Pharmacopoeia of King Edward VII Memorial Hospital

BOMBAY

1936

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PREFACE

On the first edition of the Pharmacopœia being exhausted, the compilation of the second edition was undertaken, at the request of the Advisory Medical Board of the K. E. M. Hospital and Seth Gordhandas Sunderdas Medical College, by Dr. A. S. Erulkar, till lately on the Honorary staff of these institutions, with the assistance of the Pharmacopœia Committee of the Hospital. It is regretted that owing to unforeseen circumstances its publication has taken much longer than originally anticipated.

A perusal of the Table of Contents will show several improvements in the present edition. A separate chapter gives a 'Synopsis of changes in the 1932 edition of the British Pharmacopœia''; while another deals with the 'Vitamin and mineral contents of the different articles of diet'. Dr. A. S. Erulkar is responsible for these useful additions as well as for many other improvements. Likewise Professor V. R. Khanolkar has contributed two useful chapters, one on 'Laboratory Methods', and the other on the 'Identification of the common poisonous snakes of India' in the present edition. Various other improvements in this edition are due to the different members of the Hospital and College staff; while the proof reading of the present as well as the previous edition was largely done by Dr. C. C. Merchant. To all of them as well as to all the other helpers in the preparation of this as well as the previous edition, the Poor Box Charity Fund of the Hospital, to which all the profits from the sale of this work are to be credited, is deeply indebted.

K. E. M. Hospital,
Parel, Bombay,
January 1936.

JIVRAJ N. MEHTA.

CONTENTS

APPENDIX

KING EDWARD VII

MEMORIAL HOSPITAL, BOMBAY.

FORMULÆ.

Cataplasmata (*Poultices*)

1. *Cataplasma Amyli et Acidi Borici (Starch and Boric Acid Poultice).*

℞

Pulv. Amyli	1 oz.
Acidi Borici	270 gr.
Aquæ Bullientis	10 fl. oz.

2. *Cataplasma Lini (Linseed Poultice).*

℞

Lini Contusi	4 oz.s
Aquæ Bullientis	10 fl. oz.

3. *Cataplasma Sinapis (Mustard Poultice).*

℞

Lini Contusi	4 oz.
Pulv. Sinapis	120 gr.
Aquæ Bullientis...	10 fl. oz.

Collodia (*Collodions*)

1. *Collodium Salicylici.*

℞

Acidi Salicylici		60 gr.
Ext. Cannabis Indicæ (B. P. 1914) ...		20 gr.
Collodii Flexilis	ad.	1 fl. oz.

2. *Collodium Chrysarobini.*

℞

Chrysarobini		30 gr.
Acidi Salicylici		20 gr.
Collodii Flexilis	ad.	1 fl. oz.

Collutoria (*Mouth Washes*)

1. *Collutorium Boracis Co.*

℞

Glycerini Boracis		60 m.
Tinct. Myrrhæ		5 m.
Aquam	ad.	1 fl. oz.

2. *Collutorium Phenolis.*

℞

Glycerini Phenolis		15 m.
Aquam	ad.	1 fl. oz.

3. *Collutorium Hydrogenii Peroxidi.*

℞

Sol. Hydrogenii Peroxidi (vol. 10) ...		240 m.
Aquam	ad.	1 fl. oz.

4. *Collutorium Potassii Chloratis et Phenolis.*

℞

Potassii Chloratis		15 gr.
Collutor. Phenolis	ad.	1 fl. oz.

Collunaria (*Nasal Douches*)

1. *Collunarium Alkalinum.*

℞

Sodii Bicarbonatis		3 gr.
Pulv. Boracis		3 gr.
Phenolis		1 gr.
Sacchari		5 gr.
Aquam	ad.	1 fl. oz.

2. *Collunarium Potassii Permanganatis.*

℞

Lotio. Permanganatis		120 m.
Aquam	ad.	1 fl. oz.

Cremores (*Creams*)

1. *Cremor Calaminæ Co.*

℞

Calaminæ Præp.		90 gr.
Zinci Oxidi		90 gr.
Liq. Calcii Hydroxidi		90 m.
Sulphur. Præcip.		10 gr.
Ichthammolis		5 gr.
Liq. Picis Carbonis		20 m.
Ol. Sesami (sweet oil)		90 m.
Paraffini Mollis Flav.	ad.	1 oz.

2. *Cremor Oxygenatus.*

℞

Sol. Hydrogenii Peroxidi (vol. 20) ...		120 m.
Zinci Oxidi		60 gr.
Hydrargyri Perchlor.		1 gr.
Adepis Lanæ		120 gr.
Paraffini Mollis Flav.		1 oz.

3. *Cremor Zinci Co.*

℞

Zinci Oxidi		90 gr.
Pulv. Amyli		90 gr.
Liq. Calcii Hydroxidi		90 m.
Ol. Cocos Nuciferi		60 m.
Adepis Lanæ Hydrosi (Lanolin) ...		30 gr.
Paraffini Mollis Alb.		120 gr.

Enemata (*Enemas*)

1. *Enema Amyli—Starch Enema.*

℞

Pulv. Amyli		120 gr.
Aquam	ad.	5 fl. oz.

2. *Enema Amyli et Opii.*

℞

Tinct. Opii		15 m.
Enem. Amyli	q. s. ad.	2 fl. oz.

3. *Enema Asafœtidæ.*

℞

Tinct. Asafœtidæ		240 m.
Enem. Simplicis	q. s. ad.	20 fl. oz.

4. Enema Simplex (Soap Enema).

℞

Saponis Mollis		1 oz.
Aquam	ad.	20 fl. oz.

5. Enema Terebinthinæ.

℞

Ol. Terebinthinæ (Rectif).		240 m.
Enem. Simplicis	q. s. ad.	20 fl. oz.

6. Enema Nutriens I (Glucose Enema).

℞

Glucosi (Isotonic 6°/₀)		525 gr.
Aquam Calidam	ad.	20 fl. oz.

7. Enema Nutriens II.

℞

Sp. Vini. Gallici		240 m.
Enem. Glucosi	ad.	20 fl. oz.

NOTE.—A Nutrient Enema is given at body temperature slowly and about five to ten ounces to adults and two to four ounces to children according to the age.

Gargarismata *(Gargles)*

1. Aluminis Co. Gargarisma

℞

(Alum Gargle Compound).

Aluminii		5 gr.
Acidi Tannici		5 gr.
Aquam	ad.	1 fl. oz.

2. Gargarisma Phenolis Co.

℞

Phenolis		1 gr.
Mentholis		1 gr.
Glycerini		30 m.
Aquam	ad.	1 fl. oz.

3. Gargarisma Potassii Chloratis Co.

℞

Pot. Chloratis		12 gr.
Sodii Bicarbonatis		6 gr.
Pot. Bicarbonatis		6 gr.
Aquam	ad.	1 fl. oz.

4. Gargarisma Sodæ Chlorinatæ.

℞

Liq. Sodæ Chlorinatæ		20 m.
Aquam	ad.	1 fl. oz.

Guttæ *(Drops)*

1. Guttæ Acidi Salicylici.

℞

Acidi Salicylici		10 gr.
Spiritus Rectif.		1 fl. oz.

