in a single transfusion The ideal is to transfuse blood as fresh as possible but blood fresh from the donor's vein is very seldom necessary

Labelling of Blood. Every bottle of blood must be labelled to show the ABO and Rh blood groups the anticoagulant or preservative solution used the dates of collection and expiry and the conditions of storage and handling (e g freezing must not occur and blood must not be left out of refrigeration) For cross matched blood the following must appear on the cross match label affixed to the bottles surname followed by forenames of the patient age or year of birth of patient home address of patient (but some workers rely only on the patient's hospital number) blood group ABO and Rh or other of patient and date of compatibility test If the bottle of blood was sampled to provide blood for the compatibility test an instruction must appear on the label that the blood be used within 24 hours of the sampling The signature of the person who cross matched the blood should appear on the label All this information must also be recorded in the blood bank register

Sampling of Bottles of Blood To avoid sampling the contents of a bottle of blood some workers affix to the patent bottle of blood a small pilot bottle which contains 2 or 3 ml of the donor blood This pilot sample is used in the compatibility tests This system is not in general use in Great Britain because samples in pilot bottles are occasionally technically difficult to work with There is also the risk that the pilot bottle from one bottle may be confused with that of another bottle of blood Pilot bottles must be sampled with strict aseptic technique Many workers prefer to rely on compatibility tests performed on a sample from the parent bottle, as this is representative of what is to be transfused An advantage of taking a sample of blood from the parent bottle is that after the sample has been centrifuged the supernatant can be examined for hæmolysis The objection to sampling the parent bottle is that contaminating organisms may be introduced but with strict aseptic technique there is very little risk of contamination It is nevertheless best to use blood within 24 hours of its having been sampled

Transfusion Record Cards On the transfusion record card should be recorded the reason for transfusion the patient's disease, and the date of transfusion If possible a half hourly record of the pulse rate and temperature during transfusion and in shock due to hæmorrhage the blood pressure, should be recorded at intervals as need be When symptoms such as chill or rigor headache vomiting skin rashes etc , occur notes hereon should be recorded on the record card or in the patient's case notes

TRANSFUSION PRACTICE

Transfusion Methods. On the clinical practice of transfusion clinical textbooks should be consulted Whenever possible, blood should be introduced into a vein with a needle Cannulation should be avoided

However, if an organism is cultured from the remnant of the donor's blood and the same organism is cultured from the recipient's blood, *this is good presumptive evidence that the* organism caused the reaction. When a patient dies following a reaction, blood for culture should be taken from the heart and from the spleen

After every transfusion the remnant of the donor blood should be kept in refrigeration for 48 hours, lest it be required for investigations

When a transfusion reaction occurs a sample (10 or 20 ml) of the *patient's blood should be* taken into a dry sterile container about 4 or 5 hours after transfusion ceased If possible, a similar sample of the patient's blood should be taken at the time of occurrence of the reaction These blood samples are very necessary since examination of them may reveal that hæmolysis in transfusion has occurred Thus, in a hæmolytic reaction, the liberation of hæmoglobin into the circulation may result in *hæmoglobinæmia followed* by methæmalbuminæmia and hyperbilirubinæmia Hæmoglobinuria, and later jaundice, may follow If a patient is seen to be mildly jaundiced within a few days of transfusion a hæmolytic reaction should be suspected, even if no other symptoms have occurred. If the wrong bottle of blood has been used and incompatible blood in consequence given, this may be revealed simply by inspecting the blood bottle label Again, if incompatible blood has caused a reaction, the incompatibility may be revealed by repeating grouping tests on patient and donor However, the investigation of a transfusion reaction may be a matter for specialist workers particularly when the rarer forms of incompatibility are involved, e g that due to Kell or Duffy antibodies etc When a reaction complicates transfusion it is wise not to give further transfusions *until* the cause of the reaction has been established *Failure* to observe this precaution may result in more incompatible blood being given to a patient who has already received incompatible blood When the cause of a febrile reaction cannot be established the methods of preparation and sterilisation of transfusion apparatus and fluids used should be looked into, since pyrogens may be the cause

Treatment of Transfusion Reactions. Allergic reactions are usually treated by injecting adrenaline or diphenhydramine hydrochloride or tripelennamine hydrochloride These drugs should not be given before, or during, transfusion, since they may mask a reaction the cause of which is incompatibility Circulatory overloading may require treatment with oxygen, morphine, digoxin, and perhaps venesection When a *hæmolytic* transfusion reaction occurs no ill effects may ensue and no treatment *may* be necessary However, in some cases, severe renal damage with consequent renal failure may follow hæmolysis in transfusion or the transfusion of hæmolysed blood

Treatment of Renal Failure due to Hæmolysis. The method of treatment of renal failure due to hæmolysis in transfusion is vitally important since incorrect treatment may have fatal result When a hæmolytic reaction occurs correct treatment roust be instituted from the outset. Transfusion of compatible *whole* blood should be given to correct oligæmia (so as to ensure a good circulation in the kidneys) and to correct anæmia In addition, transfusion of concentrated red cells will help to correct anæmia When gross hæmolysis in transfusion has occurred the kidneys may he so severely damaged that oliguria, or *anuria*, occurs, that is, the excretion of water and electrolytes by the kidneys is inhibited or even suppressed In treatment, therefore, careful attention

to fluid intake and electrolyte balance is essential Excessive fluid and electrolyte intake may have serious even fatal consequences simply because the patient may be unable to excrete the excess Fluid intake must equal that normally lost per diem in urine and fæces and also the insensible loss in sweat and by exhalation Loss from other sources e g fistula etc must also be counterbalanced Immediate treatment consists in giving the patient within a period of one or two hours a litre of water by mouth if it can be taken by this route If not an infusion of 1000 ml of 5 or 10 per cent dextrose in distilled water is given intravenously over 2 or 3 hours Nothing further should be given for 24 hours If in that time diuresis occurs a volume of the glucose solution equal to that of the urine voided should be given The fluid intake and output must be charted Should the urine output fail it must be assumed that renal damage has occurred and the patient treated accordingly The intake of salt and water must be very carefully controlled The patient is given a daily intake of 600 ml of a 50 per cent solution of dextrose in water either by mouth (or gastric drip) or intravenously (via a polythene catheter in the vena cava superior or inferior) If urine is voided there will of course be loss of water and electrolytes and this loss must be made good This is achieved by giving the patient a volume of special fluid equivalent to the volume of urine voided per diem The composition of the special fluid referred to is sodium chloride 3 2 g (55 mEq) and sodium lactate 2 2 g (20 mEq) in water to 1 litre Loss by vomiting too must be corrected the vomitus being collected filtered through lint and fed back by stomach tube This regime will tide the patient over the phase of oliguria or anuria which may last a few days or 1 to 2 weeks before diuresis occurs Measures such as splanchnic block renal decapsulation or catheterising the kidneys are worthless and may be dangerous In cases in which wrong treatment has been given resulting in excessive intake of electrolytes or when treatment has been long delayed so that the patient s serum potassium has attained a dangerously high level it may be necessary to use peritoneal dialysis or the artificial kidney but such treatment is rarely necessary When a good diuresis has been established i e an output of one litre per diem and such diuresis has been maintained for 2 days the regime mentioned above may be discontinued Instead the patient should be allowed 500 to 750 ml of water per diem to balance insensible loss in sweat and from the lungs Also a low protein and high carbohydrate diet should be given The urinary loss too must be made good and this is done by giving fluid of the following composition sodium chloride 3 2 g (55 mEq) sodium lactate 2 2 g (20 mEq), and potassium chloride 1 0 g (13 mEq) in water to 1 litre This treatment is persevered with for as many days after the onset of diuresis as there were days of oliguria before its onset. It is most necessary that the treatment of such cases be undertaken by experts With correct treatment almost all patients who have had hæmolysis in transfusion should recover

Citrate Toxicity Human plasma normally contains a minute amount of citrate Citrate if injected in large amount may have toxic or even fatal effects Toxic effects appear to be due to the citrate and are not due simply to absence of calcium In infants rapid exchange transfusion using citrated blood may cause symptoms of citrate toxicity (muscle tremors and changes in the electrocardiograph) The treatment is injection of a 10 per cent solution of calcium gluconate In massive transfusion of citrated blood in adults the possibility of toxic effects being

caused by the citrate must be considered It is generally safe to give an adult 2 litres of citrated blood in half an hour However, if this amount is to be exceeded, the patient should be injected with 10 ml of a 10 per cent solution of calcium gluconate for each litre of blood transfused Toxic effects of citrate are more likely to occur in those having impaired liver function than in those having normal liver function

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FORMULÆ OF PROPRIETARY MEDICINES

This section replaces that of the Extra Pharmacopœia Volume II 23rd Edition, pages 1408–33

'Counter' Proprietaries

Proprietary medicines are usually regarded as being ethical or not according to the methods of presentation and distribution Those which are intended to be supplied against prescriptions written by medical practitioners for individual patients are generally termed ethical remedies these are described in Volume I of the Extra Pharmacopœia and in the list of New Drugs and Proprietary Medicines on pages 185 to 277 of this Supplement

The following list of proprietaries is a selection of those medicines which are advertised to the public in the press or by window and counter display and which are usually supplied over the counter on demand A clear distinction cannot however be drawn between proprietary medicines of this class and those usually described in Volume I of the Extra Pharmacopœia Some of the medicines included in this list may also be prescribed just as some of the proprietary medicines described in Volume I of the Extra Pharmacopœia and in the list on pages 185 to 277 of this Supplement may also be supplied to the public on demand

The ingredients given in the formulæ are in the terms employed by the manufacturers or as described on the labels on the containers In the form in which they appear the formulæ do not necessarily satisfy the requirements of the Pharmacy and Medicines Act 1941 and the attention of manufacturers and pharmacists is drawn to the information on disclosure of composition given on page 1405 of the Extra Pharmacopœia Volume II 23rd Edition

A.P (Anti pain) Chilblain Ointment (*Wigglesworth Ltd Westhoughton*) Phenol 1% Camphor 6% Balsam of Peru 2% Base ad 100%

Acnolene (*Asha Laboratories Ltd Leatherhead*) Active ingredients Sodn Sulphoricinas 25% Paraffinum Liquidum pro Nebulis 25%

Activarol Tablets (*Polypharma Laboratories Ltd Wembley Middx*) Each contains Hæmatoporphyrin 0 002 g Glycocol 0 166 g Ext. Hepatis Conc. 0 007 g Ext. Cerevis Ferment. 0 034 g Sod Cit. 0 100 g

Actron Cachets (*Wilcox Joseau & Co Ltd London*) Each contains Quinine 0 096 g Caffeine 0 054 g Phenazone 0 150 g Phenacetin 0 250 g Magnesium Oxide 0 100 g

Adiposin Obesity Tablets (*Teucer Ltd Southend*) Rhubarb 1 grain Aloe $^1/_8$ grain Cascara $^1/_8$ grain Carlsbad Salt $^1/_{20}$ grain Bladderwrack $^1/_{20}$ grain

Aldesan Indigestion Tablets (*Reuppas Chemical Co Ltd Brighton*) Alоin 3 Ext. Casc. Sag. 7 5 P Rhei 3 75 P Sod Bic 75 with liquid and solid excipients q s.

[Pt] **Aldex Cream** (*Cuxson, Gerrard & Co Ltd Oldbury*) Aminoacridine 0 1% Benzocaine 0 1% Phenoxetol 1 0% in a non greasy base.

Akrotherm Cream (*Priory Laboratories Ltd West Drayton*) Histamine Acid Phosph 0 1% Acetylcholine Chloride 0 2% Oxycholesterol 1-0% Adeps Lanæ 2 5% Base to 100%

Aletricor Aletris Cordial (*Brook Parker & Co Ltd Bradford*) Inf Buchu Cone 20% 25% alcohol e extract (1 in 1) of Aletris Farinosa 5% Leonorus Cardiaca 5% Tanacetum Vulgare 5% Chenopodium Olidum 5% Erythræa Centaurium 5% Artemisia Vulgaris 5% Piscidia Erythrina 10% Artemisia Abrotanum 20% with Aneurin. Hydrochlor 10 5 mg. per 1 oz. and Base to 100%

Algispray (*Castle Laboratories Hinckley*) 2 Hydroxyethyl Salicylate 5% Diethylamine Salicylate 5% Methyl Nicotinate 1% Vehicle ad 100

Alkafyl Tablets (*International Chemical Co Ltd London*) Each contains Diethylaminocarbethoxycyclohexyl (Dicyclomine) Hydrochloride 1 mg Magnesium Trisilicate 58 mg Dried Aluminium Hydroxide Gel 58 mg Calcium Carbonate 408 mg Heavy Magnesium Carbonate 58 mg

Alka-Seltzer Tablets (*Miles Laboratories Ltd Stoke Poges*) Each contains Acetylsalicylic Acid 5 grains Citric Acid anhydrous, 14 9 grains, Sodium Bicarbonate 25 1 grains

Alkia Saltrates (*International Chemical Co Ltd London*) Mag Sulph. Exsic 27 57% Sod Sulph Exsic. 25 73% Sod Chlorid 1 38% Lithium Carbonate 0 69% Saccharin Sod 0 06% Sod Bicarb 35 38% Acid. Tart. 9 19%

Alpine Tea (*Brook Parker & Co Ltd Bradford*) Senna Fol 95% Yarrow Herb 5%

Altoids Lozenges (*Smith Kendon Ltd London*) Contain OL Menth. Pip 1 21%

Aluzyme (*Phillips Yeast Products Ltd, London*) Tablets each containing Yeast 5 grains Each g contains Aneurine 110–135 μg Riboflavine 45 55 μg Nicotinic Acid 350–525 μg Pyridoxine 30–35 μg Pantothenic Acid 45 52 μg

Aminat Powders (*Wigglesworth Ltd, Westhoughton*) Acid Acetylsalicyl 50 0% Phenacet 35 0% Caffein 3 5% Ol Cinnam 0 1%, OL Cinnam. Fol. 0 5% Kaolin Lev 10 6% Saccharin Sod 0 3%

Amovon Corn Paste (*Amovon Ltd, Bradford*) Ac Sal cyl 22 94 Ol Rose Rect 0 05 Ol Eucalyp 0 2 Meth. Sal. 0 1 Coloph. 1 43 Base ad 100

Anadin Tablets (*International Chemical Co Ltd London*) Each contains Acetophenetidin 2 grains Acetylsalicylic Acid 4 grains Caffeine ¼ grain Quinine Sulphate 1/12 grain

Anarolds Hæmorrhoidal Suppositories (*Rybar Laboratories Ltd, Tunkerton*) Each contains Resorcinol 1% Acid Gallotannic 1% Bism. Subgall. 2% Titanium Dioxid 2% Zinc. Oxid 10% Ac. Bor 18% Bals. Peru 2% Kaolin 2%

Anaspasmine (*Roberts Chemists* (*Bond Street*) *Ltd London*) Elixir containing Caffeine 1 64% Potassium Iodide 9 25% Sodium Benzoate 1 82%

Andomia Capsoids (*Andomia Products Ltd Bradford*) Each contains Vitamins A (Acetate) 5000 units D_2 1000 units B_1 3 mg., B_2 2 mg C 25 mg. B_6 1 mg and Nicotinamide 15 mg

Andrews Liver Salt (*Phillips Scott & Turner Ltd Surbiton*) Acid. Tart. 23% Sod Bicarb 23% Sucros 37% Mag Sulph. Exsic. 17%

Andrews Liver Salt for Diabetics (*Phillips Scott & Turner Ltd Surbiton*). Tart. Acid 40 00% Sod. Bicarb 42 33% Mag Sulph. Exsic. 17 62% Saccharin Sod 0 05%

Anduvite Capsules (*Carter Bros Shipley*) Each red capsule contains Vitamin A 5000 i u Vitamin D 1000 i.u. Each green capsule contains Vitamin B_1 1 mg Vitamin B_2 2 mg Vitamin B_6 1 5 mg Vitamin C 75 mg Nicotinamide 15 mg Vitamin E 5 i u. Ferrous Sulphate Exsic 10 mg Cobalt Sulphate 0 193 mg Potassium Sulphate 4 458 mg Manganese Sulphate 1 573 mg

[P1] **Anestan Ointment** (*Keldon Ltd Pentale*) Active constituents Tetanus Salicylas 0 31% Hydrargyri Oxidum Flavum B P 0 31% w/w Zinci Oxidum 25% Titanii Dioxidum 2 5% Acidum Boricum 2 5% Balsamum Peruvianum 0 31%

[P1] **Anestan Tablets** (*Keldon Ltd Pentale*) Active constituents Fluoresc Sod 1 5% Calc Glucon 1 0% Ephed Hydrochlor B P 6 0% w/w Phenazon 24 0% Theobrom 12 0%

Angettes (*Bristol Myers Co Ltd Ruislip*) Tablets each containing Vitamin A 4000 i u Vitamin D 500 i u Vitamin C 40 mg

Angier s Emulsion (*Bristol Myers Co Ltd Ruislip*) Paraffinum Liquidum 25% Calcu Hypophosph s 0 79% Sodu Hypophosphus 0 88% Glycerinum 5 2% Sod s Benzoas 0 47%

Aniska Pills (*Aniska Preparations* (*Rand s*) *Ltd Sevenoaks*) Pulv Aloes Curaçao 40 0% Pulv Glycyrrh. Co 18 2% Pulv Myrrhæ 9 1% Bism Oxy carb 21 8% Ext Hamsmelidis Liq 2 0% Excipient q s

An-Skels Pastilles (Diabetic) (*Smith Kendon Ltd London*) Cetyl Pyridinium Chloride 0 053% w/w Gum Sorbitol Base ad 100 00%

[P1] **Antasma Tablets** (*Potter & Clarke Ltd Barking*) Ephed. Hydrochlor B P 5 46% w/w Caffein 10 92% Pot. Iod 12 28% Theophyll e Æthyl enediam 21 84% Phenacet 21 84% Calc Glucon 21 84%

Antexema (*Potter & Clarke Ltd Barking*) Yellow Soft Paraffin 35 4% Gum Acacia 12 4% Boric Acid 1 5% Almond Oil or Nut O l 1 5% Water 49 2%

AntiBil Antibilious Pills (*George Eade Ltd London*) Aloe 32% Scammon Res 16% Coloc 8% Zing b 4% Sapo Dur 4% Sacch Lact 8% Ext. Gent 12% Sod Tauroglycocholate 16% Ol Caryoph q s

Anti Fog Bronchial Lozenges (*Smith Kendon Ltd London*) Ulm Pulv Pulv G 250% Co Benz Tinct. 0 396% Menthol 0 390% Ol Menth l ip 0 809% Ol Anis 0 661% Ol Cubeb 0 077% Oleores Caps c. 0 003% Tart Acid 0 223% Tinct Tolu 0 396% Ext Glycyrrh 5 357%

Antiseptol Disinfectant (*James Woolley Sons & Co Ltd Manchester*) Chloroxylenol 3% w/v Dichloroxylenol 0 5% w/v

[P1] **Antussin Cough Treatment** (*Tobal Laboratories Ltd London*) Each fl oz. contains Dextromethorphan Hydrobrom. 30 mg Ephed Hydrochlor 75 mg., Ammon. Chlor 250 mg Ipecac Liq Ext. 0 5 minim Tolu Syr 120 minims Glycer 50 minims

Apiderm (*Ernest Lindsay Ltd London*) Royal Jelly of Bees in vials of 3 ml or 5 ml contains in each fl oz Vitamin B_1 23 mg Vitamin B_2 5 mg Vitamin C 128 mg Nicotinic Acid 153 mg

Apioline de Chapoteaut (*Wilcox Jozeau & Co Ltd London*) Capsules each containing 200 mg of Apioline the true active principle of parsley

Apiserum (*Chemia Products* (*U K*) *Ltd London*) Contains in 24 ampoules Royal Jelly 250 mg

Appegin (*James Hart* (*Chemists*) *Ltd Bolton*) Active constituents Liq Bism. et Ammon Cit 18 75% Ammon Brom 0 45% Inf Gent Co 50% Sod Benz 0 05% Ferr et Ammon Cit. 0 11%

Archanium (*The Phenolaine Company Tunbridge Wells*) Acidum Acetyl salicylicum 48% Sodii Bicarbonas 48% Traces of Potass Chloride from Willow Ash.

Arctic Glow Menthol and Wintergreen Cream (*Brook Parker & Co Ltd Bradford*) Methyl Salicyl 20% Menthol Pot Iod aa 1% Oleores Cap sic. 0 5% Base to 100%

Arla-Tabs (*International Laboratories Ltd Chesterton*) Tablets each containing Salicylam de 5 grains Phenacetin 1 1/2 grains Vitamin B_1 0 14 mg

Armstrong s Influenza Mixture (*Boots Pure Drug Co Ltd Nottingham*) Camph. 0 12% Sp Æther 1 75% Acet Scill 2 3% Liq Ammon Acet Dil 8 8% Benzoic Acid 0 2% Ol Anis 0 02% Rectified Spirit 4 9%

Armstrong s Tonic (*Boots Pure Drug Co Ltd Nottingham*) Liq Sod Glycerophosph. 4 8% Acid Glycerophosph 1 4% Caffein Cit 0 9% Ext. Medull Rub 1 2% Ext. Cerevis Ferment 1 9% Sod Form 1 5% Aneurin Hydrochlor 0 0017% Inf Gent. Co. Conc 12 5% Glycer 10 0% Chlorof 0 3% Sod Benz 0 2%

Arthene (*Dalmas Ltd, Leicester*) Phenyl Ethyl Iodide 0 25% Methyl Salicylate 0 06% Terpineol Iodide 1 0% Phenyl Ethyl Isothiocyanate 0 08% Oil of Amber 0 2% Cream Base to 100 0%

Arthroids Balm (*Stephen Matthews & Co Ltd London*) Ung Methyl Salicyl 19 70% Iodum 0 03% Liq Ammon Fort. 0 06% Sp Meth Indust. 0 83% Menthol 0 46% Cera Alb 4 90% Paraff Moll Alb 74 02%

Ashton and Parsons Infants' Powders (*Beecham Pharmaceuticals Ltd St Helens*) Tincture of Matricaria (1 in 10) 3 12% Lactose 96 88%

Askit Powders (*Askit Ltd Glasgow*) Each contains Acidum Acetylsalicylicum 0 55 g Acetophenetidin 0 40 g Caffeinæ Citras 0 11 g Magnesii Trisilicas 0 01 g

Askit Tablets (*Askit Ltd Glasgow*) Each contains Acidum Acetylsalicylicum 3 00 grains Acetophenetidin 1 50 grains Caffeina 0 2ɔ grain, Magnesii Trisilicas 0 05 grain Excip q s

[P1] **Asmaton** (*Tidebrook Chemical Products Ltd London*) Epinephrine 0 ɾ5% w/v Chlorbutol 0 50% Sodium Nitrate 0 07ɔ% Ext Pituit. Liq B P C. 1 0% Papaverine Hydrochloride 0 75% w/v Amethocaine Hydrochloride 0 25% w/v, Vitamin C 0 5% Atropine Methylbromide 0 05% w/v Scopolamine Hydrobromide 0 0025% w/v Glycerin 20 0% Distilled Water to 100%

Aspergum (*White Laboratories Ltd London*) Chewing gum tablets each containing Aspirin $3^1/_2$ grains

[P1] **Asthmador, Schiffmann s** (*Fassett & Johnson Ltd London*) Powder for inhalation containing Fol Stramonii 52 5%, Fol Belladon 4-5% Lig. Santal Alb 5 7% Cortex Cascarillæ 6 6°₀, Potass Nitras 30 7%

Athera (*Modern Health Products Ltd Chessington*) Broom 16% Senna Leaves 4% Rue 2% Coltsfoot 4% Raspberry Leaves 3% Clivers 5% Orange Flowers 3% Orange Leaves 4% Parsley 8% Hops 1%, Nettles 25% Mistletoe 25%

Athera Tablets (*Modern Health Products Ltd Chessington*) Each contains Senna Leaf $^1/_6$ grain Rue $^1/_6$ grain, Coltsfoot $^1/_6$ grain, Orange Flowers $^1/_{10}$ grain Orange Leaves $^1/_6$ grain Hops $^1/_3$ grain and the aqueous extract from Broom 3 grains Raspberry Leaves $^1/_6$ grain Clivers 1 grain Parsley 2 grains, Nettles 6 grains and Mistletoe 5 grains

Atkinson & Barker s Infants Preservative (*Robert Barker & Son Ltd, Manchester*) Magnes Carb 5% Soda Bicarb 1 5% Sugar 9 75% Alcohol 7 0% Sweet Spirit of Nitre 0 62ɔ% Saffron 0 05°₀, Oils of Dill and Fennel 0 16%

[P1] **Atroparvin** (*Axa Ltd, London*) Tablets each containing Atropine Sulph. 0 00025 g Papaverine Hyd 0 01 g

[P1] **Ayrotabs** (*Ayrton Saunders & Co Ltd Liverpool*) Ext. Bellad Sicc. $^1/_{10}$ grain Mag Carb Lev 6 grains Sod B carb 3 grains, Calamus $^1/_2$ grain, Bism Subnit. 5 grains, Frangula $^1/_6$ grain Excip q s

[P1] **Ayrtolax** (*Ayrton Saunders & Co Ltd Liverpool*) Phenolphthalein 1 grain, Aloin $^1/_6$ grain Ipecac. $^1/_6$ grain Ext. Bellad. Liq B P $^1/_2$ m nim.

Ayrton s Antiseptic Cream (*Ayrton Saunders & Co Ltd, Liverpool*). Lanolin 29 0 Zinc Oxid 3 8 Acid Boric. 3 8 Methyl Salicyl 0 45 Phenol 0 45 Liq. Formaldehyd 0 12 Ung Paraff to 100 0

Ayrton s Bronchial Emulsion (*Ayrton Saunders & Co Ltd Liverpool*). Tinct Benz Co 2 5 Acet. Scill 5 0 Acid Acet 1 0 Ol Menth. Pip. 0 06, Ol Anis 0 20 Tinct. Capsic 0 25 Camph. 0 02 Chlorof 1 0, Acid Benz. 0 25 Calc. Hypophosph 1 0 Sod. Hypophosph. 1 0 Glycer 5 0 Paraff Liq. 25 0 Dec Chond (2 5%) ad 100 0

Ayrton s Naze Drops (*Ayrton Saunders & Co Ltd Liverpool*) Phenylephrine Hydrochloride 0 5% Chlorbutol 0 5% in Isotonic Saline Solution.

Bablets (*G T Fulford Co Ltd Hatch End*) Tablets each containing Mag Oxid Pond 1 5 grains P Zing b $^1/_{50}$ grain Ol Menth. Pip $^1/_{200}$ grain

Balca Cream (*Boots Pure Drug Co Ltd Nottingham*) Glycol Monosalicylate 7 5% Ethyl Nicotinate 0 5% Phenyl Nicotinate 0 5°₀ Benzyl Salicylate 0 5° Chlorocresol B P 0 1%

Balto Foot Balm (*G R Lane Gloucester*) Active ingredients Liquid Extract of Bladderwrack 1% Camphor 0 5% Oil of Pine 1°₀ Menthol 0 2°₀ Sulphur Præcip 3% Pot. Iod 0 25% Acid Salicyl 0 167°₀ Zinc Oxid. 0 47°₀ Chlorbutol 2%

Bansor Mouth and Throat Antiseptic (*Thornton & Ross Ltd, Huddersfield*). Active ingredient Cetrimide 0 01°₀

Barker s Liquid of Life (*G Barker (Liquid of Life) Ltd Manchester*) The water soluble constituents (w/v) of Quassia 9% Gentian 5% Rhubarb 2% Chillies $1^1/_2$% Aloes 8% Worm wood $1^1/_2$% Calumba 2% and Ginger 1% with Sod B carb 10% and Sugar 60%

Barker's Liquid of Life Tablets (*G Barker (Liquid of Life) Ltd, Manchester*) Each contains Aloin 0 25 grain Sod Bicarb 1 00 grain Ext. Rhei Sicc 0 25 grain Cerevis. Ferment Sicc. 0 50 grain Ext. Quass. 0 50 grain Ext Gent. 0 25 grain Calumb Pulv 0 50 grain Oleores Capsic. 0 009 grain Oleores Zingib 0 015 grain

Barkoff Cough Syrup (*Carter Bros Shipley*) Infusions (1 in 10) of Hyssop 19% Horehound 19% and Lobel a 19% with Ext. Seneg Liq 0 6% Camph. 0 06% Succus Glycyrrh. 1 6% Ol Anis 0 18% Chlorof 0 15% Ol Menth. Pip 0 14% Tinct. Capsic Fort 0 12% Acid Acet 0 36% Honey 12 7%

[P] **Barlows Red Velvet Syrup** (*Hailand Harty & Co. London*). Contains in each ounce Tinct Opii Camph Syr Scillæ, Syr Tolu and Syr Pruni Serot. of each 80 minims Tinct Chlor et Morph B P 1885 5 minims Syr Rhœados B P C 1949 140 minims

Bates & Co s Compound Breast Salve (*Bates & Co West Molesey*) Ol Rap 20 4% Coloph. 46 1% Cera Flav 29 3% Ol Terebinth. 1 1% Ol Thym. 0 5% Zinc Carb 2 6%

[P] **Baume Dalet** (*International Laboratories Ltd, Chessington*) Chlorbutol 3% Ethyl Am nobenzoate B P 3% w/w Glycol Monosalicylate 3% Menthol 0 5% Camphor 1% Hydrarg Subchlor 3% Aq Hamam 10% Zinc Oxide 5%

Baxen Tablets (*Nicholas Products Ltd Slough*) Each contains Aceto phenetidin 0 1823 g Phenazonum 0 0810 g Theobromina 0 0108 g Caffeina 0 0216 g

Beecham s Pills (*Beecham Pharmaceuticals Ltd St Helens*) Z ngib Pulv 25 08% Conand Pulv 5 40% Sapo Purus 12 00% Aloe 51 84% Ol. Rosmarin. 0 87% Ol Junip 0 87% Ol Anis 0 20% Oleores Capsic 0 11% Oleores Zingib 0 55% Light Mag Carb 3 08%

Beecham's Powders (*Beecham Pharmaceuticals Ltd St Helens*) Acetophenetidin 35 00% Acetylsal cyl c Acid 50 00% Caffeine 3 30% Kaol num Leve 10 80% Oleum Cinnamomi 0 12% Oleum Cinnamomi Fol i 0 48% Saccharin Sodium 0 30%

Beecham s Powders (Tablet Form) (*Beecham Pharmaceuticals Ltd St Helens*) Acetylsal Acid 50 00% Phenacet 35 00% Caffe ne 3 30% Ol Cinnam 0 12% Ol Cinnam. Fol 0 48% Saccharin Sod 0 32% Excip ad 100 00%

[P] **Bejean Specific for Gout and Rheumatism** (*Wilcox Joxeau & Co Ltd London*) Tinct Colch ci Fl B P C. [1923] Tinct. Colchici Sem B P [1948] Tinct. Gentian, aa 15 g Potass Iodid 4 g Aq Dest. ad 100 g

[P] **Bellapurin Suppositories** (*Riddell Products Ltd London*) Each conta ns Ext. Bellad Sicc 0 022 g Papaverine Hydrochlor 0 0218 g Ephedrine Hydro chlor 0 0011 g Atropine Methyln trate 0 0011 g Strontium Iodide 0 022 g *Oleum Cacao ad 2 20 g*

Beltona Lotion (*Beltona Ltd Hoddesdon*) Liq Ammoniæ Fort. 2 16 Oleum C tronellæ 0 03 Oleum Verbenæ 0 06 Methyl Sal cylas 0 15 Oleum Ricini 0 30 Alcohol (Industrial) 48 60 Aqua Dest 48 60 Colouring 0 1

Beltona Ointment (*Beltona Ltd Hoddesdon*) Unguentum Aquosum

Beltona Tablets (*Beltona Ltd Hoddesdon*) Each contains Sulphur Sublim $^1/_{10}$ grain Aspirin 2 grains Sod Benz. $^1/_8$ grain Caffein. $^1/_8$ grain Quininæ Sulphas $^1/_{60}$ grain Amylum $^1/_8$ grain, Acacia $^1/_8$ grain Sucros $^1/_8$ grain, Lactos. $^1/_8$ grain

Belzo Rheumatic Tablets (*Bellringer, Salford*) Each contains Acetophene- t d n $1^1/_2$ grains Guaiacum Resin 2 gra ns Phenazonum $1^1/_2$ grains, Phenol phthalein $^1/_8$ gra n

Benevit Tonic (*Heath & Heatl er Ltd St Albans*) The aqueous extractive from Burdock 3% Holy Thistle 1% and Red Clover 2% with Dec. Sars Co Conc. 5% Syrup 50% Acid Phosph. Conc 6% Flavouring Essences q.s Colour q s Aq Chlorof to 100%

Bengué s Balsam (*Bengué & Co Ltd Wembley*) Menthol 20% Methyl Salicyl 20% Adeps Lanæ 60%

Bengué's Balsam, Stainless and Greaseless (*Bengué & Co Ltd, Wembley*). Methyl Salicylate 15 g, Menthol 10 g, Greaseless Base to 100 g

Bengué's Dragées (*Bengué & Co Ltd, Wembley*) Each contains Menthol 0 005 g, Benzoic Acid 0 01 g, Borax 0 05 g, Excipient q s

Benolds Pastilles (*Smith Kendon Ltd, London*) Tereben 0 169%, Ol Eucalyp 0 077%, Ol Betul 0 066%, Menthol 0 056%, Ol Menth Pip 0 006%, Ext Glycyrrh 3 571%, Ol Pini Pumil 0 048%, Co Benz Tinct. 0 793%, Guaiacol Carb 0 028%, Glycerin 0 893% Creosot 0 007%, Thymol 0 006%

[PI] **Benzac Tablets** (*Wigglesworth Ltd Westhoughton*) Active constituents Phenolphthal 0 4%, Calc Lact 3 0%, Ephed Hydrochlor B P 6 9% w/w Caffein 6 9% Phenacet 39 5%

Besorbon Medicinal Snuff (*Kemsales Ltd, London*) Mag Carb. Pond. 38 6%, Bism Carb 3%, Calc Carb 5 8%, Acid Boric. 8 8%, Sod. Bicarb. 1 3%, Menthol 4 4%

Betalax Chocolate Laxative Drops (*Koray Ltd London*) Each chocolate drop contains Phenolphthalein 1 grain

[PI] **Betonin Tonic Tablets** (*Boots Pure Drug Co Ltd, Nottingham*) Each contains Cerevis Ferment Siec $1^1/_2$ grains Ferr Sulph. Exsic $^1/_4$ grain Strych. Hydrochlor B P $^1/_{120}$ grain, Aneurin Hydrochlor 0 5 mg Riboflav 0 5 mg

[PI] **Betul-Ol (Huxley Brand)** (*Gale, Bass & Co Ltd London*) Liniment containing Menthol 2 2%, Ol Betula Lenta 7 2%, Oil Spike Lavend 2 0% Methyl Salicylat 86 6% Chloral Hydrate 2% w/v

Biladin (*International Chemical Co Ltd London*) Tablets each containing Bile Salts 16 mg, Ipom Res 5 mg Podoph Res 5 mg., Aloe 20 mg, 60% ethanol ext of Colocynth 5 mg, Capsicin 1 mg, Mag Carb Pond 30 mg

Bilax (*Foster McClellan Products Ltd, London*) Pills each containing Podoph. Res 0 12 grain Aloin 0 12 grain, 60% Alcoholic Extract of Leptandra ($1=2^1/_2$) 0 06 grain, Jalap Resin 0 06 grain Gingerin 0 04 grain, Ol Menth. Pip 0 01 grain

Bile Beans (*C E Fulford Ltd, Leeds*) Each contains Podoph. Res. 7 80 mg Ext Case. Sagr Siec 8 90 mg, Jalap Res 3 05 mg, Ol Menth. Pip 0 97 mg. Oleores Zingib 1 56 mg Zingib Pulv 12 41 mg Oleores Capsic. 0 78 mg. 70% Alcoholic Extract of Colocynth (1—4) 5 20 mg Aloe Pulv 15 60 mg Cardam Fruct 1 30 mg, Ipom Res 4 55 mg Sod Tauroglycochol 8 45 mg

Biobalm (*Modern Health Products Ltd Chessington*) Powdered Slippery Elm Bark 24%, Barley Flour 67%, Powdered Irish Moss 6%, Biochemic Concentrate 3% (Pot Phosph 6x Scutellaria 3x, Ferr Phosph. 4x Mag Phosph 6x Calc Phosph 3x, Pot. Iod 6x)

[PI] **Bioflue** (*Biorex Laboratories Ltd, London*) Sodium Citrate 4 6%, Sodium Nitrite 0 23%, Strong Solution of Ammonium Acetate 8 34% Camphorated Tincture of Opium 4 6%, Solution of Amaranth 1 04% Vehicle to 100

Biometica Antiseptic Cream (*Biometica Ltd Boreham Wood*) Active ingredient Cetrimide 0 5%

Biorub (*Biorex Laboratories Ltd, London*) Methyl Nicotinate 1 0%, Glycol Salicylate 10 0%, Histamine Dihydrochlor 0 1%, Capsicin 0 1% Base ad 100 0%

Birley's Antacid Powder (*Walter Crowe Ltd London*) Gelatum Aluminii Hydroxidi Siccum 1 0% Magnesii Trisilicas 11 1%, Magnesii Carbonas Levis 87 9%

Bishop's Effervescent Carlsbad Salt (*Alfred Bishop Ltd Cambridge*). Sodii Sulphas 8 89%, Lithii Carbonas 0 37%, Sodii Chloridum 5 93%, Magnes. Sulphas 1 48%, Sodii Bicarbonas 45 226%, Calcii Hypophosphis 0 37%, Saccharinum 0 014% Acidum Tartaricum 24 91% Acidum Citricum 12 81%

Bishop's Effervescent Citrate of Caffeine (*Alfred Bishop Ltd, Cambridge*) Sodii Bicarbonas 41 60%, Acidum Tartaricum 22 57% Acidum Citricum 15 89%, Sugar 18 43%, Saccharinum 0 004% Caffeine 1 506%

Bishop's Effervescent Citrate of Caffeine Tablets (*Alfred Bishop Ltd Cambridge*) Caffeine 10% Sucrose 10% Saccharin 0 006%, Sodium Bicarbonate 40%, Citric Acid 20% Tartaric Acid 19 994% Each tablet contains one grain pure Caffeine

Bishop's Effervescent Citrate of Lithia (*Alfred Bishop Ltd Cambridge*) Sodii Bicarbonas 51 38%, Acidum Tartaricum 26 82%, Acidum Citricum 18 63% Lithii Carbonas 3 162%, Saccharinum 0 008%

Bishop s Effervescent Citrate of Magnesia (*Alfred Bishop Ltd, Cambridge*) Magnes Sulphas Exsic 6 55% Sucrose 15 75% Sodii Bicarbonas 41 35%, Acidum Tartaricum 18 40% Acidum Citricum 17 95%

Bishop s Kissingen Salts (in Effervescent Granules or Varalettes) (*Alfred Bishop Ltd Cambridge*) Sodii Phosphas 2 10% Sodii Chloridum 7 30% Magnes Sulphas 4 09% Calcii Carbonas 0 73% Sodii Bicarbonas 45 75% Acidum Tartaricum 27 32% Acidum Citricum 12 71%

Bishop s Natural Fruit Saline (*Alfred Bishop Ltd Cambridge*) Sodii Bicarbonas 50 66% Acidum Tartaricum 46 08% Acidum Citricum 3 26%

Bishop s Varalettes for Gout and Rheumatism (*Alfred Bishop Ltd, Cambridge*) Lithii Carbonas 10 40% Lithii Citras 7 42%, Sodii Bicarbonas 21 78% Acidum Tartaricum 20 80%, Acidum Citricum 39 60%

Bishop s Vichy Salts (in Effervescent Granules or Varalettes) (*Alfred Bishop Ltd Cambridge*). Sodii Phosphas 0 93% Calcii Carbonas 0 08% Magnes Sulphas 0 08% Potassii Chloridum 0 31% Sodii Sulphas 3 12% Sodii Bicarbonas 56 23% Acidum Tartaricum 24 93% Acidum Citricum 14 32%

Bis Ka-Ma Powder (*Roberts Chemists (Bond Street) Ltd, London*) Liq Paraffin 2 00 Calcined Magnesia 10 45 Bism Carb 15 42, Colloidal Kaolin 41 85 Gum Acacia 3 3 Aromatic Sweetened Excipient to 100

Biskolait Swedish Milk Diet (*Andoma Products Ltd Bradford*). Ingredients Milk Proteins Glucose Yeast Potassium Citrate Methylcellulose, Saccharin Soluble Vitamin A 2000 i u Vitamin B_1 2 5 mg Vitamin B_2 2 5 mg Vitamin C 50 mg Vitamin D 1000 i u Nicotinic Acid 12 mg per ounce

Bisma Rex Antacid Powder (*Rexall Drug Co Ltd Loughborough*) Sod Bicarb 67 2% Calc Carb 12-0% Magnesii Carbonas Ponderosus 3 75%, *Kaolinum Leve* 2 5% *Bism. Carb* 2 5% *Magnesii Carbonas Levis* 11 2% Diastas 0 2% Ol Menth Pip 0 125%

Bisma Rex Antacid Tablets (*Rexall Drug Co. Ltd Loughborough*) Each contains Mag Trisil 1 4 grains Mag Carb Pond 2 5 grains Calc Carb 7 1 grains Bism Carb 0-2 grain Ol Menth Pip 0 05 minim

Bisma-Calna Cream (*E H Butler & Son Ltd Leicester*) Bism. Carb 1 65%, Light Mag Carb 5 25% Creta 5-0% Sod Bicarb 3 75%

Bisma-Calna Powder (*E H Butler & Son Ltd Leicester*) Bism. Carb 10% Heavy Mag Carb 30% Chalk 20% Sod. Bicarb 30% Calc Carb 10%

Bismuthated Magnesia Ovals (*Cupal Ltd Blackburn*) Mag Carb Pond 21 87 Calc. Carb 21 87 Kaolin 6 24 Bism Carb 0 39 Ol Menth Pip 0 14 Sod Bicarb 1 56 Basis ad 100

BiSoDoL Powder (*International Chemical Co Ltd London*) Active constituents Light Mag Carb 39 27% Sod Bicarb 57 49% Bismuth Aluminate 1 40% Diastase 1-40%

BiSoDoL Rollmints and BiSoDoL Tablets (*International Chemical Co Ltd London*) Light Mag Carb 5 37% Sod Bicarb 5 10% Bismuth Aluminate 0 27% Calc Carb 41 70% Diastase 0 74% Mint Flavoured

Bisurated Magnesia (*International Chemical Co Ltd London*) Sod. Bicarb. 47 5% Bism Carb 2 5% Mag Carb Pond 30% Mag Carb Lev 20%

Bisurated Magnesia Tablets (*International Chemical Co Ltd London*) Each contains 4 78 grains of Bismag Powder of the following composition Sod Bicarb 47 5% Bism Carb 2 5% Mag Carb Pond 35 3% Mag Carb Lev 14 7%

Bisuroids Laxative Tablets (*International Chemical Co. Ltd, London*) Each contains Phenolphthalein 1 grain

Blackfrutex Cough Linctus (*Wright, Layman & Umney Ltd London*). Active ingredients Oxymel Scillæ 12 5 Tinct. Ipecac. 4 16, Syr Tolu. 24 96, with Blackcurrant Flavour

Blanchard s Female Pills (*Leslie Martyn Ltd London*). Ferr Sulph. Exsic. 10% Rhei Pulv 20% Cinnam. Pulv 12% Cardam. Sem. Pulv 12% Zingib Pulv 12% Syr Glucos Liq 30% Apiol 4%

Boldariem (*Spencer & Co London*) Capsules each containing Ol Junip. Oxyced 0 463 grain Ol Tereb nth. 0 802 grain Sulphur 0 061 grain Ol. Linum 0 216 grain Ol Cynara Scolymus 0 463 grain Ext. Boldo 0 309 grain Ext Hepat. Sicc. 0 309 grain, Hexamine Camph. 0 309 grain

Bonomint Laxative Chewing Gum (*Westminster Laboratories Ltd London*) Sucrosum 66 40% Glucosum Liquidum 11 85% Phenolphthalein 4 83% Amylum 2 00% Acaciæ 0 22% Oleum Menthæ Piperitæ 0 45% Basis 13 2%.

Boots Baby Cream (*Boots Pure Drug Co Ltd Nottingham*) Zinc Oxide 7 5% Pot Hydroxyquinolin Sulph 0 1%

Boots Cold and Influenza Tablets (*Boots Pure Drug Co Ltd Nottingham*). Camph $^{1}/_{8}$ grain Ext. Cascarae Sagr Siccum $^{1}/_{8}$ grain Phenacet 2 grains Capsic. $^{1}/_{8}$ grain Quinine Sulph $^{1}/_{2}$ grain Prep Ipecac. $^{1}/_{8}$ grain Podoph. Resin $^{1}/_{40}$ grain

Boots Cold Sore Lotion (*Boots Pure Drug Co Ltd Nottingham*) Camphor 3 0% Menthol 0 2% Dybenal (2 4 dichlorobenzyl alcohol) 0 25%

Boots Juniper Pills (Back and Kidney) (*Boots Pure Drug Co Ltd Nottingham*) Guaiac Resin $1^{1}/_{2}$ grains Scill $^{1}/_{4}$ grain Rheum $^{1}/_{8}$ grain Aloe $^{1}/_{8}$ grain, Myrrh $^{1}/_{12}$ grain Pot Sulph $^{1}/_{8}$ grain Ol Junip $^{1}/_{12}$ minim, Ol Menth. Pip $^{1}/_{100}$ minim Ext Quass $^{1}/_{8}$ grain

Boots Sting Relief (*Boots Pure Drug Co Ltd Nottingham*) Zinc Oxide 2 0% Benzyl Alc 1 5% Chloroxylenol 1 5% Ol Eucalyp 1 0% Borax 1 0% Menthol 0 5% Camphor 0 25%

Boots Universal Embrocation (*Boots Pure Drug Co Ltd Nottingham*). Ol Terebinth 12 0% Camph 0 5% Liq Ammon. Fort 2 0% Ammon. Carb 4 0% Ammon Chlor 2 0%

Bormol (*Roberts Chemists (Bond Street) Ltd London*) Thymol 0 1% Ess. Olis 0 3% Alum, Zinc Phenolsulphon aa 5% Sodium Borate 10% Acid Bor c 79 6%

Bowden's Indian Balm (*W Bowden's Indian Balm Co Barnstaple*) Active ingredients aqueous extract of Althæa Leaves (2 in 1) 1 1o6% Adeps 4 624% Palm Kernel Ol 1 4 21% Ol Chaulmoog 0 262% Ol. Olive 5 78% Ol Ricin 5 78% Ol Camph. Rect. 1 32% Ol Cajuput 1 32% Ol Rosmarin. 1 32% Ol of Thyme 1 32% Ol Eucalyp 1 32% Camph. 0 50% Canada Balsam 0 262%

Box's Herbal Ointment (*W H Box Plymouth*) Pulv Ulm. Fulv 10 5% Pulv Alth 10 5% Paraff Moll Flav ad 100%

Box's Indigestion Pills (*W H Box Plymouth*) Myrrh Pulv 18 02% Gentian Pulv 18 02% Zingib Pulv 18 02% Aloe Pulv 18 92% Capsic. Pulv 18 02% Acac Pulv 6 30% Cajuput Ol 2 70%

Braggatabs (*J L Bragg Ltd London*) Tablets each containing Charcoal 2 175 grains Dried Aluminium Hydroxide Gel 1 74 grains Light Kaolin 1 74 grains

Bragg's Charcoal Biscuits (*J L Bragg Ltd London*) Carbo Lignis B P C. 1934 $12^{1}/_{2}$%

Bragg's Charcoal Capsules (*J L Bragg Ltd London*) Carbo Lignis B.P C. 1934 50% suspended in Liquid Paraffin

Bragg's Charcoal Granules (*J L Bragg Ltd London*) Carbo Lignis B.P C. 1934 90%

Bragg's Charcoal Lozenges (*J L Bragg Ltd London*) Carbo Lignis B P C 1934 90%

Bragg's Charcoal Tablets (*J L Bragg Ltd London*) Carbo Lignis B.P C. 1934 90%

Brandreth's Pills (*Allcock Products Ltd Liverpool*) Ext. Cascarae Sagr Siccum 0 030 g Aloe 0 055 g Guaiac. Resin 0 021 g Ext Sarsae 0 003 g Capsicum 0 003 g Sap Dur 0 004 g

[P1] **Bromidia** (*Roberts Chemists (Bond Street) Ltd London*) Contains in each fl oz Chloral Hydrate 91 grains Potassium Bromide 91 grains Ext Hyoscyam. Siccum B P 1 grain

[P1] **Bromocarpine** (*Roberts Chemists (Bond Street) Ltd London*) Active constituents Potassium Bromide 12 00% Pilocarpine Nitrate B P 0 01% w/v

Bromo-Seltzer (*Thomas Harris Ltd Hounslow*) Phenacetin 1 250% Salicylamide 2 500% Caffeine 0 625% Sodium Bromide 6 250% Sugar 8 164% Sodium Bicarbonate 42 656% Citric Acid 38 555%

[P1] **Bronchipax Tablets** (*Nicholas Products Ltd Slough*) Each contains Ephedrine Resinate equivalent to Ephedrine Hydrochloride 30 mg Theophylline 40 mg Salicylamide 250 mg

[P1] **Bron-Skels Pastilles (Diabetic)** (*Smith Kendon Ltd, London*) Pholcodine B.P C. 0 106% w/w, Gum-Sorbitol Base ad 100%

Brooklax Chocolate Laxative (*Westminster Laboratories Ltd, London*) Chocolate 90%, Phenolphthalein 10%

Broparco Rheumatic Rub (*Brook, Parker & Co Ltd, Bradford*) Methyl Salicylate 25 00%, Camphor 7 75%, Menthol 3 00%, Eucalyptol 4 00%, Oil of Amber 4 00%, Capsicin 0 50%, Glycerin 5 00%, Turpentine 4 00%, in a water-miscible base

Broparco Sulphur and Herbal Bitters (*Brook, Parker & Co Ltd, Bradford*) Aloe Perryi 0 4%, Ext. Sennæ Liq 3 0%, Sulphur Sublim. 0 3%, 25% alcoholic extract (1 in 1) of Eupatorium Perfoliatum 0 3%, Tanacetum Vulgare 0 1%, Erythræa Centaurium 0 3%, Gentiana Lutea 0 6%, Acorus Calamus 0 6%, Podophyllum Peltatum 3 0%, Picræna Excelsa 0 6%, with Aneurine Hydrochloride 10 5 mg per oz

Broparco Syrup of White Pine and Tar (*Brook, Parker & Co Ltd, Bradford*) Liq Ext White Pine 2 50%, Liq Ext Squills 4 00%, Ammon Chloride 2 5%, Syrup of Tar 20%, Glycerin 10 00%, Flavouring and Colour q s, Base to 100%

Broparco Tisane de Qualité (*Brook, Parker & Co Ltd Bradford*) Ext Glycyrrh. Liq 2 4%, Ext Case Sagr Liq 0 6%, Ext Senn. Liq 1 2%, Capsicin 0 016%, Aloe 2 4%, Ol Anis 0 007%, Ol Coriand 0 007%, Ol Fœnic 0 007%, Ol Sassaf 0 006%, 25% alcoholic ext. (1 in 1) of Gentian 1 2% and Cichorium Intybus 1 8%, Base ad 100 000%

Broparco Walk-Easy Corn Paint (*Brook, Parker & Co Ltd, Bradford*) Ac Salicyl 8%, Ac Lactic 2%, Collodium Flex Meth Colour etc. to 100%

Bruzoff Oils (*Ruddell Products Ltd London*) Ol Cumin. 0 05%, Chlorocresol 0 02% Ol Arachidis ad 100%

Budden's S R. Skin Ointment (*Budden & Co Ltd, Liverpool*) Acid Boric. 11 2%, Phenol 1%, Ol Tereb 1 8%

Bunter's Nervine (*Gambartra Ltd London*) Acid Tann 4 25%, Acid Benz 0 5%, Camph 4 25%, Chlorof 9 8%

Burgess "Lion" Ointment (*Edwin Burgess Ltd London*) Adeps Lanæ Anhyd 28%, Paraffin Molle 28%, Cera Flav 12%, Resina 12%, Zinci Oleas 12%, Sp Vin. Methyl 8%

Burgess "Lion" Pills (*Edwin Burgess Ltd London*) P Rhei 24%, P Ext Aloes 18%, P Sapo 12%, P Myrrhæ 12%, Ol Manth. Pip 2% Syrup Excip

[P1] **Burnojel** (*Dalmas Ltd Leicester*) Copper Guaiacol Sulphonate 0 2, 5-Aminoacridine Hydrochloride 0 1, Benzamine Borate 0 1, Jelly Base ad 100

Buxton Rubbing Battle (*Braddock & Bagshaw Ltd, Oldham*) Oleores. Capsic 5 19%, Ol Terebinth. 12 69%, Camph 2 3%, Methyl Salicylate 2 3%

CB Coltsfoot Bronchials (*Wiggleworth Ltd Westhoughton*) Tablets containing the water-soluble constituents of 0 3% Coltsfoot Flower together with Cubeb 0 45%, Ext Glycyrrh. Liq 4 6%, Capsicin 0 004%, Tolu Bals. 0 15%, Liq Iod Fort 0 02%, Ol Eucalyp 0 02%, Menthol 0 276%, Ol Anis 0 75%

CMP Asthma Remedy (*C & M Medical Products Ltd, Bristol*) Caffein Sod Iod 8 3, Sod Iod 8 3, Acid Hydriod Dil 8 3, Ephedrine Hyd 0 95, Dec. Coffeæ 66 0, Aq Chlorof ad 100

[P1] **Cabdrivers Adult Linctus** (*Ford Jackson & Co (Sales) Ltd, Castleford*) Codein Phosph 1/8 grain Terpin Hydr 1/8 grain Menthol 1/64 grain Ol Pini Pumil. 1/64 minim, Ol Eucalyp. 1/32 minim, Alcoh 9 1/2 minims, Glycer 20 minims, Syrupus 17 minims, Glucos Liq 9 1/2 minims, Aq to 1 fl drachm.

Cabdrivers Junior Glucose Linctus (*Ford Jackson & Co (Sales) Ltd, Castleford*) Contains in each teaspoonful Acetum Ipecac 2 1/2 minims, Syrup Rhœados 5 minims Syrup Anisi 20 minims, in a fruit flavoured base

Cal-Bis-Nate (*William R. Warner & Co Ltd, Eastleigh*). Contains in each 20 grains Calcium Carbonate 6 1/4 grains Magnesium Carbonate 3 1/2 grains, Sodium Bicarbonate 3 1/2 grains Colloidal Kaolin 2 1/4 grains Magnesium Trisilicate 1 3/4 grains, Bismuth Subcarbonate 1/2 grain, Bismuth Subgallate 1/2 grain, Oil of Peppermint q s.

California Syrup of Figs (*Phillips, Scott & Turner Ltd, Surbiton*) Aqueous Extract of Senna Leaf (1–1) 27 8%, Aqueous Extract of Fig (1–1) 9 0%, Extract of Ginger (1–1) 0 11%, Oil of Cassia 0 04%, Oil of Peppermint 0 08%, Oil of Clove 0 11%

Calsalettes (*Torbet Lactic Oat Co Ltd, Edinburgh*) Tablets of 1 grain containing Alotinum 62 64792%, Amylum 27 14742%, Lactosum 5 10233%, Acid Stear 5 10233%

Calsaloids (*Torbet Lactic Oat Co Ltd, Edinburgh*) Alotinum 56 72507%, Amylum 24 58087%, Lactosum 4 61994%, Hydrarg Subchlor 9 45418%, Acid Stear 4 61994%

[P2] **Calvex Ointment** (*F C Calvert & Co Ltd, Manchester*) Cera Alb Co 26 2%, Phenol 8 1%, Camph. 4 4%, Cetac. 8 8%, Ol. Oliv et Arach. 52 5%

[P1] **Campbell's Cherry Flavoured Cough Syrup** (*Boots Pure Drug Co Ltd, Nottingham*) Morphine Hydrochloride B P 0 02% w/v, Syrup of Squill 8 3%, Dilute Acetic Acid 2 0%, Nitric Acid 0 3%, Rectified Spirit 0 6%

Candol Cold Sore Salve (*Clay & Abraham Ltd, Liverpool*) Sod Benz. 0 32, Acid Tann 4 0, Chlorbutol 0 64, Menthol 0 32, Base to 100

Caphedrodine (*E H Butler & Son Ltd Leicester*) Each fluid drachm contains Caffein et Sod Iod 5 grains, Sod Iod 5 grains, Ext Glycyrrh. Liq 5 minims, Chlorof ½ minim, Ephed Hydrochlor ½ grain

Carters Little Liver Pills (*Pretested Products Ltd Rickmansworth*) Each contains Aloe Curaçao 0 25 grain, Podophylli Resina 0 0625 grain.

Carter's Vegetable Cough Remover (*Potter's (Herbal Supplies) Ltd, Wigan*) Coltsfoot 5%, Mullein 2%, Maidenhair 1%, Marshmallow 2%, Blood Root 1%, Ipecacuanha 1%, Ol Anisi 0 1%, Theriaca 8%, and the aqueous extractive from Hyssop 3%, Horehound 2%, Elecampane 2%, and Fleurisy Root 4%

Cartwright's Nerve and Bone Liniment (*W B Cartwright Ltd Rawdon*) Ol Terebinth 12 50%, Ammon. Bicarb 3 75%, Ammon Chlor 1 87%, Liq Ammon Fort 2 50%

Cassells (Dr) Tablets (*Beecham Pharmaceuticals Ltd, St Helens*) Each contains Dried Ferr Sulph. 0 96 grain, Cupri Sulphas 0 007 grain, Calc. Phosph 0 85 grain, Caffeine 0 49 grain, Cerevis Ferment Sicc. 1 82 grains, Aneur Hydrochlor 0 166 mg

[P1] **Castellan No 10 Cough Mixture** (*John McGuffie & Co Ltd, Liverpool*) Morphine Acetate 0 036% w/v, Antim et Pot Tart 0 045% w/v, Ext. Glycyrrh Liq 1 00%, Ext Scill Liq 1 50%, Acet Scill 2 70%, Ether 0 37%, Chlorof 0 25% v/v, Ol Anis 0 094%, Ol Menth Pip 0 094%, Sod Algin. 0 8%, Aquæ ad 100%

Cefonin (*Kenwood Laboratories Ltd, London*) Tablets each containing Phenylsemicarbazide 4 grains, Caffeine ½ grain, Lactose 5 grains

Cephos Powders (*Beecham Pharmaceuticals Ltd, St Helens*) Acetylsalicylic Acid 57 14%, Phenacetin 28 67%, Caffeine 4 76%, Kaolinum Pond 9 53%

Cephos Tablets (*Beecham Pharmaceuticals Ltd, St Helens*) Each contains Acetylsalicylic Acid 0 195 g, Phenacetin 0 095 g, Caffeine 0 015 g, Amylum 0 030 g, Acacia Pulv 0 015 g

Chex for Chilblains (*Harker Stagg Ltd London*) Acid. Tann 17%, Chloroxylenol 0 5%, Sp Meth Indust ad 100%

Chicabax (*Brook, Parker & Co Ltd, Bradford*) Chewing gum tablets each containing Phenolphthalein 2 grains.

[P1] **Chilban Chilblain Cream** (*Evans Medical Ltd Liverpool*) Glycol Salicylate 5%, Methyl Nicotinate 1 25%, Benzocaine B P 5% w/w, Chlorocresol 0 1% in a non greasy base

Chilbo Healing Ointment Tablet (*Amovon Ltd Bradford*) Adeps Lan. 9 12, Ceresin 15 25, Tereben 1 75, Coloph. 1 75, Paraff Dur 21 25, Meth. Sal 0 153, Bals Peruv 0 16, Ol Thym 0 034, Ol Caryoph 0 05, Ol Citronell. 0 04, Geraniol 0 04, Ol Eucalyp 0 1, Paraff Moll ad 100

[P2] **Chillilline** (*Sangers Ltd, London*) Ointment containing Phenol 3%, Glycerin 10%, Paraff Moll Alb 10%

Chilva Elixir (*Chilca Laboratories Ltd Bradford*) Syr Tolu 5, Inf Marrub. Conc 1 5, Ext. Scill Liq 0 025, Ext Cocillan Liq 0 025, Ext Seneg Liq

0 025 Ext. Ipecac. Liq 0 025 Ext. Glycyrrh Liq 8 5 Tinct. Capsic. 0 3, Glycer 5 5 Brandy 7 5 Ephed Hydrochlor 0 200 Acid Benzoic. 0 5, Cetrimid 0 06 Syr ad 100 *w/w*

Chlorophen (*Ayrton Saunders & Co. Ltd, Liverpool*). Chlorine 0 4% Iodine 0 11%, Bromine a trace Phenol 0 95% Ac. Salicyl 0 05%

Chloro Yeast (*Sun Island Chemicals Ltd London*). Tablets each containing Chlorophyll (water-soluble) 10 mg Dried Yeast 2 $^{3}/_{5}$ grains, Caffeine $^{1}/_{5}$ grain Phenacetin $^{3}/_{5}$ grain Acetylsalicylic Acid $^{3}/_{4}$ grain, Phenolphthalein $^{1}/_{12}$ grain.

Christy's Emulsion (*Thos Christy & Co Ltd Aldershot*) Active constituents Adeps Lanæ 4 80% Glyceryl Monostearate 4 80% Cera Alba 0 70% Cetac 0 70%, Propyl Hydroxybenzoate 0 04% Methyl Hydroxybenzoate 0 08% Glycerin 2 16% Sp Meth Indust 7 50% Parachlorometaxylenol 0 05% Aminacrin Hydrochlor 0 00035%

Clarke's Blood Mixture (*The Lincoln & Midland Counties Drug Co Ltd Lincoln*) Pot Iod 1 15% Sod Sal 1 85% Pot. Bicarb. 1 85% Ammon. Chlor 0 70% Conc. Co. Gent Inf 0 75% Dec Sars Co. Conc 0 75%, Chlorof 0 25%, Sacch Ust 0 25% Aq ad 100%

Clarke's Blood Mixture Tablets (*The Lincoln & Midland Counties Drug Co Ltd Lincoln*) Pot Iod 19 230% Pot Bicarb 15 384% Sod Sal 23 076% Extract of Gentian 3 846% Oleum Cassiæ 0 769% Caffeine 3 846% Cerevis. Ferment. Sicc 23 076%

Clarke's Pills (*The Lincoln & Midland Counties Drug Co, Ltd, Lincoln*) Aloin 20 0% Jalap. Res 12 5% Podophyllin 10 0% Gingerin 12 5% Capsic. 12 5% Ol Menth Pip 5 0% Excip. ad 100%

Clarke's Salve (*The Lincoln & Midland Counties Drug Co Ltd Lincoln*) Zinc Oxid. 10 000% Acid Salicyl 1 339% Coloph 10 000% Thymol 0 268% Paraff Dur 0 714% Paraff Moll Alb 77 679%

Clarke's Skin Lotion (*The Lincoln & Midland Counties Drug Co Ltd Lincoln*) Liquor Picis Carbonis 10 00% Sodium Borate 2 50% Glycer 1 50% Ol Thym 0 05% Aq ad 100 00%

Clarkson's Medicine (*Clarkson Ryde*) Tinct Zingib Mit. 1 250% Tinct. Myrrh. 1 875% Spiritus Camphoræ 1 875% water soluble constituents of Capsici Pulv 7 000% and Coccus Cacti 0 062% Spiritus Rectificatus 50 000% Aquam ad 100%

Clearasil (*Vick International Ltd London*) Greaseless ointment containing Resorcinol 2% Sulphur 8% Hexachlorophane 0 05%

Cleer (*Universal Laboratories Ltd Folkestone*) Active constituents Tetrahydrozoline Hydrochloride 0 025% Phenylephrine Hydrochloride 0 25%

Clolster Herbal Tea (*Campbell Laboratories Torquay*) Peumus Boldus 0 02 Cassia Angustifolia 0 20 Rhamnus Frangula 0 10 Glycyrrhiza Glabra 0 10 Mentha Piperita 0 08 Hamamelis Virginiana 0 02 Melissa Officinalis 0 05 Parietaria Officinalis 0 02 Coriandrum Sativum 0 02 Spiræa Ulmaria 0 08 Saponaria Officinalis 0 09 Pimpinella Anisum 0 05 Illicium Verum 0 02 Anethum Fœniculum 0 02 Origanum Majorana 0 02 Veronica Officinalis 0 02 Althæa Officinalis 0 02 Fraxinus Excelsior 0 07

Cockburn's Balsam (*Cockburn & Co Ltd Glasgow*) Syr Marrub 13 50 Spt Anis 0 012, Tinct. Scill 10 00 Ext Seneg Liq 2 00 Tinct Capsic. 1 66 Ext Grindel Liq 0 33 Liq Tolu 2 5 Ammon Chlorid 0 50 Syr 40 00 Acid Benz 0 33 Aq Chlorof ad 100

Cockburn's Pills (*Cockburn & Co Ltd Glasgow*) Ext Euonym 7 0% Ipom. Res 3 5% Colocynth 7 0%, Aloe 14 0% Sap Dur 14 0% Phenolphthal 3 5%, Oleores Zingib 1 75% Excipient and Coating ad 100%

[Pl] **Codilax** (*Thomas Guest & Co Ltd Manchester*) Tablets each containing Acid Acetylsalicyl 5 grains Codein Phos $^{1}/_{3}$ grain Phenacetin 2 $^{1}/_{2}$ grains Caffein 1 grain Phenolphthalein $^{1}/_{6}$ grain

[Pl] **Codis** (*Reckitt & Sons Ltd London*) Tablets each containing Acid Acetylsalicyl 4 grains Phenacet 4 grains Codein Phosph 0 125 grain Calc Carb 1 2 grains Acid Cit (Exsic.) 0 4 grain

[Pl] **Colchi-Sal Capsules (Huxley Brand)** (*Gale Bates & Co Ltd London*) Each contains Colchicine 0 25 mg Methyl Salicylate (natural) 200 mg

Coldrex (*Phillips Scott & Turner Ltd Surbiton*) Tablets each containing Paracetamol 400 mg Phenylephrine Hydrochloride 5 mg, Vitamin C 50 mg

[Pl] **Collis Browne s (Dr J) Chlorodyne** (*J T Davenport Ltd London*) Active constituents L quid Extract of Op um (10°₀ Morphine) 1 4°₀ w/v Codeine 0 21% w/v Chloroform 14% v/v Proof Sp r t 5 75°₀ v/v Extract of Caps cum 0 032% w/v Oil of Peppermint 0 05°₀ v/v

Collozin Lotion (*Evans Medical Ltd L verpool*) Active constituents Zinc. Hydrox 1 83% Menthol 0 046% Glycerin 5 0°₀ Chlorocresol 0 25°₀

Collyrol Eye Lotion (*Savory & Moore Ltd London*) Acid. Boric. 0 50 Z nc Sulphate 0 03°₀ Sodium Chloride 0 38% Chloroform 0 09° Geraniol 0 027°₀ Colouring matter 0 83% Preservative q s Aq Dest. ad 100%

Coluval Eye Lotion (*Roberts Chem ts (Bond Street) Ltd London*) Borax 0 6% Boric Acid 0 75% D stilled W tch Hazel 19 0°₀ and O l of Fennel 0 03%

Compericum (*Un ted Chemists Associat on Ltd Cheltenham*) O l-constit uents of 6% Flores Hypericum s nd 0 3% Anchus with Acid Tannic 0 05°₀ in Ol Arach

Condy s Fluid (*Savory & Moore Ltd London*) Contains approxima ely Twice ts volume of available oxygen der ved from the 1°₀ compounds of manganic and permangan c acids contained by this fluid Sodium Chloride 4% and Sodium N trate (a trace)

Congreve s Balsamic Elixir (*G T Co greve Ltd Horsha n*) Contains aqueous extracts of Marrub 0 5°₀ Tuss lag Fol 0 5°₀ Hyssop 0 25°₀ and Rosemary 0 375°₀ together w th alcohol (48°₀) extract of Bals Tolu 2° Fact tious Venice Turpentine 2% Catech. 2°₀ Guaiac. Res. 1°₀ Cocc. 0 25°₀ and Scill 0 5% Ethyl Alcohol 27 5% v/v

[Pl] **Cortiforte Deep Penetration Massage Cream** (*Haiand Harty & Co London*) Adrenaline (1 5000) Methyl N cotinate (1 100) Caps cin (1 1000)

Cremor Antispasmodic (*Wade Pharmaceuticals Ltd Glasgow*) Act ve ingredients Benzyl Benzoate 2 5% Camphor 0 05% Bismuth Carbona e 0 62% Oil of An seed 0 31° Chloroform 0 31% Glycerin 12 5°₀

[Pl] **Creo Bronchial and Catarrh Syrup** (*W B Cartwright Ltd, Rawdon*) Creosot 0 312°₀ Lactic Acid 0 312% Codeine Phosph. B.P 0 046°₀ w/v Cale i Lactophosphas 0 625% Ol Ab et 0 156°

[Pl] **Creo Terpin** (*Ayrton Saunders & Co Ltd Liverpool*) An elixir containing in each 60 minims D onin $^1/_{12}$ grain Terpin Hydrate $^1/_2$ grain Creosote 1 minim, Pinus Canadens s 10 grains

Crescendo Tonic Syrup (*McClure Young & Co Ltd London*) Ext. Malt Liq 80 fl oz Ferri et Ammon. C t Virid. 2 lb. 4 oz 280 grains, Copper Sulphate (Pure) 64 grains Calcium Glycerophosph 7 oz. 87$^1/_2$ grains Aqua 40 fl oz Blackcurrant Essence 16 fl oz 420 minims Syrup Glucose ad 10 gallons

Crookes Scalp Lotion (*The Crookes Laboratories Ltd London*). *Colloidal* Mercury Sulphide (1%) 1 9% Sod um Hydroxide 0 07°₀ Sod um Sal cylate 1 0% Sodium Thiosulphate 2 5% Phenol 0 2% Benzylcresol 0 025° (Supp l ed non-oily and o ly the latter containing L ght L qu d Paraffin 10°₀)

Croupline Cough Syrup (*Roberts' Croupline Ltd Bolton*) Active consti tuents The water soluble constituents of Lobel 3 62% Grindel a 0 56% Anis 0 9% and Tuss lagina Fol a 1 06°₀ together with Ol An s. 0 1°₀ Acid. Acet 0 24% Sucrose 59 8%

Croupline Pastilles (*Roberts Croupline Ltd Bolton*) Act e constituents The water soluble constituents of Lobel 4 75% An s 1 1% and G ind ha 0 46% together w th Ext. Ipecac L q 0 05°₀ Inf Seneg Conc 0 22°₀ Ext. Glycyrrh. Liq 1 78% Ol Anis 0 03% Ol Menth P p 0 08% Ol Caryoph 0 04% Oleores Caps e 0 002%

Cupal 10 Hour Cold and Flu Capsules (*Cupal Ltd Blackburn*) Each contains Quinine Sulphate $^7/_{24}$ grain, Menthol $^1/_8$ gra n *Acid Acetylsalicyl* c 2$^1/_2$ grains Oleores n Capsicum $^1/_{400}$ gra n Camphor $^1/_8$ grain Cinnamon Oil $^1/_{400}$ minim

Cupal 10 Hour Flu Mixture (*Cupal Ltd Blackburn*) Acid Hydrochlor 0 395% Ac d N t. 0 296°₀ Quinin. Hydrochlor 0 016°₀ Quinin Sulph. 0 17% Ol Eucalypt. 0 094% Totaquin. 0 078°₀

Cupal Insect Bite Cream (*Cupal Ltd Bla kburn*) Antazol ne HCl 2°₀ w/w in a non greasy basis.

Cupal Menthol and Wintergreen Cream (*Cupal Ltd Blackburn*) Ol Eucalypt. 1 25% Methyl Salicyl 11 20% Thymol 0 66% Menthol 0 22% Phenol 0 37% Camph 0 34% Ol Sinap Vol 0 08% Basis ad 100 00%

[P] **Cupal Travel Sickness Tablets** (*Cupal Ltd Blackburn*) Each contains Hyoscine Hydrobromide 0 005 grain

CurAcho (*CurAcho Co Horley*) Embrocation containing Camphor 1% Ol Rosmarin 1% Ol Sassaf 1 5% Ol Camph. Rect. 5% Phenol Liq 0 8% Acid Acet. Glac 1 5% Sap Moll 2 5%

Curlcones (*Stephen Mattheus & Co Ltd London*) Capsules and Tablets containing Sulphur Præc p 19 7 Sodii B carbonas 5 6 Cimicifuga 3 5 Guaiaci Resina 2 1 Aspirin 3 5 Sodii Benzoas 1 4 Soluble Casein 3 5 Zingib Pulv 0 7 Lactose ad 100

Curraglen Bronchial Mixture (*Carter Bros Sh pley*) Syr Tolu 12 5% Syr Rhœad 12 5% Ext Ipecac Liq 0 15% Ext. Scill Liq 0 62% Acid Acet 1 86% Glycerin. 12 5% Succ Ribis Nig 0 62%

[P] **Cuscutine Laxative Pills** (*Wilcox Jozeau & Co Ltd London*) Each contains Ext Cuscutæ 0 32 grain Ext. Sennæ 0 16 grain Ext. Hyoscyam 0 008 grain Aloin Pur 0 48 gra n Excipient 0 632 grain

Cuticura Medicated Liquid (*Newbery & Phillips Ltd London*) Chlor butanol 0 51% Oxyquinol ne Sulphate 0 10% Resorcinol 0 51% Phenol B P 0 51% Camphor 0 20% Boric Acid 1 75% Glycerin 6 30% Alcohol 28% by volume.

Cuticura Ointment (*Newbery & Phillips Ltd London*) Mineral Oil 28 50% Petrolatum 50-43% Mineral Wax 18 17% Beeswax 1 94% Pine Oil 0 04% Rose Geranium 0-17% Chlorophyll 0 04% Oxyquinoline 0 05% Sulphur Præcip 0 50% Phenol B P 0 16%

Cypholds (*Smith Kendon Ltd London*) Pellets containing Menthol 1 172% Ext Glycyrrh. ad 100 00%

Cystex Tablets (*Knox Laboratories Ltd London*) Each contains Hexamine 129 6 mg Sodium Sal cylate 97 2 mg Phenacetin 64 8 mg Benzoic Acid 24 3 mg

D D D Balm (*D D D Co Ltd Watford*) Active ingredients Thymol 0 09% Menthol 0 15% Methyl Sal cyl 1 15% Phenol 0 98% Chlorbutol 1 11% Hexachlorophane 0 2% Glycerin 5% Resorcin 0 25% Lanolin 5% Titan ium D oxide 0 5%

D D D Prescription (Extra Strength) (*D D D Co Ltd Watford*) Active ingredients Thymol 0 09% Menthol 0 14% Ac d Sal cyl 1 84% Resorcinol 0 74% Chlorbutol 1 10% Methyl Sal cyl 0 92% Glycerin 7 72% Phenol Liq 0 98% Alcohol 34 73%

D D D Prescription (Ordinary Strength) (*D D D Co Ltd Watford*) Act ve ingredients Thymol 0 09% Menthol 0 14% Ac d. Salicyl 0 75% Resorcinol 0 75% Chlorbutol 1 13% Methyl Sal cyl 0 94% Glycerin 7 93% Phenol Liq 0 98% Alcohol 34 11%

Dalli Mouthwash Tablets (*Arthur H Cox & Co Ltd Brighton*) O l of Peppermint 0 56% w/v Methyl Sal cylate 0 02% w/w Thymol 0 23% w/w O l of Clove 0 33% w/v Oil of Spearmint 0 03% w/w Menthol 0 62% w/w Effervescent Base to 100%

Daisy Powders (*J E Ellis Ltd, Harrogate*) Acetophenetidin 44 44% Ac. Acetylsal cyl 55 56%

Daisy Powders (Red Label) (*J E Ellis Ltd Harrogate*) Active const tuents Acid Acetylsal cyl 52 25% Acetophenetidin 30 87% Caffein. 3 75% Piperyl p perid ne 0 25%

Daisy Tablets (*J E Ellis Ltd Harrogate*) Active ingred ents Acetophen etid n 24 98% Acid Acetylsal cyl 54 16% Caffein 1 67% Piperyl p perid ne 0 17%

[P] **Dalay** (*International Laboratories Ltd Chesin ton*) Tablets each con ta ning: Ephedrine Hydrochloride $^1/_{10}$ grain Acetyln ethyldimethyloxamido-phenylhydraz ne $^1/_8$ gra n Phenacetin 4 grains, Ext. Hyoscy S cc. B.P $^1/_{10}$ grain.

Damalets (*Modkem Ltd Leicester*) Tablets containing: Ext. Osmiana 1 Ext. Kola 1 Ferri et Quin. Cit 1 Excip ent q s

Damianets Tablets (*Brook, Parker & Co Ltd, Bradford*) Ferri Hypophos. 1/3 grain Quin Sulph. 3/8 grain, Pulv Ext Damian 1 grain

Daxalds (*Universal Laboratories Ltd, Folkestone*) Tablets each containing Dihydroxy Aluminium Sodium Carbonate 340 mg

Daxalds Instant Dispersal Indigestion Tablets (*Universal Laboratories Ltd Folkestone*) Each contains Dihydroxy Aluminium Sodium Carbonate 50 mg Calcium Carbonate 500 mg

De Witt's Antacid Powder (*E C De Witt & Co Ltd, Croydon*) Mag Trisil 10 0, Mag Carb Lev 10 0, Calc. Carb 20 0 Sod Bicarb 48 5 Kaolin Lev 9 0 Gelat Alumin Hydrox Sicc 2 0, Ol Menth Pip 0 5

De Witt's Antacid Tablets (*E C De Witt & Co Ltd, Croydon*) Each contains Gelat Alumin Hydrox. Sicc 0 5 grain, Calc Carb 5 0 grains Mag Carb Pond 3 0 grains, Mag Trisil 0 5 grain Ol Menth Pip 0 0625 minim, Lactos 2 0 grains

[P1] **De Witt's Antibiotic Throat Lozenges** (*E C De Witt & Co Ltd, Croydon*) Each contains Tyrothricin 1 25 mg, Benzocaine B P 8 mg

De Witt's Kidney and Bladder Pills (*E C De Witt & Co Ltd Croydon*). Each contains Pot Nitras 0 05 g Oil of Juniper 0 002 g 60% Alcoholic Extract of Buchu (1–4) 0 01 g Pichi 0 013 g Methylene Blue 0 01 g, Aqueous Extract of Uva Ursi (2–7) 0 02 g, Ext. Case Sagr Sicc 0 015 g

De Witt's Little Laxaliver Pills (*E C De Witt & Co Ltd, Croydon*). Each contains Aloin 0 125 grain, Ext Case. Sagr Sicc. 0 125 grain, Phenol phthal 0 5 grain, Ext Gent. 0 25 grain.

Degalan Ointment (*Chas Zimmermann & Co Ltd Greenford*) Active ingredient Bacillus Coli Vaccine (132,000 million per ml) 0 5%, in an appropriate fatty base

Degalan Suppositories (*Chas Zimmermann & Co Ltd Greenford*). Bacillus Coli Vaccine (132 000 million per ml) 0 25%, in a polyethylene glycol base

Dentosine (*Curson, Gerrard & Co Ltd, Oldbury*) Mouthwash containing Tannic Acid 2 2%, Phenol 2 2% Glycerin 11% Isopropyl Alcohol 11%, 60% Alcoholic Tincture of Krameria (1 in 5) 7%, Witch Hazel (Distilled Extract) 10%

Dermateg Antiseptic Barrier Cream (*Wade Pharmaceuticals Ltd Glasgow*) Contains Chloroxylenol 0 1%

[P1] **Dex Pastilets** (*Meggeson & Co Ltd, London*) Tablets each containing Dextromethorphan Hydrobromide 0 21%, Ephedrine Hydrochloride 0 21%, Papaverine Hydrochloride 0 04%, and Menthol 0 34%

Diadermine (*Diadermine Ltd Alperton*) Acid. Stear 12 7, Ammon Carb 0 6, Sod Carb 0 5 Glycer 77, Aq Dest ad 100

[P1] **Dicey's Drops (Dr Bateman's)** (*W Sutton & Co, Enfield*) Castoreum 0 052%, Camphora 0 416%, Oleum Anisi 0 208% Alcohol (90%) 12 5% Morphine Anhydrous 0 084% w/v, Caramel 1 04%, Pot Carb 0 208%, Aqua ad 100%

Digene (*Boots Pure Drug Co Ltd Nottingham*) Mag Trisil 45 5%, Dried Alum Hydrox Gel 45 5% Light Mag Oxide 5 0%, Zingib 2 0%, Rheum 0 5%, Ext Gent. B P C 1954 0 28%, Calumb B P C 1954 0 5%, Saccharin Sod 0 02% Sod Chlor 0 5% Olea Aromatica 0 2%

Dinneford's Pure Fluid Magnesia (*Beecham Pharmaceuticals Ltd St Helens*) Consists of Liquor Magnesii Bicarbonatis B P 1948, which contains not less than 2 5% of Magnesium Bicarbonate

Diotex Tablets (*Knox Laboratories Ltd, London*) Each contains Magnesium Hydroxide 4 400 grains Papain 1 000 grain, Oil of Cassia 0 050 grain.

Dismenol Tablets (*Roberts Chemists (Bond Street) Ltd London*) Each contains Parasulphamidobenzoic Acid 0 05 g, Antipyrin 0 25 g, Lactose 0 25 g

[P1] **Dispello Catarrh Snuff** (*Ayrton Saunders & Co Ltd Liverpool*) Menthol 2 41, Ol Pini 1 20 Ol Eucalypt 1 20 Terebene 1 20 Bism Oxycut 14 51 Mag Carb Pond 21 77, Perfume 1 20, Ephedrine Hydrochlor 1 0, Ac Boric to 100

Diuromil (*Eucryl Ltd, Southampton*) Piperazine Tartrate 3 321 Piperazine Citrate 2 223, Hexamine 3 500, Lithium Salicylate 0 800 Lithium Benzoate 0 725 Exsiccated Sodium Phosphate 2 325, Effervescent Base q.s. ad 100

Doan s Backache Kidney Pills (*Foster McClellan Products Ltd London*) Each contains Aloin 0 01 grain Aqueous Extract of Buchu (1=2½) 0 12 grain Buchu 0 12 grain Ext Gent 0 32 grain Pot. Nitras 0 50 grain Aqueous Extract of Uva Ursi Leaves (1=3 0) 0 60 grain Powdered Uva Ursi Leaves 0 55 grain.

Doan s Ointment (*Foster McClellan Products Ltd London*) Calomel 4 969% Zinc Oxide 19 875% Yellow Soft Paraffin 67 909% Phenol 1 657% White Beeswax 5 590%

Dodd s Kidney Pills (*Thomas Marns Ltd Hounslow*) Ext Buchu 0 00324 g Ext. Uvæ Ursi 0 00324 g Ol Juniperis 0 0162 g Sod Bicarb 0 0648 g., Pot. Nit 0 0648 g Saponis 0 0324 g Pod Res 0 00178 g

[P1] **Do Do** (*International Laboratories Ltd Chessington*) Tablets each containing Ephedrine Hydrochloride ½ grain, Caffeine ½ grain Acetylmethyl dimethyloxamidophenylhydrazine ½ grain Lobelia ½ grain Theobromine and Calcium Salicylate 1 grain Calcium Gluconate 1 grain

Dols' Rub Cream (*Dols Volatalise Flannel Ltd London*) Active ingred ents Sodium Iodide 0 45% Thorium Acetylacetonate 0 035% Camphor 0 40% Methyl Sal 9 50% Oleores Caps c 0 075%

Dols' Volatalise Flannel (*Dols Volatalise Flannel Ltd London*) Flannel impregnated with fluid containing Iodine 1 25% Oleum Gaultheriæ 0 13% Tinct of Capsicum 0 13% Acidum Boricum 2 0% Thorium Acetylacetonate 0 033%

[P1] **Double Three "33 Pile Ointment** (*W B Cartwright Ltd Ramsdon*) Adeps Lan 27 00% Paraff Moll Flav 31 24% Galla 11 75% Aq Hamam 5 87% Acid. Boric 2 15% Opium Pulverat. B P 1 91% w/w Menthol 1 10% Ol of Origanum 0 39%

[P1] **Drexamin Cream** (*Medkem Ltd Leicester*) Adrenaline B P 1–5000 w/w Ephedrine Hyd B P 1 1000 w/w

Drisian Decongestant Tablets (*International Chemical Co Ltd London*) Each contains Acetylsalicylic Acid 3 5 grains Phenacet n 1 5 grains Caffeine 0 25 grain, Ascorbic Acid 0 31 grain Phenylephrine Hydrochloride 0 077 grain.