2. Guttæ Argenti Nitratis. (Aural)

℞

Argenti Nitratis		2 gr.
Aquæ destillatæ	ad.	1 fl. oz. (Ophth).

3. Guttæ Argyroli.

℞

Argyrol.		40 gr.
Aquæ destillatæ	ad.	1 fl. oz. (Ophth)

4. Guttæ Atropinæ.

℞

Atropinæ Sulphatis		4 gr.
Aquæ destillatæ	ad.	1 fl. oz. (Ophth).

5. Guttæ Atropinæ et Cocainæ.

℞

Atropinæ Sulphatis		4 gr.
Cocainæ Hydrochloridi		4 gr.
Aquæ destillatæ	ad.	1 fl. oz. (Ophth).

6. Guttæ "Calot's fluid."

℞

Creosoti		75 m.
Guaiacolis		15 m.
Iodoformi (sterile)		150 gr.
Ætheris		1 fl. oz.
Paraffini Liq. (sterile)		2½ fl. oz.

7. Guttæ Cocainæ et Phenolis.

℞

Cocainæ Hydrochloridi		10 gr.
Phenolis		16 gr.
Aq. dest.	ad.	1 fl. oz. (Aural).

8. Guttæ Æthyl Morphinæ.

℞

Æthyl. morphinæ hydrochloridi (dionine).		20 gr.
Aq. dest.	ad.	1 fl. oz. (Ophth).

9. Guttæ Eserinæ.

℞

Eserinæ Sulphatis		4 gr.
Aq. dest.	ad	1 fl. oz. (Ophth).

10. Guttæ Eserinæ et Cocainæ.

℞

Eserinæ Sulphatis		4 gr.
Cocainæ Hydrochloridi		2 gr.
Aq. dest.	ad.	1 fl. oz. (Ophth).

11. Guttæ Glycerini Phenolis.

℞

Glycerini Phenolis		120 m.
Glycerini	ad.	1 fl. oz. (Aural).

12. Guttæ Homatropinæ et Cocainæ.

℞

Homatropinæ Hydrobromidi		6 gr.
Cocainæ Hydrochloridi		3 gr.
Aq. dest.	ad.	1 fl. oz. (Ophth).

13. Guttæ Phenolis Co.

℞

Phenolis		15 gr.
Mentholis		15 gr.
Glycerini		1 fl. oz. (Aural).

14. Guttæ Resorcini.

℞

Resorcinolis		5 gr.
Ol. Olivæ		1 fl. oz. (Aural).

15. Guttæ Sodii Bicarbonatis.

℞

Sod. Bicarbonatis		30 gr.
Phenolis		2 gr.
Glycerini		240 m.
Aq. dest.	ad.	1 fl. oz. (Aural).

16. Guttæ Spiritus.

℞

Acidi Borici		20 gr.
Spiritus Rectif		1 fl. oz. (Aural).

17. Guttæ Zinci

Zinci Sulphatis		4 gr.
Aq. dest.	ad.	1 fl. oz. (Ophth).

18. Guttæ Zinci et Borici.

℞

Zinci Sulphatis		4 gr.
Acidi Borici		10 gr.
Aq. dest.	ad.	1 fl. oz. (Ophth).

19. *Guttæ Zinci et Borici Fort.*

℞

Zinci Sulphatis		10 gr.
Acidi Borici		10 gr.
Aq. dest.	ad.	1 fl. oz.

Haustus *(Draughts)*

1. *Haustus Carbonei Tetrachloridi.*

℞

Carbon. Tetrachlor. (pur)		60 m.
Aquam	ad.	1 fl. oz.

NOTE.—Children one year old may be given 10 minims of the pure drug and this may be increased by 2 minims for each year of age.

2. *Haustus Chloralamidi Co.*

℞

Chloralamidi		30 gr.
Pot. Bromidi		30 gr.
Sp. Rectif.		60 m.
Aquam	ad.	1 fl. oz.

3. *Haustus Chloralis Co.*

℞

Chloralis Hydratis		15 gr.
Pot. Bromidi		15 gr.
Syrupi		60 m.
Aquam	ad.	1 fl. oz.

4. *Haustus Filicis.*

℞

Ext. Filicis.		60 m.
Mucilag. Acaciæ		60 m.
Chloroformi		5 m.
Aquam	ad.	1 fl. oz.

5. *Haustus Olei Ricini.*

℞

Ol. Ricini		240 m.
Tinct. Card. Co.		20 m.
Mucilaginis		q. s.
Aquam	ad.	1 fl. oz.

6. *Haustus Opiatus.*

℞

Tinct. Opii		10 m.
Aq. Chloroformi	q. s. ad.	1 fl. oz.

7. *Haustus Paraldehydi.*

℞

Paraldehydi		60 m.
Syr. Aurantii		60 m.
Aquaum	ad.	1 fl. oz.

8. *Haustus Zinci Emeticus.*

℞

Zinci Sulphatis		30 gr.
Aq. dest.	ad.	1 fl. oz.

INFUSA (INFUSIONS)

Infusum Granati Radicis (Pomegranate Root Infusion)

NOTE.—3 Ounces of bruised Pomegranate rootlets to be boiled in a pint of water for 10 minutes, strained and the infusion boiled down to 12 ounces, to which, 6 mins. of chloroform are added.

DOSE.—Six Ounces. To be repeated after 3 hours, if necessary.

Injectiones *(Sterilisatæ)*

(HYPODERMIC and INTRAMUSCULAR)

1. *Injectio Atropinæ Sulphatis.*
   Atropine Sulphate $\frac{1}{150}$ gr. in 1. c. c. of distilled water.

2. *Injectio Caffeinæ Hypodermica.*
   Caffeine 3 gr. Soda Salicylate 2½ gr. in 1 c.c. of sterilized water.

3. *Injectio Calcii Chloridi.*
   Calcium Chloride (fused) 1 gr. in 1 c. c. of distilled water (to be diluted with one c. c. of distilled water before injection). Should not be given hypodermically.

4. *Injectio Camphoræ.*
Camphor 3 gr. in 1 c. c. of sterilized olive oil.

5. *Injectio Camphoræ et Aetheris.*
Camphor 3 gr. and Ether 5 min. in 1 c. c. of sterilized olive oil.

6. *Injectio Emetini Hydrocholridi.*
Emetine Hydrochloride 1 gr. in 1 c. c. of distilled water.

7. *Injectio Hyoscini Hydrobromidi.*
Hyoscine Hydrobromide $\frac{1}{100}$ gr. in 1 c.c. of distilled water.

8. *Injectio Lactis.*

9. *Injectio Morphinæ et Atropinæ.*
Morphine Tartarate $\frac{1}{4}$ gr. and Atropine sulphate $\frac{1}{150}$ gr. in 1 c.c of distilled water.

10. *Injectio Novocainæ Hypodermica.*
1 p. c. solution of Novocaine in normal Saline.

11. *Injectio Sodii Cacodylatis.*
Sodium Cacodylate 1 gr. in 1 c. c, of distilled water.

12. *Injectio Sodii Chloridi.*
is sterilized Sodium Chloride Lotion.