Droxalin Gel (*Phillips Scott & Turner Ltd Surbiton*) Each teaspoonful (3 5 ml) contains Alum Hydrox Gel 60 grains (equivalent to Dried Alum. Hydrox. Gel 5 grains) Mag Trisil 5 grains

Droxalin Tablets (*Phillips Scott & Turner Ltd Surbiton*) Each contains Gelat Alumin Hydrox. Sicc 2 5 grains Mag Trisil 2 5 grains

Drury s Infants' Soothing Mixture (*Drury s Pharmaceuticals Ltd Newark on Trent*) Active ingredients Sod B carb 2½% Mag Carb Lev 2½%, Tinct. Zingib Mit 3% Sp Chlorof 3% Ol Anis 0 1%

Dusk Insect Barrier (*Cupal Ltd Blackburn*) Contains Diethyl Toluamide 20%

Eade s Anodyne Ointment (*George Eade Ltd London*) Paraff Moll 77 00% Paraff Dur 5 50% Ol Camph 8 66% Methyl Sal 5 75% Menthol 1 72% Oleores Caps c. 1 37%

[P1] **Eade s Rheumatic and Gout Pills** (*George Eade Ltd London*) Active constituents Ext Colch Sicc B P 25% Aloe 12 5% Guaiac Res 1 38% Colch. Corm Pulv B P 32% (Each pill contains Colchicine B P 0 0133 grain)

Earex Ear-drops (*Earex Ltd, Southport*) Eugenol 1 0 Terpineol 1 0 Safrol 1 0 Eucalyptol 10 0 Ol Arach s 17 0 Ol Amygdalæ Dulc. 33 0 Ti Tree Oil 0 1 Ol Pers c 17 0 Ol Camph Ess ad 100

[P1] **Eczemacide Lotion** (*Hailand Harty & Co London*) Mercuric Nitrate 0 5% o Hydroxybenzoic Acid 0 25% p Methan 3-ol 0 12% 3 Methyl 6 isopropylphenol [thymol] 0 1% Boric Acid 1 5% Oil of Sweet Birch 0 1% Benzoic Acid 0 25% in Industrial Sp rit.

Educol Tablets (*Modern Health Products Ltd Chessington*) Rhubarb 55% Irish Moss 25% Cranberries 15% Artichoke 3%, Asparagus 2%

Efrex Nasal Drops (*Rexall Drug Co Ltd Loughborough*) Phenylephrine Hydrochlor 0 25% Liq Benzalkon Chlor 0 05%, in Isotonic Solution.

Elasto Nature Salve (*New Era Laboratories Ltd London*) B H P Calcii Phosphas 6x 1 25% Potassii Phosphas 3x 1 25% Magnesii Phos. 6x 1 25% Calcii Fluoridum 6x 1 25% Ointment Base to 100

Elasto Tablets (*New Era Laboratories Ltd London*) Ingredients (stated in terms of homœopathic potency) Calcu Phosphas 6x Potassii Phosphas 3x, Magnesii Phosphas 6x Calcu Fluoridum 6x in equal proportions

Elliman s Fibro Cream (*Elliman Sons & Co Ltd Slough*) Methyl Salicyl 5 00% Methyl Nicotin 1 00% Ol Sinap Vol 0 10% Ol Caryoph. 0 75% Ol Terebinth 14 25% Emollient Cream Base ad 100%

Elliman s Medicated Foot Cream (*Elliman Sons & Co Ltd Slough*). Chloroxylenol 1 0% Terpineol 3 0% Potassium Hydroxyquinoline Sulphate 0 1% Potass um Aluminium Sulphate 2 0% D s Witch Hazel 10% Calamine 3 0% Menthol 1 0% Cream Base to 100 0%

Elliman s Universal Embrocation (*Elliman Sons & Co Ltd Slough*) Active constituents Ol Terebinth 35 41% Acid Acet (80% pure) 4 16%

Emulax (*Astra Heulett Ltd, Watford*) Tablets each containing Dioctyl Sod um Sulphosuccinate 120 mg Ext Case Sagr Conc. (Casanthranol) 50 mg

Endrine Nasal Compound Isotonic (*John Wyeth & Brother Ltd London*) Ephedrine Hydrochloride 0 50% Chlorbutol 0 25% Menthol 0 015% Camphor 0 015% Ol of Eucalyptus 0 10% Alcohol 0 5% Isotonic Saline to 100%

Endrine Nasal Compound Mild (*John Wyeth & Brother Ltd London*). Ephedrine 0 5% Camphor 0 3% Eucalyptol 0 5% Ol Rieini 0 35% Light Liquid Paraffin to 100%

Endrine Nasal Compound Ordinary (*John Wyeth & Brother Ltd London*). Ephedrine 0 75% Menthol 0 5% Eucalyptol 0 5% Camphor 0 5% Ol Ricini 0 35% Light Liquid Paraffin to 100%

Eno Fruit Salt (*Beecham Pharmaceuticals Ltd St. Helens*) Sod. B carb. 53 25% Acid Tart 43 50% Sod B tart 1 50% Sod. Tart. 1 75%

Enpro Foot Powder (*S W Cutrdin Ltd London*) Pancreatic Ferments 6 0% Salicylic Acid 2 0% Zinc Oxide 15 0% Magnesium Carbonate Levis 8 0% Zinc Peroxide 3 0% Calcium Iodide 0 2% Propyl *p*-Hydroxybenzoate 0 5% Benzyl *p* Hydroxybenzoate 0 2% Talcum ad 100 0%

Entacarb Powder (*Stafford Miller Ltd Hatfield*) Each 2 6 g contains Calcium Carbonate 1 04 g Kaolin 0 78 g Magnesium Carbonate 0 39 g Sodium Bicarbonate 0 19 g Potassium B carbonate 0 06 g Bismuth Subcarbonate 0 13 g Oil of Peppermint 0 0076 ml Soluble Saccharin 0 69 mg

[P1] **Enzolets** (*Boots Pure Drug Co Ltd Nottingham*) Tablets each containing Tyrothricin 1 mg Benzocaine B P 5 mg

[P1] **Ephazone Tablets** (*Keldon Ltd Perivale*) Each contains Ephed Hydrochlor B P 1/4 grain Theobrom. 1/2 grain Phenazon. 1 grain, Fluoresc Sod. 1/4 grain Calc. Glucon. 3/4 grain

Ephedrol (*Clay & Abraham Ltd Liverpool*) Ephedrine 0 95 Menthol 2 0, Camphor 2 0 Alkannin 0 05 Aromatic Oil 0 166 Paraffin Liq Leve ad 100.

[P1 S1] **Ergoapiol** (*Thos Christy & Co Ltd, Aldershot*) Capsules each containing Ergot Præparata B P 1 grain Oil of Pennyroyal 1/2 min m Apiol U S P IX (green) 5 minims Aloin 1/2 grain Castor Oil q s

Eupinal (*Cuxson Gerrard & Co Ltd Oldbury*) Caffein B P 2 2% Ammonium Iodide 6 87% Dec Coff Prep B P C 1949 70%

Evalert Energy Tablets (*International Laboratories Ltd Chessington*) Caffeine 1 grain Vitamin B_1 1 mg Dextrose Monohydrate 3 1/4 grains Amylum 1/4 grain

Evans Antiseptic Throat Pastilles (*Evans Medical Ltd Liverpool*) Menthol 0 201% Terebene 0 419% Eucalyptol 0 035% Peppermint O I 0 017% Potassium Chlorate 1 61% Sodium Chlorate 1 61% Borax 1 61% Liquorice Extract 3 87%

Everest Sting Relief Lotion (*United Chemists Association Ltd Cheltenham*) Active ingredients Phenoxyethyl Alcohol 0 5% Magnes Hydrox. 4 1% Menthol 0 23% Ol Citronell. 0 23%

Everymans Universal Embrocation (*Brook Parker & Co Ltd Bradford*). Active ingredients Ammon Chlor 1 25% Sapo Mollis 7 54% OL Terebinth. 25%

Exalagar (*Pinkerton Gibson & Co Ltd Edinburgh*) Paraff Liq Alb. 50 parts Gum 1 75 parts Sod Benz. 0 2 part Phenolphthalein 1 37 parts Agar-agar 0 28 part Flavouring 5 4 parts Aqua ad 100 parts.

Examone Cream (*Allied Laboratories Ltd, London*). Orthobenzylpara chlorphenol 0 66 mg Titanium Dioxide 2 0 g Zinc Oxide 10 0 g Aq Hamamelid s 5 0 ml in 100 g

Ex Lax (*Ex Lax Ltd Slough*) Chocolate 92% Phenolphthalein 8%

Ex Lax, Junior (*Ex Lax Ltd Slough*) Chocolate 96% Phenolphthalein 4%

[P1] **Exogen Tablets** (*McClure Young & Co Ltd London*) Each tablet of 11 8 grains contains Acid Acetylsalicyl 32 68% Codeine Alk 0 99% Phenacetin 32 68% Excipient ad 100 00%

Eyetone (*United Chemists Association Ltd Cheltenham*) Boracic Acid 2 0 Sodium Borate 0 5 Methyl Hydroxybenz 0 025 Propyl Hydroxybenz. 0 0125 Liq Hamam. Dest 5 0 Colour a trace Aqua Dest to 100 0

Faivre (Dr) Cachets (*Wilcox Jozeau & Co Ltd, London*) Each contains Oxyquinotheine 0 065 g Phenazone 0 228 g Acetophenetidin 0 260 g Magnes a 0 097 g

Falconer's Golden Compound (*Thomas Harris Ltd Hounslow*) Sap Moll 0 6% Ol Ricin 0 46% Ol Oliv 0 28% Ol Terebinth 2 50% Oleores. Capsic. 0 80% Sp Meth. Indust to 100 00%

[P1] **Famel Children's Cough Linctus** (*Keldon Ltd Pervale*) Active ingredients per 8 oz Pholcodine 14 mg Papaverine Hydrochloride 2 8 mg

Famel Pastilles (*Keldon Ltd, Pervale*) Each contains Creosot. 0 12 minim Ol Limon. 0 04 minim Ol Cinnam 0 09 minim, Menthol 0 126 grain

[P1] **Famel Syrup** (*Keldon Ltd Pervale*) Active constituents by weight. Creosote 0 26% Calcium Lactophosphate 0 125% Codeine B P C. 1954 0 023% Tinct Aconit. 0 55% Syrup 90%

Fam Lax Family Laxative Tablets (*Roberts Croupline Ltd Bolton*) Each contains. Phenolphthal 2 grains Rhei Pulv 0·44 grain.

Febs (*Boots Pure Drug Co Ltd Nottingham*) Tablets each containing Paracetamol 250 mg Ascorbic Acid 50 mg Caffeine 30 mg Quinine Bisulphate 10 mg Phenylephrine Hydrochloride 5 mg

Feen a mint Laxative (*White Laboratories Ltd London*) Chewing gum tablets each containing Phenolphthalein 0 0972 g

[P1] **Fellows Compound Syrup** (*Fassett & Johnson Ltd London*) Contains in each fluid drachm Manganese Hypophosphite $^1/_8$ grain Potassium Hypophosphite $^1/_8$ grain Sodium Hypophosphite $^1/_8$ grain Calcium Hypophosphite $^1/_8$ grain Iron Pyrophosphate Sol. $^1/_8$ grain Quinine Sulphate $^1/_{16}$ grain Strychnine Hydrochloride $^1/_{64}$ grain.

Felsol Powders (*British Felsol Co Ltd London*) Each contains Phenazone 0 768 g Phenacetin 0 097 g Caffeine 0 100 g Compound of Phenazone 0 018 g and Iodine 0-012 g Ext. Grandel Liq B P C. 1949 0 003 g 50% Alcohol Extract of Viscum (10-1) 0 002 g (equivalent to Ext. Visci B P C 1923)

Fennings Adult Cooling Powders (*John Sanger & Sons Lancing*) Each 3 grain powder contains Calc. Phosph. 9% Lactos. 14% Glycyrrh. 14% Phenacet 42% Mag Oxid Pond 21%

Fennings Children's Cooling Powders (*John Sanger & Sons Lancing*) Each 3 grain powder contains Mag Carb Pond. 10% Calc Phosph. 28% Lactos 14% Glycyrrh 33% Phenacet. 10% Mag Oxid Pond 5%

Fennings Cough Mixture (*John Sanger & Sons Lancing*). Active constituents Pot. Brom 5% Ext. Ipecac. Liq 0 25% Sucros 6 67% Liq Tolu. 1 04% Glycer 10% Acid Acet Dil 3 34%

Fennings Fever Mixture (*John Sanger & Sons Lancing*) Acidum Nitricum I 53 % v/v Oleum Menthæ Piperitæ 0 0075% v/v Sanguis Draconis 0 001% w/v Aqua ad 100

Fennings Indigestion Tablets (*John Sanger & Sons Lancing*) Each contains Mag Trisil 5 grains Mag Carb Pond. $^1/_2$ grain, Ol Menth. P p. and Excipient q s

Fennings Little Healer Tablets (*John Sanger & Sons Lancing*) P Scill $^1/_6$ grain, P Ipecac. $^1/_8$ grain P Elecampane $^1/_8$ grain, Conf Ros. Can $^1/_{24}$ grain Lactos. $^1/_{24}$ grain

Fennings Little Healers (*John Sanger & Sons Lancing*) Ipecac. 90% Conf Ros Can 10%

Fennings Ointment (*John Sanger & Sons Lancing*) Zinc Oxide 4% Calamine 3% Bornyl Acetate 1% Adeps Lan 6% Liq Picis Carbonis 6% Balsam of Peru 3% Paraff Dur 12% Paraff Moll to 100%

Fennings Rheumatic Tablets (*John Sanger & Sons Lancing*) Sodii Sal 3 grains Phenacetin 1 grain Aloin $^1/_{16}$ grain Excipients q s to 6 grains

Fennings Sulphur Powders (*John Sanger & Sons Lancing*) Lactos. 33% Sulphur Præc p 67%

Fernico Tablets (*Cupal Ltd Blackburn*) Each contains Ferrous Gluconate 200 mg Copper Gluconate 1 2 mg Nicotinamide 3 0 mg Vitamin B_1 0 166 mg Vitamin C 5 0 mg Caffeine 10 mg Vitamin B_2 0 166 mg

Feroglen Artery Tablets (*Carter Bros Shipley*) Chlorophyll 1 0% Ferr Phos 0 8% Calc Phos 6 0% Sucros to 100%

Ferrotone (*Ayrton Saunders & Co Ltd Liverpool*) Ferr Glycerophosph. 3 0 Calc Glycerophosph 3 5 Pot Glycerophosph 0 25 Sod Glycerophosph. 0 25 Acid Glycerophosph 0 04 Glycerin 25 0 *Sacch Alb 50 0 Flavouring* and Colour q s Aqua ad 100

Ferute Cough Syrup (*Hough Hoseason & Co Ltd Manchester*) Active constituents Ext Scill Liq 0 21% Ext Ipecac Liq 0 04% Glycer 17 50% Liq Tolu 3 03%

Fibrosine Balm (*International Chemical Co Ltd London*) Active ingredients. Methyl Nicotinate 1% Glycol Salicylate 5% Histamine Dihydrochloride 0 05% Capsicin 0 12%

Fiery Jack Rubbing Ointment (*Fylde Laboratories Ltd Preston*) Iodum 0 28 Ol Arach. 0 72 Capsicum 20 Adeps 8 Paraff Dur 8 Paraff Moll Flav ad 100

Figine Compound Syrup of Figs (*Boots Pure Drug Co Ltd Nottingham*). 45% alcoh ext from Senna Fruit 15% aq ext from Fig 11% Extract of Malt 26 7% Oil of Clove 0 02% Oil of Peppermint 0·005% *Benzoic Acid* 0 2%

Flowerdells Worm Treatment Tablets (*Flowerdells Ltd London*) Sod. Phosph 0 2% 45% alcoholic extractive from Populus Tremuloides 3 0% and aqueous extractive from Artemisia Abro 1 0%

Fogyl Pastilles (*Spencer & Co London*) Benzannozal (Benzoate of Sodium 46 Cinnamate of Sodium 54) 0 0025 g Perborate of Sodium 0 0025 g Eucalyptol 0 001 g *Menthol 0 001 g Milacyl* (Essence de Melaleuca Viridiflora) 0 001 g Sugar and Gum Arabic q s for 1 pastille.

[P1] **Folks Pastilles** (*Smith Kendon Ltd London*) Contain Pholcodine B P C. 0 106% w/w

Foot Ease Antiseptic Powder (*Wrigglesworth Ltd Westhoughton*) Hexachlorophane 0 5% Boric Acid 3 0% Calcium Carbonate 12 0% Cetostearyl *Alcohol 0 5%*

Forbes Influenza and Fever Mixture (*Brook Parker & Co Ltd Bradford*) Vin Ipecac 7 pts Pot Nitras 4 pts Sodii Nitras 4 pts Acid. Nit Dil. 35 pts Emulsio Chlorof 3 pts Aq Menth Pip 21 pts Aq Dest ad 200 pts.

[P1] **Formacaine Tablets** (*Fassett & Johnson Ltd London*) Each contains Paraformaldehyde $^1/_{60}$ grain Benzocaine $^1/_6$ grain Orthocaine $^1/_6$ grain, Codeine Phos $^1/_{24}$ grain Menthol $^1/_{24}$ grain

Formula 21 (*Beecham Pharmaceuticals Ltd St Helens*) Granules containing in each avoirdupois ounce Methylcellulose 262 grains Dextrose 113 grains, Lemon Essence 8 minims Citric Acid 4 grains Colouring Matter 0 5 grain Vitamin B_1 1 1 mg Riboflavine 2 7 mg Nicotinic Acid 10 9 mg Reduced Iron 10 9 mg Calcium 675 mg

[P1] **Franks (Dr) Skin Ointment** (*Wyleys Ltd Coventry*) Paraff Mollr 70 20 Lanolin Anhyd 18 60 Liq Picis Carb 7 95 Hydrarg Ammon 1 65 Terpineol 1 60

Freezone (*International Chemical Co Ltd London*) Pyroxylin 1 43 Industrial Methylated Spirit 22 20 Sandarac 2 50 Castor Oil 3 78 Zinc Chloride 2 36 Hypophosphorous Acid D 08 Colour 0 07 Salicylic Acid 14 41 Acetone to 100 w/w

[P1] **Fruligar Asthma and Bronchial Tablets** (*Cupal Ltd Blackburn*) Each contains Phenolphthal 0 04 grain Calc. Glucon 1 04 grains Ol Menth. Pip 0 004 minim Theobromin 0 368 grain Ephed Hydrochlor 0 24 grain, Phenylsemicarbazide 0 368 grain Basis q s

Fruligar Garlic Mixture (*Cupal Ltd Blackburn*) Sod Benz 0 1 Chlorof 0 5 Pot Iod 1 09 Ext Glycyrrh. 0 24 Ext. Scill Liq 0 25 Ext. Ipecac. Liq 0 25 Ol Allii 0 008 Ol Menth Pip 0 05 Basis ad 100

Frutabax (*Brook, Parker & Co Ltd Bradford*) Tablets each containing Phenolphthalein 2 grains P Acid Tart. $^{1}/_{10}$ grain Pot Tart Acid 1 grain Sulph Sub 3 grains Saccharum Alb Flavouring and Excipient q s

Fuller Brand Celery Perles (*Sumpson Laboratories Westcliff on Sea*) The aqueous extractives from Celery Seed 2 5 grains Buchu $^{5}/_{16}$ grain and Cimicifuga $^{5}/_{16}$ grain, together with Phenolphthalein $^{1}/_{2}$ grain, Sodium Salicylate $^{5}/_{8}$ grain Sublimed Sulphur $^{5}/_{8}$ grain

Fumic Vaporising Rub (*Carter Bros Shipley*) Camphor 6 15% Menthol 1 00% Menthol (Synth) 1 00% Ol Terebinth 3 50% Ol Cedri Fol 0 72% Ol Myristic 0 72% Ol Thyme 0 72% Oleores Capsic 0 05% Bals Peru 0 05% *Guaiacol 0 01%* *Base to 100%*

Fumora Ephedrine Cigarettes (*Wiggleworth Ltd Westhoughton*) Ol of Eucalyptus 0 62% Caffeine 1 79% Potassium Nitrate 1 79% Menthol 0 45% *Oil of Geranium 0 23%* Ephedrine Hydrochloride 0 85% *Stramonium 44 64%* *Rose Petals 13 35%* *Peppermint Herbs 17 84%* *Thyme Herbs 17 84%* *Ol of Juniper 0 60%*

Fynnon Salt (*Beecham Pharmaceuticals Ltd St Helens*) Sodium Sulphate 95 96% Sodium Bicarbonate 1 95% Potassium Sulphate 2 05% Lithium Sulphate 0 033%, and traces of Iron and Sodium Chloride.

G.S. Tablets (*Westminster Laboratories Ltd London*) Sodii Sulphas Exsiccatus 4$^{1}/_{2}$ grains, Phenolphthaleinum $^{1}/_{2}$ grain Potassii Iodidum $^{1}/_{2}$ grain Zingiber $^{1}/_{4}$ grain Magnesii Trisilicas $^{1}/_{4}$ grain

[P1] **Gabail Elixir Bromo Valerianate** (*Anglo French Drug Co Ltd London*) Active ingredients per $^{1}/_{2}$ fl oz. Ext. Valerian (Gabail) derived from 1 5 g of Valeriana B P C Strontium Bromide 0 3 g Chloral Hydrate 0 3 g in a specially flavoured and palatable vehicle

[P1] **Gacovin** (*Rouse of Wigmore Street Ltd London*) Each fluid drachm contains Sod Glycerophosph $^{1}/_{2}$ grain, Pot. Glycerophosph $^{1}/_{2}$ grain Strych B P C $^{1}/_{100}$ grain Vin Xeric. B P C 1934 30 minims

Galibyl Tablets (*Axa Ltd London*) Sod Tauroglycocholate 25 00 Aloin 3 125 Excipient ad 100 00

Galloways Baby Cough Linctus (*Eucryl Ltd Southampton*) Active ingredients Ipecac Tinct 1 52% Chlorof Spt 1 52% Acid. Sulph 0 10% Dil Acet. Acid 0 024% Ol Cinnam 0 0023% Tolu Syr 20 0% Syr Scill 10 0% Glycerin 10 0% v/v

Galloways Cough Syrup (*Eucryl Ltd Southampton*) Active ingredients Ol Menth. Pip 0 003% Ol Anis 0 06% Ext. Ipecac. Liq 0 09% Chlorof 0 2% v/v Acid Acet. 3 3% Acet Scill 5 35% Ether 0 05%

Garlic Pearles (*Hofels Curative Foods Ltd London*) Capsules containing Oleum Allii Sativi 0 06 Oleum Arachis ad 100

Garlodex Garlic Plus Remedy (*Modern Health Products Ltd Chessington*) Tablets each containing Ol Garlic 0 025 minim Ol Aniseed 0 01 minim Marshmallow Root 2 grains Thymol 0 007 grain Activated Charcoal 0 4 grain, Chlorophyll 0 2 grain.

[P1] **Geeps Pastilles** (*Smith Kendon Ltd London*) Mel Depur 17 14% Camph 0-08% Tolu Bals 0-28% Acet Acid 2 14% Benzoic Acid 0 16% Ol Anis. 0 07% Ext Scill Liq 1 25% Opium Tinct. B P 1 25% Tinct Chlorof et Morph B.P.C. 1 00% Acid Cinnam 0 05% (w/w)

Genatosan Skin Bar (*Genatosan Ltd Loughborough*). Sodium Salts of Sulphated Fatty Alcohols (C_{12}-C_{18}) 78%

George s Gravel Pills (*George s Pills Ltd Llanelly*) P Podoph Res 0 1 P Ginger 3 2, P Gamboge 1 2 P Jalapæ 9 6, P Coloc Pulp 0 4 Sod Carb Ex. 3 2 P Saponis 14 9 P Aloes Barb 38 4 Ol Juniper 0 06 Hexamine 0 02 Coating to 100

George s Pile and Gravel Pills (*George's Pills Ltd Llanelly*) P Podoph Res 0 2 P Ginger 3 2 P Gamboge 3 2 P Jalapæ 9 6 1 Coloc Pulp 0 6, P Saponis 12 8 P Aloes Barb 38 4 Ol Menth Pip 0-03 Ext Cascara 0 6 P Ipecac 0 3 Hexamine 0 03 Coating to 100

George s Pills for the Piles (*George s Pills Ltd Llanelly*) P Podoph. Res. 0 2 P Ginger 3 2 P Gamboge 1 07 P Jalapæ 9 6 P Coloc. 0 53 P Aloes Barb 38 4 P Saponis 12 8 Ol Carui 0 07 Coating to 100

Germoleno (*Beecham Pharmaceuticals Ltd St Helens*) *Adeps Lanæ* 35 00% Paraff Moll 44 00%, Amylum 10 19% Zinc Oxide 6 56% Ethyl Salicylate 3 00% Chloroxylenol 0 05% Phenol 1 19% Menthol 0 012% Rub Scarlat. 0 004%

Germoloids Suppositories (*Beecham Pharmaceuticals Ltd St Helens*) *Zinc Oxid* 12 56% Ethyl Salicylate 2 83% Resorcin 2 17% Bism Oxychlor 1 11% Rub Scarlat 0 007% Ceresin 11 11% Cetac. 7 77% in an emoll ent base

Gestona Tablets (*Warrick Brothers Ltd Coventry*) Bism Carb. 0 9% Heavy Mag Carb 5 0% Sod Bicarb 3 5% Calc Carb 32 0% Pepsin 0 07% Pancreatin 0 05% Ether 0 2% Capsicin 0 004% Chlorof 0 2% c/w Lavender and Peppermint flavoured

Gilbert s Gripo Syrup (*Brook Parker & Co Ltd Bradford*) Ol Aneth. 0 5 minim Sod Bicarb 20 grains Spiritus Rectificatus 110 minims Syrupus 9 5 drachms Aqua 3 fluid ounces

Gilbert s Little Liver Pills (*Brook Parker & Co Ltd Bradford*) Podoph. Res 0 0625 grain Aloes 0 25 grain Glycyrrh 0 00238 grain Acacia 0-006 grain.

Gilley s (Dr) Herbal Laxative (*Gilley s Laboratories Ltd Yelverton*) Rhamnus Frangula 17 Cassia Acutifolia 60 Plantago Ispaghula 12, Foeniculum 10, Glycyrrhizæ Pulvis 1

Glenco (*Carter Bros Shipley*) Active ingredients Tinct. Ipecac. 0 6% Acet Scill 3 75% Infs (1 10) Peppermint 10% Lobelia 12 5% Elder Flowers 12 5% Bayberry 3 75% Cinnam. 6 3% Hemlock Spruce 3% Capsic. 8 75% and Cloves 2 5% with Inf Seneg Conc. 0 8%

Glenergy Strength Tablets (*Carter Bros Shipley*) Ext. Damianæ 1 5 grains Ext Kolæ 1 grain Ext Saw Palmetto 0 25 grain

Glenol Rubbing Oils (*Carter Bros Shipley*) Active constituents. Ol. Cajuput Ol Caryoph Ol Eucalypt. Methyl Salicyl aa 1 25% Camph. 5% Capsic 0 5%

Glickon s Salve (*W Locking & Son, Leeds*) Ol. Rapæ (*Brassica campestris*) 33 3% Cera Flav 33 3% Colophonium (*Pinus palustris*) 20 0% Zinci Oxidum 13 4%

Glinteel Lotion (*Wigglesworth Ltd Westhoughton*) Acid Acet. Glac 3 50 Acid Tann 4 70% Bals Peruv 6 25% Ol Cinnam. 0 52% Acid Phosph. 0 31% Chlorof 4 00% Sp Meth Indust 87 5% Aq ad 100%

Glinteel Medicated Shampoo (*Wigglesworth Ltd Westhoughton*) Neutral *Alkyl Sulphate (40% active) 42 50%, Fatty Acid Diethanolamide* 3 50% Coal Tar Solution (Meth) 1 50% Oil of Thyme 0 10% Hexylresorcinol 0 0 Camphor 0 10% Oil of Pumilio Pine 0 10%

Glinteel Salve for Sore Gums (*Wigglesworth Ltd Westhoughton*) Active constituents Tincture of Myrrh 35% 60% Alcoholic Tincture of Krameria (1 5) 3 5% Borax 2 5% Glycerin 5 0%

Glucovite (*Hough Hoseason & Co Ltd, Manchester*) Contains in each fluid *ounce Vitamin A 450 units Vitamin D, 45 units* Mang Glycerophosph. 0 143 grain Liq Sod Glycerophosph 1 000 grain Liq Pot Glycerophosph. 2 000 grains Ferr Pyrophosph. Solub B P C. 1949 8 000 grains Cupri Sulphas 0 143 grain

Glyco Thymoline (*Thos Christy & Co Ltd Aldershot*) Sodium Borate 2 084% Thymol 0 044% Menthol 0 044% Sod Salicyl 0 091% Sod Bicarb. 2 084% Sod Benz 2 084% Glycerin 17 50% Ol Pini Pumil 0-044% Cajuputol 0 088% Ol Betulæ 0 040% Alcohol 3 88%

Golden Ear Drops (*Wigglesworth Ltd Westhoughton*) Ol Camph. Rect. 15 0% Eucalyp 7 5% Ol Myrist. 0 4% Terp neol 2 0% Chlorof 7 5% Arachis Oil ad 100%

Gon (*Ward Blenkinsop & Co Ltd London*) Tablets each containing Acetomenaphthone 10 mg Nicotinamide 50 mg

Gonne Pain Relieving Balm (*G R Lane Gloucester*) Active ingredients Menthol 10% Camphor 2% Ol of Cajuput 2 5% Ol of Eucalyptus 2 5 Ol of Turpentine 8% Methyl Salicylate 10% Ol Sinap *Express.* 0 2 %

(P1) **Gould s Black Cherry Linctus** (*Wigglesworth Ltd Westhoughton*) Syr Prun. Serot B P C. 16 66°₀ v/v Ext Scill Liq 0 33°₀ Ext. Ipecac Liq 0 08% Bals Tolu. 0 62°₀ Acid Cit 0 50°₀ Acid Benz 0 17% Acid. Ascorb 0 03% Mel Depur 12 50°₀ Glycer 4 45% Sucros 50 00%

Gould s Family Laxatives (*Wigglesworth Ltd, Westhoughton*) Tablets containing Phenolphthalein 22 22% Chocolate Base 77 78%

Gould s Gripe Mixture (*Wigglesworth Ltd Westhoughton*) Active constituents Ol Aneth. 0 035% Ol Anis 0 055% Sodii Bicarbonas 0 89°₀ Syrupus 26 50% Aq Chlorof 44 0%

Gould s Liver Salt (*Wigglesworth Ltd Westhoughton*) Acid Tart 17 5°₀ Sod Bicarb 17 5% Mag Sulph Exsic 15 0% Refined Sugar 50 0%

Gould s Zinc, Starch and Boracic Powder (*Wigglesworth Ltd Westhoughton*) Zinc Oxide 2 5% Starch 10 0% Boric Acid 5 0°₀ Sterilised Talc to 100% Perfume q s

Grasshopper Ointment (*Grasshopper Ltd London*) Resina 31 68 Cera Flav 7 94 Oleoresina Laricis 23 74 Ol Arachis 15 84 Paraff Moll Alb 19 81, Cupri Acetas 0 99

Grasshopper Pills (*Grasshopper Ltd London*) Aloe Pulv 25 0 Dried Extract of Taraxacum (1–8) 12 5 Capsic. Pulv 9 4 Aqueous Extract of Anthemis (1–5) 12 5 Jalap Pulv 20 0 Jalap Res 17 5 Podoph Res 3 1

Gratton s Embrocation (*Boots Pure Drug Co Ltd Nottingham*) Acid Acet Glac 5 0% Camph 0 8% Ol Terebinth 40 0°₀

Greenfield s (Dr) Whooping Cough Mixture (*Wyleys Ltd Coventry*) Syr Rubi Idæi 25 000% Syr Scill 25 000°₀ Tinct Cardam Co 2 085% Acid Nitr 0 300% Chloroformum 0 214% Ol Thymi 0 0013% Aq Destillatæ ad 100%

Gumtex (*Dalmas Ltd Leicester*) 100 g contains alcohol 25°₀ extract from Salvia 10 g aqueous extracts from Juniper Berries 19 g and Chamomile Flowers 4 g with Oil of Chamomile 0 008 g Colloidal Silver 0 345 g

Guy s Fruit Pills (*Guy s Tonic Ltd, Leeds*) Each contains Zingib 0 03 grain Oleores Zingib 0 03 grain Colocynthis 0 23 grain Aloe 0 46 grain Ipom Res 0 46 grain Ol Cari 0 06 grain

Guy's Tonic (*Guy s Tonic Ltd Leeds*) Gentianæ Radix 0 178 Aurantii Cortex Recens 0 067 Cardamomi Semina 0 022 Coccus Cacti 0 178 Spiritus Chloroformi 3 58 Acidum Phosphoricum 0 033 Acidum Glycerophosphoricum 0 033 Acidum Nitricum 0 123 Acidum Hydrochloricum 0 164 Aqua ad 100 0

Guy s Tonic Pastilles (*Guy s Tonic Ltd Leeds*) Extractum Gentianæ 5 38 Chlorof 1 79 Acidum Phosphoricum 0 74 Acidum Glycerophosphoricum 0 74 Acidum Nitricum 0 022 Acidum Hydrochloricum 0 027 Oleum Limonis 0 04 Oleum Cardamom 0 03 Massa ad 100 0

Gynopax Tablets (*Cuxson Gerrard & Co Ltd Oldbury*) Each contains Acid Acetylsalicyl. 2 75 grains Caffeine 0 25 grain, Acetophenetidin 2 grains Quinin Sulph. 0 1 grain

Hacks (*White Hudson & Co Ltd Southport*) Active constituents Menthol 0 18°₀ Ol Anis 0 11% Ol Eucalyp 0 15% Liq Tolu 0 02% Fxt Tussilag 0 008% Ext. Marrub 0 03°₀ Tinct Benzoin Co 0 02°₀ Tinct Scill 0 02% Sucros 63 7°₀ Glucos Liq 31 9°₀

Hæmatone (*Ayrton Saunders & Co Ltd Liverpool*) Each tablespoonful is equivalent to Fresh Liver 1 oz Ferri et Ammon Cit. 10 grains Cupri Sulph $^1/_{20}$ grain

(P1) **Hæmovin Pile Ointment** (*Moore Medicinal Products Ltd London*) Menthol 3 0°₀ Ethyl Aminobenzoate 5 0% w/w in a bland emollient base

Hair s (Dr) Asthma Remedy (*Dr Hair s Proprietaries Ltd Staines*) Sodii Benzoas 2 625 Potassii Iodidum 5 5 Sodii Iodidum 0 3 Chloroform 0 46 Spiritus Tenuior 4 36 Pix Liquida 0 01 Aqua Destillata ad 100

Hair s (Dr) Liver Pills (*Dr Hair's Proprietaries Ltd, Staines*) Podophylli Resina $^1/_4$ grain Sapo Durus Pulv $^1/_{10}$ grain Glycyrrhizæ Rad $^1/_{10}$ grain, Glucosi 1 iq $^1/_3$ grain

Halaurant (*Ayrton Saunders & Co Ltd, Liverpool*) Each fl oz. contains Vitamin A 20 000 i.u Vitamin D 3000 i u Vitamin C 30 mg

Hall s Wine (*Stephen Smith & Co Ltd London*) Finest Australian Wine with the addition of Aneurine Hydrochloride 0 0012% Riboflavine 0 002% Niacin 0 014% Potassium Iodide 0 00014% Each fl oz. contains not less than Vitamin B_1 0 3 mg Vitamin B_2 0 55 mg Niacin 3 6 mg Iodine 30 µg

Halmagon (*Halmagon Sales Ltd Croydon*) Tablets each containing Magnesii Chloridi 0 431 g Magnesii Bromidi 0 00868 g Magnesii Iodidi 0 00003 g Magnesii Fluoridi 0 00009 g Excipient q s ad 0 45 g

Halvitex (*Wright Layman & Umney Ltd London*) Halibut Liver Oil 10 minims Ascorbic Acid 40 mg Calcium Gluconate 20 grains, Flavour and Emulgents Vehicula to 1 fl oz

[P1] **Happy Journey Tablets** (*Wigglesworth Ltd Westhoughton*) Each contains Hyoscine Hydrobromide 0 005 grain

Harley's Threo Salts (*Thomas Harley Ltd Perth*) Mag Sulph. 58 56% Mag Sulph Exsic 4 46% Sod Sulph 20 98% Sod Sulph. Exsic. 13 28% Pot Tart Acid 1 70% fused equal parts of Pot Nitras and Sulphur 1%

[P2] **Healo Skin Ointment** (*Curson Gerrard & Co Ltd Oldbury*) Calamine 4 534 Phenol 4 14 Boric Acid 4 534 Zinc Oxide 4 534 Adeps Lanæ Anhyd. 26 54 Zinc Oleostear 1 49 Paraff Moll 53 09 Vanillin 0 138

Heath & Heather s No M62 Asthma and Bronchitis Mixture (*Heath & Heather Ltd St Albans*) Tinct Cubeb 2% Tinct Seneg 2 5% Tinct. Lobel Simp 5% Ext Glycyrrh Liq 2% Acet Scill 2% Sp. Anis 0 2% Ol Piment a trace Syr Tolu 10% aqueous extracts from Pleurisy Root, Euphorbia Stillingia Horehound and Sundew of each 1%

Heath & Heather s No 217 Balm of Gilead Cough Mixture Acet. Scill 5% Ext Ipecac Liq 0 5% Tr Lobel Simp 2% Aq Chlorof Conc 6% Colouring q s alcoholic extractive from Lungwort 10% and Balm of Gilead Buds 5%

Heath & Heather s No 293 Balm of Gilead Cough Pastilles. Acetum Scillæ 1 44% Tinct Lobel Acid 0 70% Ext. Glycyrrh 0 89% Ol Menth. Pip 0 13% Ol Anisi 0 27% Menthol 0 07% Chloroform 0 82% Balm of Gilead 0 50% Glucose 50 00% Colour 0 02% Pastille Base ad 100 00%

Heath & Heather s No 233 Catarrh Pastilles Creosote 0 3 Oleum Abietis 0 6 Menthol 0 6 Ext. Coltsfoot 0 5 Ol Eucalyptus 0 2 Pastille Base to 100

Heath & Heather s No 2A Improved Indigestion and Flatulence Tablets Capsicin 0 091% Ext Scutellariæ (Aq 1=7) 0 36% Valerian 4 6% Fœniculum 4 6%, Myrrh 6 6% Papain 0 4% Ol Menth. Pip 0 66%

Heath & Heather s No 144 Pile Ointment Ointment base in which Pilewort 30% has been digested

Heath & Heather s No 147A Rheumatic Balm Tereb Venet. Fact. (containing Colophony 62½% Ol Lini 22½% Ol Tereb 15%) 7½% Ol Sassafras 3% Ol Camph Ess 5° Base ad 100%

Heath & Heather s No 123 Rheumatism and Gout Pills. Guaiac Res ¼ grain Ext Rhei Sicc. ½ grain Capsic. ½ grain Ext Ind. (Alc 70% 1=4) ½ grain Ext Uvæ Ursi (Aq 2=5) ½ grain

Heath & Heather s No 142A White Eczema Ointment Ung Zinc. Oleat B P 1948 20% Zinc Oxide 3 50% Acid Salicyl 0 25%, Acid. Boric. 1% Liq Picis Carb 1%, Adeps Lanæ 4% Paraff Dur 5% Paraff Molle Alb ad 100%

Hewlett s Antiseptic Cream (*Astra Hewlett Ltd Watford*) Zinc. Oxid. 8% Zinc Oleostear 1% Acid Boric. 6% Adeps Lan Hydrosus 4%

Hewlett s Teething Jelly (*Astra Hewlett Ltd Watford*) Pot. Cit. 2 3% Glycerin 30 0% Otto of Rose 0 12%

Hi G Ah (*W Devereux London*) Coriand 3 5 Chelone Glabra 7 Cassia Acutifolia 44 5 Fœnic. 3 Menth Pip 1 5, Anis 1 5 Glycyrrh. 1 5 Scopar 15 Triticum Repens 20 5 Hyssop 2

[P1] **Hill s Bronchial Balsam** (*Hill s Pharmaceuticals Ltd Nelson*) Active constituents Co Benz Tinct. 6 25% Ammonium Acetate 3 6% Antim et Pot. Tart 0 30% w/v Ol Menth Pip 0 02%, Tinct Capsic 0 21% Morphine Acetate 0 06% w/v Acetum Scillæ 6 25% Ol Anis 0 63% Acid Acet (80 %) 2 2% 60% Alcoholic Tincture of Lobelia (1 in 8) 2 5%

Hill s Bronchial Balsam Pastilles (*Hill s Pharmaceuticals Ltd Nelson*) Active ingredients Co Benz Tinct 0 793% Oleores Capsic 0 001% Ol

Menth. Pip 0 04% Chlorof 0 99% Ext Scill Liq 1 26% Ol Anis 0 84%, 60% Alcoholic Tinct. Lobelia (1 in 8) 2 50% Menthol 0 11%

Hill s Junior Balsam (*Hill s Pharmaceuticals Ltd Nelson*) Active ingredients Co Benz Tinct 3 125% Ext Ipecac Liq 0 2% 60% Alcoholic Tincture of Lobelia (1 in 8) 1 25% Acid Acetic (80%) 1 13% Tinct Capsic. 0 1% Liq Ammon. Acet. Fort. 3 12% Acetum Scillæ 3 12%

Himrod s Remedy (*May Roberts & Co Ltd London*) Stramonium 71% Saltpetre 27%, Anise Oil 0 6% Cedar Oil 1 4%

Holdroyd s Pills (*Sangers Ltd London*) Active constituents Sod Bicarb 16 9% Rhei Rhizoma 28 8% Sap Dur 26 0% Ol Juniper Lig 6 5% Ol Anisi 6 5%

Homocea (*Nunol Ltd Newcastle-on Tyne*) Ol Cocos 20 82 Paraff Moll 35 39 Paraff Dur 16 65 Cera Alb 7 29 Adeps 2 08 Camph 2 08 Ol Cajuputi 2 41 Ol Terebinth 8 98 Ol Rosmarini 0 58 Ol Eucalypti 0 58 Ammon 0 08 Aqua Dest to 100 00

Hooper's (Dr John) Female Pills (*May Roberts & Co Ltd London*) Each contains Canell Pulv $^1/_{32}$ grain Piper Longum Pulv $^1/_{42}$ grain Quass Pulv $^1/_{42}$ grain, Senn Fol Pulv $^1/_{19}$ grain, Myrrh Pulv $^1/_{24}$ grain Aloe Pulv $^1/_8$ grain, Ferr Sulph Exsic $^1/_{70}$ grain

Huxley Brand Absorbent Dusting Powder (*Gale Baus & Co Ltd London*) Zinc Oleostearate 25 0 Pulv Acid Boric 25 0 Ol Geranium 0 2, Pulv Amylum to 100.

(P) **Hytex Balm** (*Knox Laboratories Ltd London*) Benzocaine B.P 1 00% w/w Tannic Acid 3 00% Quinine and Urea Hydrochloride 0 25% Phenol 0 75%

Ickosan Dusting Powder (*Ayrton Saunders & Co Ltd Liverpool*) Ichtham 2 5 Zinc Oxid 2 5 Acid Boric 3 0 Bism Subgall 0 5 Sulphur Præcip 1 5, Hexachlorophane 0 25 Casein 1 0 Adeps Lan 1 0 Kaolin Lev 5 0 Kieselguhr 2 5 Mag Trisil 2 5 Titan Dioxid 2 5 Ferr Oxid 4 0 Mag Sil cat (natural) to 100 0

Iglodine (*Hall Forster & Co Ltd Newcastle on Tyne*) Antiseptic containing Phenol 0 089% Combined Iodine 0 04%

Iglodine Ointment (*Hall Forster & Co Ltd Newcastle on Tyne*) Bismuth Oxychloride 2 86% Zinc Oxide 1 43% Phenol 0 32% Combined Iodine 0 14%

Iglodine, Salicylated (*Hall Forster & Co Ltd Newcastle-on Tyne*) Phenol 0 71% Combined Iodine 0 32% Salicylic Acid 8 0% Wood Naphtha 80%

Ilon Abscess Salve (*T V Duncan Burnside*) Active ingredients Venice Turpentine 8 2% Colophony 16 0% Phenol 0 1% Chlorophyll 0 2% Pinene 9 8% Camphene 0 2% Cineole 0 03% Borneol 0 01% Thymol 0 16% D pentene 0 3%

Indian Cerate (*Reade Brothers & Co Ltd, Wolverhampton*) Camph. 0 5 Zinc Oxid 3 7 Acid Boric. 1 6 Phenol Liq 0 27 Ol Arach 21 Lanolin 10 2%

Infurno Embrocation (*Carter Bros Shipley*) Methyl Salicyl 17% Capsicin 1 88% Ol Eucalyp 4 25% Ol Camph Rect. 4 25% Menth 0 8%

Infurno Massage Cream (*Carter Bros Shipley*) Methyl Salicyl 12 39% Capsicin 0 86% Menthol 0 49% Ol Eucalyp 2 39% Ol Camph Rect 2 39%

Ingo Analgesic Balm (*Moore Medicinal Products Ltd, London*) Tolazoline Hydrochloride 2% Glycol Monosalicylate 15% Capsicin 0 1%

Inhalex (*Wigglesworth Ltd Westhoughton*) Camph. 0 51% Menthol 5 12% Ol Lavand 11 27% Liq Formaldehyd. 0 12% Thymol 0 3% Sp Meth. Indust. 62 0% Aq Dest. ad 100%

Inhalex Ephedrine Buffered Isotonic Nasal Solution (*Wigglesworth Ltd Westhoughton*) Active constituents Ephedrine Sulphate 0 5% w/v Menthol 0 05% Camphor 0 025% Eucalyptol 0 025%

Inhalex Ephedrine Nasal Oil (*Wigglesworth Ltd Westhoughton*) Ephedrine 0 75% Menthol 1% Camphor 0 5% Eucalyptol 0 5% Liquid Paraffin to 100%

Innerclean (*Brooks & Warburton Ltd London*) Sennæ Folium 26% Frangula 20% Psyllium 12% Sassafras 12% Buchu 9% Agar Agar 6% Irish Moss 5%, Linum 4% Anisum 6%

Inotyol (*Roberts Chemists (Bond Street) Ltd, London*) Ointment containing Ichtyol 1 5, Oxyde de Zinc 15, Oxyde de Titane 6, Borax 0 1, Excipient q.s.p. 100 g

Instoms (*Genatosan Ltd, Loughborough*) Tablets containing Aluminium Phosphate 15% Light Magnesium Carbonate 16 7%

Intrait de Marron d Inde Drops (*Roberts Chemists (Bond Street) Ltd, London*) Intrait de Marron d Inde 5 00, Methesculetol Sodique 1 00 per 100 g, Vit. P 11 mg in 1 c c

Intrasept (*Riddell Products Ltd, London*) Iodum Resub 4 1%, Liq Ammon. Dil 25% Caffein et Sodii Benzoas 5 5%, Sod Sal 1 0%, Ol Menth. Pip. 1 5% Alcohol (90%) 45 0%, Camphor 5%, Aqua Destillata ad 100%

Iodhema (*Wilcox Jozeau & Co Ltd, London*) Tablets each containing Hexamine Iodomethylate 250 mg Hexamine 100 mg

Iodine Medol (*William Pearson Ltd Hull*) Iodum 1-00%, Ol Rosm 23 75%, Cresol 2 25%, Paraffinum Liq 49 65%, Sodii Hydras 1 10%, Ceresin 17 75% Liq Ammon Fort. 1 75%, Aqua Dest. 2 75%

Iodo Caffedrin (*Ayrton, Saunders & Co Ltd, Liverpool*) Each 60 minims contains Ephed Hydrochlor $^1/_4$ grain Caffein. Pot. Iod $5^1/_2$ grains, Pot. Iodid. 2 grains in Decoction of Coffee This preparation contains 7% Proof Spirit.

Ipsolon Balm (*Thomas Morris Ltd Hounslow*) Allyl Isothiocyanate 2 00%, Menthol 1 00%, Camph. 1 00%, Ol Terebinth. 10 00% Methyl. Salicyl. 12 50%, in a non greasy and non staining base

Ipsolon Tablets (*Thomas Morris Ltd Hounslow*) Each contains, N Acetyl *p* Aminophenol [paracetamol] 5 grains, Salicylamide $2^1/_2$ grains, Caffeine $^1/_4$ grain.

Iron Jelloids (*Beecham Pharmaceuticals Ltd, St Helens*) Tablets each containing Dried Ferr Sulph 65 mg, Copper Carbonate 0 17 mg Cerevis. Ferment Sicc 138 mg Aneur Hydrochlor 0 17 mg, Riboflav 0 29 mg, Nicotinamide 1 67 mg, Ascorb Acid 4 17 mg

Iron-Ox Tonic Tablets (*Thomas Morris Ltd, Hounslow*) Mang Sulph. $^1/_{100}$ grain Cupri Sulph. $^1/_{100}$ grain Caffeine Alk. $^1/_3$ grain, Ext. Case Sagr Sicc $^1/_{12}$ grain Acid Ascorb $^1/_{10}$ grain Ferr Sulph. Exsic. $1^1/_4$ grains.

Irvona Tablets (*The London & Colonial Export Co Ltd, London*) Ferri Sulph Exsic 1 00 grain, Calc. Phosphas 1 75 grain Cupri Sulphas $^1/_{500}$ grain, Mangan Sulphas $^1/_{100}$ grain, Aloin $^1/_{60}$ grain, Caffeine 0 125 grain, Vitamin B_1 60 i u

[Pl] **I-So Coll Eye Lotion** (*Graham Tatford & Co Ltd Portsmouth*) Phenyl mercuric Nitrate $^1/_{40000}$, Propyl *p*-Hydroxybenzoate $^1/_{2000}$, Ephedrine HCl 0 1% Aq Lauroceras 1 0%, Aq Sambuci Trip 5 0% Zinc. Sulph. 0 03% Sod Bicarb 0 2%, Sod. Cit. 0 3%, Sod Chlor 1 12%, Aq Dest. to 100% Filtered

Itsit Ointment (*Martin Phillips & Co Ltd, London*) Ol Thyme 0 1 Ol Neem Ref 0 3 Camphoræ 0 6, Ol Cajuput. 0 7, Ol. Eucalypt. Glob. 2 1 Ol Viride 2 4 Resin 5, Paraffin Molle 88 8

[Pl] **Ivy Lotion** (*Wigglesworth Ltd, Westhoughton*) Benzocaine B P 2% w/v Phenol *B P* 1% w/v, Menthol 1%, Triethanolamine 5% Sp Meth. Indust. 70%, Aq ad 100%

Jackson's Febrifuge (*Geo Jackson & Sons Ltd Manchester*). Sucros. 4 190 Sodii Sulphas 4 190 Pot. Nitras 0 761, Chlorof 0 13, Ammon Chlor d. 0 761 Ext. Glycyrrh. Liq 0 633 Aqueous Extract of Rheum (6–1) 0 190 Evaporated Juice from fresh Taraxacum (10–1) 0 666, Saech Ust 0 634 Tinct. Zingib Fort. 0 476 Pot Iod 0 047 Iod 0-048 Tinct Capsic 0 095 Camph. 0 023, Alcoh. 1 369 Ol Anis 0 019 Ol Caryoph 0 039 Aq ad 100-00

Janssen's (Dr) Tablets, Normal (*Dr Janssen Ltd London*) Ext Cascaræ Sag Sicc 25 625, Ext Aloes 7 500 Ext Leptandrinæ 2-083, Ext Gentian 3 750 Ext Taraxaci 7 500 Cerevis Ferment. Sicc. 38 541, Myrrh 2-083 Lecithin (Ground Nut) 3 750 Oleoresin Zingib 0 958 Base to 100 000

Janssen's (Dr) Tablets, Strong (*Dr Janssen Ltd London*) Ext Cascaræ Sag Sicc 25 625 Ext. Aloes 25 625 Ext. Leptandrinæ 2 083 Ext Gentian. 3 750 Ext Taraxaci 7 500 Cerevis Ferment. Sicc. 20 833 Myrrh 2 083 Lecithin(Ground Nut) 3 750 Oleoresin Zingib 0 958 Base to 100 000

Jenner's (Dr) Absorbent Lozenges (*Savory & Moore Ltd London*) Each contains Calc Carb 1 5 g Ol Caryophylli 0 004 g

Jofar (*Jofar Ltd London*) Capsicum 0 26% extracted by Ol Camph Rect. 12 89% Ol Terebinth 5 67% Ol Cedri 4 67% Ol Eucalyp. 3 64% Ol. Melaleucæ Alternifoliæ 3 10% Methyl Salicyl 3 00% Ol Pini Pumil 2 30% Ol Santal. 2 06% Ol Cinnamomi Foliæ 1 72% Ol Caryoph 1 44% Ol Rosmarin 0 83% Ol Limon 0 76% Ol Citronell 0 70% Ol Myrciæ Oeterpenatum 0 64% Ol Sassaf 0 60% Ol Menth. Pip 0 45% Ol Cinnam 0 42% Ol Aurant 0 38% Ol Sinap Vol 0 09%

Johnson s (Mrs) Soothing Syrup (*Fassett & Johnson Ltd London*) Active constituents w/v Sod Chlorid 6 6% Tinct Tolu 2 5% Sucrose 60%

Johnson s XX Oils (*Johnson Bros (Wrinehill) Ltd Crewe*) Ol Ricini 88%, Dipentene DL Limonene 9% Ol Eucalyp 3%

Jordan s Gin Pills (*Jordan Medicine Co London*) Ext. Tritici Rep 12 698 Ext. Buchu 3 175 Ext. Gentian 8 333 Aloin 0 334 Pulv Potass Nit. 12 698 Ol Juniper 1 333 Tereb Venice 3 000 Pulv Fol Buchu 11 500 Pulv Rad Podophyll 36 000 Excip ent 10 929

Jubol (*Spencer & Co London*) Tablets each containing Irish Moss 1 40 grains Ext Fel Bov 0 31 grain Ext Black Elder Bark 0 46 grain Phenol phthalein 1 23 grains

Junipah Major (*Thomas Morris Ltd Hounslow*) Sod Bicarb 55% Acid Tart. 41 6% Paracetamol 3 31% Saccharin Sod 0 04% Oil of Juniper 0 05%

Juno Junipah Mineral Salts (*Thomas Morris Ltd Hounslow*) Sod Sulph. Exsic 87 644% Sod Chlor 0 59% Sod Phosph. Exsic. 0 75% Sod Bicarb 10 96% Saccharin 0 012% Ol Junip 0 044% Flavouring q s

Juno Junipah Tablets (*Thomas Morris Ltd Hounslow*) Sod Sulph Exsic $6^{3}/_{4}$ grains Phenolphthal $^{3}/_{8}$ grain Ol Junip $^{1}/_{240}$ minim Ol Limon $^{1}/_{800}$ minim Sod Chlorid $^{1}/_{20}$ grain Sod Phosph. Exsic $^{2}/_{20}$ grain Excipients to $7^{1}/_{2}$ grains

K B (Kidney and Bladder) Pills (*Hegglesworth Ltd Westhoughton*) Each contains the water soluble constituents of Buchu $^{3}/_{8}$ grain and Uva Ursi $^{3}/_{8}$ grain together with Oleoresin from *Larix decidua* (Pinaceæ) $^{1}/_{8}$ grain Capsic Pulv $^{1}/_{4}$ grain Oil of Juniper $^{1}/_{4}$ minim Pot Nitras 1 grain Methylthionin Chlor $^{1}/_{4}$ grain.

Kaladex (*The Kaladex Co Brentford*) Ephed Hydrochlor B P 0 208% Pot Iod 4 374% Ext. Grindel Liq 0 078% Caffein et Sod Salicyl 4 583% 25% Alcoholic Extract Tussilaginis Folium (1 1) 0 234%

Kalzana Tablets (*Fassett & Johnson Ltd London*) Each contains Calc et Sod Lact 7 5 grains, Vit D_2 100 units.

(P1) Kandu Tablets (*Thomas Morris Ltd Hounslow*) Each contains Acid Acetylsalicyl $3^{1}/_{2}$ grains Phenacet $2^{1}/_{2}$ grains Caffein $^{1}/_{2}$ grain Phenolphthal $^{1}/_{4}$ grain Codein. Phosph $^{1}/_{10}$ grain

Kaputine (*Kaputine Ltd Oldham*) Powders each containing Acidum Acetyl salicylicum 7 5 grains

Karsote Inhalant (*E Griffiths Hughes Ltd Manchester*) Active ingredients Menthol 3 50 Camph. 3 50 Ol. Eucalyp 18-00 Ol Citronell 2 50 Methyl Salicyl 7 50 Oleum Cassiæ 0 75 Cinnamic Aldehyde 0 75%

Kasbah Kidney Remedy (*Potter s (Herbal Supplies) Ltd Wigan*) Equisetum 15% Clivers 15% Liquorice 15% Triticum 20% Buchu 15% Senna Leaf 10% Uva Ursi 10%

Kasemol (*Edward Cleaver Greenford*) Menthol 3% Camphor 10% Methyl Sal 15% Essent Oil Camphor 72%

Kasemol Ointment (*Edward Cleaver Greenford*) Camphor 10% White Wax 8% Menthol $2^{1}/_{2}$% Methyl Sal $7^{1}/_{2}$% Ess. Oil Camphor 2% Adeps Lanæ 50% Borax 1% Water 19%

Kay s Linseed Compound (*Kay Brothers Ltd Stockport*) Ol Anis 0 07% Acid Benz 0 1% with aqueous extractives of Scill 5% Seneg 0 2% Ipecac 0 13% Linum 5% and Bals Tolu 0 02% and, subject to some spontaneous loss by volatilisation Æther 0 12% w/w Chloral 1 4% w/w

Keene s 'One Night' Corn Cure (*The Keene Laboratories London*) Acid Salicyl 15 8%, Methyl Salicyl 1 25%

Kelfo Laxative-Digestive (*New Era Laboratories Ltd London*) Tablets containing Phenolphthal 35%, Ol Betul 0 39%, Bry 3x(B H P) 1 875% Hydrast. 3x(B H P) 1 875%

[P] **Kendale's Adult Cough Syrup** (*Biorex Laboratories Ltd, London*) Ol Anisi 0 166% Menthol 0 09%, Ol Menth. Pip 0 083%, Ext. Ipecac. Liq 0 4%, Spt Chlorof. 4%, Chloroform 0 83%, Oxymel Scillæ 20%, Acid Acetic 6 25%, Syr Prun Serot. 25%, Syr ad 100

[P] **Kendale's Influenza Mixture** (*Biorex Laboratories Ltd, London*) Sodium Citrate 4 6%, Sodium Nitrite 0 23%, Strong Solution of Ammonium Acetate 8 34%, Camphorated Tincture of Opium 4 6%, Solution of Amaranth 1 04%, Vehicle to 100

Kephaldol (*Kephaldol Laboratories Ltd London*) Tablets each containing Acetophenetidin 2 15 grains, Sodium Salicylate 1 75 grains Quinine 0 45 grain, Caffeine 0 25 grain, Salicylic Acid 0 15 grain Citric Acid 0 25 grain, Amylum q.s.

Kerbina Compound Raspberry Leaf Tablets (*Kerbina Ltd, London*) Each contains aqueous extract from Rubi Idæi Fol 6 grains, aqueous extract from Alth 2 grains 45% alcoholic extract from Mitchella Repens 2½ grains.

Ker-nak Pills (*C E Fulford Ltd, Leeds*) Each contains Aloes 1 grain, Capsicin $^{9}/_{20}$ grain Podophyllin $^{1}/_{12}$ grain, Ginger $^{1}/_{6}$ grain, Gingerin $^{1}/_{12}$ grain, Ol Menth. Pip $^{1}/_{60}$ grain, Excipient q s

Keroderm (*Scientific Pharmacals Ltd London*) Ointment containing Titanium Dioxide 2%, Zinc Oxide 10%, Bismuth Oxyquinolinate 0 25%, in a water-in-oil emulsion base

Kerofil Lozenges (*Thomas Kerfoot & Co Ltd, Ashton under-Lyne*) Chlorophyll B P C 1934 (100% Chlorophyllin) 0 4%, Basis to 100%

Kest Laxative Tablets (*Kest Ltd, London*) Each contains Epsom Salts 4½ grains, Phenolphthalein ¼ grain

Kestoma Tablets (*Kestoma Co Ltd, London*) Each contains Acetophenetidin 2 grains, Acetylsalicylic Acid 4 grains, Caffeine ½ grain, Quinine Sulphate $^{1}/_{12}$ grain.

Keswick's Pure Vegetable Charco-Lax (Tablets) (*J B Keswick & Co., Wigton*) Pil Rhei Co 4 00, P Saponis 0 50, Aloin 0 50, Ol. Ricini q.s., Pulv Carbo Ligni ad 100 00

Kilkof (*Parkinsons Ltd, Burnley*) Active ingredients Ext. Glycyrrh. Liq. 0 5, Hexylresorcin 0 1, Chlorof 0 63, Ext Ipecac. Liq 0 05, Tinct. Benzoin. 1 66, Tinct Tolu 1 66, Tinct Capsic. 0 41, Æther Anæsth. 0 20, Ol Anis. 0 16, Oxymel Scill 5 0

K-Lens (*S Mata, Son & Sons Ltd, Barnet*) Sod. Bicarb 2 00%, Methyl cellulose 0 33% Sod Hexametaphosphate 0 000015% Urea Peroxide 0 00275%

Klorodene (*Brook, Parker & Co Ltd, Bradford*). Chlorof 9 3%, Æther 6 2% Ol Menth. Pip 0 1%, Ext. Glycyrrh Liq 12 5%, Tincture B P C. 1934 12 5%, Syrup 46 9%, Alcohol 12 5%, all v/v

Kompo (*J F White & Co Ltd, Leeds*) Aqueous extract from 5 9% kutch together with Ol Caryoph. 0 065% Ol Cass 0 09%, Tinct Capsic. 7 29%

Koray (*Koray Ltd, Bridgend*) Tablets each containing Acetylsalicylic Acid 7 5 grains

Kruschen Salts (*Nicholas Products Ltd, Slough*) Potassium Sulphate 5 5 Exsiccated Sodium Sulphate 2 0, Sodium Chloride 10-0, Potassium Chloride 1 0 Citric Acid 1 5, Magnesium Sulphate q s. ad 100 0

Kuranol Hemorrhoidal Ointment (*Roberts Chemists (Bond Street) Ltd, London*) Active constituents Zinc Oxide 10 8%, Mercurous Chloride 10 8%, Bismuth Oxychloride 10 8%, Camphor 1 8%, Phenol B.P 1 78%, Distilled Witch Hazel 21 6%

Kürboil Tablets (*Arthur H Cox & Co Ltd, Brighton*) Stann. Pulv B.P C. [1949] 1 7, Stann. Oxid. B P C [1949] 0 3

Kutnow's Saline (*C E Fulford Ltd, Leeds*) Sod. Bicarb 49 75%, Acid. Tart. 38 95%, Sod Sulph. Exsic. 11 30%

[P] **Kwells** (*Nicholas Products Ltd, Slough*) Tablets each containing Hyoscine Hydrobromide 0 3 mg

[P] **L.S.A. Travel Sickness Tablets** (*Arthur H Cox & Co Ltd, Brighton*). Each contains Hyoscin. Hydrobrom. B.P 0 005 grain.

Lactobyl Tablets (*Continental Laboratories Ltd Hove*) Bile Salts 30 0 mg Pancreatin 4 5 mg Aloes 27 0 mg Activated Charcoal 20 0 mg Laminaria Flexicaulis 50 0 mg

Laidabeille Royal Jelly (*Tom L Hobson Ltd London*) Twenty six drinkable ampoules contain Pure Royal Jelly 1250 mg and Queens Embryos 150 mg

Lane s Catarrh Remedy (*O Phelps Brown Bradford*) Active constituents Sod Chlorid 3 33%, Phenol Liq 0 47% Liq Iod. Mit 0 312% Liquor Hamamelidis 8 33%

Langdale s Cinnamon Tablets (*E F Langdale Ltd Croydon*) Active ingredients Ol Cinnam 1 000 Ext Scill Liq 0 006 Ext. Seneg Liq 0 001, Ext. Ipecac Liq 0 001

Langdale s Concentrated Medicinal Essence of Cinnamon (*E F Langdale Ltd Croydon*) Ol Cinnam 2 72% Alcohol (90%) 54 35% Tinct. Ipecac 0 85% Tinct. Scill 0 85% Tinct. Seneg 0 47%

Lantigen B Bacterial Vaccine (*Lantigen (England) Ltd Bagshot*) Each c c. contains the detoxified antigens of the following Pneumococci 1000 million N catarrhalis 1000 million Streptococci 1000 million Staphylococci 500 million Bact. friedlanderi 500 million, H influenzæ 500 million

Larson s S.M.D Swedish Milk Diet (*Dendron Distributors Ltd Watford*) Granules containing in each ounce Vitamin A 5000 i u. Vitamin C 75 mg Vitamin B_1 1 mg, Vitamin B_2 1 mg, Vitamin B_6 0 1 mg Vitamin D 400 i u Glucose 7 g Citric Acid 140 mg Calcium Pantothenate 1 mg Nicotinamide 5 mg Sucrose 11 g Guar Flour 10 g

Larson s S.M.D Tablets (*Dendron Distributors Ltd Watford*) Twelve tablets contain. Vitamin A 5000 i u Vitamin B_1 2 mg Riboflavine 1 mg Vitamin B_6 0 1 mg Vitamin C 75 mg Vitamin D 400 i u Calcium Pantothenate 1 mg Nicotinamide 15 mg Iron 10 mg Glucose 9 g., Sucrose 9 g Milk Solid (non fat) 0 6 g Maize Oil 0 6 g Lactose 7 g Guar Flour 4 7 g

[Pl] **Lascelles' Gout & Rheumatism Pills** (*Hirst Brooke & Hirst Ltd Leeds*) Each contains Colchicine $^1/_{100}$ grain

Lastonet Cream (*Lastonet Products Ltd, Redruth*) Contains Chlorbutol 4% Zinc Oxide 10% Chloroxylenol 0 25% in a stable hydrophil c base.

[Pl] **Leeve** (*Universal Laboratories Ltd Folkestone*) Diethylamine Salicylate 10% Benzocaine 0 9% w/v Vehicle to 100%

Legat s Elixir Caphedrin Iodinata (*H H Legat Ltd Bolton*) Ephedr Hydrochlor B P 0 2% Caffein Sod Benz. 11 6% Iodine 0 2%

Lemadin Cold and Flu Mixture (*Graham Tatford & Co Ltd Portsmouth*) Active ingredients Acid Cit 5 grains Ess Limonis Prep 2 minims Acid Hydrobrom Dil 5 minims Inf Quass Conc 2 minims

[Pl] **Lewis s Drops** (*Morgan & George Ltd Ystrad*) Tinct. Opii 6% Spirit Æther Nitros 3 2% Spirit Rectificatus 68 2% Camphor 7% Aquam ad 100

Licoricine (*Hall Forster & Co Ltd Newcastle-on Tyne*) Liquorice Extract 3 0% Vinegar of Squill 4 67% Rectified Spirit 0 28% Chloroform 0 36% Camphor 0 036% Benzoic Acid 0 034% Aniseed Oil 0 067%

Linalgik Balm (*Axa Ltd London*) Calamine 15% Liq Alumin. Acet. 12% Liq Pic Carbon $2^1/_2$% Glycerin $2^1/_2$% Water miscible Base ad 100%

[Pl] **Linituss** (*Ayrton Saunders & Co Ltd Liverpool*) Contains in each fluid drachm Chlorodyne B P C $7^1/_2$ minims Tinct. Opii Camph B P $2^1/_2$ minims Oxymel Scill 30 minims Ext. Glycyrrh Liq 4 minims Ext. Ipecac Liq $^1/_4$ minim Tinct Capsic. $^1/_4$ minim Syr Tolu. 15 minims Linum (as Infus.) 2 grains.

Lion Cleansing Herbs (*Potter's (Herbal Supplies) Ltd Wigan*) Elder Leaf 8% Fennel 18% Frangula Bark 8% Ispaghula 8% Maté 8% Senna Leaf 50%

Liquifruta (*The Liquifruta Laboratories London*) Water soluble constituents of Linum 0 66% Cetrar 0 29% Chond 0 20% and Anthem. 0 125%, together with Oleum Allii Essentiale 0 013% Ol Menth. Pip 0 104%, Ol Anis 0 052% Ext Ipecac. Liq 0 165% Succus Glycyrrhizæ 0 75% Saccharum Ustum 1 25% Sucrose 1 25% Aqua ad 100%

Liquifruta Medica (*The Liquifruta Laboratories London*) Water soluble constituents of Linum 0 66% Cetrar 0 29% Chond 0 20% and Anthem 0 125% together with Oleum Allii Essentiale 0 0195% Ol. Menth. Pip 0 104%,

Ol Anis 0 052% Ext. Ipecac Liq 0 165% Succus Glycyrrhizæ 0 75% Saccharum Ustum 1 25% Sucrose 1 25% Aqua ad 100°

Liquiprin (*Johnson & Johnson (Gt Brita n) Ltd Slough*) Active ingredient. Sal cylamide 6 48%

Liquor Iodo-creosotal (*Wade Pharmaceut cals Ltd Glasgow*) Each fl. oz. contains Potass um salts of sulphonated fractions of Beechwood Creoso e 14 grains Iodine 0 8 grain assoc ated w th Peptone 2 grains Potass um Guaiacol Sulphonate 2 grains L qu d Extract of Malt 320 minims

Listerine Antiseptic (*Lambert Chemical Co Ltd Eastleigh*) Benzo c Ac d 0 03% Boric Ac d 2 35% Menthol 0 05% Thymol 0 07% Eucalyptol 0 09 % Methyl Sal cylate 0 06% Alcohol 27 00% Water to 100 00%

[P1] **Lloyd s Adrenaline Cream** (*Howard Lloyd & Co Ltd London*) Adrena l ne 1 5000

Lohelline (*W B Cartwright Ltd Rawdon*) Parts per 100 Treacle 54 Mel Depur 27 Oxymel Sc llæ 4 54 Ext Glycyrrh. Liq 5 7 Ext. Seneg L q. 0 23 Ext Ipecac. L q 0 11 Sp r tus Rectificatus 1 42 Æther Solvens 0 28 Chlorof 0 9 Tinct Caps c. 0 45 Ol Menth. P p 0 05 Ol Anis. 0 02, Ol of Pennyroyal 0 02 Oil of Spearmint 0 02, Tinct. Quill 0 11 and the water-solub e extracts from V rgin an Prune Bark 0 91 Horehound 1 81 Lobelia 0 34 Red Poppy Petals (dried) 0 7 Pulmonaria Officinalis 0 23

Lombio (*The Lombio Co Watford*) Plumb Monox. 16 778% Paraff. Dur 8 054% Paraff Moll Flav 75 168%

Lotex Cream (*Graham Tatford & Co Ltd Portsmouth*) Active constituents. Chlorocresol 0 25% Liq Pic Carbon 1 0% Camphor 0 1% Tinct Benzoin. Co 1 0%

Luma Anti Rheumatic Compound (*Luma Products Ltd Croydon*) Methyl Salicylate 6 0% Oleoresina Caps ci 0 01% Potass um Iodide 0 5% Fluorescein 0 5% Sodium Carbonate to 100%

Luma Anti Rheumatic Cubes (*Luma Products Ltd Croydon*) Act ve ingredients Methyl Sal cylate 5 00% Potass um Iodide 0 40% Oleoresina Caps ci 0 01% Sod um Carbonate to 100 00%

Lusty s Garlic Perles (*Lusty s Natural Products Co Ltd Westcliff-on Sea*) Each conta ns Essential Oil distilled from Fresh Garl c 30 grains

Lusty s Herbalene (*Lusty's Natural Products Co Ltd Westcliff-on-Sea*) Sennæ Folium 64% Rhamnus Frang 4% Elder Lea es 8% Fennel 16% Maté 8%

Lusty s Malted Kelp Tablets (*Lusty's Natural Products Co. Ltd Westcliff-on Sea*) Each conta ns Kelp 12 grains Ext. Malt S ec 6 grains

Lydrin (*E H Butler & Son Ltd Leicester*) Active constituents Ephed. Hydrochlor 0 416% Sod Iod 4 166% Caffeine 2 166% Sod. Sal 2 00%

Lysanthine Astier (*Wilcox Jozeau & Co Ltd London*) Effervescent granules containing Sodium Iodopropanol Sulphonate 12% Lys dine B tartra e 9° Calcium Gluconate 12% Sodium B carbonate 37% Excip ent 30%

Lysantol Pastilles (*Allen & Hanburys Ltd London*) Chloroxylenol 0 054% Benzylcresol 0 013° Menthol 0 028% Camphor 0 0045% Blackcurrant flavoured Base to 100%

Lystone Salts (*International Chemical Co Ltd London*) Sodium B carbonate 48 30% Tartaric Acid 44 75% Anhydrous Sodium Phosphate 6 91° Soluble Saccharin 0 04%

M O (*Thos Christy & Co Ltd, Aldershot*) Active ingredients Mag Calcinata Levissima 4% Paraffinum L qu dum 25%

Mac Antiseptic Throat Sweets (*Beecham Pharmaceuticals Ltd St. Helens*) Amylmetacresol 0 040 Camph. 0 005 Menthol 0 200 Eucalyptol 0-054 Tinct. Tolu. 0 032 Ol Menth P p 0 032 Ol Anis. 0 014 Ol Cass. 0 018, Ol Caryoph 0 009 Tart. Ac d. 0 346 Sugar Base to 100

McClure Brand Ephedrine Nasal Catarrh Specific (*McClure Young & Co Ltd London*) Ephedrine 0 99% Camphor 2% Menthol 2% Aromatics 2% Liqu d Paraffin 93 01%

[P1] **McClure s Balsam** (*McClure Young & Co Ltd London*) T nct. Chlorof et Morph B P C 10 0% Tinct. Ipecac. 5% Syr Tolu 44 7% Syrup Sc læ 40 0% Tinct Caps ci 0 3%

Mackenzie s Smelling Bottle (*Dr Mackenzie s Laboratories Ltd London*) Active constituents Ammon a 15% Phenol 5% Eucalyptol 1%

McKintol Hair Tonic (*Wigglesworth Ltd Westhoughton*) Active constituents Acid Benzoic 1 11% Acid Boric 1 11% Sp Meth. Indust. 52 50% Thymol 0 17%

Maclean Brand Indigestion Powder (*Beecham Pharmaceuticals Ltd St Helens*) Calcium Carbonate Heavy Magnes um Carbonate and Aluminium Hydroxide produced in accordance with British Patent No 745 493 giving Calcium Carbonate 37 2% Heavy Magnes um Carbonate 15 5% Aluminium Hydroxide 18 6% together with demulcent and flavour

Maclean Brand Indigestion Tablets (*Beecham Pharmaceuticals Ltd, St Helens*) Calcium Carbonate Magnes um Carbonate and Aluminium Hydroxide produced in accordance with British Patent No 745 493 giving in each tablet Calcium Carbonate 0 397 g Heavy Magnesium Carbonate 0 156 g Aluminium Hydroxide 0 187 g

Macprin (*Beecham Pharmaceuticals Ltd St. Helens*) Tablets each containing Aspirin 5 grains Glycine 2 ½ grains

(P1) **Magnolds Lozenges** (*Smith Kendon Ltd London*) Bismuth Carbonate 8 635% Calc. Carb 17 27% Heavy Mag Carb 8 635% Tinct. Chlorof et Morph B P C 19 00% w/w

Magnolax (*Newbery & Phillips Ltd London*) Contains in each fl oz Magnesium Hydroxide 30 grains Liquid Paraffin 120 minims Glycerin 30 minims, Vanillin $^{2}/_{15}$ grain Distilled Water q s

ManZan Pile Ointment (*E C De Witt & Co Ltd Croydon*) Camphor 0 06% Eucalyptus 0 25% Phenol 1 00% Thymol 0 01% Solid Ext Witch Hazel 1 00% Paraff Molle/Lanolin q s to 100%

Marmola Antifat Tablets (*Fassett & Johnson Ltd, London*) Each contains Aqueous Extract of Fucus (3 10) 3 grains, Ext. Cascara Sagr Sicc $^{1}/_{4}$ grain Phenolphthal. $^{1}/_{4}$ grain, Calc. Carb 3 $^{1}/_{4}$ grains Oleores Zingib $^{16}/_{1000}$ minim, Ol Anis. $^{1}/_{75}$ minim, Methyl Salicyl $^{1}/_{15}$ minim, Ol Sassaf $^{1}/_{15}$ minim.

(P1 81) **Master Tonic Tablets for Men** (*Haviland Harty & Co London*) Each contains Arsen Trioxide B P 0 6 mg Yohumb Hydrochloride B P C. [1949] 5 mg Strych Hydrochloride B P 0·5 mg

Matmed Black Currant Cough Syrup (*Modkem Ltd Leicester*) Tinct. Camph Co s Opio 8 33%, Acid Sulph Dil 1 67% Syrupus Rhœados 16 67% Tinct. Ipecac. 8 33% Oxymel Scillæ 50 00% Syrupus Ribis Nigri 15 00%

(P1) **Matmed Cherry Bark Cough Cure** (*Modkem Ltd Leicester*) Acidum Aceticum 1 25% Glycerinum 10 00% Tinctura Ipecacuanhæ 3 75% Oxymel Scillæ 10 00% Syrupus Prunı 5 00% Spiritus Camphoræ 1 25% Spiritus Chloroformi 2 50% Syrupus Simplex 66 25%

Matmed Pynefume Inhalant (*Modkem Ltd Leicester*) Menthol 3 92% Oleum Cajuputi 2 95% Oleum Eucalypti 2 95% Oleum Pini Pumilonis 2 95% Terebenum 0 98% Oleum Camphoræ Rectificatum 7 85% Perfume 15 68% Spiritus Methylatus Industrialis 62 72%

Matmed Tussolds (*Modkem Ltd, Leicester*) Menthol $^{1}/_{30}$ grain Ol Anisi $^{1}/_{40}$ grain, Pulv Extractum Glycyrrhizæ ad 2 grains

Max Instant Cold Relief (*Mondart Ltd London*) Triethylene Glycol 3 35 Menthol 1 02, Thymol 0 15 Camphor 0·41 Ol Eucalyptus 1 01 Benzalkonium Chloride 0 40 Bornyl Acetate 0 11 Linalyl Acetate 0 10 Solvents/Propellents ad 100 as an aerosol spray

Medac Acne Cream (*Genatosan Ltd Loughborough*) Cetrimide 0 5% Resorcinol 0 5% Precipitated Sulphur 1 5% in a water miscible base

Medibalm Antiseptic Ointment (*Savory & Moore Ltd, London*) Amylum 24 5% Specially distilled Tar 0 5% Zinc Oxide 14% Ac. Salicylic 0·495% Camphor 0 75% Colouring q s Paraffin Moll Flav ad 100%

Medic-aire Aerosol Cold Relief (*Cooper McDougall & Robertson Ltd Berkhamsted*) Active constituents % w/w Camph. 0 45 Chlorbutol 0 30 Ol Cinnam 0 15 Ol Eucalyp 1 20 Menthol 0 60 Methyl Salicyl 0 15 Thymol 0 15 Resorcin 1 50 Propylene Glycol 2 25

Medicoids (*Boots Pure Drug Co Ltd Nottingham*) Suppositories containing Rub Scarlat. 0 007% Bism. Subgall. 1 5% Bals. Peruv 3 0% Zinc

Oxide 10 0%, Resorcin 0 5%, Methyl Sal 0 6%, Bism Oxyiodid 0 5%, Acid. Gall B P C 1934 2 0%

Medilax Laxative Pellets (*Savory & Moore Ltd, London*) Each contains Podoph Res $^1/_8$ grain, Sap Animal $^1/_{16}$ grain Aloe $^1/_4$ grain, Ipom Res. $^1/_8$ grain Ext Colocyntb Co $^1/_4$ grain, Phenolphthalein $^2/_{20}$ grain, Oleores Zingib $^{12}/_{60}$ grain

Meggeson Dyspepsia Tablets (*Meggeson & Co Ltd, London*) Each contains Bism Carb 0 69, Mag Carb 15 38, Sod Bicarb 15 38, Chlorof. 2 00 (approx) Lavender Lozenge Base to make 100

Meggeson Sore Throat Lozenges (*Meggeson & Co Ltd, London*) Active constituents Pot Chloras 6 6%, Sod Benz 3 3%, Sod Bibor 3 3%, Menthol 0 4%, Blackcurrant flavour

Meggezones (*Meggeson & Co Ltd, London*) Active constituents Menthol 0 78%, Ol Menth Pip 0 33%, Chlorof 0 40%, Benzoin 0 28%, Ext. Glycyrrh 0 54%

Meloids (*Boots Pure Drug Co Ltd, Nottingham*) Pellets containing Liquorice Juice 93 3%, Menthol 1 5%, Cinnamon Oil 0 37%, Alcoholic Extract of Capsicum equivalent to Capsicum 0 08%

Melrose Tablet (*Roberts & Sheppey Ltd, Oxford*) Terebin 1 0, Parachlorometaxylenol 0 1, Ol Essentialia 1 0, Ung Simp ad 100

Meltus Adult Cough Linctus (*Cupal Ltd, Blackburn*) Percentage active ingredients Purified Honey 22, Ol Anis. 0 25, Guaiacol Glyceryl Monoether 0 456, Cetylpyridinium Chloride 0 056, Sodium Citrate 5, Chlorof Spt 5, Menthol 0 15, Chlorof 0 25 v/v, Glycerin 5, Camphor 0 05

Menakotin Tablets (*Brook Parker & Co Ltd, Bradford*) Acetomenaphthon 10 mg, Ac Nicotin 15 mg

[P1] **Mendaco Tablets** (*Knox Laboratories Ltd, London*) Each contains: Potassium Iodide 130 mg, Dihydroxypropyltheophylline 32 mg, Ephedrine Hydrochloride B P 6 mg, Dry Extract of Stramonium B P 8 mg

Mentex Embrocation and Inhalant (*Foster-McClellan Products Ltd, London*) Ol Abiet 2 500, Iodine 0 075 Paraff Dur 7 500 Ol Camph. Rect. 3 250 Menthol 1 000 Adeps Lan 15 500, Ol Eucalypt 0 750 Camphor 1 800, Methyl Salicyl 6 000 Acid Benz 0 500, Paraff Moll ad 100 000

Mentholatum (*The Mentholatum Co Ltd, Slough*) Menthol 1 66, Camphor 10 00 Acid Boric 10 00, Ol Eucalypt 0 66, Ol Pini Pumil 0 66, Methyl Salicyl 0 66, Paraff Molle Flav ad 100 00

Mentholatum Deep Heat Rub (*The Mentholatum Co Ltd Slough*) Menthol 5 91%, Ol Eucalyp 1 97%, Methyl Salicyl 12 80%, Ol Terebinth. 1 47% Adeps Lan 4 92%

Mentholatum Inhalant Capsules (*The Mentholatum Co Ltd, Slough*) Menthol 15 0%, Camphora 2 5%, Ol Pini 2 5% Ol Citronell. 2 5%, Tereben. 5 0%, Methyl Salicyl 20 0%, Chlorocresol 2 0%.