13. *Injectio Sparteinæ*
Sparteine Sulphate 1 $\frac{1}{2}$ gr. in 1 c.c. of distilled water.

14. *Injectio Stovainæ (Intra-spinal).*
5 p. c. solution of stovaine.

15. *Injectio Strychninæ.*
Strychnine sulphate $\frac{1}{60}$ gr. in 1 c. c. of distilled water.

16. *Injectio Sulphuris.*

The following injections are Kept in stock.

1. Acid Quinine Hydrochloride 5 gr. and 10 gr. Ampoules.

2. Sol. Pituitrin ½ c.c. and 1 c.c. Ampoule.
3. Sol. Adrenalin Chloride 1-1000 in 1 oz. bottles.
4. Neo Salvarsan powder in Ampoules, 0·15,, 0·30, 0·45, 0·60, 0·90 gramme.
5. Bismuth preparations for intra-muscular injections.
6. Strophanthin preparation in Ampoules.
7. Digitalin.
8. Ephedrine.
9. Insulin.
10. Sodium Thiosulphate.

Injectiones (*Injections—Uretheral*)

1. *Injectio Argenti Nitratis.*
is Lotio Argenti Nitratis (10 grs. to 1 oz. of distilled water); to be diluted as required.

2. *Injectio Potassii Permanganatis.*
is Lotio. Pot. Permanganatis (½ gr. to 1 oz.); to be diluted as required.

Injectiones (*Injections—Vaginal*).

1. *Injectio Acidi Borici.*
is Lotio acidi Borici (10 gr. to 1 oz. of water) to be diluted as required.

2. *Injectio Iodi.*

℞

Liq. Iodi Mitis	60 m.
Aquam	ad. 20fl. oz.

3. *Injectio Potassii Permanganatis.*
is Lotio Pot. Permanganatis. (½ gr. to 1 oz. of water), to be diluted as required.

4. *Injectio Tannici.*

℞

Acidi Tannici	60 gr.
Aquam ... ... ad	20 fl. oz.

5. Injectio Zinci Chloridi.

℞

Zinci Chloridi		5 gr.
Aquam	ad.	20 fl. oz

6. Injectio Zinci Sulphatis.

℞

Zinci sulphatis		60 gr.
Aquam	ad.	20 fl. oz

INSUFFLATIONES

Insufflatio Iodoformi Co.

℞

Iodoformi	1 parte
Acidi Borici	2 partes
Pulv. Amyli	1 parte

LINCTI

1. Linctus Ammoniæ.

℞

Ammon. Carb.		⅓ gr.
Tinct. Scillæ...		5 m.
Sp. Anisi		2 m.
Sp. Chloroformi		2 m.
Mucilag Acaciæ		30 m.
Aquam	q. s. ad.	60 m.

2. Linctus Codeinæ.

℞

Codeinæ Phosphatis		⅛ gr.
Syr. Pruni Serotinæ		30 m.
Syr. Simplcis ...	q. s. ad.	60 m.

3. Linctus Scillæ Co.

℞

Tinct. Opii Camphoratæ		20 m.
Syr. Scillæ		20 m.
Syr. Tolu.		20 m.

LINIMENTA

1. Linimentum A. B. C.

℞

Lin. Aconiti (methylat.)	}	aa partes aequales
Lin. Belladonnæ		
Lin. Camphor.		

2. Linimentum Calaminæ.

℞

Calaminæ Præparatæ		20 gr.
Zinci Oxidi		20 gr.
Lin. Calcis	q. s. ad.	1 fl. oz.

3. Linimentum Calcis.

℞

Liq. Calcii Hydroxidi	}	aa partes aequales.
Ol. Sesami (sweet oil)		

4. Linimentum Methyl Salicylatis.

℞

Mentholis		24 gr.
Ol. Eucalypti		48 m.
Ol. Camphoræ (Essen.)		120 m.
Ol. Methyl. Salicylatis	q. s. ad.	1 fl. oz.

NOTE.—Dissolve the menthol in the liquids. This liniment is mixable with either spirit or oil. It is painted over the affected part and the part subsequently covered with flannel or gutta percha tissue.

5. Linimentum Saponis.

℞

Sapon. Mollis...		44 gr.
Camphoræ		17½ gr.
Aquæ		180 m.
Sp. Methylati	q. s. ad.	1 fl. oz.

LOTIONES

1. Lotio Acidi Borici.

℞

Acidi Borici		10 gr.
Aquam	ad.	1 fl. oz.

2. *Lotio Phenolis* (5°/₀).

℞

Phenolis Liq.		2½ m.
Aquam	ad.	1 fl. oz.

(to be coloured pink)

3. *Lotio Acidi Picrici* (1°/₀).

℞

Acidi Picrici	(approx.)	4½ gr.
Aquam	ad.	1 fl. oz.

4. *Lotio Acriflavini* (1°/₀).

℞

Acriflavini	(approx.)	4½ gr.
Lotio Sodii Chloridi	ad.	1 fl. oz.

5. *Lotio Argenti Nitratis.*

℞

Argenti Nitratis		10 gr.
Aq. dest.	ad.	1 fl. oz.

6. *Lotio Calaminæ.*

℞

Calaminæ Præp.		20 gr.
Zinci Oxidi		20 gr.
Liq. Calcii Hydroxidi.		60 m.
Aquam	ad.	1 fl. oz.

7. *Lotio Calaminæ et Sulphuris.*

℞

Sulphur. Præcip.		10 gr.
Lotio Calaminæ	ad.	1 fl. oz.

8. *Lotio Calcis Chlorinatæ c. Acido Borico* (*Eusol*)

℞

Calcii Chlorinati (*finely ground*)		6 gr.
Pulv. Acidi Borici		6 gr.
Aquam	ad.	1 fl. oz.

9. *Lotio Evaporans.*

℞

Sp. Methylati		60 m.

Ammon. Chloridi		12 gr.
Aquam	ad.	1 fl. oz.

10. *Lotio Hydrargyri Perchloridi* (1 in 1000).
is Liq. Hydrargyri Perchlor. coloured with Methylene blue.

11. *Lotio Permanganatis.*

℞

Pot. Permanganatis		¼ gr.
Aquam	ad.	1 fl. oz.

12. *Lotio Plumbi*
is Liq. Plumbi Subacetatis diluti. B.P.

13. *Lotio Plumbi c. Opio.*

℞

Tinct. Opii		25 m.
Lotio Plumbi	q. s. ad.	1 fl. oz.

14. *Lotio Plumbi Detergens.*

℞

Liq. Carbonis Detergentis		4 m.
Lotio Plumbi	q. s. ad.	1 fl. oz.

15. *Lotio Sodii Bicarbonatis.*

℞

Sodii Bicarbonatis		12 gr.
Aq. dest.	ad.	1 fl. oz.

16. *Lotio Sodii Chloridi* (*Normal Saline*).

℞

Sodii Chloridi		4 gr.
Aquam	ad.	1 fl. oz.

17. *Lotio Terebinthinæ Hydrargyro.*

℞

Hydrargyri Perchloridi		3 gr.
Sp. Methylati		60 m.
Ol. Terebinthinæ	ad.	1 fl. oz.

18. *Lotio Zinci Chloridi.*

℞

Zinci Chloridi		½ gr.
Aq. Dest.	ad.	1 fl oz.