Mentholatum Nasal Liquid (*The Mentholatum Co Ltd, Slough*) Camphora 0 25 Menthol 0 50, Ol Eucalyp 0 03, Ol Gaultheriæ 0 03, Ol Pini Pumil 0 03, Paraff Liq to 100 00

Mentholoids (*Wigglesworth Ltd, Westhoughton*) Pellets containing Ext. Glycyrrh 99 0%, Menthol 1 0%

Metad (*Ayrton Saunders & Co Ltd, Liverpool*) Each teaspoonful contains Ferr et Ammon Cit $1^1/_2$ grains, Calc Glycerophosph $^1/_4$ grain Pot Glycerophosph $^1/_{40}$ grain Sod Glycerophosph $^1/_{50}$ grain Mangan. Glycerophosph. $^1/_{100}$ grain, Cup Sulph. $^1/_{100}$ grain, Vitamin A 2000 I.u. Vitamin D 330 I.u.

Meteol (*Brook, Parker & Co Ltd, Bradford*) Ol Cinnam 0 34%, Ol Menth Vir 0 17%, Menthol 0 34%, Glyc 8 00%, S V R 19 5% Aqua ad 100%

Microban Antiseptic Cream (*Evans Medical Ltd, Liverpool*). Active constituent Aminacrine Hydrochloride 0 1%

Midy Effervescent Piperazine (*Wilcox Jozeau & Co Ltd London*) Granules containing in 100 g Piperazine Hydrate 3 5 g, Sodium Bicarbonate 43 g Tartaric Acid 30 g, Citric Acid 12 g, Sugar q s.

[P1] **Minophos** (*Ayrton, Saunders & Co Ltd, Liverpool*) Each fluid drachm contains Calc. Glycerophosph 1 grain Pot Glycerophosph. $^1/_2$ grain, Sod. Glycerophosph. $^1/_2$ grain, Magnes Glycerophosph. $^1/_2$ grain, Ferr Glycerophosph.

1/4 grain Mangan Glycerophosph. 1/16 grain, Caffeine 1/4 grain Strych. 1/100 grain Vitamin B_1 0 5 mg

Mistol Aqueous (*Fassett & Johnson Ltd London*) Active constituents Phenylephrine Hydrochloride 0 25% Mepyramine Maleate 0 2%

Mistol Drops (*Fassett & Johnson Ltd London*) Camph. 0 47% Eucalyp 0 63% Menthol 0 63% Chlorbutol 1 00% Paraff Liq Lev 97 27%

Mistol Drops with Ephedrine (*Fassett & Johnson Ltd London*) Camph 0 63% Eucalyp 0 63% Menthol 0 63% Ephed Anhydros. 0 57% Paraff Liq Lev 97 54%

Moore s Baby Cream (*Moore Medicinal Products Ltd London*) Benzalkonium Bromide 0 01% Cetrimide 0 5% in a non sticky base of low viscosity

Moore s Teething Jelly (*Moore Medicinal Products Ltd London*) Salicylamide 8 0% Calcium Phosphate 8 0%

Moorland Indigestion Tablets (*W B Cartwright Ltd Rawdon*) Mag Carb Pond 5 14% Mag Trisil 2 142% Pepsinum 0 085% Bism Carb 0 857% Calc. Carb 37 85% Oleores Capsic. 0 00045% Sod B carb 3 77% Ol Cardamom 0 011% Pancreatinum 0 057% Ol Lavand 0 005% Ol Ros. 0 0025%

Morhulin Cod Liver Oil Ointment (*Priory Laboratories Ltd West Drayton*) Balsam of Peru 0 69 Cod Liver Oil 11 4 Solution of Chlorinated Soda B P C. 1934 1 0 Zinc Oxide 38·0 Base to 100

Morses (Dr) Indian Root Pills (*Comstock Co Ltd New York*) Each contains. Aloes 0 92 grain Mandrake 0 54 grain Cubebs 0 50 grain, Gamboge 0 29 grain, Jalap 0 14 grain

Mother Seigels Digestive Syrup (*Fassett & Johnson Ltd London*) 8 8% Compound aqueous extract made from 16 64% Cimicifuga 10 4% Iris 6 66% Podophyllum, 2 64% Colocynth 10 4% Taraxacum 3 33% Gentian 10 4% Stillingia, 10 4% Walnut 8 33% Chimaphylla 10 4% Phytolacca, and 10 4% Leptandra together with Sodium Borate 4 2% Aloes 1 25% Capsicum 0 255% Oil of Sassafras 0·01% Acid Hydrochloric 3 5% Cane Sugar 67 2% Aq Dest q s to 100

Mothereze Tablets (*Carter Bros Shipley*) Ext. Raspberry Leaf 27 7% Ext Sennæ S cc 11 1%

(P1) **Mu-Cron Tablets** (*International Laboratories Ltd Chessington*) Each contains Alpha Glyceryl Guaiacol Ether 1 1/2 grains Prep Ipecac 1/8 grain, Ephedrine Hydrochloride 1/8 grain Phenacetin 4 grains

Mulcets Mouth Ulcer Tablets (*Revell Drug Co Ltd Loughborough*) Each contains Ascorbic Acid 25 mg, Cetyl Pyridinium Chloride 1 mg

Murine (*Scott & Bowne Ltd London*) Berberine HCl 0 025% Ac. Boric 1 26% Pot. Bicarb 0 578% Pot. Metaborate 0 224% Hydrastine HCl 0 0003% Glycer 0 333% Thiomersal 0 001% Aq Dest. Recens to 100%

Musterole (*Thos Christy & Co Ltd Aldershot*) Camphor (Synth.) 5 80%, Menthol 2 10% Methyl Salicyl 0 50% Ol Sinap Ess. (Synth.) 2 90% in a base of inert animal and mineral fats

Musterole, Mild for Children (*Thos Christy & Co Ltd Aldershot*) Active ingredients Camphor (Synth.) 6% Menthol 2 1% Ol Sinap Ess (Synth) 0 4% Methyl Salicyl 0 5% in a base of inert animal and mineral fats.

'N' for Burns (*Tidebrook Chemical Products Ltd London*) Sodium Salts of Dihydroxy Diaryl Methane Sulphonic Acid Polymers 15% in a water soluble Jelly Base.

N H-S Balm (*Modkem Ltd Leicester*) Salicylic Ester Ethylene Chlorhydrin 5 000% Glycol Monosalicylate 5 000% Phenyl Nicotinate 0 500% Hexyl Nicotinate 0 500% Histamin Dihydrochlor 0 100% Capsicin 0 100% Combined Iodine 0 009% Non greasy Base ad 100 000%

Nasciodine Medicated Massage Cream (*Walker Davis & Co Ltd London*) Active ingredients Iodine 1 25% Liquid Menthol 0 625% Methyl Salicylate 4 375% Oil of Camphor 3 75% Oil of Turpentine 3 75%

Nasofen Nasal Drops (*Boots Pure Drug Co Ltd Nottingham*) Phenyleph. Hydroch. 0 25% Antazol Methanesulph 0 2% Chlorbutol 0 5%

Natex Ono for the Liver (*Modern Health Products Ltd Chessington*). Tablets containing Garlic 5% Endive 15% Watercress 25% Parsley 35% Tomato 20%

Natex "Two" for Blood and Skin (*Modern Health Products Ltd Chessington*) Tablets containing Endive 20% Parsley 25%, Watercress 25%, Beet Greens 10% Seaweeds 20%

Natex "Nine" for Nerves (*Modern Health Products Ltd Chessington*) Tablets containing Lettuce 50%, Pumpkin 7½%, Asparagus 2½%, Celery 30%, Seaweeds 10%

Natex "Ten" for Acid Digestive Troubles (*Modern Health Products Ltd, Chessington*) Tablets containing Mint 10% Horseradish 15%, Carrot 20% Turnip Tops 20% Celery 25% Papaya Fruit 10%

Natex "Eleven" for Glands (*Modern Health Products Ltd Chessington*) Tablets containing Parsley 15% Watercress 35%, Seaweeds 50%

Natex "Twelve A" for Natural Bowel Activity (*Modern Health Products Ltd, Chessington*) Tablets containing Rhubarb Root 50%, Irish Moss 20%, Rhubarb Stalk (garden variety) 10% Parsley 20%

Natex "Twelve A Special" for Natural Bowel Activity (*Modern Health Products Ltd Chessington*) Tablets containing Rhubarb Root 70%, Irish Moss 10% Rhubarb Stalk (garden variety) 10% Parsley 10%

Natex "Sixteen" for the Respiratory Organs (*Modern Health Products Ltd Chessington*) Tablets containing Onion 35%, Carrot 35%, Garlic 5% Red Cabbage 25%

Natex "Twenty-Two" Tonic (*Modern Health Products Ltd Chessington*) Tablets containing Carrot 30% Spinach 25% Lettuce 5%, Seaweeds 20%, Dried Yeast 20%

Natex "Thirty" for Mucous Membranes (*Modern Health Products Ltd Chessington*) Tablets containing Parsley 35% Endive 20%, Lettuce 10%, Beet Greens 35%

Natex "Thirty-One" for the Genito Urinary Tract (*Modern Health Products Ltd Chessington*) Tablets containing Watercress 25%, Asparagus 5% Parsley 40% Celery 15% Seaweeds 15%

Natex "Thirty-Two" for Blood Pressure (*Modern Health Products Ltd Chessington*) Tablets containing Parsley 25% Watercress 35% Endive 15% Garlic 5% Seaweeds 20%

[Pt] **Nature e Herbal Ointment** (*O Phelps Brown Bradford*) Ext. Corn Circinat. 1% Ext. Lobel. 3% Ext Symphyt. 2% Ext Dulcamar 2%, Ext Symplocarp 3% Colophonium 8% Basis to 100%

Natusol Baby Cream (*Thomas Kerfoot & Co Ltd Ashton under Lyne*) Acid Boric. 2 85 Borax 0 15 Glycer 10 62, Paraff. Liq 10, Paraff Moll Alb 55 2 Adeps Lan. 20

Navano (*Navano Preparations Ltd Blackpool*) Acid. Salicyl 22 2% Phenol 1 5% Cresol 0 5%, Adeps Lan Hydros 20 0% Paraff Moll Flav ad 100%

Nazex Nasal Spray (*Cupal Ltd, Blackburn*) Phenylephrine Hydrochloride ½% in an isotonic basis

Nemakol Tablets (*International Chemical Co Ltd London*) Each contains Caramiphen Ethanedisulphonate 6 mg

Nemolin Ointment (*International Chemical Co Ltd, London*) Zinc Oxid 18 75 Amylum 18 75 Adeps Lan 5 0, Paraff Liq Lev 12 75, Alum 0 2, Aqua Hamamelidis 14 75 Paraff. Moll Flav ad 100

[Pt] **NeoDex A5 Ointment for Hæmorrhoids** (*International Laboratories Ltd, Chessington*) Ethyl Linolate and Linolenate 2 5% Benzocaine 5% w/w Menthol 0 5% Bismuth Subgallate 10%, Zinc Oxide 22% Ointment base to 100%

NeoDex Capsules (*International Laboratories Ltd Chessington*) Each contains Ethyl Linolate 0 18 g, Ethyl Linolenate 0 09 g

NeoDex Ointment (*International Laboratories Ltd Chessington*) Active ingredients Ethyl Linolate 1 7% Ethyl Linolenate 0 8%

[Pt] **NeoDex S5 Suppositories for Hæmorrhoids** (*International Laboratories Ltd Chessington*) Ethyl Esters of Linoleic and Linolenic Acids 3% Bismuth Subgallate 7 5% Benzocaine 5% w/w, Menthol 0 5%, Dry Extract of Hamamelis 0 5% Excipient to 100%

Neoklenz (*Carter Bros Shipley*) Senna Leaf 40%, Psyllium 27½%, Frangula Bark 22½%, Fennel 10%

Neovit Elixir (*Rybar Laboratories Ltd Tankerton*) Aneurine Hydrochloride 8 8 mg Riboflavine 4 4 mg Pyridoxine Hydrochloride 2 2 mg Nicotinamide 66 mg Vitamin B_{12} 11 1 µg Calcium Glycerophosphate 288 mg Sodium Glycerophosphate 576 mg Potassium Glycerophosphate 53 mg Flavouring and Preservative q s in each 100 ml

Nephritin Tablets (*Stafford Miller Ltd Hatfield*) Each contains Desiccated Kidney Substance 197 mg Acacia 19 7 mg Corn Starch 4 33 mg Milk Sugar 37 4 mg Talc 12 6 mg Terra Alba 43 7 mg Tragacanth 9 3 mg

NerVoids (*British Chemotherutic Products Ltd Bradford*) Tablets each containing Vitamins B_1 3 mg B_2 1 mg A 1500 i u. and D 400 i u with Nicotinamide 20 mg Caffeine 0 5 grain Folic Acid 0 25 mg Ferr Sulph. Exsic 1 5 grain

Nervone (*New Era Laboratories Ltd London*) Tablets containing in homœopathic potency Calci Phosphas 3x Potassii Phosphas 3x Magnesii Phosphas 3x Sodii Phosphas 3x, Potassii Chloridum 3x, in equal proportions

Neuracetin Pellets (*Wyleys Ltd Coventry*) Caffein. 10 55% Phenacetin 53 00% Sod. Bic 24 70% Excipient 11 75%

Neverill Old Salts (*Shadforth Pharmaceutical Co Ltd Romford*) Sod Sulph Exsic 30 73% Mag Sulph Exsic 34 41% Mag Sulph 34 41% Sod Chlorid. 0 15% Pot. Sulph. B P C 1949 0 15% Pot. Chlorid 0 15%

New-Skin (*Beecham Pharmaceuticals Ltd St Helens*) Butyl Alcohol 5 0 Ethyl Acetate 57 3 Ethyl Alcohol 25 1 Amyl Acetate 2 0 Pyroxylin 6 9 Camphor 0 6 Castor Oil 3 0 Perfume 0 1

Niblett's (Dr.) Nerve Sedative (*C P Niblett London*) Inf Aurant Conc B P C 0 796 v/v 70% Alcoholic Tincture of Cinnamon (1 in 10) 0 454 v/v 60% Alcoholic Tincture of Calumba (1 in 10) 0 341 v/v Compound Tincture of Lavender (Oil of Lavender 0 50 v/v Oil of Rosemary 0 05 v/v, Cinnamon 1 00 w/v Nutmeg 1 00 w/v Red Sanders Wood 2 00 w/v Alcohol 90% to 100 00) 0 058 v/v Chloroform 0 113 v/v Potassium Bromide 21 770 w/v Ammonium Bromide 7 260 w/v Potassium Iodide 3 630 w/v Potassium Carbonate 0 056 w/v Caramel 0 625 w/v Aqua ad 100 00

Nigroids (*Nigroid Ferru Ltd Bristol*) Pellets containing Ext Glycyrrhizæ 68 6% Menthol 2 06%

Nixoderm Ointment (*Knox Laboratories Ltd, London*) Benzoic Acid 6% Salicylic Acid 2 5% Titanium Dioxide 5% Menthol 1 1% Precipitated Sulphur 4 6%

No Del (*Rybar Laboratories Ltd Tankerton*) Cream containing Allyl Isothiocyanate 0 1 ml Ethyl Nicotinate 1 0 ml Methyl Salicylate 5 ml Eugenol 0 5 ml Oil of Turpentine 12 0 ml Cholesterol 0 1 g Hydrophilic Base to 100 0 g

[P] **Nohæsa Ointment** (*Camden Chemical Co Ltd London*) Camphor 0 4% Menthol 0 3% Calcium Chloride 0 3% Chloral Hydrate 0 08%

[P] **Nohæsa Suppositories** (*Camden Chemical Co Ltd London*) Each 2 2 g suppository contains Chloral Hydr 0 2% Camph. 0 4% Menthol 0 6%, Calc Chloride 0 5%

Nostabs (*Moore Medicinal Products Ltd London*) Tablets each containing Sodium Chloride 8 grains, Sodium Bicarbonate 2 grains Borax 2 grains Thymol $^1/_{20}$ grain

[P] **Nostex Cream** (*Moore Medicinal Products Ltd London*) Menthol 0 2% Benzocaine 5 0% w/w Eucalyptol 0 5% in an emollient base

[P] **Nostex Inhalant** (*Moore Medicinal Products Ltd London*) Pseudoephedrine Hydrochloride 0 10% Ephedrine Hydrochloride 0 70% Epinephrine 0 05% Methylatropine Bromide 0 05% Chlorbutol 0 50% Chloroxylenol 0 05%

Nostroline (*Fletcher Fletcher & Co Ltd London*) Boric Acid 3 981 Cineole 0 244 Menthol 0 313 Phenol 1 656 Geranium O I 0 274 Petrolatum to 100.

Nostroline Inhaler (*Fletcher Fletcher & Co Ltd London*) Each contains *Amphetamine 350 mg with essential oils*

Notoids Pastilles (*Smith Kendon Ltd London*) Menthol 0 837% Ol Eucalyp 0 077%, Otto Rose 0-014% Ext Glycyrrh. 0 893%

[P1] **Noxacorn Antiseptic Corn Remover** (*Thomas Marns Ltd Hounslow*) Benzocain 2 1% Camphor 2 1% Salicylic Acid 10 6% Iodine 0 1% Oil Ricin 2 65% Collodion to 100

Noxacorn Foot Powder (*Thomas Marns Ltd Hounslow*) Magnesium Stearate 5 00% Aluminium Hydroxide 20 00% Precipitated Chalk 48 00% Light Magnesium Carbonate 8 00% Purified Talc 10 00% Zinc Phenol sulphonate 4 00% Hexachlorophane 1 00% Methyl Salicylate 1 00% Colouring 3 00%

Noxco (*Knox Laboratories Ltd London*) Tablets each containing Sodium Nitrate $^1/_8$ grain Bile Salts $^1/_8$ grain Aqueous Extract of Chionanthus Virginica (1—5) $^1/_{20}$ grain Indin B P C. 1934 $^1/_{48}$ grain, Extract Cascara Sagrada $^1/_{16}$ grain.

Noxzema Medicated Skin Cream (*The Lambert Chemical Co Ltd Eastleigh*) Active ingredients Hexachlorophane 0 50% Menthol 0 08% Camphor 0 40% Clove Oil 0 13% Eucalyptus Oil 0 13% Phenol 0-40%

[P1] **Nucleomina Elixir** (*Wyleys Ltd, Coventry*) Active ingredients Sod. Nucleinate 0 41% Malt Extract 2 00% Manganese Glycerophos. 0 133% Sodium Glycerophos 0 50% Potassium Glycerophos. 0 89% Calcium Glycerophos 0 56% Tinct. Kola 1 66% Ext. of Scutellaria 0 16% Tinct. Nux Vomica B P 1 66%

Numol (*Numol Ltd Newcastle on Tyne*) Extractum Malti 75% Hydrogenated Vegetable Oils 9% Sucrose 12% Lecithinum 0 19% Calc Hypophosph 0 17% Glycer 0 35% Acid Citric 0 13% Ol Lamon Deterpenat. 0 05% Aqua 3 11% Each oz contains Vit A 2500 i u. Vit. D 500 i u. B_1 0 8 mg B_2 0 8 mg Nicotinamide 8 0 mg Vit C 14 0 mg

Nuritabs Slimming Tablets (*Axa Ltd London*) Each contains Vitamin B_1 0 09 mg Sodium Tauroglycocholate $^1/_{10}$ grain, Phenolphthalein $^1/_8$ grain

Nurse Harvey's Mixture (*Harvey Scruton Ltd York*) Oleum Anethi 2 minims Oleum Carui 2 minims Tinctura Zingiberis Mitis 150 minims Sodii Bicarbonas 35 grains Syrupus 360 minims Aqua Pura to 6 fl oz

Nurse Sykes Balsam (*J Waterhouse & Co Ltd Ashton under-Lyne*) Active ingredients Tinct Benz Co 3 1% Tinct. Capsici 0 26% Camphor 0 02% Ol Anisi 0 02% Ac. Acet. 1 50% Glycerin 6 25% Syr Tolu. 25 0% Syrup 25 0% Chlorof q s

Nurse Sykes Powders (*J Waterhouse & Co Ltd Ashton under Lyne*) Each powder of approximately 8 grains contains Aspirin 56 parts Acetophenetidin 22 parts Caffeine 22 parts.

Nurse Sykes Tablets (*J Waterhouse & Co Ltd Ashton under-Lyne*) Each contains Aspirin 140 mg Acetophenetidin 55 mg Coffeine 55 mg

Nylax Laxative Tablets (*British Chemotherapeutic Products Ltd Bradford*) Each contains Vitamin B_2 2 mg Vitamin B_1 1 mg Nicotinamide 15 mg Phenolphthalein 1 5 grains Ext Casc Sicc 0 5 grain

Nylax Laxative Tablets, Mild (*British Chemotherapeutic Products Ltd Bradford*) Each contains. Vitamin B_1 2 mg Acid Nicotin 15 mg Ext. Casc. Sagr Sicc 1 5 grains Phenolphthal 1 0 grain.

Obsettes (*Riddell Products Ltd London*) Tablets containing Ext. Luc Vesic. 15% Ext Frangulæ 25% Ext Cascaræ Sag 23% Dihydroxyphthalophenone [phenolphthalein] 13% Cream of Tartar Sol 23%

Ocular Eye Lotion (*Evans Medical Ltd Liverpool*) Active constituents. Sodium Chloride 0 36% Boric Acid 1% Borax 0 15% Zinc Sulphate 0 1% Sodium Potassium Tartrate 0 25% Distilled Witch Hazel 6% Benzalkonium Chloride 0 004%

Œsbron Lung Tonic (*Brook Parker & Co Ltd Bradford*) Ext. Euphorb Liq 1% Ext Glycyrrh Liq 5% 25% Alcoholic Extract ve of Tussilag 1 ol (1 in 1) 1% Ol Anis 0 25% Tinct Capsici 3 33% Syr Tolu 10% Menthol 0 25% Sp Chlorof 2% Theriaca 56 00% Copaiba 0 5% Liq Pot. Hydrox. 0 8%

Okasa (*William Martindale Wholesale Ltd London*) Tablets each contain Vitamin A 360 i u. Vitamin B_1 0 6 mg Vitamin C 5 0 mg Vitamin D_2 100 i u. Vitamin E 0 1 mg Lecithin Albumin (1 2) 0 05 g Calcium Citrate 0 05 g. Calcium Phosphate 0 03 g Potassium Phosphate 0 005 g Potassium Sulphate

0 005 g Magnesium Phosphate 0 01 g Iron Phosphate 0 01 g Iron Lactate 0 01 g Dried Yeast 0 02 g Lithium Citrate 500 μg Manganese Lactate 40 μg Calcium Silicate 2500 μg Calcium Fluoride 50 μg Zinc Phosphate 300 μg Potassium Bromide 1500 μg Aluminium Acetate Basic 100 μg Copper Citrate 5 μg Cobalt Sulphate 5 μg

Oliglen (*Carter Bros Shipley*) Extract of Malt and Olive Oil with Calciferol 800 i u in each fl oz

[P1] **Omega Oil** (*Page Woodcock Ltd London*) Paraff Liq 71 4% Methyl Salicyl 20% Chlorof 8 6% v/v Solanaceous Alkaloids (calculated as hyoscyamine) 0 002% w/v

Opas Stomach Digestive Powder (*Wigglesworth Ltd Westhoughton*) Sod Bicarb 18 5% Mag Carb Pond 40% Calc Carb 40% Bism Carb 1 5%

Opas Stomach Digestive Tablets (*Wigglesworth Ltd Westhoughton*) Active constituents Sod Bicarb 5 26% Mag Carb Pond 10 53% Calc Carb 10 53% Bism Carb 2 63%

Opas-ol (*Wigglesworth Ltd Westhoughton*) Mist Mag Hydrox 69 72% Paraff Liq 29 88% Chlorof 0 37% Vanillin 0 03%

Optocus Eye Lotion (*Brook Parker & Co Ltd Bradford*) Acid Boricum 1 00% Borax 1 50% Zinc Sulphas 0 10% Sodium Salicylate 0 065% Chlorbutol 0 50% Liq Hamamelis 1 00%

Optone Eye Drops (*Keldon Ltd Penrith*) Witch Hazel Ext Dis 19 5 ml, Sodium Borate 0 5 g Zinc Sulph 0 004 g Acid Boric 2 0 g Acid Salicyl 0-025 g Chlorbutol 0 02 g Antipyrin 0 02 g in 100 ml of solution

Optrex Eye Lotion (*Keldon Ltd Penrith*) Acidum Boricum 2 0 g Sodium Borate 0 5 g Acidum Salicylicum 0 025 g Zinci Sulphas 0 004 g Chlorbutol 0 02 g Liquor Hamamelidis (double distilled) 12 95 g in 100 g of solution

[P1] **Orlex Compound** (*Stafford Miller Ltd Hatfield*) 33⅓% w/w of this compound is Lead Acetate

Orstrax Tonic (*Orstrax Ltd Leeds*) Tablets each containing Ferr Sulph Exsic. 38 33 mg Aneurin Hydrochlor 0 83 mg =250 i u Calc Phosph. 322 4 mg Cupr Sulph 0 01 mg

Owbridge s Lung Tonic (*W T Owbridge Ltd Hull*) Active ingredients Ol Anis 0 055% Ol Caryoph 0 055% Chlorof 0 716% Ether 0 550% Tinct. Capsic 0 550% Alcoh 0 958% Mel Depur 41 96% Acetum 11 01% Sucros 29 61%

Owbridge s Lung Tonic Pastilles (*W T Owbridge Ltd Hull*) Ol Anis 0 07 Ol Caryoph 0 07 Chlorof 0 60 Ether 0 70 Tinct Capsic 0 14 Acetum 2 30 Mel Depur 2 77 Pastille Base ad 100

Oxien Nerve Tablets (*The Giant Oxie Co Ltd London*) Lec thin Alb 0 74% Bismuth. Carb 1 47% Mag Carb Pond 2 94% Ferr Hypophosph 1 47% Ol Sassafras 0-47% Ol Betul 0 29% Gentian 0 12% Aneurin Hyd 25 i u

Oxien Pills (*The Giant Oxie Co Ltd London*) Aloin ⅛ grain Podoph. Res 5/100 grain, Ext Gent ¼ grain, Camphor 1/64 grain Ext. Jalap ⅛ grain, Capsicin 1/60 grain Sucrose ⅛ grain

Ozoline (*Oppenheimer Son & Co Ltd London*) Acid Boric 2% Thymol 0 2% Liq Hydrog Perox (20 vol) 6 25% Adepa Lanæ 20 0% Paraff Moll to 100

P(3) **Antiseptic** (*Ayrton Saunders & Co Ltd Liverpool*) Sapo Moll Flav 17 0 Phellandrene 10 0 Terpineol 10 0 Parachlormetaxylenol 5 0 Industrial Alcohol 37 5 Aq ad 100

P C.O (*Gedeon Richter Ltd London*) Vitamin B_1 10 mg Nicotinic Acid 30 mg Riboflavine 2 mg Pyridoxine 1 mg Ferri et Ammon. Cit 8 grains Ext Hepatis Liq to 1 oz

P C O Infans (*Gedeon Richter Ltd London*) Vitamin B_1 5 mg Nicotinic Acid 15 mg Riboflavine 1 mg Pyridoxine 0 5 mg Ferri et Ammon Cit. 4 grains Ext Hepatis Liq ½ oz Flavouring Syrup to 1 oz.

P K.L. (*Ayrton Saunders & Co. Ltd, Liverpool*). Caps c. (o l soluble constituents) 10 0 Ol Succin 10 0 Safrol 0 8 Ol Eucalyp 6 3 Methyl Salicyl 1-0 Ol Pini Aromat. 10 0 Ol Camph. Ess. 25 0 Ol Tereb ad 100-0

Page Woodcock s Wind Pills (*Page Woodcock Ltd London*) Each contains Aloes $^1/_8$ grain Ext Gent $^1/_2$ grain P Z ng b $^1/_8$ grain P Myrrh $^1/_{16}$ gra n P Gentian $^1/_8$ grain P Calumb $^1/_8$ gra n Ol Anthem. q s Ol Menth Pip q s Ol Cass æ q s

Page Barker s (Dr) Scurf and Dandruff Lotion (*Fevershum Products Ltd London*) Active ingred ents Acid Sal cyl 0 187% Sulph ur 1 rec p 0 75% Glycerin 3%

Parker s Perfect Panacea (*Brook Parker & Co Ltd Bradford*) Ac. Ole c. 8 75% Sol Pot Hydrox (1 1) 1 875% v/v Camphor 2% S V R 21% Liq Ammon Fort 5% Aqua ad 100%

Parkinsons Blood & Stomach Pills (*Parkinsons Ltd Burnley*) Aloe 56% Rheum 25% Colocynth 1% Ol Caryoph 1% P Caps c. 6%

Passiorine Sedative (*Bengué & Co Ltd Wembley*) Active ingredients Aqueous Extract Pass flora Incarnata (1 1) 10% Aqueous Extract Salix (10–1) 5% 70% Alcohol c Extract Cratægus Oxyacantha (1 2 5) 5% Glycerin 17%

Patterson s Pills for Anæmia (*Hygienic Stores Ltd Londo*) Ferri Sulph Exsic 24 113 Sod Carb Exsic 15 320 Pulv Trag 1 419 Pulv Acac a 5 957 Liq Glucosum 22 695 Mang Dioxide 23 404 Cascarin 5 673 Aqua Dest 1 419

[Pl] **Paxedin Tablets** (*Boots Pure Drug Co Ltd, Nottingham*) Each contains. Acetylsal Ac d 4 grains Phenacet 4 grains Code ne Phos 0 125 grain, Calc. Carb 1 2 grains Citric Ac d 0 4 grain

[Pl] **Pazo Pile Ointment** (*Grove Laboratories Inc St Louis May Roberts & Co Ltd London*) Triolyte (Grove s brand of the combination of benzoca ne and ephedrine sulphate) camphorated phenol z ne oxide and eucalyptus o l in an emollient base

Pectomed Syrup (*Medo Chemicals Ltd London*) Ext. Ipecac. Liq $^1/_4$ minim Ext Scillæ Liq 1 minim Liq Tolu 2 minims, Liq Amm Acet. Fort. $1^1/_4$ minims Syr of Cherr es ad 60 minims

Pedrian Foot Salve (*Wiggleworth Ltd Westhoughton*) Active constituents. Salicylic Acid 1 85% Menthol 0 45% Thymol 0 45% Camphor 1 85% Methyl Sal cylate 1 40% Eucalyptol 0 28% Balsam of Peru 0 45%

Pegol Rub Gum Teething Emollient (*Darwen Laboratories Ltd Blackburn*) Active ingred ents Tinct. Ipecac 12 50% Phenol 0 05% Menthol 0 05% Glycerin 41 50% Syr Tolu 41 50%

Penetrol Drops (*W B Cartwright Ltd Rawdon*) Ephedr ne 0 45% Camphor 1 00% Ol Lavand 0 80% Eucalyptol 0 25% Menthol 1 00% Ol Cajuput 1 00% Paraff L q ad 100 00%

Penetrol Inhalant (*W B Cartwright Ltd Rawdon*) Menthol 17 5% Ol Cajuput 5 0% Ol Lavand. 8 0% Ol Eucalyp 5 0% Otto Lavand 4 0% Ol Menth. P p 0 2% Industr Meth Spt 60 3%

Penetrol Inhaler (*W B Cartwright Ltd, Rawdon*) In each inhaler Menthol 7 5 grains Ol Lavand 7 5 m nims O l of P ne 2 0 minims, Eucalyptol 1 0 minim.

Penetrol Penetrating Cough Syrup (*W B Cartwright Ltd Rawdon*) Guaphenesin 0 75% Cetylpyridin um Chloride 0 03% 60% Alcohol soluble Extract of Bryony 0 83% Menthol 0 005% Acet Scill 5 0% Syr Tolu 5 0% Glycer 8 3% Spt Chlorof 3 3% Base to 100 0%

[Pl] **Penetrol Tablets** (*W B Cartwright Ltd Rawdon*) Each conta ns Ephed Hydrochlor B P 0 02 g Calc Glucon. 0 0075 g Theobrom 0 04125 g Phenazon 0 08 g

Pennine Brand Eye Lotion (*Thornton & Ross Ltd Huddersfield*) Z nc Sulph 0 05 Acid Bor c 2 0 Ac d Sal cyl 0 025 Sod et l ot Tart 0 2 Aq Hamam B P C. 1949 5 0 Borax 0 2 Methyl Hydroxybenz 0 02 I mpyl Hydroxybenz 0 01 Normal Saline Solution ad 100

Peps (*C E Fulford Ltd Leeds*) Tablets each contain ng Cetyl Pyrid n um Chloride 0 01% Amyl Metacresol 0 10% Ortho Hydroxy Benzyl Alcohol 0-40 Extract of Liquorice 2 48% Acacia 5 57% Menthol 0 18%, Eucalyptus O l 0 14% Peppermint Oil 0 14% Anise O l 0 14% Liquid Extract of Hy ne Canadens s (1 1) 0 05%

Peptet Indigestion Tablets (*British Drug Houses Ltd, London*) Calc Carb 11 5 B sm Carb 2 9 P Zing b 2 9 Pancreatin 0 7 Ol. Carui 0 3 Sacchar ad 100

Peractum Disinfectant and Antiseptic (*Thornton & Ross Ltd Huddersfield*) Active constituents Chloroxylenol 3% Terpineol 12%

PeriKay Chilblain Tablets (*Perivale Laboratories Ltd Perivale*) Each contains Calcium Phosphate 2 1/4 grains Nicotinamide 25 mg Acetomenaphthone 10 mg and Vitamin D 200 i.u.

Persomnia (*Nicholas Products Ltd Slough*) Tablets each containing Salicylamide 375 mg Phenacetin 150 mg

Pertusa Children's Cough Pastilles (*Boots Pure Drug Co Ltd Nottingham*) Mel Depur 5 0% Glycer 5 5% Ipecac Liq Ext 0 05% Ext Scill Liq 0 05%

Pertussin (*May Roberts & Co Ltd London*) Ext. Thymi Liq 15 0 Ext Droserae Rotund Liq 0 12 Spirit Vini (95%) 6 66 Glycerini Puriss 1 2 Syrup Sacch ad 100 0

Pharmalene (*The Procter Medicinal Co Stockport*) Ointment containing Petroleum Jelly 73% Petroleum Wax 10% Pale Resin 5% Oil Eucalyptus 10% Methyl Sal 2% Tr Chlorophyll q.s.

Phenodine (*Cuxson Gerrard & Co Ltd Oldbury*) Tri-iodophenol 0 02% Methyl Salicylate 0 01% Phenol 0 5% Boric Acid 2%

Phensic Tablets (*Beecham Pharmaceuticals Ltd St Helens*) Acetylsal Acid 63 50% Phenacet 20 00% Caffeine 6 57% Excip ad 100 00%

Pheriban Tonic Tablets (*MacLennan Brand Products Ltd London*) Each contains Calcu Phosph 1/4 grain Ferri Phosph. 1/8 grain Quinin Sulph. 1/12 grain Chlorophyll 1/8 grain Cerevis Ferment 3 1/2 grains

Phillips Tonic Yeast Tablets (*Phillips Yeast Products Ltd London*) Each contains Yeast 4 grains (Each g contains Aneurine 110–135 µg Riboflavine 45 55 µg Nicotinic Acid 350–525 µg Pyridoxine 30–35 µg Pantothenic Acid 45 52 µg)

[P1] **Phocil** (*Ayrton Saunders & Co Ltd Liverpool*) Contains in each fl oz Pholcodine 32 mg Ext Cocillan Liq 8 minims, Ext Euphorb. Liq (1=1 in 45% alcohol) 20 minims Ext. Seneg Liq 2 minims Ext Scill Liq 2 minims Elix Case 15 minims Glycer 60 minims Antim. et Pot. Tart. 1/32 grain Menthol 1/32 grain

[P1] **Pholco Terpin** (*Pinkerton Gibson & Co. Ltd, Edinburgh*) Each teaspoonful (4 ml) contains Pholcodine 4 mg Terpin Hydrate 2 mg in a flavoured base.

[P1] **Pholoz** (*Ayrton Saunders & Co Ltd Liverpool*) Lozenges each containing Pholcodine 4 mg in a menthol sed aromatic base

[P1] **Phoscodin Tablets** (*Wigglesworth Ltd Westhoughton*) Each tablet of 10 grains contains Acetylsalicylic Acid 4 grains Phenacetin 4 grains Codeine Phosphate 1/8 grain

Phosferine (*Beecham Pharmaceuticals Ltd St Helens*) Cinchonidine Sulphate 0 06 Quinine Sulphate 0 47 Dilute Phosphonic Acid 77 90 Glycerophosphoric Acid 0 06 Rectified Spirit 6 00 Base to 100

Phosferine Tablets (*Beecham Pharmaceuticals Ltd, St. Helens*) Cinchonidine Sulphate 0 06 Quinine Sulphate 0 56 Phosphoric Acid 8 54 Glycerophosphoric Acid 0 07 Glycerin 7 43 Lemon Oil 0 52, Base to 100

[P1] **Phospho Lecithin, Wampole** (*Newbery & Phillips Ltd London*) Contains in each fl. oz. Sodium Glycerophosphate 8 grains Calcium Glycerophosphate 4 grains Potassium Glycerophosphate 2 grains, Strychnine Glycerophosphate 1/30 grain Lecithin 1/16 grain Cochineal 1/6 grain, Sucrose 184 grains Pineapple Flavour 1/8 grain Alcohol 14%

Phos-Qu Ron Tablets (*Brook Parker & Co Ltd Bradford*) Ferr Glycerophosphas 12 5 Ferr Phosph Sacch 6 25 Quinine Sulphas 0 6875, Calc Hypophosph 25 0 Excip ad 100

Phyllosan Tablets (*Beecham Pharmaceuticals Ltd St Helens*) Each tablet of 0 25 g contains Ferri Phosphas 65 0 mg Nicotinic Acid 8 5 mg Aneurine Hydrochloride 0 166 mg Riboflavine 0 333 mg

Phytocil Cream (*Wade Pharmaceuticals Ltd Glasgow*) Active constituents 3 Phenoxypropanol 2% 2 p-Chlorophenoxyethanol 1% Salicylic Acid 1 5% Menthol 1% Glycerin 7% in a non-ionic wax base

Phytocil Powder (*Wade Pharmaceuticals Ltd Glasgow*) Active constituents 3 Phenoxypropanol 2% 2 p Chlorophenoxyethanol 1% Zinc Undecylenate 5·8% in Sterilised Talc.

Pickles Foot Ointment (*J Pickles & Sons Harrogate*) Contains Acid. Salicylic 50% and Paraffinum Molle Flav 50%.

Pierre s (Father) Monastery Herbs (*Monkseaton Herbalists Ltd Salford*) Active ingredients (%) Frangula 2 500 Sennæ Folium 65 250 Ispaghula 6 750 Spiræa Ulmaria 5 125 *Maté Folia 13 500 Urtica Dioica 6 750*

'Pineate' Honey Cough-Syrup (*International Chemical Co Ltd London*) Active constituents (% w/w) Ol Menth Pip 0 075 Ol Pini Pumil 0 16 Oil of Sylvestris Pine 0 04 Menthol 0 10 Syr Scill 30 40 Liq Tolu 4 14 Ext Ipecac. Liq 0 35 Honey 29 00 Glycerin 7 00 Syr 28 26

Pinelyptus Pastilles (*Numol Ltd Newcastle on Tyne*) Menthol 0 548 Ol Eucalyp 0 842 Ol Pini Pumil 0 240 Saccharin 0 003 Gelat. 2 0 Dextrose 24 0 Sucros 30 0 Acac 42 367 Art Saffron q s

Pinkettes (*The Dr Williams Medicine Co Hatch End*) Pills each containing Aloin $^1/_4$ grain Podoph. Res $^1/_{24}$ grain Oleores Zingib $^1/_{20}$ grain.

Pipergran (*Ayrton Saunders & Co Ltd Liverpool*) Piperazin 4 0 Hexamin 3 5 *Lith Salicyl B P C 1949* 0 8 Lith Benz. B P C. *1934* 0 7 Sod Phosph Exsic 2 3 Effervescent Base to 100 0

Pirisol Junior Aspirin (*Cupal Ltd Blackburn*) Orange flavoured tablets each containing Aspirin 1 250 grains Aluminium Glycinate 0 167 grain Calcium Carbonate 0 375 grain Citric Acid 0 125 grain

[P1] Pixylators (*W B Cartwright Ltd, Rawdon*). Tablets containing Acid Acetylsalicyl 31 25% Phenacet. 31 25% Caffein 6 25% Codein. 0 95%

Plesox (*Granto Laboratories Ltd Twickenham*) 100 tablets contain Ext. *Salviæ (detoxicat) 4 g Ext Fell Bov 4 g Cervisiæ Fermenti S ec 4 g*

Plurivite Pellets (*Boots Pure Drug Co Ltd Nottingham*) Each contains Vitamin A 1600 i u Vitamin B_1 0 5 mg Vitamin B_2 0 6 mg, Nicotinamide 5 mg Vitamin C 16 mg Vitamin D 160 i u

Plus Prin Tablets (*Bengué & Co Ltd Wembley*) Each contains Acetylsal cylic Acid 0 3 g Aluminium Glycinate 0 06 g Aluminium Hydroxide (dried gel) 0 06 g Aneurine Hydrochloride 1 mg Riboflavine 1 mg Nicotin emide 10 mg

[P1] Pommade Midy (*Wilcox Jozeau & Co Ltd London*). Adrenaline 6 6 mg Chlorhydrate d Amyleine 1 g Ethoforme 1 g Extrait de Marron d Inde frais stabilise 2 50 g, Extrait d Hamamelis 0 50 g Vaseline et Lanoline q s p. 100 g

Post's C.B Q (*A M Post & Co Maidstone*) Tablets containing Pot Iod 21 88% Ext. Cinchonæ 12% Ac Salicylic 1 78%.

Potter s Acidosis Tablets (*Potter s (Herbal Supplies) Ltd Wigan*) Anise 2% *Caraway 12% Cardamom Seed 2%. Cinnamon 2%. Meadowsweet 64%.* Rhubarb 2% Willow Charcoal 16%.

Potter's Alpine Tea (*Potter's (Herbal Supplies) Ltd Wigan*) Buchu 5% Cloves 5% Couch Grass 5% Fennel 5% Ginger 5% Marshmallow Leaves 5% *Senna Leaf 65%. Yarrow 5%.*

Potter s Asthma Remedy (*Potter & Clarke Ltd Barking*) Stramonium 30% Lobelia 15%. Tussilaginis Folium 30%. Anisum 7% Potassii Nitras 18%

Potter's Balm of Gilead Cough Mixture (*Potter's (Herbal Supplies) Ltd Wigan*) Acet Scill 4 37% Chlorof 0 54% Ipecac. Liq Ext 0 04% Liquorice Liq Ext. 3 00% Rect Spirit 0 30% 30% alcoh. ext 1–1 from 1%. *Balm of* Gilead Buds and 2% Lungwort Lichen Syr 72 00%. Water to 100

Potter s Catarrh Pastilles (*Potter & Clarke Ltd Barking*) Ol Pini Sylv 0 41 Ol Pini Pumil 0 41, Ol Eucalyp 0 02 Creosot. 0 2 Menthol 0 83 Thymol 0 02 aqueous extractive from Althæa 0 5 Basis to 100 0

***Potter s Chelsea Pensioner* Tablets** (*Potter s (Herbal Supplies) Ltd Wigan*) Each contains Guaiacum Resin $^1/_8$ grain Rhubarb $^1/_2$ grain Potassium Acid Tartrate 2 grains Sublimed Sulphur 4 grains Nutmeg $^1/_4$ grain

Potter s Duodenal Ulcer Tablets (*Potter's (Herbal Supplies) Ltd Wigan*) Comfrey Root $^3/_4$ grain Cranesb Bill Root 2 grains *Echinacea Root 3 grains* Golden Seal Root 1 grain Marshmallow Root $^3/_4$ grain Poke Root 1 grain

Potter s Elder Flowers and Peppermint with Composition Essence (*Potter s (Herbal Supplies) Ltd Wigan*) Ol Menth Pip 0 188%. Ol Caryoph. 0 02% Ol Piment 0 02%. with the aqueous extractive 1–1 from 1 5% Oak

Bark 3 0% Bayberry 1 5% G nger 6% Hemlock Spruce 1 5% Capsicum and 30 0% Sambucus with Benzoic Acid 0 093% and Syrup to 100

Potter s Herbal Blood Compound (*Potter's (Herbal Supplies) Ltd Wigan*) Tinct Capsici 0 5% Pot Iod 0 24% Mist. Sennæ Co 5 5% Ol Sassafras 0 002% aqueous extract ve from 5% Sarsaparilla 5% Blue Flag 2% Clover 0 5% Guaiacum Wood 5% Burdock 0 5% Liquorice and 5% Yellow Dock Aqua to 100

Potter s Natural Herb Tablets (*Potter's (Herbal Supplies) Ltd Wigan*) Holy Thistle 1 grain Aloes $^1/_3$ grain Fennel $^1/_4$ grain Myrrh $^1/_4$ grain Scullcap 1 grain Podophyllum 1 grain Valerian $^1/_3$ grain Lime Flowers $^1/_3$ grain

Potter s Peerless Composition Essence (*Potter's (Herbal Supplies) Ltd Wigan*) Aqueous extract ve 1 1 from 3% Bayberry Bark 1 5% Capsic. 1 5% Ginger 2 0% Oak Bark 3 0% Pinus Canad Bark 1 0% Poplar Bark and 3 0% Prickly Ash Bark with Benzoic Acid 0 015% Chlorof 0 29% Clove Oil 0 03% Cinnam O l 0 02% Pimento O l 0 02% Rectified Spirit 4 00% Syrup 60 00% and Water to 100

Powell s Balsam of Aniseed (*Newbery & Phillips Ltd London*) Ol Anis 0 25% Acid Benz 0 2% alcohol soluble constituents of Benzoin 7 8% Ext Scill (2 in 1) 4% Ext Glycyrrh 10% Glycerin 12 5% Mel Depur 10% Tinct. Zingib Fort. 5% Alcohol (90%) 15% Aqua to 100%

Preparation H Ointment and Suppositories (*International Chemical Co Ltd London*) The alcohol soluble extract of Live Yeast Cells 20% Shark Liver Oil 3%

Primes (*Vick International Ltd London*) Tablets containing Dicyclomin Hydrochlor 0 08% Mag Trisil 1 97% Dried Alum Hydrox. Gel 6 22% Light Mag Carb. 7 78% Creta 12 47% Peppermint Oil 0 2%

Primoids (*Smith Kendon Ltd London*) Ammon Chlor 5 000 Menthol 0 333 Ol Anis 0 191 Ext. Glycyrrh ad 100 000

Pronel (*Fassett & Johnson Ltd London*) (a) Multivitamin Capsules each contain ng Vitamin A 2500 i u Vitamin D 300 i u. Vitamin B_1 0 5 mg Vitamin B_2 0 5 mg Vitamin C 15 0 mg Nicotinam de 7 5 mg Gelatin 230 0 mg (b) M neral Capsules each containing Ferrous Sulphate to give Iron 10 mg D calc um Phosphate to give Calcium 27 9 mg and Phosphorus 21 6 mg Manganese Sulphate to give Manganese 0 5 mg Sod um Molybdate to give Molybdenum 0 1 mg Potassium Iodide to give Iodine 0 15 mg Gelatin 200 0 mg (c) Flavoured crystals containing pure Gelatin Concentrate Protein 85–87% Sugar and Citric Acid

Propax (*Lillyuh te (Propax) Ltd Nott ngham*) Tablets each containing Acid Acetylsalicyl 3 5 grains Acetophenetidin 2 0 grains Phenolphthal 0 166 grain

Properts Inolak (*Properts Bristol*) Active constituents Resorcinol 1 176% Hydrargyri Subchloridum 1 176% Liquor P cis Carbonis (Meth) 8 235%

Pro Plus Tablets (*Ashe Laboratories Ltd Leatherhead*) Each conta ns Caffe ne 50 mg

[P] **Prunagar Tablets** (*Wilcox Joseau & Co Ltd London*) Each contains Conc. Ext Prunes 0 005 g Agar Agar 0 03 g Ext. Belladonna 0 01 g Ext Nux Vomica 0 003 g Ext Rhamnus 0 01 g Podoph. Peltatum 0-01 g Cassia 0 01 g Euonym n 0 01 g Aloes 0 10 g Exc p ent q s to 0 40 g

[P] **Pulmo Bailly** (*Benguè & Co Ltd Wembley*) Guaiacol 1 50% Codeine 0 14% Acid Phosph (50%) 3 00% Excipient ad 100

Purgen (*H & T Kirby & Co Ltd London*) Tablets each containing Phenolphthale n 1 $^1/_2$ grains

[P] **Purgolda** (*Evans Medical Ltd Liverpool*) Tablets each containing Phenolphthale n 1 grain Alo n $^1/_2$ grain Ext Bellad S ec. B P $^1/_{12}$ grain.

Pylatum Regulators (*Branded Pharmaceuticals Ltd London*) Active ingred ents Senn Fol 5% Ext Casc Sag S ec 56% Aloin 16% Pulv Colocynth 6% Oleoresin Z ngib 4% Ol Menth Pip 4% Pulv Sap Castil 1 5% Exc p ent ad 100

Pyllina Aperient Tablets (*Sangers Ltd London*) Each contains Ext Casc. Sagr S ec. 2 gra ns Aloe $^1/_{32}$ grain Rheu m $^1/_{32}$ gra n Oleores Zingib $^1/_{32}$ grain Glycyrrh. $^1/_{32}$ grain

(Pl) Pylitna Ointment (*Sangers Ltd London*) Ext Bellad Viride 9 35% Gallæ Ceruleæ 18 70% Cyllin 2 92% Adeps Lanæ 31 58% Paraff Liq 14 12% Paraff Moll Flav 23 33%

Pylitna Powders (*Sangers Ltd London*) Pot Nitras 1 739% Cubeba 6 956% Glycyrrh 17 393% Sulphur Sublim. 13 913% Mag Carb Pond 13 913% Pot Tart Acid 13 913% Cinchona 6 956% Cascarill 11 304% Acac 13 913%

Quinacinas Anti-Cold Tablets (*Roberts Chemists (Bond Street) Ltd London*) Each contains Quinine B sulphate 65 mg Aspirin 194 mg Vitamin C 3 mg

Quinacinas Elixir (*Roberts Chemists (Bond Street) Ltd London*) Active constituents Quinine B sulphate 2 55% Oil of Cinnamon 0 04%

(Pl) Quinasp Influenza Capsules (*Savory & Moore Ltd London*) Each contains Quinine Hydrobromide 64 8 mg Atropine Sulphate 0 217 mg Camphor 16 2 mg Aspirin 194 0 mg

(Pl) Quincabel Cold Remedy (*Cuxson Gerrard & Co Ltd Oldbury*) Liq Quinin Ammon 50 0% Tinct Bellad B P 6 25% v/v Camph 1 25% Glycerin 20 0% Ext Cinchon 0 25%

Quinoderm Cream (*Aspro-n Ltd, Oldham*) Pot. Hydroxyquinoline Sulphate 0 5% Benzoyl Peroxide 10% Water miscible Cream Base ad 100%

Quinphos Liquid (*Thompson & Capper Ltd Liverpool*) Quinine Sulphas 4 15% Liq Ferri Perchlor 0 019% Acid Phosph 10 26% Liq Formaldehyd 0 078% Aq ad 100%

Quinphos Tablets (*Thompson & Capper Ltd Liverpool*) Quinine Phosphas 3 1 Pulv Acacia 3 0 Amylum 8 0 Lactos. 5 0 Calc Phosph 1 7 Pulv Creta Gal 2 8 Sucros ad 100

Rabro Dutch Gastric Ulcer Tablets (*Macfarlan & Co Ltd Kingston-on-Thames*) Each contains Block Liquorice 300 mg Bismuth Subnitras 350 mg Magnesii Carbonas Levis 400 mg Sodii Bicarbonas 200 mg Frangula 25 mg Calamus 25 mg

Radian Massage Cream (*Radiol Chemicals Ltd London*) Oleores Capsic. 0 042 Camphor 1 410 Methyl Salicylate 0-420 Ol Camph. Rect. 0 210, Menthol 2 540 Base ad 100 000

Radian Ovals (*Radiol Chemicals Ltd London*) Lithium Carbonate 0 70 Lithium Benzoate 0 70 Potassium Nitrate 0 70 Hexamine 0 70 Guaiacol 0 70 Ext Uvæ Ursi 0 25 Ext. Buchu 0 25 Excipient ad 100 00

Radian Soothing Cream (*Radiol Chemicals Ltd London*) Menthol 2 40 Camphor 0 20 Glycerin 1 00 Acriflavine 0 01 Cream Base ad 100-00

Radian-α Spirit Dressing (*Radiol Chemicals Ltd London*) Guaiacol 5 2 Menthol 5 2 Camphor 1 7 Creosote 12 8 Methyl Salicylate 21 3 Alcohol ad 100 0

***Radian-β Aspirin Spirit* Liniment** (*Radiol Chemicals Ltd, London*) Alcohol 66 00 Menthol 3 30 Camphor 0 60 Acidum Acetylsalicylicum 1 20 Ol Citronell 0 60 Methyl Salicylate 0 60 Glycerin 1 60 Liq Ammon Fort. 1 05 Aqua ad 100 00

Ralgex (*Eucryl Ltd Southampton*) A solid embrocation containing Glycol Salicylate 3 01% Ethyl Salicylate 3 01% Methyl Salicylate 0 60% Capsicin 1 67% Menthol 6 19%

Reade's Egyptian Salve (*Reade Brothers & Co Ltd Wolverhampton*) Camph 0 54% Zinc Oxid 3 8% Acid Boric. 1 6% Borax 0 8% Phenol Liq 0 13% Ol Arach 21% Lanolin 10 2% Paraff Moll Alb 27%

Reade's Express Powders (*Reade Brothers & Co Ltd Wolverhampton*) Active ingredients Salicylamide 20% Acetophenetidin 13 3% Acetylsalicylic Acid 20% Caffeine 3 3%

Reade's Express Tablets (*Reade Brothers & Co Ltd Wolverhampton*) Each contains Salicylamide 1½ grains Acetophenetidin 1 grain Acid Acetylsalicyl 1½ grains Caffein ½ grain

Red Crown Embrocation (*Brook Parker & Co Ltd Bradford*). Ammon. Chlorid 1 25% Sapo Mollis 7 54% Ol Terebinth 25 00% Aqua ad 100%

Red Velvet Capsules (*Harland Harty & Co London*) Each contains Quinidine Sulphate 0 001 g Quinine Dihydrochloride 0 075 g Ascorbic Acid 0 150 g

[P1] **Red Velvet Catarrh and Throat Pastilles** (*Hailand Harty & Co London*) Ac Acet Glac 1 67% Chlorof 1 6% Morph Hyd 0·037% Ol Menth Pip 0 01% Ext Scillæ Liq 0 6% Ac. Benz 0 15% Camph. and Ol Anisi aa 0 09%

[P1] **Red Velvet Junior Syrup** (*Ha land Harty & Co London*) Contains in each fl oz Pholcodine 15 mg

Redux Herbal Tea (*Promedico Products Ltd London*) Herba Violæ Tric 27 5 Herba Asperulæ Odor 7 9 Herba Rubi Fruct 6 6 Flor Cyani sine Cal 1 2 Fol Sennæ 45 0 Fol Theæ Ind 1 7 Flor Calendulæ 1 1 Flor Arnicæ 1 1 Herba Rubi Idæi 7 9

Regesan Bronchial Cough Mixture (*Boots Pure Drug Co Ltd Nott ngham*) Ammon Chlor 2 2% Ammon Carb 1 3% Ext Scill Liq 0 42% Ext Ipecac Liq 0 1% Succus Liquiritiæ 0 5% Glycer 5 0% Inf Seneg B P 1948 7 0%

Regesan Embrocation (*Boots Pure Drug Co Ltd Nottingham*) Menthol 2 4% Eucalyp 2 0% Ol Cajuput 0 5% Ol Eucalyp 1 5% Methyl Salicyl 14 2%

Regesan Gripe Mixture (*Boots Pure Drug Co Ltd Nottingham*) Sod Bicarb 1 0% Tinct Zingib Mit 0 5% Aq Cari Conc 1 5% Aq Menth Vir Conc 0 01% Aq Menth Pip Conc 0 01% Rectified Sp rit 3 0%

Regesan Indigestion Mixture (*Boots Pure Drug Co Ltd Nottingham*) Mag Carb Lev 3 1 Sod Bicarb 3 1 Calc Carb 2 3 Ol Menth Pip 0 08 Aq Chlorof ad 100

Regesan Morning Salts (*Boots Pure Drug Co Ltd Nottingham*) Mag Sulph 84 25 Sod Chlor 10 0 Pot. Sulph 0 5 Sod Sulph. 5 0 Lith Cit 0 25

Regoids Laxative Tablets (*Boots Pure Drug Co Ltd Nottingham*) Each contains Phenolphthalein 2 grains

Reg u lets (*Cupal Ltd Blackburn*) Tablets each containing Phenolphthalein 2 grains, in Chocolate Basis B P

Relaxa Tabs (*International Laboratories Ltd Chessington*) Tablets each containing Lactylphenetidin 1½ grains Phenacetin 3½ grains Prep Ipecac. ½ grain Calcium Phosphate 2½ grains

Reman Pile Ointment (*Brook Parker & Co Ltd Bradford*) Bism. Sub gall 5% Gall B P C 10% Z nc Oxid 10% Camph 3% Phenol 2% Eat Hamam Sicc 2% Base ad 100%

Renipas Analgesic Powder (*Rempas Chemical Co Ltd Brighton*) Pulv Phenacet. 12 Caffein Cit 2 5 Acid Acetylsalicyl 60 with solid and liquid ancillaries q s to 100

Renipas Analgesic Tablets (*Rempas Chemical Co Ltd Brighton*) Pulv Phenacet 12 Caffein Cit 2 5 Acid Acetylsalicyl 60 with solid and liquid ancillaries q s to 100

Renipas Constipation Tablets (*Renipas Chemical Co Ltd Brighton*) Ext Cascara Sag 48% Aloin 19% Res Podophylli 6% combined with solid and liq d ancillaries q s

Renipas Liniment (*Ren pas Chemical Co Ltd Brighton*) Lin Sapon 10 5 Acid Acetic 0 28 Tr Iodi 1 3 Liq Ammon Fort. 1 3 Ol Terebinth 5 75 combined with ancillaries q s

Rennies (Digestif) Tablets (*Nicholas Products Ltd Slough*) Each contains Magnesii Carbonas Levis 0 0780 g Magnesii Hydroxidum 0 0029 g Magnesii Oxidum Leve 0 0034 g Calcii Carbonas 0 6716 g Kaolinum Leve 0 0034 g Calcii Phosphas 0 0011 g Oleum Menthæ Piperitæ 0·0026 g

Resinol (*Sangers Ltd London*) Resorcinol 2 08 Oil of Cade 0 89 Bismuth Subnitrate 4 17 Calamine 4 17 Zinc Oxide 4 17 Boric Acid 7 14 Starch 9 52, O ntment Base ad 100 0

[P1] **Resuflin Tablets** (*Resuflin Ltd London*) Each contains, Papaverinæ Sulphas 0 0470 grain Th eophyll ne 0 2625 grain Ephedrinæ Hydrochlor 0 4590 gra n Theobrominæ 0 5775 grain, Calcii Gluconas 0 7700 grain Phen azonum 1 5400 grains

Reudel Bath Salts (*International Chemical Co Ltd London*) Sod Carb Exs c 49 9% Sod B carb 23 55% Borax 10 1%, Sod Chlorid, 0 22% Sod Sulph 0 01% Kaolin Pond. 2 42%

[P1] **Rexall Bronchial and Catarrh Syrup** (*Rexall Drug Co Ltd Loughborough*) Calc Lactophosph 0 23% Quinin Hydrochlor 0 02% Codein Phosph B P 0 03% w/v Creosot 0 12% Tinct Aconit B P C. 1949 0 18% v/v

Rexall Children s Aspirin Tablets (*Rexall Drug Co Ltd Loughborough*) *Acid Acetylsalicyl 1 1/4 grains Acid Citric 1/8 grain* Calc. Carbonate 3/8 grain Raspberry flavoured

Rexall Cold Sore Lotion (*Rexall Drug Co Ltd Loughborough*) Benzoin 4 95% Camphor 2 18% Phenol 0 36% Menthol 0 26% Industrial Methylated Spirit to 100%

Rexall Orderlies (*Rexall Drug Co Ltd Loughborough*) Tablets each containing Phenolphthalein 2 grains

Rheumester Cream (*Rouse of Wigmore Street Ltd London*) Ethyl Salicylate 6% Guaiacyl Nicotinate 1% Methyl Nicotinate 1% in a water miscible non greasy deep penetrating base

[P1] **Rhinatone Nasal Drops** (*Wade Pharmaceuticals Ltd Glasgow*) Cineole 1 0% Camphor 1 4% Cresol 0 6% Ephedrine 0 125% Ethyl Aminobenzoate 1 0% Oil of Melaleuca 9 0% Vegetable Oil Base to 100%

Rhuaka Digestive Syrup (*Rhuaka Remedies (1923) Ltd Halifax*) Each fl oz contains active principles of Cassia Acut Fruct. 1 111% Cassia Acut. Fol 1 666% and Amomi Meleg Sem 0 069% together with Ext Glycyrrh. 0 555% Theriaca N g 1 666% Ext Sterculia Acum. Liq 0 277% Inf Rhei Conc. (Rhuaka) 0 970% Chlorof 0 243% Aqua Dest. to 100 000%

Rhumatisone Cream (*Lambert Chemical Co Ltd Eastleigh*) Active ingredients Oleoresin Capsicum 0 2% Benzyl Nicotinate 1 0% Mono-salicylic Acid Glycol Ester 1 0% Camphor 1 0% Glycerin 2 0% Oil of Rosemary 0 5% Excipient q s

[P1] **Ricotiv** (*E H Butler & Son Ltd Leicester*) Contains in each fl oz. Pyridox Hydrochlor 0 1 mg Aneur Hydrochlor 4 0 mg Riboflav 2 0 mg, Nicotinamid 30 0 mg Liq Sod Glycerophosph. 4 minims Liq Pot Glycerophosph 7 5 minums Calc Glycerophosph 4 5 grains, Mang Glycerophosph. 0 45 grain Strych 1/100 grain

Riddiopin Oil (*Riddell Products Ltd London*) 95% Alcoholic Soft Extract of Sprouts of Pine (*Pinus sylvestris*) (1 in 2) 1 5% Menthol 0 33% Light Liquid Paraffin sd 100%

[P1] **Riddofan Inhalant** (*Riddell Products Ltd, London*) Epinephrine 1% Ephetonin (Merck) [Racephedrine Hydrochloride] 0 5% Papaverine 0 05% Methyl Atropine Nitrate 0 14% *p* Butyl aminobenzoyl dimethylamino-ethanol [Amethocaine] HCl 2% Glycerin 15% Distilled Water to 100%

Rinstead Pastilles for Sore Gums (*Warrick Brothers Ltd Coventry*) Menthol *0 03%* Myrrh *0 1%* Sodium Ricinoleate 0-1% Chloroxylenol 0 06% Phenolphthalein 0 06% Tartaric Acid 0 26%

Roberts Pine Vapour Rub (*Roberts Croupine Ltd Bolton*) Camphor 6% Menthol 3% Ol Terebinth. 5% Ol Eucalyp Ol Myrist. Oleum Pini Sylvestris Oleum Cedri aa 1% Thymol 0 25% Guaiacol 0 01% Bals Peruv *0 06%* Paraff Moll Alb ad 100%

Roche s Embrocation (*W Edwards & Sons London*) Camphora 1 125% Ol Carui 1 172% Ol Rosmarini 0 076% Ol Cajuputi 0 076% Colour s trace Ol Rapæ to 100 00%

Rotercholon (*F A I R Laboratories Ltd Twickenham*) Dragées each containing: *Curcum* Rhiz. 120 mg Ext Fell Bov 65 mg Ol Menth P p 10 mg Ol Fœnic 3 mg Ol Cari 2 mg Aloe Pulv 5 mg Podoph. 1 mg Salicyl Methyl 2 mg Sucros 200 mg

[P1] **Rouse s Compound Adrenalin Cream** (*Rouse of Wigmore Street Ltd, London*) Active ingredients Adrenaline 1 in 5000 Ephedrine 1 in 1000 Menthol 1% Oil of Eucalyptus 1% all w/w

Ruban (*Evans Medical Ltd Liverpool*) Active constituents Glycol Salicylate 2 00% Methyl Nicotinate 0 75% Oleoresin of Capsicum 0 20% in a non greasy base

Rybaform Gargle (*Rybar Laboratories Ltd Tunkerton*) Active ingredient Chlorinated xylenol 1 0%

Rybar C T.A for Insect Bites (*Rybar Laboratories Ltd Tunkerton*) Active ingredient Chlorinated Tar Acids (Chloro-Benzyl Cresol) 2 0% v/v

Rymel Children's Cough Mixture (*Rybar Laboratories Ltd Tankerton*) Ext Ipecac Liq 0 2% Acid Acetic 0 75% Muc Chond Crisp 17 0% Syrupus 17 0% Ext Scillæ Liq 0 4% Sod Citrat 1 0% Glycerin 17 0% Colouring and Flavouring q s

S.N.A. Soluble Neutral Aspirin Tablets (*Wigglesworth Ltd Westhoughton*) Each contains Acetylsalicylic Acid 5 grains Calcium Carbonate 1½ grains, Citric Acid ½ grain.

St James' Balm (*Medico Biological Laboratories Ltd London*) Broth filtrate of the germs of skin infections (Streptococci Staphylococci B pyocyaneus) 12 5 Ichthammol 2 8 Zinc Oxide 20 0 Liquid Paraffin 10 5 Yellow Soft Paraffin 28 0 Urea 0 1 Borax 0 1 Anhydrous Lanolin ad 100

Sal Alterata (*Wyleys Ltd Coventry*) Strontium Lactate 0 30 Lithium Citrate 0 15 Caffeine Citrate 0 03 Quinine Phosphate 0 06 Sodium Benzoate 0 23 Sodium Formate 0 08 Calcium Lactophosphate 0 15 Magnesium Sulphate 8 00 Sodium Sulphate 30 00 Potassium Sodium Citro tartrate 61 00

[P1] **Sal Antisepticus** (*Gale Bass & Co Ltd London*) Acetanilide 2 24 w/w Liquor Antiseptic Conc (Menthol Thymol Eucalyptol Salicylate of Methyl) 4 63 Sodii Sulphocarbol 5 00 Sodii Chlorid Pur 25 00 Acid Boric Subtil 60 76 Acid. Benzoici Co 2 00 Phenol 0 25 w/w Chloral Hydrate 0 12 w/w

Salvitæ Granules (*Coates & Cooper Ltd West Drayton*) Strontii Lactas 0 30 Lithii Carbonas 0 15 Caffein et Quinin Citras 0 80 Sodii Formabenzoas 1 60 Calcii Lactophosphas 0 15 Potassii et Sodii Citrotartras 59 00 Magnesii Sulphas 8 00 Sodii Sulphas 30 00

[P1] **Sanderson's Cough Linctus** (*Sanderson's (Chemists) Ltd Manchester*) 60% Alcohol Extract of Cardamom Seed (1 in 10) 2 1% Caraway Oil 0 0026% Cinnamon Oil 0 0026% 90% Alcohol Extract of Cudbear (1 in 8) 0 23% Morphine Anhydrous 0 05% w/v Codeine 0 002% w/v Citric Acid 0 03% Alcohol (90%) 1 05% Syrup 80 31%

Sanderson's Throat Specific (*Sanderson's (Chemists) Ltd Manchester*) Acetic Acid (27%) Extract of Squills (3 20) 8 34% Alcoholic (18%) Extract of Capsici Fructus (1–20) 2 084% Acid Sulph Dil 2 084%

Sanolds Effervescent Mouth Wash Tablets (*Cuxson Gerrard & Co Ltd Oldbury*) Each contains Menthol ½ grain Thymol 1/48 grain

Santronex Antiseptic Hygiene Tablets (*W J Rendell Ltd Hitchin*) p-Sulphondichloroaminobenzoic Acid 2 5% Zinc Sulphocarbolate 5 5% Foaming Base 41 0% Excipient q.s. 100 0% Perfume q s.

Scan (*Allcock Products Ltd Liverpool*) Eye drops containing Sodium Borate 1 1% Boric Acid 2 5% Distilled Witch Hazel Extract 12 5% Methyl Hydroxybenzoate 0 036% Æthyl Hydroxybenzoate 0 012% Propyl Hydroxybenzoate 0 012%

Scholl's (Dr.) Foot Cream (*The Scholl Mfg Co Ltd London*) Camphor 2 9 Methyl Salicyl 2 9, Basis ad 100 00

Scholl's (Dr.) Foot Powder (*The Scholl Mfg Co Ltd London*) Sodium-Copper Chlorophyllin 0 02% Benzalkonium Chloride 0 10% Aluminium Chlorhydroxide 12 50% Powder Base to 100 00%

Sclargo (*Potter's (Herbal Supplies) Ltd Wigan*) Clivers Uva Ursi Wild Carrot, Shepherds Purse of each 22% Juniper Berries 12%

Scott's (Dr.) Bilious and Liver Pills (*W Lambert & Co Ltd Lancing*) Uncoated Aloes Soc 16 56% Aloes Barb 10 94% Rhei 16 25% Zingib 13 75% Sapo 12 5% Scam Rad 20% Glycyrr 2 5% Excipients 7 5% (Ol Caryoph, S V R Aq)

Scott's Emulsion (*Scott & Bourne Ltd London*) Cod liver Oil 40% Glycerin 8% Calc Hypophosph 1% Sod Hypophosph 0 5%

Scott's Medicinal Charcoal Biscuits (*R. W Scott (Ipswich) Ltd Ipswich*) Contain Carbo Lignis B P C 1934 12 ½%

[P1] **Sedax** (*Graham Tatford & Co Ltd Portsmouth*) Tablets each containing Acid Acetylsalicyl 32 68% Phenacet 32 68% Codein B P 0 99% w/w Base to 6 grains.

[P1] **Sedets** (*Revell Drug Co Ltd Loughborough*) Tablets each containing Salicylamide 5 grains Codeine Phosphate ½ grain Phenacetin 2½ grains Caffeine 1 grain Phenolphthalein ½ grain.

SEK Ointment (*International Chemical Co Ltd, London*) Active constituents Sodium Propionate 12 1% Sodium Caprylate 9 8%, Propionic Acid 1 5% Zinc Caprylate 4 9% Dioctyl Sodium Sulphosuccinate 0 15%

Selaxa Senna Laxative Pastilles (*Boots Pure Drug Co Ltd Nottingham*) Each contains the active constituents of 12 grains of senna pod (equivalent to six senna pods)

Sentor Antiseptic Stick (*Smith & Nephew Pharmaceuticals Ltd, Welwyn Garden City*) Active ingredients Allantoin 0 1% Hexachlorophane 0 25%, Resorcinol Monoacetate 2% Precipitated Sulphur 1% Zinc Oxide 2%

[P1] **Sepichlor Lozenges** (*Wigglesworth Ltd Westhoughton*) Each contains Cetylpyridinium Chloride 3 mg Benzocaine B P 2 mg

Serocalcin (*Eucryl Ltd Southampton*) Tablets each containing 0 035 g of a mixture of 1 2 4- and 1 2 5 guaiacolsulphonic acid precipitated bovine plasma and 0 165 g excipient

Setlers Indigestion Tablets (*Beecham Pharmaceuticals Ltd St Helens*) Each contains Aluminium Triple Precipitate 6 grains (Aluminium Triple Precipitate contains Aluminium Hydroxide 24 0% Basic Magnesium Carbonate 20 0% and Calcium Carbonate 48 0%)

[P1] **Seville Nerve Tonic** (*Wigglesworth Ltd Westhoughton*) Active constituents Aneurin Hydrochlor 0 0053% Manganese Glycerophosphate 0 112% Sodium Glycerophosphate 1 37% Calc Glycerophosph. 0 92% Strychnine Hydrochloride B P 0 0083% w/v

[P1] **Shadforters Backache & Bladder Pills** (*Shadforth Pharmaceutical Co Ltd, Romford*) Each contains Cubeb 0 024 g Copaiba 0 008 g Radix Eupatorium Purpureum 0 03 g Podoph 0 03 g, Colch Corm. B P 0 016 g Hexamin. 0 016 g Ol Santal 0 001 ml, together with the aqueous extractive of 0 02 g Uvæ Ursi Folia

[P1] **Shadapro Analgesic Compound** (*Shadforth Pharmaceutical Co Ltd Romford*) Tablets each containing Acid. Acetylsalicyl 0 259 g, Pulv Ipecac. et Opii B P 0 03 g Quinin Sulph 0 008 g Phenacet. 0 016 g, Ol Cinnam 0 00025 ml

Shurzine Antiseptic Ointment (*The Shurzine Pharmacy Ltd Hathern*) Adeps Lan 36 83 Pataff Moll Flav 36 83 Zinc Oxid 6 91, Glycer 7 67 Phenol 1 45 Ol Eucalyp 2 11 Ol Lavand 2 04, Aq Dest. q s to 100 00 parts

Silf Tablets (*Silf Co Ltd London*) Aqueous extract of Fucus 8 75 grains, Rheum 0 03 grain Ext Case Sagr Succ 0-25 grain, Aloin 0 03 grain

Simpson's Foot Ointment (*Branded Pharmaceuticals Ltd, London*) Active ingredients Pot Iod 0 25% Sulphur Sublim 3 0% Acid Salicyl 0 187% Camphor 2 0% Zinc Oxid 0 47% Menthol 0 2% Oleum Pini 0 25%

Simpson's Liquid Warmth Liniment (*Branded Pharmaceuticals Ltd London*) Active ingredients Methyl Salicyl 6 5% Ol Caryoph 1 1%, Menthol 0 08% Ol Eucalyp 1 1% Ol Terebinth. 6 5% Iodof 0 125% Capsicin 0 58%

[P1] **Singha (Dr) Asthma Tablets** (*The Dr Singha Co Ltd, Caernarvon*) Caffeine $^1/_4$ grain Grindel Pulv 1 grain Emet. Hydrochlor $^1/_{100}$ grain, Lobel Pulv $^1/_2$ grain, Euphorb Pulv $^1/_2$ grain Ephed Hydrochlor $^1/_{10}$ grain Amylum $^1/_4$ grain Lactose ad 5 grains

[P1] **Singleton's Eye Ointment** (*Stephen Green Ltd London*) Contains Red Mercuric Oxide 5% w/w

Sinubérase (*Spencer & Co London*) Tablets each containing Lactic Ferments 0 05 g Dried Brewer's Yeast 0 00125 g Dried Malt Extract 0 0006 g, Lactose et Excipient q s

Skin Soft Calamine Skin Cream (*Crown Capsules Co Ltd Bexleyheath*) Calamin 12% Lanolin 4 5% Benzalkonium Chloride 0 1%, Cream Emulsion Base ad 100

Slack's Sure Remedy for Rheumatism (*Potter's (Herbal Supplies) Ltd Wigan*) Tablets each containing Raspberry Leaves 1 grain and the aqueous extractive from Burdock Bogbean Yarrow and Agrimony, of each $2^1/_2$ grains

Sloan's Balm (*Lambert Chemical Co Ltd Tautleigh*) Active ingredients Oleoresin Capsici 1 8% Methyl Salicylate 2% Menthol 2%, Turpentine 6%, Oils of Camphor 0 5%, Pine 0 85%, and Eucalyptus 1%

Sloan's Liniment (*Lambert Chemical Co Ltd, Eastleigh*) Liq Ammon Fort 0 04%, Ol Pini Aromat 6 375%, Methyl Salicyl 2 656%, Ol Terebinth 46 70% together with the paraffin soluble constituents of 3 531% of Capsic.

Smith's Bronchial Pastilles (*Smith Kendon Ltd London*) Ol Menth Pip 0 202% Menthol 0 111% Ext Glycyrrh 3 571%, Ol Anis 0 165%, Ol Cubeb 0 019%, *Co Benz Tinct.* 0 099%, *Tinct Tolu* 0 099%, *Tinct Capsic Fort* 0 018%

Smith's Red Gum & Menthol Pastilles (*Smith Kendon Ltd, London*) Gummi Eucalypti 1 841%, Menthol 0 297%, Ol Eucalyp 0 100%, Ol Ros (Synth.) 0 005%

Snef (*Thornton & Ross Ltd Huddersfield*) Active ingredients Menthol 0 2%, Ephed Hydrochlor 0 75%, Eucalyp 0 2%, Chlorbutol 0 5%, Glycer 2 5%, Pot Phosph. Acid 0 2%, Dextros 3 0%

Snowfire Healing Tablet (*F W Hampshire & Co Ltd, Derby*) Active constituents (% w/w) Soft Paraffin Extract of 0 2% Althææ Folium Acid Boric 4 0 Benzoin 0 02 Ol Citronell 0 06, Ol Thyme 0 02, Ol Caryoph 0·04, Ol Cadin 0 04

Snowfire Ointment (*F W Hampshire & Co Ltd, Derby*) Zinci Oxidum 8 0, Amylum 5 0, Ol Thym 0 25 Phenol Liq 0 5, Adeps Lanæ 15 0, Aq Dest 10 0 *Paraff Molt Flav ad 100*

Solution 41 (*Innoxa (England) Ltd, London*) Resorcinol 0 070%, Acid Salicyl 0 057%, Hexachlorophane 0 081% in a solvent vehicle

Songo Travel Sickness Remedy (*Vandre Ltd, Glasgow*) Chlorbutol 88 925% *Caffeinæ Citras* 11 075%

Soothe (*Universal Laboratories Ltd Folkestone*) An ointment for chilblains containing Ascorbyl Palmitate 5% in an emollient base

Sotol Mouth Wash Tablets (*Claudius Ash, Sons & Co Ltd London*) Each contains Thymol $^1/_{60}$ grain Menthol $^1/_{25}$ grain Borax $1^1/_2$ grains

Springbok Embrocation (*Peel & Campden Ltd London*) Terebene 12 5%, Ol Pin Pumil 2 0% Bornyl Acetate 3 5% Eucalyptol 0 2%, Ol Caryoph. 0 2%, Methyl Salicylate 0 8% in a special emulsifying medium ad 100

Stanwood Treatment for the Tobacco Habit (*Stanwood Proprietaries Ltd, Bolton*) Tablets containing Ferr Sulph Exsic 52 85%, Alumen 12 85%, Lactosum q s Acacia q s, Virid Nit q s

Steedman's Soothing Powder (*John Steedman & Co, London*) Phenolphthal 33 33%, Sucros 16 66%, Amylum 50% Each powder weighs approx. 152 mg

Steedman's Teething Jelly (*John Steedman & Co, London*) Dequalinium Chloride 0 02%, Ethyl Nicotinate 1 00% Glycerin 25 00%

Stotherts Foot Paste (*Stotherts Ltd, Atherton, Manchester*) Active constituent Salicyl Acid 50%

Strepsol (*Boots Pure Drug Co Ltd Nottingham*) Dybenal (2,4-dichlorobenzyl alcohol) 0 5%, Amyl-meta-cresol 0 125%

Stride Medicated Foot Powder (*British Drug Houses Ltd London*) Chlorphenesin 1%, Hexachlorophane 0 5%, Boric Acid 5%, Zinc Oxide 5%, Base to 100%

[P1] **Strix Inhalant** (*Moore Medicinal Products Ltd London*) Atropine Methonitrate 0 14% w/v Papaverine Hydrochloride 0 88% w/v, Adrenaline 0 50% w/v, Chlorbutol 0 50% w/v

[P1] **Strix Tablets** (*Moore Medicinal Products Ltd London*) Each contains Theophylline 2 grains, L-N-Methylephedrine Hydrochloride (Metheph) $^3/_8$ grain

Sublamin (*Edwards Harlene Ltd London*) Lotion containing Acid Benz 4 829%, Acid Salicyl 3 618%, Benzalkonium Chloride 0 050%, Cetyl Pyridinium Chloride 0 050%

Sulpholine Lotion (*Gambarra Ltd, London*) Sulphur Præcip 4 0%, Zinc. Oxid 2 0%, Glycer 7 8%

Supavite (*Single capsule dose*) (*Bristol-Myers Co Ltd, Ruislip*) Capsules each containing Vitamin A 6000 i.u., Vitamin D 500 i.u. Vitamin E 2 mg., Vitamin B_1 2 mg., Riboflavine 2 mg., Vitamin C 40 mg., Nicotinamide 15 mg., Vitamin B_6 1 mg., Calcium Pantothenate 3 mg., Manganese 5 mg., Iron 12 mg., Iodine 150 µg

Supavite Capsules (*Bristol Myers Co Ltd Ruislip*) Amber capsules each containing *Vitamin A 6000 i u* Vitamin D 500 i u Vitamin E 2 mg Black capsules each containing Vitamin B_1 2 mg Riboflavine 2 mg Vitamin C 40 mg Nicotinamide 15 mg Vitamin B_6 1 mg *Calcium Pantothenate 3 mg*, Manganese (Mang Sulph dried equiv) 5 mg Iron (Ferr Sulph. Exsic. equiv) 12 mg Iodine (Pot Iod equiv) 150 µg

Super Plenamins (*Rexall Drug Co Ltd Loughborough*) Tablets each containing Vitamin A Acet 6500 i u Vitamin B_1 2 25 mg Vitamin B_2 2 25 mg *Vitamin B_6 0 5 mg Vitamin B_6 100 µg Vitamin B_{12} 2 µg* Vitamin C 40 mg Vitamin D_2 800 i u Vitamin E 2 mg P P Factor 20 mg mineral salts equivalent to Iron 15 mg Calcium 75 mg Phosphorus 58 mg Iodine 0 15 mg Copper 0 75 mg Cobalt 0 15 mg Manganese 1 25 mg Potassium 3 mg Zinc 1 mg plus Liver Concentrate 1 20 50 mg

Supersalve Germicidal Cream (*Boots Pure Drug Co Ltd Nottingham*) Chloroxylenol 2 0% Terpineol 1 5% Borax 1 5% D pentene 1 0%

Supersan Disinfectant (*Boots Pure Drug Co Ltd Nottingham*) Chloroxylenol 3 0% Terpineol 5 0% Ol Pini Aromat 1 0%

[P1] **Supol Hæmorrhoidal Suppositories** (*Fassett & Johnson Ltd London*) Each contains *Bismuth Subgallicum 3 grains* Resorcin 1 grain Ephedrin Hydrochlor $^1/_{10}$ grain Benzocaine 2 grains

Surama Medicated Cigarettes (*Opera Omnia Ltd London*). P Cort. Cascarillæ 1 5% P Fruct Cubebæ 1 5% P Gum Benzoin. 1 5% Fol Stramonii 92 5% Ol Eucalypti Glob 1 5% Menthol 0 5% Ol P ni Pumil 1 0%

Sure Shield Iodised Throat Lozenges (*Thos Guest & Co Ltd Ancoats, Manchester*) Each contains Iodine (free and combined) 0 0478% Methyl Salicylate 0 0617% *Phenol (free and combined) 0 379%* Menthol 0 228% Citric Acid 0 446% Cetyl Pyridinium Chloride 0 44%

Sure Shield Laxatives (*Thos Guest & Co Ltd Ancoats Manchester*) Tablets each containing Phenolphthalein 1 381 grains Natural Raspberry Juice 0 07 minim.

Surgaseptic Antiseptic Throat Tablets (*Modkem Ltd Leicester*) Halogenised Phenolic Compounds (made from Phenol 63 00% Chlorine 22 00% Salicylic Acid 6 00% Iodine 15 00%) 0 500% Menthol 0 085% Thymol 0 085% Flavour and Colour q s Excipient ad 100 00

Surgaseptic Effervescing Mouth Wash Tablets (*Modkem Ltd Leicester*) Sodii Bicarbonas 55 00% Menthol 1 00% Phenol 0 63% Chlorine 0 22% Acid Tartaric 45 00% Thymol 0 25% Acid Salicylic 0 06% Iodum 0 15%

Surgaseptic Germicide and Antiseptic (*Modkem Ltd Leicester*) Phenol 0 63% Chlorine 0 22% Salicylic Acid 0 06% Iodine 0 15%

Surgaseptic Ointment (*Modkem Ltd Leicester*) Halogenated phenolic compounds (made from *Phenol 0 63% Chlorine 0 22% Salicylic Acid 0 06%* Iodine 0 15%) 17 00 Glycerin 7 00 Sulphur Præcip 4 00 Acid Salicylic 1 00 Acid Boric 3 00 Kaolin 22 60 Iodine 0 75 Methyl Salicylate 3 00 Camphor 3 50 Creosotum 2 00 Base 200 00

Surgaseptic Pile Suppositories (*Modkem Ltd Leicester*) Trichlorophenyl methylhodosalicyl (Conc) 1 0% *Hamamelin 3 3%* Ol *Theobromæ* 95 7%

Suthers Composition Essence (*James Woolley Sons & Co Ltd Manchester*) 60% alcohol extract of Capsici Fructus 0 625% Cinnamomi Cortex 1 312% and Myrica B P C 1949 2 50% together with Tincture Catechu 0 55% and Ol Caryoph 0 14%

Swift Brand Corn Cure (*Modkem Ltd Leicester*) Acid Salicyl 20, Collodium Flex 100

Syrofans (*Gedeon Richter Ltd London*) Each two teaspoonfuls contain Tinct. Ipecac 5 minims, Syr Scillæ 20 minims Syr Tolu 15 minims, Liq Ammon Acet 10 minims

[P1] **Syrup Pulmonaria Comp** (*Clayton Saunders & Co Ltd, Liverpool*) Each 60 minims contains Calc Lactophosph 1 grain Guaiacol $^1/_4$ minim, Codein Phosph. $^1/_{16}$ grain Tinct. Aconit. $^3/_8$ minim

Syrup Vitamin Co (*E H Butler & Son Ltd Leicester*) Cupri Sulph. 0 009% Calc Glycerophosph 0 45% Mang Glycerophosph 0 11% Ferri et Ammon Cit. Vir 3 65% *Each fl oz contains not less than* 17 000 i u Vitamin A and 3000 i u Vitamin D

T.B.P Hair & Scalp Treatment (*British Alkaloids Ltd London*) Boric Acid 1 87% Salicylic Acid 0 39% Sodium Salicylate 1 37% Sodium Phenate 1 22% Benzoic Acid 0 94% Methyl Hydroxybenzoate 0 20% Iodosalicylic Acid 0 01% Bromosalicylic Acid 0 01%

T C.P (*British Alkaloids Ltd London*) Halogenated phenols made from Chlorine 0 4% Iodine 0 11% Bromine a minute trace Phenol 0 63% Salicylic Acid 0 045% with partial elimination of ionisable halides

[P1] **T C.P Bronchial Antidote** (*British Alkaloids Ltd, London*) T C.P 6 7% Iodised Sodium Salicylate 0 5% Sodium Salicylate 1 5% Sodium Bicarbonate 1 7% Sugar 5% Extract of Malt 14% Syr Prun. Serot. 21 6%

T C P Throat Pastilles (*British Alkaloids Ltd London*) Acid. Cit. 0-89% Acid Phosph 0 267% T C P 11 6% (equivalents Phenol 0 075% Acid Salicyl 0 0052% Iodine 0 013% Chlorine 0 048%)

[P1] **Tabasan** (*Ayrton Saunders & Co Ltd Liverpool*) Tablets each containing Ephed Hydrochlor 3/4 grain Theobrom 3/8 grain Acid Acetylsalicyl 1 grain Calc. Glucon 1/18 grain Phenolphthal 1/60 grain Lactos. q s.

[P1] **Tan Kem Chest and Lung Syrup** (*Tan Kem Ltd London*) Ext. Glycyrrh Liq 0 47% Liq Morph. Hydrochlor B P 0 86% v/v Acid Sulph. Dil 3 75% Acid Hydrocyan D I 0 24% v/v Flavouring Essences and Vehicula ad 100 00%

Taxol Tablets (*Continental Laboratories Ltd, Hove*) Pancreatin 4 5 mg Bile Salts 30 0 mg Aloes 27 0 mg Agar 30 0 mg

Taylor s 'Sevnols (*Bellringer & Noble Manchester*) Menthol 0 3% Camphor 0 6% Ol Camph. Rect 4 0% Ol Rap 1 0% Oil of Amber 2 0% Acid Acet. 3 0% Ol Terebinth. 56 0% together with the ol terebinth soluble constituents of 1 8% of Capsicum

[P1] **Teasdale Chlorodyne** (*The Teasdale Chlorodyne Co Bradford*) Tinct Capsici Fort, 0 83% Chlorof 9% v/v Ether Meth 3% Hydrocyanic Acid (HCN) 0 0025% w/w Ol Menth Pip 0 138% Codeinæ Hydrochlondum 0 217% w/v Morph Hydrochlor 0 177% w/v Vehicul ad 100%

Teencreem (*Stanacen Products London*) Active ingredient Salicylic Acid 5%

Terpoflor Nasal Oil (*Wilcox Joseau & Co Ltd London*) Cedrene 1 Pinene 1 Anethol 1 2 Camphoric Aldehyde 1 Cineole 0 8 Methylorthoamudobenzoate 0 7 Linalyl Acetate 0 4 Terpineol 0 4 Sesquiterpenes 3 5 Pure Liquid Paraffin 90

Testonic Tablets (*Axa Ltd London*) Each contains Vegetable Lecithin 1/10 grain Brain 1/18 grain Prostate 1/10 grain Ext Kola 1/4 grain Vit E (Succinate) 1 1/4 mg Calc. Hypophos. 3/4 grain Excipient q s

Therm-o Lin (*Carter Bros Shipley*) Ol Camph Rect. 23 33% Methyl Salicyl 13 33% alcoholic extractive from Capsicum 18 66% Spt. Meth Indust. ad 100%

Therm-o Rub (*Carter Bros Shipley*). Contains the methyl salicyl soluble constituents of Capsic (1 in 3) 11 57% Menthol 0 48% Ol Camph Rect. 2 1% Ol Eucalyp 2 7%

Thomas s Chest and Lung Mixture (*Hubert A C Thomas & Co Ltd Llanelly*) Active constituents Chloroform 0 75% Ether 1% Tinct Capsic 0 01% Ol Menth Pip 0 01% Ol Anis. 0 01% Ol Caryoph 0 01% Ext Glycyrrh Liq 14% Sod Algin 1% Sucrose 10%

Thomas s Pectoral Balsam (*Boots Pure Drug Co Ltd Nottingham*) Mel Depur 35-4% Acet Scill 10 5% Succus Liquiritiæ 3 0% Ext. Ipecac Liq 0 53% Chlorof 0 52% Tinct Capsic 0 16% Ol Anis. 0 04% Ol Menth. Pip 0 03% Acid Cit 0 52%

Thompson s Indigestion Remedy (*Potter s (Herbal Supplies) Ltd Wigan*) Tablets containing Scullcap Valerian, Fennel Myrrh, Lobelia Pawpaw Capsicum of each 14 28%

Thomson s Iodised Vitamin Capsules (*R. Thomson Elgin*) Vitamin A 108 000 I.u Vitamin D 1800 i.u. Iodine 14 200 µg in each ounce

Three Flasks Blackcurrant Cough Linctus (*Thornton & Ross Ltd Huddersfield*) Active ingredients Ipecac Tinct. 3% Liq Ammon Acet. Fort. 3 1% Tolu Syr 8 1% Oxymel Scill 8 1% Lemon Juice 5%, Syr Rub Ver 32%

Three Flasks Children s Cherry flavoured Cough Syrup (*Thornton & Ross Ltd Huddersfield*) Active ingred ents Liq Ammon Acet Fort 3 12% Ipecac Tinct. 3 125% Liq Tolu 6 25% Sp Camph. 0 15% Ol Anis. 0 12% Oxymel Scill 10% Glycer 6 25% Syr 65 7% with Cherry Flavouring

Three Flasks Cold Sore Lotion (*Thornton & Ross Ltd Huddersfield*) Active ingredients Camph 1 1% Menthol 1 1% Æthyl Phthal 0 825% Tinct Benzoin (Meth.) 84 475%

Three Flasks Ephedrine Nasal Drops (*Thornton & Ross Ltd Huddersfield*) Active ingredients Menthol 0 2% Ephed Hydrochlor 0 75% Eucalyp 0 2% Chlorbutol 0 5% Glycer 2 5% Pot Phosph Acid 0 2% Dextros 3 0%

Three Flasks Sore Gum Lotion (*Thornton & Ross Ltd Huddersfield*) Active ingred ents Tinct Myrrh. 35% Tinct Kramer B P C, 1949 3 5% Borax 2 5% Glycer 5 0%

[P1] **Thru** (*Rexall Drug Co Ltd Loughborough*) Benzoca ne B P 0 93% w/v Sal cylam de 4 65% Isopropyl Alcohol 60 0%

[P1] **Thru in Jel Form** (*Rexall Drug Co Ltd Loughborough*) Salicylam de 5% Benzocaine 1% w/w

Thymo Ephedrin (*Ayrton Saunders & Co Ltd Liverpool*) Each 60 minims contains Ephed Hydrochlor $\frac{1}{4}$ grain Thym Vulg $7\frac{1}{2}$ grains

Tip and Run Corn Cure (*Modhem Ltd, Leicester*) Salicyl c Acid 8 16 Lactic Acid 2 04 Ether (Meth.) 8 16 Flexible Collod on 81 64 Chrysoidin q s

[P1] **Toniphos Tonic Syrup** (*Cupal Ltd Blackburn*) Each fl oz conta ns Vitamin B_1 4 mg Nicotinamid 32 mg Strych Hydrochlor $\frac{1}{60}$ gra n Calc. Glycerophosph 5 grains Liq Sod Glycerophosph 5 minims Liq Pot. Glycerophosph. 10 minims Mang Glycerophosph 1 grain Acid. Glycerophosph 20 minims

Topsy Soluble Aspirin (*Kaputine Ltd Oldham*) Tablets each containing Acid Acetylsalicyl 1 25 grains

Totavit D R Capsules (*Cupal Ltd Blackburn*) Each conta ns Vitamin A 5000 i u Vitamin D 600 i.u. Aneurine Hydrochloride 1 5 mg Riboflavine 1 2 mg Pyridoxine 0 5 mg Nicotinamide 10 0 mg Ascorbic Acid 30 0 mg DL Alpha Tocopheryl Acetate 1 5 i.u., Potassium Iodide equiv to 0 1 mg Iodine, Copper Sulphate equiv to 0 1 mg copper Ferrous Sulphate equiv to 15 0 mg iron di Calcium Phosphate equ v to 24 0 mg calcium and 18 5 mg phosphorus DL Methionine 30 0 mg

[P1] **Towle s Chlorodyne** (*James Woolley Sons & Co Ltd Manchester*) Chlorof B P 20% v/v Morph Hydrochlor B P 0 144% v/v Acid Hydro cyan Dil. B P C [1924] 3 84% v/v Ol Menth. P p 0 577% Oleores Capsic. 0 006% w/v Æther Solv 7 7% v/v

Triple Action Cough Treatment (*Rexall Drug Co Ltd Loughborough*) Ammon Chlorid 1 15% Menthol 0 069% Sal cylamid 2 5% Liq Benzalkon Chlor 0 023% Sp ritus Rectificatus 17 9% Glycol Propylen. 27 5%

Tubelette Menthol and Wintergreen Cream (*Gale Bass & Co Ltd London*) Caps cin B P C 1923 0 30 Thymol 0 11 Eucalyptol 0 11 Menthol 2 60 Methyl Salicyl 12 17 Glyc Amyls ad 100 00

[P1] **Tucal Linctus** (*United Chemists Association Ltd Cheltenham*) Active ingredients (% w/v) Pholcodine Tart. 0 21 Terp n Hydr 0 17 Menthol 0 34 Amylmetacresol 0 05 Thymol 0 05 Iodophenol 0 02 and Phenol 0 53

Tucal Lozenges (*United Chemists Association Ltd Cheltenham*) Phe ol B P 0 9% Menthol 0 9% Iodophenol 0 03% Amylmetacresol 0 06% Thy mol 0 06%

[P1] **Tusana Cocillana Cough Linctus** (*Boots Pure Drug Co Ltd Nottingham*) Ext Cocillan Liq 2 3% Ext. Ipecac. Liq 0 4% Ext Scill Liq 0 4 % Ext Seneg Liq 1 5% Ext Senn. Liq 2 3% Glycer 8 0% Codein. Phos B P 0 23% w/v Antim Pot Tart B P 0 06% w/v

[P1] **Tusana Cocillana Cough Pastilles** (*Boots Pure Drug Co Ltd Nottingham*) Codein. Phos B P 0 11% w/w Antim. Pot. Tart B P 0 014% w/w Ext Cocillan Liq 0 2% Ipecac. Liq Ext 0 4% Ext Scill Liq 0 4% Glycer 5 0%

(P1) **Tussils** (*Boots Pure Drug Co Ltd Nottingham*) Lozenges each containing Dextromethorphan Hydrobromide 2 5 mg Phenylephrine Hydrochloride 0 5 mg

Tussimol Cough Pastilles (*The British Drug Houses Ltd London*) Each contains Oxeladin Citrate approximately 5 mg

(P1) **Tyrocane Antiseptic Lozenges** (*Cupal Ltd Blackburn*) Tyrothricin 0 5 mg Cetyl Pyridinium Chloride 2 5 mg Benzocaine B P 5 mg

Ucadrox Tablets (*United Chemists Association Ltd Cheltenham*) Each contains Dried Alum mum Hydroxide Gel 8 grains

Ucal Bronchial Lozenges (*United Chemists Association Ltd Cheltenham*) Active ingredients (%) P Scill 0 95 P Ipecac. 0 35 Menthol 0 35 Ext. Glycyrrh 6 6 Ol Pini Pumil 0 12 Ol Anis 0 15 Ol Cinnam 0 07

Ucal Burn Dressing (*United Chemists Association Ltd Cheltenham*) Acriflavine 0 1 Cera Alb 19 0 Paraff Liq 54 0 Sod Borate 1 2 Aq Dest to 100 0

(P1) **Ucal Children s Cherry Bark Cough Syrup** (*United Chemists Association Ltd Cheltenham*) Active ingredients Camph 0 05% Syr Prun. Serot B P C 2 5% v/v Acid Acet 1 5% Ol Anis 0 008% Ext. Ipecac. Liq 0 08% Benzaldehyde 0 003% Ether 0 15% Chlorof B P 0 15% Ext Scill Liq 0 18%

Ucal Children s Soluble Aspirin Tablets (*United Chemists Association Ltd Cheltenham*) Aspirin 1 25 grains Calcium Carbonate 0 375 grain Citric Acid 0 125 grain

Ucal Children s Worm Syrup (*United Chemists Association Ltd Cheltenham*) Santonin 0 2 Chlorof 0 08 Alcoh. Isopropyl 1 6 Elix Senn. 25 0 Syrupus ad 100 0

Ucal Corn and Wart Solvent (*United Chemists Association Ltd Cheltenham*) Acid Lact. 1 0 Acid Salicyl 15 0 Pyroxylin 2 0 Sp Meth Indust 20 0 Ol Ricin 1 7 Canada Balsam 3 4 Colour a trace Æther Solv ad 100

(P1) **Ucal Foot Powder** (*United Chemists Association Ltd Cheltenham*) Phenylhydrarg Nitras 0 1 Methyl Salicyl 0 3 Menthol 0 1 Zinc. Oxid 3 6 Talc 38 0 Acid Boric. 38 0 Amylum 20 0 Hexachlorophane 0 5

(P1) **Ucal Forty Plus Tonic** (*United Chemists Association Ltd Cheltenham*) Active ingredients in each fl oz Vitamin B_1 3 mg Liq Pot. Glycerophosph 8 grains Liq Sod Glycerophosph 8 grains Ferr Glycerophosph $1^1/_4$ grains Magnes Glycerophosph $2^3/_4$ grains Strych Hydrochlor B P $^1/_{25}$ grain Caffein 2 grains

(P1) **Ucal Golden Eye Ointment** (*United Chemists Association Ltd Cheltenham*) Hydrarg Oxid Flav 1 0% w/w

Ucal Indigestion Lozenges (*United Chemists Association Ltd Cheltenham*) Active ingredients (%) Sod. Bicarb 3 75 Bism Carb 0 94 Mag Carb Pond 5 00 Calc Carb 33 75 Pepsin 0 08 Pancreatin 0 05 Flavouring q s

Ucal Iron and Yeast Tonic Tablets with Vitamins (*United Chemists Association Ltd Cheltenham*) Active ingredients Ferr Glucon $1^1/_2$ grains Cerevis Ferment Sicc. 3 grains Calc Phosph. $1^1/_2$ grains Aneurin Hydrochlor 0 17 mg Acid Ascorb 4 0 mg

(P1) **Ucal Junior Linctus** (*United Chemists Association Ltd Cheltenham*) Active ingredients Camph. 0 05% Syr Prun Serot B P C 2 5% Acid Acet. 1 5% Ol Anis 0 008% Ext Ipecac Liq 0 08% Ether 0 15% Chlorof 0 15% Ext Scill Liq 0 18%

Ucal Menthol and Wintergreen Cream (*United Chemists Association Ltd Cheltenham*) Active ingredients Capsicin 0 19 Oleum Sinapis Volatile 0 19 Menthol 2 5 Methyl Salicyl 6 75

Ucal Nebuliser (*United Chemists Association Ltd Cheltenham*) Ephed Hydrochlor 0 95% made isotonic with Normal Saline Solution

(P1) **Ucal Nerve Tone** (*United Chemists Association Ltd Cheltenham*) Active constituents Liq Pot. Glycerophosph 2 75% Liq Sod Glycerophosph. 2 75% Ferr Glycerophosph. 0 29% Mag Glycerophosph. 0 63% Strych Hydrochlor 0 009% w/v Ext. Malt. Liq 4 38% Pot Cit 1 0% Vitamin D_2 3 mg. per fl. oz.

Ucal No 2 Chocolate Worm Cake (*United Chemists Association Ltd Cheltenham*) Each contains Hydrarg Subchlor 1 grain Santonin $^1/_4$ grain P Jalap 1 grain Chocolate base q s.

Ucal Nursery Powder (*United Chemists Association Ltd Cheltenham*) Boric Acid 5% Starch 10% Zinc Oxide 5 5% Talc to 100%

Ucal Ointment (*United Chemists Association Ltd Cheltenham*) Active ingredients (% w/w) Phenol 0 22 Resorcin 0 45 Ol Eucalyp 1 89 Zinc Oxid 12 8

[PI] **Ucal Pile Ointment** (*United Chemists Association Ltd Cheltenham*) Active ingredients (w/w) Hydrarg Oxid. Rub 0 75% Phenol Liq 3 00% Zinc Oxid 7 00%

Ucal 'Safety First' Iodised Throat Lozenges (*United Chemists Association Ltd Cheltenham*) Each contains Tinct Iodi $^1/_{15}$ minim Phenol Liq B P $^1/_{12}$ minim Menthol $^1/_{24}$ grain Ol Gaultheriæ $^1/_{100}$ minim Sugar q.s.

Ucal Speedy Cough Lozenges (*United Chemists Association Ltd Cheltenham*) Active constituents in each lozenge Acid Cinnamic 0 005 grain, Acid Benz 0 055 grain Acid Tart 0 4 grain, Camph. 0 027 grain, Ol Anis, 0 03 minim Ext. Scill Liq 0 5 minim, Chlorof 0 3 grain

Ucal Speedy Cough Mixture (*United Chemists Association Ltd Cheltenham*) Oxymel Scill 34 5 Ext Glycyrrh Liq 3 0 Theriaca 35 0 Ol Menth. P p 0 012 Ext Seneg Liq 0 2 Chlorof 1 36 Sp Æther 1 56 Aquam 4 7 Syr ad 100

[PI] **Ucal Toothache Drops** (*United Chemists Association Ltd Cheltenham*) Camphor 9 7 Menthol 2 4 Ol Cajuput 4 5 Ol Caryoph. 5 1 Chloral Hydrate 9 7 Phenol 4 9 Chloroform 63 7 (% w/w)

Ucal Universal Antiseptic Cream (*United Chemists Association Ltd Cheltenham*) Active ingredient. Aminacrin Hydrochlor 0 1%

Ucaloids (*United Chemists Association Ltd Cheltenham*) *Pellets containing* Menthol 1 25 Caps c 0 025 Ext. Glycyrrh. Base

Ulcanon (*Clay & Abraham Ltd Liverpool*) Acid. Tann 5% Sod Benz. 0 02% Diethyl Phthalate 1% Linalyl Acetate 0 5% Sp Meth. Indust 70% Aq Dest. to 100%

Ulter Stomach Tablets (*Ulter (Bradford) Ltd Bradford*) Bismuth Subnitrate 350 mg Magnes Carbonas 400 mg Sodii Bicarbonas 200 mg Frangula 25 mg Calamus 25 mg

Union Jack Paste (*Union Jack Paste Co Ltd Seaford*) Ac. Salicyl 46 6 Ung Coloph ad 100

Urace Rheumatism Tablets (*Newbery & Phillips Ltd London*) Each *contains Acetylsalicylic Acid 0 173 g* Guaiac Res 0 048 g Quin Bisulph. 0 016 g Amylum 0 048 g Saccharum 0 032 g

Urilac (*W B Cartwright Ltd Rowdon*) Tablets each containing Acidum Acetylsalicylicum 2 750 grains Phenacetinum 1 000 grain Sulphur Sublimatum 0 125 grain Caffeinæ Benzoas 0 250 grain Aloinum 0 022 grain Colour and Excipient q s

Urodonal (*Spencer & Co London*) Contains in 100 g Hexamine 4 35 g Piperazine Tartrate 0 2 g Quinic Acid 0 14 g Theobromine 0 06 g., Lith. Carb 0 25 g Sod Bicarb 52 5 g Acid. Tart 31 25 g Sod. Phosph. Exsic. 5 62 g Acid Cit 1 87 g Saccharum Album 3 46 g., Sod Cit. 0 3 g

U Zit Toothache Remedy (*W B Cartwright Ltd Rowdon*) Camphor 8-0% Chloroform 9 0% v/v Phenol 0 69% w/v Clove Ol 1 8 1% alcohol soluble constituents of Krameria 0 6% and Kino 0 62% Distilled Water 10-0% Industrial Methylated Spirit to 100 0%

Valda Pastilles (*Wilcox Jozeau & Co Ltd London*) Menthol 0 715% Eucalyptol 0 033% Ol Menth. Pip 0 011% Terpineol 0 0025% Thymol 0 0025%

Valderma Antiseptic Balm (*Dae Health Laboratories Ltd London*) *Active constituent Di 8 hydroxyquinoline p Aminosalicylate 0 3% in a water* miscible base

Valopto Eye Lotion (*Dae Health Laboratories Ltd London*) *Active constituents* Acid Boric. 1 8% Borax 0 6% Chlorbutol 0 1% Sod et Pot Tart. 0 1% Sod Chlorid. 1 0% Hamam 2 0% Aq Sambuc. 4-0% Minodin DH 493 (9 Aminoacridine Salicylate) 0 001% Nipasept 0 08%

Valpeda Antiseptic Foot Balm (*Dae Health Laboratories Ltd London*) Chlorinated (5 and 5 7) 8 hydroxyquinolines 0 3%. Menthol 0 6%. Methyl Salicylate 0 1%, in a non greasy water miscible base

Vapex (*Thomas Kerfoot & Co Ltd Ashton under Lyne*) Menthol 17 500 Linalyl Acetate 0 468 Ol Eucalyp 4 687 Ol Lavand 4 687 Bornyl Acetate 0 416 Ol Camph Essent 1 500 Alcohol (1 M S) 70 742

Vapex Medicated Rub (*Thomas Kerfoot & Co Ltd Ashton under Lyne*) Camphor 7 00%. Menthol 3 00%. Oil of Siberian Fir 1-00%. Methyl Nicotinate 0 33%. Oleoresin Capsicum 0 05%. Base ad 100 00%.

Vapex Pastilles (*Thomas Kerfoot & Co Ltd Ashton under Lyne*) Menthol 0 5% Linalyl Acetate 0 014% Ol Eucalyp 0 125% Ol Lavand 0 125%. Bornyl Acetate 0 014% Ol Cinnam. Camph. 0 042% Terpineol 0 14%. Basis ad 100%

VapoMist Nasal Spray (*Vick International Ltd London*) Active ingredients *Phenylephrine Hydrochloride* 0 25% *Ephedrine Sulphate* 0 25%

Varicones (*Thompson & Capper Ltd Liverpool*) Suppositories containing Hamamelidin 6 11%. Ol Theobrom. ad 100

Vasogen Silicone (*Lactagol Ltd London*) An oil in water emulsion containing Polydimethylsiloxane 20% Zinc Oxide 7 5% Calamine 1 5%

Vegetex Tablets (*Modern Health Products Ltd, Chessington*) Watercress 35% Celery 30%. Horseradish 15% Parsley 10% Lettuce 5%. Mint 5%.

Velocium (*Emmet Laboratories Ltd London*) Tablets containing Ephedrine Hydrochloride 0 965 Calcii Gluconas 23 5 Theobromina 23 5 Phenacetinum 10 5 Drosera Longifolia 3 5 Hydrargyri Subchloridum 2 1 Extractum Aloes 0-7 *Podophylli* Resina 0 7 (all %)

Velox Brand Rheumatic Tablets (*Wiggleworth Ltd Westhoughton*) Acidum Acetylsalicylicum 62 5% Phenylsemicarbazide 3 125% Caffeine 3 125%

Veno s Lightning Cough Mixture (*Beecham Pharmaceuticals Ltd St Helens*) Dil Acet Acid 5 50%. Camph 0 02%. Tinct Capsic 0 12% Sucrose 34 00% Molasses 34 00% Sod Benz 0 17% Ol Anis 0 03%. Chlorof 0 31% Glucos. Liq 22 00% Aq Chlorof ad 100 ml

Ventos Stomach Powder (*Carter Bros Shipley*) Mag Trisil 21 42%. Mag Carb Pond 28 57%. Sod. Bicarb 21 42% Creta 21 42% Ulm. Fulv 7 17%

Vick Cetamium Cough Syrup (*Vick International Ltd London*) Active ingredients Ammon Chlor 1 00% Sod Cit 4 00% Citric Acid 0 25%. *Cetamium* (cetylpyridinium chloride) 0 025% Camph 0-002% Menthol 0 029%. Ol Eucalyp 0 009%. Glycer 3 75%. Vitamin C 0 21%.

[PI] **Vick Formula 44 Cough Linctus** (*Vick International Ltd London*) Active constituents Ephed Sulph 0 11% w/v Morph Hydrochlor 0 02% w/v Sod Cit 5 00% Chlorof 0 50% Ol Anis 0 026%. Alcoh (95%) 10 50%. Cetylpyridinium Chloride 0 025%.

Vick Inhaler (*Vick International Ltd London*) Menthol 40%. Camphor 40% Methyl Salicylate 11% Oil of Pine 4%. Oil of Sassafras 5%

Vick Medicated Cough Drops (*Vick International Ltd, London*) Menthol 0 20%. Eucalyptus Oil 0 06% Camphor 0 005%. Thymol 0 01%. Benzyl Alcohol 0 14%. Tinct Tolu 0 01%. *Cetylpyridinium* Chloride 0 06%.

Vick Medicated Cough Drops (Wild Cherry Flavour) (*Vick International Ltd London*) Menthol 0 10% Eucalyptus O 1 0 01%. Camphor 0 001%. Thymol 0 002%. *Benzyl Alcohol* 0-10%. *Tinct Tolu* 0 002%. Cetylpyridinium Chloride 0 03% aqueous extract from 2%. Wild Cherry Bark.

[PI] **Vick Therex Decongestant Tablets** (*Vick International Ltd London*) *Salicylamide* 26 45%. *Phenacetin* 26-45%. Caffeine 2 65%. *Ephedrine Sulphate* 0 65%. Atropine Sulphate 0 02% Magnesium Hydroxide 10 58%. Sodium Citrate 2 65%. Dried Aluminium Hydroxide Gel 2 65%

Vick Vapour Rub (*Vick International Ltd London*) Menthol 2 82 Camph 5 25 Ol Tereb 4 77 Ol Eucalyp 1 35 Ol Myrist 0 48 Thymol 0 10 Ol Cedri 0 45 Basis ad 100 00

Vick Vitamin C Cough Drops (*Vick International Ltd London*) *Cetamium* (cetylpyridinium chloride) 0 03%. Menthol 0-087%. Vitamin C 0 195%. Citric Acid 0 87%. Tartrazine 0 008%. Natural Oil of Lemon 0 28%.

Videnal (*Modkem Ltd, Leicester*) Tablets each containing Mag Carb Pond 36 36%, Bism Subnit 31 82%, Sod Bicarb 18 18%, Frangula 2 27%, Calamus 2 26% Aneurin Hydrochlor 250 μg, Acid Ascorb 1000 μg

Vi-Globéol Granules (*Spencer & Co London*) Vitamin A 160 000 i u Calciferol 14 000 i u, Thiamine Hydrochloride 0 05, Ascorbic Acid 1 50, Nicotinic Amide 0 40, Tryptophane 0 05, Histidine Hydrochloride 0 025, Lysine 0 025, Choline Hydrochloride 0 50 Calcium Triphosphate 5 Disodium Hydrogen Phosphate 1, Potassium Phosphate 0 50, Manganese Lactate 0 10 Copper Sulphate 0 02, Zinc Sulphate 0 03, Ferrous Sulphate 0 10, Potassium Iodide 0 069, Tannin 0 20 Aromatic Sugar Excipient ad 100 g

Vikelp (*Health Products Laboratories Ltd, London*) Tablets each containing Ascophyllum Nodosus 2 grains Calcii Phosphas 3 grains, Ferri et Ammonii Citras 0 35 grain Cupri Sulphas 0 003 grain Vitamin B_1 50 i u, Vitamin D 100 i u

Vince Powder (*Lambert Chemical Co Ltd, Eastleigh*) Sodium Perborate 96%, Magnesium Trisilicate 3%

Vine's Scurf Lotion (*Vine's Biocrin Ltd London*). *Active ingredients* p Chlor-*m* cresol 0 25%, Sodium Alkyl Sulphates 0 25% Alkyl Aliphatic Esters 8 7% Aliphatic Alcohols 4 9%, Cholesterol 0 37%, Lanosterol 0 3%, Sulphur 1 97% Carbamide 0 98%

Vinferade Tonic (*Brook, Parker & Co Ltd Bradford*) Ext. Kola Liq 3 12%, Sodii Phosph 0 859%, Ferr Ammon Cit 0 775% Calc Glycerophosph. 0 228%, Pot Cit 0 156% Sodii Benz 0 064%, Cupri Sulph 0 0058%

Viodox Tablets (*Ashe Laboratories Ltd Leatherhead*) Each contains Acetylsalicylic Acid 220 mg, Potassium Citrate 40 mg Lithium Citrate 20 mg, Aqueous Extract of Arctium Lappa (1 in 3) 5 mg, Quinine Dihydrochloride 2 mg, Base ad 370 mg

Vironita (*M Calthorpe & Co Ltd, London*) Dextrose Monohydrate 10%, Liquid Glucose 10% Malt Extract 6%, Benzoic Acid 0 06% Each fl oz. contains Iron 6 mg, Nicotinic Acid 3 mg Riboflavine 0 6 mg, Aneurine Hydrochloride 0 3 mg

[P] **Virotone** (*Ayrton, Saunders & Co Ltd Liverpool*) Each 60 minims contains Sod Glycerophosph 2 grains Calc Glycerophosph. 1 grain, Strych Glycerophosph $^1/_{10}$ grain, Vin. Xenic 30 minims, Sp Rect. 6 minims

Vitadatio (*S A Palmer Ltd Leeds*) Decoction containing active constituents of Melaleuca Ericifolia 18 00% and Quassia 0 144%

Vitafort Vitamin-Mineral Capsules (*Every Ltd Southampton*) Each red capsule contains Vitamin A 6000 i u. Vitamin D 1000 i u, Vitamin E 3 mg Each black capsule contains Vitamin B_1 3 0 mg Vitamin B_2 3 0 mg, Vitamin B_6 0 2 mg Vitamin B_{12} 2 0 μg, Vitamin C 30 0 mg, Niacinamide 15 0 mg, Ferrous Sulphate Exsic 61 8 mg, Dicalcium Phosphate 83 5 mg, Manganese Sulphate 5 0 mg

Vitanium (*Archanum Co, Sandhurst*) Sodii Bicarbonas 50%, Acidum Acetylsalicylicum 49 9%, Phenolphthalein 0 1%

Vitasun Capsules (*Burgoyne Burbidges & Co Ltd London*) Each contains Vitamin A 25 000 i u, Vitamin B_1 2 mg Vitamin E 3 mg

[P] **Vitathone Cream** (*Cupal Ltd Blackburn*) Dimethylpolysiloxane 3%, Benzocaine 5% w/w Azulene 0 05%, Hexylresorcinol 0 1% Methyl Nicotinate 1 25%

Vitathone Tablets (*Cupal Ltd, Blackburn*) Each contains Acetomenaphthone 7 mg Nicotinic Acid 25 mg

Viv (*Viv Pharmaceuticals Ltd Winchester*). Alcoholic Extract of Æsculus Canea 50% Glycerin 50%

Vocalzone Pastilles (*Vocalzone Ltd London*) Menthol 1 0%, Ol Menth Pip 0 5%, Myrrh 0 25%, Glycerin 0 65%, Ext Glycyrrh 1 1%

Vykmin Vitamin and Mineral Capsules (*Scott & Bowne Ltd, London*) *Red capsules each containing* Vitamin A 5000 i u, Vitamin D 750 I.u Vitamin E 1 25 mg Black capsules each containing Vitamin B_1 1 mg, Vitamin B_2 1 mg, Vitamin B_6 0 1 mg, Vitamin C 15 mg, Nicotinamide 10 mg, Mang Sulph 2 2 mg, Ferr Sulph Exsic 61 1 mg, Calc Phosph 92 34 mg

Wade's Salve (*Wade Pharmaceuticals Ltd, Glasgow*) Active ingredients Phenol 2 4% w/w, Terebene 5 25%, Melaleuca Oil 5 6%, Rectified Oil of Turpentine 6%, Resin 26%, Chlorophyll 0 1%

Warrick s Smokers Cough Pastilles (*Warrick Brothers Ltd Coventry*) Mel Depur 2% Ol Anis 0 02% Ol Menth Pip 0 02% Chlorof 1 33% Capsicin 0 001%

Wate-on (*Dendron Distributors Ltd Watford*) Conta ns in each oz Corn Oil 33%, Glucose 11 0% Lecithin 11 0% Iron 3 2 mg Nicotinamide 2 0 mg Riboflavine 1 0 mg Vitamin B_1 0 4 mg Calcium Pantothenate 0 4 mg Vitamin B_6 0 03 mg Vitamin D_2 100 i u Vitamin B_{12} 4 2 µg

Wate-on Tablets (*Dendron Distributors Ltd Watford*) Sixteen tablets conta n Vitamin D 400 i u Vitamin C 75 mg Vitamin B_2 2 6 mg Vitamin B_1 1 5 mg Vitamin B_6 0 13 mg Vitamin B_{12} 6 4 µg Inositol 15 mg Choline 13 mg Iron 13 mg Calcium 292 m g Phosphorus 172 mg Lecithin 110 mg Nicotinamide 15 mg Zinc Phosphate 3 6 mg Copper Sulphate 4 6 mg Manganese Sulphate 3 7 mg Calcium Pantothenate 1 3 mg Protein 7 9% Corn Oil 25% Carbohydrate 56 3%

White Lions Antacid Tablets (*Shadforth Pharmaceutical Co Ltd Romford*) Each contains Mag Trisil 0 03 g Calc Carb 0 003 g Sod B carb 0 143 g Mag Carb Pond 0 178 g Ol Menth Pip 0 002 ml, Ol Anisi 0 002 ml

White Tar Ointment (*Tillott s Laboratories London*) Lanol n 39 3% Soft Paraffin 46 7% Z nc Oxide 10% Resorcin 4% Cresol 0 002%

Widow Welch s Female Pills Kearsley s Original (*C & G Kearsley Ltd London*) Ferri Sulph 52 5 Elecampane 5 32 Curcuma 5 32 Glycyrrh 5 32 Sulph Sub 5 32 Excip 26 22

Wigglesworth s Compound Vitamin Tablets (*Wigglesworth Ltd Westhoughton*) Each contains Vitamin A 2500 units Aneurine Hydrochloride 1 0 mg Riboflavine 0 5 mg Ascorbic Acid 15 0 mg Calciferol 0 0075 mg Nicot namide 7 5 mg

Wigglesworth s Vaporising Chest Rub (*Wigglesworth Ltd Westhoughton*) Active constituents Menthol 1 0% Camph 5 0% Eucalyp 3 0%, Thymol 0 1% Ol Caryoph 0 3% Ol Cedri 0 2%

Williams (Dr) Pink Pills (*The Dr Williams Medicine Co Hatch End*) Each contains Ferr Sulph Exsic 1 25 grains Cupr Sulph 0 01 grain Mang Sulph 0 013 grain Caffein. Cit 0 5 gra n, Aneurin Hydrochlor 0 156 mg

Wills Eczema Ointment (*Boots Pure Drug Co Ltd Nottingham*) Zinc Oxid 8 7% Acid Boric 2 0% Acid Benzoic 0 1% Ol Cadin 2 2% Phenol 0 5%

Wills Health Salt (*Boots Pure Drug Co Ltd Nottingham*) Sucros 38 9% Sod B carb 22 5% Acid Tart 6 9% Acid Cit. Anhyd 13 8% Mag Sulph Exs c 17 3% Sod Chlorid 0 6%

Winslow s (Mrs) Soothing Syrup (*Thos Christy & Co Ltd Aldershot*) Sod Cit 2 160% Anis Stell 0 059% Glycerol 5 888% Ext Rhei Liq 0 040% Ol Coriand 0 012% Sucrose 54 850% Ext Sennæ Liq 0 236% Ol Fœnic 0 089% Sod B carb 0 223% Ol Carui 0 040% Aq Dest 36 403%

Woodward s Gripe Water (*W Woodward Ltd London*) Ol Anethi 2 minims, Sodii B carbonas 20 grains Spiritus Rectificatus 106 3 minims, Syrupus 9½ fluid drachms Aqua ad 4½ fl oz

Wright s Calcinate Tablets (*Wright Layman & Umney Ltd London*) Each contains Calc um Gluconate 5 grains Vitamin D_2 500 i u

Wright s Capsules for the Relief of Colds (*Wright, Layman & Umney Ltd, London*) Each contains Menthol 1/10 grain Ol Cinnam 1/10 minim Caps c. 1/12 grain, Scill 1/2 grain Acid Acetylsalicyl 2 grains Quinin Sulph. 1/8 grain

Wright s Coal Tar Ointment (*Wright Layman & Umney Ltd London*) Coal Tar 3 00% Cresol 0 79% Benzyl Cresols 0 41% Oil of Thyme 0 014% Liquid Extract of Quillaia 0 38% Lanol n 28 60% in a petroleum base.

(P) Wright s Coal Tar Vaporizing Liquid (*Wright Layman & Umney Ltd, London*) Pix Carbon a 0 25% Naphthalenum 1 50% Cresol 88 50% Olea Essentialia ad 100 00%

Wynobak Kidney and Bladder Pills (*Amocon Ltd Bradford*) Each contains (in grammes) Pichi 0 014 Ext Casc. Sagr Sicc. 0 022 Methylene Blue 0 005 Tot. Nitras 0 078 Aqueous Ext Uvæ Ursi (1 1) 0 022 Buchu 0 005, Podoph. Ind 0 001 Ol of Juniper 0 001

Wyn Tarrh Medicinal Snuff (*Amocon Ltd, Bradford*) Active constituents. Menthol 5 0975% Camphor 0 0225% Ol Lavand. 0 18%, Otto Lavand

0 045% Ol Cajuput 0 0712%, Ol Eucalyp 0 18%, Ol Menth. Pip. 0 0028%, Phellandrene 0 015% Bism Carb 8 8%, Sod Bicarb 1 4%, Mag Carb Pond 23%, Calc Carb 15%, Ac Boric 5%

Wyntol Inhalant (*Amowon Ltd Bradford*) Menthol 6 5, Camphor 1 5, Ol Lavand 12, Otto Lavand 3, Ol Cajuput 4 75 Ol Eucalyp 12, Ol Menth Pip 1 875, Phellandrene 1, *Sp Meth Indust ad 100*

Yadil (*Yadil (1935) Ltd London*) Glycerol 3 75% Paraformaldehyde 1 25%, *Thymol* 0 0625%, *Oleum Allii Essentiale* 0 008%, Aqua Thymolis (sat sol) 60 00%

Yeast-Vite (*Beecham Pharmaceuticals Ltd St Helens*) Tablets each containing Phenacet 2 50 grains, Caffein 0 50 grain, Caryoph 0 11 grain Cerevis. Ferment Sicc 1 90 grains (standardised to contain Aneurin Hydrochlor 0 167 mg , Riboflav 0 167 mg , Nicotinamid 1 5 mg)

Yestamin (*Walter Crowe Ltd London*) Tablets each containing Dried Yeast 5 grains (containing in each g Vitamin B_1 33 i u Riboflavine 65 *µg*, Niacin 455 *µg*, *Protein* 45%, and all other vitamins of the *B* complex natural to yeast)

Zam-Buk (*C E Fulford Ltd Leeds*) *Active ingredients (w/w)* Ol Eucalyp 5 0% Camph. 1 8%, Ol Camph Rect. 0 65%, Ol Thym 0 55%, Coloph 2 5%

Zam-Buk Medicinal Cream (*C E Fulford Ltd, Leeds*) *Benzyl Benzoate* 2 5 Camphor 2 0, Ol Eucalypt 1 0, Ol Thymi 0 25, Ol Camphor 0 65, Glycerin 2 0 Titan Diox 1 0, Pot Hydroxyquin. Sulph 0 012, Emulsified Base to 100

Zam Buk Suppositories (*C E Fulford Ltd, Leeds*) Active ingredients Thymol 0 17%, Camphor 0 94%, Menthol 0 47%, Ol Eucalyp 0 94%, Resin 4 71%

[Pl] **Zamcones Suppositories** (*C E Fulford Ltd Leeds*) Each contains Bism Subgall 2 8 grains, Titan Dioxid 1 4 grains Zinc Oxid. 2 8 grains, Pot. Hydroxyquinolin Sulph 0 03 grain Benzocain B P 0 31 grain

Zant Disinfectant (*Evans Medical Ltd Liverpool*) Active constituents Chloroxylenols 2% Benzylated Cresol 2%, in an aromatic saponaceous base.

Zee-Kol Blood Tonic Pills (*Zee Kol Co Ltd London*) Each contains Pulv Aloes (Cape) $^1/_2$ grain *Pulv Saponis* $^9/_{10}$ grain, *Pulv Zingib* $^{11}/_{10}$ grain, Excipient q s

Zee-Kol Skin Healer (*Zee Kol Co Ltd London*) Adeps Lanæ Hydrosus 77 00 Acid Boric 5 40 Zinci Oxidi 8 20, Sulphur 2 50, *Colophonium* 2 50 Ol Eucalypt Glob 3 40

Zenoids Lozenges (*Smith Kendon Ltd, London*) Zingiberis Pulvis 5 36% *Rhei Pulvis* 2 34%, *Cardam Pulv* 0 67%, Ol Limon 0 38%.

Zeph Nasal Spray (*Phillips, Scott & Turner Ltd, Surbiton*) Contains Phenylephrine Hydrochloride $^1/_2$%

Zief (*New Era Laboratories Ltd London*) Tablets containing (in homœopathic potency) Ferri Phosphas 3x, Sodii Phosphas 3x, Sodii Sulphas 3x Silicic Oxide 3x in equal proportions

Zim Dental Balm (*Arthur H. Cox & Co Ltd, Brighton*) Adeps Lanæ 48 85% Paraff Moll Flav. 49 9%, Iodoform 0 05%, Borax 1 15%, Saccharin 0 05%

Zim Throat Spray (*Arthur H Cox & Co Ltd Brighton*) Tyrothricin 0 02% Cetyl Pyridinium Chloride 0 02%, Salicyl Alcohol 4 00%

[Pl] **Zom Pile Ointment** (*Arthur H Cox & Co Ltd Brighton*) Ext Hamam. Liq B P 1914 6 43%, Gall 13 17% Acid Boric 2 06% Opium Pulverat 1 87% Adeps Lanæ 26 34%, *Paraff Moll Flav 30 00%, Base ad 100%*

Zom Pile Tablets (*Arthur H Cox & Co Ltd Brighton*) Senn Fol 1 grain, Ipom Res $^1/_2$ grain, Sulphur Sublim $^1/_2$ grain Phenolphthal $1^1/_2$ grains, Hydrarg Subchlor $^1/_8$ grain

[Pl] **Zomex Pile Suppositories** (*Arthur H Cox & Co Ltd Brighton*) Bism Subgall $1^1/_2$ grains, Ext Hamam Sicc (Alc 90° 10=1) $1^1/_2$ grains, Opium *Pulverat B P* $^1/_2$ *grain Resorcin* 1 *grain, Zinc* Oxid 2 grains Bals. Peruv 1 minim Ol Theobrom q s

Zonobrone Bronchial Mixture (*Pinkerton, Gibson & Co Ltd, Edinburgh*) Acetum Scillæ 10 0, Inf Seneg Conc 0 20, Ext Glycyrrh Liq 5 0, Ipecac Liq Ext 0 20, Glycer 5 0, Theriaca 20 0, Mel Depur 9 0, Linctus Simplex ad 100 0

Zubes (*F W Hampshire & Co Ltd Derby*) Ol Anis 0 2, Ol Menth Pip 0 13, Ol Caryoph 0 02 Menthol 0 3, Camph 0 01, Bals Tolu 0 07, Benzoin 0 07, Tinct Capsic 0 02 Gingerin 0 02 the aqueous extract of Marrub (1 in 15), Quassia (1 in 48) and Tussilag Fol (1 in 60) 0 015, with Sucros et Glucos Liq ad 100

Zubes Cough Mixture (*F W Hampshire & Co Ltd, Derby*) Active constituents (%) the chloroform extract (1 in 17) of 0 05% of Bals Tolu and 0 05% of Benzoin, together with Ol Caryoph 0 02, Ether 0 15 Gingerin 0 01, Ol Anis 0 1, Tinct Capsic 0 01, Ol Menth Pip 0 19, Acid. Benz 0 15, Acet Scill 2 5, Acid Acet Dil 5 0 Asmulon (regd.) (Sod et Lauryl Sulph.) 0 14, Mel Depur 20 0 Glucose Liq 15 0, Sucros 12 0

Zytocin Tablets (*The Emion Co., Romford*) Each contains Aqueous Extract of Garlic (4 = 5) 0 5 minim

NEW DRUGS AND PROPRIETARY MEDICINES

SUPPLEMENT TO THE EXTRA PHARMACOPŒIA VOLUME I, 24th EDITION

The main purpose of this section is to provide information on the new drugs and proprietary medicines that have been introduced since the publication in 1958 of the Extra Pharmacopœia Volume I, 24th Edition In addition, modifications to a number of the statements on drugs and proprietary medicines in the main volume have been included where such modifications have been considered appropriate to the limited scope of this section

[P1 84B] **Ahicol Tablets** (*Boots*) Each contains bendrofluazide (q v) 2 5 mg and *reserpine 0 15 mg For the treatment of hypertension Dose* $^1/_2$ *to* 1 *tablet* morning and evening

[B] **Achromycin Ophthalmic Oil Suspension** (*Lederle*) Eye drops containing tetracycline hydrochloride 1% in plastic drop-bottles of 6 ml

[B] **Achromycin V** (*Lederle*) There are now also available capsules each containing the equivalent of tetracycline hydrochloride 50 mg buffered with sodium metaphosphate *(See also I of I 24th Edn p 1470)*

[B] **Achromycin V Pediatric Drops** (*Lederle*) Contain in each ml tetracycline equivalent to tetracycline hydrochloride 100 mg with citric acid and sodium citrate

[B] **Achromycin V Syrup** (*Lederle*) Contains in each teaspoonful (5 ml) tetracycline equivalent to tetracycline hydrochloride 125 mg buffered with citric acid and sodium citrate

(For other preparations of Achromycin see Vol I 24th Edn pp 1469–70)

Actal (*Bayer Prod*) Sodium polyhydroxyaluminium monocarbonate hexitol complex available as tablets of 360 mg Antacid *Dose* 1 or 2 tablets to be sucked *as required*

[P1 87] **Actifed** (*Burroughs Wellcome*) **Syrup** containing in each fluid drachm triprolidine hydrochloride 0 88 mg and pseudoephedrine hydrochloride (q v) *21 3* mg **Tablets** each containing triprolidine hydrochloride 2 5 mg and pseudoephedrine hydrochloride 60 mg For the relief of respiratory congestion *Dose* one tablet twice or thrice daily children $^1/_2$ to 1 teaspoonful of syrup twice or thrice daily

[P1 87] **Actifed Compound Linctus** (*Burroughs Wellcome*) Contains in each fluid drachm triprolidine hydrochloride 1 mg pseudoephedrine hydrochloride (1 v) 20 mg and codeine phosphate 7 5 mg For the treatment of simple cough accompanied by bronchospasm *Dose* 1 to 2 teaspoonfuls every 4 to 6 hours children $^1/_2$ teaspoonful every 4 to 6 hours

Actriol (*Organon*) A non greasy cream containing in each g epiœstriol 2 5 mg in tubes of 15 g For the treatment of acne vulgaris.

[B] **Adcortyl** (*Squibb*) Triamcinolone (q v) available as tablets of 1 mg and 4 mg

[B] **Adcortyl A** (*Squibb*) Triamcinolone acetonide (q v) available as an Ointment containing 0 1% in tubes of 5 g and 15 g and jars of 50 g as a Lotion containing 0 1% in plastic bottles of 15 ml and as an aerosol Spray containing 3 3 mg in 50 g

[B] **Adcortyl-A Parenteral** (*Squibb*) Triamcinolone acetonide (q v) in aqueous suspension in vials of 5 ml containing 10 mg in each ml

[B] **Adcortyl A with Graneodin** (*Squibb*) Ointment and Lotion each containing triamcinolone acetonide (q v) 0 1% neomycin 0 25% and gramicidin 0 025% For combined steroid and antibacterial topical therapy

Adenosine Triphosphate. A.T.P $C_{10}H_{14}O_{13}N_5P_3 = 507.2$
A co-enzyme valuable in the transfer of phosphate bond energy and the deposit of glucose as glycogen. It plays a fundamental role in biological processes involving energy liberation, *e.g.* muscle contraction. *It is given* by mouth and by intramuscular injection and its administration is claimed to increase peripheral circulation and muscle power, to increase the range of joint movement in rheumatoid arthritis, and to relieve the pain of osteoarthritis. *Contra-indicated* in myocardial infarction (Dubois-Ferriere, *Helv. med. Acta*, 1951, *18*, 192).
Proprietary Name ADENOTRIPHOS

Adenotriphos (*Rona Laboratories*). Adenosine triphosphate (q.v.) available as Tablets of 3 mg. of the disodium salt and as Ampoules of 2 ml. each containing 20 mg. as the neutral sodium salt. *Dose*: by mouth, initial 2 or 3 tablets 3 or 4 times daily for one week, reduced if necessary to 1 to 3 tablets thrice daily. *By* intramuscular injection, initial 1 or 2 ampoules daily for 2 to 4 days followed by the same or half dosage every other day to a total of 10 to 20 injections; maintenance 1 or 2 tablets thrice daily and a course of 5 injections of 20 mg. every 6 months if necessary.

Adwin Tablets (*Clarnell*). Each contains paracetamol (q.v.) 300 mg., phenacetin 200 mg., and caffeine 30 mg. Analgesic and antipyretic. *Dose*: 1 or 2 tablets 3 or 4 times daily. Adwin Paediatric. A suspension containing in each teaspoonful paracetamol 75 mg., phenacetin 50 mg., and caffeine 7.5 mg. *Dose*: children, ½ teaspoonful to one tablespoonful thrice daily.

Akineton (*Knoll Pharmethicals, London*). Biperiden (q.v.) available as Tablets of 2 mg. of the hydrochloride and in Ampoules of 1 ml. each containing 5 mg. of the lactate.

[P] 84B.B.] Albamycin GU (*Upjohn*). Tablets each containing novobiocin (as calcium salt) 125 mg. and sulphamethizole 250 mg. For urinary tract infections. *Dose*: 1 or 2 tablets 4 times daily.
[B.] Albamycin T (*Upjohn*). Tablets each containing novobiocin (as calcium salt) 125 mg. and tetracycline hydrochloride 125 mg. For mixed infections. *Dose*: 2 tablets every 12 hours or in severe infections 2 tablets 3 or 4 times daily.
[B.] Albamycin T Paediatric (Upjohn). A suspension containing in each teaspoonful (5 ml.) novobiocin 62.5 mg. and tetracycline equivalent to 62.5 mg. of the hydrochloride supplied as granules for reconstitution with water before use. *Dose*: children 0.6 ml. per kg. body weight daily, may be doubled or trebled in severe infections.
(*For other preparations of Albamycin see Vol. I, 24th Edn., p. 1421*)

Alcopar (*Burroughs Wellcome*). Bephenium hydroxynaphthoate (q.v.) in dispersible granules. 5 g. of granules contains the equivalent of 2.5 g. of bephenium base.

Alcos-Anal (*Camden*). Ointment containing sodium salts of unsaturated fatty acids of cod liver oil 11%, polyethylene glycol monododecyl ether 5%, and chlorothymol 0.1%. [P.] Suppositories containing sodium salts of unsaturated fatty acids of cod liver oil 11%, benzocaine 5%, and chlorothymol 0.035%. *For* the treatment of hæmorrhoids and pruritus ani.

Aldactone (*Searle, U.K.*). Spironolactone (q.v.) available as tablets of 100 mg.

Aldocorten (*Ciba*). Aldosterone available in ampoules of 1 ml. each containing 0.5 mg. For replacement therapy in acute and chronic adrenocortical insufficiency. *Dose*: 0.5 mg. by intravenous injection or infusion to be repeated several times daily if necessary.

[P.] Alka Donna (*Carlton Laboratories*). Tablets each containing magnesium trisilicate 7½ grains, aluminium hydroxide 4 grains, and belladonna dry extract ½ grain, flavoured with peppermint oil. For peptic ulceration and hyperacidity. *Dose*: 1 or 2 tablets sucked slowly before meals.

[P1 81 84A] **Alka Donna P** (*Carlton Laboratories*) As Alka Donna with the addition of phenobarbitone $^1/_8$ gram in each tablet.

Alka-Scorb (*Carlton Laboratories*) Tablets each containing magnesium trisilicate $7^1/_2$ grains aluminium hydroxide 4 grains and ascorbic acid $^1/_8$ grain flavoured with peppermint oil For peptic ulceration and hyperacidity without spasm *Dose* 1 or 2 tablets sucked slowly

[P1 87] **Allercur** (*Schering A G Berlin Pharmethicals London*) Clemizole hydrochloride (q v) available in Ampoules of 1 ml each containing 10 mg as Dragées of 20 mg as an [exempt]Ointment (water soluble) containing 2% and as a Syrup containing 20 mg in each teaspoonful (5 ml)

[P1 84B] **Allylœstrenol** 17α Allylœstr-4 en 17-ol $C_{21}H_{32}O$=300 5

A progestogen which is given by mouth and which is claimed to have no androgenic or œstrogenic properties The progestational effect is about eight times that of ethisterone *Dose for menorrhagia* 15 mg daily from the 16th to the 26th day of the menstrual cycle for metrorrhagia 15 mg daily for 10 days and then on the 16th day after the onset of withdrawal bleeding 15 mg daily to the 26th day and repeat for 3 or 4 cycles for premenstrual tension 10 mg daily from 3 days before symptoms are due to 3 days before menstruation is due for habitual abortion 10 to 20 mg daily from the 16th to the 26th day of each cycle until conception then 15 mg daily throughout pregnancy for threatened abortion 10 to 20 mg daily for failure of nidation 15 mg daily from the 16th to the 26th day of the cycle for 2 cycles

Proprietary Name GESTANIN

Almacarb (*British Drug Houses*) Tablets each containing aluminium hydroxide magnesium carbonate co dried gel 375 mg peppermint flavoured For hyperacidity *Dose* one tablet chewed and swallowed

Alphosyl Lotion (*Stafford Miller*) Contains allantoin 2% and a special coal tar extract 5% in a non greasy basis For the treatment of psoriasis

Altafur (*Smith Kline & French*) Furaltadone (q v) available as tablets of 250 mg

Aludrox Co Tablets (*Wyeth*) Each contains dried aluminium hydroxide gel 420 mg and light magnesium carbonate 60 mg For peptic ulceration and hyperacidity *Dose* one tablet to be sucked at regular intervals between meals

[P1 81 84A] **Aludrox SA** (*Wyeth*) Suspension containing in each teaspoonful (5 ml) aluminium hydroxide gel 4 75 ml magnesium hydroxide 100 mg butabarbital 8 mg and ambutonium bromide (q v) 2 5 mg and Tablets each containing dried aluminium hydroxide gel 290 mg magnesium hydroxide 80 mg butabarbital 8 mg and ambutonium bromide 2 5 mg For peptic ulceration *Dose* 1 or 2 tablets or 1 or 2 teaspoonfuls of suspension 3 or 4 times daily before meals and at bedtime

(*For other preparations of Aludrox see Vol I 24th Edn p 862*)

Ambazone 1 4 Benzoquinone amidinohydrazone thiosemicarbazone monohydrate $C_8H_{11}N_5S\ H_2O$=255 3

A bacteriostatic agent which is used for infections of the mouth and pharynx in the form of lozenges It is especially active against *Streptococcus pyogenes Strep pneumoniæ* and *Strep* spp *viridans* type *Dose* 10 mg 3 to 5 times daily after meals

Proprietary Name IVERSAL

[B] **Ambramycin** (*Nicholas*) Tetracycline hydrochloride available as Capsules of 250 mg and as an Oral Suspension containing the equivalent of tetracycline hydrochloride 2 5%

Ambutonium Bromide BL700B (3 Carbamoyl 3 3-diphenylpropyl)ethyldimethylammonium bromide $C_{20}H_{25}ON_2Br$=391 4

An anticholinergic drug administered by mouth in the treatment of gastro-intestinal hypermotility and hypersecretion *Toxic effects* are

stated to be mild and may include dryness of the mouth, dysuria, constipation, blurring of vision, and dizziness *Contra indicated* in glaucoma. *Dose* 10 to 25 mg

Proprietary Name it is an ingredient of ALUDROX SA.

Aminosol Vitrum (*Pannes & Byrne*) Dialysed enzymatic casein hydrolysate available in oral preparations as **Granules** containing 25% as **Powder**, as **Powder with Glucose** containing 50% as a **Syrup** containing 10% and as **Tablets** of 250 mg with *vitamin supplements Also available for administration* by injection as **Solution with Glucose** containing 3 3% with glucose 5%, and as **Solution with Glucose and Ethanol** containing 3 3% with glucose 5% and alcohol 5%

Amisometradine (*U S N F*) 6 Amino 1,2,3,4 tetrahydro-3-methyl-1-methylallylpyrimidine-2,4-dione, $C_8H_{13}O_2N_3$=195 2

A non mercurial diuretic with actions and uses *similar to aminometradine*—see Vol I 24th Edn, p 906 Patients with mild œdema may be maintained satisfactorily on 400 mg or less daily, in severe cases, 3 2 g daily may be necessary *Toxic effects* the principal side-effects are nausea, *vomiting, and diarrhœa but they occur less frequently than with aminometradine Dose* first day, 400 mg 4 times daily, thereafter, 400 mg twice daily

Proprietary Name ROLICTON

Amoxal (*Smith & Nephew*) **Cream** and **Gel** each containing *o* pentyloxybenzamide ($C_{12}H_{17}O_2N$=207 3) 2% *o* pentyloxyacetophenone ($C_{13}H_{18}O_2$=206 3) 2% and salicylic acid 1% **Dusting Powder** containing *o*-pentyloxybenzamide 2% and hexachlorophane 0 5% For the treatment of fungous in*fections of the skin.*

[P1 84B] **Amphactil** (*May & Baker*) **Tablets** each containing chlorpromazine hydrochloride 25 mg and dexamphetamine sulphate 5 mg For mild depressive states with anxiety *Dose* 1 or 2 tablets thrice daily, the last dose to be taken *several hours before bedtime.*

Amphomycin. An antibiotic substance produced by *Streptomyces canus*

Amphomycin is used locally for dermatoses of bacterial origin

Proprietary Name it is an ingredient of ECOMYCIN

Amphotericin B (*N N D*) A polyene antibiotic isolated from a *strain of Streptomyces nodosus*

Amphotericin B is used in the treatment of deep seated mycotic infections particularly North American blastomycosis and histoplasmosis Limited data suggest that the drug may also be effective against South American blastomycosis Amphotericin B has a chemotherapeutic effect on some cases of meningeal cryptococcosis which responds more favourably to it than to any previous agent It is also of value in the treatment of disseminated cryptococcosis The effect on disseminated coccidioidomycosis is variable, but other forms of therapy have hitherto proved *inadequate Combined intravenous* and intrathecal administration may produce a better response in patients with coccidioidal meningitis. Generalised systemic monilasis may be favourably influenced with amphotericin B which appears to be more effective than nystatin It is usually given by *slow intravenous injection in solutions of 0 1 mg per* ml of 5% Dextrose Injection It has been given by intramuscular injection in a daily dose of 20 mg in 2 ml of 5% Dextrose Injection in conjunction with a local anæsthetic. For severe coccidioidal meningitis, it has also been given by intrathecal injection in *doses of 0 5 to 1 0 mg* every other day in aqueous solutions of approximately 0 25 mg per ml mixed with spinal fluid

Two cases of chronic monilial cystitis were effectively treated by daily installations into the bladder of 15 mg of amphotericin B dissolved in 100 ml or 400 ml of sterile water (*Goldman et al., J Amer med Ass*, 1960 *174*, 359)

Amphotericin B has been incorporated in a preparation of tetracycline with the object of preventing the overgrowth of yeasts which is a frequent complication of tetracycline administration

Toxic effects headache, nausea, vomiting, chills, fever, excessive administration can lead to an increase in blood urea nitrogen and to thrombophlebitis at the site of injection Toxic effects occasionally encountered are diarrhœa, gastro intestinal cramp, anæmia, and skin rash

Dose by intravenous injection, 0 25 mg per kg body weight rising gradually to 1 0 mg according to the response and toxic effects Doses of up to 1 5 mg per kg body weight may be given daily or every other day, provided no toxic symptoms develop

Incompatibility amphotericin B is precipitated from solutions by solutions of sodium chloride

Storage amphotericin B and its solutions should be stored at about 4° and protected from light Solutions should be used within 24 hours of preparation

Proprietary Names FUNGIZONE it is an ingredient of MYSTECLIN F PÆDIATRIC DROPS and MYSTECLIN F SYRUP

[P] [B] **Anabolex** (*Lloyd Hamol*) Stanolone (q v) available as tablets of 25 mg

[P] **Anacol Tablets** (*Brook Parker*) Each contains acetylsalicylic acid 3 grains, phenacetin $3^1/_2$ grains caffeine $^1/_6$ grain codeine phosphate $^1/_{15}$ grain, and phenolphthalein $^1/_{14}$ grain. Analgesic. *Dose* 2 tablets thrice daily or as required

Anaflex (*Geutlich*) A high molecular weight polyoxymethylene urea 10% in **Cream, Paste,** and **Powder** Bacteriostatic and antimycotic for the topical treatment of infections

[P] [B] **Anapolon** (*Imperial Chemical Pharmaceuticals*) Oxymetholone (q v), available as tablets of 5 mg

[P] **Aneurone** (*Philip Harris*) A tonic mixture containing in each two fluid drachms aneurine hydrochloride 1 mg strychnine hydrochloride $^1/_{100}$ grain caffeine $^1/_3$ grain sodium acid phosphate 1 grain, and compound gentian infusion 40 minims. *Dose* 2 teaspoonfuls thrice daily before meals

Anthical Cream (*May & Baker*). Contains mepyramine maleate 1 5% and zinc oxide 15% in a flesh-coloured vanishing-cream basis For sunburn insect bites and stings urticaria, and other pruritic conditions (*For Anthical Lotion see Vol. I, 24th Edn p 1119*)

Antidol (*Lewis*) Tablets each containing *o*-(2 ethoxyethoxy)benzamide 250 mg phenacetin 200 mg and caffeine 50 mg Analgesic and antipyretic *Dose* 1 or 2 tablets every 4 hours

Antihæmophilic Globulin (*Crookes*) Available in ampoules each containing 200 Oxford units of antihæmophilic factor activity—see Blood-coagulation Factor VIII p.194

Anturan (*Geigy*) Sulphinpyrazone (q v) available as tablets of 100 mg

Anusol (*Warner*) **Suppositories and Ointment** containing bismuth subgallate 2 12% bismuth oxide 0 87% resorcinol 0 87% Peru balsam 1 77% zinc oxide 10 60% and boric acid 17 85% For hæmorrhoids [B] **Anusol HC** *Suppositories each containing in addition hydrocortisone acetate 10 mg* [B] **Anusol HC Ointment** containing in addition hydrocortisone acetate 0 25% (*Modification of entry in Vol. I, 24th Edn p 296*)

Aprinox (*Boots*) Bendrofluazide (q v) available as tablets of 2 5 mg and 5 mg

Aquavit (*Astra-Hewlett*) Tablets each containing vitamin A 5000 units, calciferol 800 units, aneurine hydrochloride 5 mg., riboflavine 5 mg., nicotinamide 30 mg., pyridoxine hydrochloride 2 mg., calcium pantothenate 8 mg., calcium ascorbate equivalent to ascorbic acid 100 mg., and tocopheryl acetate 3 mg. For vitamin deficiency *Dose* 1 or 2 tablets daily children, 1 tablet daily

Aramine (*Merck Sharp & Dohme*) Metaraminol acid tartrate in ampoules of 1 ml. and 10 ml. containing 10 mg. in each ml. For immediate administration in shock *Dose* by intramuscular or subcutaneous injection 0·2 to 1·0 ml., by intravenous infusion, 1·5 to 10 ml. in 500 ml. of Sodium Chloride Injection or Dextrose Injection

Arterochol (*Lewis & Burrows*) A flavoured emulsion containing in each tablespoonful maize oil 8·33 g., pyridoxine hydrochloride 0·6 mg., and tocopheryl acetate 12 mg. For hypercholesterolæmia *Dose* 1 to 3 tablespoonfuls once to thrice daily

Ascoxal (*Astra Hewlett*) Tablets each containing ascorbic acid 100 mg., sodium percarbonate 70 mg., and copper sulphate 0·2 mg. For use as a mouth-wash or gargle (one tablet in 25 ml. of warm water) in gingivitis, pharyngitis and oral fungous infections and as a stronger solution (one tablet in 8 to 12 ml. of warm water) for application in furunculosis and dermatomycosis

[P1 84B] **Asmapax** (*Nicholas*) Sustained-release tablets each containing ephedrine resinate equivalent to ephedrine hydrochloride 50 mg., theophylline 65 mg. and bromvaletone 200 mg. For chronic bronchitis and bronchial asthma *Dose* 1 or 2 tablets on rising and on retiring (*Replaces Asmapax Ion Ex, Vol. I, 24th Edn. p. 72*)

[P1 84B] **Asmaval** (*Distillers Co.*) Tablets each containing thalidomide (q.v.) 12·5 mg. and ephedrine hydrochloride 20 mg. For prevention of attacks of asthma *Dose* 1 or 2 tablets thrice daily.

Aspellin (*Radiol*) A liniment containing menthol 3·3%, camphor 0·6%, acetylsalicylic acid 1·2%, methyl salicylate 0·6%, glycerin 1·6%, strong ammonia solution 1·0%, citronella oil 0·6%, industrial methylated spirit 66·0%, and water to 100%. For the treatment of acute rheumatic conditions, sciatica, lumbago, fibrositis, muscular trauma, and unbroken chilblains

Aturbane (*Ciba*) Phenglutarimide hydrochloride (q.v.), available as tablets of 5 mg.

[P1] **Badional Gel** (*F.B.A. Pharmaceuticals*) Sulphathiourea (q.v.) as a 10% neutral gel for use as a bacteriostatic and protective dressing for burns, scalds, and wounds.

Bamethan Sulphate. 2-Butylamino-1-*p*-hydroxyphenylethanol sulphate, $(C_{12}H_{19}O_2N)_2.H_2SO_4 = 516.7$.

Bamethan sulphate is a peripheral vasodilator which is said to act on cardiac muscle and the peripheral arterioles. It is used in the treatment of vasomotor disorders, such as acrocyanosis and chilblains, in the treatment of gravitational leg ulcers and bedsores, and in some cases of thrombo angiitis obliterans and arteriosclerosis. *Toxic effects* large doses may cause tachycardia. *Dose* 12·5 mg. 4 to 5 times daily

Proprietary Names VASCULIT, VASCULAT (*Ger.*)

[P1 84B R] **Batrillin** (*Woolley*) Tablets each containing sulphadimidine 92·5 mg., sulphamerazine 92·5 mg., sulphadiazine 65 mg., nicotinamide 10 mg., aneurine hydrochloride 1·5 mg., and penicillin 100 000 units. For a wide range of bacterial infections *Dose* 2 to 4 tablets every 4 hours children, ½ to 2 tablets every 4 hours.

Becantyl (*Horlicks*) Sodium dibunate (sodium 2,6-di-t-butylnaphthalene-1-sulphonate, $C_{18}H_{23}O_3SNa = 342.4$) available as a Syrup containing 14 mg. in each teaspoonful (3·5 ml.) and as Tablets of 15 mg. For cough suppression *Dose* 2 teaspoonfuls or 2 tablets thrice daily (*Modification of entry in Vol. I, 24th Edn., p. 937*)

Becomel (*Crookes*) An elixir containing in each teaspoonful aneurine hydrochloride 0·7 mg riboflavine 0·7 mg pyridoxine hydrochloride 0·35 mg and nicotinamide 5·0 mg *Dose* 2 to 6 teaspoonfuls daily (*This preparation replaces B-Complex Crookes Elixir Vol I 24th Edn p 164*)

Becosym Ampoules with Vitamin B_{12} (*Roche*) Each contains aneurine hydrochloride 10 mg riboflavine 4 mg nicotinamide 40 mg pyridoxine 4 mg and cyanocobalamin 8 µg (*For other Becosym preparations see Vol I 24th Edn p. 165*)

[P1 81 84A] **Belladenal Retard Tablets** (*Sandoz Products*) Slow release tablets each containing the total alkaloids of belladonna 0·25 mg and phenobarbitone 50 mg For the symptomatic treatment of conditions associated with gastrointestinal spasm, hypermotility and hypersecretion. *Dose* one tablet night and morning (*For Belladenal see Vol I 24th Edn p 228*)

[P1 81 84A] **Bellaphene Tablets** (*Brook Parker*) Each contains belladonna dry extract $^1/_{18}$ grain phenobarbitone $^1/_8$ grain aluminium hydroxide 5 grains and aneurine hydrochloride 3 mg For gastric or duodenal ulceration gastritis and diarrhœa *Dose* 1 or 2 tablets twice daily after meals

[P1 81 84A] **Bellergal Retard** (*Sandoz Products*) Slow release tablets each containing the total alkaloids of belladonna 0·2 mg ergotamine tartrate 0·6 mg and phenobarbitone 40 mg For the symptomatic treatment of a wide range of psychosomatic disorders *Dose* one tablet morning and evening (*For Bellergal Tablets see Vol I 24th Edn, p 228*)

Bemaco (*B.M Laboratories*) Tablets each containing chloroquine phosphate 42 mg acetylsalicylic acid 162·5 mg calcium carbonate 45 mg ascorbic acid 25 mg, and citric acid 15 mg For rheumatoid arthritis *Dose* 2 tablets thrice daily

Bemaphate (*B.M Laboratories*) Chloroquine phosphate available as tablets of 250 mg

Bemasulph (*B M Laboratories*) Chloroquine sulphate available as tablets of 200 mg (*equivalent to chloroquine base 150 mg*)

Bendrofluazide *Bendroflumethiazide Benzydroflumethiazide* FT81 3 Benzyl 3 4 dihydro 7 sulphamoyl 6 trifluoromethylbenzo 1 2 4 thiadiazine 1,1-dioxide $C_{15}H_{14}O_4N_3S_2F_3$=421·4

A powerful diuretic with an action lasting about 18 hours used in the treatment of œdema and hypertension *Bendrofluazide* may potentiate the effects of digitalis ganglion blocking agents and reserpine. Prolonged administration may lead to depletion of potassium although the drug appears to cause less disturbance of serum electrolytes than chlorothiazide Bendrofluazide is 100 to 200 times more potent than chlorothiazide When bendrofluazide is used alone in the treatment of hypertension doses of 20 mg daily may be given and maintenance doses of up to 15 mg daily *Toxic effects* it may cause psychic disturbance in patients with cirrhosis Electrolyte imbalance particularly hypokalæmia may develop in patients on high dosage or with renal or hepatic dysfunction

Dose initial 5 to 20 mg daily maintenance 2·5 to 10 mg daily

Proprietary Names APRINOX CENTYL HYDRIL B NEO NACLEX NATURETIN (*U.S.A.*) it is an ingredient of ARICOL and QUADRIN

Benerva (*Roche*). *Aneurine hydrochloride* now also available as Tablets of 300 mg in addition to the strengths recorded in Vol I 24th Edn, p 151

Benziloniumum Bromide 3 Benziloyloxy 1 1 diethylpyrrolidinium bromide $C_{21}H_{28}O_3NBr$=434·4

An anticholinergic agent given by mouth in the treatment of peptic ulcer and functional gastro intestinal disease *Toxic effects* doses of 60 mg or more may produce dryness of the mouth, blurred vision urinary hesitancy, constipation stomatitis and drowsiness. However, doses of

up to 160 mg have been given without intolerable side-effects
Dose initial, 10 mg thrice daily, increasing if necessary
Proprietary Name PORTYN

Benzonatate (*N N D*) KM65 2 (ω-Methoxyoctaethyleneoxy)ethyl *p*-butylaminobenzoate, $C_{30}H_{53}O_{11}N$=603 8
An antitussive agent which does not depress respiration. It may be given by mouth or, in doses of 5 to 10 mg, by subcutaneous or slow intravenous injection and it has been used rectally for children It acts within about 15 minutes after administration by mouth and its effects last for 2 to 8 hours *Toxic effects* mild erythema, transient skin irritation, and headache have been reported *Dose* by mouth, 100 mg 3 to 6 times daily
Proprietary Names TESSALON, TESSALIN (*Scand*)

Benzthiazide P1393 3-Benzylthiomethyl 6-chloro-7-sulphamoyl-2*H* benzo 1,2,4-thiadiazine 1,1-dioxide $C_{15}H_{14}O_4N_3S_3Cl$=432 0
A non mercurial diuretic which is 10 to 15 times more potent than chlorothiazide Its administration is said to carry less risk of depletion of potassium than chlorothiazide It potentiates the action of digitalis and the ganglion blocking agents Doses up to 200 mg daily can be given for cardiac failure *Toxic effects* nausea and vomiting *There is more likely* to be a significant loss of potassium in patients with liver disease or on high dosage and the administration of additional potassium is desirable *Dose* initial 50 to 100 mg daily, maintenance, 25 to 100 mg on alternate days
Proprietary Name FOVANE

[B] **Benzylpenicillin Intrathecal** *(Glaxo).* Benzylpenicillin (sodium salt) in ampoules of 5 ml each containing 20 000 units

Bephenium Hydroxynaphthoate Benzyldimethyl(2 phenoxyethyl)-ammonium 3 hydroxynaphthalene 2 carboxylate, $C_{31}H_{33}O_4N$=443 5
An effective anthelmintic for the treatment of hookworm infestation, it is also markedly active in ascariasis A single dose is usually adequate when given early in the morning at least 2 hours before food, but in some cases 4 consecutive daily doses are necessary *Dose* the equivalent of 2 to 3 g of bephenium base, irrespective of age or weight.
Proprietary Name ALCOPAR

[B] **Betamethasone** 9α-Fluoro-11β 17α 21-trihydroxy-16β-methylpregna 1,4 diene 3,20 dione, $C_{22}H_{29}O_5F$=392 5
An anti inflammatory steroid which it is claimed, does not cause retention of sodium ions and has little effect on potassium excretion in normal dosage It is administered by mouth and is 6 to 10 times as potent as prednisolone It is used principally in the treatment of hay fever, severe asthma, rheumatoid arthritis, inflammatory skin diseases, allergies and shock *Toxic effects* and *contra indications* a final assessment will only be possible after extensive clinical use, but the side-effects are likely to be similar to those caused by prednisone—Vol I, 24th Ldn, p 492 *Dose* 0 5 to 1 5 mg three or four times daily, reduced to a maintenance for chronic cases of 0 25 mg twice daily according to the response of the patient
Proprietary Name BETNELAN

Betaxan Elixir (*Bayer Prod*) Contains aneurine hydrochloride 0 675 mg in each teaspoonful (*For other Betaxan preparations see Vol I, 24th Edn, pp 153 and 165*)

[B] Betnelan (*Glaxo*) Betamethasone (q v) available as tablets of 0 5 mg

Braknesol Lotion (*Borex*) Contains precipitated sulphur 5% cetrimide 1% titanium dioxide 5% hamamelis water 20% and industrial methylated spirit 45% *For the treatment of acne*

Bilevac (*Weddel Pharmaceuticals*) Tablets each containing sodium taurocholate 1 grain rhubarb $^1/_2$ grain, aloin $^1/_{10}$ grain, and peppermint oil q s. For use as a biliary stimulant and evacuant. *Dose* one tablet thrice daily or 2 tablets at night.

Biloptin (*Schering A G Berlin Pharmaceuticals London*) Sodium podate (q v) available as capsules of 500 mg

Bilostat (*Weddel Pharmaceuticals*) Dehydrocholic acid available as tablets of 250 mg

[P] [B] Bimez (*Imperial Chemical Pharmaceuticals*) Tablets each containing sulphadimidine 375 mg and 2 *p*-aminobenzenesulphonamido-4 6 dimethoxypyrimidine 125 mg and a Suspension containing the equivalent of one tablet in each fluid drachm (3 5 ml) For the treatment of bacterial infections sensitive to sulphonamides and for prophylaxis particularly against complications associated with influenza and the common cold *Dose* initial 4 tablets or one tablespoonful of suspension, followed by 2 tablets or 2 teaspoonfuls of suspension daily

[B] Biocortar (*Armour*) Powder for insufflation in capsules each containing hydrocortisone acetate 15 mg and lactose 85 mg *For the treatment of hay fever and bronchial asthma*

[B] Biomydrin (*Warner*) A nasal spray containing neomycin sulphate 0 1% gramicidin 0 005% thonzylamine hydrochloride 1% phenylephrine hydrochloride 0 25% and thonzonium bromide (a cationic surface-active agent with a mucolytic action) 0 05% with *thiomersal* 0 002% as a preservative. A bactericidal antihistaminic decongestant and mucolytic spray for use in coryza, sinusitis and rhinitis

[B] Biotexin (*Glaxo*) Novobiocin, available as Tablets of 125 mg and 500 mg (as the sodium salt) and as a Syrup containing 125 mg in each teaspoonful (5 ml) (as the calcium salt) (*Modification of entry in Vol I 24th Edn p 1421*)

Biperiden. 1-(Bicyclo[2 2 1]hept 5-en 2 yl) 1 phenyl 3 piperidino propan 1-ol $C_{21}H_{29}ON = 311\ 5$

An anticholinergic agent used in the treatment of paralysis agitans It is usually administered by mouth but in severe cases it may be given by *intravenous* or intramuscular injection. *Toxic effects* biperiden may cause dryness of the mouth blurred vision gastric irritation and occasionally mental confusion When given by intravenous injection it should be administered slowly as tolerance varies *Contra indicated in* epilepsy glaucoma or prostatic hypertrophy *Average dose* by mouth 2 mg 3 or 4 times daily by *intramuscular injection* 10 to 20 mg daily in divided doses.

Proprietary Name Akineton

Bisacodyl. 2-(4 4 Diacetoxydiphenylmethyl)pyridine $C_{23}H_{21}O_4N = 361\ 4$

A laxative acting in 6 to 12 hours when given by mouth and in less than one hour when administered as a suppository It has little or no action on the small intestine and it is not absorbed *Dose* 5 to 20 mg by mouth 10 to 20 mg by rectum

Proprietary Name Dulcolax (Vol I 24th Edn, p. 93).

Bismucyn (*Rybar Laboratories*) Suppositories containing bismuth sodium tartrate in two strengths, for adults 60 mg for children 30 mg For the treatment of non diphtheritic sore throat. *Administration* one suppository to be inserted daily for two days at the onset of symptoms

Blood coagulation Factor VIII Antihæmophilic Globulin A.

Blood coagulation factor VIII is an antihæmophilic globulin whose deficiency represents the classical hæmophilia A (Nomenclature of Blood clotting Factors, *Brit med J*, 1/1959, 1292) It is given to patients with hæmophilia A during major surgical treatments and severe hæmorrhagic episodes if it is not practicable to give blood or plasma. Treatment should be finished within 14 days since the preparation is antigenic and sensitisation probably occurs after that time Normal human plasma contains 0 25 Oxford units of blood coagulation factor VIII per ml. Factor VIII is given by intravenous injection in a concentration of 200 Oxford units in 540 ml of Sodium Chloride Injection, the solution is unstable even at refrigerator temperatures and should be used within one hour of its preparation To dissolve factor VIII it is necessary to warm the solution to a temperature no higher than 37° and shake gently *Dose* by intravenous injection, sufficient to raise the level of blood-coagulation factor VIII in the plasma to at least 0 075 Oxford units per ml

Brasivol (*Denver Laboratories*) Cleansing pastes containing graded particles of a non silicon abrasive (fused synthetic aluminium oxide) with hexachlorophane 1% in a detergent basis Supplied in three grades No 1 (fine) No 2 (medium) and No 3 (coarse) For the abrasive treatment of acne, by removing dead cells and unblocking plugged follicles

Bretylium Tosylate 373 C 57 (o-Bromobenzyl)ethyldimethylammonium tosylate $C_{11}H_{18}O_3NSBr=414\ 4$

Bretylium tosylate is an antihypertensive drug which acts by selectively blocking adrenergic nerves Its hypotensive effect is postural being greatest when the patient is standing and exercising, and least when the patient is recumbent An oral dose is said to take effect in 1½ to 3 hours and to last for up to 9 hours Individual response is most variable but an initial dose has been recommended of 100 mg thrice daily for the first day, 200 mg thrice daily for the second, and then an increase of 100 mg *in the dose on the following or alternate days up to 400 mg thrice daily* if necessary Maintenance doses have varied between 0 1 g and 6 g daily Patients on bretylium tosylate may become sensitive to adrenaline amphetamine, and other sympathomimetic drugs Lack of uniformity of effect can be attributed to variations in noradrenaline and adrenaline secretion to the enhancement of the postural hypotensive effect by exercise to the development of tolerance to the drug and to incomplete or irregular absorption When a ganglion blocking agent is given concurrently the results are more uniform It is claimed that this prevent the development of tolerance to bretylium Bretylium may be used in conjunction with mecamylamine, pempidine rauwolfia hydroflumethiazide or hydrochlorothiazide, when smaller doses of bretylium may be possible

Recent reports on the effectiveness of bretylium tosylate as an antihypertensive drug are conflicting In a trial on 43 patients, Lowther and Turner (*Brit med. J* ii/1960 1049) found that although there was a temporary fall in blood pressure tolerance to the drug developed in *two thirds of the patients and the blood pressure rose again in spite of a* steady increase in dose Hurley *et al* (*J Amer med Ass*, 1960 *172*, 2031) found the drug to be ineffective in 11 out of 13 patients It was poorly absorbed and tolerance developed with prolonged therapy Smith (*Practitioner*, 1960, *185*, 471) also found that the drug was incompletely absorbed and that drug tolerance developed to some degree He used

doses varying from 300 to 1800 mg daily but not necessarily in 3 equal or evenly spaced doses and found that the dosage must be adapted to the individual patient. Montuschi *et al* (*Brit med J* ii/1960 1199) gave doses of 100 mg every 8 hours increasing the dose by 100 or 200 mg three times every other day and found the minimum effective dose to be 100 to 1800 mg thrice daily. With a daily dose of 100 mg of hydroflumethiazide as an adjuvant for some of the patients successful control was obtained in 71% of 75 cases of severe hypertension. They concluded that bretylium was not suitable for the treatment of benign hypertension and required careful supervision.