19. Lotio Zinci Sulphatis.

℞

Zinci Sulphatis		2 gr.
Aquam	ad.	1 fl. oz.

20. Lotio Zinci Sulphatis Co.

℞

Zinci Sulphatis		2 gr.
Cupri Sulphatis		1 gr.
Aquam Camph. (sat.)	ad.	1 fl. oz.

MISTURÆ

1. Mistura Acidi Co.

℞

Acidi Hydrochlor. dil.		10 m.
Ext. Nucis-Vom. Liq.		1 m.
Inf. Gentianæ Co.	ad.	1 fl. oz.

2. Mistura Acidi Sulphurici c. Opio.

℞

Acid Sulph. dil		20 m.
Tinct. Opii		7 m.
Spt. Chloroformi		10 m.
Aquæ Camphoræ	q. s. ad.	1 fl. oz.

3. Mistura Alba.

℞

Mag. Sulphatis		180 gr.
Mag. Carbonat. Levis		20 gr.
Aq. Menth pip.	q. s. ad.	1 fl. oz.

4. Mistura Alkalina.

℞

Pot. Citratis		20 gr.
Sodii Bicarbonatis		20 gr.
Mag. Carbonatis		10 gr.
Aquæ	q. s. ad.	1 fl. oz.

5. Mistura Ammoniæ et Aetheris.

℞

Sp. Ammon. Aromatici		30 m.
Sp. Aetheris		30 m.
Aq. Camphoræ q. s.	ad.	1 fl. oz.

6. Mistura Arsenici Acidi.

℞

Liq. Arsenicalis		3 m.
Acid Hydrochlor. Dil.		15 m.
Aq. Chloroformi	ad.	1 fl. oz.

7. Mistura Bismuthi Astringens.

℞

Bismuthi Carbonatis		20 gr.
Tinct. Catechu		40 m.
Inf. Carophylli (cloves)		240 m.
Aq. Chloroformi	q. s. ad.	1 fl. oz.

8. Mistura Bismuthi c. Sodæ.

℞

Bismuthi Carbonatis		10 gr.
Sodii Bicarbonatis		10 gr.
Mag. Carbonatis		10 gr.
Mucilag. Acaciæ		q. s.
Aq. Chloroformi	q. s. ad.	1 fl. oz.

9. Mistura Bromidi.

Pot. Bromidi		15 gr.
Aq. Chloroformi	q. s. ad.	1 fl. oz.

10. Mistura Bromidi Co.

℞

Pot. Bromidi		15 gr.
Tinct. Valerianæ Ammon.		20 m.
Liq. Arsenicalis		1 m.
Aq. Camphoræ	q. s. ad.	1 fl. oz.

11. Mist. Buchu Co.

℞

Pot. Citratis		30 gr.
Tinct. Hyoscyami		30 m.
Inf. Buchu	ad.	1 fl. oz.

12. Mist. Carminativa.

℞

Sodii Bicarbonatis		10 gr.
Tinct. Cardam. Co.		30 m.

♀

Sp. Ammon. Aromat.	...	...	20
Sp. Chloroformi	...	...	20
Aq. Menth. Pip.	...	q. s. ad.	1

13. *Mistura Cascaræ.*

℞

Ext. Cas. Sagr. Liq.	...	...	40
Sp. Ammon. Aromat.	...	...	20
Ext. Glycyrrhizæ Liq.	...	...	30
Aq. Chloroformi	...	ad.	1 f

14. *Mistura Cinchonæ Febrifugæ.*

℞

Cinchon. Febrifugæ	...	...	10 g
Acid. Hydrochlor. dil.	...	...	10 m
Aquæ	...	q. s. ad.	1 fl

15. *Mistura Chlori.*

℞

Pot. Chloratis	...	...	30 gr
Acid. Hydrochlor	...	...	60 m
Syrupi Aurantii	...	...	1 fl.
Aquæ	...	q. s. ad.	12 fl.

Dose.— 1 oz.

NOTE.—Place Potassium Chlorate in a dry bott add Hydrochloric Acid; cork the bottle, and set asi for 15 minutes, shaking occasionally. Then add separate portions water upto eleven ounces, shaki well after each addition; finally flavour with syr of Orange.

16. *Mistura Diaphoretica.*

℞

Pot. Citratis	...	...	20 gr.
Liq. Ammonnii Acetatis Dil.	...	...	240 m.
Aq. Chloroformi	...	q. s. ad.	1 fl. o

17. *Mistura Digitalis.*

℞

Tinct. Digitalis	...	...	10 m.
Aquæ	...	ad.	1 fl. o

18. *Mistura Digitalis et Ferri.*

℞

Liq. Ferri. Perchloridi	...	...	15 m.
Acidi Citrici	...	...	5 gr.
Syr. Limonis	...	...	30 m.
Mist. Digitalis	...	ad.	1 fl. oz.

19. *Mist. Ergotæ.*

℞

Ext. Ergotæ Liq.	...	...	20 m.
Tinct. Aurantii	...	...	30 m.
Aq. Chloroformi	...	q. s. ad.	1 fl. oz.

20. *Mistura Ergotæ et Bromidi.*

℞

Pot. Bromidi	...	...	15 gr.
Mist. Ergotæ	...	q. s. ad.	1 fl. oz.

21. *Mistura Ergotæ et Ferri.*

℞

Ext. Ergotæ Liq.	...	...	20 m.
Liq. Ferri Perchloridi	...	...	15 m.
Acidi Citrici	...	...	5 gr.
Aq. Chloroformi	...	q. s. ad.	1 fl. oz.

22. *Mist. Ergotæ et Quininæ.*

℞

Quininæ Sulphatis	...	...	5 gr.
Acid. Sulph. dil.	...	...	5 m.
Mist. Ergotæ	...	ad.	1 fl. oz.

23. *Mistura Expectorans.*

℞

Ammon. Carbonatis	...	...	5 gr.
Tinct. Ipecacuanhæ	...	...	10 m.
Syr. Tolu.	...	...	60 m.
Aq. Chloroformi	...	q. s. ad.	1 fl. oz.

24. *Mistura Ferri Acetatis.*

℞

(Basham's Mixture)

Liq. Ferri Perchloridi	...	...	15 m.
Liq. Ammon Acetatis Dil.	...	...	120 m.

Acidi Acetici, Dil.		30 m.
Aquæ	q. s. ad.	1 fl.

25. Mist. Ferri Arsenicalis.

℞

Liq. Arsenicalis		2 m.
Ferri et. Ammonii Citratis		10 gr.
Aquæ Menth. Pip.	... q. s. ad.	1 fl. o

26. Mistura Ferri Cathartica.

℞

Ferri Sulphatis		4 gr.
Mag. Sulphatis		40 gr.
Acid Sulph. Dil.		10 m.
Aq. Chloroformi	q. s. ad.	1 fl. oz

27. Mistura Ferri Salicylatis.

℞

Ferri et Ammonii Citratis		5 gr.
Sodii Salicylatis		10 gr.
Syrupi		30 m.
Aquæ	q. s. ad.	1 fl. oz

28. Mistura Gentianæ c. Soda.

℞

Sod. Bicarbonatis		15 gr.
Tinct. Gentianæ Co.		25 m.
Sp. Ammon. Aromat		15 m.
Aq. Chloroformi	ad.	1 fl. oz.