Toxic effects are claimed to be mild and not prominent; they include occasional faintness, stuffiness of the nose, parotid pain, postural hypotension, diarrhœa, nausea, lassitude and disturbance of urination. Most of these effects have been reported by Montuschi *et al* (loc. cit.) but they found no evidence of dyspnœa. Lowther and Turner (loc. cit.) report these side effects to be frequent and include also dyspnœa and muscular weakness. Hurley *et al* (loc. cit.) found it necessary to discontinue treatment in 3 patients out of 13 on account of the development of facial pain and severe abdominal symptoms. Smith (loc. cit.) reported indigestion, parotid pain and blurred vision and concluded that although these toxic effects are not necessarily prominent they may force a change of treatment. *Contra-indicated* in phæochromocytoma, in coronary or cerebral vascular disease and in hypertension associated with severe renal damage.

Dose determined by the physician in accordance with the needs of the patient.

For further information on bretylium tosylate see Boura *et al.* (*Lancet* ii/1959 17), Dollery *et al* (*Lancet* i/1960 296), Vernikos-Danellis and Zaimis (*Lancet* i/1960 787), Campbell and Montuschi (*Lancet* ii/1960 789), Doyle *et al* (*Brit med J* ii/1960 422) and Morris (*S Afr med J* 1960 *34* 23).

For a comparison of bretylium and guanethidine see *Lancet* i/1961 91.

Proprietary Name: DARENTHIN.

Brevidil E (*May & Baker*). Suxethonium bromide now also available as a 15% solution in multi-dose containers of 10 ml. (*See also Vol. I 24th Edn p 521*)

[Pt 81 84A] **Brietal Sodium** (*Lilly*). Methohexitone sodium (q.v.) available in crystalline form in rubber stoppered ampoules of 50 ml. containing 500 mg.

[Pt 81 84A] **Bronchodil** (*B.W. Laboratories*). Sublingual tablets each containing isoprenaline sulphate 10 *mg* and amylobarbitone sodium 8 *mg* in a chocolate basis. For the relief of bronchospasm in bronchitis and asthma. *Dose* 2 tablets at the onset of an attack and repeated after 3 or 4 hours if required.

Brontyl (*Lloyd Hamol*). Proxyphylline (q.v.) available as Tablets of 120 mg and in Ampoules of 2 ml. each containing 300 mg.

Brosalamid (*Smith & Nephew*). 5-Bromosalicylhydroxamic acid (*T* 40, B.S.H. $C_7H_6O_3NBr$=232.0) in tablets of 500 mg. A tuberculostatic agent undergoing clinical trials; not available commercially. *Dose* 3 to 4 g daily with a probable maximum of 6 g daily.

[Pt] **Brovon Asthma Inhalant, Pressurised** (*Moore Medicinal Products*). Contains atropine methonitrate 0.14%, adrenaline 0.50% and chlorbutol 0.50% in an inert propellent. For the relief of asthma. *Dose* 2 or 3 inhalations.

Brovon Bronchial Mixture (*Moore Medicinal Products*). Contains ammonium chloride 20 grains, ammonium carbonate 20 grains, sodium iodide 12 grains, liquid extract of squill 8 minims, liquid extract of pecacuanha 2 minims, infusion of senega to 1 fl. oz. *Dose* 2 teaspoonfuls with hot or cold water on rising and twice or thrice during the day; children, ½ to 1 teaspoonful with

(*For other Brovon preparations see Vol. I 24th Edn, p.*

[P1] **Brovonite** (*Moore Med cinal Products*) Enteric-coated tablets each contain ing methylephedrine hydrochloride 1 grain and theophylline 2 gra ns For re-l eving bronch al spasm. *Dose* one tablet twice or thr ce daily and at bedtime.

[B] **Broxil** (*Beecham Research Laboratories*) Potassium phenethicillin (q v) available as Tablets of 125 mg and 250 mg and as a Syrup containing 125 mg in each 5 ml (supplied in powder form for reconstitution with water before use)

Bunamiodyl Sodium. Sodium 3 (3 butyramido-2 4 6 tri iodophenyl)-2-ethylacrylate $C_{15}H_{15}O_3NI_3Na=661\ 0$

A contrast medium for cholecystography and cholangiography *Toxic effects* it is reported to have only minor side-effects such as mild cramp nausea and diarrhœa There is an allergic reaction in approximately one per cent of patients *Contra indicated* in acute nephritis and uræmia *Dose* 4 5 g by mouth 12 to 14 hours before examination.

Proprietary Names ORABILIX ORABILEX (*U S A*)

[P1 81 84A] **Butibel Tablets** (*McNeil Laboratories*) Each contains butabarb tal sodium 15 mg hyoscyamine sulphate 0 138 mg hyoscine hydrobromide 0-027 mg and atropine sulphate 0 067 mg For the treatment of gastro-intestinal disorders *Dose* 1 or 2 tablets half an hour before meals and at bedtime

[P1 81 84A] **Butisol Tablets** (*McNeil Laboratories*) Butabarbital sodium in tablets of 15 mg 30 mg and 100 mg

Cafdis (*Reckitt & Sons*) Tablets each containing acetylsal cylic ac d $3^1/_2$ grains phenacetin $2^1/_2$ grains and caffeine $^1/_2$ grain th calcium carbonate and citric ac d For the relief of pain. *Dose* 1 or 2 tablets in water

[P1 81] **Cafergot-Q** (*Sandoz Products*) Tablets each containing ergotamine tartrate 1 mg and caffeine 100 mg in a chocola e-flavoured basis For the rel ef of migraine. *Dose* one tablet to be chewed at the first warning of an attack and a further tablet at half hourly intervals if necessary to a maximum of 6 tablets not more than 12 tablets to be taken in any one week. (*For other Cafergot preparat ons see Vol I 24th Edn p 610*)

[P1 84B B] **Calcipen V-Sulpha** (*Boots*) Tablets each containing phenoxymethyl penicillin 60 mg (as the calcium salt) and sulphadimidine 500 mg and a Suspension containing in each 5 ml the equivalent of one tablet. For th e treatment of infections caused by penicillin sens tive or sulphonamide-sens tive organisms *Dose* initially 4 tablets or 20 ml of suspens on followed by 1 to 3 tablets or 5 to 15 ml of suspens on every 4 to 6 hours. (*For other Calc pen V preparations see Vol. I 24th Edn p 1445*)

Calcium Ipodate Calcium β (3 dimethylaminomethyleneamino-2 4 6 tri iodophenyl)propionate $(C_{15}H_{15}O_3N_2I_3)_2Ca=1234\ 0$

A contrast medium used in cholecystography and cholangiography It is administered by mouth. *Toxic effects* occasional d arrhœa and allergic reactions *Contra indications* as for Sodium Ipodate p 255 *Dose* for cholecystography 3 g in the evening prior to examination or if the patient is fasting on the morning of the examination for fractionated cholecystangiography 3 g in the evening prior to examination repeated early in the morning 2 to $2^1/_2$ hours before the examination for cholangiography 6 g to the fasting patient 2 to $2^1/_2$ hours before examination

Proprietary Name SOLU BILOPTIN

Calpol (*Calmic*) Paracetamol (q v) a ailable as tablets of 500 mg.

[B] **Cambison Ointment** (*Hoechst Horlicks*) Contains prednisolone in two strengths 0 25% and 0 5% w h neomycin 0 16% as the hydrochlor de and *NN* di(4 amino-2 methylquinol 6 yl)urea hydrochloride 0 3 % For acute dermatitis eczema and pruritus

Camyna (*C H Boehringer Sohn Germany Pfizer*). 4 Hydroxy 2-oxobenz oxathiole (thioxolone $C_7H_4O_3S=168\ 2$) available as a Lotion conta n ng

0 2%, and as a Tincture containing 0 5% For the treatment of acne, the tincture to be applied during the day and the lotion at night.

[P1 S7] **Capriton Tablets** (*Allen & Hanburys*) Each contains chlorpheniramine maleate 2 mg phenylephrine hydrochloride 10 mg, acetylsalicylic acid 230 mg, phenacetin 160 mg, and caffeine 30 mg For the relief of symptoms of the common cold. *Dose* one tablet every 4 hours maximum in 24 hours, 4 tablets.

[B] **Carbopas** (*Antigen Laboratories*) Effervescent tablets each containing aminosalicylic acid 1 813 g isoniazid 50 mg, and sodium bicarbonate 500 mg For the administration of sodium aminosalicylate without gastric disturbance One tablet in half a tumblerful of water provides an effervescent solution of sodium aminosalicylate 2 5 g with isoniazid 50 mg

[P1 S4B] **Carrocrin** (*Napp*) Tablets each containing acetylcarbromal 200 mg mephenesin 150 mg, and reserpine 0 05 mg For neuroses insomnia, and hypertension *Dose* as a sedative, one tablet 3 or 4 times daily for insomnia, 1 or 2 tablets at bedtime

Carovit (*Continental Laboratories*) Tablets each containing chlorophyll 10 mg vitamin A 500 units soluble iron phosphate 8 mg and calcium phosphate 60 mg For general debility *Dose* 2 or 3 tablets twice daily before meals

[P1 S4B] **Cavodil** (*Benger*) Phenuprazine hydrochloride (q v), available as tablets of 3 mg

[B] **Celbenin** (*Beecham Research Laboratories*) Sodium methicillin (q v), available in vials of 1 g

[P1 S1 S4A] **Censedal** (*May & Baker*) Nealbarbitone (q v) available as tablets of 60 mg and 200 mg

Centyl (*Leo Laboratories*) Bendrofluazide (q v) available as Tablets of 2 5 mg and 5 mg, and as an Injection in vials of 5 ml containing 5 mg in each ml

[P1 S4B] **Centyl and Reserpine Tablets** (*Leo Laboratories*) Each contains bendrofluazide (q v) 2 5 mg and reserpine 0 1 mg For the treatment of hypertension, and the toxæmia of pregnancy *Dose* initial, 2 to 4 tablets, maintenance, 1 or 2 tablets daily

Cetal Tablets (*Carturight*) Each contains paracetamol (q v) 500 mg

[B] **Chloramphenicol Sodium Succinate** Sodium D(−) *threo*-3 (3-carboxypropionyloxy)-2-dichloroacetamido 1 p nitrophenylpropan-1-ol, $C_{15}H_{15}O_8N_2Cl_2Na$=445 2

Uses, toxic effects, and contra indications, as for Chloramphenicol (Vol I, 24th Edn, pp 1408–9)

Chloramphenicol sodium succinate is a soluble salt of chloramphenicol which is suitable for intravenous, intramuscular, and subcutaneous injection *Dose*, by injection 1 g every 6 to 8 hours, for meningitis in infants more than one month old and in children, up to 200 mg per kg body weight daily in divided doses every 6 to 8 hours, for other conditions in infants more than one month old and in children 100 mg per kg body weight daily in divided doses every 6 to 8 hours The maximum single dose for children is 1 g These doses may be injected by intravenous or subcutaneous injection as a 10% solution, or by deep intramuscular injection as a 25 to 40% solution

Proprietary Names CHLOROMYCETIN SUCCINATE KEMICETINE SUCCINATE (*abroad*)

Chlordantoin. 5-(1-Ethylpentyl)-3 (trichloromethylthio)hydantoin, $C_{11}H_{17}O_2N_2SCl_3$=347 7

Chlordantoin has *fungicidal* properties It has been used in the topical treatment of vaginal moniliasis.

Proprietary Name it is an ingredient of SPOROSTACIN

[P] [B] **Chlordiazepoxide Hydrochloride.** Methaminodiazepoxide. 7-Chloro-2-methylamino-5-phenyl-3*H*-benzo-1,4-diazepine 4-oxide hydrochloride, $C_{16}H_{14}ON_3Cl\,HCl=336.2$

Chlordiazepoxide hydrochloride is used in the treatment of neurotic conditions accompanied by anxiety and tension and for some types of reactive depression. It has been used as a muscle relaxant in the treatment of neuromuscular disorders and it may prove of value for epilepsy. It is also claimed to be of value in the treatment of obsessional compulsive syndromes, schizophrenia, and chronic alcoholism. However, in a review of the actions and uses of the drug (To-day's Drugs, *Brit. med. J.* ii/1960, 797) it is stated that in some patients obsessional symptoms and tension have been made worse by the drug, that there appears to be no place for it in the treatment of schizophrenia, and that its usefulness in the treatment of addiction to alcohol needs further substantiation. Tobin and Lewis (*J. Amer. med. Ass.*, 1960, *174*, 1242) have reported favourably on its use in the treatment of 212 patients whose predominant symptom was anxiety. *Toxic effects*: most frequently encountered are drowsiness and ataxia and more rarely constipation, rashes, headaches, nausea, loss of libido, and frequency of micturition. *Contra-indications*: it should be given with caution to patients with impaired renal or hepatic function. *Dose*, daily in divided doses: 30 mg., for severe cases, 40 to 100 mg., elderly patients, initial, 10 mg., children, 10 mg.

Proprietary Name: LIBRIUM.

Chlorhexidine Gluconate 1,6-Di(*N*-*p*-chlorophenyldiguanido)hexane digluconate $C_{22}H_{30}N_{10}Cl_2\,2C_6H_{12}O_7=897.8$

Uses as for Chlorhexidine Diacetate (Vol. I, 24th Edn., p. 1026). It is *incompatible* with soap: the addition of hard water to solutions of chlorhexidine gluconate may cause slight precipitation of insoluble chlorhexidine salts.

Proprietary Names: HIBITANE, it is an ingredient of SAVLON HOSPITAL CONCENTRATE.

[B] **Chloromytol Ointment** (*Parke, Davis*): Chloramphenicol 2% and prednisolone 0.5% in an emollient soft paraffin basis. For the treatment of allergic and inflammatory dermatoses.

[B] **Chloromycetin Succinate** (*Parke, Davis*): Chloramphenicol sodium succinate (q.v.) in vials each containing the equivalent of 1 g. of chloramphenicol.

Chlorothiazide (*B.P. Add. U.S.P.*) 6-Chloro-7-sulphamoylbenzo-1,2,4-thiadiazine 1,1-dioxide, $C_7H_6O_4N_3S_2Cl=295.7$

A non-mercurial diuretic which is active when given by mouth. It increases the excretion of sodium and chloride ions and, to a lesser extent, of bicarbonate and potassium ions. It does not normally cause any change in the acid-base balance and is only slightly less effective than the parenteral mercurial diuretics. Its diuretic effect appears after 2 hours and lasts for 6 to 12 hours. It is employed in the treatment of œdema associated with nephrosis, liver disease, certain types of nephritis, œdema of pregnancy, and premenstrual œdema. It potentiates the action of ganglion-blocking agents, rauwolfia, hydrallazine, and digitalis.

Toxic effects: allergic reactions, nausea, dizziness, weakness, paræsthesias, photosensitivity, epigastric discomfort, hypochloræmic alkalosis, which may be treated by the administration of ammonium chloride except in patients with hepatic disease, and hypokalæmia, which may be corrected with potassium chloride. Acute pancreatitis has been

reported, and thrombocytopenia, leukopenia, and agranulocytosis have occasionally occurred Patients with severe congestive heart failure and œdema may develop a low salt syndrome and need the concurrent transfusion of hypertonic solution of sodium chloride *Contra indicated* in severe renal or hepatic impairment.

Dose 0 5 to 2 g *in the morning in one or two doses*

Proprietary Names SALURIC WARDIURIDE CHLOTRIOS (*abroad*) DIURIL (*U.S A*) MINZIL (*Ital*) NEO-DEMA (*Canad*) YADALAN (*Span*)

Chlorothiazide Sodium (*N N D*) Sodium salt of 6-chloro 7-sulphamoylbenzo 1 2,4 thiadiazine 1,1-dioxide $C_7H_5O_4N_3S_2ClNa$= 317 7

A non mercurial diuretic with the same actions and uses toxic effects and *contra indications as chlorothiazide (see above) It is administered* when diuresis is urgently required or when chlorothiazide is unable to be taken by mouth *Dose* 0 5 to 2 g daily by intravenous injection

Proprietary Names LYOVAC SALURIC LYOVAC DIURIL (*U S A*)

Chlorphenoctium Amsonate (2 4-Dichlorophenoxymethyl)dimethyl octylammonium amsonate $(C_{11}H_{14}ONCl_2)_2C_{14}H_{12}O_6N_2S_2$=1035 1

A cationic compound which is said to have bactericidal and antifungal properties *It is employed in the form of lozenges for the treatment of oral and pharyngeal infections*

Proprietary Name It is an ingredient of PLANIDETS.

Chlorphenoxamine Hydrochloride 2 (1 *p* Chlorophenyl 1 phenyl ethoxy)ethyldimethylamine hydrochloride $C_{16}H_{18}ONCl\ HCl$=340 3

Chlorphenoxamine hydrochloride is used in the treatment of paralysis agitans It reduces muscular rigidity and has a mild euphoriant action but it has little effect on tremor *Toxic effects* are stated to be minor and to include drowsiness dizziness, and dryness of the mouth but doses up to 600 mg daily have been given without side effects. *Dose* 50 to 100 mg thrice daily

Proprietary Names CLOREVAN PHENOXENE (*U S A*)

Chlorproguanil Hydrochloride N^1 3 4-Dichlorophenyl N^5 iso propyldiguanide hydrochloride $C_{11}H_{15}N_5Cl_2\ HCl$=324 7

An antimalarial drug with similar properties to proguanil but with a *longer duration of action It is used in the prophylaxis of malaria and is* effective against the asexual forms of all species and especially the primary exo-erythrocytic forms of *Plasmodium falciparum Dose* 20 mg weekly

Proprietary Name LAPUDRINE HYDROCHLORIDE.

[Pl 84B] **Chlorpropamide.** Chlorglypropamide P 607 *N p* Chloro benzenesulphonyl *N'* propylurea $C_{10}H_{13}O_3N_2SCl$=276 8

An antidiabetic drug employed similarly to tolbutamide which has the *same contra indications and toxic effects* (see p 266) *Chlorpropamide* has however, a more sustained hypoglycæmic action Maintenance doses of more than 750 mg daily should be avoided Excessive hypoglycæmic response is the most commonly encountered serious reaction a few cases of jaundice have been reported *Dose* 100 to 500 mg daily with breakfast.

Proprietary Name DIABINESE.

[Pl 84B] **Chlorprothixene** *Chlorprothixan* α 2 Chloro 9-(3 dimethyl-aminopropylidene)thiaxanthen $C_{18}H_{18}NSCl$=315 9

An antidepressant drug which is said to have a sedative action greater than that of chlorpromazine. It has an anti emetic and an antihistaminic

action and probably potentiates the action of narcotics and alcohol So far it has mainly been used in the treatment of depressive states and the major psychoses It may exacerbate schizophrenic symptoms when given alone Chlorprothixene is usually administered by mouth but, in severe cases, a more rapid effect can be obtained by giving the initial doses by intramuscular injection

Toxic effects so far reported include dryness of the mouth, drowsiness, mild vertigo, moderate tachycardia, skin rash headache, and mild extrapyramidal effects High dosage has been known to lead to epileptiform fits

Dose daily in divided doses for major psychiatric conditions, initial 90 to 300 mg , maintenance 90 to 150 mg , for depression, initial 60 to 120 mg , maintenance 30 to 90 mg , children, for all disorders, 1 to 2 mg per kg body weight daily in divided doses

Proprietary Names Taractan, Truxal (*Dan.*)

Chlorthalidone G 33 182 2 Chloro 5-(3 hydroxy 1-oxoisoindolin 3-yl)benzenesulphonamide, $C_{14}H_{11}O_4N_2SCl$=338 8

Chlorthalidone is a long acting diuretic Its action is said to last for 24 to 48 hours after a single oral dose of 100 to 200 mg It increases the excretion of sodium and chloride ions, but there is said to be only a slight loss of potassium and bicarbonate Chlorthalidone may potentiate the action of hypotensive agents *Contra-indications* care is necessary in giving the drug to digitalised patients and patients with hepatic dysfunction and supplementary potassium is advisable. *Dose* 100 to 200 mg every other morning, for severe cases, an initial dose of 400 mg followed by 200 mg every other morning

Proprietary Name Hygroton

Chlorthenoxazin 2 (2 Chloroethyl) 2,3-dihydro 4-oxobenz 1,3 oxazine, $C_{10}H_{10}O_2NCl$=211 7

A mild analgesic with anti inflammatory and antipyretic properties *Dose* 500 mg up to 3 times daily

Proprietary Name it is an ingredient of Valtorin

Chlorzoxazone (*N N D*) 5 Chlorobenzoxazolinone 5-Chlorobenzoxazolone, $C_7H_4O_2NCl$=169 6

A skeletal muscle relaxant with uses similar to zoxazolamine—see Vol I, 24th Edn, p 663 It is administered by mouth *Toxic effects* as for zoxazolamine, but less severe and less frequent *Dose* 250 to 750 mg 3 or 4 times daily

Proprietary Names Parafl ex (*abroad*) it is an ingredient of Parafon

[P1 84B] **Choloxin** (*Baxter*) D-Thyroxine sodium [sodium dextrothyroxine sodium D-β [4 (4 hydroxy 3 5-di iodophenoxy) 3 5-di iodophenyl] propionate, $C_{15}H_{10}O_4NI_4Na$=798 9] available as tablets of 2 0 mg It is used in the treatment of hypercholesterolæmia. *Contra indicated* in acute myocardial infarction. *Dose* one tablet daily for 10 to 14 days then 2 tablets daily increased up to 4 tablets daily if required *Note* it may be necessary to reduce the dose of an anticoagulant given concurrently

Chrysocreme (*Ruker*) An ointment containing chrysarobin 10 grains in 1 oz. The ointment basis has the same pH as normal skin contains a spreading agent and reduces staining For the treatment of acne rosacea, psoriasis and tinea

Chymar (*Armour*) Lyophilised chymotrypsin (q v) available in the following forms Chymar Buccal Tablets† each containing 10 000 Armour units for the treatment of inflammatory conditions both local and systemic of any origin *dose* one tablet 4 times daily dissolved slowly in the lower buccal

pouch with minimum swallowing and expectoration Chymar Aqueous a sterile stabilised injection in 5 ml vials containing 5000 Armour units in 1 ml. incompatible with heavy metals it should be stored in a cool place for the reduction and prevention of inflammation œdema blood extravasates and lymph effusions *dose* by deep intramuscular injection for chronic and recurrent inflammation 2500 to 5000 Armour units once or twice a week for other conditions 5000 Armour units once to thrice daily Chymar Parenteral a dry powder in vials of 5000 Armour units uses and dosage as for Chymar Aqueous (*Replacement of entry in Vol I, 24th Edn p 1394*)

[B] Chymar Ointment (*Armour*) Contains in each g hydrocortamate hydrochloride (q v) 1 25 mg neomycin 3 5 mg (as palmitate) and proteolytic activity (provided by a *concentrate of pancreatic enzymes*) 10 000 Armour units For the reduction of swelling and itching associated with wounds, dermatitis and skin infections

Chymar Zon (*Armour*) Sterile lyophilised chymotrypsin (q v) in vials of 100 Armour units supplied with 1 ml vials of Compound Injection of Sodium Chloride for use in cataract surgery

Chymoral (*Armour*) Tablets of trypsin and chymotrypsin (q v) activity in a ratio of approximately six to one each providing total enzyme activity of 50 000 Armour units For the treatment of inflammatory conditions, both local and systemic, of any origin. *Dose* 2 tablets reduced to 1 tablet 4 times daily

Chymotrypsin. ⍺ Chymotrypsin

Chymotrypsin, a proteolytic enzyme obtained in crystalline form from mammalian pancreas, is an anti inflammatory agent given by mouth, by inhalation, by intramuscular injection, and used topically as an ointment. Solutions are employed in cataract surgery (see Pierse and O Donoghue, *Brit med J*, 1/1960, 1629) *Contra indicated* in patients with severe liver disease or abnormal blood-clotting mechanisms

Units Theoretical comparisons of different units are unreliable Recent work has shown that one Anson unit is equivalent to 160 000 Armour units (letter from R B Christie, *Pharm J* 1/1960 508)

Proprietary Names Chymar Chymar Zon Chymo Trypure Novo Gastrolav Zonulysin, it is an ingredient of Chymoral, Lomudase, and Tryptar Ointment

Chymo-Trypure Novo (*Evans Medical*) Sterile freeze-dried crystalline chymotrypsin (q v) in vials each containing 2 mg for dissolving in 10 ml of Compound Injection of Sodium Chloride for use in cataract surgery

Ciba 1906 (*Ciba*) Thiambutosine (q v) available as tablets of 500 mg

Cirotyl (*Parke Davis*) A fluid laxative containing in each teaspoonful (5 ml) acetphenolisatin 2 mg and propylene oxide-ethylene oxide polymer 100 mg *Dose* 2 teaspoonfuls before breakfast or at bedtime children over 6 years one teaspoonful infants, $^1/_4$ to $^1/_2$ teaspoonful (*Modification of entry in Vol. I 24th Edn p 93*)

[P1 87] Clemizole Hydrochloride 1 *p* Chlorobenzyl 2 pyrrolidin 1 ylmethylbenzimidazole hydrochloride $C_{19}H_{20}N_3Cl\,HCl$=362 3

An antihistamine which is stated to produce slight drowsiness occasionally as its only side-effect in the usual dosage It can be given by mouth, or by injection, or used locally *Dose* by mouth, 20 mg 2 to 4 times daily, and 40 mg at night if necessary by subcutaneous, intramuscular, or slow intravenous injection, 10 to 20 mg 3 to 5 times daily

Incompatibility solutions of clemizole hydrochloride are incompatible with solutions of calcium salts

Proprietary Name Allercur

Clorevan (*Evans Medical*) Chlorphenoxamine hydrochloride (q v) available as tablets of 50 mg

[P1 84B 8] Codelprone (*Merck Sharp & Dohme*) Tablets each containing an inner core of *prednisolone* 2 *mg* surrounded by meprobamate 200 *mg* and dried

aluminium hydroxide gel 200 mg For the treatment of chronic rheumatic diseases inflammatory and allergic conditions and collagen diseases *Dose* initial 2 tablets 3 or 4 times daily then reduced by one tablet daily every 4 or 5 days until the lowest effective level is reached

[B] **Codelsol** (*Merck Sharp & Dohme*) Prednisolone phosphate available as an injection in vials of 2 ml. each containing 40 mg as prednisolone disodium phosphate, with nicotinamide 50 mg For the treatment of severe allergic reactions adrenocortical insufficiency certain types of shock and acute life threatening infections *Dose* by intravenous or intramuscular injection. 20 to 100 mg maintenance 10 to 20 mg By intrasynovial injection 2 to 20 mg

[B] **Codelsol Eye Ear Solution** (*Merck Sharp & Dohme*) Contains prednisolone phosphate 0 5% and neomycin sulphate 0 5% in bottles of 2 5 ml. For inflammatory conditions of the eye and ear

[B] **Codelsol Skin Lotion with Neomycin** (*Merck Sharp & Dohme*) Contains prednisolone phosphate 0 5% and neomycin sulphate 0 5% in bottles of 15 ml For inflammatory skin conditions and the prevention of secondary infection.

Combizym (*Lustpold Werk Munich Roberts*) Tablets containing multivalent digestive enzymes of animal and vegetable origin including lipase amylase trypsin proteases cellulase, and hemicellulases *Dose* 1 or 2 tablets during meals

[B] **Compocillin-VK** (*Abbott*) Phenoxymethylpenicillin potassium, available as granules for preparing **Solution 62 5** containing 62 5 mg in each teaspoonful (5 ml) and **Solution 125** containing 125 mg in each teaspoonful (5 ml)

[P1 84B B] **Compocillin VK with Sulphas** (*Abbott*) Filmtabs (film-coated tablets) each containing phenoxymethylpenicillin potassium 125 mg., sulphadiazine 250 mg and sulphadimidine 250 mg. Solution containing in each teaspoonful (5 ml) phenoxymethylpenicillin potassium 62 5 mg sulphadiazine 125 mg and sulphadimidine 125 mg (supplied as granules for reconstitution with water before use) For the treatment of mixed infections *Dose* one Filmtab or 2 teaspoonfuls of solution thrice daily in severe infections up to 2 Filmtabs or 4 teaspoonfuls of solution every 4 hours

(*For other Compocillin preparations see Vol I, 24th Edn pp 1444–5*)

[P2] **Conotrane** (*Ward Blenkinsop*) A cream containing Fenotrane 0 05% and silicone MS 200 20% For the prevention and treatment of bedsores and napkin rash.

[P1 84B] **Conovid** (*Searle U.K.*) Tablets each containing norethynodrel (q v) 5 mg and 17α-ethynyl 3 methoxyoestra 1 3 5(10)-trien 17-ol 0 075 mg For the control of fertility *Dose* one tablet every night for 20 nights starting on the 5th day of each menstrual cycle

Conprin (*Continental Laboratories*) Sachets each containing acetylsalicylic acid 5 grains citric acid 10 71 grains sodium bicarbonate 21 65 grains, and ascorbic acid 3 09 grains For colds, influenza and minor aches and pains. *Dose* the contents of 1 or 2 sachets in water thrice daily

Coomassie Blue (Medical) (*Imperial Chemical Pharmaceuticals*) Sodium anoxynaphthonate (q v) 2% and 4% in ampoules of 5 ml the 4% solution contains 2 imidazoline 10% w/v as a solubiliser

[P1 87] **Co Pyronil Pulvules** (*Lilly*) Capsules each containing pyrrobutamine phosphate (q v) 15 mg methapyrilene 25 mg and cyclopentamine hydrochloride 12 5 mg For the treatment of allergic reactions and relief of cough. *Dose* one capsule twice or thrice daily may be increased to 6 capsules daily in divided doses for severe symptoms

[P1 81] **Corangil** (*Allied Laboratories*) Tablets each containing in the outer coating glyceryl trinitrate 0 5 mg and, in an inner core, pentaerythritol tetranitrate 20 mg diprophylline 120 mg magnesium trisilicate 120 mg and papaverine hydrochloride 60 mg For the prevention and treatment of attacks of angina pectoris

Cordocel (*Clay & Abraham*) A sterile powder containing Dusting powder of Alum and Zinc for Infants B P C and hexachlorophane 0 3% in envelopes of 60 grains

[B] **Corlan Pellets** (*Glaxo*) Each contains hydrocortisone sodium succinate equivalent to 2 5 mg of hydrocortisone For aphthous ulceration. *Dose* one pellet 4 times daily they should not be sucked but kept in the mouth in close proximity to the ulcer

[B] **Cortibiotic Skin Ointment** (*Roussel*) Contains framycetin sulphate 1 5%, gramicidin 0 005% and prednisolone 0 5% For inflammatory conditions and pruritus (*For other Cortibiotic preparations see Vol. I 24th Edn, p 1416*)

[P1 84B B] **Cortico-Gel** (*Crookes*) Corticotrophin in hydrolysed gelatin solution for subcutaneous or intramuscular injection available in vials of 5 ml in two strengths 20 units and 40 units in each ml *Dose* initial 20 to 30 units maintenance 10 to 30 units daily

[B] **Cortisporin Lotion** (*Burroughs Wellcome*) Contains in each ml polymyxin B sulphate 10 000 units neomycin sulphate 5 mg and hydrocortisone 10 mg in an aqueous vehicle For the treatment of bacterial infection and inflammation of the skin (*See also Vol. I 24th Edn p 1448*)

[B] **Cortocaps** (*Crookes*) Capsules containing hydrocortisone acetate 0 5% and neomycin sulphate 0 5% in a soft paraffin base For topical treatment of infections of the eye and external ear

[B] **Cortoderm** (*Crookes*) A cream containing hydrocortisone acetate 0 25 0·5 or 1% and colloidal calamine for dermatitis and pruritus. [B] **Cortoderm N** contains in addition neomycin sulphate 0 5% for similar conditions when secondarily infected. (*Modification of entry in Vol. I 24th Edn p 1395*)

[B] **Cortril Spray** (*Pfizer*) An aerosol spray containing hydrocortisone 100 mg in 2 fl oz For local use in atopic dermatitis, contact dermatitis, and non-specific ano-genital pruritus (*For other Cortril preparations see Vol I 24th Edn pp 486 and 490*)

[P1 84B B] **Cortrophin** (*Organon*) Corticotrophin freeze-dried for the preparation of Corticotrophin Injection available for intramuscular or subcutaneous use in vials containing 10 units and 25 units, and for intravenous use in vials containing 30 units and 75 units (*Modification of entry in Vol I 24th Edn p 459*)

[P1 84B B] **Cortucid** (*British Schering*) A fluid cream containing sulphacetamide sodium 10 0% and hydrocortisone acetate 0 5% For inflammatory eye conditions To be dropped into the eye every 3 hours until the condition improves

Coryzin (*Richter*) Tablets each containing quinine dihydrochloride 50 mg and ascorbic acid 150 mg For colds, influenza and nasal catarrh. *Dose* prophylactic, one tablet twice or thrice daily therapeutic 2 tablets thrice daily for 3 to 5 days

Cremalga (*Brook Parker*) A cream containing methyl nicotinate 1 0% glycol salicylate 10 0% and capsicin 0 15% For the relief of fibrositis sciatica, lumbago muscular pain and stiffness, and rheumatic conditions

[P1 84B B] **Cremostrep** (*Merck Sharp & Dohme*) A flavoured suspension containing succinylsulphathiazole 10% streptomycin (as sulphate) 1% and kaolin 10% For the treatment of diarrhœa *Dose* 4 teaspoonfuls 2 to 4 times daily before meals infants and children 1 to 2 teaspoonfuls thrice daily

Crolax (*Crookes*) Tablets each containing dioctyl sodium sulphosuccinate 50 mg and dihydroxyanthraquinone 50 mg For constipation. *Dose* 2 tablets at night.

[B] **Crystapen G Syrup** (*Glaxo*) Contains in each 5 ml benzylpenicillin (potassium salt) 200 000 units (125 mg) supplied as granules for reconstitution with water before use

[B] **Crystapen V** (*Glaxo*) Phenoxymethylpenicillin available as Tablets (potassium salt) of 125 mg and 250 mg as a Syrup (potassium salt) containing in each teaspoonful (5 ml) 125 mg (supplied as granules for reconstitution with water before use) and as a Suspension (calcium salt) in two strengths, 62 5 mg and 125 mg in each teaspoonful (5 ml)

(*For other Crystapen preparations see Vol I 24th Edn p 1438*)

[P1 87] **Cyclizine Lactate** (*N N D*) (see also Vol. I, 24th Edn, p 1112) 1-Diphenylmethyl-4-methylpiperazine lactate $C_{18}H_{22}N_2,C_3H_6O_3$=356 5

Cyclizine lactate has the same actions and uses as cyclizine hydrochloride and is given by intramuscular injection when cyclizine hydrochloride by mouth is not feasible *Toxic effects, antidotes,* and *contra-indications* as for the antihistamines in general (Vol I, 24th Edn, pp 1101–2) *Dose* 25 to 50 mg by intramuscular injection.

Proprietary Names VALOID INJECTION, MAREZINE LACTATE (*U S A*)

[P1 81 84A] **Cyclophosphamide B 518** *NN*-Di(2 chloroethyl)-*N* (3-hydroxypropyl)phosphorodiamidic acid lactone, $C_7H_{15}O_2N_2PCl_2$=261 1

A cytostatic agent which may be given by mouth or by intravenous or intramuscular injection Up to 22 g has been given by intravenous injection over a period of 8 months without blood complications Matthias and Misiewicz (*Brit med J*, ii/1960, 1837) consider that regular leucocyte counts are essential during therapy with cyclophosphamide and recommend a count every 3 to 4 weeks *Toxic effects,* which are less marked than with other cytostatic agents, may include a fall in leucocyte count, anorexia, nausea, and temporary alopecia Damage to bone marrow and a fall in the leucocyte count is said to be less with cyclophosphamide than with other cytostatic agents Leucopenia may occur with full courses of treatment but the leucocytes recover within 3 to 4 days of reducing dosage or interrupting treatment. *Dose* initial 100 mg daily by intravenous injection, increased up to 200 to 400 mg daily to a total of 5 to 7 g, maintenance, 50 to 100 mg daily by mouth

Proprietary Names ENDOXANA, CYTOXAN (*U S A*), ENDOXAN (*Ger*), PROCYTOX (*Canad*)

[B] **Cycloserine** (*Lilly*) (Vol I 24th Edn, p 1412) Also available as Pulvules (capsules) of 125 mg

[B] **Cycloserine and INH Pulvules** (*Lilly*) Capsules each containing cycloserine 250 mg and isoniazid 150 mg

Cyfol (*Rybar Laboratories*) Tablets each containing ferrous gluconate 300 mg, folic acid 5 mg and cyanocobalamin 5 µg For the prevention and treatment of macrocytic anæmia and hydræmia of pregnancy nutritional macrocytic anæmia, and iron deficiency anæmias. *Dose* one tablet thrice daily

Cytostatic E 39 Soluble (*F B A Pharmaceuticals*) 2,5-Di(ethyleneimino)-3 6-di(2 methoxyethoxy) *p*-benzoquinone, available in Ampoules of 10 mg, with aqueous solvent in separate ampoules of 10 ml, and in Capsules of 5 mg Similar in action to inproquone.

[P1 87] **Daneral** (*Hoechst Horlicks*) Phenramine anunosalicylate (q v), available as tablets of 10 mg and 50 mg

Daraclor (*Burroughs Wellcome*) Tablets each containing pyrimethamine 15 mg and chloroquine sulphate equivalent to chloroquine base 150 mg For the treatment and suppression of malaria *Dose* prophylactic, semi immunes 2 tablets monthly non immunes one tablet weekly, therapeutic, semi immunes one dose of 4 tablets, non immunes 4 tablets followed by 2 tablets in 6 hours and 2 tablets on the second and on the third day

Daramide (*Merck Sharp & Dohme*) Dichlorphenamide (q v), available as tablets of 50 mg

Dareets (*Clarnell*) Lozenges each containing cetylpyridinium chloride 4 m g For the treatment of infections of the mouth and throat *Dose* one lozenge dissolved slowly in the mouth every 2 hours

Darenthin (*Burroughs Wellcome*) Bretylium tosylate (q v), available as tablets of 50 mg and 200 mg.

[P1 84B] **Dartalan** (*Searle U K*) Thiopropazate hydrochloride (q v), available as tablets of 5 mg and 10 mg

Deaner (*Riker*) *Deanol p acetamidobenzoate available as tablets each containing the equivalent of 25 mg of deanol (see below)*

Deanol 2 Dimethylaminoethanol $C_4H_{11}ON$=89 14

The administration of deanol produces an increase in well being and physical energy The drug is effective in the treatment of general debility, mild depression chronic headache, and some behavioural disorders It is usually administered by mouth but it has been administered in clinical trials by intravenous and intramuscular injection A dose of 50 mg has been given intravenously and up to 300 mg has been given daily by mouth to chronic schizophrenics, and 350 mg has been given daily by mouth to patients with severe or agitated depression without producing serious side effects Children with behavioural disorders have been given initial doses of 300 mg daily, with maintenance doses of 100 mg to 300 mg daily *Toxic effects* are minor but may include dull headache, slight constipation, muscle tension insomnia and pruritus *Contra indicated* in grand mal *Dose* by mouth initial 50 mg daily in the morning, maintenance 25 mg up to 3 times daily

Proprietary Name DEANER (as the *p* acetamidobenzoate)

[P1 87] **Debendox** (*Merrell National*) Tablets coated for delayed action each containing dicyclomine hydrochloride 10 mg doxylamine succinate 10 mg and pyridoxine hydrochloride 10 mg For the relief of the nausea and vomiting *of pregnancy Dose* 2 *tablets at bedtime in severe nausea*, one additional tablet on rising and in mid afternoon

[B] **Decadron** (*Merck Sharp & Dohme*) Dexamethasone (q v) available as a **Skin Lotion** containing 1 mg (as phosphate) in each ml and as **Tablets** of 0 5 mg and 0 75 mg

[P1 84B] **Decaserpyl** (*Roussel*) 10 Methoxydeserpidine (methoserpidine 11 demethoxy 10-methoxyreserpine $C_{33}H_{40}O_9N_2$=578 7) available as tablets of 5 mg and 10 mg For the treatment of hypertension It is stated to have the same hypotensive *action as reserpine without its neuropsychiatric depressant effect. Dose* initial 30 mg daily according to results reduce to 15 mg daily or increase to 40 to 60 mg daily

[B] **Decaspray** (*Merck Sharp & Dohme*) An aerosol containing in 90 g dexamethasone (q v) 10 mg and neomycin sulphate 50 mg For the treatment of inflammatory and pruritic skin conditions Releases in each second dexamethasone 0 075 mg and neomycin sulphate *0* 375 mg

[P1 81 84A] *Degranol* (*Leda*) *Mannomustine dihydrochloride* (q v) *in ampoules of 50 mg*

Dekrasil Capsules (*Crookes*) Each contains vitamin A 6000 units, calciferol 600 units aneurine hydrochloride 2 mg riboflavine 3 mg pyridoxine 0 5 mg cyanocobalamin 1 µg ascorbic acid 30 mg vitamin E 2 units, biotin 25 µg folic acid 0 5 mg nicotinamide 20 mg pantothenic acid 3 mg iron 17 mg manganese 1 mg zinc *0* 5 mg iodine 150 µg and cobalt 100 µg A vitamin and *mineral supplement. Dose one capsule daily*

Delaminoph (*B.M Laboratories*) *Aminophylline available as enteric-coated* tablets of 125 *mg*

[P1 81 84A] **Delamised** (*B M Laboratories*) Enteric coated tablets each containing aminophylline 125 mg and amylobarbitone 16 mg For the treatment of asthma chronic bronchitis, angina pectoris and cardiac failure *Dose* 2 to 4 tablets thrice daily before meals.

[P1 84B R] *Delta Butazolidin* (*Geigy*) *Tablets each containing phenyl* butazone 50 *mg and prednisone* 1 25 *mg For rheumatic and related disorders Dose* initial 2 tablets 3 or 4 times daily maintenance 2 tablets twice or one tablet thrice daily

[B] **Deltacortril** (*Pfizer*) Prednisolone available as Tablets of 1 mg and 5 mg and as **Deltacortril Enteric** in enteric-coated tablets of 2 5 mg **Deltacortril DA** : an ointment containing prednisolone diethylaminoacetate hydrochloride 0 25% in tubes of 5 g and 15 g for atopic and contact dermatitis and

non-specific ano-genital pruritus. **Deltacortril Intramuscular:** an injection in vials of 5 ml. containing in each ml. prednisolone acetate 25 mg. (*Modification of entry in Vol. I, 24th Edn, p 497*)

[B] **Delta-Fenox Nasal Spray** (*Boots*). Contains prednisolone 0·01%, phenylephrine hydrochloride 0·25%, and naphazoline nitrate 0·025%, in a water-miscible basis. For allergic conditions in the nose.

[B] **Delta-Genacort** (*Genatosan*) Prednisolone, available as tablets of 1 mg and 5 mg

[B] **Deltastab** (*Boots*). Prednisolone, available as Tablets of 1 mg. and 5 mg. **Deltastab Injection:** prednisolone acetate in aqueous suspension for intra-articular injection, available in vials of 5 ml. containing 25 mg in each ml. **Deltastab-B Tablets** each contain prednisolone 5 mg., dried aluminium hydroxide gel 300 mg., and magnesium trisilicate 50 mg. (*Modification of entries in Vol. I, 24th Edn, pp. 497 and 1395*)

[B] **Demethylchlortetracycline.** 7-Chloro-4-dimethylamino-1,4,4a,5,5a,6,11,12a-octahydro-3,6,10,12,12a-pentahydroxy-1,11-dioxonaphthacene-2-carboxyamide, $C_{21}H_{21}O_8N_2Cl$=464·9.

An antibiotic with similar actions and uses to the tetracyclines—*see* Vol. I, 24th Edn, p 1462. It is rapidly absorbed and slowly excreted and has approximately twice the antibacterial activity of tetracycline. For a review of information on demethylchlortetracycline see *Brit. med. J.*, ii/1960, 959. *Toxic effects:* as for the tetracyclines (Vol. I, 24th Edn, p 1461), in addition, there may be a phototoxic reaction. *Dose:* 300 mg. twice daily, infants and children, 6 mg. per kg. body-weight daily in 2 to 4 divided doses

Proprietary Names LEDERMYCIN, DECLOMYCIN (*U.S.A.*).

Depinar (*Armour*) A complex of cyanocobalamin with zinc and tannic acid which on reconstitution forms a colloidal suspension for intramuscular injection. After injection it breaks down slowly and is said to provide a continuous supply of cyanocobalamin and to maintain a high concentration in the serum for several weeks. Available in vials of 2500 µg with one vial of 5 ml. of diluent, and in vials of 1000 µg with one vial of 2 ml. of diluent.

[B] **Depo-Medrone** (*Upjohn*). Methylprednisolone acetate (q.v.) in a sterile aqueous suspension for injection, in 1-ml. vials and in multi-dose vials of 5 ml. containing 40 mg. in each ml.

Depot-Glumorin (*F.B.A. Pharmaceuticals*). Kallikrein (q.v.), in ampoules each containing 40 biological units bound to a colloid of high molecular weight. For use in severe vascular diseases and circulatory disturbances.

Dequadin Cream (*Allen & Hanburys*). Contains dequalinium chloride (see below) 0·4%.

Dequadin Pessaries (*Allen & Hanburys*) Each contains dequalinium chloride (see below) 10 mg.

(*For other Dequadin preparations see p.275 and Vol. I, 24th Edn, p. 1336*)

Dequalinium Chloride (*B.P.C.*). Decamethylenebis(4-aminoquinaldinium chloride), $C_{34}H_{40}N_4Cl_2$=527·6.

An antibacterial and antifungal agent active against many Gram-positive and Gram-negative organisms, *Spirochæta vincenti*, *Candida albicans*, and *Trichophyton* spp. It is used in the form of lozenges or paint in the treatment of infections of the mouth and throat and as pessaries in the treatment of trichomonal vaginitis.

Proprietary Names DEQUADIN, it is an ingredient of DEQUADIN CREAM, DEQUADIN LOZENGES and PAINT (Vol. I, 24th Edn, p. 1336), DEQUADIN PESSARIES, DEQUALONE-P, and DEQUASPON (Vol. I, 24th Edn, p. 931).

[B] **Dequalone-P** (*Allen & Hanburys*). A non-greasy cream containing dequalinium chloride (q.v.) 0·4% and prednisolone 0·25% in a hydrophilic basis. For topical use in acute or chronic dermatoses

DermaPbytex (*Wynlit Laboratories*) A paint containing borotannic complex 10 92% in ethyl acetate and alcohol For the treatment of dermatomycos s

Detigon Antitussive Drops (*F B A Pharmaceuticals*) Contain in each ml chlophedianol hydrochlor de (1-*o*-chlorophenyl 3 dimethylamino 1 phenyl propan 1 ol hydrochlor de $C_{17}H_{28}ONCl\,HCl$ 326 3) 50 mg A cough suppressant. *Dose* 15 to 25 drops 3 or 4 times da ly

Detigon Linctus (*F B A Pharmaceuticals*) Contains in each teaspoonful (4 ml) chlophedianol 14 mg (as citrate) and potassium guaiacolsulphonate 80 mg A cough suppressant and expectorant. *Dose* 1 to 2 teaspoonfuls 3 to 5 times daily

[B] **DexaCortisyl** (*Roussel*) Dexamethasone (see below) available as tablets of 0 5 mg and 0 75 mg

[B] **Dexamethasone** Delta 1 9α fluoro-16α methylhydrocortisone 9α Fluoro 16α methylprednisolone Hexadecadrol, 16α Methyl 9α fluoro prednisolone 9α Fluoro 11β 17α 21 trihydroxy 16α methylpregna 1 4-diene 3 20-dione, $C_{22}H_{29}O_5F$=392 5

Dexamethasone is a synthetic analogue of hydrocortisone with similar actions and uses but it is about twenty five times more potent It does not have the sodium retaining or the potassium excreting properties of hydiocortisone and is chiefly used for its anti inflammatory and anti allergic effects Doses of up to 15 mg daily have been given for acute rheumatic fever acute leukæmia the nephrotic syndrome and acute pemphigus *Toxic effects* and *contra indications* as for Prednisone (Vol I 24th Edn p 492) *Dose* 0 75 to 4 5 mg daily in divided doses

Proprietary Names DECADRON DEXACORTISYL DEXTELAN MILLICORTEN ORADEXON GAMMACORTEN (*U.S.A.*) t is an ingredient of DECASPRAY

[B] **Dextelan** (*Glaxo*) Dexamethasone (q v) available as tablets of 0 5 mg and 1 mg

[D P I 81] **Dextromoramide** Dextrod phenopyrrne D moramid M C.P 875 R 875 SKF 5137 (+) 1 (3 Methyl 4 morpholino 2 2-diphenyl butyryl)pyrrolidine $C_{25}H_{32}O_2N_2$=392 5

An analgesic stated to be of value in the control of severe pain and to have a rapid action It may potentiate the action of barbiturates chlor promazine and anæsthetic agents Barbiturates given concurrently should be at half the normal dosage It is given by mouth by rectum or by subcutaneous or intramuscular injection and similar analgesic effects are claimed for the same dose whether g ven by mouth or by injection Doses of up to 400 mg have been given daily in carcinoma. Dextromoramide may cause addiction Hazard (*Précis de Thérapeutique et de la Pharmacologie* Masson et Cie 9th Edn 1950 2nd Supplement 1959 p 36) states that it is d ff cult to be sure that such a potent analges c does not lead to any add ction or habit. The drug was found to have an addiction l ability equ valent to morphine in morph ne add cts and non tolerant former op ate addicts (*Pharm J* 1/1957 336)

Toxic effects it may cause l ghtheadedness dizziness and with h gher doses severe respiratory depression *Antidote* nalorphine *Contra indications* dextromoram de must be used with care when prescribed with respiratory st mulants and for patients suffering from hepatic insufficiency with jaundice hypotens on and cerebral disease

Dose max imital dose 5 mg or post-operatively 2 5 mg , a further dose can be given after 2 hours if necessary, the size and frequency of the dose depending on the response of the pat ent. Max single dose 20 mg

Proprietary Names PALFIUM DIMORLIN (as tartrate) (*U.S.A.*) JETRIUM (*Ned*)

[P1 81] **Dextropropoxyphene Hydrochloride** (*N.N.D.*) (+) α 1 Benzyl 3 dimethylamino-2 methyl 1 phenylpropyl propionate hydrochloride $C_{22}H_{29}O_2N$, HCl=375 9

An analgesic administered by mouth to alleviate pain associated with chronic or recurrent disease such as rheumatoid arthritis and migraine The drug is said to have little or no liability to cause addiction. It causes local irritation if given by injection. *Toxic effects* the drug occasionally causes a rash or gastro intestinal disturbance, large doses may cause drowsiness and dizziness *Dose* 65 mg 3 or 4 times daily

Proprietary Names DOLOXENE DARVON (*U.S.A.*)

[P1 84B] **Diabinese** (*Pfizer*) Chlorpropamide (q v) available as tablets of 100 mg and 250 mg

Di Ademul (*Squibb*) Hydroflumethiazide (q v) available as tablets of 50 mg Di Ademul K tablets each containing hydroflumethiazide 25 mg. and potassium chloride 625 mg

Diaginol Viscous (*May & Baker*) Sodium acetrizoate 40% in dextran solution available in ampoules of 10 ml and 15 ml For hysterosalpingography (*For other Diaginol preparations see Vol I 24th Edn p 802*)

Diagnex Blue (*Squibb*) Azure A carbacrylic resin for the determination of gastric acidity Each test unit includes 2 g of dye-resin equivalent to azure A dye 100 mg and 2 tablets each of 250 mg of caffeine sodium benzoate When the dye resin and tablets are taken the dye is quantitatively released by the gastric acid and is excreted in the urine The dye content of the urine as estimated by comparison with colour standards indicates the gastric acidity (*For Diagnex see Vol I 24th Edn p 810*)

[P1 84B] **Dianabol** (*Ciba*) Methandienone (q v) available as Drops for paediatric use containing 1 mg in each ml. and as Tablets of 5 mg

[P1 84B] **Dibotin** (*Bayer Prod.*) Phenformin hydrochloride (q v) available as tablets of 25 mg

Dibromopropamidine Embonate 1 3 Di(4-amidino-2 bromophenoxy)propane embonate $C_{13}H_{14}O_2N_4Br_2.C_{23}H_{16}O_6$=858 6

A bacteriostatic and fungistatic agent used in the treatment of oral and pharyngeal infections

Proprietary Name it is an ingredient of PLANIDETE.

Dichlorphenamide Dichlorophenamide 4,5 Dichlorobenzene 1,3-disulphonamide, $C_6H_8O_4N_2S_2Cl_2$=305 2.

Dichlorphenamide is an oral diuretic which inhibits carbonic anhydrase and has actions similar to acetazolamide but also causes an increase in chloride excretion Dichlorphenamide is used in the treatment of glaucoma. *Toxic effects* and *contra indications* as for Acetazolamide (Vol 1, 24th Edn, p 903) *Dose* initial doses of 100 to 200 mg may be necessary in acute glaucoma followed by 100 mg every 12 hours until the desired effect is obtained Maintenance, 25 to 50 mg 1 to 4 times daily

Proprietary Name DARANIDE.

[P1 84B] **Diethylpropion Hydrochloride** α Diethylaminopropiophenone hydrochloride, $C_{13}H_{19}ON$ HCl=241 8

A sympathomimetic amine related to amphetamine and given by mouth to suppress appetite in obesity It is claimed that it does not lose its effectiveness with prolonged usage, but the Council on Drugs of the American Medical Association (*J Amer med Ass*, 1960, *173*, 1737) states that there is little evidence that prolonged usage promotes continuing loss of weight. *Toxic effects* it is claimed to have few and infrequent side effects and rarely to stimulate the central nervous system

The Council on Drugs (loc. cit.) considers that this statement lacks conclusive substantiation and also considers that chronic toxicity studies are inadequate *Dose* 25 mg 3 or 4 times daily before meals

Proprietary Names TENUATE TEPANIL (*U S A*)

Dilavase (*Organon*) Isoxsuprine hydrochloride (q v) available as tablets of 10 mg

[P1 84B] **Dilosyn** (*British Drug Houses*) Methdilazine hydrochloride (q v) available as a Syrup containing 4 mg in each teaspoonful and as Tablets of 8 mg

Diloxanide Furoate Dichloro-*N* p-hydroxyphenyl *N* methylacetamide furoate $C_8H_8O_2NCl_2$ $C_5H_4O_3$—346 2

An amœbicide which is used in the treatment of intestinal amœbiasis and may be of value in tissue amœbiasis Diloxanide furoate is stated to be more active than diloxanide against *Entamœba histolytica Toxic effects* are stated to be not serious and may include flatulence *Dose* 500 mg thrice daily for 10 days repeated if necessary children 20 mg per kg body weight daily in divided doses for 10 days repeated if necessary

Proprietary Name FURAMIDE

Proprietary Name for Diloxanide ENTAMIDE (Vol 1 24th Edn pp 604 and 1368)

Dimagel (*Lewis*) Dimagnesium aluminium trisilicate available as tablets of 500 mg Antacid adsorbent. *Dose* 2 tablets with fluid between meals

[P1] **Dimagel Belladonna** (*Lewis*) Tablets each containing dimagnesium aluminium trisilicate 500 mg and belladonna alkaloids (hyoscyamine apoatropine hyoscine and belladonnine in naturally occurring proportion) 0 1 mg For gastric and duodenal ulcer hypersecretion and gastrointestinal spasm due to inflammation *Dose* 2 to 4 tablets half an hour before meals

[P1 84B] **Dimethisterone** 6α,21 Dimethylethisterone 17α Ethynyl 17 hydroxy 6α,21-dimethylandrost-4 en 3-one $C_{23}H_{32}O_2$—340 5

Dimethisterone is an orally active progestogen with similar actions and uses to progesterone (Vol I 24th Edn p 970) *Dose* 5 to 10 mg up to thrice daily

Proprietary Name SECROSTERON

Dimethoxanate Hydrochloride 2 (2 Dimethylaminoethoxy) ethyl phenothiazine 10-carboxylate hydrochloride $C_{19}H_{22}O_4N_2S$ HCl=394 9

An antitussive agent which acts on the medullary centre but does not entirely suppress the cough reflex It has mild antispasmodic activity and local anæsthetic action *Dose* 25 mg 3 to 4 times daily

Proprietary Name it is an ingredient of THORPAX SYRUP

Dimyril Capsules (*Genatosan*) Each contains isoamanile 21 5 mg For cough suppression *Dose* one capsule 3 to 5 times daily to be swallowed whole

Dimyril Cough Linctus (*Genatosan*) Contains in each teaspoonful (3 55 ml) isoamanile citrate (q v) 40 mg *Dose* one teaspoonful 3 to 5 times daily

[P1 84B] **Diotroxin** (*Glaxo*) Tablets each containing thyroxine sodium 90 μg and liothyronine sodium 10 μg For the treatment of myxœdema and other forms of hypothyroidism *Dose* ½ to 5 tablets daily

Direma (*Distillers Co*) Hydrochlorothiazide (q v) available as tablets of 25 mg and 50 mg

Disamide (*British Drug Houses*) Disulphamide (q v) available as tablets of 100 mg

Disprin Junior (*Reckitt & Sons*) Tablets each containing acetylsalicylic acid 1¼ grains calcium carbonate ½ grain and citric acid ¼ grain.

[R] **Distaquaine V Elixir Forte** (*Distillers Co*) Contains in each teaspoonful (5 ml) phenoxymethylpenicillin 240 mg (*See also Vol I 24th Edn p 1445*)

[8] **Distaquaine V-K** (*Distillers Co*) Phenoxymethylpenicillin potassium available as a Suspension containing 125 mg in each teaspoonful (5 ml) and as Tablets of 60 mg 125 mg and 250 mg the strengths are expressed as phenoxymethylpenicillin (*Modification of entry in Vol I 24th Edn p 1445*)

[P1 84B] **Distaval** (*Distillers Co*) Thalidomide (q v) available as tablets of 25 mg and as Distaval Forte, tablets of 100 mg

Distivit (*Distillers Co*) Cyanocobalamin with polypeptide available as Elixir containing 20 μg in each teaspoonful (3 5 ml) and as Tablets of 20 μg, 100 μg and 1000 μg (*See also Distivit B_{12}, Vol I 24th Edn p 576*)

[P1 87] **Distolyt** (*Distillers Co*) Tablets each containing chlorcyclizine hydrochloride 10 mg and guaiphenesin (q v) 100 mg For the relief of cough. *Dose* 2 or 3 tablets 3 or 4 times daily

Disulphamide 5 Chlorotoluene 2,4-disulphonamide, $C_7H_9O_4N_3S_2Cl$ =284 8

A diuretic which inhibits the activity of carbonic anhydrase and increases the excretion of chlorides It promotes the excretion of potassium, and supplementary potassium may be required It potentiates the action of digitalis In congestive heart failure the initial dosage is 200 mg by mouth daily for 5 days each week then reduced to 100 to 200 mg on alternate days A few daily doses of 100 mg are sufficient in premenstrual œdema *Contra indicated* in advanced liver dysfunction and in severely impaired renal function *Dose* initial, 100 to 200 mg daily, maintenance, 100 mg every other day

Proprietary Name DISAMIDE

Disulphine Blue Intravenous Injection (*Imperial Chemical Pharmaceuticals*) A sterile solution of sulphan blue 6 2% in ampoules of 10 ml For intravenous use as a diagnostic aid in the study of changes in blood supply to various body tissues

Dithiazanine Iodide (*N N D*) 3 3' Diethylthiadicarbocyanine Iodide 3 Ethyl 2 [5 (3 ethylbenzothiazolidin 2 ylidene)penta 1,3 dienyl]-benzothiazolium iodide $C_{21}H_{21}N_2S_2I$=518 5

An anthelmintic which is particularly effective in the treatment of infestations by whipworms (*Trichuris*) and *Strongyloides* It may also be used in the treatment of threadworm (*Oxyuris*) and roundworm (*Ascaris*) infestations when piperazine has failed *Toxic effects* the drug may cause nausea, vomiting, abdominal cramps, and diarrhœa *Contra-indicated* in renal disease *Dose* 200 mg thrice daily for 5 days in roundworm and threadworm infestations, for 5 to 10 days in whipworm infestations and for 7 to 21 days in *Strongyloides* infestations, children 50 to 75 mg 4 times daily for 5 days in threadworm infestations, 50 to 100 mg 4 times daily for 5 days in roundworm and whipworm infestations, and for 10 to 14 days in *Strongyloides* infestations

Proprietary Names TELMID, ASSINTHE (*U S A*) ANTELMID (*Ital*), DELVEX (*U S A*) DILOMBRIN (*U S A*) PARTEL (*abroad*)

Ditophal 15688, Diethyl Dithiolisophthalate, ETIP Ethyl dithiolisophthalate $C_{12}H_{14}O_2S_2$=254 4

Ditophal is administered by injection in the treatment of leprosy and tuberculosis of the skin, especially lupus vulgaris When given to lepromatous patients ditophal produces a greater clinical improvement than other antileprotic drugs but after 3 to 6 months drug resistance may appear and the patients tire of the treatment. Ditophal is therefore best given with dapsone or thiambutosine and then discontinued after 3 months (*Brit med J*, ii/1960 656) *Dose* 5 g daily by injection

Proprietary Names ETISUL ETISUL T

[P1 81] **Doloxene** (*Lilly*) Dextropropoxyphene hydrochloride (q v) available as Pulvules (capsules) of 32 mg and 65 mg

[P1 81] **Doloxene Compound** (*Lilly*) Pulvules (capsules) each containing dextropropoxyphene hydrochloride 32 mg phenacetin 162 mg acetylsalicylic acid 227 mg and caffeine 32 4 mg For the treatment of pain associated with fever or inflammation *Dose* 1 or 2 capsules 3 or 4 times daily

[P1 81 84A] **Dolviran** (*F B A Pharmaceuticals*) Tablets each containing acetylsalicylic acid 200 mg phenacetin 200 mg codeine phosphate 10 mg caffeine 50 mg and phenobarbitone 25 mg Analgesic *Dose* 1 or 2 tablets once to thrice daily

[P1] **Donabel Syrup** (*Dalmas*) Contains atropine methonitrate 0 025% chloroform spirit 5% purified honey 20% glycerin 10% compound tartrazine solution 0 25% syrup 45% and water 19 725% For the treatment of cough *Dose* 2 teaspoonfuls when the cough is troublesome children $^1/_2$ to 1 teaspoonful

[P1 81 84A] **Donnatal** (*Robins Co*) Tablets each containing hyoscyamine sulphate 0 1037 mg atropine sulphate 0 0194 mg hyoscine hydrobromide 0 0065 mg and phenobarbitone 16 2 mg Elixir each teaspoonful (5 ml) is equivalent to one tablet For the treatment of a wide range of parasympathetic disorders. *Dose* 1 or 2 tablets (5 or 10 ml of elixir) 3 or 4 times daily

[P1 81 84A] **Donnazyme** (*Robins Co*) Tablets each containing in an enteric coated core pancreatin U S N F 300 mg and bile salts 150 mg and in the outer layer hyoscyamine sulphate 0 0518 mg atropine sulphate 0 0097 mg hyoscine hydrobromide 0 0033 mg phenobarbitone 8 1 mg and pepsin U S N F 150 mg For gastro intestinal disturbances *Dose* 2 tablets to be swallowed whole after each meal

[P1 84B] **Dosulfin** (*Geigy*) A mixture of equal parts of sulphaproxyline (q v) and sulphamerazine available as a Syrup containing 10% of the mixed sulphonamides and as Tablets of 750 mg It is rapidly absorbed and is said to achieve a therapeutic level in the blood within 2 hours of administration to have a low rate of acetylation and to maintain adequate blood levels for relatively long periods so that doses need only be given at intervals of 8 to 12 hours Its toxic effects contra indications and uses are similar to those of the sulphonamides in general—see *Vol 1 24th Edn* pp 1242–4 *Dose* initially 2 tablets followed by 1 tablet every 8 hours for 3 days and then on the 4th and subsequent days 1 tablet every 12 hours children initially $^1/_2$ to 3 teaspoonfuls (1 8 to 10 7 ml) of syrup according to age every 8 hours for 2 days and then every 12 hours on the 3rd and subsequent days

Duncaine (*Duncan Flockhart*) Lignocaine base available as Lozenges each containing 250 mg and as an Ointment containing 5% Lignocaine hydrochloride available as Solutions for injection in the following strengths 0 5% 0 5% (intravenous) 1% 1 5% 2% [P1 84B] 0 5% with adrenaline 1 100 000 [P1 84B] 1% with adrenaline 1 100,000 [P1 84B] 2% with adrenaline 1 80 000 [P1 84B] 2% with adrenaline 1 50 000 and 4% (for topical use) Duncaine Gel a sterile viscous gel containing Lignocaine hydrochloride 2% for anaesthesia of the urethra Duncaine Viscous a flavoured jelly containing Lignocaine hydrochloride 2% for surface anaesthesia of the upper digestive tract These products were formerly marketed by *Duncan Flockhart* under the name Xylocaine

Duromine (*Riker*) Phentermine (q v), available as capsules of 15 mg and 30 mg as an ion-exchange resin complex for sustained release.

[D P1 81] **Duromorph** (*Laboratories for Applied Biology*) Morphine in microcrystalline form in a long acting aqueous suspension for subcutaneous or intramuscular injection, available in ampoules of 1 1 ml each containing 1 1 grains

[P1 84B] **Durophet** (*Riker*) Dexamphetamine 3 parts and laevo amphetamine 1 part bonded to an ion-exchange resin, available as capsules of 7 5 mg 12 5 mg and 20 mg For the treatment of obesity *Dose* one capsule of the strength giving satisfactory response to be taken at or immediately after breakfast.

Ebimar (*Evans Medical*) A sulphated polysaccharide derived from seaweed available as tablets of 500 mg representing not less than 1000 Evans units of antupeptic activity Ebimar Al tablets each containing Ebimar 500 mg and dried aluminium hydroxide gel 350 mg For the prevention and treatment of peptic ulcer *Dose* 3 or 4 tablets to be sucked, chewed or taken crushed 4 or 5 times daily between meals

[B] Ecomytrin (*Warner*) A non greasy ointment containing amphomycin (calcium salt) (q v) 0 5% and neomycin B (as the hydrochloride) 0 33% For the treatment of bacterial skin disorders (Neomycin B is one of the components of neomycin)

[B] Ecomytrin with Hydrocortisone (*Warner*) Ecomytrin with hydrocortisone 1%

Eczederm Cream (*Approl n*) Contains benzalkonium chloride 0 05% calamine 20 88% and starch 2 09% in a lanolin cream basis For most acute or chronic skin disorders

[B] Efcortelan Soluble (*Glaxo*) Hydrocortisone sodium succinate in vials each containing the equivalent of hydrocortisone 100 mg supplied with ampoules of Water for Injection 2 ml for intravenous injection may also be used as a retention enema when dissolved in normal saline 100 ml

[B] Efcortelan Soluble Intrathecal (*Glaxo*) Hydrocortisone sodium succinate in ampoules each containing the equivalent of hydrocortisone 10 mg for intrathecal injection.

[B] Efcortelan Solution Tablets (*Glaxo*) Each contains hydrocortisone sodium succinate equivalent to hydrocortisone 100 mg To be dissolved in 100 to 120 ml of normal saline for rectal infusion.

(*For other Efcortelan preparations see Vol I 24th Edn pp 486 490 491 and 1398*)

[B] Eleatol (*F.B.A Pharmaceuticals*) Tablets each containing chloroquine phosphate 40 mg prednisone 0 75 mg and acetylsalicylic acid 200 mg For rheumatoid arthritis and other rheumatic conditions *Dose* 2 tablets thrice daily for 4 to 12 weeks then gradually reduced and changed to chloroquine phosphate 250 mg once daily

[P1 81 84A] Eleval B (*Richter*) Tablets each containing amylobarbitone 30 mg methylamphetamine hydrochloride 5 mg and aneurine hydrochloride 5 mg For anxiety states *Dose* one tablet thrice daily (*For Eleval see Vol I 24th Edn p 134*)

[P1 84B] Elimist (*Camden*) Tablets each containing reserpine 1 mg and orphenadrine hydrochloride (q v) 50 mg For the treatment of psychoses and extrapyramidal disturbances. *Dose* initial 6 to 8 tablets daily maintenance 1 to 3 tablets daily

Emylcamate 1 Ethyl 1 methylpropyl carbamate $C_7H_{15}O_2N$=145 2

A tranquilliser which is stated to act by inhibiting the transmission of nerve impulses through interneuncial circuits It is used in the treatment of anxiety and tension and as an adjunct in the treatment of fractures and muscle strain and muscle pain and inflammation *Toxic effects* occasionally reported are mild gastro-intestinal upsets headache dry mouth dizziness palpitation paræsthesia insomnia increased anxiety irritability and skin rash. *Dose* 200 mg thrice daily before food and at night if necessary

Proprietary Name STRIATRAN

[P1 84B] Enavid (*Searle U.K.*) Norethynodrel (q v) 98 5% and 17α ethynyl 3 methoxyœstra 1 3 5(10) triene 17-ol 1 5% in tablets of 5 mg and 10 mg For the treatment of various disorders of menstruation, fertility and pregnancy *Dose* for menstrual disorders menorrhagia metrorrhagia premenstrual tension and idiopathic infertility 5 to 10 mg daily for 20 days from the 5th day of the menstrual cycle For endometriosis 5 mg daily increased slowly over 7 weeks to 20 mg daily for a course of 7 months For recurrent abortion 20 mg daily for

the first 5 months of pregnancy increased if spotting occurs to 40 to 50 mg daily until the bleeding stops *For threatened abortion* 20 to 30 mg daily for 7 to 10 days and then 10 to 20 mg daily until term For infertility due to an inadequate luteal phase 5 mg daily for the last 14 days of the menstrual cycle (*Modification of entry in Vol I 24th Edn p 1395*)

[P1 81 84A] **Endoxana** (*Ward Blenkinsop*) Cyclophosphamide (q v) available in Ampoules of 100 mg (with sodium chloride 45 mg) 200 mg (with sodium chloride 90 mg), 500 mg (with sodium chloride 225 mg) and 1 g (with sodium chloride 450 mg) and as Tablets of 50 mg

Eneril Elixir (*Nicholas*) Contains in each teaspoonful (4 ml) paracetamol (q v) 120 mg

Enterfram (*Genatosan*) A mixture containing in each 30 ml framycetin sulphate 300 mg and light kaolin 6 g For the treatment of diarrhœa bacillary dysentery food poisoning and gastro enteritis *Dose* 2 to 4 tablespoonfuls 4 times daily children 1 to 4 teaspoonfuls 4 times daily

Entobex (*Ciba*) Phanquone (q v) available as enteric coated tablets of 50 mg

Epanutin Parenteral (*Parke Davis*) Phenytoin sodium in vials of 250 mg to be dissolved in 5 ml of diluent provided (propylene glycol 40% alcohol 10% and Water for Injection) to produce a solution containing 50 mg in each ml for intravenous injection (*For other Epanutin preparations see Vol I 24th Edn p 1041*)

[P1] **Ephpect Forte** (*Clarnell*) An elixir containing in each teaspoonful 30 mg of guaiphenesin and 10 mg of diphenamine citrate (2-diethylaminoethyl α-phenylbutyrate citrate $C_{16}H_{25}O_2N.C_6H_8O_7$=455 5) *For the treatment of* cough in bronchitis bronchiectasis bronchial asthma and other conditions requiring increased expectoration (*For Ephpect Elixir see Vol I 24th Edn p 1395*)

Epidexa (*Kerfoot*) Contains pentachylene glycol ether of dichlorocresol and dodecyl(ethoxycarbamoylmethyl)dimethylammonium bromide in the following strengths Cream (5% and 2% respectively) Liquid (3% and 1%) and Powder (3% and 1%) For fungous infections of the skin and nails

Episol (*Crookes*) **Lotion, Cream, and Dusting powder,** each containing 5-chloro 2-(2 *p*-diethylaminoethoxyphenyl)benzothiazole 0 5% For the treatment of athlete's foot and other fungous infections

[P1 84B] **Equadiol** (*Wyeth*) Tablets each containing meprobamate 200 mg and ethinylœstradiol 0 01 mg For the treatment of menopausal symptoms *Dose* 1 to 4 tablets daily

[P1 84B] **Equatrate** (*Wyeth*) Tablets each containing meprobamate 200 mg and pentaerythritol tetranitrate 10 mg For the prevention of attacks of angina pectoris *Dose* 1 or 2 tablets 2 to 4 times daily before meals and at bedtime.

[E] **Erythrocin Filmtabs** (*Abbott*) Film-coated tablets each containing erythromycin stearate equivalent to 100 mg or 250 mg of erythromycin base

[E] **Erythrocin I.M.** (*Abbott*) Erythromycin ethyl succinate dissolved in polyethylene glycol in ampoules of 2 ml multi dose vials of 10 ml and disposable syringes of 1 ml and 2 ml containing the equivalent of erythromycin base 50 mg in each ml *For infections caused by organisms sensitive to erythromycin Dose* 100 mg intramuscularly every 6 to 12 hours

[E] **Erythrocin Lactobionate** (*Abbott*) Erythromycin lactobionate available as a sterile lyophilised powder in 10 ml vials containing the equivalent of 300 mg of erythromycin. For intravenous injection.

[E] **Erythrocin Oral Suspension** (*Abbott*) Contains in each teaspoonful (5 ml) erythromycin stearate equivalent to 100 mg of erythromycin base

(*The above Erythrocin entries replace those in Vol I 24th Edn p 1416*)

Esidrex (*Ciba*) Hydrochlorothiazide (q v) available as tablets of 25 mg and 50 mg Esidrex K tablets each containing hydrochlorothiazide 12 5 mg and potassium chloride 600 mg

[P1 87] **Eskornade Spansules** (*Smith Kline & French*) Sustained release capsules each containing isopropamide odide (q v) 2 5 mg phenylpropanol amine hydrochloride 50 mg and d phenylpyraline hydrochloride 5 mg For nasal congestion *Dose* one capsule every 12 hours

Ethibalm (*Eth ca Laboratories*) A water miscible cream containing acetyl sal cyl c acid 17 5% For the relief of pain in lumbago and muscular stiffness.

Ethionamide Alphaethylisonicotinic Thioamide Alphaethylthioisonicotinamide 2 Ethylisothionicotinamide 1314 TH 2 Ethylpyridine-4 carbothionamide $C_8H_{10}N_2S$ 166 25

Ethionamide is used in the treatment of pulmonary tuberculosis where other drugs are unsuitable because of drug resistant micro-organisms or intolerance *Toxic effects* occur in about half of the patients on a daily dosage of 1 g and may include anorexia nausea salivation vomiting and diarrhœa mental depression headache acne menorrhagia, gynæcomastia and alopecia have been reported *Dose* 0 5 to 1 g daily in divided doses

Proprietary Names TRESCATYL. TRÉCATOR (*Fr*)

Ethoheptazine Citrate Heptacyclazine Wy-401 Ethyl 1 methyl 4 phenyl 1 azacycloheptane-4-carboxylate citrate $C_{18}H_{31}O_9N$=453 5

An analgesic which is chemically allied to pethidine The clinical trials so far reported do not suggest that it is liable to cause addiction It does not appear to sedate or depress cough or respiration Ethoheptazine citrate has been found useful for moderately severe pain of musculoskeletal origin and when given in combination with acetylsalicylic acid the analgesic effects are additive *Toxic effects* nausea dizziness epigastric distress and pruritus *Dose* 75 to 150 mg 3 or 4 times daily

Proprietary Names ZACTANE (*U S A*) it is an ingredient of ZACTIRIN

Ethosuximide PM 671 α Ethyl α methylsuccinimide $C_7H_{11}O_2N$= 141 2

An anticonvulsant used in the treatment of petit mal If grand mal seizures are present it may be administered in conjunction with other anticonvulsants *Toxic effects* most frequently reported are nausea gastric distress drowsiness headaches and occasional skin rashes *Dose* daily adults and children of 6 years and over initial doses of 500 mg adjusted by small increments e g 250 mg every 4 to 7 days until control is achieved with minimum side effects children up to 6 years initial doses of 250 mg adjusted as above Doses of up to 2 g daily are not unusual for adults

Proprietary Names EMESIDA (see p 275) ZARONTIN

[P1 84B] **Ethotoin** (*N.N.D*) AC 695 3 Ethyl 2 4-dioxo 5 phenyl imidazoline 3 Ethyl 5 phenylhydantoin $C_{11}H_{12}O_2N_2$=204 2

An anticonvulsant effective in the treatment of grand mal and some cases of petit mal it may be given alone or in combination with other anticonvulsants Up to 5 g daily has been given. *Toxic effects* are less frequent than with other hydantoin derivatives Occasional reactions may include skin rash dizziness anorexia nausea diplopia nystagmus gastro intestinal disturbance and depression *Dose* 1 g daily in 4 to 6 divided doses after food increasing over several days to 2 to 3 g daily usual dose for children 0 5 to 1 g daily in divided doses

Proprietary Name PEGANONE.

Etisul (*Imperial Chemical Pharmaceuticals*) Diothiophal (q v) in a perfumed cream for junction containing 0* for use mainly in tropical climates. Etisul T is a similar cream for temperate climates

[Pl 84B] **Euvernil** (*Kerfoot*) Sulphaurea (q v) available as tablets of 500 mg

[B] **Evramycin** (*Wyeth*) Triacetyloleandomycin (q v), available as Capsules each containing the equivalent of 250 mg of oleandomycin, and as a Suspension containing in each teaspoonful (5 ml) the equivalent of 125 mg of oleandomycin

Extrinemin (*Weddel Pharmaceuticals*) Liquid containing in each fluid ounce soluble liver fraction 260 mg ferrous sulphate 525 mg ascorbic acid 28 mg aneurine hydrochloride 2 mg riboflavine 2 mg., nicotinamide 17 5 mg liquid glucose 14 g and alcohol (90%) 3 64 ml For nutritional iron deficiency and secondary anæmias *Dose* one tablespoonful thrice daily Capsules each containing dried liver extract 150 mg dried ferrous sulphate 200 mg ascorbic acid 15 mg aneurine hydrochloride 1 mg riboflavine 1 mg and nicotinamide 10 mg *Dose* one capsule thrice daily after meals

[Pl 87] **Fabahistin** (formerly known as Incidal) (*F B A Pharmaceuticals*) Methylhydrolin naphthalene 1 5 disulphonate (q v) available as tablets of 50 mg

[B] **Falapen** (*Duncan Flockhart*) Benzylpenicillin, available as slow release tablets of 500 000 units *Dose* one tablet every 12 hours

Febrilix (*Boots*) Elixir containing in each fluid drachm paracetamol (q v) 120 mg

[Pl 84B] **Fentazin** (*Allen & Hanburys*) Perphenazine (q v) available as Tablets of 2 mg 4 mg and 8 mg and as an Injection in ampoules of 1 ml each containing 5 mg

Feravol Syrup (*Carlton Laboratories*) Contains in each fluid drachm ferrous sulphate 3 grains, aneurine hydrochloride 0 4 mg riboflavine 1 0 mg ascorbic acid 9 0 mg., and liquid glucose 20 grains

Feravol Tablets (*Carlton Laboratories*) Each contains ferrous sulphate 3 grains aneurine hydrochloride 0 4 mg riboflavine 1 0 mg and ascorbic acid 9-0 mg with a trace of copper

Ferrodic Tablets (*Allen & Hanburys*) Each contains ferrous iron (as carbonate) 50 mg and ascorbic acid 12 5 mg For the treatment of hypochromic anæmias including nutritional anæmia and post gastrectomy iron deficiency *Dose* 1 or 2 tablets to be sucked or chewed thrice daily after meals

Ferroids (*Riker*) Tablets each containing iron aminoates (iron chelated with a complex of amino-acids) 350 mg (equivalent to 35 mg Fe) and aneurine hydrochloride 1 mg For the treatment of iron deficiency anæmias *Dose* 1 or 2 tablets 3 or 4 times daily

Ferrous Fumarate $C_4H_2O_4Fe = 169\ 9$

Ferrous fumarate is administered by mouth for the prophylaxis and treatment of iron-deficiency anæmias It is well absorbed and is said to be less likely to cause gastro intestinal disturbances than other orally administered iron compounds. *Usual dose* 200 to 400 mg (equivalent to about 65 to 130 mg of Fe) thrice daily

Proprietary Names FERSAMAL CITRON (*U.S.A.*), TOLERON (*U S.A.*) it is an ingredient of PERIHEMIN CAPSULES.

Fersamal (*Glaxo*) Ferrous fumarate (q v) available as a Syrup containing in each teaspoonful (3 5 ml) 100 mg and as Tablets of 200 mg *Usual dose* 1 or 2 tablets or 2 to 4 teaspoonfuls of syrup thrice daily (*Modification of entry in Vol I 24th Edn p 1395*)

Fertilol Cream (*Vitamins Ltd*) Contains in each g vitamin A 50 000 units and vitamin E 50 units in a bland basis containing wheat germ oil (*New formula replacing that given in Vol I 24th Edn p 343*)

Fibrindex (*Ortho*) Lyophilised standardised thrombin (human) for diagnostic use only in an poulea each containing 50 N I H units—for definition of N I H unit see Vol I 24th Edn p. 983

Filon (*West Pharmaceutical Co*) Tablets each containing 50 mg of phenmetrazine theoclate (q v) and 20 mg of phenbutrazate hydrochloride [2 (3 methyl 2 phenylmorpholino)ethyl α phenylbutyrate hydrochloride $C_{23}H_{27}O_2N$ HCl=401 9] For the treatment of obesity *Dose* one tablet thrice daily ½ to 1 hour before meals

Flagyl (*May & Baker*) Metronidazole (q v) available as tablets of 200 mg

[P1 87] **Flavelix** (*Fletcher Fletcher & Co*) Linctus containing in each teaspoonful (4 ml) mepyramine maleate 12 5 mg ephedrine hydrochloride 10 mg ammonium chloride 90 mg and sodium citrate 40 mg An antihistaminic and antispasmodic expectorant. *Dose* 2 teaspoonfuls 3 or 4 times daily

Fletcher's Disposable Unit Enema (*Fletcher Fletcher & Co*) An aqueous solution of sodium acid phosphate 10% and sodium phosphate 8% in a plastic bag containing 4½ fl oz fitted with rectal tube

[P1 84B] **Flexin** (*McNeil Laboratories*) Zoxazolamine available as tablets of 250 mg

[B] **Florinef Acetate Tablets** (*Squibb*) Fludrocortisone acetate in tablets of 0 1 mg and 1 mg the higher strength is available to hospitals only (*For other Florinef preparations see Vol I 24th Edn, p 500*)

[P1 84B] **Fluopromazine Hydrochloride** Trifluopromazine Hydrochloride (*N.N.D*) 10 (3 Dimethylaminopropyl) 2 trifluoromethylphenothiazine hydrochloride $C_{18}H_{19}N_2SF_3$ HCl=388 9

Fluopromazine hydrochloride has similar uses to chlorpromazine hydrochloride (Vol I, 24th Edn p 386) in the treatment of psychoses and conditions characterised by vomiting *Toxic effects* as for chlorpromazine except that jaundice and blood dyscrasias occur less frequently *Contra indicated* in patients under the influence of alcohol, barbiturates or opiates *Dose* 25 mg thrice daily by mouth rising to a maintenance dose if necessary of 50 mg thrice daily, 20 to 50 mg thrice daily by intramuscular injection, 2 to 10 mg by single intravenous injection Children, by mouth for nausea 0 2 to 0 25 mg per kg body weight by mouth, for mental disorders 10 to 50 mg thrice daily, adjusted according to the response by intramuscular injection for all conditions 0 2 to 0 25 mg per kg body weight, by single intravenous injection 2 mg

Proprietary Names Vespral Siquil (*abroad*) Vesprin (*U.S.A.*)

[P1 84B] **Fluoxymesterone** (*N.N.D*) Fluorohydroxymethyltestosterone Fluoxymesterone 9α Fluoro 11β 17β-dihydroxy 17α methylandrost 4-en 3-one $C_{20}H_{29}O_3F$=336 5

An anabolic and androgenic agent which is about five times as active as methyltestosterone Its actions and uses, toxic effects and contraindications are similar to those of other androgens (Vol 1 24th Edn, p 973) Doses of fluoxymesterone of up to 20 mg or even 40 mg daily have been given for inoperable carcinoma of the breast *Dose* 2 5 to 10 mg daily

Proprietary Names Ultandren Halotestin (*U.S.A.*)

[P1 84B] **Fluphenazine Hydrochloride.** 10 [3 [4-(2 Hydroxyethyl)-piperazin 1 yl]propyl] 2 trifluoromethylphenothiazine dihydrochloride, $C_{22}H_{26}ON_3SF_3$ 2HCl=510 5

Fluphenazine hydrochloride is a phenothiazine derivative which is said to have a prolonged tranquillising action to have virtually no sedative effect and to be 10 to 20 times as potent as chlorpromazine *Toxic effects* it is claimed that side-effects are unlikely in the recommended dosage of

1 to 2 mg , but larger doses are likely to produce the side effects characteristic of phenothiazine derivatives as described under chlorpromazine (Vol I, 24th Edn, p 386) *Contra indications* as with other phenothiazine derivatives, the drug is contra indicated in patients with severe depression. *Dose*, for emotional stress and anxiety 1 mg daily which may be increased if necessary to 1 mg twice daily or 2 mg daily for patients with relatively severe symptoms Daily doses above 2 mg should be given with caution

Proprietary Names MODITEN, PERMITIL (*U S A*) PROLIXIN (*U S A*)

[B] Flurymal (*Schering A G Berlin Pharmethicals London*) Pessaries each containing hydrocortisone sodium hemisulphate 15 mg and hexachlorophane 5 mg *For the treatment of leucorrhœa and non specific vaginitis Administration first day, one pessary in the morning and one in the evening second to* fifth day, one pessary at bedtime

Fovane (*Pfizer*) Benzthiazide (q v) available as tablets of 50 mg

Frador (Bell (John) Hills & Lucas) A paint containing menthol 0·25% prepared storax 6 7% and benzoin 10% in a spirituous vehicle. For application to mouth ulcers.