29. Mistura Hexaminæ.

℞

Hexaminæ		10 gr.
Syr. Aurantii		30 m.
Aq. Chloroformi	q. s. ad.	1 fl. oz.

30. Mistura Hydrargyri.

℞

Liq. Hydrargyri Perchloridi		30 m.
Inf. Quassiæ	ad.	1 fl. oz.

31. Mistura Hydrargyri Iodidi.

℞

Pot. Iodidi		5 gr.
Mist. Hydrargyri	q. s. ad.	1 fl. oz.

32. Mistura Hypophosphitum Co.

℞

Sodii Hypophos. ... } Calcii Hypophos ... }	aa	5 gr.
Inf. Quassiæ	ad.	1 fl. oz.

33. Mistura Iodi Co.

℞

Liq. Iodi Mitis (Rectif)		3 m.
Glycerini Phenolis		7 m.
Syr. Limonis		60 m.
Aquæ	q. s. ad.	1 fl. oz.

34. Mistura Kurchi Co.

℞

Ext. Kurchi Liq.		90 m.
Ext. Belæ Liq. (Bale Fruit)		60 m.
Syr. Aurantiæ		60 m.
Aquæ	q. s. ad.	1 fl. oz.

35. Mistura Oleum Morrhuæ.

℞

Ol. Morrhuæ		120 m.
Pulv. Acaciae		60 gr.
Syrupi		30 m.
Aq. Carui	q. s. ad.	1 fl. oz.

36. Mistura Ol. Morrh. Co.

℞

Sodii Hypophos.		5 gr.
Calcii Hypophos.		5 gr.
Mist. Ol. Morrhuæ ...	q. s. ad.	1 fl. oz.

37. Mistura Morrhuæ c. Ferro.

℞

Ferri et Ammon. Citrat		10 gr.
Mist. Ol. Morrhuæ ...	q. s. ad.	1 fl. oz.

38. Mistura Oxymelis Co.

℞

Ext. Ipecac. Liq.		1 m.
Tinct. Opii Camphoratæ		30 m.
Pot. Nitratis		10 gr.
Oxymelis		60 m.
Aquæ	q. s. ad.	1 fl. oz.

39. Mistura Pot. Chloratis et Ferri.

℞

Pot. Chloratis		10 gr.
Liq. Ferri Perchlor		15 m.
Glycerini		30 m.
Aquæ	q. s. ad.	1 fl. oz.

40. Mist. Pot. Iodidi.

℞

Pot. Iodidi		5 gr.
Sp. Ammon Aromat		20 m.
Inf. Quassæ	ad.	1 fl. oz.

41. Mist. Pot. Iodidi c. Stramonio.

℞

Pot. Iodidi		3 gr.
Tinct. Hyoscyami		30 m.
Tinct. Strammonii		10 m.
Ext. Glycyrrhizæ Liq.		10 m.
Aq. Chloroformi	q. s. ad.	1 fl. oz.

42. Mistura Quininæ.

℞

Quininæ Sulphatis		7 gr.
Acidi Sulphurici, Dil.		7 m.
Aq. Chloroformi	q. s. ad.	1 fl.oz.

43. Mistura Quininæ c. Arsenico.

℞

Liq. Arsenicalis		3 m.
Mist. Quininæ	ad.	1 fl. oz.

44. Mistura Santali Co.

℞

Ol. Santali		10 m.
Sodii Bicarbonatis		10 gr.
Pulv. Acaciæ		5 gr.
Tr. Hyoscyami		30 m.
Aq. Menth. Pip.	q. s. ad.	1 fl. oz.

45. Mistura Scillæ Co.

℞

Tinct. Scillæ		10 m.
Tinct. Opii Camphoratæ		30 m.
Ammon. Carb.		5 gr.
Inf. Senegæ	q. s. ad.	1 fl. oz.

46. Mistura Sodii Salicylatis.

℞

Sodii Salicylatis		15 gr.
Sodii Bicarbonatis		15 gr.
Syr. Aurantii		30 m.
Aquæ	q. s. ad.	1 fl. oz.

47. Mistura Strychninæ c. Digitalis.

℞

Liq. Strychn. Hydrochlor		8 m.
Tinct. Digitalis		20 m.
Caffeinæ		5 gr.
Sodii Salicylatis		2½ gr.
Aquæ	q. s. ad.	1 fl. oz.

48. Mistura Trinitrini.

℞

Sodii Bicarbonatis		10 gr.
Sodii Nitritis...		1 gr.
Liq. Trinitrini		1 m.
Sp. Ætheris Nitrosi		20 m.
Aquæ		1 fl. oz.

49. Mistura Viburni Co.

℞

Ext. Viburni Liq.		30 m.
Pot. Bromidi		10 gr.
Aquæ	q. s. ad.	1 fl. oz.

Tr. Hyoscyami
Synop.

NEBULÆ (*Spray solutions*).

1. Nebula Alkalina.

℞

Sodii Bicarbonatis		30 gr.
Pulv. Boracis		10 gr.
Phenolis		5 gr.
Glycerini		60 m.
Aquam	ad.	1 fl. o

2. Nebula Hydrargyri Nitratis.

℞

Ung. Hydrarg Nitratis		40 gr.
Ol. Sesami		4 m.
Paraffini Liq.	ad.	1 fl. o

3. Nebula Thymolis Co.

℞

Thymolis		1 gr.
Mentholis		10 gr.
Eucalyptolis		1 m.
Paraffini Liq.	ad.	1 fl. oz

PASTÆ

(Aural

1. Pasta Bismuthi et Iodoformi (B. I. P. P.).

℞

Bismuthi Subnitratis	120 gr.
Iodoformi	240 gr.
Paraffini Liquidi	120 m.

2. Pasta Picis Co.

℞

Picis Carbonis Præp.	30 gr.
Pastæ Zinci	1 oz.

3. Pasta Zinci.

℞

Zinci Oxidi	120 gr.
Amyli	120 gr.
Paraffini Mollis Alb.	240 gr.

4. Pasta Zinci Co.

℞

Hydrargyri Ammoniati	5 gr.
Ichthammolis	5 gr.
Pastæ Zinci	1 oz.

5. Pasta Zinci et Gelatini (Unna's Paste).

℞

Gelatini	30 partes
Zinci Oxidi	50 ,,
Glycerini	55 ,,
Aq. dest.	85 ,,

NOTE—Boil Gelatin in water. Triturate Zinc Oxide and Glycerine well when Gelatine is melted. Stir the Glycerine and Zinc Oxide mixture with above. When cool cut into blocks and keep.

PIGMENTA

1. Pigment. Argenti Nitratis.

Silver Nitrate dissolved in one ounce of distilled water in the following strengths: 10 grs., 20 grs., 30 grs., 40 grs., 50 grs., and 60 grs.

2. Pigment. Mentholis Co.

℞

Mentholis	15 grs.
Chlorbutolis	15 grs.
Mag. Sulphatis	30 grs.
Tinct. Benzoini Co....	180 m.
Glycerini	1 fl. oz.