[B] Framycort (*Genatosan*) Framycetin sulphate 0 5% and hydrocortisone acetate 0 5% in Ear- and Eye-drops in bottles of 5 ml , in Eye Ointment in tubes of 3 5 g , in Lotion in bottles of 20 ml , and in Ointment in tubes of 10 g

Framygen (*Genatosan*) Framycetin sulphate 0 5% in Cream in tubes of 15 g in Ear- and Eye-drops in bottles of 5 ml and in Eye Ointment in tubes of 3 5 g

Frenantol (*Leda*) Paroxypropione (*p*-Hydroxypropiophenone, $C_9H_{10}O_2$= 150 2) available as Tablets of 250 mg A pituitary gonadotrophic hormone inhibitor, for the control of pituitary hyperactivity *Dose* initial 2 tablets thrice daily, maintenance, one tablet thrice daily Frenantol Ointment contains paroxypropione 12%, for use in disorders of pigmentation

Fulcin (*Imperial Chemical Pharmaceuticals*) Griseofulvin (q v) available as tablets of 250 mg

Fungizone (*Squibb*) Amphotericin B (q v) available as a dry powder in vials each containing 50 mg

Furaltadone. Furmethonol 5 Morpholinomethyl 3 (5 nitrofurfuryl-ideneamino)oxazolidin-2-one, $C_{13}H_{16}O_6N_4$=324 3

An antibacterial agent active against some staphylococci, most streptococci, especially *Strep pneumoniæ*, *Bacillus anthracis*, *B subtilis*, many strains of *Escherichia coli* and some species of *Clostridium* and *Vibrio* It has been used in the treatment of pulmonary infections, abscesses, cellulitis, pyodermas, septicæmia, wound infections, and urinary and intra uterine infections *Toxic effects* gastric distress, nausea, vomiting, diarrhœa, skin reactions eosinophilia and diplopia. Alcohol should not be given to patients taking furaltadone *Contra indicated* in peptic ulcer and renal or hepatic dysfunction *Dose* 250 to 500 mg with food 4 times daily, infants and young children, 22 to 25 mg per kg body-weight daily with food in 4 divided doses older children, 15 to 22 mg per kg body-weight daily with food in 4 divided doses

In a leading article in *Brit med. J.*, 1/1961, 264, in which three papers on furaltadone by McCabe *et al.*, Byrne and Goldsmith, and Mast (*New Engl J Med*, 1960, *263*, 927 962, and 963) are reviewed, it is considered that the general conclusion to be drawn from the findings of these workers is that furaltadone has more potential toxicity and less antibacterial activity than appears originally to have been thought and that there appears to be no present indication for the use of furaltadone in preference to an appropriate antibiotic

Proprietary Name ALTAFUR.

Furamide (*Boots*) Diloxanide furoate (q v), available as tablets of 500 mg

Furazolidone (*U S N F*) (see also Vol. I 24th Edn, p 1188) 3 (5 Nitrofurfurylideneamino)oxazolidin 2-one, $C_8H_7O_5N_3$=225 2

In addition to its local use in vaginal trichomoniasis furazolidone is given by mouth in bacterial enteritis and diarrhœa *Toxic effects* so far reported after oral administration include nausea, vomiting, and allergic rashes *Dose* 100 mg 4 times daily, children under 1 year 8 to 16 mg 4 times daily, 1 to 5 years 25 to 33 mg 4 times daily, 5 years and over 50 mg 4 times daily

Storage it should be kept in well closed containers protected from direct sunlight

Proprietary Names FUROXONE TRICOFURON (*U.S.A.*)

Furoxone (*Smith Kline & French*) Furazolidone (q v) available as Tablets of 100 mg and as a Suspension containing in each tablespoonful 100 mg with kaolin and pectin.

[P1 81] **GT 50A** (*Geistlich*) An injection in ampoules of 5 ml. each containing calciferol 500 000 units aneurine 5 mg neostigmine 0 25 mg and carbachol 0 08 mg (*Modification of entry in Vol I 24th Edn p 1396*)

[P1 81 84B] **GT 50B** (*Geistlich*) Of similar composition to GT 50A but contains œstrone 1 mg and progesterone 5 mg in place of aneurine. (*Modification of entry in Vol. I 24th Edn p 1396*)

Gastrolav (*Armour*) Lyophilised chymotrypsin (q v) in capsules of 7 mg for use in diagnostic gastric lavage

[B] **Genacort** (*Genatosan*) Hydrocortisone in a non greasy Cream and a greasy Ointment (Hydrocortisone Ointment B P) in two strengths 0 5% and 1% Lotion contains hydrocortisone acetate in three strengths, 0 25%, 0 5% and 1% in an aqueous vehicle (*Modification of entry in Vol I 24th Edn p 1396*)

Geriden (*Denver Laboratories*) Tablets each containing leptazol 100 mg and nicotinic acid 50 mg and Elixir containing in each teaspoonful the equivalent of one tablet. For the treatment of senile retrogression *Dose* one tablet or one teaspoonful of elixir twice or thrice daily

Geriplex Capsules (*Parke Davis*) Each contains rutin 25 mg choline dihydrogen citrate 20 mg riboflavine 5 mg cyanocobalamin 2 µg vitamin E 5 units vitamin A 5000 units, aneurine mononitrate 5 mg ascorbic acid 50 mg nicotinamide 15 mg Taka Diastase 1 gr a n ferrous sulphate 30 mg copper sulphate 4 mg manganese sulphate (monohydrate) 4 mg zinc sulphate 2 mg calcium hydrogen phosphate (anhydrous) 200 mg A mineral vitamin supplement. *Dose* one capsule daily

[P1 84B] **Gestanin** (*Organon*) Allylœstrenol (q v) available as tablets of 5 mg For the treatment of dysfunctional uterine bleeding premenstrual tension habitual and threatened abortion and impaired fertility

Gevodin (*Geistlich*) Tablets each containing 4-isopropyl 2 methyl 3 [*N* methyl *N* (α methylphenethyl)aminomethyl] - 1 - phenylpyrazol 5 one ($C_{24}H_{31}ON_3$=377 5 an analgesic) 25 mg paracetamol (q v) 250 mg propyphenazone 75 mg and caffeine 30 mg Antipyretic and analgesic *Dose* 1 to 2 tablets up to thrice daily

[P1 84B] **Glucophage** (*Rona Laboratories*) Metformin hydrochloride (q v) available as tablets of 500 mg

Glumorin (*F B A Pharmaceuticals*) Kallikrein (q v) in Ampoules each containing 10 biological units and Tablets each containing 30 biolog cal units. A vasodilator for use in disorders of the circulatory system

Glyceryl Triacetate (*U S.N F 1955*) (see also Vol I 24th Edn p 1372) Triacetin. $C_9H_{14}O_6$=218 2

Glyceryl triacetate has been reported to have fungistatic properties and it has been applied topically usually as a 25% solution or cream, in the treatment of certain superficial mycotic infections. According to

Knight (*J Soc cosmet Chem* 1959, *10*, 307) glyceryl triacetate acts by providing a constant level of mildly fungistatic acetic acid, the acetic acid being liberated after enzymatic hydrolysis of the ester bond by esterases from fungi serum and skin

Proprietary Name GLYPED

Glycinal (*Medo Chemicals*) Tablets each containing dihydroxyaluminium aminoacetate 750 mg magnesium trisilicate 250 mg and peppermint oil q s A long acting antacid *Dose* 1 or 2 tablets to be sucked at frequent intervals. (*Modification of entry in Vol I, 24th Edn p 864*)

[P] **Glycodine** (*Duncan Flockhart*) *A sedative cough mixture containing in* each fluid drachm pholcodine 0 123 grain solution of tolu 7 18 minims, syrup of wild cherry 7 18 minims and glycerin 44 68 minims *Dose* 1 to 2 teaspoonfuls 3 or 4 times daily

Glyped (*Imperial Chemical Pharmaceuticals*) Glyceryl triacetate (q v) available as a Cream containing 25% in an emollient basis For the prevention and treatment of superficial dermatophytoses especially athlete s foot and dhobie itch

[P] **Gresuton** (*F B A Pharmaceuticals*) Capsules each containing aneurine hydrochloride 3 3 mg yeast extract 33 mg cyanocobalamin 1 μg vitamin A palmitate 2500 units vitamin E 1 5 mg kallikrein (q v) 5 biological units reserpine 0 033 mg and theophylline 15 mg For geriatric disorders. *Dose* 1 or 2 capsules daily

Griseofulvin Curling Factor 7 Chloro-4 6 dimethoxycoumaran 3 one 2 spiro 1′ (2 methoxy 6 methylcyclohex 2-en-4 one), $C_{17}H_{17}O_6Cl$ = 352 8

An antibiotic for the systemic treatment of ringworm and favus infections Treatment of ringworm of the scalp should last at least 4 weeks, but 6 months is usual for ringworm of the nails, the duration of the treatment depends on the type of infection and the time required for the replacement of infected tissues Griseofulvin may potentiate the effect of alcohol *Toxic effects* are usually slight, rare, and transient, but a vesicular eruption and angioneurotic œdema have been reported *Dose* initial, 2 g daily for severe cases, maintenance 1 g daily children, 20 mg per kg body-weight daily

Proprietary Names FULCIN, GRISOVIN FULVICIN (*U.S.A.*) GRIFULVIN (*U S A*), LAMORYL (*Dan.*)

Grisovin (*Glaxo*) *Griseofulvin* (*see above*), available as tablets of 250 mg

Guaiphenesin (see also Vol I, 24th Edn under Respenyl p 506) Guaiacol Glycerol Ether Guaiacyl Glyceryl Ether 3 (o Methoxyphenoxy)propane 1 2 diol, $C_{10}H_{14}O_4$ = 198 2

An expectorant which liquefies mucus It is said to cause no gastric irritation and to be non toxic even in very large doses *Dose* 100 mg every 2 hours

Proprietary Names RESPENYL (Vol. I 24th Edn p 506) REORGANIN (*Ger*), it is an ingredient of DISTOLYT, PULMODRINE EXPECTORANT, ROBITUSSIN, and SYNUSON

Guanethidine Sulphate SU 5864 *N*-(2 Perhydroazocin-1′ ylethyl)-guanidine sulphate $(C_{10}H_{21}N_4)_2 \cdot H_2SO_4$ = 494 7

An antihypertensive drug which acts by inhibiting the peripheral sympathetic nervous system It is suitable for all types of hypertension and can be given in conjunction with reserpine It is administered by mouth as a single daily dose, and doses up to 150 mg have been given *Toxic effects* diarrhœa and muscular pain and weakness, overdosage produces orthostatic collapse, nausea, nasal stuffiness, and blurring of

vision may also occur *Contra indicated* in phæochromocytoma or recent myocardial or cerebral infarction Care is necessary in treating patients with renal failure. *Dose* initial 10 mg daily for one week increasing by 10 mg daily every week to an average maintenance dose of 30 to 60 mg daily

For a comparison of bretylium and guanethidine see *Lancet*, I/1961 91
Proprietary Name ISMELIN

Halopenium Chloride *p* Bromobenzyl 3-(4-chloro 2 isopropyl *m* tolyloxy)propyldimethylammonium chloride $C_{21}H_{28}ONBrCl_2$=475 3

An antibacterial and antifungal agent. It is used topically in the treatment of infections of the mouth and throat. *Dose* 5 mg
Proprietary Name it is an ingredient of TRILLETS

Harker's Disposable Enema (*Harker Stagg*) A mixture of sodium acid phosphate and sodium phosphate in a plastic bag of 120-ml capacity fitted with a catheter When the bag is filled with water and the contents dissolved the solution contains sodium acid phosphate 18% and sodium phosphate 8%

Hexadimethrine Bromide *NNN'N'* Tetramethylhexamethylenediamine–trimethylene bromide polymer $(C_{13}H_{30}N_2Br_2)_n$ where *n* may be 30 to 45

A heparin antagonist administered by slow intravenous injection in concentrations of 1 mg in 1 ml of Sodium Chloride Injection or 5% Dextrose Injection *Toxic effects* transient hypotension *Contra indications* the drug must be given with care to patients with impaired cardiovascular or respiratory function *Dose* 1 mg per 100 units of heparin by intravenous injection repeated if necessary
Proprietary Name POLYBRENE.

Hexopal (*Bayer Prod*) Inositol hexanicotinate, available as tablets of 200 mg For the treatment of Raynaud's disease, acrocyanosis, and chilblains *Dose* initial 2 tablets thrice daily increased if necessary up to 16 to 20 tablets daily

Hibitane (*Imperial Chemical Pharmaceuticals*) Chlorhexidine available as the dihydrochloride (see Vol I 24th Edn, p 1026) in powder form and as [P1] **Lozenges** each containing 5 mg with benzocaine 2 mg and as chlorhexidine gluconate (q v) in the following preparations Antiseptic Cream containing 1% in a water miscible base Concentrate containing 5% with a surface-active agent in a red-coloured aqueous solution Gluconate Solution containing 20% (B P C) and Obstetric Cream containing 1% in a pourable water miscible base (*Modification of the entries under Hibitane in Vol I 24th Edn p 1026 several of these products were formerly prepared with the diacetate*)

Histamal (*Richter*) Nasal nebuliser containing mepyramine maleate 0 5% ephedrine hydrochloride 0 75% and chlorbutol 0 5 % in isotonic solution. For local application in hay fever and colds

[P1 84B] **Hostacain Special** (*Hoechst Horlicks*) A local anæsthetic in dental cartridges of 1 8 ml containing in each ml butylamino-N-(6-chloro-2-methylphenyl)acetamide (hostacain) phosphate 20 mg procaine phosphate 10 mg adrenaline 0 02 mg and methyl hydroxybenzoate 1 0 mg *Dose* for infiltration anæsthesia 0 3 to 1 0 ml for block anæsthesia, 1 5 to 1 8 ml

[P1 84B] **Hostacain with Noradrenaline** (*Hoechst Horlicks*) A local anæsthetic in dental cartridges of 1 8 ml containing the same anæsthetics as Hostacain Special (see above) but with noradrenaline 0 04 mg in each ml instead of adrenaline.

[B] **Humatin** (*Parke Davis*) Paromomycin sulphate available as capsules each containing the equivalent of 250 mg of paromomycin (q v)

Hycolin (*Pearson's Antiseptic Co*) A green disinfecting fluid containing chloroxylenol 2-benzyl-4-chlorophenol ($C_{13}H_{11}OCl$=218 7) sodium *o*-phenylphenate ($C_{12}H_9ONa$=192 2) chlorocresol, and sodium pentachlorophenate (C_6OCl_5Na=288 3) with an anionic emulsifier in alcohol available

as Hycolin Concentrate, containing 16% of the mixed phenols, to be diluted 1 in 160 for general ward and theatre use, for the storage of instruments, thermometers and sutures, for the disinfection of baths and sinks and for preoperative skin preparation, as Hycolin Standard, containing 12% of the mixed phenols for disinfecting blankets and infected linen and for routine disinfection and cleaning of kitchens and bathrooms in strengths from 1 in 200 to 1 in 80, and as Hycolin Antibacterial Cream, containing hycolin 2 5%, equivalent to 0 4% of the mixed phenols, in a vanishing-cream basis, for use as a hand cream for nursing and medical staff as a nasal bactericide, as a dressing for the umbilical stump of newborn infants, and as an obstetric cream.

Hydratene Tablets (*Coates & Cooper*) Each contains the equivalent of chloral hydrate 4 grains and paracetamol (q v) 6 grains in the form of a complex For insomnia in the presence of pain *Dose* 1 or 2 tablets

Hydrenox (*Boots*) Hydroflumethiazide (q v) available as tablets of 50 mg , and, as Hydrenox-M tablets of 25 mg

Hydril (*Lewis & Burrows*) Hydrochlorothiazide (q v), available as tablets of 25 mg (Hydril-25) and of 50 mg (Hydril-50)

Hydril B (*Lewis & Burrows*) Bendrofluazide (q v), available as tablets of 2 5 mg (Hydril B 2 5) and of 5 mg (Hydril B-5)

Hydril F (*Lewis & Burrows*) Hydroflumethiazide (q v), available as tablets of 25 mg (Hydril-F-25) and of 50 mg (Hydril F-50)

Hydrochlorothiazide Chlorhydrothiazide, SU 5879 6 Chloro-3,4-dihydro-7-sulphamoylbenzo-1,2,4 thiadiazine 1,1-dioxide, $C_7H_8O_4N_3S_2Cl$ =297 8

Hydrochlorothiazide has similar actions and uses to chlorothiazide (p 198), but it may be effective for patients in whom chlorothiazide is ineffective or produces side effects It is about 10 times more potent than chlorothiazide, the maximum effect is attained after a few hours and a residual effect may persist after 12 hours *Toxic effects* and *contra indications* as for Chlorothiazide (p 198) *Dose*, daily in one or two doses in the morning initial, 25 to 200 mg , maintenance, 25 to 100 mg

Storage it should be stored protected from light

Proprietary Names Direnia Esidrex Hydril Hydrosaluric Hydrothida, Dichlotride (*U S A*) Hydrodiuril (*U S A*) Oretic (*U S A*) it is an ingredient of Esidrex K, Hydrosaluric-K, Salupres Serpasil-Esidrex, Serpasil-Esidrex K, and Tensival.

[B] Hydrocortamate Hydrochloride (*N N D*) Ethamicort; Hydrocortisone Diethylaminoacetate Hydrochloride 21-Diethylaminoacetoxy-11β 17α-dihydroxypregn-4-ene-3,20-dione hydrochloride, $C_{27}H_{41}O_5N$, HCl=512 1

A glucocorticoid for topical application in the treatment of dermatoses It is used similarly to hydrocortisone but it is said to be twice as potent—see Vol I, 24th Edn, p 481.

Proprietary Names Magnacort (*U S A*), it is an ingredient of Chymar Ointment

[B] Hydrocortistab Soluble (*Boots*) Hydrocortisone sodium succinate as dry powder in vials each containing the equivalent of 100 mg of hydrocortisone, supplied with ampoules of sterile water for intravenous injection (*For other Hydrocortistab preparations see Vol. I, 24th Edn, pp 486 and 490*)

[P t B] Hydrocortisyl Skin Spray (*Roussel*) Contains hydrocortisone 0 5% (*For other Hydrocortisyl preparations see Vol. I, 24th Edn pp 486 and 490*)

Hydroflumethiazide. Trifluoromethylhydrothiazide. 3,4-Dihydro-7-sulphamoyl-6-trifluoromethylbenzo-1,2,4-thiadiazine 1,1-dioxide, $C_8H_8O_4N_3S_2F_3$=331 3

Hydroflumethiazide has similar actions and uses to chlorothiazide (p 198) but the excretion of potassium caused by hydroflumethiazide

is said to be less than with chlorothiazide It is about 10 times as potent as chlorothiazide *Toxic effects* and *contra indications* as for Chlorothiazide (p 198) *Dose* initial, 100 to 200 mg daily in one or two doses in the morning, maintenance 50 to 100 mg daily or on alternate days

Proprietary Names Di Ademil Hydrenox, Hydrenox M Hydril-F NaClex Rontyl (*Can*), Saluron (*U.S.A*) it is an ingredient of Di Ademil K and Rautrax.

[B] Hydromycin-D (*Boots*) Prednisolone 0 5% and neomycin sulphate 0 5% in Ear/Eye Drops in bottles of 3 ml, Ear/Eye Ointment in tubes of 3 g Lotion in bottles of 15 ml and Ointment in tubes of 5 g and 15 g For inflammatory conditions either with infection or to prevent secondary infection. (*These replace the Hydromycin preparations described in Vol. I 24th Edn, p 491*)

HydroSaluric (*Merck Sharp & Dohme*) Hydrochlorothiazide (q v) available as tablets of 25 mg and 50 mg

HydroSaluric-K (*Merck Sharp & Dohme*) Tablets each containing hydrochlorothiazide (q v) 25 mg and potassium chloride 572 mg

Hydrothide (*Medo-Chemicals*) Hydrochlorothiazide (q v) available as tablets of 25 mg

Hydroxychloroquine Sulphate (*B P Add.*) Hydroxychloroquin Sulphate 7 Chloro-4-[4-(*N* ethyl *N* 2 hydroxyethylamino)methylbutylamino]quinoline sulphate, $C_{18}H_{26}ON_3Cl, H_2SO_4$=434 0

An antimalarial drug with a marked effect on the lesions of discoid lupus erythematosus It may also prove of value in the treatment of rheumatoid arthritis and has been used in the treatment of giardiasis For the treatment of malaria an initial dose of 800 mg is followed 6 to 8 hours later by a dose of 400 mg and a further 400 mg on each of two successive days To eradicate infection by *Plasmodium falciparum* and to terminate an acute attack by *P vivax*, a single dose of 800 mg has been used Weekly doses of 400 mg prevent recurrent attacks of *P vivax* For discoid lupus erythematosus the initial daily dose recommended is 800 mg to 1200 mg which is reduced after several weeks either gradually or abruptly depending on the response of the patient. The dosage given for this condition ranges from 400 to 2000 mg daily. In the treatment of rheumatoid arthritis the initial daily dose is 800 to 1200 mg which may be reduced to 400 mg daily after the remission of symptoms For giardiasis, doses of 200 mg thrice daily for 5 days have been used

Toxic effects, which may be avoided by decreasing the dose, may include gastro intestinal disturbances, and, less frequently, dermatitis, transitory giddiness, headaches, lassitude, and nervousness. Visual disturbances have occasionally been reported *Contra indicated* in hepatic disease or if skin reactions occur The drug should not be given to patients with psoriasis or a history of psoriasis

Dose see above

Storage it should be protected from light

Proprietary Name Plaquenil.

(*The above entry replaces the entry in Vol I, 24th Edn, p 1170*)

[P1 84B] **Hydroxyprogesterone Caproate** (*N.N.D*) 17α Hexanoyloxypregn-4-ene 3,20-dione, $C_{27}H_{40}O_4$=428 6

A progestogen with similar uses to progesterone (Vol I, 24th Edn, p 970) but with a longer duration of action *Toxic effects* large doses occasionally exacerbate existing asthma, epilepsy and migraine *Dose* by intramuscular injection as a single dose, 125 to 250 mg

Proprietary Names Primolut-Depot (see p 277), Delalutin (*U.S.A*) it is an ingredient of Primosiston

Hygroton (*Geigy*) Chlorthalidone (q v), available as tablets of 100 mg

Hypaque 85% (*Bayer Prod*) Sodium diatrizoate 28 33% and the *N*-methylglucamine salt of diatrizoic acid 56 67%, in aqueous solution in ampoules of 20 ml For angiocardiography and pulmonary arteriography *Dose* 50 ml. intravenously, children 1 to 2 ml per kg body-weight (*See also Vol I 24th Edn, p 802*)

Hypertensin-Ciba (*Ciba*). A polypeptide containing the following amino-acids asparagine, arginine, valine, tyrosine, histidine, proline and phenylalanine, in 2 ml ampoules containing 0 5 mg of freeze dried powder For the treatment of severe states of shock or collapse *Dose* by continuous intravenous infusion in a concentration of 1 µg per ml at an initial rate of 1 ml per minute which may be adjusted if necessary to maintain the blood pressure

[R] Icipen V (*Imperial Chemical Pharmaceuticals*) Phenoxymethylpenicillin, available as a Syrup (supplied as granules for reconstitution with water before use) containing in each teaspoonful (5 ml) 150 mg (as the potassium salt) and as Tablets of 300 mg (as the potassium salt)

Ilidar (*Roche*) Azapetine phosphate, available as tablets of 25 mg

[R] Ilosone (*Lilly*) Erythromycin estolate, available as Pulvules (capsules) of 125 mg and 250 mg and as a Suspension (supplied as granules for reconstitution with water before use) containing in each teaspoonful (5 ml) 125 mg For infections due to organisms sensitive to erythromycin *Dose* 250 mg every 6 hours, children, ½ to 2 teaspoonfuls of suspension every 6 hours

[P1 84B] **Imipramine Hydrochloride.** *N*-(γ-Dimethylaminopropyl)iminodibenzyl Hydrochloride 1-(3-Dimethylaminopropyl)-4,5-dihydro-2,3-6,7-dibenz-1*H* azepine hydrochloride, $C_{19}H_{24}N_2,HCl = 316\ 9$

An antidepressant drug chiefly used in the treatment of endogenous and involutional depressive states It is given by mouth or by intramuscular injection. *Toxic effects* include dryness of the mouth, tachycardia, blurred vision, sweating, and eosinophilia, and usually disappear as treatment is continued *Contra indicated* in epilepsy and schizophrenia. *Dose* by mouth, in divided doses initial, first and second day, 100 mg, rising by 50 mg daily to 250 mg daily, and this dose is continued until there is clinical improvement, maintenance, 50 to 150 mg daily

Proprietary Name TOFRANIL

[R] Inapasade (*Smith & Nephew*) Granules processed with fat in packets each containing sodium aminosalicylate 6 g and isoniazid 150 mg For the treatment of tuberculosis. *Dose* the contents of one packet twice daily

Inproquone. 2,5-Di(ethyleneimino)-3,6 dipropoxy-*p*-benzoquinone, $C_{18}H_{22}O_4N_2 = 306\ 4$

A cytostatic agent used for the treatment of chronic leukæmia, Hodgkin's disease, and some sarcomas and carcinomas It is administered by mouth and by injection, intravenously or directly into the tumour *Toxic effects* gastro-intestinal disturbance, rashes, skin irritation, and thrombocytopenia *Contra-indications* inproquone should not be given to adolescents or at the same time as radiotherapy *Dose* 5 mg thrice daily with food, 5 mg rising to 20 mg daily if necessary by intravenous injection

[P1] Intralgin (*Riker*). An application containing benzocaine 1 86%, salicylamide 4 65%, and isopropyl alcohol 60% Also Gel containing benzocaine 2% and salicylamide 5%. For strains, sprains, and unbroken chilblains.

[P1 81 84A] Intraval Sodium Suppositories (*May & Baker*). Thiopentone sodium in suppositories of 125 mg, 250 mg, 500 mg, and 750 mg (*See also Vol I, 24th Edn, p 260*)

[B] **Iproniazid Phosphate** (*N.N.D.*). *N*-Isonicotinoyl-*N'*-isopropylhydrazine phosphate, $C_9H_{13}ON_3, H_3PO_4$=277·2.

Iproniazid phosphate has been used for its tuberculostatic action (see Iproniazid, Vol. I, 24th Edn, p. 1207), but owing to the frequent side-effects, it is now rarely used except for the treatment of angina pectoris and moderate or severe depressive states which have failed to respond to other treatment. Iproniazid potentiates the action of alcohol, barbiturates, cocaine, ether, pethidine, phenylephrine, and procaine.

Toxic effects: these are frequent and similar to those caused by isoniazid (Vol. I, 24th Edn, p. 1202) but also include reversible psychotic personality changes, postural hypotension, neurological side-effects such as vertigo and muscular weakness, peripheral œdema, dyspnœa, gastro-intestinal disturbance, impotence, and mild hypochromic anæmia. The most serious toxic effects, although probably of low incidence, are jaundice and fulminating hepatitis. *Contra-indications:* liver disease, impaired renal function, and possibly schizophrenia and epilepsy.

Dose, daily as a single dose for non-tuberculous conditions. Initial, 100 to 150 mg, continued until there is clinical improvement, maintenance, 50 to 100 mg.

Proprietary Name: MARSILID.

[P1 84B] **Irgapyrin** (*Geigy*) Amidopyrine and phenylbutazone in equal parts, available as Tablets of 250 mg, and as Ampoules of 5 ml. containing amidopyrine 15% and phenylbutazone sodium 15% with lignocaine hydrochloride 1%. For the treatment of rheumatic disorders and for the relief of pain in other conditions. *Dose* one tablet twice or thrice daily, ampoules, 5 ml. daily by slow intramuscular injection. (*Modification of entry in Vol. I, 24th Edn, p. 34*)

Ismelin (*Ciba*) Guanethidine sulphate (q.v.), available as tablets of 10 mg. and 25 mg.

Isoaminile Citrate. γ-Dimethylamino-α-isopropyl-α-phenylvaleronitrile citrate, $C_{14}H_{24}N_2, C_6H_8O_7$=436·5.

An antitussive agent which is said to have no side-effects. *Usual dose*: 40 mg. 3 to 5 times daily.

Proprietary Name: DIMYRIL.

[P1 84B] **Isocarboxazid.** Ro 5-0831. *N*-Benzyl-*N'*-5-methylisoxazol-3-ylcarbonylhydrazine, $C_{12}H_{13}O_2N_3$=231·3.

A mono-amine oxidase inhibitor used in the treatment of depression and angina pectoris. It potentiates the action of alcohol, barbiturates, cocaine, ether, pethidine, phenylephrine, and procaine. *Toxic effects:* as for Iproniazid Phosphate (see above) but less frequent and seldom severe. *Contra-indicated* in renal dysfunction. *Dose*, daily as a single dose. initial, 30 mg. continued until there is clinical improvement; maintenance, 10 to 20 mg. Max. daily dose 30 mg.

Proprietary Name. MARPLAN.

Isopropamide Iodide (*N.N.D.*). R-79, SKF-4740. (3-Carbamoyl-3,3-diphenylpropyl)methyldi-isopropylammonium iodide, $C_{23}H_{33}ON_2I$ =480·4.

An anticholinergic compound used in the management of peptic ulcer and hypermotility and hyperacidity of the gastro-intestinal tract. *Toxic effects:* dryness of the mouth, blurring of the vision, difficulty of urination, and constipation. *Contra-indicated* in glaucoma, prostatic hypertrophy, and pyloric or duodenal obstruction. *Usual dose:* 5 mg. every 12 hours.

Proprietary Names: TYRIMMA, DARBID (*U.S.A.*), PRIAMIDE (*Fr.* and *Belg.*), it is an ingredient of ESKORNADA and STELABID.

(P1 87) **Isothipendyl Hydrochloride.** D 201 10 (2 Dimethylamino propyl) 9 thia-4 10-diaza anthracene hydrochloride $C_{18}H_{19}N_3S$ HCl= 321 9

An antihistamine with little sedative effect Doses of up to 64 mg daily have been given, but Alexander and Harvey (*Scot med J* 1960, *5* 158) suggest that a daily dose of 48 to 60 mg should not be exceeded in ambulant patients because of the greater incidence of side effects at higher dosage *Dose* 4 to 8 mg 3 to 4 times daily by mouth 10 mg by intramuscular or slow intravenous injection.

Proprietary Names NILERGEX ANDANTOL (*abroad*) THERUHISTIN (*U.S.A.*) it is an ingredient of THORPAX SYRUP

Isoxsuprine Hydrochloride. 5029 Caa 40 Phenoxyisopropyl nor suprifen 1 *p* Hydroxyphenyl 2 (1 methyl 2 phenoxyethylamino)propan 1-ol hydrochloride $C_{18}H_{23}O_3N$ HCl=337 9

A vasodilator which is stated to have a direct action on arterial muscle and a slight adrenolytic effect. *Toxic effects* it is claimed to be free from side-effects in the usual dosage Transient palpitation and dizziness may occur *Usual dose* initial by mouth 10 to 20 mg 3 to 4 times daily reduced to a maintenance dose as required by intramuscular injection 5 to 10 mg twice or thrice daily

Proprietary Names DILAVASE DUVADILAN (*abroad*) and VASODILAN (*U.S.A.*)

(P1 84B B) **Ivax** (*Boots*). A mixture containing in each fluid ounce neomycin sulphate 300 mg sulphaguanidine 4 g and kaolin 6 g For the treatment of diarrhœas and bacillary dysentery *Dose* initial 2 tablespoonfuls then one tablespoonful 4 times daily children, initial one teaspoonful to one tablespoonful according to age then ½ to 2 teaspoonfuls 4 times daily

Iversal (*F B A Pharmaceuticals*) Ambazone (q v) available as troches each containing 10 mg

Jadit (*Hoechst Horlicks*) 4-Chloro 2 hydroxybenzbutylamide, available in an Ointment containing 10% with salicylic acid 2% and in Powder and Solution each containing 10% with salicylic acid 1% For fungous infections of the skin especially athlete's foot. [B] **Jadit H** Ointment and Solution each contain in addition hydrocortisone 0 5% For fungous infections with inflammation

Junivite (*Boots*) A syrup containing in each fluid ounce vitamin A 14,000 units aneurine hydrochloride 2 8 mg riboflavine 3 4 mg nicotinamide 28 4 mg ascorbic acid 85 2 mg and calciferol 1400 units A vitamin supplement for growing children, for nursing and expectant mothers and for convalescents *Dose* 2 teaspoonfuls thrice daily children ½ to 2 teaspoonfuls twice daily

Juvel (*Vitamins Ltd*) Tablets each containing vitamin A 5000 units calciferol 500 units aneurine hydrochloride 2 5 mg riboflavine 2 5 mg pyridoxine hydrochloride 2 5 mg nicotinamide 50 mg tocopheryl acetate 10 mg and ascorbic acid 50 mg Elixir containing the equivalent of one tablet in each 2 fluid drachms A dietary supplement to prevent nutritional defects particularly in old age

Kallikrein. Callicrein.

A hypotensive substance isolated from the pancreas and urine of mammals It has been used as a vasodilator for peripheral vascular and coronary artery disease It may be administered by mouth or by intramuscular injection *Toxic effects* it may cause flushing dizziness and syncope There are several proprietary preparations of kallikrein and the manufacturers literature should be consulted for information on dosage

Proprietary Names GLUMORIN PADUTIN (Vol. I 24th Edn p 994) it is an ingredient of DEPOT GLUMORIN and GLUMORON

Kanamycin. An antibiotic produced by strains of *Streptomyces kanamyceticus*, $C_{18}H_{36}N_4O_{11}$=484·5

Kanamycin has similar actions to neomycin (Vol I 24th Edn, p 1419) and is used in the treatment of infections which have failed to respond to other antibiotics It is usually given by intramuscular injection and because it is not easily absorbed from the gastro-intestinal tract, it should not be given orally except for gastro-intestinal infections It can be used by intraperitoneal instillation as a 2·5% aqueous solution, or as a 0·25% solution to irrigate body cavities and abscesses Intrathecal injections should probably not exceed 5 ml of a 0·25% solution For the inhalation treatment of respiratory infection it may be administered as an aerosol containing 250 mg in 1 ml of water diluted with 3 ml of normal saline.

Toxic effects oral administration causes few side-effects but parenteral therapy with kanamycin can cause damage to the auditory nerve (sometimes preceded by tinnitus and dizziness) and eosinophilia, sensitisation skin rash, fever, headache, and paræsthesia occasionally occur *Contra-indications* kanamycin should be used with care and at a lower dosage in patients with renal impairment

Dose by intramuscular injection not more than 15 mg per kg body weight daily in divided doses for 5 days, by slow intravenous injection as a 0·25% solution 15 to 30 mg per kg body weight daily in divided doses pre-operatively by mouth 1 g hourly for 5 doses and 1 g every 6 hours for 36 to 72 hours by mouth for *Shigella* and *Salmonella* infections 15 to 30 mg per kg body weight daily in divided doses, by mouth for amœbiasis 30 to 150 mg per kg body weight daily in divided doses for 10 days

Proprietary Names (as the sulphate) KANNASYN KANTYCINE (*Fr*) KANACINE (*Belg*) KANTREX (*U S A*)

Kannasyn (*Bayer Prod*) Kanamycin sulphate powder in vials of 1·43 g equivalent to 1 g of kanamycin (q v) To be dissolved in Water for Injection for intramuscular use

[Pl 84B] **Kethamed** (*Medo-Chemicals*) Pemoline (q v) available as tablets of 20 mg

Konakion (*Roche*) Phytomenadione (q v), now also available in Ampoules of 0·5 ml each containing 1 mg (*See also Vol I 24th Edn, p 875*)

Lævoral (*Calmic*) Described as a 65% concentrate of lævulose for use as a sweetening and energising agent in all conditions where sucrose is contraindicated Lævosan lævulose in 20% and 40% solution in 10 ml ampoules for intravenous injection.

[Pl] **Lævotonine** (*Calmic*) An elixir containing in each 100 ml lævulose 41 g sodium acid phosphate 500 mg caffeine 500 mg strychnine nitrate 4·5 mg and manganese chloride 20 mg For the treatment of neurasthenia and debility *Dose* 1 or 2 teaspoonfuls thrice daily before meals.

Lapudrine Hydrochloride (*Imperial Chemical Pharmaceuticals*) Chlorproguanil hydrochloride (q v) available as tablets of 20 mg

[Pl 84B] **Largactil** (*May & Baker*) Chlorpromazine hydrochloride now also available as Tablets of 50 mg (*see Vol I 24th Edn p 397*)

[B] **Ledercort** (*Lederle*) Triamcinolone (q v) available as Tablets of 2 mg and 4 mg **Ledercort Acetonide Cream** and **Ointment** each contain triamcinolone acetonide (q v) 0·1% and are available in tubes of 5 g and 15 g

[Pl 84B] **Lederkyn Acetyl Pædiatric Suspension** (*Lederle*) Contains in each teaspoonful (5 ml) the equivalent of 250 mg of sulphamethoxypyridazine (q v) as the N^4 acetyl derivative (*See also Vol I 24th Edn, p. 1260*)

[B] **Ledermycin** (*Lederle*) Demethylchlortetracycline (q v) available as Capsules of 150 mg as Drops containing 60 mg in each ml and as a Syrup containing 75 mg in each teaspoonful (5 ml)

Lenium (*Bayer Prod*) A cream with a non alkaline basis, containing bithionol 1% and selenium sulphide 2 5% For dandruff and seborrhœic dermatitis of the scalp

[P1 84B] **Leviton** (*British Schering*) Ovets (oval tablets) each containing methyl pentynol carbamate 150 mg and dexamphetamine sulphate 5 mg For mental and emotional disturbances where anxiety is associated with depression *Dose* one ovet after breakfast and one after lunch

[P1 84B] **Librium** (*Roche*) Chlordiazepoxide hydrochloride (q v) available as capsules of 5 mg and 10 mg

Lignax Ointment (*Willows Francis*) Contains lignocaine hydrochloride 2% zinc oxide 10%, Peru balsam 5%, dry extract of hamamelis 1% and menthol 0 1% For hæmorrhoids

Lignax Suppositories (*Willows Francis*) Each contains lignocaine hydrochloride 1 grain zinc oxide 3 grains, Peru balsam 1 grain bismuth subgallate 2 grains dry extract of hamamelis 1 grain and menthol $^1/_{50}$ grain For hæmorrhoids

Lignostab (*Boots*). Lignocaine hydrochloride 10 a 2% solution. [P1 84B] **Lignostab-A** lignocaine hydrochloride in a 2% solution with adrenaline 1 80 000 [P1 84B] **Lignostab-A '100'** lignocaine hydrochloride in a 2% solution with adrenaline 1 100,000 [P1 84B] **Lignostab-N** lignocaine hydrochloride in a 2% solution with noradrenaline acid tartrate 1 80,000 For local anæsthesia by injection.

Linosclerin Capsules (*Uni Pharma*) Each contains ethyl linoleate 400 mg, pyridoxine hydrochloride 3 mg and tocopheryl acetate 2 mg For the treatment of atherosclerosis and hypercholesterolæmia *Dose* initial, 2 capsules thrice daily for 20–30 days maintenance, 2 to 3 capsules daily

Lipostabil (*Nicholas*) Capsules each containing a selected fraction of soya bean phosphatides (providing α and β lecithins) 200 mg and pyridoxine hydrochloride 1 5 mg For the prevention and treatment of circulatory disorders *Dose* 4 capsules daily with meals (*Modification of entry in Vol I, 24th Edn p. 113-l*)

Lipotriad (*Lewis*) Capsules containing, in each dose of three, choline bitartrate 700 mg, inositol 334 mg methionine 84 mg, cyanocobalamin 5 μg, aneurine hydrochloride 1 mg, riboflavine 1 mg nicotinamide 10 mg, pyridoxine hydrochloride 1 mg, and 1 mg of dexpanthenol [panthenol D(+)-αγdihydroxy *N*-(3 hydroxypropyl) ββ-dimethylbutyramide, $C_9H_{19}O_4N=205\ 3$] For the treatment of senile macular degeneration, arteriosclerotic retinopathy and diabetic retinopathy *Dose* 3 capsules thrice daily, preferably after meals

Lobak (*Bayer Prod.*) Tablets each containing 450 mg of paracetamol (q v) and 100 mg of chlormezanone (chlormethazanone 2 *p*-chlorophenylperhydro-3 methyl 1,3 thiazin-4-one 1,1-dioxide, $C_{11}H_{13}O_3NSCl=273\ 7$) For backache *Dose* 1 or 2 tablets thrice daily

[P1] **Lobldan** (*Uni Pharma*) Tablets each containing lobeline sulphate 2 mg magnesium carbonate 125 mg and calcium phosphate 180 mg For use as a smoking deterrent. *Dose* 3 or 4 tablets daily with meals for 3 to 5 days then 2 tablets daily for 3 to 4 days

Lomudase (*Benger*) An ultra fine homogeneous powder for inhalation containing chymotrypsin (q v) 0 01 Anson unit and isoprenaline sulphate 0 1 mg in a cartridge for dispersal in a Lomulizer (a specially designed pocket disperser) For use in chronic bronchitis with difficult expectoration

Lomupren (*Benger*) Isoprenaline sulphate 0 1 mg in a fine homogeneous powder for inhalation contained in a cartridge for dispersal in a Lomulizer (a specially designed pocket disperser) For use in chronic bronchitis and asthma.

Lorexane No 3 (*Imperial Chemical Pharmaceuticals*) Cream shampoo, containing gamma benzene hexachloride 2% in a detergent basis. For the treatment of head lice infestations (*For other Lorexane preparations see Vol. I, 24th Edn, p 559*)

Lyovac Saluric (*Merck Sharp & Dohme*) Chlorothiazide sodium (q v) as a sterile powder, in vials containing the equivalent of 500 mg. of chlorothiazide, to be dissolved in Water for Injection for intravenous use.

[P1 84B] **Lysinex** (*Lloyd Hamol*) Tablets each containing L lysine monohydrochloride 300 mg and stanolone (q v) 10 mg For the treatment of protein-deficiency conditions *Dose* one tablet 3 or 4 times daily

Madecassol (*Leda*) Asiaticoside (the active principle of *Centella asiatica*) available in Ampoules of 25 mg for subcutaneous or intramuscular injection, as an Ointment containing 0 5% with trypsin 0 25%, and as a Powder containing 2% with trypsin 1% To accelerate cicatrisation and grafting

[P1 84B] **Madribon** (*Roche*) Sulphadimethoxine (q v), available as Tablets of 500 mg, as Drops for children containing 200 mg in each ml (10 mg per drop) and as a Syrup containing 250 mg in each teaspoonful (5 ml.)

[P1 81 84A] **Mannomustine Dihydrochloride.** B C.M, Mannitol Mustard 1,6-Di(2 chloroethylamino)-1,6-dideoxy D-mannitol dihydrochloride, $C_{10}H_{22}O_4N_2Cl_2,2HCl$=378 1

A cytostatic drug used in the treatment of malignant haematological diseases, particularly chronic lymphatic leukaemia, Hodgkin's disease, Brill Symmers's disease, reticulosarcoma, multiple myeloma, and polycythaemia *Toxic effects* nausea and vomiting Toxic effects on the bone marrow have been reported (Barlow *et al*, *Brit med J*, ii/1959, 208) *Suggested dose* 50 to 100 mg every other day by intravenous injection to a total of 600 to 800 mg

Proprietary Name DEGRANOL.

[P1 84B] **Marbadal 'C' Vaginal Tablets** (*F B A Pharmaceuticals*) Each contains sulphatolamide (q v) 500 mg and stilbestrol dipropionate 50 mg with carbohydrates and dispersing agents For the treatment of leucorrhœa and vaginitis *Administration* 1 tablet to be inserted every evening for 6 to 10 days

Marevan (*Evans Medical*) Warfarin sodium, available as tablets of 1 mg, 3 mg, 5 mg, and 10 mg

[P1 84B] **Marplan** (*Roche*) Isocarboxazid (q v) available as tablets of 10 mg

[B] **Marsilid** (*Roche*) Iproniazid phosphate (q v) available as tablets each containing the equivalent of 25 mg and 50 mg iproniazid

[P1 87] **Mebhydrolin Naphthalene-1,5-disulphonate.** 5-Benzyl-1,2,3,4-tetrahydro 2 methyl-γ-carboline hydrogen naphthalene-1,5-disulphonate, $(C_{12}H_{16}N_2)_2$, $C_{10}H_8O_3S_2$=841 1

An antihistamine which is stated to have no hypnotic or sedative effects *Toxic effects* gastric upsets *Dose*, daily in divided doses 100 to 300 mg, children, up to 2 years 50 to 100 mg, 2 to 5 years 50 to 150 mg, 5 to 10 years 100 to 200 mg

Proprietary Names FABAHISTIN, it is an ingredient of REFAGAN

Medapsol (*Imperial Chemical Pharmaceuticals*) Di(*p*-aminophenyl) sulphoxide (DDSO) formerly available for clinical trial as tablets of 100 mg Antileprotic. *Dose* initial, 50 mg daily, rising to 100 mg within 3 to 4 weeks.

[B] **Medihaler Cort** (*Riker*) Hydrocortisone acetate 30 mg per ml in a suspension in a pressurised spray delivering a dose of 1 2 mg

Medihaler Iso Forte (*Riker*) Isoprenaline sulphate 10 mg per ml in a pressurised spray delivering a dose of 0 4 mg For the relief of bronchial asthma.

(*For other Medihaler preparations see Vol. I, 24th Edn, p 1396*)

[P1 81 84A] **Medomin** (*Geigy*) Heptabarbital available as tablets of 200 mg

[B] **Medro-Cordex** (*Upjohn*) Tablets each containing methylprednisolone (q v) 1 mg and acetylsalicylic acid 300 mg For the relief of musculoskeletal inflammation *Dose* 1 or 2 tablets 3 or 4 times daily

[B] **Medrone** (*Upjohn*) Methylprednisolone (q v) available as tablets of 4 mg

[B] **Medrone Veriderm** (*Upjohn*) An ointment, with a basis approximating the lipids of human skin, containing methylprednisolone (q v) 0 25% in tubes of 5 g

[P1 31 84A] **Megobar** (*Nicholas*) Tablets each containing phenobarbitone 30 mg and bemegride 3 mg A general sedative with reduced danger in case of over dosage. *Dose* 1 to 3 tablets daily

Meladinine (*Savory & Moore*) Methoxsalen available as a Paint containing 1% and as Tablets of 10 mg

[P1 84B] **Melleril** (*Sandoz Products*) Thioridazine hydrochloride (q v) available as tablets of 10 mg 25 mg 50 mg and 100 mg

[P1] **Melosan** (*Allied Laboratories*) Silver-coated tablets each containing dried ferrous sulphate 100 mg aneurine hydrochloride 1 5 mg riboflavine 1 mg nicotinamide 5 mg ascorbic acid 10 mg dry extract of nux vomica 15 mg and kola powder 120 mg Hæmatinic and tonic. *Dose* 1 or 2 tablets thrice daily (*Modification of entry in Vol. I 24th Edn p 378*)

[P1 84B] **Melsedin** (*Boots*) Methaqualone hydrochloride (q v) available as tablets of 150 mg

[P1 84B] **Menopax Tablets** (*Nicholas*) Each contains ethinylœstradiol 0 01 mg carbromal 90 mg and bromvaletone 30 mg **Menopax Forte Tablets** each contains in addition methyltestosterone 0 25 mg and mephenesin 65 mg For disorders of the menopause *Dose* 1 tablet 2 to 4 times daily after meals. [P1 84B] **Menopax Antipruritic Cream** contains stilbœstrol 0 1% testosterone 0 1% amethocaine hydrochloride 0 5% and benzocaine 5% For menopausal pruritus vulvæ and senile vaginitis (*Modification of entries in Vol. I 24th Edn p 964 and p 966*)

[P1 84B] **MEP** (*Independent Research Laboratories*) Meprobamate available as tablets of 200 mg (MEP 2) and 400 mg (MEP 4)

MER 29 (*Merrell National*) Triparanol (q v), available as tablets of 250 mg

Merbentyl Dospan (*Merrell National*) Dicyclomine hydrochloride in long acting tablets of 60 mg (*For other Merbentyl preparations see Vol. I 24th Edn p 217*)

Merocet (*Merrell National*) A detergent antibacterial solution containing cetylpyridinium chloride For infections of the throat and mouth To be used full strength or with an equal volume of water as a gargle or mouthwash.

[P1 84B] **Metamsustac** (*Pharmax*) Methylamphetamine hydrochloride in sustained-action tablets of 7 5 mg and 15 mg

Metanium (*Bengué*) Ointment containing titanium dioxide 20% titanium peroxide 5% titanium salicylate 3% and titanium tannate 0 1% in a silicone and paraffin basis and Dusting powder containing titanium dioxide 25% titanium peroxide 5% titanium salicylate 1% and titanium tannate 0 2% For inflamed skin lesions and bedsores (*Modification of entry in Vol I 24th Edn p 1353*)

[B] **Metastab** (*Boots*) Methylprednisolone (q v) available as tablets of 4 mg

[P1 84B] **Metformin Hydrochloride L.A. 6023** N^1N^1-Dimethyldiguanide hydrochloride, $C_4H_{11}N_5$ HCl=165 6

A hypoglycæmic agent for oral administration It is stated to be most suitable for middle aged and elderly diabetics It should not be used in conjunction with tolbutamide and similar drugs but can be given alone or with insulin When it is given to diabetics already receiving insulin the dosage of insulin should be reduced very gradually *Toxic effects* gastro-intestinal upsets have been reported *Contra indications* care is necessary in patients with cardiovascular disease *Dose* daily in divided doses after food, initial 1 5 g rising slowly over 8 days to 3 0 g usual maintenance, possibly 1 to 1 5 g

Proprietary Name GLUCOPHAGE

[P1 84B] **Methandienone** Methandrostenolone 17 Hydroxy 17α methyl-androsta 1,4-dien 3-one, $C_{20}H_{28}O_2$=300 4

An anabolic agent which is stated to have little progestational or œstrogenic effect It is also claimed to be of use in the treatment of osteoporosis *Dose*, daily initial 10 to 20 mg, maintenance 5 to 10 mg for courses of 4 to 6 weeks with intervals of 2 to 4 weeks, infants up to 2 years, 0 04 mg per kg body weight, children 0 5 to 2 mg for courses of 4 weeks with intervals of 4 to 8 weeks.

Proprietary Name DIANABOL.

[P1 84B] **Methaqualone Hydrochloride.** T R 495 2-Methyl 3-o-tolyl-4-quinazolone hydrochloride, $C_{16}H_{14}ON_2,HCl$=286 8

A hypnotic which has no analgesic action Methaqualone hydrochloride takes effect within 20 minutes and the effect lasts for 6 to 8 hours It is also active when administered by suppository It potentiates the effect of chlorpromazine, pethidine, codeine, and dextromethorphan Alcohol increases the depressant effect of methaqualone on the central nervous system *Toxic effects* mild gastric upsets Some patients are resistant to a hypnotic dose of 300 mg and only develop confusion, giddiness and headache *Dose* hypnotic, 150 to 300 mg at night sedative, 75 mg once or twice daily Children, hypnotic, 75 mg at night.

Proprietary Name MELSEDIN

[P1 84B] **Methdilazine Hydrochloride.** 10-(1-Methylpyrrolidin 3-ylmethyl)phenothiazine hydrochloride, $C_{18}H_{20}N_2S,HCl$=332 9

An antihistamine which is stated to be of value in the treatment of pruritus and various allergies Its action is said to persist for up to 12 hours after a single oral dose Methdilazine may potentiate the action of alcohol, analgesics, and sedatives *Usual dose* 8 mg twice daily

Proprietary Names DITOSYN TACARYL (*U S A*)

[P1 84B] **Methocarbamol** AHR 85 2 Hydroxy-3 *o*-methoxyphenoxy-propyl carbamate $C_{11}H_{15}O_5N$=241 2

A skeletal muscle relaxant which acts centrally It has similar effects to mephenesin carbamate (Vol I, 24th Edn, p 405) but has a slower and longer action *Toxic effects* drowsiness, vertigo, blurred vision, headaches, nausea, skin eruptions and fever

Dose, by mouth initial, 1 5 to 2 0 g 4 times a day for 48 to 72 hours, maintenance, 1 0 g 4 times a day By intramuscular injection not more than 500 mg into each buttock every 8 hours followed as soon as possible by oral therapy By slow intravenous injection of a 10% solution, maximum of 1 g not more than thrice daily for not more than 3 consecutive days The recommended dose by mouth for children is not more than 30 mg per lb body weight daily in divided doses.

Proprietary Names ROBAXIN ROBAXIN (*U S A*)

Methocidine (*Rona Laboratories*) Nasal and throat spray In isotonic solution, containing in each 100 ml methocidin (gramicidin formaldehyde or hydroxymethylgramicidin a broad spectrum antibiotic) 10 mg., ephedrine lævulinate 900 mg and cetylpyridinium chloride 25 mg For general infections of the nose and throat.

[P1 81 84A] **Methohexitone Sodium** Methohexital Sodium, Sodium α-(±)-5 allyl 1 methyl 5 (1 methylpent 2 ynyl)barbiturate, $C_{14}H_{17}O_3N_2Na$ = 284 3

Methohexitone sodium is a very short acting barbiturate which is given intravenously for the induction of general anæsthesia or as the sole anæsthetic for minor operative procedures which do not require muscle relaxation. It may, however be employed with skeletal muscle relaxants.

It is injected intravenously for induction anæsthesia as a 1% solution at the rate of approximately 1 ml every 5 seconds or it may be administered as a 0 2% solution by continuous intravenous drip for the maintenance of general anæsthesia at the rate of approximately 1 drop per second Methohexitone sodium is more potent than thiopentone sodium but is not absorbed by the fatty tissues and is more rapidly eliminated so that the total dosage of the two drugs is approximately the same after 3 hours anæsthesia

Toxic effects The Council on Drugs of the American Medical Association (*J Amer med Ass* 1960 *173* 676) states that the administration of methohexitone sodium may cause respiratory depression and apnœa and occasional post anæsthetic shivering and fall in body temperature If administered in inadequate dosage or at an incorrect rate there may be muscle twitching or more severe convulsive movements *Contra indications* it should be used with caution in patients with respiratory obstruction asthma severe hypotension or hypertension myocardial disease congestive heart failure anæmia and extreme obesity Like other barbiturates the drug is probably contra indicated in patients with severe hepatic dysfunction

Dose for induction of anæsthesia 50 to 120 mg for intermittent administration in the maintenance of general anæsthesia when supplemented by a gaseous anæsthetic and oxygen, 20 to 40 mg at intervals as required e g. every 5 to 7 minutes

Storage aqueous solutions are stated to be stable at room temperature for at least 6 weeks

Proprietary Names BRIETAL SODIUM BREVITAL SODIUM (*U S A*)

Methotrexate (*U S P*) Amethopterin 4-Amino N^{10} methylpteroyl glutamic Acid α Methopterin *N p* [*N* (2 4 Diaminopterid 6 ylmethyl)-*N* methylamino]benzoyl L(+) glutamic acid $C_{20}H_{22}O_5N_8$=454 5

A folic acid antagonist which it is stated, may produce remissions within 2 to 4 weeks in all types of acute and subacute leukæmia. It appears to be more effective in children than in adults and the most frequent response is seen in children with lymphoblastic leukæmia.

Toxic effects alopecia stomatitis ulceration of the mouth diarrhœa and gastro-intestinal hæmorrhage *Antidote* folinic acid *Contra indicated* in pregnancy

Dose children under 2 years 1 25 to 2 5 mg daily and children 2 to 12 years 2 5 to 5 mg daily reduced gradually when remission is well established to a maintenance dose of 5 to 10 mg weekly Adults may need initial doses of up to 10 mg daily

Methotrexate (*Lederle*) Methotrexate (see above) available as tablets of 2 5 mg

[P1 84B] **Methotrimeprazine** Levomepromazine 7044 R P (−)-10-(3-Dimethylamino 2 methylpropyl) 2 methoxyphenothiazine $C_{19}H_{24}ON_2S$ =328 5

A phenothiazine derivative used in the treatment of psychotic patients and stated to act similarly to chlorpromazine in the reduction of psychomotor activity (Vol *I*, 24th Edn p 390), it has also been used in the treatment of moderate depression It can be used as an alternative to chlorpromazine when given alone or with analgesics or narcotics for the relief of pain and anxiety Methotrimeprazine is usually administered by mouth and it is not well tolerated by injection A limited number of doses may, however be given by intramuscular injection or, diluted with

250 ml of normal saline by slow intravenous injection. It should not be injected subcutaneously Intramuscular doses of 25 mg have an effect approximately equivalent to 50 mg given by mouth.

Toxic effects similar to those of other phenothiazine compounds as described under Chlorpromazine (Vol I 24th Edn pp 386 90) Side-effects reported include drowsiness asthenia dryness of the mouth postural hypotension tachycardia and agranulocytosis. *Contra indications* as for Chlorpromazine (Vol I 24th Edn p 390) Some prescribers consider that patients receiving methotrimeprazine tolerate electroconvulsive therapy poorly

Dose for ambulatory patients an initial daily dose of 25 to 50 mg by mouth in divided doses increasing slowly to the most effective dose with minimum side effects for patients in bed an initial daily dose of 100 to 200 mg by mouth in divided doses increasing slowly to doses of up to 1 g daily which is maintained for some time and later reduced if possible to the minimum effective dose for patients in bed by intramuscular or intravenous injection up to 50 mg repeated 3 or 4 times in 24 hours if necessary The suggested dose by mouth for children is not more than 40 mg daily in divided doses

Storage methotrimeprazine should be stored protected from light

Proprietary Names (as the acid maleate and the hydrochloride) VERACTIL NOZINAN (*Fr*)

[B] **Methylprednisolone** (*N.N.D*) 6 Methyldelta 1 hydrocortisone 11β 17α 21 Trihydroxy 6α methylpregna 1 4-diene-3 20 dione $C_{22}H_{30}O_5$ =374 5

A glucocorticoid with the same actions and uses as prednisolone (Vol I 24th Edn p 495) Methylprednisolone has a greater anti inflammatory effect than prednisolone and causes less retention of sodium and water *Toxic effects* and *contra indications* as for Prednisone (Vol I 24th Edn p 492)

Dose daily in severe or acute conditions 12 to 40 mg in mild or chronic conditions an initial dose of 6 to 20 mg reduced by decrements of 2 mg every 7 days to a maintenance dose of about 3 to 10 mg in acute rheumatic fever 0 5 mg per lb body weight until the erythrocyte sedimentation rate has been normal for 7 days

Proprietary Names MEDRONE METASTAB MEDROL (*U S*) it is an ingredient of MEDRO-CORDEX and MEDRONE VERIDERM

[B] **Methylprednisolone Acetate** 21 Acetoxy 11β 17α dihydroxy 6α methylpregna 1 4-diene 3 20-dione $C_{24}H_{32}O_6$=416 5

This has the same uses toxic effects and contra indications as methyl prednisolone Retention enemas containing 40 to 120 mg of methyl prednisolone acetate in diluted normal saline have been used in the treatment of ulcerative colitis *Dose* by intramuscular injection 40 mg every 2 weeks to 40 to 120 mg weekly according to the condition by intra articular injection 4 to 80 mg every 1 to 5 weeks

Proprietary Names DEPO MEDRONE DEPO MEDROL (*U S A*) it is an ingredient of NEO-MEDRONE VERIDERM

Metronidazole 8823 R P 1 (2 Hydroxyethyl) 2 methyl 5 nitroimidazole $C_6H_9O_3N_3$=171 2

Metronidazole is said to be effective in the oral treatment of *Trichomonas vaginalis* infections of the genito-urinary tract in males and females It has no marked inhibitory effect on the growth of Döderlein's bacillus It has no action against *Candida* For a summary of information

on the use of metronidazole in the treatment of trichomoniasis see *Lancet* II/1960 1238 *Toxic effects* side effects so far reported include gastro intestinal upsets unpleasant taste furred tongue and transient skin rashes *Dose* 200 mg thrice daily for 7 days followed if necessary after a few days by a second course of 300 mg thrice daily for 7 days *Proprietary Name* FLAGYL.

[P1 84B] **Mezuran** (*Imperial Chemical Pharmaceuticals*) Tablets each containing sulphadimidine 500 mg and phenazopyridine hydrochloride (q v) 50 mg For the treatment of genito urinary infections *Dose* 2 tablets every 6 hours

[P1 84B] **Midicel** (*Parke Davis*) Sulphamethoxypyridazine (q v) available as Tablets of 500 mg and as a Suspension containing in each teaspoonful (5 ml) the equivalent of 250 mg as the N^1 acetyl derivative

[B] **Millicorten** (*Ciba*) Dexamethasone (q v) available as tablets of 0 5 mg and 1 mg

Millophylline (*Dales Pharmaceuticals*) 8-(2 Diethylaminoethyl) 1 3-dimeth ylxanthine camphorsulphonate ($C_{22}H_{31}O_6N_5S$=511 7) available in 5 ml Ampoules each containing 700 mg and as Tablets of 100 mg For use as a cardiac and respiratory stimulant and as an adjuvant to muscular effort *Dose* by mouth 3 to 6 tablets daily in divided doses after food by intramuscular injection 1 to 2 ampoules daily

[P1 84B] **Moditen** (*Squibb*) Fluphenazine hydrochloride (q v) available as an Elixir containing 0 5 mg in each ml and as Tablets of 0·25 mg and 1 mg

[P1 84B] **Mornidine** (*Searle U.K.*) Pipamazine (q v) available as tablets of 5 mg

Multrate (*Richter*) A syrup containing in each fluid ounce vitamin A 50 000 units aneurine hydrochloride 40 mg riboflavine 20 mg pyridoxine hydro chloride 4 mg ascorb c acid 400 mg calciferol 10 000 un ts and nicotinamide 120 mg For use as a dietary supplement. *Dose* 1 to 2 teaspoonfuls daily children $^1/_2$ to 1 teaspoonful daily

Muripsin (*Norgine*) Tablets each containing glutamic acid hydrochloride 500 mg and pepsin 35 mg For the treatment of hypochlorhydric states *Dose* 1 or 2 tablets with each meal

Mycil Spray (*British Drug Houses*) Chlorphenesin 1% in an aerosol spray For athlete's foot and other fungous infections (*For other Mycil preparations see Vol. I 24th Edn p 1334*)

Mydrilate (*Ward, Blenkinsop*) Eye-drops containing cyclopentolate hydro chloride in two strengths 0 5% and 1%

[P1 81 84A] **Mylodex A** (*Brook Parker*) Tablets each containing desam phetamine sulphate 5 mg and amylobarb tone 32 mg

[P1 81 84A] **Mylomide** (*Nicholas*) Tablets each containing amylobarbitone 100 mg and bemegride 10 mg Sedative with reduced danger in case of over dosage *Dose* sedative $^1/_2$ tablet thrice daily hypnotic 1 or 2 tablets on retiring

[B] **Myateclin F** (*Squibb*) Pædiatric Drops containing in each ml phosphate-potentiated tetracycline equivalent to tetracycline hydrochloride 100 mg and amphotericin B (q v) 20 mg and Syrup containing in each teaspoonful (5 ml) phosphate potentiated tetracycline equivalent to tetracycline hydrochloride 125 mg and amphotericin B 25 mg *Dose* children, 5 to 45 lb body weight, $^1/_2$ to $2^1/_2$ dropperfuls of pædiatric drops 4 times daily 20 to 80 lb. body weight, $^1/_2$ to 2 teaspoonfuls of syrup 4 times daily These preparations are supplied in powder form for reconstitution with water

NaClex (*Claxo*) Hydroflumethiazide (q v) available as Tablets of 50 mg and as Half Strength Tablets of 25 mg
Note In U.S.A., NaClex (*A. H. Robins Co Inc Richmond Va*) is a proprietary name for benzthiazide

[P1 84B] **Nardil** (*Warner*) Phenelzine (q v) available as tablets of 15 mg., as the hydrogen sulphate

[D Pl $1] **Narphen** (*Smith & Nephew*) Phenazocine hydrobromide (q v) available in ampoules of 1 ml each containing 2 mg

[B] **Naseptin** (*Imperial Chemical Pharmaceuticals*) A cream containing chlorhexidine hydrochloride 0 1% and neomycin sulphate 0 5%. For nasal application to nasal carriers of staphylococci

Naturalax (*Johnson & Johnson*) A flavoured syrup containing dioctyl sodium sulphosuccinate 2 mg in each ml

Navidrex (*Ciba*) 6 Chloro 3-cyclopentylmethyl 3 4-dihydro-7 sulphamoyl benzo-1 2 4 thiadiazine 1 1-dioxide ($C_{13}H_{18}O_4N_3S_2Cl$=379 9) available as tablets of 0 5 mg

A diuretic which is said to carry only a slight risk of potassium depletion. A dose of 0 25 mg by mouth is equivalent in diuretic action to 500 mg of chlorothiazide. It is used for the treatment of œdema hypertension, and premenstrual tension It potentiates the action of guanethidine sulphate, doses of digitalis administered concurrently may have to be reduced. *Contra indications* it must be given with caution to patients with impaired renal or hepatic function, or on a low salt diet. *Dose* as a single dose in the morning for œdema initial 1 to 2 tablets or rarely 3 tablets maintenance ½ to 1 tablet. For premenstrual tension, ½ to 1 tablet from the onset of symptoms to menstruation For hypertension, 1 tablet when combined with other hypotensive drugs, ½ tablet.

[P1 $1 $4A] **Nealbarbitone** Alneobarbital, Nealbarbital. 5 Allyl 5 neopentylbarbituric acid, $C_{12}H_{18}O_3N_2$=236 3

Nealbarbitone is stated to be a daytime sedative which rarely produces drowsiness and has a duration of action intermediate between amylobarbitone and phenobarbitone Doses of up to 800 mg thrice daily have been given *Toxic effects* similar to those of other barbiturates (Vol I, 24th Edn, p 233) Side effects so far reported include nausea, vomiting, dizziness, unsteadiness, and fatigue *Usual dose* 60 to 200 mg thrice daily, starting with the lower dose and adjusting to the needs of the patient

Proprietary Names CENSEDAL NEVENTAL (*Steed*)

[P1 $1 $4A] **Nebrinal** (*Wander*) Timed release tablets each containing pentobarbitone 50 mg and mephenesin 225 mg For insomnia *Dose* 2 to 4 tablets half an hour before bedtime

[B] **Neo-Cortef Lotion** (*Upjohn*) Contains hydrocortisone acetate 0 5% or 1% both with neomycin sulphate 0 5%. For reducing inflammation and preventing infection. (*For other Neo-Cortef preparations see Vol I 24th Edn p 491*)

[B] **Neo Medrone Veriderm** (*Upjohn*) An ointment, with a basis approximating the lipids of human skin containing methylprednisolone acetate (q v) 0 25% and neomycin sulphate 0 5% in tubes of 5 g For the treatment of inflammatory and allergic skin conditions and control of secondary skin infections

Neo NaClex (*Glaxo*) Bendrofluazide (q v) available as tablets of 2 5 mg and 5 mg

[P1] **Neo-Rybarex** (*Rybar Laboratories*) A liquid inhalant containing adrenaline 0 4% pituitary (posterior lobe) extract 0 2% pituitary (anterior lobe) extract 0 2% atropine methonitrate 0 1% papaverine hydrochloride 0 15%, benzocaine 0 12%, and mucolytic base to 100%. For the relief of bronchial asthma and bronchitis (*Modification of entry in Vol I 24th Edn p 49*)

[P1 $1 $4A] **Neostol** (*Anglo-French Drug Co*) Tablets each containing reserpine 0 25 mg., phenobarbitone 15 mg and theophylline 60 mg. For hypertension. *Dose* initial one tablet twice or thrice daily, maintenance one tablet daily.

Nestargel (*Nestlé*) A thickening powder containing ceratonia 96% and calcium lactate 4%. For the dietetic treatment of regurgitation and vomiting in infants *Dose* ½ to 1% in each feed.

Neutrapen (*Burroughs Wellcome*) Penicillinase (q v) in vials each containing 500 000 units, the addition of 2 ml of water yields an isotonic solution.

Nez Drops (*Rybar Laboratories*) Nasal drops containing naphazoline hydrochloride 0·05%, phenylephrine hydrochloride 0·25%, chlorbutol 0·5%, and sodium chloride 0·9% (*This preparation was formerly known as Rybastool, see Vol. I, 24th Edn, p. 59*)

[B] **Nialamide.** *N*-Benzyl-β-pyridine-4-carboxyhydrazidopropionamide, $C_{16}H_{18}O_2N_4$=298·4

A mono-amine oxidase inhibitor which appears useful in the treatment of psychiatric disorders characterised by depression. It may be used in conjunction with electroconvulsion therapy. It is said to reduce the frequency and severity of attacks of angina pectoris. Nialamide prolongs the central depressant effect of hexobarbitone, augments the hypotensive effects of chlorothiazide, and may possibly enhance the effect of amphetamine. *Toxic effects* so far reported include nervousness, restlessness, insomnia, blurred vision, dizziness, dryness of the mouth, increased sweating, and some increase in blood pressure in hypertensive patients. *Contra-indications*: it should be used with care in renal or hepatic disease and in epilepsy. *Dose*: initial, 75 to 100 mg. daily, increased or decreased according to tolerance and response.

Proprietary Name: NIAMID

[B] **Niamid** (*Pfizer*) Nialamide, available as tablets of 25 mg. and 100 mg.

Nicopyron (*Trommsdorff, Aachen: German Ethicals*) 1,5-Dimethyl-2-phenyl-4-(pyridine-3-carboxyamido)-pyrazol-3-one, available as Pills of 200 mg., and as Suppositories each containing 400 mg. For the relief of rheumatic and neuralgic pain. *Dose*: 1 or 2 pills or one suppository twice or thrice daily.

[P1 87] **Nilergex** (*Imperial Chemical Pharmaceuticals*). Isothipendyl hydrochloride (q.v.) available as an Injection in ampoules of 1 ml. each containing 10 mg., as Sustained-Action Tablets of 12 mg., as a Syrup containing 2 mg. in each teaspoonful (3·5 ml.) and as Tablets of 4 mg.

[P1 84B] **Nitoman** (*Roche*) Tetrabenazine (q.v.), available as tablets of 25 mg.

Nivaquine (*May & Baker*) Chloroquine sulphate, now also available as a Syrup containing the equivalent of 50 mg. of chloroquine base in each fluid drachm (*See Vol. I, 24th Edn, p. 1170*)

[B] **Nivemycin** (*Boots*) Neomycin sulphate available as an Eye Ointment containing 0·5%, in tubes of 4 g., as a Lotion containing 0·5%, as an Ointment containing 0·5%, and as Tablets of 500 mg.

Nobecutane (*Evans Medical*) A transparent plastic wound dressing consisting of an acrylic resin dissolved in a mixture of acetic esters, when applied to the skin and allowed to evaporate it leaves a tough elastic protective film impervious to bacteria and other contaminants, available in pressurised spray packs of 100 ml. and 300 ml. (*Modification of entry in Vol. I, 24th Edn, p. 1137*) Nobecutane 'D' contains in addition 0·15% of thiuram [TMTD, Di(dimethylthiocarbamoyl) disulphide, $C_6H_{12}N_2S_4$=240·4, an antiseptic] available in non-pressurised bottles of 14 ml. for application with a brush (*For Nobecutane Marking Ink see Vol. I, 24th Edn, p. 1137*)

Nobepyrol (*Evans Medical*) A preparation similar to Nobecutane leaving on evaporation a plastic film containing crude coal tar 5% and thiuram 0·6% with small amounts of phenolic and aromatic substances, available in pressurised spray packs of 45 g.

Noradran (*Norma Chemicals*) [P1 81] **Britabs**: each dose consists of one pink sublingual tablet containing isoprenaline sulphate 10 mg. and one plain white tablet containing ephedrine hydrochloride 25 mg., theophylline 125 mg., and papaverine hydrochloride 10 mg. [P1 81 84A] **Britabs Nocte**: each dose consists of one plain white tablet containing ephedrine hydrochloride 30 mg., theophylline 125 mg., papaverine hydrochloride 10 mg. and phenobarbitone 16 mg., and one orange enteric-coated tablet containing ephedrine hydrochloride 30 mg., theophylline 125 mg., and papaverine hydrochloride 10 mg. For the relief of asthmatic bronchospasm. *Dose*: one dose of Britabs thrice daily and one dose of Britabs Nocte at bedtime.

[P1] Noradran Inhalant (*Norma Chemicals*) Contains isoprenaline sulphate 1%, diprophylline 5% and papaverine hydrochloride 0 99% For the quick relief of asthma attacks

[P1 84B] Norethisterone Norethindrone (*N.N.D*), Anhydrohydroxy-19 norprogesterone, Ethinylnorprogesterone 17α Ethynyl 17 hydroxy-œstr 4-en 3 one, $C_{20}H_{24}O_2$=298 4

A progestational agent It has a slight œstrogenic effect but is stated to have no androgenic action It is used in the treatment of primary and secondary amenorrhœa in conjunction with œstrogens if necessary It has also been given for dysfunctional uterine bleeding and endometriosis. When given from the 5th to the 25th day of the menstrual cycle it is believed to inhibit ovulation There is not yet sufficient evidence to establish the drug in the treatment of dysmenorrhœa premenstrual tension and threatened and habitual abortion *Toxic effects* mild nausea and lethargy Prolonged therapy generally decreases libido *Dose* for amenorrhœa menstrual irregularities and dysfunctional uterine bleeding 10 to 20 mg daily from the 5th to the 23rd day of the menstrual cycle, to prevent menstruation 20 to 30 mg daily

Proprietary Names PRIMOLUT N NORLUTEN (*U S A*) as the acetate it is an ingredient of PRIMODOS

[P1 84B] Norethynodrel 17α Ethynyl 17 hydroxyœstr 5(10)-en 3-one $C_{20}H_{26}O_2$=298 4

Norethynodrel is a steroid which is an active progestogen when given by mouth and which also has a slight intrinsic œstrogenic action, it is free of androgenic activity It is used for the control of fertility and is said not to affect subsequent conception and pregnancy For controlling fertility it is usually administered together with an œstrogen from the 5th up to and including the 24th day of the menstrual cycle. Tyler (*J Amer med Ass* 1961, *175*, 225) considers that the consistent use of norethynodrel for a two year period for contraceptive purposes has shown no long term or far reaching effects and that the evidence at present suggests no damage to bodily functions or organs Norethynodrel is also used by cyclic administration in the control of abnormal bleeding, dysmenorrhœa and premenstrual tension It is given continuously for several months in endometriosis and recurrent and threatened abortion and it is also of value in infertility due to an inadequate luteal phase

Toxic effects may include nausea and vomiting, dizziness and an increase in weight during the first cycles of administration, there may be an increase in premenstrual tension About 5% of all cycles may be associated with breakthrough bleeding or spotting Breast engorgement and nipple pigmentation have occasionally been reported The first intermenstrual interval after discontinuing medication may be prolonged and ovulation may occur later

Dose 5 to 30 mg daily

Proprietary Names it is an ingredient of CONOVID and ENAVID

Norflex (*Riker*) Orphenadrine citrate (q v) available as long acting tablets of 100 mg

[P1] Novalkal (*Anglo-French Drug Co*) Tablets each containing magnesium trisilicate 600 mg., belladonna dry extract 8 mg and ascorbic acid 60 mg I of peptic ulcer and allied conditions *Dose* 1 or 2 tablets to be chewed every 4 hours preferably before meals.

[D P1 81] Numorphan (*British Drug Houses*) Oxymorphone hydrochloride (q v) available as an injection in ampoules of 1 1 ml containing 1 5 mg in 1 ml

Nu-seals Ammonium Chloride (*Lilly*) Ammonium chloride in enteric-sealed tablets of 7½ grains

Nu seals Aspirin (*Lilly*) Acetylsalicylic acid in enteric sealed tablets of 5 grains and 10 grains

Nu-seals Ferrous Sulphate (*Lilly*) Ferrous sulphate in enteric sealed tablets of 5 grains.

Nu seals P.A.S (*Lilly*) Aminosalicylic acid in enteric-sealed tablets of 500 mg equivalent to sodium aminosalicylate 690 mg

Nu-seals Potassium Chloride (*Lilly*) Potassium chloride in enteric sealed tablets of 5 grains and 7½ grains.

Nu seals Sodium Chloride (*Lilly*) Sodium chloride in enteric sealed tablets of 500 mg and 1 g

Nu-seals Sodium Salicylate (*Lilly*) Sodium salicylate in enteric sealed tablets of 5 grains and 10 grains.

Nycets (*Potter & Clarke*) Pastilles each containing tyrothricin 1 0 mg and cetylpyridinium chloride 2 5 mg For infections of the mouth and throat. *Dose* one pastille to be sucked each hour

Nystatin Dusting Powder (*Squibb*) Contains in each g nystatin 100 000 units in purified talc. For application to the skin and external ear

Nystatin for Suspension (*Squibb*) A dry powder producing after reconstitution with water a suspension containing in each ml nystatin 100 000 units. (*See also Vol I 24th Edn p 1422*)

[Pt 81 84A] **Œstrad** (*Brook Parker*) An elixir containing in each teaspoonful ethinylœstradiol 0 01 mg with phanobarbitone sodium 0 227% sodium bromide 1 843% and glyceryl trinitrate solution 0 416% For the relief of menopausal conditions *Dose* 1 to 4 teaspoonfuls.

OnychoPhytex (*Wynlit Laboratories*) A paint containing borotannic complex 9 92% in alcohol and ethyl acetate For the treatment of onychomycosis

Orabilix (*Guerbet Paris Benguê*) Bunamiodyl sodium (q v) available as tablets of 750 mg

[B] **Oradexon** (*Organon*) Dexamethasone (q v) available as tablets of 0 5 mg and 0 75 mg

[B] **Orapen V K** (*Independent Research Laboratories*) Phenoxymethylpenicillin potassium available as tablets of 125 mg

[Pt 84B B] **Orastrep** (*Distillers Co*) Suspension containing in each teaspoonful (5 ml) streptomycin 500 mg (as sulphate) sulphadimidine 500 mg and light kaolin 1 5 g and Tablets each containing streptomycin 250 mg (as sulphate) and sulphadimidine 250 mg For the treatment of bacterial infections of the intestinal tract including bacillary dysentery infantile gastro enteritis bacterial food poisoning and diarrhœas of non specific origin also for use prophylactically *Dose* initial 2 teaspoonfuls (10 ml.) of suspension or 4 tablets then one teaspoonful of suspension or 2 tablets 4 times daily infants and children half the adult dosage.

Organidin (*Denver Laboratories*) 2 3 (2 and 3 Iodopropyl denedioxy) propan 1-ol available as Tablets of 30 mg as an Elixir containing 1 2% and as a Solution containing 50 mg in each ml For promoting expectoration in bronchial asthma bronchitis bronchiectasis sinusitis and post-operatively *Dose* 2 tablets or one teaspoonful of elixir or 20 drops of solution 4 times daily with fluids.

[Pt 84B] **Orisulf** (*Ciba*) Sulphaphenazole (q v) available as Tablets of 500 mg., and as a Suspension containing 500 mg in each teaspoonful (5 ml)

Orphenadrine Citrate, Mephenamine Citrate. Dimethyl 2-(α *o*-tolylbenzyloxy)ethylamine citrate, $C_{18}H_{23}ON\ C_6H_8O_7$=461 5

Actions and uses, toxic effects contra indications, and dosage as for Orphenadrine Hydrochloride, p 238

Proprietary Name NORFLEX.

Orphenadrine Hydrochloride (*N N D*) B S 5930, Mephenamine Hydrochloride Dimethyl 2 (α *o* tolylbenzyloxy)ethylamine hydrochloride, $C_{18}H_{23}ON,HCl$—305 9

Orphenadrine produces a reduction of voluntary muscle spasm and has a euphoriant effect It has been used in the symptomatic management of Parkinson s disease It relieves rigidity but has little effect on tremor, which it may even accentuate There is not yet sufficient evidence to establish its use in other painful conditions due to skeletal muscle spasm, in Ménière s disease, in dizziness, and in psychiatry for its antidepressant action

Toxic effects so far reported include nausea, dryness of the mouth dizziness, mild excitation, occasional hallucinations, gastro intestinal upsets, urinary retention, blurring of vision, and an increase of tinnitus when used for the treatment of Ménière s disease *Contra indications* care is necessary in patients with glaucoma, tachycardia, and urinary retention

Dose 50 mg thrice daily, adjusted according to response and side-effects

Proprietary Name DISIPAL (Vol I 24th Edn p 658) it is an ingredient of ELIMIT

[P1] **Otalgan** (*Serumwerk Basle Umclem*) Ear-drops containing phenazone 5% and procaine 1% in anhydrous glycerin. For painful effections of the middle ear

Otamidyl (*May & Baker*) Ear drops containing dibromopropamidine isethionate 0 15% and di(*p*-amidinophenyl)amine dihydrochloride 0 5% in an organic solvent. For the treatment of otitis externa and chronic suppurative otitis media

[P2 B] **Ototrane** (*Ward Blenkinsop*) An adhesive ear paint containing I enotrane 0 1% prednisolone 0 5%, and carbopol 0 75%, with alcohol and distilled water, in tubes of 5 g For the treatment of chronic otitis externa and otitis media

[P1 84B] **Ovestin** (*Organon*) Œstriol available in Ampoules of 1 ml each containing 1 mg for intramuscular injection and as Tablets of 0 25 mg

Oxazine Elixir (*Rouse*) Contains in each fluid drachm piperazine hydrate $7\frac{1}{2}$ grains

[P1 84B] **Oxymetholone** 17 Hydroxy 2 hydroxymethylene 17α methylandrostan 3-one, $C_{21}H_{32}O_3$=332 5

An anabolic agent which is stated to have no progestational and a minimum androgenic effect. It is claimed to stimulate growth and to correct physical development or loss of weight by promoting the retention of nitrogen and elements essential to the formation of body tissues. *Contra indicated* in prostatic carcinoma It should be given with care to patients with circulatory failure or renal dysfunction *Dose* daily 5 to 15 mg for courses of 30 to 45 days with intervals of 10 to 15 days, for severe cases, an initial course of 20 to 30 mg for 7 to 10 days followed by 5 to 15 mg for 4 to 8 weeks, children, 5 mg for courses of 30 days with intervals of 15 to 30 days

Proprietary Names ADROYD (see p 275) ANAPOLON

[D P1 81] **Oxymorphone Hydrochloride** Oxumorphone Hydrochloride, Oxydimorphone Hydrochloride 7 8-Dihydro-14-hydroxymorphunone hydrochloride, $C_{17}H_{19}O_4N,HCl$=337 8

Oxymorphone hydrochloride is an analgesic. It is usually administered by subcutaneous or intramuscular injection in the treatment of severe pain, and by intravenous injection as an adjunct to anaesthesia It acts

in 10 to 20 minutes after subcutaneous injection and in 10 to 15 minutes after intramuscular injection and its effect lasts for 4 to 6 hours The analgesic effect of 1 mg is stated to be equivalent to 8 to 10 mg of morphine It has been administered rectally in the form of a suppository Doses of up to 25 mg have been given by injection in the treatment of neoplastic disease *Toxic effects* as for morphine—see Vol 1, 24th Edn, p 909—but the side effects are stated to be less with oxymorphone Addiction to oxymorphone can occur after prolonged administration but its liability to cause addiction is claimed to be less than that of morphine or pethidine.