3. Pigment. Ferri Perchloridi.

℞

Ferri Perchlor. (salt)		120 gr.
Aquam	ad.	1 fl. oz.

4. Pigment. Ichthammolis.

℞

Ichthammolis		60 gr.
Glycerini	ad.	1 fl. oz.

5. Pigment. Iodi Co. (Mandle's Paint).

℞

Iodi (pur)		6 gr
Potas. Iodidi		12 g
Ol. Menth. Pip.		2 m
Glycerini		1 fl.

6. Pigment. Resorcini Co.

℞

Resorcini		60 gr.
Mentholis		5 gr.
Glycerini Boracis	ad.	1 fl.

7. Pigment. Tannici Co.

℞

Mentholis		2 gr.
Liq. Iodi Mitis (Rectif)		240 m.
Glycerini Acidi Tannici (Dental)		1 fl. oz

PILLULÆ

1. Pilula Aloes Co.

℞

Aloes	2½ gr.
Ext. Nuc. Vom. Sicc.	½ gr.
Ext. Belladonnæ	⅓ gr.

Dose.—1 to 2 pills.

2. Pilula Cinchonæ Febrif.

℞

Cinchon. Febrif	5 gr.

Dose.—1 to 2 pills.

3. Pilula Colocynthidis et Hydrargyri.

℞

Pil. Hydrargyri	1 gr.
Pil. Colocynthidis et Hyoscyami ...	3 gr.

Dose.—1 to 2 pills.

4. Pilula Digitalis Co. (Guy's Pill).

℞

Digitalis Pulverat	1 gr.
Pulv. Scillæ	1 gr.
Pil. Hydrargyri	1 gr.

Dose.—1 to 2 pills.

5. Pilula Ferri et Aloini.

℞

Aloini	⅙ gr.
Pil. Ferri	5 gr.

Dose—1 to 2 pills.

6. Pilula Ferri Co.

℞

Acidi Arseniosi	1/60 gr.
Pil Ferri et Aloini	5 gr.

7. Pilula Hydrargyri c. Creta.

℞

(Three strengths)—½ gr., 1 gr. and 2 gr. are to be kept in stock.

8. Pilula Quininæ Co.

℞

Quinin. Sulph.	3 gr.
Arsenii Trioxidii	1/60 gr.
Ferri Redacti	2 gr.
Ext. Cascaræ Sagr. Sicc.	½ gr.
Ext. Belladonnæ	¼ gr.

Dose.—1 to 2 pills.

9. Pilula Quininæ c. Opio.

℞

Quinin. Sulph.	3 gr.
Ext. Opii	¼ gr.
Ext. Gentian	½ gr.

Dose 1 to 2 pills.

10. *Pilula Trium Phosphatum.* aver Strychnic pil

℞

Ferri Phosphatis	1 gr.
Quin. Sulphatis	1 gr.
Strychninæ	$\frac{1}{32}$ gr.
Acid. Phosph. (Conc.)	$1\frac{1}{2}$ m.

Dose.—1 to 2 pills.

PULVERES

1. *Pulv. Acidi Borici Co.*

℞

Acidi Borici	$\overline{aa}$
Zinci Oxidi	partes
Pulv. Amyli	aequales

2. *Pulvis Camphoræ Co.*

℞

Zinci Oxidi	240 gr.
Cretæ præp.	240 gr.
Camphoræ	10 gr.

3. *Pulv. Guaici Co.*

℞

Pulv. Resinæ Guaici	$\overline{aa}$
Sulphur. Praecip.	partes
Mag. Carb. pond.	aequales
Pulv. Acaciæ	
Pot. Bicarbonatis	

Dose.—30 to 40 grs.

4. *Pulv. Iodoformi et Borici.*

℞

Iodoformi	120 gr.
Acidi Borici ... ... ad.	1 oz.

5. *Pulvis Lobeliæ (Asthma Powder).*

℞

Pulv. Fol. Strammonii	$\overline{aa}$
Potas. Nitratis	Partes
Pulv. Fol. Thaenig (tea)	aequales

NOTE :—Burn half a teaspoonful or more on a plate and inhale several times as required.

6. *Pulv. Tannici et Borici.*

℞

Acidi Tannici	$\overline{aa}$
Acidi Borici	partes
	aequales

SOLUTIONES

1. *Solutio Argenti Nitratis.*

℞

Argenti. Nitratis ...	2 gr., 5 gr., or 10 gr.
Aq. dest. ... ... ad.	1 fl. oz.

2. *Solutio Fluorescini.*

℞

Fluorescini	8 gr.
Sodii Bicarbonatis	4 gr.
Aq. dest. ... ... ad.	1 fl. oz.

SPIRITUS

1. *Spiritus Bin-Iodidi.*

℞

Hydrarg. Bin-Iodidi	1 gr.
Sp. Methylati ... ... ad.	1 fl. oz.

SUPPOSITORIA

1. *Suppositorium Adrenalini et Cocainæ.*

℞

Adrenalini	$\frac{1}{60}$ gr.
Cocainæ Hydrochlor	$\frac{1}{4}$ gr.
Acidi Borici	$\frac{1}{30}$ gr.
Aq. dest.	1 m.
Adepis Lanæ Hydrosi (Lanolin)	2 gr.
Olei Theobromatis	q. s. to fill. 15 gr. mould.

2. Suppositorium Cocainæ.

℞

Cocainæ Hydrochlor.		½ gr.
Olei Theobromatis	q. s. to	15 grains mou

3. Suppositorium Hamamelini et Zinci Oxidi.

℞

Hamamelini		3 gr.
Zinci Oxidi		10 gr.
Olei Theobromatis	q. s. to	30 grains mou

TROCHISCI (*Lozenges*)

1. Trochiscus-Glycyrrhizæ.

℞

Ext. Glycyrrhizæ		3 gr.
Ol. Anisi		½ m.
Basis Simplicis	q. s.	

UNGUENTA

1. Ung. Acidi Benzoici Co.

℞

Acidi Salicylici		20 gr.
Acidi Benzoici		30 gr.
Ol. Coccos Nucif		120 m.
Paraffini Mollis Flav.	ad.	1 oz.

2. Ung. Acidi Borici.

℞

Acidi Borici		10 gr.
Paraffini Mollis Flav.	ad.	1 oz.

3. Ung. Acidi Salicylici Co.

℞

Acidi Salicylici		15 gr.
Liq. Picis Carbonis		30 m.
Hydrarg. Ammon.		5 gr.
Paraffini Mollis Flav.	ad.	1 oz.

4. Ung. Atropinæ et Cocainæ.

℞

Atropinæ (pur.)		4 gr.
Cocainæ (alkaloid)		4 gr.
Paraffinii Mollis Alb.	ad.	1 oz.
		(Ophth.)

5. Ung. Belladonnæ et Ichthammolis.

℞

Ichthmmolis		2 gr.
Ext. Belladon.		2 gr.
Paraffini Mollis Flav.	ad.	1 oz.

6. Ung. Betanaphtholis.

℞

Betanaphtholis		5 gr.
Sulphur. Sublim.		20 gr.
Ung. Zinci Oxidi		1 oz.