Dose by subcutaneous or intramuscular injection, as an analgesic, 1 5 to 5 mg , pre-operatively 0 3 to 1 5 mg As an adjunct to anæsthesia, by intravenous injection as a 0 03% solution 0 3 to 0 6 mg , supplemented by doses of 0 15 to 0 3 mg

Proprietary Name NUMORPHAN

Oxyphenbutazone G 27 202 Hydroxyphenylbutazone 4-Butyl 1 *p*-hydroxyphenyl 2 phenylpyrazolidine 3 5 dione $C_{19}H_{20}O_3N_2$=324 4

Oxyphenbutazone is stated to have anti inflammatory, antipyretic, and analgesic properties It has been used in the treatment of inflammatory conditions and rheumatic diseases *Toxic effects* which may be produced are gastro intestinal upset salt and fluid retention skin rash and more rarely, leucopenia. Gastro intestinal upsets which are usually milder than with phenylbutazone, may be lessened by the concurrent administration of a sodium free antacid *Contra indicated* in patients with cardiac, renal and hepatic damage peptic ulceration drug allergy and blood dyscrasias *Usual dose* initial 400 to 600 mg daily after food maintenance, 200 to 300 mg daily after food.

Proprietary Names TANDERIL, TANDEARIL (*U.S.A*)

PCM (*Napp*) Paracetamol (q v) available as tablets of 500 mg

Pabalate—Sodium Free (*Robins Co*) Enteric-coated tablets each containing potassium salicylate 300 mg and potassium *p* aminobenzoate 300 mg [B] Pabalate HC contains in addition in each tablet hydrocortisone 2 5 mg For rheumatoid arthritis and rheumatic conditions when restricted sodium intake is desirable *Dose* initial 6 to 8 tablets daily increased if necessary to control symptoms

[0 Pi 81] **Palfium** (*M C P Pure Drugs*) Dextromoramide (q v) available as bitartrate in Tablets of 5 mg (base) and in Ampoules of 5 mg and 10 mg (base)

[0 Pi 81] **Pamergan** (*May & Baker*) Pre anæsthetic solutions in five forms P100 in 2 ml ampoules containing pethidine hydrochloride 100 mg and promethazine hydrochloride 50 mg SP50 in 2 ml ampoules containing pethidine hydrochloride 50 mg promethazine hydrochloride 50 mg and hyoscine hydrobromide 0 43 mg SP100 in 2 ml ampoules containing pethidine hydrochloride 100 mg promethazine hydrochloride 50 mg , and hyoscine hydrobromide 0 43 mg P100/25 in 1 ml ampoules containing pethidine hydrochloride 100 mg and promethazine hydrochloride 25 mg , and AP100/25 in 1 ml. ampoules containing pethidine hydrochloride 100 mg promethazine hydrochloride 25 mg and atropine sulphate 0 6 mg

Panaleve (*Wigglesworth Ltd*) Paracetamol (q v) available as an Elixir containing 120 mg in each fluid drachm, and as Tablets of 500 mg

Pancreozymin (*Boots*) Vials each containing 100 units of pancreozymin in the form of a dry powder to be dissolved in Water for Injection For use with secretin as a diagnostic agent in pancreatic and gall bladder dysfunction. *Dose* 1 to 2 units per kg body weight by slow intravenous injection

Pancrex (*Panes & Byrne*) Pancreatin B P , available as enteric-coated Granules and as Powder. **Pancrex V.** pancreatin with approximately five times the tryptic activity of pancreatin B P , available as Powder, and as Tablets each equivalent in tryptic activity to pancreatin B.P 0 33 g **Pancrex V Forte** Tablets each equivalent in tryptic activity to pancreatin B P 1 g (*Modification of the Pancrex entries in Vol. I, 24th Edn, p 939*)

Panets (*Ward, Blenkinsop*) Paracetamol (q v), available as tablets of 500 mg

Panok (*B.M Laboratories*) Paracetamol (q v), available as tablets of 500 mg

[P1 81 84A] **Parabal** (*West Pharmaceutical Co*) Tablets each containing phenobarbitone sodium dihydroxyaluminiumaminoacetate 260 mg (equivalent to phenobarbitone sodium 10 mg) Sedative. *Dose* one tablet morning and night or thrice daily

Paracetamol (see also Vol. I, 24th Edn, under Panadol, p 25) Acetaminophen (*U S.N.F*), 4'-Hydroxyacetanilide, *p*-Acetamidophenol, $C_8H_9O_2N$=151 2 A white, odourless, crystalline powder with a bitter taste Slightly soluble in cold water, more soluble in hot water, soluble in alcohol, chloroform, and propylene glycol, slightly soluble in ether

An analgesic and antipyretic with an analgesic action approximately equivalent to that of acetylsalicylic acid There have been no reports of undesirable side-effects such as gastric irritation, sulphæmoglobinæmia, and methæmoglobinæmia *Dose*, every 3 or 4 hours, adults 1 g , children, 3 to 7 years 250 mg , 7 to 12 years 500 mg

Proprietary Names CALPOL, CETAL, PCM, PANADOL (Vol I 24th Edn, p. 25), PANALEVE, PANETS, PANOK TABALGIN (Vol I, 24th Edn, p 1398), AMADIL (*U S A*), TRALGON (*U.S A*), it is an ingredient of ADWIN TABLETS, ADWIN PÆDIATRIC, ENERIL, FEBRILIX GEVODIN HYDRATENE, LOBAK PANALEVE ELIXIR, PARAFON, PREFACOSE, QUADRIN, RINUREL TABLETS, TABALGIN ELIXIR, TRIOTUSSIC, and TYLENOL ELIXIR.

Parafon Tablets (*McNeil Laboratories*) Each contains chlorzoxazone (q v) 125 mg and paracetamol (q v) 300 mg Muscle relaxant and analgesic *Dose* 1 or 2 tablets 3 or 4 times daily.

Parenzyme Aqueous (*Merrell-National*) Lyophilised trypsin in vials of 25 mg , to be dissolved for use in aqueous diluent 5 ml For the treatment of a variety of inflammatory disorders *Dose* 1 ml. daily by intramuscular injection. **Parenzyme B** buccal tablets each containing trypsin 5 mg for use in conjunction with Parenzyme Aqueous or alone. *Dose* one tablet 4 times daily

[B] **Pargonyl** (*Roussel*) Paromomycin sulphate, available as capsules each containing the equivalent of 250 mg of paromomycin (q v)

Parnate (*Smith, Kline & French*) Tranylcypromine sulphate (q v), available as tablets of 10 mg

[B] **Paromomycin**, D Glucosaminedeoxystreptamine D ribosediaminohexose, $C_{23}H_{45}O_{14}N_5$=615 7. An antibiotic substance derived from cultures of certain streptomyces species, one of which is *Streptomyces rimosus* forma *paromomycinus*

Paromomycin is used in the treatment of intestinal amœbiasis, bacillary dysentery, salmonellosis, and other gastro-intestinal infections It is also employed for pre-operative gut sterilisation and the suppression of nitrogen-forming bacteria in the gastro intestinal tract of patients with hepatic coma. It is given by mouth and, since it is only slightly absorbed from the gastro-intestinal tract, it is not suitable for the treatment of systemic infections.

Toxic effects abdominal cramps, pruritus ani, and heartburn have been reported. Larger doses may cause initial constipation, followed by moderately severe diarrhœa, and prolonged dosage may result in

super-infections by non susceptible organisms If given by injection in high or prolonged dosage, paromomycin may cause renal damage

Dose for amœbiasis, 25 mg per kg body-weight daily in divided doses for 5 days, for infections by *Shigella* spp and *Escherichia coli*, 25 to 50 mg per kg body-weight daily in divided doses for up to 7 days, for infections by *Salmonella* spp and other less sensitive organisms, 100 mg per kg body-weight daily in divided doses for up to 7 days, for pre-operative sterilisation of the gut, 500 mg 4 times daily for 4 days, for infections associated with hepatic coma, up to 6 g daily in divided doses for 2 to 6 days *Dose for children for amœbiasis*, 25 mg per kg body-weight daily in divided doses for 5 days, for bacillary dysentery, 50 to 100 mg per kg body-weight daily in divided doses for up to 7 days.

Proprietary Names (as the sulphate) HUMATIN, PAROMYL.

[P1 84B] Parstelin (*Smith Kline & French*) Tablets each containing tranylcypromine sulphate (q v) 10 mg and trifluoperazine hydrochloride (q v) 1 mg For the treatment of depression with anxiety *Dose* 1 to 3 tablets daily

Pasade (*Smith & Nephew*) Granules of anhydrous sodium aminosalicylate processed with fat, equivalent to sodium aminosalicylate 96 4% or aminosalicylic acid 70%

[R] Pasinah-302 (*Wander*) Cachets each containing sodium aminosalicylate 2 g and isoniazid 50 mg

[R] Pasinah-6PH (*Wander*) Cachets each containing sodium aminosalicylate 1 67 g and isoniazid 33 3 mg

(*For other Pasinah preparations see Vol I, 24th Edn p 1206*)

PASkallium (*Glenwood*) Potassium aminosalicylate, available as Powder in bulk and in single-dose 'Envules of 3 g, and Tablets of 500 mg

[P1] Pavacol (*Ward, Blenkinsop*) A syrup containing in each 100 ml papaverine hydrochloride 20 mg, pholcodine 100 mg, tolu balsam 45 mg, clove oil 20 mg, weak ginger tincture 0 1 ml, anise oil 7 mg, capsicum tincture 0 4 ml., peppermint oil 20 mg, glycerin 10 ml, alcohol 1 1 ml, chloroform 0 25 ml., and treacle 45 g For the symptomatic treatment of unproductive, painful, or exhausting cough. *Dose* 1 or 2 teaspoonfuls as required, children, ½ to 1 teaspoonful 3 to 5 times daily [P1] Pavacol Diabetic. A cough syrup containing the same ingredients as Pavacol except that the carbohydrates are omitted [P1] Pavacol Pastilles. *Each contains papaverine hydrochloride 1 mg*, pholcodine 4 mg., phenoctide 2 mg., tolu balsam 0 9 mg., clove oil 0 4 mg, weak ginger tincture 0 001 ml, anise oil 0 14 mg capsicum tincture 0 004 ml, peppermint oil 0 44 mg, and chloroform 0 005 ml. (*Modification of entry in Vol I, 24th Edn, pp 995–6*)

[P1 84B] Peganone (*Abbott*) Ethotoin (q v), available as tablets of 500 mg

[P1 84B] Pemoline Phenilone, 5-Phenylisohydantoin 2-Imino-5 phenyloxazolidin 4-one, $C_9H_8O_2N_2$=176 2

A stimulant of the central nervous system, which is said to have an action intermediate between that of amphetamine and caffeine Pemoline is claimed to stimulate respiration depressed by morphine and to shorten barbiturate anæsthesia *Usual dose* 20 mg after breakfast and lunch.

Proprietary Name KETHAMED

Pempidine Tartrate. Pempidine Hydrogen Tartrate 1,2 2,6,6-Pentamethylpiperidine hydrogen tartrate, $C_{10}H_{21}N,C_4H_6O_6$=305 4

An autonomic ganglion-blocking agent with an action resembling that of mecamylamine (Vol I, 24th Edn, p 735) but it is more rapidly eliminated The action of pempidine tartrate lasts 5 to 8 hours It is used in selected cases of severe essential hypertension and malignant hypertension The hypotensive effect is enhanced by chlorothiazide. The ingestion

of alkalinising agents may interfere with the excretion of pempidine and thereby enhance its effect

Toxic effects as for Hexamethonium Bromide (Vol I, 24th Edn, p 721) *Contra indicated* in glaucoma, pyloric stenosis, and uræmia Care must be taken when the drug is given to patients with renal disease and cerebral or coronary insufficiency

Dose initial, 1 to 7 5 mg every 8 hours, the interval being later shortened to every 5 hours and the dose adjusted by increments or decrements of 2 5 mg according to the response of the patient, maintenance, *2 5 to 20 mg 4 times daily*

Proprietary Names PERDLYSEN TENORMAL.

[B] **Penicillin V Potassium Syrup** (*Lilly*) Contains in each teaspoonful (5 ml) phenoxymethylpenicillin potassium 62 5 mg (supplied as granules for reconstitution with water before use)

[B] **Penicillin V Suspension** (*Distillers Co*) Contains in each teaspoonful (5 ml) phenoxymethylpenicillin 60 mg as the potassium salt.

(*For other Penicillin V preparations see Vol I, 24th Edn, p 1445*)

Penicillinase. An enzyme produced by many strains of bacteria. The commercial product is obtained by fermentation from cultures of *Bacillus cereus*

Penicillinase destroys penicillin and is used in the treatment of allergic reactions to penicillin, although its action is too slow for it to be effective in immediate anaphylactic reactions In such cases penicillinase should be injected as soon as possible together with adrenaline and other supportive measures In delayed reactions to penicillin, penicillinase is best given with concurrent administration of antihistamines or corticosteroids *Contra indications* penicillinase may act as a protein antigen and anaphylactic reactions have been reported, patients who have received penicillinase previously should be tested for sensitivity *Dose* by intramuscular injection, 800 000 units repeated after 3 or 4 days if necessary

Proprietary Name NEUTRAPEN

[PI 84B B] **Penitriad** (*May & Baker*) Tablets each containing phenoxymethyl penicillin potassium equivalent to 60 mg of free acid sulphadimidine 167 mg , sulphadiazine 167 mg , and sulphathiazole 167 mg , and granules for Suspension containing after reconstitution the equivalent of one tablet in each teaspoonful (3 6 ml) For the treatment of infections due to penicillin- and sulphonamide-sensitive organisms *Dose* initial, 2 to 4 tablets or 2 to 4 teaspoonfuls of suspension followed by 1 to 3 tablets or teaspoonfuls every 4 to 6 hours

[P2] **Penotrane** (*Ward Blenkinsop*) Phenylmercuric methylene bis(2 naphthyl 3-sulphonate), $C_{23}H_{14}O_6S_2Hg_2$=982 0 (hydrargaphen hygraphen) now also available as Detergent containing 0 4%, as [PI 81] Jelly Urethral containing 0 05% with cinchocaine 0 3%, and as Pessaries, Strong, each containing 5 mg

(*For other Penotrane preparations see also Conotrane, Ototrane and Vol I, 24th Edn, p 893*)

[PI 81 84A] **Pentothal Rectal Suspension** (*Abbott*) Thiopentone sodium in an emulsion of light mineral oil with sodium carbonate buffer 40%, supplied in a disposable plastic syringe graduated for a total dosage of 2 g of thiopentone sodium in increments of 200 mg

Pentral Tempules (*Armour*) Controlled-disintegration capsules each containing pentaerythritol tetranitrate 30 mg For the treatment of angina pectoris. *Dose* one capsule morning and evening

Perdilatal (*Smith & Nephew*) Buphenine hydrochloride, now also available as Forte Tablets of 6 mg (*See also Vol I 24th Edn, pp 64 and 1362*)

Perihemin Capsules (*Lederle*) Each contains cyanocobalamin with intrinsic factor concentrate 2/3 U S P unit (oral), ferrous fumarate (q v) 168 mg

folic acid 0 67 mg and ascorb c acid 50 mg For hypochromic and hyperchromic anæm as *Dose* one capsule thrice daily with or after meals (*Mod fica t on of entry in Vol I 24th Edn p 832*)

Pentrate S.A. (*Warner*) Pentaerythritol tetran trate in sustained action tab lets of 80 mg For the prevention of attacks of ang na pectoris *Dose* one tablet before breakfast and one before the even ng meal (*See also Vol I 24th Edn p 145*)

Perolysen (*May & Baker*) Pemp dine tartrate (q v) available as tablets of 1 mg 5 mg and 10 mg

[P1 84B] **Perphenazine** (*N N D*) 2 Chloro 10 [3 [4 (2 hydroxyethyl) p perazin 1 yl]propyl]phenothiazine $C_{21}H_{26}ON_3SCl$—404 0

A phenothiazine derivative which has a depressant action on sub cortical brain centres It produces sedation without hypnosis and has little or no effect on blood pressure It does not potentiate the action of other central depressants such as barbiturates or volatile anæsthetics It has marked anti emetic propert es It is used chiefly in the treatment of anxiety tension and psychomotor hyperactivity nausea and vomiting It is usually administered by mouth but for the immediate relief of acute symptoms it may be g ven by intramuscular injection

Toxic effects the side effects reported are associated with extra pyramidal dysfunction and usually but not always have occurred at high dosage levels Common symptoms are dystonia involving muscles of the neck and shoulder tremors swollen tongue salivation and blurred vision These symptoms are said to be reversible on discon tinuing the drug

Contra indications injections of perphenazine should be given with care to patients with coronary d sease or severe hypertension Per phenazine is contra indicated in patients with leucopenia and in patients being treated with drugs liable to cause depression of the bone marrow

Dose by mouth for simple anxiety and tens on states 2 mg thrice daily for schizophrenia and acute manic states 8 mg three or four times daily increased if necessary to 64 mg daily in divided doses for nausea and vomiting 2 to 4 mg thrice daily By intramuscular injection 5 to 10 mg every 6 hours followed as soon as the acute symptoms sub side by oral administration

Storage solutions should be protected from light

Proprietary Names FENTAZIN DECENTAN (*Ger*) TRILAFON (*U S A*)

Persantin (*C H Boehringer Sohn Germany Pfizer*) 2,6-D [di(2 hydroxy ethyl)amino] 4 8 d p perdinopyrimido[5 4 *d*]pyrimidine ava lable in Am poules of 2 ml containing 10 mg and as Tablets of 25 mg For increasing the blood flow and the supply of oxygen to the heart in coronary insufficiency acute myocard al infarct on and angina pectoris *Dose* by mouth, 25 to 50 mg thrice daily by slo v intravenous injection, 10 mg which may be admin stered tw ce or thrice daily

[P1] **Pertussa** (*Boots*) L netus for children containing in each teaspoonful ephedrine hydrochloride $^1/_{30}$ gram and belladonna tincture $1^1/_2$ m nims, with tolu ipecacuanha and c tr c acid For the relief of cough *Dose* $^1/_2$ to 2 teaspoon fuls every 4 hours.

[D P1 81] **Pethilorfan** (*Roche*) Now also available in ampoules of 1 ml each containing pethidine hydrochloride 50 mg and levallorphan tartrate 0 625 mg (*See also Vol I 24th Edn p 931*)

Phanquone 11925C Phenquinone 4 7 Phenanthroline 5 6 quinone $C_{12}H_6O_2N_2$=210 2.

Phanquone is stated to be effective in the treatment by mouth of acute and chronic intestinal amœbias s and other protozoal infections including

giardiasis trichomoniasis and chlomastixiasis It is also stated to have some antibacterial activity *Toxic effects* nausea and vomiting *Dose* 50 to 100 mg thrice daily for 5 to 10 days, repeated if necessary after an interval of 1 to 2 weeks

Proprietary Name ENTOBEX.

[D P I 81] **Phenazocine Hydrobromide.** *NIH 7519* Phenethylazocine Bromide 1 2 3 4 5 6 Hexahydro 8-hydroxy 2 6 methano-6 11 dimethyl 3 phenethyl 3 benzazocine hydrobromide hemihydrate, $C_{22}H_{31}ON\,HBr$, $^1/_2H_2O$—411 4

A narcotic analgesic stated to have similar actions to morphine but to cause less respiratory depression and vomiting It may be potentiated by phenothiazines and some sedatives and analgesics Doses of phenazocine hydrobromide of more than 3 mg may be given for severe pain In obstetric use the total dose during labour and delivery need seldom exceed 6 mg When given by intramuscular injection it acts in 5 to 20 minutes and by intravenous injection it acts immediately, its effect lasts for 1 to 6 hours

Toxic effects these are similar to those caused by other narcotic drugs and toxic effects so far reported are respiratory depression hypotension bradycardia and constipation *Antidotes* levallorphan and nalorphine *Contra indications* similar to those of other narcotics as described under Morphine (Vol I 24th Edn p 909) The drug must be given with care to elderly and debilitated patients

Dose by intramuscular injection, 1 to 3 mg every 4 to 6 hours by intravenous injection 1 to 2 mg

Proprietary Names NARPHEN PRINADOL (*U.S.A.*)

Phenazopyridine Hydrochloride 2 6-Diamino-3 phenylazopyridine hydrochloride $C_{11}H_{11}N_5Cl$=249 7

Phenazopyridine has a local analgesic effect on the urogenital mucosa and is used in the treatment of irritation caused by infection or following instrumentation It is rapidly eliminated by the kidneys and colours the urine orange or red It has also been used topically as a 0 1 to 1 0% solution *Toxic effects* it has occasionally caused headache vertigo, colic and in high dosage methæmoglobinæmia. *Contra indicated* in glomerular nephritis uræmia severe hepatitis and pyelonephritis of pregnancy *Dose* 200 mg thrice daily before food

Incompatible with medicaments containing mercury silver, or sulphur, and with mineral acids

Proprietary Names PYRIDIUM (see Vol I 24th Edn, p. 1397) MALLOPHENA (*U.S.A.*) PHENAZODINE (*U.S.A.*) PYRAZOFEN (*Den.*) URIDINAL (*U.S.A.*), it is an ingredient of MEZURAN

[P I 84B] **Phenelzine** Phenethylhydrazine $C_8H_{12}N_2$=136 2

A mono amine oxidase inhibitor stated to be effective in the treatment of reactive and endogenous depression *Toxic effects* postural hypotension nervousness headache nausea vomiting constipation, drowsiness ataxia impotence and œdema *Contra indications* the drug should be given with care to patients with impaired liver function *Dose* 15 mg 3 or 4 times a day reduced in a maintenance dosage for the individual patient

Proprietary Name NARDIL, as the hydrogen sulphate

Phenethylamine Citrate. $C_8H_{11}N\,C_6H_8O_7$=313 3

Phenethylamine citrate is stated to be a sedative with a peripheral action on the autonomic nervous system and to act as an antispasmodic

and antihistamine It potentiates the effect of barbiturates *Usual dose* 15 to 30 mg every 4 hours after food

Proprietary Names it is an ingredient of RYBROL, THEOPHEN and THEOPHEN RETARD

[P1 84B] **Phenformin Hydrochloride** P E D G Phenethylbiguanide Hydrochloride N^1 β Phenethylformamidinyliminourea Hydrochloride N^1 Phenethyldiguanide hydrochloride $C_{10}H_{15}N_5$ HCl=241 7

A hypoglycæmic agent which has been admin stered by mouth in the treatment of most forms of d abetes mellitus and has been found to be most effective in the treatment of stable elderly diabetics who require small doses of insulin Phenformin hydrochloride may also be effective in the treatment of labile diabetes and juvenile d abetes supplemented by insulin although Walker *et al* (*Brit med J* ii/1960 1567) consider that its use in juveniles cannot be recommended at this stage Phen formin can be used alone or in conjunction with a sulphonylurea or insulin If insulin has been given in doses of more than 30 units daily it should be decreased slowly by not more than 10% every 3 or 4 days as the dosage of phenformin hydrochloride is increased.

Toxic effects anorexia nauses vomiting and diarrhœa occur as reversible side effects proportionally to the dose and occur in about 25 per cent of patients receiving more than 150 mg daily In unstable diabet cs there may occur ketonuria and an acidos s which is controllable by the intravenous administration of sodium bicarbonate and not sodium lactate (Walker *et al* loc cit.) *Contra indicated* in acidos s coma infections pregnancy and before or after surgery The drug must be administered with caution to patients with hepatic disease

Dose 25 mg twice daily increasing if necessary by 25 mg daily every 3 or 4 days to a satisfactory maintenance dose (usually 50 to 100 mg daily in divided doses) according to response and toxic effects

Proprietary Names DIBOTIN D B I (*U S A*)

Phenglutarimide Hydrochloride 10870C α 2 Diethylaminoethyl α phenylglutarimide hydrochloride $C_{17}H_{24}O_2N_2$ HCl=324 9

An anticholinergic agent given by mouth in the treatment of paralysis ag tans and stated to reduce muscular rigidity tremor and excessive secretion of saliva *Toxic effects* dryness of the mouth blurring of vision tachycardia and difficulty in urinating *Contra indicated* in glaucoma. The drug should be given with care to patients with prostatic hypertrophy or pyloric constriction *Usual dose* 10 to 20 mg daily in divided doses Up to 50 mg daily may be given

Proprietary Name ATURBANE.

[P1 84D] **Phenipraxine Hydrochloride** JB 516 *β-Phenylisopropyl hydrazine Hydrochloride N α Methylphenethylhydrazine hydrochloride* $C_9H_{14}N_2$,HCl=186 7

A mono amine oxidase inhibitor wh ch is reported to be of value in the treatment of all types of depress on It can be used alone or in com bination w th electro-convuls on therapy Phenipraxine hydrochloride potentiates th e action of reserp ne phenothiazines barbiturates and amphetamines

Toxic effects phenipraxine may occasionally cause postural hypo-tens on Larger doses may also lead to constipation diff culty in urinating increased sweating œdema of the ankles blurring of vision dryness of the mouth skin rashes, insomnia, nausea and vomiting, and dizziness

The administration of **phenprazine hydrochloride** should be discontinued if a defect of red green **colour vision** develops *Contra indicated* in viral hepatitis and liver dysfunction

Dose initial, 12 to 24 mg daily until a response has been obtained usually in 4 to 14 days, after which the dose is halved to 6 to 12 mg and given for a further 14 days, maintenance, the dose is again halved to 3 to 6 mg daily Phenprazine hydrochloride may be given in single or divided doses preferably early in the day It should not be withdrawn abruptly at the end of a course of treatment but slowly decreased over at least one month

Proprietary Names CAVODIL CATRON (*U S A*)

[P1 87] **Phenuramine Aminosalicylate** Dimethyl(3 phenyl 3 pyrid-2 -ylpropyl)amine *p* aminosalicylate, $C_{14}H_{20}N_2.C_7H_7O_3N=393.5$

An antihistamine with similar actions, uses and toxic effects to phenuramine maleate (Vol I, 24th Edn, p 1122) *Dose* 20 to 50 mg twice or thrice daily

Proprietary Name DANERAL.

[P1 84B] **Phenmetrazine Hydrochloride** (*B P C*) The name approved by the British Pharmacopœia Commission for 3 methyl 2 phenyl morpholine hydrochloride For actions and uses see under Preludin, Vol I 24th Edn, p 134 *Toxic effects* it occasionally causes dryness of the mouth skin rashes, and insomnia Large doses and prolonged treatment may lead to addiction and severe mental depression *Dose* 25 mg thirty minutes before breakfast and lunch, and also in the late afternoon if necessary

Proprietary Names PRELUDIN (Vol I, 24th Edn, p 134), PRELUDIN TABLONGETS

Phenmetrazine Theoclate R 382 3 Methyl 2 phenylmorpholine 8 chlorotheophyllinate $C_{11}H_{15}ON.C_7H_7O_2N_4Cl=391.9$

An anorectic agent with similar actions and toxic effects to phenmetrazine hydrochloride. *Usual dose* 30 mg

Proprietary Name it is an ingredient of TRION

Phentermine 2 Phenyl tert butylamine *aa* Dimethylphenethylamine, $C_{10}H_{15}N=149.2$

Phentermine is a very weak sympathomimetic drug with an anorectic action it is used in the treatment of all types of obesity It is claimed that it has a negligible stimulating action on the central nervous system, that it is not cumulative, and that drug tolerance develops more slowly than with other anorectic agents It is marketed as a complex with an ion exchange resin to give a more sustained release of the drug *Toxic effects* dryness of the mouth and early waking *Dose* 15 to 30 mg at breakfast time

Proprietary Names (as a resinate) DUROMINE IONAMIN (*U S A*)

Phenyltoloxamine Citrate. Phenyltolyloxamine Citrate PRN (2 *o* Benzylphenoxyethyl)dimethylamine dihydrogen citrate, $C_{17}H_{21}ON.C_6H_8O_7=447.5$

It has the general properties and uses of the antihistamine drugs as described in Vol 1 24th Edn p 1102 *Toxic effects* average or large doses may cause drowsiness dryness of the mouth, nausea vomiting dizziness and nervousness

Dose 25 to 50 mg 3 or 4 times daily

Proprietary Names ANTIN (*Dan*) BRISTAMIN (*U S A*) it is an ingredient of RINUREL. Phenyltoloxamine is an ingredient of PHOLTEX.

Phisohex (*Bayer Prod*) Hexachlorophane 3% in an emulsion containing lanolin white soft paraffin and a detergent. For cleansing and disinfecting the skin

[P1] **Pholtex** (*Riker*) A mixture containing in each teaspoonful (4 ml) pholcodine 15 mg and phenyltoloxamine (see phenyltoloxamine citrate) 10 mg both in the form of ion-exchange resin complexes for sustained release For use as a cough suppressant. *Dose* one teaspoonful on retiring and on rising

Phyldrox Suppositories (*Carlton Laboratories*) Each contains aminophylline 360 mg for adults or 150 mg for children

[P1 84A] **Phyldrox Tablets** (*Carlton Laboratories*) Each contains theophylline 128 mg ephedrine hydrochloride 25 mg and phenobarbitone 8 mg supplied Plain for prompt action and Enteric Coated for delayed action For the symptomatic relief of asthma and hay fever *Dose* one plain tablet thrice daily or as required one plain tablet and one coated tablet on retiring

Phytomenadione The name approved by the British Pharmacopœia Commission for phytonadione—see Vol I, 24th Edn p 874

[Q P1 81] **Pipadone Compound Tablets** (*Burroughs Wellcome*) Each contains dipipanone hydrochloride 25 mg and cyclizine hydrochloride 50 mg For the relief of pain *Dose* $\frac{1}{2}$ to $1\frac{1}{2}$ tablets every 6 hours (*See also Vol I 24th Edn p 935*)

[P1 84B] **Pipamazine.** 10 [3 (4 Carbamoylpiperidino)propyl] 2-chlorophenothiazine $C_{21}H_{24}ON_3SCl = 402.0$

A phenothiazine derivative which acts as an anti emetic and is used in the treatment of the nausea and vomiting of pregnancy It has little tranquillising effect in normal doses It is usually given by mouth but has been given by intramuscular injection in doses of 5 and 10 mg in the treatment of post operative vomiting

Toxic effects pipamazine may have the side-effects characteristic of phenothiazines such as drowsiness orthostatic hypotension depression of bone marrow, and extra pyramidal effects on high dosage *Contra indications* depression of haemopoietic function Pipamazine should be used with caution in patients with hypotension or for patients taking other drugs which depress the central nervous system

Dose according to the needs of the patient. The usual dose is 20 mg daily in divided doses

Proprietary Name MORNIDINE

Pipazethate Hydrochloride. 2 (2 Piperidinoethoxy)ethyl 9 thia-4, 10-diaza anthracene 10-carboxylate hydrochloride, $C_{21}H_{25}O_2N_3S\,HCl = 436.0$

Pipazethate is stated to be an antitussive agent which acts on the cough centre and does not depress respiration. It is claimed that pipazethate has no side effects or contra indications *Dose* 20 to 40 mg 3 or 4 times daily

Proprietary Name SELVIGON

[P1] **Planidets** (*May & Baker*) Lozenges each containing dibromopropamidine embonate (q v) 1 mg chlorphenoctium amsonate (q v) 1 mg and butyl aminobenzoate 4 mg For the relief of painful conditions of the throat and mouth *Dose* one lozenge to be sucked every 3 hours total daily dose 4 to 6 lozenges.

Plaquenil (*Bayer Prod*). Hydroxychloroquine sulphate (q v) available as tablets of 200 mg (*Modification of entry in Vol I 24th Edn p 1171*)

Plenliron (*Kerfoot*) Ferrous aminoacetosulphate available as a Liquid containing 170 mg (equivalent to ferrous iron 30 mg) in each mL and as Tablets of 225 mg (equivalent to ferrous iron 40 mg) *For* the treatment of

iron deficiency anæmias *Dose* initial, 30 drops of liquid 3 or 4 times daily or 2 tablets twice or thrice daily for 10 to 14 days maintenance, 20 drops of liquid twice daily or 1 or 2 tablets daily

Plesmet Syrup (*Coates & Cooper*) Contains in each teaspoonful ferrous aminoacetosulphate equivalent to 25 mg of Fe and aneurine hydrochloride 1 mg For the treatment of iron deficiency anæmias *Dose* 1 to 2 teaspoonfuls twice or thrice daily children ½ to 1 teaspoonful twice daily (*For Plesmet tablets see Vol I 24th Edn p 1396*)

Polybrene (*Abbott*) Hexadimethrine bromide (q v) available in ampoules of 10 ml containing 10 mg in each ml

Portyn (*Parke, Davis*) Benzalonium bromide (q v) available as Kapseals (capsules) each containing 10 mg

[℞] **Potassium Phenethicillin, BRL 152, Penicillin 'B', Potassium α phenoxyethylpenicillin, Potassium 6 (α phenoxypropionamido)penicillanate**, $C_{17}H_{19}O_5N_2SK$=402 5

An antibiotic which is administered by mouth and which has a similar antibacterial action to phenoxymethylpenicillin and benzylpenicillin, but which has been stated to be active against some penicillin resistant organisms notably staphylococci Potassium phenethicillin appears to be slightly less effective against streptococci and pneumococci than phenoxymethylpenicillin and benzylpenicillin and very much less effective against *Hæmophilus influenzæ* and *Proteus* than benzylpenicillin (Garrod, *Brit med J*, 1/1960, 527) In a study of the relative activity of phenethicillin and phenoxymethylpenicillin potassium, Fairbrother and Taylor (*Lancet*, II/1960, 400) concluded that there was little difference in the activity of the two drugs on strains of *Staphylococcus aureus* which produce penicillinase

Toxic effect diarrhœa *Contra indications* it should not be given to patients sensitive to penicillin It is not recommended for chronic or deep seated infections such as subacute bacterial endocarditis, meningitis or syphilis

Usual dose 125 to 250 mg thrice daily Doses of up to 500 mg may be given for more severe infections

Proprietary Names BROXIL ALPEN (*U S A*) CHEMIPEN (*U S A*) DARCIL (*U S A*) DRAMCILLIN S (*U S A*) MAXIPEN (*U S A*), SYNCILLIN (*U S A*)

Note Syncillin (Ger) *contains potassium benzylpenicillin and sulphonamides*

[℞] **PreCortisyl** (*Roussel*) Prednisolone available in solution in water miscible vehicles as a **Skin Cream** containing 0 25% or 0 5% in tubes of 5 g and 15 g, and as a **Skin Lotion** containing 0 25% For pruritus and dermatitis

[℞] **PreCortisyl Intravenous** (*Roussel*) Prednisolone 21 hemisuccinate, in ampoules of 1 ml each containing 25 mg in anhydrous solvent to be mixed with 4 ml of aqueous diluent containing sodium bicarbonate 4 5 mg (supplied in separate ampoule) for use as an intravenous injection or, after further dilution for infusion For severe manifestations of infectious diseases shock and acute dehydration syndromes, asthma severe allergic disorders and by retention enema ulcerative colitis. *Dose* 25 to 50 mg every 2 to 8 hours, not more than 100 mg in 24 hours

(*For other PreCortisyl preparations see Vol I, 24th Edn pp 497 and 498*)

[℞] **Prednelan** (formerly known as **Delta Ef Cortelan**) (*Glaxo*) Prednisolone available as tablets of 1 mg and 5 mg (as the acetate)

[℞] **Prednelan N Injection** (*Glaxo*) Contains prednisolone acetate 25 mg and neomycin sulphate 5 mg in each ml available in ampoules of 1 ml and in vials of 5 ml For intra articular injection in the treatment of rheumatoid arthritis osteo arthritis traumatic arthritis gouty arthritis, and bursitis *Dose* 1 to 6 ml

[B] **Predsol** (*Glaxo*) Prednisolone disodium phosphate available in the following preparations for the treatment of inflammatory conditions a Cream containing 0 25% or 0 5% in tubes of 5 g and 15 g Drops for Eye or Ear containing 0 5% in vials of 3 ml and 10 ml an Eye Ointment containing 0 5% in tubes of 3 g a Lotion containing 0 1% or 0 25% and an Ointment containing 0 25% or 0 5% in tubes of 5 g and 15 g

[B] **Predsol Injection** (*Glaxo*) Prednisolone disodium phosphate in ampoules of 1 ml each containing the equivalent of prednisolone 20 mg For the treatment of acute adrenal failure in severe shock and adrenal crises as in Addison s disease and Simmonds s disease *Dose* initial 1 to 5 ml repeated until response occurs maintenance 1 ml at suitable intervals

[B] **Predsol Nasal Drops** (*Glaxo*) Contain prednisolone d sodium phosphate 0 1% in isotonic buffered solution For the treatment of hay fever and rhinitis

[B] **Predsol Retention Enema** (*Glaxo*) A buffered solution of prednisolone disodium phosphate containing the equivalent of prednisolone 20 mg in 100 ml. in a disposable plastic bag with rectal tube. For self administration in the treatment of ulcerative colitis

[B] **Predsol Suppositories** (*Glaxo*) Each contains prednisolone 5 mg as prednisolone disodium phosphate For all forms of proctitis.

[B] **Predsol N** (*Glaxo*) Cream, Drops for Eye or Ear, Eye Ointment, Lotion, and Ointment, as the corresponding Predsol preparations (above) with the addition of neomycin sulphate 0 5% For the treatment of inflammatory conditions when infection is present or suspected.

[B] **Predsol-N Nasal Spray** (*Glaxo*) Contains prednisolone disodium phosphate 0 025% neomycin sulphate 0 5% and naphazoline nitrete 0 025% in aqueous solution For inflammatory allergic conditions of the nose

Prefacose (*Therapeutic Products Fassett & Johnson*) An effervescent powder containing in each avoirdupois ounce paracetamol (q v) 1 g ascorbic acid 100 mg and dextrose monohydrate 25 g For influenza feverish colds and headaches *Dose* 1 to 3 level dessertspoonfuls in a tumbler of water every 3 or 4 hours.

[Pl 84B] **Preludin Tablongets** (*C H Boehringer Sohn Germany Pfizer*) Phenmetrazine hydrochloride (q v) in long acting tablets of 50 mg

[Pl] **Priatan** (*Knoll Pharmethicals London*) Tablets each containing (−) 2 imino-3 4 dimethyl 5 phenylthiazol dine thiocyanate 15 mg ephedrine thiocyanate 15 mg theophyll ne 50 mg and phenazone 400 mg Solution for inhalation and oral use containing (−) 2 imino-3 4 dimethyl 5 phenylthiazoli dine theophyllin 7 ylacetate 30 mg and ephedrine theophyllin 7 ylacetate 30 mg in each g Ampoules of 1 ml containing (−) 2 imino-3 4-dimethyl 5 phenylthiazolidine theophyllin 7 ylacetate 30 mg and ephedrine theophyllin 7 ylacetate 30 mg For the treatment of asthma and bronchitis *Dose* 1 or 2 tablets followed by ½ to 1 tablet several times daily solution 10 to 20 drops in some fluid 3 or 4 times daily ampoules one injected subcutaneously or, in severe cases 2 to 3 ampoules intravenously

[Pl 84B] **Primodos** (*Schering A G., Berlin Pharmethicals London*) Tablets each containing norethisterone acetate (see norethisterone) 5 mg and ethinyl œstradiol 0 01 mg For early diagnosis of pregnancy and for the treatment of amenorrhœa

[Pl 84B] **Primogyn Depot 100 mg** (*Schering A G., Berlin Pharmethicals London*) Œstradiol undecenoate available as a clear oily solution containing 100 mg per ml in ampoules of 1 ml For the long term treatment of prostatic cancer *Dose* one ampoule every 3 weeks by intramuscular injection. (*For Primogyn Depot see Vol. I 24th Edn p 961*)

[Pl 84B] **Primolut N** (*Schering A G Berlin Pharmethicals London*) Norethisterone (q v) available as tablets of 5 mg (*For Primolut Depot see p. 277*)

[P1 84B] **Primosiston** (*Schering A G, Berlin Pharmethicals, London*) An injection in ampoules of 1 ml. each containing hydroxyprogesterone caproate (q v) 125 mg and œstradiol benzoate 10 mg in solution in a mixture of castor oil and benzyl benzoate For the treatment of functional uterine bleeding due to cystic glandular hyperplasia *Dose* 1 ml. by intramuscular injection

Pripsen (*Westminster Laboratories*) Granules containing in each full dose (160 grains) piperazine phosphate 4 g and standardised senna (containing 28 mg sennosides A and B) For the treatment of threadworm and roundworm infestations *Dose* adults and children over 6 years, 4 teaspoonfuls, children under 6 years 2 to 3 teaspoonfuls, followed by a drink.

[P1 84B] **Pro Banthine with Dartalan** (*Searle U.K.*) Tablets each containing propantheline bromide 15 mg and thiopropazate hydrochloride (q v) 3 mg For the treatment of peptic ulcer and functional dyspepsias and anxiety tension states presenting gastro intestinal symptoms *Dose* 3 to 5 tablets daily (*For other Pro Banthine preparations see Vol I, 24th Edn p 224*)

Procelium Dusting powder (*Genatosan*) Contains zinc undecenoate 5% and sodium propionate 5% in an absorbent powder basis Antimycotic.

[P1 84B] **Prochlorperazine Maleate** (*N N D*) 2-Chloro-10 [3-(4 methylpiperazin 1 yl)propyl]phenothiazine dimaleate, $C_{20}H_{24}N_3SCl,2C_4H_4O_4$ =606 1

A phanothiazine derivative which has actions and uses similar to chlorpromazine but which is 4 to 5 times as potent It produces less hypotension than chlorpromazine, its potentiating action on other depressants of the central nervous system, its antispasmodic activity, and its antihistaminic activity are less than those of chlorperazine It is given by mouth in the treatment of nausea and vomiting, neuroses, and mild emotional disturbances It is also used in the treatment of Menière's syndrome, labyrinthitis, aural vertigo, and migraine In higher doses it is used in severe psychiatric disorders such as schizophrenia, mania and psychoses It may be administered in the form of a suppository

Toxic effects, antidotes, and *contra indications* similar to those of other phenothiazine compounds, as described under chlorpromazine (Vol I, 24th Edn, pp 386 to 390)

Dose for mild emotional disturbances, nausea and vomiting Ménière's syndrome, and aural vertigo, 5 to 10 mg three or four times daily, adjusted according to the response of the patient For psychotic patients in hospital, 10 mg three or four times daily increased gradually if necessary the usual effective dose is 75 to 125 mg daily For acute migraine a single dose of 20 mg followed in 2 hours if necessary by a further 10 mg For children weighing 20 to 29 lb, 2 5 mg once or twice daily, max 7 5 mg daily, 30 to 39 lb, 2 5 mg twice or thrice daily, max 10 mg daily, 40 to 85 lb, 2 5 mg thrice daily to 5 mg twice daily, max 15 mg daily

Proprietary Names STEMETIL, COMPAZINE (*U.S.A.*), TEMENTIL (*Fr*).

[P1 84B] **Prochlorperazine Methanesulphonate.** 2-Chloro-10-[3-(4 methylpiperazin-1-yl)propyl]phenothiazine dimethanesulphonate, $C_{24}H_{34}N_3SCl\ 2CH_4O_3S$=566 2.

A water soluble salt of prochlorperazine which is suitable for deep intramuscular injection Actions and uses, toxic effects, and contraindications, as for Prochlorperazine Maleate *Usual dose* 25 mg twice or thrice daily by deep intramuscular injection.

Proprietary Names STEMETIL, TEMENTIL (*Fr*)

[P1 81 E] **Proctosedyl** (*Roussel*) **Ointment and Suppositories** each g of ointment and each suppository contains cinchocaine hydrochloride 5 mg.,

hydrocortisone 5 mg and framycetin sulphate 10 mg For the treatment of hæmorrhoids (*Modification of entry in Vol I 24th Edn p 1397*)

Proxyphylline 7 (2 Hydroxypropyl)theophylline $C_{10}H_{14}O_3N_4$=238 3

A theophylline derivative which is stated to act as a coronary vasodilator and bronchodilator and to have little or no gastric side effects *Usual dose* by mouth 120 to 480 mg 3 or 4 times daily by intramuscular or intravenous injection 150 to 300 mg

Proprietary Names BRONTYL PUROPHYLLIN (*Swiss*) THEON (*Swed.*)

[P1 84B] **Prozine** (*Wyeth*) Capsules each containing meprobamate 200 mg and promazine hydrochloride 25 mg For the treatment of severe resistant neuroses mild psychotic disturbance and the vomiting of pregnancy *Dose* for neuroses 1 or 2 capsules 2 to 4 times daily for senile states 1 or 2 capsules twice or thrice daily for vomiting of pregnancy 1 capsule once or twice daily

[P1] **Pseudoephedrine Hydrochloride** *d-ψ* Ephedrine Hydrochloride, *d* Isoephedrine Hydrochloride (+) 2 Methylamino 1 phenylpropan 1 ol hydrochloride $C_{10}H_{15}ON.HCl$=201 7

A nasal decongestant and bronchodilator

Proprietary Name SUDAFED (*U S A*) it is an ingredient of ACTIFED and ACTIFED COMPOUND LINCTUS

Pulmodrine Expectorant (*Medo Chemicals*) Contains in each 4 ml. guaiphenesin (q v) 50 mg and methylephedrine hydrochloride 0 5 mg For the stimulation of expectoration in bronchial catarrh *Dose* ½ to 1 tablespoonful 3 or 4 times daily children ½ to 1 teaspoonful

Pulvogen Dusting powder (*Genatosan*) Contains hexachlorophane 0 25% ichthammol 2% and zinc oxide 4% in an absorbent powder base For intertrigo hyperhidrosis and the prevention of bedsores and napkin rash

[R] **Puromyn** (*Calmic*) Tablets each containing neomycin sulphate 5 mg and d (5-chloro 2 hydroxyphenyl) sulphide 40 mg For the relief of sore throat and the prevention of monilial infections in patients receiving antibiotics *Dose* one tablet to be dissolved slowly in the mouth at half hourly intervals

[R] **Pycamusan B D** (*Smith & Nephew*) Cachets each containing isoniazid 37 5 mg and sodium aminosalicylate 1 5 g in tubes of 8 for dosage of 4 twice daily (*For other Pycamusan preparations see Vol I 24th Edn p 1206*)

Pyrazinamide (*Merck Sharp & Dohme*). Available as tablets of 500 mg (*See Vol I 24th Edn p 1208*)

[P1 87] **Pyrrobutamine Phosphate** (*V N D*) 1 (4-*p* Chlorophenyl 3 phenylbut 2 enyl)pyrrolidine diphosphate $C_{20}H_{23}NCl.2H_3PO_4$=507 9

An antihistamine with a low incidence of sedative and other side effects *Dose* 15 mg 3 or 4 times daily

Proprietary Name it is an ingredient of CO PYRONIL

Pyrvinium 6 Dimethylamino 2 [2 (2 5 dimethyl 1 phenylpyrrol 3 yl)vinyl] 1 methylquinolinium $C_{26}H_{28}N_2$=382 5

An anthelmintic used in the treatment of threadworm infestations (oxyuriasis) it is however not sufficiently active to be used against roundworm infestations (ascariasis) It was first used in the form of **Pyrvinium Chloride**—see Vol I 24th Ldn p 1386—and treatment for 5 to 8 days was necessary It was later marketed as **Pyrvinium Embonate** (Pyrvinium Pamoate *i n U S A*) and since a single dose of the embonate clears the majority of threadworm infestations this salt is now more commonly used

Toxic effects are not serious but may include gastro intestinal irritation nausea and vomiting *Contra-indications* it should be used with care in patients with renal or hepatic damage.

Dose of pyrvinium chloride 1·5 to 2 mg per kg body weight daily in divided doses for 5 to 8 days *Dose of pyrvinium embonate* a single dose of the equivalent of 5 mg of base per kg body weight.

Proprietary Names of pyrvinium chloride Pogint (*U.S.A.*) of pyrvinium embonate Vanquin (*U.K.* and *U.S.A.*) Povan (*U.S.A.*)

[Pl] Quadrin (*Burroughs Lyham*) Tablets each containing bendrofluazide (q.v.) 0·5 mg homatropine methylbromide 1 mg., extract of valerian B.P.C. 1934 10 mg and paracetamol (q.v.) 250 mg For the treatment of premenstrual tension and period pains *Dose* 1 or 2 tablets thrice daily at the first sign of discomfort max. 6 tablets daily

Quantril (*Trevena*) Capsules each containing caffeine citrate 250 mg., peppermint oil 53 mg aneurine hydrochloride 2 mg., and chlorophyll 3·3 mg For the relief of mild depression and anxiety states. *Dose* one capsule thrice daily after food

[Pl 84B] Rastinon (*Hoechst Horlicks*) Tolbutamide (q.v.) available as tablets of 500 mg

[Pl 84B] Rautrax (*Squibb*) Tablets each containing hydroflumethiazide (q.v.) 50 mg rauwolfia (whole root) 50 mg., and potassium chloride 625 mg For hypertension *Dose* initial, 2 to 6 tablets daily maintenance 1 or 2 tablets daily

Redoxon Effervescent Tablets (*Roche*) Each contains ascorbic acid 1 g (*For other Redoxon preparations see Vol. I 24th Edn. p. 194*)

[Pl 87] Refagan (*F.B.A. Pharmaceuticals*) Tablets each containing salicylamide 200 mg phenacetin 200 mg anhydrous caffeine 50 mg and mebhydrolin naphthalene 1·5 disulphonate (q.v.) 15 mg For colds, influenza and catarrh of the upper respiratory tract. *Dose* one tablet thrice daily in severe infections, 2 tablets 3 or 4 times daily

[Pl 81] Renotin (*Blackie*) Ethylmorphine hydrochloride 1% in a colloidal gel basis For the treatment by iontophoresis of migraine, neuritis lumbago, sciatica and myalgia

Rheumaprin (*Richter*) Tablets each containing soluble aspirin equivalent to acetylsalicylic acid 5 grains salicylamide 2 grains and aneurine hydrochloride 10 mg For the treatment of rheumatic conditions and the relief of pain *Dose* 3 to 6 tablets daily crushed and taken with water, children, one tablet when required.

Rheusalate (*Willows Francis*) A water soluble paste containing diethylamine salicylate 10% salicylamide 2% and ethyl nicotinate 2% For the relief of pain due to fibrositis sprains and strains

[B] Rhinocort (*Lewis & Burroughs*) A nasal spray containing phenylephrine hydrochloride 0·12% ephedrine hydrochloride 0·5% prednisolone 0·01% and neomycin sulphate 0·06% in an aqueous vehicle. For inflammatory conditions of the nose

Rhomex (*Riker*) Piperazine citrate, available as an Elixir containing 18% and as Tablets of 300 mg For the treatment of threadworm and roundworm infestations *Dose* threadworms 2 teaspoonfuls of elixir or 4 tablets twice daily children one teaspoonful of elixir or 2 tablets once to thrice daily according to age Roundworms 2 teaspoonfuls of elixir or 4 tablets thrice daily children, 1 or 2 teaspoonfuls of elixir or 2 to 4 tablets twice or thrice daily according to age

[Pl] Ruddovydrin Elixir (*Ruddell*) Contains methylephedrine 10 mg drosera liquid extract 0·5 ml guaiphenesin (q.v.) 63 mg tincture of chloroform and morphine 0·5 ml. ascorbic acid 63 mg and tolu syrup to 3 ml For asthma and bronchitis *Dose* one teaspoonful every 3 hours and at bedtime (*For other Ruddovydrin preparations see Vol. I 24th Edn. pp. 48 and 316*)

Riflavin Tablets (*Brook, Parker*) Each contains riboflavine 10 mg

[Pl] Rikospray Benzocaine (*Riker*) An aerosol containing benzocaine 20% and cetylpyridinium chloride 0·1% in a water miscible basis Emollient and analgesic for topical application to mucous membranes.

Rikospray Silicone (*Riker*) An aerosol containing aluminium dihydroxy allantoinate 0 5%, cetylpyridinium chloride 0 1%, and terpineol 1 0%, in a silicone vehicle For the prevention and treatment of bedsores and napkin rash and protection of colostomies and ileostomies

Rinurel Tablets (*Warner*) Each contains paracetamol (q v) 150 mg, phenacetin 150 mg, phenylpropanolamine hydrochloride 25 mg, and phenyl toloxamine citrate (q v) 22 mg For the treatment of common cold, sinusitis, hay fever, and rhinorrhœa *Dose* 2 tablets initially, then one every 4 hours, children from 6 to 12 years, half the adult dose

Ristocetin (*N.N.D.*) Antimicrobial substances produced by *Nocardia lurida*.

Two crystalline components have been isolated ristocetin A and ristocetin B. This antibiotic is effective against a wide range of staphylococcal, pneumococcal, and streptococcal infections. It is usually employed for severe staphylococcal infections and infections by *Streptococcus faecalis*, particularly bacterial endocarditis. It is administered by slow intravenous drip in isotonic saline or dextrose solution as a 2 to 2 5% solution.

Toxic effects eosinophilia, thrombocytopenia, depression of white cell count and relative neutropenia, skin rash, allergic reactions, fever, diarrhœa, and thrombophlebitis if the drug is administered in too high a concentration or too quickly *Contra indications* it is advisable to give lower doses to elderly patients, to infants, and to patients with renal dysfunction

Dose, expressed in terms of ristocetin A, daily in divided doses every 8 to 12 hours 25 mg per kg body-weight, for severe infections, initial doses of 50 to 75 mg per kg body-weight are advisable

Storage there is claimed to be no significant loss of potency in solutions stored at refrigerator temperatures for one month.

Proprietary Names RISTON SPONTIN

Riston (*Imperial Chemical Pharmaceuticals*) Ristocetin A and B (see above), available as a sterile powder in vials containing the equivalent in activity to 500 mg of ristocetin A.

Risunal (*Gestlich*) An ointment containing 5% of β-diethylaminobutyranilide hydrochloride ($C_{14}H_{22}ON_2$,HCl=270 8, a local anæsthetic), 3% of propyphenazone (2,3-dimethyl 1-phenyl 4 isopropylpyrazol 5-one, $C_{14}H_{18}ON_2$ =230 3) 1 5% of ethyl nicotinate, and 1 5% of benzyl nicotinate. *For the treatment of fibrositis, rheumatism, and allied conditions*

[P] 84B] Robaxin (*Robins Co*) Methocarbamol (q v) available as Tablets of 500 mg, and as Robaxin Injectable in ampoules of 10 ml each containing methocarbamol 1 g *Contra indications* Robaxin Injectable should not be given to patients with renal dysfunction because of the presence of polyethylene glycol 300 in the vehicle

Robitussin (*Robins Co*) An expectorant mixture containing in each teaspoonful (5 ml) guaiphenesin (q v) 100 mg *Dose* 1 to 2 teaspoonfuls every 2 to 3 hours, children, ½ to 1 teaspoonful thrice daily.

Rolleton (*Searle U.K.*) Amisometradine (q v), available as tablets of 400 mg

[B] Rovamycin (*May & Baker*) Spiramycin now also available as Capsules of 250 mg (*See also Vol. I, 24th Edn, p 1449*)

Rovigon (*Roche*). Tablets each containing vitamin A palmitate 16 5 mg (30 000 units) and tocopheryl acetate 70 mg For use as a vitamin supplement in old age. *Dose* one tablet 3 or 4 times daily

Rubraton-B (*Squibb*) An elixir containing in each teaspoonful (5 ml) ferric ammonium citrate 170 mg colloidal ferric hydroxide 19 5 mg., cyanocobalamin 4 μg, aneurine mononitrate 1 mg., riboflavine 1 mg., nicotinamide 5 mg.,

pantothenic acid 1 5 mg , pyridoxine hydrochloride 0 5 mg , and alcohol 12% For anæmia promotion of growth, and mild vitamin B complex deficiencies. *Dose* children 1 to 2 teaspoonfuls thrice daily (*For Rubraton see Vol I, 24th Edn, p 526*)

[P1] Ruticain (*Roberts*) Ampoules containing in 2 ml procaine hydrochloride 100 mg soluble rutin 50 mg , and cyanocobalamin 15 μg in a buffered isotonic solution For the treatment of mental and physical deterioration due to ageing

[P1] Rybarex (*Rybar Laboratories*) A liquid inhalant containing adrenaline 0 4%, pituitary (posterior lobe) extract 0 2%, atropine methonitrate 0 1% papaverine hydrochloride 0 08%, benzocaine 0 2%, and tri iodophenol 0 1% in a saline basis For the relief of bronchial asthma, bronchitis, and bronchial catarrh (*Modification of entry in Vol I, 24th Edn, p 48*)

[P1] Rybarvin (*Rybar Laboratories*) An inhalant containing adrenaline 0-4%, pituitary (posterior lobe) extract 0 2%, atropine methonitrate 0 1%, papaverine hydrochloride 0 08% and benzocaine 0 2% For the relief of asthma. (*Modification of entry in Vol I, 24th Edn, p 49*)

[P1 S1 84A] Rybrol (*Rybar Laboratories*). Tablets each containing phenethylamine citrate (q v) 4 mg dexamphetamine sulphate 2 5 mg , phenobarbitone 8 mg , theophylline 120 mg , and ephedrine hydrochloride 25 mg For asthma associated with anxiety *Dose* 1 or 2 tablets every 4 hours

S7 (*Calmic*) Di(5-chloro-2 hydroxyphenyl) sulphide, available as a Cream containing 1%, for fungous infections of the skin and mucous membranes as a Jelly containing 1%, for the treatment of oral thrush otitis externa and otitis media, and as a Powder containing 1%, for athlete s foot and allied fungous infections

[P1 84B] Salupres (*Merck Sharp & Dohme*) Tablets each containing hydrochlorothiazide (q v) 12 5 mg , reserpine 0 0625 mg , and potassium chloride 572 mg For the treatment of mild to moderate hypertension *Dose* 2 to 8 tablets daily

Salurie (*Merck Sharp & Dohme*) Chlorothiazide (q v) available as tablets of 500 mg

[P1] Sancos (*Sandoz Products*) A linctus containing in each teaspoonful (4 ml) pholcodine 4 mg , menthol 0 88 mg , glycerin 600 mg and syrup 4 2 g For the treatment of unproductive cough *Dose* 2 teaspoonfuls

[P1] Savlon Antiseptic Lozenges (*Imperial Chemical Pharmaceuticals*) Each contains chlorhexidine hydrochloride 5 mg and benzocaine 2 mg For the treatment of mouth infections, sore throat, and laryngitis

Savlon Hospital Concentrate (*Imperial Chemical Pharmaceuticals*) A concentrated antiseptic solution for general purposes, containing chlorhexidine gluconate (q v) 1 5% and cetrimide 15%

(*For other Savlon preparations see Vol I, 24th Edn, p 366*)

[P1 S1 B] Scheriproct (*Schering A G Berlin Pharmaceuticals, London*) Ointment containing prednisolone 0 15%, cinchocaine hydrochloride 0 5% hexachlorophane 0 5%, and clemizole undecenoate 1 0%, and Suppositories each containing prednisolone 1 mg , cinchocaine hydrochloride 1 mg , hexachlorophane 2 5 mg , and clemizole undecenoate 5 mg For hæmorrhoids pruritus ani, and anal fissures.

Scorvite (*Wigglesworth Ltd*) Effervescent tablets each containing ascorbic acid 500 mg

[P1 84B] Secergan (*Astra Heulett*) Trimethyl(1 phenothiazin 10 -yl carbonylethyl)ammonium bromide, available as tablets of 150 mg For the treatment of peptic ulcer, gastritis and spastic colitis *Dose* 1 or 2 tablets 3 or 4 times daily

Secretin (*Boots*) Vials each containing 80 to 100 units of secretin, the internal secretion of the duodenum, in the form of a dry powder to be dissolved in 10 ml of Water for Injection For use as a diagnostic agent in pancreatic and gall bladder dysfunction. (*For Secretin Mehol see Vol I 24th Edn p 1397*)

[P1 84B] **Secrosteron** (*British Drug Houses*). Dimethisterone (q v) available as tablets of 5 mg

[P1 81 84A] **Sedasma** (*B.M Laboratories*) Enteric-coated tablets each contain ing aminophylline 125 mg amylobarb tone 8 mg and hyoscine hydrobromide 0 1625 mg For the treatment of cardiac asthma *Dose* 2 tablets thrice daily preferably before meals

Selora (*Bayer Prod*) A sodium free salt substitute containing potass ium iodide 0 01% hydrated calcium silicate 1% glutamic acid 1 15% potassium glutamate 5 61% and potassium chloride 92 05% (*Replaces Neoselarom, Vol I, 24th Edn p 1221*)

Selvigon (*Smith, Kline & French*) Pipazethate hydrochloride (q v) available as a Syrup containing 20 mg in each teaspoonful (3 5 ml) and as Tablets of 20 mg

[P1 84B] **Serpasil Esidrex** (*Ciba*) Tablets each containing reserpine 0 15 mg and hydrochlorothiazide (q v) 10 mg *For the treatment of hypertension* Serpasil Esidrex K tablets have the same composition with the addition of potassium chloride 600 mg enclosed within an enteric coat to avoid gastric irritation *Dose* 2 to 3 tablets daily (*For other Serpasil preparations see Vol I 24th Edn p 746*)

[R] **Sigmamycin Syrup** (*Pfizer*) Contains in each teaspoonful (5 ml) tetra cycline 83 3 mg and oleandomycin 41 7 mg *Dose* 2 teaspoonfuls every 6 hours. (*For Sigmamycin capsules see Vol. I, 24th Edn, p 1470*)

Silbelax (*Silten*) Tablets each containing dioctyl sodium sulphosuccinate 100 mg and phanolphthalein 32 mg For the treatment of constipation *Dose* 1 or 2 tablets at bedtime

[P1 84E] **Sinaxar** (*Armour*) Styramate (q v) available as tablets of 200 mg

Skefron (*Smith Kline & French*) A rapidly evaporating liquid consisting of dichlorodifluoromethane (CCl_2F_2=120 9) 15% and trichlorofluoromethane (CCl_3F=137 4) 85%, contained under pressure in a metal canister fitted with an outlet valve designed to emit the contents in a fine jet, which reaches the skin as a coarse spray For the relief of pain in lumbago, fibrositis, muscle cramp renal colic, spasmodic dysmenorrhœa, and post herpetic neuralgia by rapidly cooling the skin

Sodium Anoxynaphthonate Trisodium 4 anilino-8 hydroxy 1,1 -azonaphthalene 3,6,5 -trisulphonate, $C_{22}H_{14}O_{10}N_3S_3Na_3$=695 6

A dye used in the investigation of cardiovascular function by a dye-dilution technique and an estimation of dye in the plasma. The dye is at first retained in the vascular system and concentrations in blood and plasma can be readily determined, the initial half life of the dye in plasma is 15 to 30 minutes The dye is removed from the serum pro teins by the liver where it is broken down and partly excreted by the bile Colourless metabolites are excreted mainly in the urine The dye does not turn the skin blue *Toxic effects* nausea, vomiting, and rigors have been reported in some patients with single doses of 250 mg or more *Dose* 50 to 100 mg may be repeated several times up to a total of 500 mg

Proprietary Name COOMASSIE BLUE.

Sodium Ipodate Sodium β-(3-dimethylaminomethyleneamino-2,4 6 tri iodophenyl)propionate, $C_{12}H_{12}O_2N_2I_3Na$=620 0

A contrast medium used in cholecystography and cholangiography *Toxic effects* occasional nausea, vomiting diarrhœa and urticarial skin reactions *Contra indications* it should be given with care to patients with liver and kidney disease, Graves s disease, and iodine hypersen-sitivity *Dose* for cholecystography, 3 g in the evening prior to exam-ination, for fractionated cholecystangiography, an additional dose of 3 g early in the morning 3 hours before the examination, for cholangiography,

6 g early in the morning to the fasting patient 2 to 2½ hours before examination

Proprietary Name B LOFTIN

Sodium Ironedetate Ferric Monosodium Edathamil The hydrated iron chelate of the mono sodium salt of ethylenediaminetetra acetic acid $C_{10}H_{13}O_8N_2FeNa\ H_2O=385.1$

Sodium ironedetate is used in the treatment of all forms of anæmia due to iron deficiency *Toxic effects* gastro-intestinal irr tation occurs less frequently than with many other iron preparations but occas onal mild nausea or diarrhœa may occur particularly with higher dosage.

Dose 200 to 400 mg thr ce daily

Proprietary Name SYTRON

[B] **Sodium Methicillin. BRL 1241** Dimethoxyphenecillin Sodium Methicillin Sodium Sodium 6 (2 6-dimethoxybenzamido)penicillanate monohydrate $C_{1}H_{1}O_5N_2SNa\ H_2O$ 420 4

Methicillin has an action resembling the other penicillins but t has a narrower range It s less active than benzylpenicillin and phenoxy methylpenicillin against streptococci and less active than benzylpen cillin against Gram negative species It is active against some other Gram positive cocci including pneumococci Its chief use is most likely to be for infections caused by penicillinase forming staphylococci and staphy lococci resistant to benzylpenicillin although it is not as effective as benzylpenicillin against sens tive strains Sodium methicillin does not cause cross res stance to other antib otics Since t is inactivated by acid solutions sodium methicillin can only be given by injection It is usually given intramuscularly but can be given intravenously in a 20% solut on in Water for Injection. It has been given intrathecally to children in doses of 3 to 5 mg dissolved in at least 1 ml *Contra indicated* in patients sensitive to other penicillins

Although no strains of staphylococci res stant to sodium methicillin have been reported clinically strains with s gnificant res s ances ha s been found in laboratory tests by Jevons (*Brit med J* 1/1961 124) and it is considered (*b d* 1/1961 113) *that the indiscriminate use of this valuable new drug should* be condemned and that it should be reserved for serious infections for which sens tivity tests suggest its use or in which a bactericidal effect is needed and for severe acute infections when treatment has to be started before laboratory studies can be completed

Dose by intramuscular injection. 1 g every 4 hours later reduced to every 6 hours children 100 mg per kg body we ght daily in 4 equally divided doses infants up to 5 kg body weigl t 500 mg daily in 4 equally divided doses

Storage Sodium methicillin po vder should be kept in a cool dry place and solutions at refrigerator temperatures Neutral unbuffered solutions lose about 20% of activ ty after 7 days at 5° or 2 days at 23°

Proprietary Names CELBENIN STAP CILLIN (*U S A*)

Sodium Versenate (*Riker*) Trisod um hydrogen edeta e (q v) available in 5 ml ampoules containing n each ml 200 mg

Soframycin (*Roussel*) Framycetin sulphate ava lable as Tablets of 250 mg For intestinal antisepsis and diarrhœa of bac erial ori, n *Do e* a total of 12 g spread over 3 to 8 days **Soframycin Nebuliser** contains framycet n sulpha e 1 25% gramicidin 0 005% and phenylephrine hydrochlo de 0 25% in buffered isotonic saline For the treatment of acu e coryza. **Soframycin Skin Ointment** contains f amycetin sulphate 1 5% and gramic din 0 005% in a water miscible bas s. For the treatment of primary and secondary infe tions

See also p 277 (*Mod fication of entry in Vol. I 24th Edn, p. 1416*)

Solu Biloptin (*Schering A G, Berlin Pharmaceuticals, London*) Calcium iodate (q v), available in bottles of 3 *g*

Soventol (*Knoll Pharmaceuticals London*) 4 (*N* Benzylanilino) 1 methyl piperidine available as a Jelly containing 2% f lactate for the relief of pruritus and as Tablets each containing 50 mg of hydrochloride Antihistamine *Dose* one tablet every 6 or 8 hours

Soventol C (*Knoll Pharmaceuticals London*) Dragees each containing 4-(*N*-benzylanilino) 1 methylpiperidine hydrochloride 25 mg and propylhexedrine hydrochloride 20 mg For hay fever pruritus, and motion sickness *Dose* 1 to 3 *dragées* every 6 hours

[P1 84B] **Sparine Latab** (*Wyeth*) A resin complex of promazine available as delayed release long-acting tablets each containing the equivalent of 50 mg of promazine hydrochloride

[P1 84B] **Sparine Suspension** (*Wyeth*) Contains in each teaspoonful (5 ml) the equivalent of promazine hydrochloride 50 mg

(*For other Sparine preparations see Vol I 24th Edn p 398*)

[P1 61 84A] **Spastipax** (*Nicholas*) Sustained release tablets each containing the resin bonded equivalent of hyoscyamine sulphate 0 35 mg atropine sulphate 0·05 mg, hyoscine hydrobromide 0 025 mg and amylobarbitone 65 0 mg For the treatment of gastro intestinal spasm, genito-urinary spasm, motion sickness, and parkinsonism *Dose* ½ to 2 tablets in the morning and on retiring

Spironolactone SC-9420 7α-Acetylthio 17β hydroxy-3 oxo-17α-pregn-4-ene-21-carboxylic acid γ lactone, $C_{24}H_{32}O_4S$=416 6

A synthetic steroid which blocks the action of aldosterone on the distal renal tubule It has been advocated as an aid in the management of œdema resistant or partly resistant to the conventional diuretics such as the mercurials and thiazides, which act mainly on the proximal renal tubule It appears to act synergistically with these other diuretics and is usually administered in association with one of them Its action is slow and prolonged, the maximum response is attained after about 3 days of treatment and the duration of activity is about 48 to 72 hours after discontinuing administration

Toxic effects the side effects so far reported have been mild and infrequent, they include drowsiness, mental confusion, and maculopapular or erythematous cutaneous eruptions Spironolactone does not cause potassium depletion but it may promote potassium retention and should be administered with caution to patients with raised serum potassium levels

Dose 100 mg four times daily for a minimum period of 5 days

The value of spironolactone has been firmly established Its widespread and indiscriminate use may however lead to some disappointing results and to criticism of its lack of efficacy in certain œdematous states This can be expected if aldosterone antagonists are administered where œdema is principally due to factors other than hyperaldosteronism —*Lancet* ii/1960 1335

Proprietary Name ALDACTONE

Spontin (*Abbott*) Ristocetin A and B (q v), available as a sterile lyophilised powder in vials representing 500 mg of ristocetin A activity

Sporostacin Chlordantoin Cream (*Ortho*) A vaginal cream containing chlordantoin (q v) 1% and benzalkonium chloride 0 05% For the treatment of fungous infections of the vulvo vaginal area, particularly moniliasis

[P1 84B] **Stanolone** (*N N D*) (see also Vol 1, 24th Edn, p 978) Androstanolone 17β Hydroxy-5α androstan-3-one, $C_{19}H_{30}O_2$=290 4

In addition to its use by intramuscular injection in the treatment of cancer (see Vol I, 24th Edn, p 978), this steroid is also used by mouth

to promote the anabolism of protein *Contra indicated* in prostatic carcinoma *Dose*, daily by mouth 100 to 125 mg for 15 days every month or 50 to 75 mg for 15 to 20 days every month, repeated if necessary, 50 to 75 mg may be given for 2 months followed by an interval of 1 month Children 8 to 15 years, 25 to 50 mg for 15 to 20 days every month Infants and children up to 8 years, 12 5 to 25 mg for 10 to 15 days every month

Proprietary Names ANABOLEX, ANDROLONE (*U S A*) NEODROL (*U S A*), PROTEINA (*Fr*) STANAPROL (*Scand*), it is an ingredient of LYSINEX.

[B] Steclin (*Squibb*) Tetracycline hydrochloride available as Capsules of 50 mg and 250 mg, and as Tablets of 50 mg and 250 mg

[B] Steclin-V (*Squibb*) Tetracycline hydrochloride with added sodium meta phosphate, available as capsules of 50 mg and 250 mg

[P1 84B] Stelabid (*Smith, Kline & French*) Tablets each containing trifluoperazine hydrochloride (q v) 1 mg and isopropamide iodide (q v) 5 mg For the treatment of peptic ulcer and nervous gastro intestinal disorders. *Dose* one tablet 2 or 3 times daily

[P1 84B] Steladex Spansules (*Smith, Kline & French*) Sustained release capsules each containing trifluoperazine hydrochloride (q v) 2 mg and dexamphetamine sulphate 10 mg For the treatment of obesity *Dose* one capsule every morning

[P1 84B] Stelazine (*Smith Kline & French*) Trifluoperazine hydrochloride (q v), available in Ampoules of 1 ml each containing 1 mg, as Spansules (sustained release capsules) of 2 mg, and as Tablets of 1 mg and 5 mg

[P1 84B] Stemotil (*May & Baker*) Prochlorperazine, available as prochlorperazine maleate (q v) in Suppositories each containing 5 mg and 25 mg, and as Tablets of 5 mg and 25 mg Also available as prochlorperazine methanesulphonate (q v) in Solution for injection containing 1 25% in ampoules of 1 ml and 2 ml, as a Syrup containing 5 mg in each teaspoonful (3 6 ml), and as Forte Syrup containing 25 mg in each teaspoonful (3 6 ml) (*Modification of entry in Vol I, 24th Edn, p 397*)

Ster-Zac Bath Concentrate (*Hough Hoteason*) Contains hexachlorophane 10% For the prevention of cross infection via baths in surgical wards. *Directions* one fl oz to be added to the bath with stirring

Ster-Zac Powder (*Hough, Hotenson*) A dusting powder containing hexachlorophane 0 33% and zinc oxide 3% For the prevention of staphylococcal sepsis and cross infection in newborn infants and as a prophylactic against napkin rash, bedsores, and skin infections.

[P1 81 84A] Stimplete (*Wyeth*) Elixir containing in each teaspoonful (4 ml) phenobarbitone 25 mg, dexamphetamine sulphate 5 mg, aneurine hydrochloride 2 5 mg, riboflavine 1 mg pyridoxine hydrochloride 0 17 mg, nicotinamide 10 mg, and alcohol 11% For the treatment of mild depression and as ancillary treatment for obese patients on a reducing diet. *Dose* for depression, one teaspoonful twice or thrice daily after meals, for dieting patients, one teaspoonful thrice daily before meals The last dose should be taken not later than 5 p m

Strepsils (*Boots*) Lozenges each containing 2,4-dichlorobenzyl alcohol 1 2 mg and amylmetacresol 0 6 mg For the treatment of minor infections of the mouth and throat *Dose* one lozenge every 2 or 3 hours.

[B] Streptomycin Sulphate, Intrathecal (*Glaxo*) Ampoules each containing streptomycin sulphate 50 mg or 100 mg, as dry powder

[P1 84B B] Streptotriad Suspension (*May & Baker*) Contains in each teaspoonful (3 6 ml) streptomycin 65 mg (as sulphate), sulphathiazole 100 mg, sulphadiazine 100 mg, and sulphamerazine 65 mg (supplied as granules for reconstitution with water before use) For the treatment of bacillary dysentery *Dose* 3 tesspoonfuls thrice daily children $^1/_2$ to $1^1/_2$ teaspoonfuls thrice daily (*For Streptotriad tablets see Vol I, 24th Edn, p 1255*)

Striatran (*Merck Sharp & Dohme*) Emylcamate (q v) available as tablets of 200 mg

[Pl 84B] **Styramate** β Hydroxyphenethyl carbamate $C_9H_{11}O_2N=181\ 2$

A skeletal muscle relaxant which is reported to act only on the polysynaptic pathways of the extrapyramidal tract to inhibit the transmission of impulses which maintain muscle spasm The limited clinical evidence so far available indicates that it may be of value in relieving conditions involving skeletal muscle spasm including spasm secondary to acute trauma and herniated disk fibrositis, arthritis bursitis muscular rheumatism and muscle strains and pain For a tentative assessment of the drug see *J Amer med Ass* , 1960 *172* 698

Toxic effects the incidence of side effects has been low but drowsiness vertigo headache and urticarial eruptions have been reported

Dose determined according to the response of the patient initial dose 200 mg *four times daily, gradually increased as required to* 400 *mg* four times daily

Proprietary Name SINAXAR

[Pl 84B] **Sulphadimethoxine** 4 *p* Aminobenzenesulphonamido 2 6 dimethoxypyrimidine $C_{12}H_{14}O_4N_4S=310\ 3$

A sulphonamide with properties similar to those of sulphamethoxypyridazine It is rapidly absorbed and very slowly excreted *Effective blood concentrations are maintained for at least 24 hours after each dose* so that only a single daily dose is required Toxic effects, contra indications and uses are the same as those of the sulphonamides in general—see Vol I 24th Edn, pp 1242–4 the clinical evidence so far available indicates that the incidence of side-effects is relatively low For a comparison of the newer sulphonamides see *Brit med J* ii/1959, 482

Dose in mild or moderate infections, 1 g on the first day, followed by 0 5 g daily, in severe infections 2 g on the first day, followed by 1 g daily the dosage for children is reduced in proportion to body weight

RESPIRATORY INFECTIONS *One hundred and six patients with upper respiratory or allied infections were treated with sulphadimethoxine for periods ranging* from one week to one month The clinical response was excellent to good in 94 patients and poor in 12 patients in the former improvement was noted in 24 *hours after administration of the drug Only one patient had side reactions and* these were mild and disappeared when the drug was withdrawn —*G Nunnelly J Amer med Ass* 1960 *173* 1020

Proprietary Names MADRIBON MADRIGID (*U S A*)

[Pl 84B B] **Sulphamagna** (*Wyeth*) *A flavoured suspension contain ng in each* 30 *ml activated attapulgite* (a hydrated magnesium aluminium s licate) 2 g streptomyc n 200 mg (as sulphate) phthalylsulphathiazole 2 g and sulphadiazine 500 n g For the treatment of diarrhœa *Dose* 2 tablespoonfuls 3 or 4 times daily

[Pl 84B] **Sulphamethoxypyridazine** (*N N D*) Sulphamethopyrazine 3 *p*-Aminobenzenesulphonamido-6 methoxypyridazine, $C_{11}H_{12}O_3N_4S=280\ 3$

A sulphonamide which is rapidly absorbed and very slowly excreted yielding effective blood concentrations for longer periods than the older sulphonamides so that lower dosage and less frequent administration are required Peak concentrations in the blood are reached within a few hours of administration being maintained for about 10 hours and falling thereafter to about half the original level in 24 to 48 hours The therapeutic uses of sulphamethoxypyridazine are the same as those of the

sulphonamides in general—see Vol I, 24th Edn, p 1244 It is administered as tablets or, in the form of its N^1-acetyl derivative, as a suspension. The recommended dosage should not normally be exceeded and therapy should be limited to 5 to 7 days or until the patient has been symptom-free for 48 to 72 hours *Toxic effects* and *contra indications* as for Sulphonamides (Vol I, 24th Edn, pp 1242 3), the incidence of renal toxicity is said to be lower than with other sulphonamides For a comparison of the newer sulphonamides see *Brit med J*, ii/1959, 482. *Dose* 1 to 2 g on the first day, followed by 500 mg daily, the dosage for children is reduced in proportion to body-weight.