7. Ung. Cadini Co.

℞

Acidi Salcylici		30 gr.
Ol. Cadini		60 m.
Paraffini Mollis Flav.	ad.	1 oz.

8. Ung. Chrysarobini Co.

℞

Chrysarobini		20 gr.
Acidi Salicylici		20 gr.
Paraffini Mollis Flav.	ad.	1 oz.

9. Ung. Eserini.

℞

Eserini (pur)		4 gr.
Cocainæ (alkaloid)		2 gr.
Paraffini Mollis Alb.		1 oz.
		(Ophth.)

10. Ung. Hydrargyri Ammoniati.

℞

Hydrarg. Ammon.		5 gr.
Paraffini Mollis Alb.		1 oz.
		(Ophth.)

11. Ung. Hydrargyri Oxidi Flavi c. Atropina.

℞

Hydrarg. Oxidi Flavi	4 gr.	
Atropinæ (pur.)	4 gr.	
Paraffini Mollis Alb.	1 oz.	
	(Ophth.)	

12. Ung. Mentholis Co.

℞

Mentholis	20 gr.
Camphoræ	20 gr.
Phenolis	20 m.
Ung. Zinci ... ... ad.	1 oz.

13. Ung. Sulphuris.

℞

Sulphur. Praecip.	60 gr.
Paraffini Mollis Flav.	1 oz.

14. Ung. Sulphuris et Salicylici.

℞

Acidi Salicylici	20 gr.
Sulphur. Præcip.	20 gr.
Paraffini Mollis Flav.	1 oz.

15. Ung. Zinci.

℞

Zinci Oxidi	120 gr.
Paraffini Mollis Flav.	1 oz.

VAPORES

1. Vapor. Mentholis.

℞

Mentholis	48 gr.
Sp. Methylati (or Rectif)	1 fl. oz.

15 to 30 drops in boiling water

2. Vapor. Mentholis Co.

℞

Eucalyptolis	30 m.
Mentholis	20 gr.
Tinct. Benzoini Co.	1 fl. oz.

15 to 30 drops in boiling water.

3. Vapor. Pini Sylvestris.

℞

Ol. pini Sylves.	40 m.	
Mag. Carb. Levis	20 gr.	
Aquam ... ... ad.	1 fl. oz.	

CHILDREN'S PHARMACOPŒIA

NOTE:—The doses are for a child of one year

Balneum Sinapis.

℞

Pulv. Sinapis (*Mustard Powder*) ... 240 gr.
Aq. Calid., (at 98° to 106°) 1 gallon.

NOTE.—Mustard should first be made into a paste then added to warm water. The child should not b allowed to remain in this bath longer than minutes.

Haustus Chloralis Infantum.

℞

Chloralis Hydratis	... ...	2 gr.
Pot. Bromidi ...	... ...	2 gr.
Syr. Aurantii	... ...	15 m.
Aquam ...	... ... ad.	60 m.

MISTURÆ

1. *Mistura Alba pro infantibus.*

℞

Mist. Alba	... ...	60 m.

2. *Mistura Aloes Co. pro infantibus.*

℞

Sodii Sulphatis	... ...	10 gr.
Aloes	... ...	$\frac{1}{10}$ gr.
Tinct. Belladonnæ	... ...	1 m.
Syr. Sennæ ...	... ...	15 m.
Aq. anethi	... ... ad.	60 m.

3. *Mistura Belladonnæ Co. pro infantibus.*

℞

Tinct. Belladonnæ	... ...	1 m.
Ammon. Bromidi ...	... ...	2 gr.
Ammon. Carbonatis	... ...	½ gr.
Syr. Tolu. ...	... ...	10 m.
Aq. Camphoræ	... ... ad.	60 m.

4. *Mistura Bismuthi Astringens pro infantibus.*

℞

Bismuthi Oxycarbonatis	... ...	2 gr.
Pulv. Catechu Co. ...	... ...	3 gr.
Pulv. cretæ Aromat c. Opio	... ...	1 gr.
Aq. anethi	... ... ad.	60 m.

5. *Mistura Bismuthi c. Soda pro infantibus.*

℞

Mist. Bismuthi c. Soda	... ...	60 m.

6. *Mistura Carminativa pro infantibus.*

℞

Sp. Ammon. Aromat.	... ...	2 m.
Tinct. Zingiberis	... ...	1 m.
Tinct. Card. Co.	... ...	3 m.
Aq. anethi	... ... ad.	60 m.

7. *Mistura Diaphoretica pro infantibus.*

℞

Liq. Ammon. Acetatis Dil.	... ...	15 m.
Pot. Citratis	... ...	3 gr.
Syrupi	... ...	10 m.
Aq. Chloroformi	... ... ad.	60 m.

8. *Mistura Ipecacuanhæ pro infantibus.*

℞

Pot. Citratis	... ...	2 gr.
Tinct. Ipecac.	... ...	1½ m.
Tinct. Scillæ	... ...	2 m.
Syr. Tolu	... ...	5 m.
Tinct. Opii Camphoratæ	... ...	3 m.
Aq. anisi	... ... ad.	60 m.

9. *Mistura Expectorans pro infantibus.*

℞

Misturæ Expectorans	... ...	60 m.

10. *Mistura Ferri Iodidi et Malti pro infantibus.*

℞

Syr. Ferri Iodidi	... ...	20 m.
Chloroformi	... ...	⅕ m.
Ext. Malti	... ... ad.	60 m.

11. Mistura ol. Morrhuæ pro infantibus.

℞

Mistura ol. Morrhuæ	...	...	...	60 m.

12. Mistura ol. Morrhuæ Co. pro infantibus.

℞

Mist. ol. Morrhuæ Co.	...	...	60 m.

13. Mistura Quininæ pro infantibus.

℞

Quinin. Hydrochloridi	...	...	...	1 gr.
Acidi Hydrochlor. Dil.	...	...	...	1 m.
Syr. Aurantiæ	...	...	...	10 m.
Aquæ			ad.	60 m.

14. Mistura Rhei c. Magnesia pro infantibus.

℞

Puly. Rhei	...	...	...	...	2 gr.
Mag. Carb	...	...	...	...	3 gr.
Syr. Zingiberis	...	...	...	...	10 m.
Aq. Cari	...	...	...	ad.	60 m.

15. Mistura Sodii Citratis pro infantibus.

℞

Sodii Citratis	...	...	...	...	3 gr.
Aquæ				ad.	60 m.

PULVERES

1. Pulv. or Pil. Hydrargyri c. Creta.
½ gr. 1 gr. and 2 gr. strengths are kept ... ...

2. Pulv. Quininæ pro infantibus.

℞

Quininæ Hydrochloridi ...	...	...	...	1 gr.
Sacchari albi	...	...	...	5 gr.

3. Pulvis Santonini pro infantibus.

℞

Santonini	...	...	...	½ gr.
Sacchari albi	...	...	...	6 gr.