Proprietary Names LEDERKYN (Vol I, 24th Edn, p 1260), MIDICEL KYNEX (*U S A*), SULTIRENE (*Fr*) The N^1 acetyl derivative is an ingredient of MIDICEL SUSPENSION and LEDERKYN ACETYL PÆDIATRIC SUSPENSION

[PI 84B] **Sulphaphenazole.** C 17922, Sulphophenylpyrazol 5 *p*-Aminobenzenesulphonamido-1-phenylpyrazole, $C_{15}H_{14}O_2N_4S=314\cdot4$

A sulphonamide with properties similar to those of sulphamethoxypyridazine Peak concentrations in the blood are attained within 3 to 4 hours after administration and gradually decline over 24 to 36 hours. The therapeutic indications are the same as those of the sulphonamides in general—see Vol I, 24th Edn, p 1244 It is said to be particularly suitable for preventing upper respiratory tract infections because it can be taken daily for long periods without side-effects It is administered as tablets or as a suspension For a comparison of the newer sulphonamides see *Brit med J*, ii/1959, 482 *Dose* prophylactic, 0 5 to 1 g daily throughout the winter, therapeutic, 1 to 1 5 g twice daily for 2 days, followed by 0 5 g twice daily for a further 3 days, the dosage for children is reduced in proportion to body-weight

Proprietary Names ORISULF, ORISUL (*Swiss*)

[PI 84B] **Sulphaproxyline.** Sulphapyroxyline *p*-Amino-N^1-(*p*-isopropoxybenzoyl)benzenesulphonamide, $C_{16}H_{18}O_4N_2S=334\cdot4$

A sulphonamide which is rapidly absorbed and slowly excreted. It is used in conjunction with sulphamerazine in the proprietary preparation Dosulfin (p 211)

[PI 84B] **Sulphathiourea.** RP 2255, Sulphathiocarbamide. *p*-Aminobenzenesulphonylthiourea, $C_7H_9O_2N_3S_2=231\cdot3$

A sulphonamide with antimycotic and bacteriostatic properties which is applied topically in the treatment of infected wounds, burns and scalds, impetigo, pyoderma, and folliculitis It is usually applied in the form of a 10% water miscible gel which forms a transparent, elastic, protective film

Proprietary Names BADIONAL, FONTAMIDE (*Fr*)

[PI 84B] **Sulphatolamide** The *p* aminobenzenesulphonylthiourea salt of *p* sulphamoylbenzylamine, $C_7H_{10}O_2N_2S,C_7H_9O_2N_3S_2=417\cdot5$

A bacteriostatic agent which is claimed to be effective against all micro-organisms causing secondary infections in leucorrhœa, particularly against anaerobic organisms It has been mainly used in the form of vaginal tablets in the treatment of trichomonasis and vaginitis

Proprietary Name VARBADAL

[PI 84B] **Sulphaurea.** *N-p*-Aminobenzenesulphonylurea, $C_7H_9O_3N_3S=$ 215 2

A sulphonamide which is rapidly excreted and which is used in the treatment of urinary infections It is claimed that it acts independently of

the pH of urine and that there is less possibility of crystalluria than with other sulphonamides It is given by mouth and may also be given by intravenous injection or infusion, or occasionally by deep intramuscular injection *Dose for mild infections, 1 g thrice daily for serious infections,* 2 g every 3 to 5 hours

Proprietary Name EUVERNIL

Sulphinpyrazone G 28 315 Sulphoxyphenylpyrazolidine 4-(2 Benzenesulphinylethyl) 1,2 diphenylpyrazolidine 3 5 dione, $C_{23}H_{20}O_3N_2S$= 404 5

An analogue of phenylbutazone It has a much stronger uricosuric effect than phenylbutazone but much weaker analgesic and anti inflammatory effects It is indicated in the long term treatment of chronic gout, it has no direct effect on acute gout Its effect is limited almost exclusively to enhancing urate excretion through the kidneys by blocking tubular resorption of urate it lowers the serum urate level and also promotes the absorption of tophi and urate deposits

Toxic effects so far reported have been mild and mainly limited to gastro intestinal disturbances, but side effects associated with the administration of phenylbutazone and other pyrazoles may possibly occur (see under Phenylbutazone, Vol I, 24th Edn, p 29) Unlike other pyrazoles, it appears to have very little effect on electrolyte balance Urolithiasis and renal colic may be avoided by giving adequate fluid and keeping the urine alkaline by giving potassium acetate or sodium bicarbonate As with other uricosuric agents acute attacks of gout may be precipitated during the initial stage of treatment Small doses should therefore be given at first and then gradually increased according to the patient s response and the level of uric acid in the blood *Contra indicated* in patients with peptic ulcer or with a known intolerance to phenylbutazone or other pyrazoles It should not be given with salicylates or citrates as they antagonise its action To reduce the possibility of gastro intestinal disturbances it is probably advisable to administer sulphinpyrazone with food, milk or antacids

Dose daily, in divided doses 200 mg at first, gradually increased to 400 to 800 mg depending on the clinical response and the blood urate level, after the blood urate level has been controlled, the daily maintenance dose may be reduced to as low as 200 mg

Proprietary Name ANTURAN

[P1 84B] Sultrin Vaginal Tablets (*Ortho*) Each contains sulphathiazole 171 mg sulphacetamide 143 mg, and *N*-sulphanilylbenzamide 185 mg For the treatment of vaginitis and cervicitis *Administration* one tablet to be inserted twice daily for 10 days

[P1] Surfadil Cream (*Lilly*) Contains cyclomethycaine sulphate 0 5% and methapyrilene hydrochloride 2% in a vanishing cream basis For allergy insect bites and pruritus

[P1] Sustac (*Pharmax*) Glyceryl trinitrate in sustained action tablets each containing $^1/_{75}$ grain or $^1/_{50}$ grain

[P1 81 84A] Sustacol (*Pharmax*) Sustained action tablets each containing hyoscine methylbromide 7 5 mg and phenobarbitone 72 5 mg For the treatment of spastic conditions of the gastro intestinal tract *Dose* one tablet to be taken before breakfast and one at bedtime

Synkavit (*Roche*) 2 Methylnaphthalene 1 4 diol (1 hydrogen phosphate) now also available in Ampoules of 1 ml each containing 1 mg (as the sodium salt) (*See also Vol. I, 24th Edn p 874*)

[P1] **Synuson** (*International Laboratories*) Tablets each containing guaiphenesin (q v) 1½ grains prepared ipecacuanha ½ grain, ephedrine hydrochloride ¼ grain and phenacetin 4 grains For the treatment of sinusitis nasal congestion, and catarrh *Dose* one tablet twice or thrice daily

Syrup of B_{12} (*Vitamins Ltd*) Contains cyanocobalamin 10 µg in each ml To improve appetite and digestion in debility *Dose* 1 or 2 teaspoonfuls daily

Sytron (*Parke Davis*) An elixir containing in each teaspoonful (4 ml) sodium ironedetate (q v) equivalent to 27 5 mg of iron *Dose* one teaspoonful increasing to 2 teaspoonfuls thrice daily infants 10 lb, 2 to 5 minims thrice daily 20 lb 5 to 10 minims thrice daily

Tabalgin Elixir (*West Pharmaceutical Co*) Contains paracetamol (q v) 120 mg in each 5 ml (*For Tabalgin tablets see Vol. I, 24th Edn p 1398*)

[P1 84B] **TACE** (*Merrell National*) Chlorotrianisene, now also available as Tablets of 24 mg (*See also Vol I, 24th Edn p 969*)

[B] **Tampovagan 'N'** (*Camden*) Pessaries each containing neomycin sulphate 20 mg in a fatty basis. For vaginal infections resistant to other forms of therapy *Administration* one pessary to be inserted at night and one in the morning half an hour before rising (*For other Tampovagan preparations see Vol. I 24th Edn*)

Tanderil (*Geigy*) Oxyphenbutazone (q v) available as tablets of 100 mg

[P1 84B] **Taractan** (*Roche*) Chlorprothixene (q v) available in Ampoules of 2 ml each containing 30 mg, and as Tablets of 5 mg, 15 mg, and 50 mg

Tardrox (*Carlton Laboratories*) A cream containing chlorohydroxyquinol ne 1 5% and tar 1% in a non greasy basis For the treatment of eczema and psoriasis

[P1 87] **Tecaldrine** (*Abbott*) A syrup containing in each fluid ounce methapyri lene hydrochloride 50 mg dextromethorphan hydrobromide 30 mg, ammonium chloride 250 mg ipecacuanha liquid extract 0 5 minim, menthol ⅓₁₆ grain and syrup 24 5 grammes For the treatment of irritant and unproductive coughs *Dose* 1 to 2 teaspoonfuls every 4 hours

Telmid (*Lilly*) Dithiszanine iodide (q v), available as tablets of 25 mg and 100 mg

Tenormal (*Imperial Chemical Pharmaceuticals*) Pempidine tartrate (q v), available as tablets of 1 mg 5 mg and 10 mg

[P1 84B] **Tensival** (*Distillers Co*) Tablets each containing thalidomide (q v) 12 5 mg and hydrochlorothiazide (q v) 12 5 mg For the relief of premenstrual tension *Dose* one tablet twice daily

[P1 84B] **Tenuate** (*Merrell National*) Diethylpropion hydrochloride (q v) available as tablets of 25 mg

[P1] **Terpacol** (*Brook, Parker*) A sedative cough elixir containing in each teaspoonful pholcodine 4 32 mg, terpin hydrate 2 16 mg, menthol 3 24 mg, and eucalyptol 0 003 ml. *Dose* 1 to 3 teaspoonfuls children, ½ to 1 teaspoonful.

[B] **Terra-Cortril Spray** (*Pfizer*) A pressurised spray containing hydrocort isone 50 mg and oxytetracycline 150 mg in 1 fl oz For infected dermatoses. (*For other Terra Cortril preparations see Vol. I, 24th Edn, p 1468*)

[B] **Terramycin Ointment** (*Pfizer*) Contains oxytetracycline hydrochloride 3% in a soft paraffin basis

[B] **Terramycin Ophthalmic Ointment with Polymyxin B Sulphate** (*Pfizer*) Contains in each g oxytetracycline 5 mg (as hydrochloride) and poly myxin B 10 000 units (as sulphate) in a soft paraffin basis. For the prophylaxis and topical treatment of superficial ocular infections. (*Modification of entry in Vol I 24th Edn p 1468*)

(*For other Terramycin preparations see Vol I 24th Edn pp 1466 8*)

Tersavid (*Roche*) 1 Benzyl 2 pivaloylhydrazine available as tablets of 50 mg as the hydrochloride A monoamine oxidase inhibitor given for the symptomatic relief of angina pectoris *Dose* initial 3 to 4 tablets daily for 2 weeks raised if no obvious improvement to 6 to 8 tablets daily for 2 weeks maintenance 1 to 4 tablets daily

Tessalon (*Ciba*) Benzonatate (q v) available in Ampoules of 1 ml each containing 5 mg as Perles of 100 mg and as Suppositories each containing 50 mg

[Pl 84B] **Tetrabenazine** Ro 1 9569 1,2,3,4,6,7 Hexahydro 3 isobutyl 9,10-dimethoxy 2-oxo 11*bH* benzo[*a*]quinolizine, $C_{19}H_{27}O_3N$=317 4

Tetrabenazine is reported to have central effects resembling those of *reserpine* It is thought to intervene in the metabolism of the physiological *mono amines*, such as serotonin and noradrenaline, and that this activity is mainly limited to the brain Unlike *reserpine* it appears to have little peripheral activity and its effects persist for only 24 to 36 hours It has been suggested for use in the treatment of acute and chronic mental disorders in which the major factors are hallucinations and delusions, anxiety and agitation and psychomotor overactivity It appears to be usually well tolerated the principal side effects so far reported being transient restlessness and drowsiness high dosage can cause pseudo parkinsonism It should not be used with reserpine or immediately after a course of iproniazid or similar mono amine oxidase inhibitors

Dose determined according to the response of the patient and the type and severity of the condition under treatment Initial daily dose 100 to 150 mg increased if necessary up to 200 mg daily maintenance dose 50 to 75 mg

Proprietary Name NITOMAN

[Pl 84B] **Thalidomide.** K 17 α Phthalimidoglutarimide, $C_{13}H_{10}O_4N_2$= 258 2

A non barbituric sedative and hypnotic It acts within 10 to 20 minutes after administration, the sedative effect lasting about 4 to 5 hours It is said to be relatively free from side effects but it occasionally causes dizziness and nausea, high dosage may cause constipation It has been reported (J McC Murdoch and G D Campbell, *Brit med J*, 1/1958, 84) that thalidomide appears to have a mild but definite antithyroid activity when given in doses of 200 mg or more

Dose as a sedative, adults 25 mg twice or thrice daily, infants and children 12 5 to 25 mg according to age once to thrice daily as a hypnotic, adults 50 to 200 mg at bedtime, infants and children 25 to 50 mg at bedtime.

Proprietary Names DISTAVAL CONTERGAN (Ger), SOFTENON (Switz), it is an ingredient of ASMAVAL, TENSIVAL, VALGIS, and VALGRAINE.

[Pl 81 84A] **Theophen** (*Roybar Laboratories*) Tablets each containing phenethyl amine citrate (q v) 15 mg amylobarbitone 10 mg, ephedrine hydrochloride 25 mg, and theophylline 120 mg For the relief of asthma *Theophen Retard* tablets have the same composition with a disintegration time of 4 to 6 hours. *Dose* 1 or 2 Theophen tablets every 4 hours and one Theophen Retard tablet at bedtime

Thiambutosine. DPT, SU1906, Thiambutoxine, Thiocarbanilide *N p* Butoxyphenyl *N p'*-dimethylaminophenylthiourea, $C_{19}H_{25}ON_3S$= 343 5

An antileprotic drug which has been subjected to extensive trials during the last few years with promising results—see T F Davey *et al*, *Leprosy Rev*, 1958, *29*, 25, J M. B Garrad, *ibid*, 1959, *30* 210, T F Davey, *Trans R Soc trop Med. Hyg*, 1960, *54*, 199, and *Brit med J*, II/1960, 655

Thiambutosine is reported to be less toxic than dapsone and slightly more active, having a more rapid effect on the bacilli than is usual with

dapsone Owing to its low toxicity it is particularly useful in the treatment of debilitated patients the full therapeutic dose can be given at the beginning of treatment and it is considered to be a valuable alternative drug in such complications of dapsone treatment as persistent erythema nodosum psychosis and neuritis Thus thiambutosine is especially useful in the earlier stages of treatment Drug resistance may develop after 2 or 3 years so the drug should be withdrawn within that period

Dose 1 to 2 g daily adjusted according to the response of the patient.

Thiambutosine has given encouraging results in combination with dapsone and ditophal—see T F Davey *Leprosy Rev* 1959 *30* 141

Proprietary Name CIBA 1906

[PI S4B] **Thiopropazate Hydrochloride** (*N V D*) 2 Chloro 10-[3 [4-(2 acetoxyethyl)piperazin 1 yl]propyl]phenothiazine dihydrochloride $C_{23}H_{28}O_2N_3SCl\ 2HCl = 519\ 0$

Thiopropazate has actions similar to those of chlorpromazine, It has been used in neurotic and psychotic states including anxiety tension, abnormal excitement psychosomatic conditions, barbiturate or alcoholic addiction the agitated states of cerebral arteriosclerosis and of catatonic or paranoid schizophrenia

Toxic effects large and occasionally average doses may cause pseudo-parkinsonism, with muscular rigidity tremors fixed facies and drooling other effects occasionally encountered are blurring of vision dryness of the mouth hypotension constipation nasal congestion and dermatoses *Contra indicated* in patients with convulsive disorders severe depression liver damage or under the influence of barbiturates alcohol narcotics or other central nervous system depressants *Antidotes* as for Chlorpromazine Hydrochloride (Vol I 24th Edn p 389)

Dose in psychoses 10 mg thrice daily adjusted up or down by steps of 10 mg daily according to the therapeutic response in neuroses 5 mg thrice daily adjusted up or down in steps of 5 mg daily according to the therapeutic response Max daily dose 100 mg

Proprietary Names DARTALAN DARTAL (*U S A*) it is an ingredient of PRO BANTHINE WITH DARTALAN

[PI S4B] **Thioridazine Hydrochloride** *10-[2-(1 Methylpiperid 2-yl)ethyl] 2 methylthiophenothiazine hydrochloride* $C_{21}H_{26}N_2S_2\ HCl = 407\ 1$

A phenothiazine derivative with tranquillising properties similar to those of chlorpromazine It has been similarly used in the treatment of neurotic and psychotic conditions It has little anti-emetic action or potentiating effects on anæsthetics alcohol and barbiturates

Toxic effects its side effects have been reported to be milder and less frequent than those of other phenothiazine derivatives (see under Chlorpromazine Vol I 24th Edn p 386) the most common side effects have been drowsiness dizziness faintness dryness of the mouth, nasal stuffiness and transient œdema and leucopenia *Contra-indicated* in severely depressed and comatose states

Dose determined according to the response of the patient and the type and severity of the condition under treatment In severe conditions 150 to 600 mg daily in moderate conditions 75 to 200 mg daily in mild conditions 30 to 100 mg daily children under 5 0 5 mg per lb. body weight daily children over 5 $^1/_4$ to $^1/_2$ the adult dose

Proprietary Names MELLERIL MELLARIL (*U S A*)

Thiotepa TESPA, TSPA, Triethylene Thiophosphoramide Tri-1 azirıdinylphosphine sulphide, $C_6H_{12}N_3SP=189\ 2$ (See also Vol I, 24th Edn, p 947)

Thiotepa has continued to be used with varying results in the palliation of a variety of neoplastic diseases The more consistent results have been seen in carcinomas of ovarian or mammary origin

THIO-TEPA (*Lederle*) is available, to hospitals only as a dry sterile powder in vials of 15 mg It should be stored at refrigerator temperatures of 2° to 10° Solutions for injection are prepared immediately before use by dissolving the powder in Water for Injection or in Sodium Chloride Injection if a precipitate is present the solution should be discarded as this represents polymerisation to less active compounds

BREAST CANCER. Thirty-four cases of breast cancer at various stages were treated with either thiotepa alone or thiotepa and testosterone Masked inhibitory effects were obtained in 30 patients the most satisfactory results being obtained in the group receiving thiotepa and testosterone The thiotepa was administered intramuscularly in an aqueous solution containing 5 mg per ml *In the 11 patients who received thiotepa alone 15 mg of the drug was given* two or three times weekly until the white cell count fell below 3000 per c.mm. Therapy was then stopped and recommenced when the blood count had returned to pre treatment levels In the other 23 patients the individual dose of thiotepa was eventually increased to 30 mg on alternate days until a total dose of 180 to 300 mg depending on response and blood counts was given a second similar course was given after an interval of 3 to 6 weeks In some patients a third course was given after an interval of a month others were placed on a maintenance dose of 15 to 30 mg of thiotepa at intervals of between 2 and 4 weeks Testosterone propionate was given intramuscularly in doses of 200 mg five times a week beginning one week before the course of thiotepa and continuing for 2 weeks after completion of the thiotepa injections. Six patients with pleural and peritoneal effusions had thiotepa 30 mg in 30 ml of normal saline instilled direct into the cavity after paracentesis this was in addition to the normal course of intramuscular injections Daily blood counts were carried out during treatment and if the total white cell count fell below 2000 the thiotepa injections were temporarily stopped but the hormone therapy continued Simple mastectomy was carried out in 11 previously untreated cases and oophorectomy in pre menopausal patients Regression of tumour growth was obtained in 8 of 11 patients treated with thiotepa alone and in 22 of 23 patients receiving thiotepa and testosterone Four patients showed no response and died within 4 weeks of commencing therapy Four other patients died after a period in which the progress of the disease was arrested. In patients showing regression of tumour growth there was an improved sense of well being with disappearance of pain anorexia and anxiety there was a gain of weight and disappearance of anaemia when present A trial of surgery and chemotherapy as opposed to surgery and radiation is advocated for early breast cancer —G W Watson and R L Turner *Brit med J* 1/1959 1315, see also *Brit med J* 1/1959 1336

Eleven patients with advanced and metastatic breast cancer were treated as advocated by Watson and Turner Within one month 7 had died and death appeared to have been hastened by an irreversible pancytopenia directly attributable to the treatment one suffered a reversible pancytopenia but showed a striking remission two had partial remissions lasting 2 and 4 months respectively and the remaining patient was lost to follow up The acceptance of a white-cell count of 3000 per c.mm as an arbitrary safe level is criticised and an alternative method of assessing the 'safe level is suggested It is considered that this method of treatment may have a useful place in the management of breast cancer but not in preference to currently accepted methods —W D Rider *Brit med J* 1/1960, 1501 A palliative effect was obtained with thiotepa in only 2 of 12 patients with advanced breast cancer —A B Miller *Brit med J*, 1/1961, 619

[P1 87] **Thorpax Syrup** (*Imperial Chemical Pharmaceuticals*) Each teaspoonful (3 5 ml) contains dimethoxanate hydrochloride (q v) 25 mg and isothipendyl hydrochloride (q v) 1 25 mg For the relief of cough *Dose* one teaspoonful 3 or 4 times daily the last dose at bedtime

Thovaline (*Ilon Laboratories*) An ointment containing talc 7·4%, light kaolin 3 5%, zinc oxide 21 8%, cod liver oil 2 15% and wool fat 1 075% For chilblains, bedsores, and napkin rash.

[P1 84B] **Tofranil** (*Geigy*) Imipramine hydrochloride (q v), available in Ampoules of 2 ml each containing 25 mg , and as Tablets of 10 mg and 25 mg

[P1 84B] **Tolbutamide** (*B P Add , U S P*) (See also Vol I, 24th Edn, p 789)

Tolbutamide is used in the treatment of mild or moderately severe uncomplicated diabetes mellitus in elderly diabetics whose insulin requirement is not more than 40 units daily *Toxic effects* the administration of tolbutamide may occasionally cause skin reactions, gastro-intestinal upsets, and leucopenia *Contra indications* juvenile diabetes, unstable diabetes, ketosis, and impaired renal or liver function *Dose* in divided doses, 2 to 4 g on the first day, 1 5 to 3 g on the second, 1 to 2 g on the third, and 0 5 to 1 5 g daily as a maintenance dose

Proprietary Names RASTINON, ARTOSIN (*Ger*), DOLIPOL (*Fr*) IPOGLICONE (*Ital*) MOBENOL (*U S A*), ORINASE (*U S A*)

Transid (*Duncan, Flockhart*) Polyaminostyrene, an ion-exchange resin available in peppermint flavoured tablets of 300 mg For use as an antacid. *Dose* 2 to 4 tablets

Tranylcypromine Sulphate *trans* (±) 2-Phenylcyclopropylamine sulphate, $(C_9H_{11}N)_2 H_2SO_4$=364 5

Tranylcypromine is an antidepressant drug which acts by inhibiting mono-amine oxidase It has been used in the treatment of all types of depression and involutional melancholia, doses of 10 mg twice daily can usually be given concurrently with electro convulsion therapy *Toxic effects* tranylcypromine may cause restlessness insomnia, weakness, drowsiness, dizziness, mild gastro intestinal symptoms, and, more rarely, headache and hypotension *Contra indications* it should be given with caution to patients with myocardial infarction, coronary artery disease with angina of effort, or hepatic or renal disease.

Usual dose 10 mg morning and afternoon for 2 to 3 weeks, when the morning dose is increased to 20 mg if there is no response when a satisfactory response has been obtained, the dose is gradually reduced to an optimum maintenance level *Intensive dose* 20 mg in the morning and 10 to 20 mg in the afternoon for one week then the total daily dose is increased by 10 mg every few days if there is no response, when a satisfactory response has been obtained, the dose is gradually reduced to an optimum maintenance level the total daily dose should not exceed 60 mg

Proprietary Names PARNATE it is an ingredient of PARSTELIN

Trasylol (*F B A Pharmaceuticals*) A trypsin and kallikrein inactivator obtained from animal glands available as a sterile isotonic solution in ampoules of 5 ml each containing 5000 kallikrein inactivating units. For the treatment of pancreatitis or pancreatic necrosis by intravenous infusion

Trescatyl (*May & Baker*) Ethionamide (q v) available as tablets of 250 mg

[B] **Triacetyloleandomycin** (*U S N F*) The triacetyl ester of oleandomycin It has the same actions and uses as oleandomycin—see Vol I,

24th Edn p 1422 It is more rapidly and completely absorbed than oleandomycin phosphate and produces higher blood levels It is administered by mouth in capsules or as a suspension *Dose* the equivalent of 250 to 500 mg of oleandomycin base 4 times daily children 30 mg (base) per kg body weight daily in divided doses

Good results were obtained in the treatment of staphylococcal and streptococcal infections of the urinary tract by administering triacetyloleandomycin in conjunction with a trisulphonamide (sulphadiazine sulphadimidine and sulphamerazine) No development of resistant strains was observed—G Carroll *et al* *J Amer med Ass* 1960 *174* 1603

Proprietary Names Evramycin Cyclamycin (*U S A*) Tao (*U S A*)

[B] **Tri Adcortyl Ointment** (*Squibb*) Contains in each g triamcinolone acetonide (q v) 0 1% neomycin 2 5 mg gramicidin 0 25 mg and nystatin 100 000 units in tubes of 5 g and 15 g For the treatment of a wide range of dermatoses with or threatened by bacterial or monilial superinfections To be applied twice or thrice daily

[B] **Triamcinolone** (*N N D*) Triamcortisone 9α Fluoro 11β 16α 17α,21 tetrahydroxypregna 1 4 diene 3 20 dione $C_{21}H_{27}O_5F$=394 4

A glucocorticoid with actions and uses similar to those of prednisone and prednisolone but with a greater potency *Toxic effects withdrawal symptoms* and *contra indications* as for Cortisone Acetate and Prednisone (Vol 1 24th Edn pp 453 454 and 492) the incidence of side effects is usually lower than with the other steroids and it does not appear to cause sodium retention it may cause anorexia loss of weight, and cutaneous erythema.

Dose varies with the response of the patient and the type and severity of the condition under treatment Usual initial dosage 8 to 20 mg daily in 3 or 4 divided doses after a satisfactory response has been achieved the maintenance level is reached by gradually reducing the initial daily dose in decrements of 2 mg every 2 or 3 days

Proprietary Names Adcortyl Ledercort Aristocort (*U S A*) Kenacort (*U S A*)

[B] **Triamcinolone Acetonide** (*N N D*) 9α Fluoro 11β 21 dihydroxy 16α 17α isopropylidenedioxypregna 1 4 diene 3 20 dione $C_{24}H_{31}O_5F$= 434 5

It is used topically as a 0 1% cream lotion ointment or spray in the treatment of the various dermatoses which respond to topical corticosteroid therapy Like other steroids it should not be applied to infected areas unless appropriate antimicrobial therapy is concurrently employed

Proprietary Names Adcortyl-A Ledercort Acetonide Kenalog (*U S A*) it is an ingredient of Tri Adcortyl Ointment

[Pl 84B] **Trifluoperazine Hydrochloride** SKF 5019 10 [3 (4 Methyl piperazin 1 yl)propyl] 2 trifluoromethylphenothiazine dihydrochloride $C_{21}H_{24}N_3SF_3.2HCl$=480 4

A phenothiazine derivative used in the treatment of psychotic states mild mental and emotional disturbances psychosomatic conditions and nausea and vomiting *Toxic effects antidotes* and *contra indications* similar to those of other phenothiazine compounds, as described under Chlorpromazine—see Vol I 24th Edn pp 386–390

Dose determined according to the response of the patient and the type and severity of the condition under treatment Usual dose by mouth in mild conditions and nausea and vomiting 1 mg twice daily increased if required by 1 mg daily every second day to a maximum

of 6 mg daily Usual dose by mouth in psychotic states 10 mg daily in divided doses increased after one week to 15 mg daily with further increases of 5 mg daily at 3 day intervals but not oftener when satisfactory control has been attained the dose may be gradually reduced until an effective maintenance level is reached Usual daily dose by intramuscular injection for the control of acute psychotic states 1 to 3 mg in divided doses at intervals of not less than 4 hours oral medication should be substituted at the same dosage or slightly higher, as soon as a satisfactory response is obtained the total daily dose by injection should not exceed 5 mg

Proprietary Names STELAZINE it is an ingredient of AMYLOZINE SPANSULES (see p 275) PARSTELIN STELABID and STELADEX,

Trillets (*Burroughs Wellcome*) Lozenges each containing halopenium chloride (q v) 5 mg framycetin sulphate 1 mg., and lignocaine 2 5 mg For the treatment of mouth and throat infections *Dose* 4 lozenges in the first hour then one as required

[P1 B] **Trilocan** (*Allied Laboratories*) Ointment containing prednisolone 0 3%, amethocaine 0 8%, amylocaine 1 0% and benzalkonium chloride solution 0 5% in a water soluble base For the relief of inflammation and irritation and the control of bacterial and fungous skin infections

[P1 84B] **Trimeprazine Tartrate** (*N N D*) Alimemazine 10 (3 Dimethylamino 2 methylpropyl)phenothiazine tartrate, $(C_{18}H_{22}N_2S)_2 C_4H_6O_6$ =747 0

A phenothiazine derivative with a pharmacological activity intermediate between promethazine and chlorpromazine Its antihistaminic action is greater than that of promethazine and its actions on the central nervous system resemble those of chlorpromazine It has a stronger spasmolytic action but a weaker anti adrenaline action than chlorpromazine. Its antipruritic action is more pronounced than any of its other effects and its principal indication is in the symptomatic treatment of acute and chronic pruritus It has also been used for oral premedication in children about to undergo anæsthesia It is administered by mouth as tablets or syrup preferably after meals

Toxic effects antidotes, and *contra indications* similar to those of other phenothiazine compounds as described under chlorpromazine and promethazine (Vol I 24th Edn pp 386 to 390 and 1104) the most common side effect is mild and transient drowsiness

Dose determined according to the response of the patient and the type and severity of the condition under treatment. Usual dosage in pruritus adults 10 to 40 mg children 7 5 to 15 mg daily in 3 or 4 divided doses in the pre anæsthetic medication of children 1 to 2 mg. per lb body weight one hour before operation

Proprietary Names VALLERGAN TEMARIL (*U S A*) THERALENE (*Fr*) it is an ingredient of VALLEDRINE COUGH LINCTUS.

[P1 87] **Triominic** (*Wander*) Slow release Tablets each containing phenylpropanolamine hydrochloride 50 mg mepyramine maleate 25 mg., and pheniramine maleate 25 mg and Syrup containing in each fluid drachm the equivalent of one quarter tablet For the relief of rhinorrhœa and nasal congestion of the common cold *Dose* one tablet thrice daily, children 6 to 12 years, 1 teaspoonful of syrup thrice daily

[P1 87] **Triotussic** (*Wander*) Timed release Tablets each containing phenylpropanolamine hydrochloride 12 5 mg mepyramine maleate 6 25 mg pheniramine maleate 6 25 mg noscapine hydrochloride 20 mg terpin hydrate 90 mg and paracetamol (q v) 160 mg For the relief of the total cold syndrome *Dose* 2

tablets every 6 to 8 hours maximum 6 tablets in 24 hours Suspension containing in each fluid drachm the equivalent of one tablet *Dose* 1 to 2 teaspoonfuls every 3 to 4 hours children 6 to 12 years $^1/_2$ to 1 teaspoonful children under 6 years in proportion

Triparanol 2 *p* Chlorophenyl 1 [*p* (2 diethylaminoethoxy)phenyl] 1 *p* tolylethanol $C_{27}H_{32}O_2NCl$=438 0

An inhibitor of the biosynthesis of cholesterol from its immediate precursor, desmosterol (24 dehydrocholesterol, $C_{27}H_{44}O$=384 6) It has been used in the treatment of conditions associated with abnormal cholesterol metabolism such as atherosclerosis It is compatible with anticoagulants vasodilators and other cardiac drugs, and may be used concurrently with them it is not a substitute for the standard therapy used in cardiovascular conditions *Toxic effects* no serious side effects at the normal dosage level have so far been reported, larger doses have caused nausea and transient albuminuria it has been reported to have mild œstrogenic activity *Contra indicated* during pregnancy *Dose* 250 mg once daily, preferably before breakfast

The clinical value of triparanol in the treatment of arterial disease is still undecided It will often produce a moderate fall in blood-cholesterol especially if the initial level is high but in place of cholesterol desmosterol accumulates and this may well be as atherogenic as cholesterol The lowering of cholesterol may persist for only a few months though an increase of dosage may control this secondary rise —*Lancet* II/1960 968

Proprietary Name MER 29

[P1 87] **Tripectol Cough Linctus** (*Willows Francis*) Contains in each fluid drachm antazoline hydrochloride 12 5 mg pholcodine 4 0 mg and ephedrine hydrochloride 8 0 mg For the treatment of post influenzal cough bronchitis bronchial asthma whooping cough and inflammatory and catarrhal conditions of the respiratory tract *Dose* 1 or 2 teaspoonfuls thrice daily and at bedtime children 6 to 14 years $^1/_2$ to 1 teaspoonful

Trisodium Hydrogen Edetate The trisodium hydrogen salt of ethylenediamine *NNN'N'* tetra acetic acid, $C_{10}H_{13}O_8N_2Na_3$=358 2

A chelating agent which chelates calcium ions thereby decreasing serum calcium A slow intravenous injection has the effect of mobilising calcium from the skeleton and the calcium chelate is almost completely excreted by the kidneys within 6 hours The drug is administered by slow intravenous injection the concentration suggested is a 1% solution in isotonic Sodium Chloride Injection or Dextrose Injection at the rate of 500 ml in 2 to 3 hours A 0 4% solution of trisodium hydrogen edetate is used topically in the treatment of corneal opacities resulting from band keratitis or lime burns Blood preserved with trisodium hydrogen edetate as an anticoagulant can be stored for 3 to 4 weeks

Toxic effects it may occasionally cause mild nausea, diarrhœa, abdominal cramping pains and reactions of the skin and mucous membranes, these can be mitigated by the administration of 25 to 75 mg of pyridoxine hydrochloride daily A burning sensation in the arm above the site of injection, numbness round the mouth giddiness and drowsiness may usually be relieved by slowing the rate of administration Hypocalcæmic tetany can occur if trisodium hydrogen edetate is administered too rapidly or in too concentrated a solution *Antidote* an intravenous injection of a calcium salt.

Dose by slow intravenous injection, 5 g daily For children, a dose of 60 mg per kg body weight has been used without untoward reduction of serum calcium

Proprietary Name SODIUM VERSENATE

Trolnitrate Phosphate (*N N D*) Aminotrate Phosphate Trieth anolamine Trinitrate Diphosphate Trinitrotriethanolamine Diphosphate Tri(2 nitroxyethyl)amine diphosphate $C_6H_{12}O_9N_4.2H_3PO_4$ 480 2

Trolnitrate phosphate has a mild persistent vasodilating effect on small blood vessels It produces some coronary vasodilatation Its action is slower but more prolonged than glyceryl trinitrate or amyl nitrite Normal dosage does not appreciably lower blood pressure or cause tachycardia Therapeutic response to trolnitrate appears to be variable and unpredictable It is used for the prophylaxis of short attacks of angina pectoris No significant effect may be obtained before the third day of administration and the maximum effect may not appear until after the seventh day Owing to its slow onset of action it is unsuitable for the immediate relief of anginal pain *Toxic effects* it occasionally causes headache, dizziness, nausea, and vomiting *Contra indicated* in glaucoma. *Dose* 2 to 4 mg four times daily before meals the last dose at bedtime doses up to 6 mg four times daily have occasionally been employed

Proprietary Names BENTONYL and PRAENITRONA (Vol *I* 24th Edn p. 146) VASOMED METAMINE (*U S A*) NITRITAMIN (*U S A*)

[P1 81 84A] **Tropenal (*Vitamins Ltd*)** Tablets each containing phenobarbitone 32 mg sinsumine hydrochloride 5 mg riboflavine 5 mg., pyridoxine hydrochloride 2 mg, nicotinamide 15 mg, and ascorbic acid 50 mg For mild sedation and vitamin supplementation in conditions where phenobarbitone is prescribed for long periods, or where there is dietary restriction. *Dose* 1 to 4 tablets daily in divided doses (*Modification of entry in Vol. I 24th Edn p 1395*)

Trophysan (*Crookes*) Nutritional infusion solutions presented in five forms combining essential amino acids aminoacetic acid, trace minerals, vitamins and (in some forms) sorbitol

[B] **Tryptar Ointment (*Armour*)** Contains in each g trypsin 5000 Armour units chymotrypsin (q v) 5000 Armour units bacitracin 500 units and polymyxin B sulphate 5000 units in a water miscible basis For the treatment of superficial skin lesions indolent ulcers, and burns (*For other Tryptar preparations see Vol. I 24th Edn p 991*)

[B] **Tumeson (*Hoechst Horlicks*)** Ointment containing in each g prednisolone (as acetate) 2 5 mg and sulphonated distillate of bituminous shale oils (Tumenol Ammonium) 30 mg For the treatment of chronic eczema.

Tylenol Elixir (*McNeil Laboratories*) Contains in each teaspoonful (5 ml) paracetamol (q v) 120 mg

[P1] **Tympalgin Ear Drops (*Silten*)** Contain phenylmercuric nitrate 0 1%, benzocaine 1 5%, ephedrine 1%, phenazone 5% chlorbutol 1% potassium hydroxyquinoline sulphate 0 1% in propylene glycol For otitis media and otitis externa

Tyordac Gum Pastilles (*Dales Pharmaceuticals*) Each contains tyrothricin 0 5 mg in a chewing gum basis

Tyrimide (*Smith Kline & French*) Isopropamide iodide (q v) available as tablets of 5 mg

[P1] **Tyromist (*British Sclering*)** A spray containing tyrothricin 0 02%, cetrimide 0 05% and amethocaine hydrochloride 0 03% in an aqueous vehicle For the relief of sore throat.

[P1 84D] **Ultandren (*Ciba*)** Fluoxymesterone (q v) available as tablets of 1 mg and 2 mg

Uniplex (*Weddel Pharmaceuticals*) Tablets each contain aneurine hydrochloride 1 mg riboflavine 1 mg nicotinamide 5 mg and granulated whole liver extract 125 mg For vitamin B deficiency *Dose* 3 tablets daily

Ureaphil (*Abbott*) Urea as an anhydrous lyophilised, sterile, pyrogen free powder supplied in units of 80 g for preparing intravenous injections by the addition of Dextrose Injection 5% or 10% or invert sugar solution 5%

or 10%. Used for the promotion of diuresis following surgery burns or trauma the concentration and total dosage (from 100 mg to 1000 mg per kg body weight) being governed by the severity of the condition under treatment.

Urelim (*Ward, Blenkinsop*) *p*-Diethylsulphamoylbenzoic acid ($C_{11}H_{15}O_4NS$ =257·3) available as tablets of 500 mg For the treatment of gout and hyperuricæmia associated with other conditions The uricosuric effect of Urelim is antagonised by citrates and salicylates *Dose* 1 g daily colchicine should be taken concurrently for some weeks

Uvistat Sunscreen Cream (*Ward Blenkinsop*) 2-Hydroxy-4-methoxy-4′-methylbenzophenone in a vanishing cream base For the prevention of sunburn and other conditions precipitated or aggravated by ultraviolet light

[P1 84B] **Valgis** (*Distillers Co*) Tablets each containing thalidomide (q v) 50 mg acetylsalicylic acid 250 mg and phenacetin 250 mg For insomnia associated with pain. *Dose* 1 or 2 tablets at night

[P1 81 84B] **Valgraine** (*Distillers Co*) Tablets each containing ergotamine tartrate 1 mg and thalidomide (q v) 12·5 mg For the treatment of migraine *Dose* 1 or 2 tablets to be repeated if necessary after 2 hours

[P1 84B] **Valledrine Cough Linctus** (*May & Baker*) Contains in each teaspoonful (3·6 ml) trimeprazine tartrate (q v) 2·5 mg pholcodine 4 mg (as citrate) and ephedrine hydrochloride 7·5 mg *Dose* 1 or 2 teaspoonfuls twice or thrice daily children ½ to 2 teaspoonfuls

[P1 84B] **Vallergan** (*May & Baker*) Trimeprazine tartrate (q v) available as a Syrup containing 2 mg in each ml and as Tablets of 10 mg Vallergan Forte Syrup contains trimeprazine tartrate 6 mg in each ml

[P1 84] **Valoid** (*Burroughs Wellcome*) Cyclizine lactate (q v) available as an Injection in ampoules of 1 ml each containing 50 mg also cyclizine hydrochloride available as Tablets of 50 mg

Valtorin (*C H Boehringer Sohn Germany Pfizer*) Tablets each containing chlorthenoxazin (q v) 250 mg and phenacetin 200 mg An analgesic and antipyretic *Dose* 2 tablets thrice daily

Vancocin (*Lilly*) Vancomycin hydrochloride (q v) available in ampoules of 500 mg for the preparation of intravenous infusions

Vancomycin Hydrochloride (*N.N.D.*) The hydrochloride of an antibiotic substance produced by strains of *Streptomyces orientalis*

Vancomycin is highly active against staphylococci, streptococci, and pneumococci It is not recommended for routine treatment or in mild infections but is specifically indicated in patients critically ill with staphylococcal infections resistant to the antimicrobial action of the commonly used antibiotics It may only be administered intravenously, in dilute solution it is irritating to the venous endothelium and may cause pain at the site of injection

Toxic effects average doses have caused febrile reactions and macular rashes large doses or prolonged treatment can produce tinnitus, auditory impairment, and thrombophlebitis *Contra-indicated* in patients with impaired renal function

Dose adults 500 mg every 6 to 8 hours by intravenous infusion or 2 g daily by continuous intravenous infusion, children 20 mg per pound body weight daily by intravenous infusion For intermittent infusion 100 to 200 ml of isotonic dextrose or saline is added to a concentrated solution containing 500 mg of vancomycin hydrochloride in 10 ml of Water for Injection and the diluted solution is administered by intravenous infusion over a period of 20 to 30 minutes For continuous infusion 1 to 2 g of vancomycin hydrochloride is added to a sufficiently large volume of isotonic dextrose or saline to permit the daily dose to be infused by intravenous drip over a period of 24 hours

Proprietary Name VANCOCIN

Vandid (*Riker*) Vanillic acid diethylamide available as a 5% solution for injection in Ampoules of 2 ml and 5 ml and as an Intravenous Infusion in infusion bottles of 540 ml containing 0 6% A respiratory stimulant (*Modification of entry in Vol I, 24th Edn p 1398*)

Vanquin (*Parke Davis*) Pyrvinium embonate (q v) available as a flavoured suspension containing the equivalent of 10 mg of anhydrous base in each ml *Dose* a single dose of 5 to 6 teaspoonfuls children a single dose equivalent to 5 mg of base per kg body weight

Varidase Buccal Tablets (*Lederle*) Each contains streptokinase 10,000 units and streptodornase 2500 units For the control of inflammation and œdema associated with trauma or infection *Dose* one tablet slowly dissolved in the mouth 4 times daily for at least 3 days (*For other Varidase preparations see Vol I 24th Edn, p 762*)

Variderm Ointment (*Paines & Byrne*) Contains in each g the extract from fresh bovine placenta 500 mg For the treatment of slow healing wounds.

Vasculit (*C H Boehringer Sohn Germany Pfizer*) Bamethan sulphate (q v) available as Drops containing 1%, and as Tablets of 12 5 mg

Vascutonex (*Calmic*) A water miscible cream containing diethylamine salicylate 10% and glycol salicylate 10% For the relief of pain in rheumatic affections

Vasomed (*Medo Chemicals*) Trolnitrate phosphate (q v) available as tablets of 2 mg

[B] **V-Cil K** (*Lilly*) Phenoxymethylpenicillin potassium available as Pulvules (capsules) of 125 mg and 250 mg as a Syrup containing 125 mg in each 5 ml (supplied as granules for reconstitution with water before use) and as Tablets of 60 mg , 125 mg , and 250 mg , all strengths expressed as phenoxymethyl penicillin

[Pl 84B B] **V-Cil K Sulpha** (*Lilly*) Tablets each containing phenoxymethyl penicillin potassium equivalent to phenoxymethylpenicillin 125 mg and sulphadimidine 500 mg and Paediatric Suspension containing in each teaspoonful (5 mL) the equivalent of half a tablet For the treatment of mixed infections. *Dose* one tablet every 3 to 6 hours children ½ to 2 teaspoonfuls of the suspension every 6 hours

[Pl 84B] **Veractil** (*May & Baker*) Methotrimeprazine (q v), available in Ampoules of 1 ml each containing 25 mg of the hydrochloride, and as Tablets of 5 mg 25 mg and 100 mg of the acid maleate

Versitol (*Bell & Sons*) Concentrated protein hydrolysate as a viscous liquid containing amino acids (16 to 18%) and simple polypeptides (24 to 27%), with minerals and some members of the vitamin B complex *Dose* 1 teaspoonful 3 to 5 times daily

[Pl 84B] **Vespral** (*Squibb*) Fluopromazine hydrochloride (q v) available as an Injection containing 20 mg in each ml in ampoules of 1 ml and vials of 5 ml and as Tablets of 10 mg and 25 mg

[Pl 84B] **Villescon Liquid** (*C H Boehringer Sohn Germany Pfizer*) Contains in each teaspoonful (5 mL) prolintane hydrochloride (1 α propylphenethylpyrrolidine hydrochloride) 2 5 mg , aneurine hydrochloride 1 7 mg riboflavine 1 0 mg pyridoxine hydrochloride 0 5 mg , and nicotinamide 5 0 mg For the treatment of debility in convalescence and in the aged. *Dose* 2 to 3 teaspoonfuls twice or three da ly before meals.

[Pl 84B] **Villescon Tablets** (*C H Boehringer Sohn Germany Pfizer*) Each contains prolintane hydrochloride (1 α propylphenethylpyrrolidine hydrochloride) 10 mg aneurine hydrochloride 5 mg riboflavine 3 mg pyridoxine hydrochloride 1 5 mg nicotinamide 15 mg , and ascorbic acid 50 mg For convalescence stress strain, or overwork *Dose* 1 or 2 tablets twice daily

[B] **Vioform Hydrocortisone** (*Ciba*) Cream, Lotion, and Ointment each containing iodochlorhydroxyquinoline 3% and hydrocortisone 1%, For the treatment of a wide range of skin affections (*For other Vioform preparations see Vol I, 24th Edn p 602*)

[B] **Viomycin P** (*Distillers Co*) A mixture of equal proportions (in terms of viomycin base) of viomycin sulphate and viomycin pantothenate with the addition of 0 1% of edetic acid as a stabilising agent Available in vials containing the equivalent of 1 g of viomycin base. It is said to be better tolerated than the sulphate alone and less likely to cause side-effects

[B] **Vionactane** (*Ciba*) A mixture of viomycin sulphate and viomycin pantothenate, available in vials containing the equivalent of 1 g of viomycin base It is said to be better tolerated than the sulphate alone and less likely to cause side-effects

[Pl] **Virugon** (*Bayer Prod*) Tablets each containing *N'-(iminomorpholino* methyl) guanidine hydrochloride (ABOB) 100 mg , atropine methonitrate 0 1 mg , and hyoscine methonitrate 0 1 mg

Virugon has been shown to have some beneficial influence in the prophylaxis and treatment of influenza and other virus infections, including non influenzal upper respiratory infections In an assessment of the drug in *Brit med J*, 1/1961, 48, it is concluded that on the basis of the work so far published it is hardly possible to form a clear estimate of its therapeutic value For a discussion on the value of the drug in respiratory diseases see Watson (*Brit med J*, 11/1960 1785), Wheatley and Boheimer (ibid , 1/1961, 51), Haglind (ibid , 1/1961, 291), and Sjoberg (ibid , 1/1961, 429)—the last appends a comprehensive list of references to published work on the drug

Dose prophylactic one tablet thrice daily children, $^1/_2$ tablet thrice daily therapeutic. 2 tablets thrice daily children $^1/_2$ to 1 tablet thrice daily Both in prevention and treatment it should be given for a minimum of 7 days (preferably 10 days), even if a rapid clinical response is obtained

Other Proprietary Names FLUMIDIN (*Swed*), also FLUMADON, STENITOL (*Ger*)

VoSoL Ear Drops (*Denver Laboratories*) Contain propylene glycol diacetate (1,2-diacetoxypropane) 3%, acetic acid 2%, benzethonium chloride 0 02%, and propylene glycol For otitis externa where there is an infective element present. *Administration* 5 drops installed 3 or 4 times daily, prophylactic, 2 drops in each ear night and morning

[Pl 848] **Wardamate** (*Lenis & Burrows*) Meprobamate, available as tablets of 400 mg

Warduzide (*Lenis & Burrows*) Chlorothiazide (q v), available as tablets of 500 mg

Warfarin Sodium (*Ward Blenkinsop*) Available in Ampoules each containing 50 mg. and as Tablets of 3 *mg* , 5 *mg* , and 20 *mg*

Welldorm (*Smith & Nephew*) Dichloralphenazone, a complex of chloral hydrate and phenazone, available as an Elixir containing $2^1/_2$ grains in each fluid drachm, as Pædiatric Tablets of $2^1/_2$ grains, and as Tablets of 10 grains Sedative and hypnotic. *Dose* as a sedative $^1/_2$ to 1 tablespoonful of elixir or $^1/_2$ to 1 tablet, children, 1 to 3 teaspoonfuls of elixir or 1 to 3 pædiatric tablets; as a hypnotic, 1 to 3 tablespoonfuls of elixir or 1 to 3 tablets, children, 2 to 6 teaspoonfuls of elixir or 2 to 6 pædiatric tablets (*Modification of entry in Vol. I, 24th Edn, p 1398*)

Wescodyne Surgical (*Bengue*) A detergent germicidal solution containing polyethoxypolypropoxypolyethoxyethanol iodine complex 13 65%, nonylphenoxypolyethoxyethanol iodine complex 13 11%, and hydrogen chloride 0 165% This solution provides available iodine not less than 2 4% and should be diluted 1 fl oz. to 1 gallon for use For thermometer instrument, and room disinfection.

Xanthocillin. An antibiotic complex produced by *Penicillium notatum* It is used as an antiseptic for topical application in the treatment of infections of the mouth and throat.

Proprietary Names it is an ingredient of LYNOLYN and LYNOTRACIN

Xylocaine (*Astra Hewlett*) Preparations of lignocaine and lignocaine hydrochloride formerly marketed under the name of Xylocaine by Duncan Flockhart & Co Ltd (see Vol I 24th Edn pp 431 and 434) are now made and marketed by Astra Hewlett Ltd In addition the following preparation is now available [P1 84B] **Xylocaine Solution for Injection with Noradrenaline** containing lignocaine hydrochloride 2% and noradrenaline 1 80,000

Xylometazoline Hydrochloride 2 (4-t Butyl 2 6-dimethylbenzyl) 2 imidazoline hydrochloride, $C_{16}H_{24}N_2,HCl$=280 8

A nasal vasoconstrictor which decongests and drains swollen nasal mucosa Its effects are said to last 4 to 6 hours It has been applied topically as a nasal solution (0 1%) or nasal spray (0 05 or 0 1%) *Toxic effects* are mild but may include rebound congestion, slight stinging, dry nose, headache, drowsiness lightheadedness palpitations, and a disagreeable taste

Proprietary Name OTRIVIN (*U S A*)

Xylotox Ointment (*Willows Francis*) Contains lignocaine 5% in a water-miscible basis For rapid surface anæsthesia of mucous membranes.

Xylotox Oral (*Willows Francis*) A solution of lignocaine hydrochloride 2% in a viscous basis For surface anæsthesia of the upper digestive tract. *Dose* 1 dessertspoonful to 1 tablespoonful

(*For other Xylotox preparations see Vol I 24th Edn p 431*)

Zacturin (*Wyeth*) Tablets each containing ethoheptazine citrate (q v) 75 mg., acetylsalicylic acid 325 mg and calcium carbonate 97 mg For the relief of pain *Dose* 1 or 2 tablets 2 to 4 times daily

Zarontin (*Parke Davis*) Ethosuximide (q v) available as capsules of 250 mg

Zonulysin (*Mau*) Chymotrypsin (q v) in ampoules each containing 0 2 mg For use as a 1 in 5000 solution in cataract surgery

[P1] **Zynocin** (*Distillers Co*) Lozenges each containing xanthocillin (q v) 1 mg and benzocaine 5 mg For the treatment of sore throats accompanying respiratory infections *Dose* 1 or 2 to be sucked slowly every 2 hours

[B] **Zynotracin** (*Distillers Co*) An ointment containing in each g 2 units bacitracin 500 units xanthocillin (q v) 4 5 mg and hydrocortisone 10 mg in a wool fat and paraffin basis For the treatment of commonly occurring infections of the skin superficial wounds and burns, and infections of the outer ear

ADDENDA

[Pl 84B] **Adroyd** (*Parke Davis*) **Oxymetholone** (p 238) available as tablets of 5 mg

[Pl 81 84A] **Amylozine Spansules** (*Smith, Kline & French*) Sustained release capsules each containing amylobarbitone 64 8 mg and trifluoperazine hydrochloride (p 267) 2 mg For the relief of agitation apprehension and insomnia *Dose* one capsule night or morning as required maximum 3 capsules daily

Astrafer I V (*Astra Hewlett*) A high molecular weight iron-carbohydrate complex in isotonic solution available in ampoules of 5 ml containing the equivalent of 20 mg of trivalent iron in each ml For the treatment of iron deficiency anaemias *Dose* by slow intravenous injection according to the haemoglobin deficiency approximately 150 mg of iron is needed for women and 200 mg for men to increase the haemoglobin content by 1 g per 100 ml of blood A trial dose of 2 ml should be given first and subsequent doses should not be more than 5 ml daily until the total calculated dose has been given

Dantyl (*Leo Laboratories*) A powder supplied in sachets each containing aminosalicylic acid 1 g phenyl p aminosalicylate 3 g and sucrose 3 g For the treatment of tuberculosis *Dose* the contents of one sachet thrice daily in water or milk preferably with main meals

Dequadin Tulle (*Allen & Hanburys*) A sterile bacteriostatic gauze dressing impregnated with a soft non irritating basis containing dequalinium acetate 0 4% For application to varicose and other ulcers infected wounds burns and scalds operation wounds incised abscesses and varicose eczema. (*For other Dequadin preparations see p 206 and Vol I 24th Edn p 1336*)

[Pl 84B] **Distaval** (*Distillers Co*)—see also p 210 Also available as a **Suspension** containing 50 mg in each teaspoonful (5 ml)

[Pl 8] **Distavone** (*Distillers Co*) A dry powder in vials each containing procaine penicillin 300 000 units benzylpenicillin (potassium salt) 100 000 units and streptomycin sulphate equivalent to 500 mg of streptomycin base, with suspending and stabilising agents For the preparation of aqueous suspensions for intramuscular injection. (*Modification of entry in Vol I 24th Edn p 1441*)

Emeside (*Laboratories for Applied Biology*) Ethosuximide (p 214) available as capsules of 250 mg

Enduron (*Abbott*) Methyclothiazide (methylclothiazide 6-chloro 3-chloromethyl 3 4 dihydro 2 methyl 7 sulphamoylbenzo-1 2,4 thiadiazine 1 1 dioxide $C_9H_{11}O_4N_3S_2Cl_2$=360 3) available as tablets of 2 5 mg and 5 mg A diuretic with an action lasting at least 24 hours after a single dose. *Dose* 2 5 to 10 mg once daily

[Pl 84B] **Euphoramin** (*Robar Laboratories*) Tablets each containing meprobamate 300 mg and methylamphetamine hydrochloride 5 mg For the treatment of depression associated with tension and anxiety *Dose* one tablet twice or thrice daily the last dose should not be taken later than 4 hours before bedtime

Febramine (*Boots*) Cetoxime hydrochloride [(*N* benzylanilino)acetamidoxime monohydrochloride $C_{16}H_{17}ON_3$ HCl=291 8] available as tablets of 100 mg An antihistaminic *Dose* one tablet 3 or 4 times daily

Framygen (*Genatosan*)—see also p 217 Also available as Sterile Powder in containers of 500 mg and as **Tablets** of 500 mg

Gastrografin (*Schering A G Berlin Pharmaceuticals London*) A 76% aqueous solution of the sodium methylglucamine salt of diatrizoic acid with added flavouring agents and a wetting agent. A modification of Urografin (Vol. I 24th Edn p 802) for use as a contrast medium in the radiological investigation of the gastro-intestinal tract. It may be given orally or rectally with or without barium sulphate

Gina (*Bayer Prod*) **Propatylnitrate** the trinitric acid ester of 2-ethyl 2 hydroxymethylpropane 1 3 diol (FITN etrynit ettriol trinitrate) available as tablets of 10 mg A coronary vasodilator for relief of pain in angina pectoris *Dose* one tablet sublingually at the first warning of an attack to prevent attacks one tablet thrice daily

Hayphryn (*Bayer Prod*) A nasal spray containing phenylephrine hydrochloride 0 5% and thenyldiamine hydrochloride 0 1% in a plastic atomiser This product was formerly marketed under the name Neophryn with Antihistamine (*see Vol I 24th Edn p 61*)

[P1 84B] **Levonor** (*Genatosan*) Lævo amphetamine alginate [(—) α methyl phenethylamine alginate] available as tablets of 5 mg For reducing weight by controlling appetite *Dose* one tablet thrice daily one hour before meals

Lucofen (*Warner*) 1 *p* Chlorophenyl 2 methylprop 2 ylamine hydrochloride ($C_{10}H_{14}NCl\,HCl = 220\,2$) available as tablets of 25 mg For reducing weight by controlling appetite *Dose* one tablet thrice daily before meals or 3 tablets daily with breakfast

[P1 84B] **Majeptil** (*May & Baker*) Thioproperazine Methanesulphonate—7843 R P Thioperazine Methanesulphonate *NN* D methyl 10-[3-(4-methyl p perazin 1 yl)propyl]phenothiazine 2 sulphonamide dimethanesulphonate $C_{23}H_{30}O_4N_4S_3\,2CH_4O_3S$ 638 9—available as a Solution containing 0 75% in ampoules of 1 ml and as Tablets of 1 mg 5 mg 10 mg and 25 mg

Thioproperazine is described as a psychocorrective agent for use in the treatment of schizophrenia and acute mania For the treatment of schizophrenia two methods of treatment are advocated (1) discontinuous treatment and (2) continuous administration The discontinuous' method aims at provoking certain neurological manifestations and maintaining them for a limited period after which the drug is abruptly withdrawn The continuous' method employs a lower dosage and neurological disturbances are avoided as far as possible by adjusting the dose and/or by concurrently administering an anti Parkinsonism or sedative drug Thioproperazine is usually administered by mouth but in the treatment of acute mania it is usually administered initially by intramuscular injection until the desired calming effect is achieved The dosage is determined according to the response of the patient and the type and severity of the condition under treatment

Overdosage may occur not only in patients during in patient treatment but after discharge from hospital on maintenance therapy Acute poisoning could also occur in children who swallow tablets left within their reach. Treatment consists in gastric lavage and the administration of 50 mg of promethazine hydrochloride by intramuscular injection as an antidote with or without the intramuscular injection of 10 ml of paraldehyde children should be given doses in proportion to their age Barbiturates and other respiratory depressants should be avoided

The manufacturers literature should be consulted for detailed information on initial dosage and maintenance therapy toxic effects, and contra indications

Mitronal (*Searle U K*) **Cinnarizine** (1 *trans*-cinnamyl-4-diphenylmethyl piperazine $C_{26}H_{28}N_2 = 368\,5$) available as tablets of 15 mg An antihistamine. It has the general properties toxic effects and uses of the antihistaminic drugs as described in Vol I 24th Edn pp 1101 3 Large doses may potentiate the effects of barbiturates *Dose* one tablet thrice daily increased if necessary to a total of 90 mg daily in divided doses

[B] **Mycifradin Veriderm** (*Upjohn*) An ointment, with a basis approximating the lipids of human skin containing neomycin sulphate 0 5% in tubes of 1 oz For the treatment of skin infections (*For other Mycifradin preparations see Vol I 24th Edn p 1420*)

Ospolot (*F B A Pharmaceuticals*) Tetrahydro-2 *p*-sulphamoylphenyl 1 2-thiazine 1 1 dioxide ($C_{10}H_{14}O_4N_2S_2 = 290\,4$) available as tablets of 200 mg For the treatment of all forms of epilepsy except petit mal It may be used alone or in combination with other anticonvulsants *Dose* 1 to 3 tablets daily in divided doses children ½ to 2 tablets daily in divided doses.

Periactin (*Merck Sharp & Dohme*) Cyproheptadine hydrochloride [4-(5-dibenzo[*a,e*]cycloheptatrienylidene)-1-methylpiperidine hydrochloride *monohydrate* $C_{21}H_{21}N,HCl\,H_2O=341.9$], available as tablets of 4 mg An antagonist of both histamine and serotonin, used in the treatment of allergic and pruritic conditions *Dose* initial one tablet 3 or 4 times daily, to be adjusted according to response

[P1 81 84A] **Potensan** (*Medo-Chemicals*) Tablets each containing dexamphetamine sulphate 0 75 mg , yohumbine hydrochloride 5 mg , strychnine hydrochloride 0 5 mg , and amylobarbitone 15 mg *Dose* 1 or 2 tablets thrice daily after meals (*Modification of entry in Vol I, 24th Edn, p 129*)

[P1 84B] **Primolut-Depot** (*Schering A G , Berlin Pharmaceuticals, London*) *Hydroxyprogesterone caproate (p 222), available as a solution containing 125 or 250 mg* per ml in benzyl benzoate and castor oil, in ampoules of 1 ml (*Modification of entry in Vol I, 24th Edn, p 971*)

[P1 87] **Pro-Actidil** (*Burroughs Wellcome*) Triprolidine hydrochloride in sustained-action tablets of 10 mg with an antihistaminic action lasting over a period of 19 to 24 hours *Dose* adults and children over 10 years, one tablet swallowed whole between 6 and 7 p m , very severe cases 2 tablets every 24 hours (*For Actidil see Vol I, 24th Edn, p 1126*)

Siposan (*Sipon*). A germicidal detergent stated to contain about 50% of the 'ammonium salt of *N*-lauryl tetraethoxy amino sulphonic acid' It is used in a dilution of 1 in 10 for disinfecting surgical instruments and utensils and for general use **Siposan FT** contains the active constituent of Siposan 25% and Bacfor FT (benzyllauryldimethylammonium bromide) 25% It has similar uses to Siposan and is used in a dilution of 1 in 20 in water

Soframycin (*Roussel*)—see also p. 256 Also available as a **Sterile Powder** in multi-dose vials of 24 ml. each containing 100 mg or 500 mg , supplied with 5-ml ampoules of sterile isotonic solvent For use as a dusting-powder and in the preparation of solutions for instillation into infected cavities, for compresses, for subconjunctival injection, and for aerosols. **Sofra-Tulle** a sterile paraffin gauze dressing impregnated with framycetin sulphate 1% For application to wounds, burns, varicose ulcers, and bedsores

Steriloderm (*Willows Francis*) A bactericidal gel containing hexachlorophane 0 01%, *o*-phenylphenol 0 01%, and isopropyl alcohol 45% in an inert jelly basis with a pH of 5 5 to 6 5 For rubbing into the hands after scrubbing with soap and water before medical or surgical procedures

Tryptizol (*Merck Sharp & Dohme*). Amitriptyline hydrochloride [5-(3-dimethylaminopropylidene)dibenzo[*a,d*]cyclohepta[1,4]diene hydrochloride, $C_{20}H_{23}N,HCl=313.9$], available as an **Injection** in 10-ml. vials containing 10 mg in each ml , and as **Tablets of 10 mg** and 25 mg An antidepressant drug which relieves anxiety *Contra-indicated in glaucoma. Tryptizol* should not be given concurrently with other antidepressant drugs *Dose* by mouth, initial, 25 mg thrice daily and increased if necessary by increments of 25 mg preferably in the evening, it is seldom necessary to exceed a total daily dose of 150 mg , maintenance, 10 to 25 mg 3 or 4 times daily By intramuscular or slow intravenous injection, initial, 20 to 30 mg 4 times daily, thus is replaced by oral treatment when advisable (usually within 2 weeks)

Viacutan Tulle (*Ward, Blenkinsop*) An antiseptic *non adherent* gauze dressing impregnated with methargen [silver methylenebis(2-naphthyl-3-sulphonate)], in a water soluble polyethylene glycol basis For application to burns, ulcers, pressure sores, infected wounds, and lacerations (*For other Viacutan preparations see Vol I, 24th Edn, p 1187*)

MANUFACTURERS OF PROPRIETARY MEDICINES

The names and addresses of the manufacturers (or distributors) of the proprietary medicines mentioned in the *Extra Pharmacopœia Volume I 24th* Edition and in the section on New Drugs and Proprietary Medicines on pages 185 to 277 of this Supplement are listed below in alphabetical order of the abbreviated names used in the texts of the two publications

This list replaces that on pages xxv to xxix of the Extra Pharmacopœia Volume I 24th Edition and records the changes that have occurred since the compilation of the original list

Abbott Abbott Laboratories Ltd 8 Baker St. London W1
Aero Ped Ltd—now *International Laboratories*
Agprolin Agprolin Ltd 180 Chadderton Rd Oldham, Lancs.
Albright & Wilson Albright & Wilson (Manufacturing) Ltd 1 Knightsbridge Green London SW1
Alginate Industries Alginate Industries Ltd Walter House Bedford St London WC2
Allen Chlorophyll Co The Allen Chlorophyll Co Ltd 20 Wharf Rd London N1
Allen & Hanburys Allen & Hanburys Ltd, Bethnal Green London E2
Allied Laboratories Allied Laboratories Ltd 140 Park Lane London W1
Alwett Trading Co Products of Farbenfabriken Bayer Aktiengesellschaft now distributed by *FBA Pharmaceuticals*
Ames Ames Co Division of Miles Laboratories Ltd Stoke Court Stoke Poges Slough Bucks
Angier Products now distributed by *Bristol Myers*
Anglo French Drug Co The Anglo-French Drug Co Ltd 11 & 12 Guilford St. London WC1
Antibody Products Antibody Products Ltd 33 Woodlands Rd Watford Herts.
Antigen Laboratories Antigen Laboratories Ltd 36 Queen Anne St. London W1
Armour Armour Pharmaceutical Co Ltd Hampden Park Eastbourne Sussex
Ashe Laboratories Ashe Laboratories Ltd Ashetree Works Kingston Rd Leatherhead Surrey
Aspro Ltd—now Nicholas Products Ltd 225 Bath Rd Slough Bucks
Astra Hewlett *Astra Hewlett Ltd King George's Avenue, Watford Herts.*
Astrapharm—now *Astra Hewlett*
BM Laboratories BM Laboratories Ltd Suffolk House Copse Hill Sutton, Surrey
Baxter Baxter Laboratories Ltd London Road Trading Estate High Wycombe Bucks
Bayer Prod Bayer Products Division of Winthrop Group Ltd, Winthrop House Surbiton, Surrey
Beecham Pharmaceuticals—now *Beecham Research Laboratories*
Beecham Research Laboratories Beecham Research Laboratories Ltd Great West Rd, Brentford Middx.
Bell (John) Hills & Lucas John Bell Hills & Lucas Ltd, Oxford Works Worsley Bridge Rd London, SE26
Bell & Sons Bell & Sons Ltd Gascoyne St. Liverpool 3
Bencard Bencard Allergy Division Beecham Research Laboratories Ltd Great West Rd, Brentford Middx.
Benger Benger Laboratories Ltd Holmes Chapel Crewe Cheshire
Bengué Bengué & Co Ltd Mount Pleasant, Alperton Wembley Middx
Bibby J Bibby & Sons Ltd King Edward St Liverpool 3
Bioglan Laboratories Bioglan Laboratories Ltd Tonsbourne Manor, Hertford.
Biorex Biorex Laboratories Ltd 47 51 Exmouth Market London EC1
Blackie Robert Blackie Ltd 25 Pomeroy St London SE14
Boake Roberts A. Boake Roberts & Co Ltd Carpenters Rd London E15
Boots Boots Pure Drug Co. Ltd Station St., Nottingham

Bristol-Myers Bristol-Myers Co Ltd, Stonefield Way, Victoria Rd, South Ruislip, Ruislip, Middx
British Alkaloids British Alkaloids Ltd, Pinners Hall, Great Winchester St, London, E C 2
British Celanese British Celanese Ltd, 22 Hanover Square, London, W 1
British Cod Liver Oils British Cod Liver Oils (Hull & Grimsby) Ltd, St Andrews Dock Hull Yorkshire
British Drug Houses The British Drug Houses Ltd, Graham St, London, N 1
British Ethical Proprietaries British Ethical Proprietaries Ltd, Middle St, Taunton, Somerset
British Schering British Schering Ltd, 229–231 Kensington High St, London, W 8
British Weleda Co British Weleda Co Ltd, Littlehurst East Grinstead, Sussex.
Brook, Parker. Brook, Parker & Co Ltd, P O Box 353, Ashfield, Horton Rd, Bradford 7, Yorkshire
Brooks & Warburton Brooks & Warburton Ltd Morden Rd, Mitcham, Surrey
Burroughs Wellcome Burroughs Wellcome & Co (The Wellcome Foundation Ltd), 183–193 Euston Rd, London, N W 1
Burrows Lyham Burrows Lyham Ltd, 197 Lyham Rd London, S W 2
Bush W J Bush & Co Ltd, Ash Grove, London, E 8
Calfos Calfos Ltd, Imperial House, Kingsway, London, W C 2
Calmic Calmic Ltd Crewe, Cheshire
Camden. Camden Chemical Co Ltd, 61 Gray's Inn Rd, London, W C.1
Carlton Laboratories Carlton Laboratories (Southern) Ltd, 2 Norfolk Square Brighton, Sussex
Carnegies of Welwyn Pharmaceutical products now supplied by *Roker*
Cartwright W B Cartwright Ltd, Rawdon, Leeds
Chemicals Trading Co Chemicals Trading Co Ltd, 18 Creechurch Lane, London, E C 3
Chesebrough-Pond s Chesebrough-Pond s Ltd, Victoria Rd London, N W 10
Christie, George Christie, George & Co Ltd 1 Academy St, Warrington, Lancs
Christy Thos Christy & Co Ltd, North Lane, Aldershot, Hants
Ciba CIBA Laboratories Ltd, Horsham, Sussex.
Cilag Lloyd Cilag Lloyd Ltd, 11 Waterloo Place London, S W 1
Clarnell Clarnell Ltd, Spark Lane, Mapplewell, Barnsley Yorkshire
Clay & Abraham Clay & Abraham (Manufacturing) Ltd, 2 Upper Duke St, Liverpool 1
Clinical Products—now *Nicholas*
Coates & Cooper Coates & Cooper Ltd, Pyramid Works, West Drayton, Middx
Continental Laboratories Continental Laboratories Ltd, 85 Church Rd, Hove, 3, Sussex.
Cooper, McDougall & Robertson Cooper, McDougall & Robertson Ltd, Berkhamsted, Herts
Courtaulds Courtaulds Ltd 16 St Martin's le grand, London, E C 1.
Croda Croda Ltd Croda House, Snaith, Goole, Yorkshire
Crookes Crookes Laboratories Ltd, Park Royal, London, N W 10
Cuxson, Gerrard Cuxson, Gerrard & Co Ltd, Fountain Lane, Oldbury, Birmingham
Cyclo Chemicals Cyclo Chemicals Ltd, 376 Strand, London, W C 2
Dales Pharmaceuticals Dales Pharmaceuticals Ltd, Power Rd, London, W 4
Dalmas Dalmas Ltd, Junior St, Leicester
Damancy Damancy & Co Ltd, Coronation Rd, Ware, Herts.
Denver Chemical Mfg Co—now *Denver Laboratories*
Denver Laboratories Denver Laboratories Ltd 12 Carlisle Rd, London, N W.9.
Deosan Ltd Deosan Ltd, 42 Weymouth St, London, W 1
Derby Luminescents Ltd Derby Luminescents Ltd, 11 St Swithin's Lane, London, E C 4.
Distillers Co. The Distillers Co (Biochemicals) Ltd, Broadway House, The Broadway, London, S.W.19.
Don S Momand Ltd. Agency products now distributed by *Bell (John), Hills & Lucas*

Duncan, Flockhart Duncan, Flockhart & Co Ltd, 16 Wheatfield Rd, Edinburgh, 11
E G H Laboratories—now *Nicholas*
Ethica Laboratories Ethica Laboratories 1 High St, Barnet Herts
Evans Medical Evans Medical Ltd Speke, Liverpool 24, formerly *Evans Medical Supplies*
F A I R Laboratories F.A.I.R Laboratories Ltd, 179 Heath Rd, Twickenham, Middx.
F B A Pharmaceuticals FBA Pharmaceuticals Ltd, 37–41 Bedford Row, London, W C 1
Fassett & Johnson Fassett & Johnson Ltd, St John's Gate Buildings, 86 Clerkenwell Rd, London, E C 1
Ferris Ferris & Co Ltd, Bristol 2
Fletcher, Fletcher & Co Fletcher, Fletcher & Co Ltd, Vibrona Laboratories, Holloway, London, N 7
Fletcher (W) Chemists Ltd Agency products now distributed by *Dales Pharmaceuticals*
Geigy Geigy Pharmaceutical Co Ltd Roundthorn Estate, Wythenshawe Manchester, 23
Geistlich Geistlich Sons Ltd Melrose Avenue, Chester
Gemec Chemicals—now Union Carbide Ltd Chemicals Division, 8 Grafton St., London, W 1
Genatosan Genatosan Ltd Loughborough Leics
German Ethicals German Ethicals 56 Redbreast Rd, Moordown, Bournemouth, Hants
Giles, Schacht Giles, Schacht & Co Ltd, 27 Regent St, Clifton, Bristol, 8
Glaxo Glaxo Laboratories Ltd, Greenford, Middx
Glenwood Glenwood Laboratories Ltd, 21 Jockey's Fields London, W C 1
Griffiths Hughes—now Nicholas Products Ltd 225 Bath Rd Slough Bucks
H E B Pharmaceuticals H E B Pharmaceuticals Ltd, 482 Stratford Rd, Old Trafford Manchester, 16
Harker Stagg Harker Stagg Ltd, Devon Wharf, Emmott St, London, E.1
Heulett—now *Astra Heulett*
Hillside Pharmaceuticals Hillside Pharmaceuticals 839 High Rd London, N 12.
Hommel. Products now distributed by Lloyds' Pharmaceuticals Ltd, 11 Waterloo Place, London, S W 1
Honeywill-Atlas Honeywill Atlas Ltd, Devonshire House, Mayfair Place, London, W 1
Hopkin & Williams Hopkin & Williams Ltd, Freshwater Rd, Chadwell Heath, Romford Essex
Horlicks Horlicks Ltd, Slough, Bucks
Hough, Hoseason Hough Hoseason & Co Ltd, Atlas Laboratories, Levenshulme, Manchester, 19
Howards Howards of Ilford Ltd, Ilford, Essex.
Ilon Laboratories. Ilon Laboratories, Lorne St., Hamilton, Lanarkshire
Imperial Chemical Industries Imperial Chemical Industries Ltd, Imperial Chemical House Millbank, London, S W 1
Imperial Chemical Pharmaceuticals Imperial Chemical Industries Ltd Pharmaceuticals Division, Alderley Park, Macclesfield, Cheshire
Independent Research Laboratories Independent Research Laboratories, 79 Charing Cross Rd, London, W C.2
International Chemical Co International Chemical Co Ltd, Chenies St, London, W C 1
International Laboratories International Laboratories Ltd, 205 Hook Rd Chessington, Surrey
Jeyes' Sanitary Compounds Products now distributed by Jeyes Sales Ltd River Rd, Barking Essex.
Johnson & Johnson Johnson & Johnson (Great Britain) Ltd, Slough Bucks
Johnsons of Hendon Johnsons of Hendon Ltd, 335 Hendon Way, London N W 4
Kaylene Chemicals Kaylene (Chemicals) Ltd, Waterloo Rd, London N W 2.
Kerfoot. Thomas Kerfoot & Co Ltd, Vale of Bardsley, Ashton under Lyne, Lancs

Knox Laboratories Knox Laboratories Ltd 46 Hertford St London W 1
Kumar Kumar (London) Ltd 144 Fortess Rd London N W 5
Laboratories for Applied Biology Laboratories for Applied Biology Ltd 91 Amhurst Park London N 16
Lactagol Ltd Lactagol Ltd 51 Clapham Rd London S W 9
Laporte Chemicals Laporte Chemicals Ltd Luton Beds
Leda Leda Pharmaceuticals Ltd Berk House Portman Square London W 1
Lederle Lederle Laboratories Division of Cyanamid of Great Britain Ltd Bush House Aldwych, London, W C 2
Lehn & Fink Lehn & Fink Products Ltd 565 Kingston Rd London S W 20
Lennig Charles Lennig & Co (Great Britain) Ltd 26 Bedford Row London W C 1
Leo Laboratories Leo Laboratories (England) Ltd 223 Kensington High St London W 8
Lewis Lewis Laboratories Ltd, Knowsthorpe House Knostrop Lane Leeds 9
Lewis & Burrows Lewis & Burrows (Manufacturing Chemists) Ltd 197 215 Lyham Rd London S W 2
Lilly Eli Lilly & Co Ltd Basingstoke Hants
Lloyd Hanol Lloyd Hanol Ltd 11 Waterloo Place London S W 1
M C P Pure Drugs M C P Pure Drugs Ltd Station Wharf Works Alperton Wembley Middx
Macfarlan. J F Macfarlan & Co Ltd 109 Abbeyhill Edinburgh.
McNeil Laboratories McNeil Laboratories Ltd High Wycombe, Bucks
Macwell Macwell & Co Ltd 7 West Rd Kingston-on Thames Surrey
Marmite Food Extract Co Marmite Ltd Walsingham House 35 Seething Lane London E C 3
Matthews Laboratories Matthews Laboratories Ltd Vibrona Laboratories Holloway London N 7
Matthews & Wilson. Matthews & Wilson Ltd 45 Morrish Rd London S W 2
Maw S Maw Son & Sons Ltd Aldersgate House New Barnet Barnet Herts.
Mawdsley D Mawdsley & Co P O Box 146 64 Faulkner St Manchester 1
May & Baker May & Baker Ltd Dagenham Essex.
Medical Alginates Ltd Medical Alginates Ltd Wadsworth Rd Perivale Greenford Middx.
Medico Biological Laboratories Medico Biological Laboratories Ltd Cargreen Rd London, S E 25
Medo Chemicals Medo Chemicals Ltd 144 Fortess Rd, London N W 5
Melanoid Melanoid Ltd Dudley Port Tipton Staffs.
Menosine Menosine Ltd, 7 West Rd Kingston-on Thames Surrey
Merck Sharp & Dohme Merck Sharp & Dohme Ltd Hoddesdon Herts
Merrell National Merrell National (Laboratories) Ltd 20 Savile Row London W 1
Merz Merz & Co Ltd 51 Tottenham Court Rd London W 1
Midland Silicones Midland Silicones Ltd 68 Knightsbridge, London S W 1
Milton Antiseptic Ltd—now Milton Pharmaceuticals Ltd 10 New Burlington St London W 1
Monsanto Monsanto Chemicals Ltd Monsanto House 10–18 Victoria St London, S W 1
Moore Medicinal Products Moore Medicinal Products Ltd Waverley House Aberdeen
Multipax Chemicals Multipax Chemicals Ltd 142 Larkhall Lane London S W 4
Napp H R Napp Ltd Commerce Way Lancing Sussex.
Nestlé The Nestlé Co Ltd Hayes Middx.
Newton Chambers Newton Chambers & Co. Ltd Thorncliffe, Sheffield
Nicholas Nicholas Laboratories Ltd 225 Bath Rd, Slough, Bucks.
Nipa Nipa Laboratories Ltd Treforest Industrial Estate Pontypridd Glam
Norgine Norgine Pharmaceutical Products (London) Ltd 26 Bedford Row London W C 1
Norma Chemicals Norma Chemicals Ltd, 198 Finchley Rd, London, N W 3
Oldham Laboratories The Oldham Laboratories Ltd 25 Ebury St. London S W 1

Oppenheimer Oppenheimer, Son & Co Ltd, Handforth Laboratories, Clapham Rd London S W 9
Organon The Organon Laboratories Ltd Brettenham House, Lancaster Place, London W C 2
Ortho Ortho Pharmaceutical Ltd, Saunderton, High Wycombe, Bucks.
Oxo Oxo Ltd Thames House, Queen St. Place, London E C.4
Paines & Byrne Paines & Byrne Ltd, Pabyrn Laboratories Perivale, Greenford, Middx.
Parke, Davis Parke, Davis & Co, Staines Rd Hounslow, Middx
Pearson's Antiseptic Co Pearson's Antiseptic Co Ltd, 172 Buckingham Palace Rd, London, S W 1
Permutit Ltd, London Permutit Co Ltd, Permutit House, Gunnersbury Avenue, London W 4
Pfizer Pfizer Ltd, Sandwich, Kent
Pharmaceutical Manufacturing Co—now *Willows Francis*
Pharmax Pharmax Ltd, Western House Gravel Hill Bexleyheath Kent
Pharmethicals, London Pharmethicals (London) Ltd, Victoria Way, Burgess Hill, Sussex
Phenolaine Co Phenolaine Co, 12 St John's St Tunbridge Wells Kent
Philip Harris Philip Harris Ltd 144 Edmund St, Birmingham, 3
Phillips—now Phillips, Scott & Turner Division of Winthrop Group Ltd St Mark's Hill Surbiton Surrey
Potter & Clarke Potter & Clarke Ltd, River Rd Barking, Essex
Prince Regent Tar Co Prince Regent Tar Co Ltd, Brettenham House, Lancaster Place, London, W C 2
Radiol Radiol Chemicals Ltd, Radian House, 78 Upper Richmond Rd, London, S W 15
Reckitt & Colman—now *Reckitt & Sons*
Reckitt & Sons Reckitt & Sons Ltd, Hull, Yorkshire
Rendell W J Rendell Ltd Ickleford Manor, Hitchin, Herts
Reynolds & Branson Reynolds & Branson Ltd Leodis Works, North West Rd, Leeds, 6
Richter Gedeon Richter (Great Britain) Ltd, Richter House, 14–18 Weedington Rd, London N W 5
Riddell Riddell Products Ltd Riddell House, 10 Dunbridge St., London, E 2
Riker Riker Laboratories Ltd, Morley St, Loughborough, Leics
Roberts Roberts Chemists (Bond Street) Ltd, 76 New Bond St., London, W 1.
Robins Co A H Robins Co Ltd, 5 Fenchurch St, London E C.3
Roche Roche Products Ltd, 15 Manchester Square, London, W 1
Rona Laboratories Rona Laboratories Ltd, 13 Molyneux St, London W 1
Ronaldson John Ronaldson & Co Ltd, 3 & 4 Crooked Lane, London, E C.4
Ronsheim & Moore Ronsheim & Moore Ltd, 8 Buckingham Palace Gardens, London, S W 1
Rouse Rouse of Wigmore Street Ltd, 274 Ilderton Rd, London, S E.15
Roussel Rousel Laboratories Ltd, 847 Harrow Rd, London, N W 10
Rybar Laboratories Rybar Laboratories Ltd, 6 Park Avenue, Tankerton, Whitstable Kent.
Rystan Ltd Rystan Ltd, 49 Kingston Rd Leatherhead Surrey
Saccharin Corporation The Saccharin Corporation Ltd 10 Parkhouse St, London, S E 5
Samuelson P Samuelson & Co, 1 Crutched Friars London, E C 3
Sandoz Products Sandoz Products Ltd, Sandoz House, 23 Great Castle St, London, W 1
Sanitas Sanitas Co Ltd 51 Clapham Rd, London, S W 9
Savory & Moore Savory & Moore Ltd, Standard Works Lawrence Rd, London, N 15
Scott & Bowne Scott & Bowne Ltd, 50 Upper Brook St, London, W 1
Scott & Turner—now Phillips, Scott & Turner Division of Winthrop Group Ltd, St Mark's Hill, Surbiton, Surrey
Searle U K G D Searle & Co Ltd Lane End Rd High Wycombe, Bucks
Shell Chemicals Shell Chemical Co Ltd, 170 Piccadilly, London, W 1
Silten Silten Ltd, Silten House, Hatfield, Herts.

Sipon. Sipon Products Ltd, 23 Dryden Chambers, 119 Oxford St., London W 1
Smith, Kline & French Smith Kline & French Laboratories Ltd, Welwyn Garden City, Herts
Smith & Nephew Smith & Nephew Pharmaceuticals Ltd, Bessemer Rd, Welwyn Garden City, Herts The surgical dressings of *Smith & Nephew* mentioned in Volume I, 24th Edn, are marketed by Smith & Nephew Ltd, of the same address
Smith (T & H) T & H Smith Ltd, Blandfield Works, Wheatfield Rd, Edinburgh, 11
Southon Southon Laboratories Ltd, Western House, Gravel Hill, Bexleyheath Kent
Squibb. E R Squibb & Sons Ltd, Edwards Lane Speke Liverpool 24
Stafford-Miller Stafford Miller Ltd, 166 Great North Rd, Hatfield, Herts
Standard Laboratories Standard Laboratories Ltd, Windmill Rd, Sunbury-on-Thames, Middx
Stanning Proprietaries Stanning Proprietaries Ltd, 11 Waterloo Place London S W 1
Steel (J M) J M Steel & Co Ltd 36 Kingsway, London, W C 2
Tampax. Tampax Ltd Dunsbury Way, Havant, Hants.
Thackray Chas F Thackray 10 Park St, Leeds, 1
Thawpit Ltd Thawpit Ltd, Woodstock Grove, London, W 12
Therapeutic Products Therapeutic Products Ltd, 67 Wigmore St. London W 1
Trevena Trevena Ltd, 20 Grosvenor Place, London, S W 1
Unichem Unichem Ltd 3 Broadwater Rd, London, S W 17
Uni Pharma Uni-Pharma Ltd, 229a Shaftesbury Avenue, London W C 2
Upjohn Upjohn Ltd, Fleming Way, Crawley, Sussex
Virol Ltd Virol Ltd, 148 Old St, London E C 1
Vitamins Ltd Vitamins Ltd 23 Upper Mall, London, W 6
Voxsan Ltd Voxsan Ltd 23 Church St., London, E 15
Wade Pharmaceuticals Wade Pharmaceuticals Ltd, Springfield Laboratories Bishopbriggs, Glasgow
Wallace & Tiernan Wallace & Tiernan Ltd, Power Rd, London, W 4
Wander A. Wander Ltd, 42 Upper Grosvenor St London, W 1
Ward, Blenkinsop Ward Blenkinsop & Co Ltd, Fulton Rd Wembley, Middx
Warner William R Warner & Co Ltd, Eastleigh Hants
Warrick Warrick Brothers Ltd Warrex Laboratories, Tile Hill, Coventry, Warwickshire
Watford Chemical Co Watford Chemical Co Ltd, 22 Copperfield Rd, London, E.3
Weddel Pharmaceuticals Weddel Pharmaceuticals Division of the Union International Co Ltd, 14 West Smithfield, London E C 1
West Pharmaceutical Co West Pharmaceutical Co Ltd, 9 Palmeira Mansions, Church Rd, Hove, 3, Sussex
Westminster Laboratories Westminster Laboratories Ltd, Chalcot Rd, London, N W 1.
White Laboratories White Laboratories Ltd 428 Southcroft Rd, London, S W 16
Wigglesworth Ltd Wigglesworth Ltd, Peels Mills Westhoughton Bolton, Lancs
Wilcox, Jozeau Wilcox, Jozeau & Co Ltd 74 White Lion St., London N 1
Willows Francis Willows Francis Ltd, Ashley Works, Ashley Rd, Epsom, Surrey
Winthrop Products—now Winthrop Group Ltd, Winthrop House, Surbiton, Surrey
Woolley James Woolley, Sons & Co Ltd, P O Box 279, Victoria Bridge, Manchester, 3
Wright, Layman & Umney Wright, Layman & Umney Ltd, 42 Southwark St, London, S E.1
Wyeth John Wyeth & Brother Ltd Clifton House Euston Rd London N W 1
Wyleys Wyleys Ltd Tile Hill Coventry, Warwickshire
Wynlit Laboratories Wynlit Laboratories Ltd, 60 Welbeck St London W 1
Zimmermann Chas Zimmermann & Co Ltd, Walmgate Rd, Perivale, Greenford, Middx.

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