℞ Olei Jecoris ℥ij
Almond oil ℥j

HOSPITAL DIETS

Milk Diet. (Approximate caloric value 1540)	Light Diet. (Approximate caloric value 1825)	Vegetarian Diet. (Approximate caloric value 2640)	Non-vegetarian Diet. (Approximate total caloric value 2650)
48 oz. Milk (3 lbs.)	32 oz. Milk 2 (lbs.)	9 oz. Rice.	6 oz. Rice.
4 oz. Sugar.	3 oz. Sugar.	3 oz. Dall.	2 oz. Dall.
¼ oz. Tea.	2 oz. Rice.	6 oz. Green vegetables.	6 oz. Mutton (Edible portion 4. oz.).
	1 oz. Dall for Dall water	4 oz. Potatoes.	6 oz. Green vegetables.
	2 oz. Potatoes.	8 oz. Bread.	4 oz. Potatoes.
	4 oz. Bread.	4 oz. Milk.	1 oz. Ghee.
	1 oz. Butter.	1½ oz. Sugar.	4 oz. Milk.
	¼ oz. Tea.	1 oz. Butter.	1½ oz. Sugar.
		1 oz. Ghee.	8 oz. Bread.
		¼ oz. Tea.	1 oz. Butter.
		1 oz. Cocoanut.	¼ oz. Tea.
		½ oz. Curry Stuff.	1 oz. Cocoanut.
		½ oz. Salt.	½ oz. Curry Stuff.
			½ oz. Salt.

POISONS AND THEIR ANTIDOTES

ACIDS—Mineral, Hydrochloric, Nitric, Sulphuric.

Do not use stomach tube or emetic. Neutralise Acid by giving Soda Bicarb. 2 dr. or Mag. Carb. 4 dr. or Chalk 4 dr. in 10 ozs. of water. Plenty of water or soap and water. White of egg and water, milk, thick gruel or conjee of rice or arrowroot, olive oil or ghee. Later Morphia for pain, ice for thirst; stimulants hypodermically or per rectum for shock. Warmth to the body by blankets and hot-water bottles.

ACIDS—Oxalic, Tartaric.

Do not use stomach tube or emetic. Give chalk 4 dr. in 5 ozs. of water or lime water, ad lib. After this, stomach tube may be used but with the greatest care. Saccharated Lime-water 4 dr. in 2 oz. of water repeated every half hour for 8 doses. Castor oil, stimulants hypodermically.

ACID—Acetic.

Stomach tube with care. Chalk 4 dr. in half a pint of water, thick gruel or conjee. Stimulants hypodermically. Warmth to body. Later Morphia.

ACID—Carbolic.

Stomach tube with the greatest care to wash out repeatedly with Soda Sulph. or Mag. Sulph. 4 dr. in a pint of warm water or give Mag. Sulph. or Soda Sulphate 1 oz. or Saccharated Lime-water 2 oz. in three ounces of water. Give demulcents, olive oil, ghee in plenty, white of egg and water, Brandy and stimulants hypodermically or per rectum. Artificial respiration. Warmth to the body.

ACID—Hydrocyanic or Prussic (and Cyanides).

If seen, immediately dash cold water over head and chest. Wash out stomach with 2 p. c. Copper Sulphate Solution or give by mouth 10 oz. Liq. Pot. Permanganate or Hydrogen Peroxide. Ammonia inhalations. Inject Atropine or Sodium Thiosulphate, Artificial Respiration. Stimulants hypodermically.

ACONITE—

Stomach tube or emetic. Recumbent position on back with head lowered. Liq. Atropine 4 m. by mouth or Tinct. Belladonna 16 m. by mouth, to be repeated in 15 minutes, if pulse improves Inject Atropine Sulph. 1/50 gr. or Adrenalin Solution 1-1000 ten drops. Digitalis, Camphor. Brandy. Warmth to the body. Artificial respiration.

ALCOHOL—

Stomach tube or emetic (Apomorphine). Strong hot coffee 1 pint by mouth or rectum or inject Caffeine Sod. Salicylate. Rouse by flicking. Cold douche. Ammonia inhalations. Sustain by Strychnine. Warmth to the body.

ALKALIES—Caustic Soda, Caustic Potash, Ammo-nia.

Neutralise by giving diluted vinegar or Acetic Acid or lemon juice 1 oz. in 3 oz. of water. Then give freely milk, ghee or olive oil or white of egg. Inject Morphia for shock and pain, if necessary.

ANTIMONY—

If vomiting, encourage by draughts of tepid water, if necessary use stomach tube or emetic. Give Glycerine Tannic 2 dr. in 5 oz. of water or Tannic Acid 30 gr. in 5 oz. of water, repeat if vomited. Strong tea, coffee, white of egg, milk. Stimulants. Warmth to the body; for pain Morphia.

ARSENIC—

Stomach tube or emetic. Give Ferri Hydrate solution prepared by adding crystallized sodium carbonate (washing Soda) 4 dr. dissolved in 5 oz. of water to Liq. Ferri Perchlor. 1½ oz. diluted with 2 oz. of water or give dialysed iron in oz. doses diluted. Repeat, if necessary. Eggs and milk. Stimulants for prostration. Warmth to the body. Later Morphia.

ATROPINE, BELLADONNA, DATURA, etc.

Stomach tube or emetic. Give Tannic Acid 30 gr. in 5 oz. of water or strong coffee or tea one pint. Inject Morphia ⅓ gr. repeat after 2 hours or inject Pilocarpine gr. ¼ to be repeated in 15 minutes if pulse improves. For collapse, stimulants, flicking, warm and cold douche. Faradism. Later artificial respiration. Hot water bottles or cold compresses according to temperature.

BARIUM SALTS—(excluding Barium Sulphate).

Stomach tube or emetic. Soda Sulph. 1 oz. or Mag. Sulph. 4 dr. in 5 oz. water or 1 dr. Alum in 5 oz. of water. Stimulants. Warmth to the body. Later Morphia.

BENZOL—(Benzene).

Stomach tube or emetic. Inject Atropine. Give Brandy. Inhalations of Ammonia, flicking. Artificial respiration.

BICHROMATE OF POTASSIUM—

Stomach tube or emetic. Give Mist. Cretæ 8 oz. or chalk 4 dr. in half a pint of milk. gruel, conjee. Warmth to the body.

CAMPHOR—

Stomach tube or emetic. Inhalations of Ammonia. Stimulants (avoid alcohol by mouth) warmth to the body. Hot fomentation to abdomen.

CANTHARIDES—

Stomach tube; if throat won't admit of this, give Apomorphine injection. Demulcents, gruel, conjee, Later Morphia.

CANNABIS INDICA—(Bhang-Ganja).

Stomach tube or emetic. Inject Strychnine.

CARBON DI-OXIDE—

Fresh air. Artificial respiration. Inhalations of Ammonia, Oxygen, Bleeding—Hot water bottles, blankets, faradism, cold douche.

CARBON MONOXIDE—(coal-gas, charcoal fumes).

Fresh air, artificial respiration, oxygen. venesection and intravenous saline. Warmth to the body. Friction, faradism.

CHLORODYNE—

See Opium.

CHLORAL—

Stomach tube or emetic. Prevent sleep. Stimulants. Inject Strychnine. Caffeine, Sod. Salicylate, or strong hot coffee 1 pint by mouth or per rectum. flicking. friction, faradism. Warmth to the body. Artificial respiration. Oxygen. Empty bladder.

CHLOROFORM—(Inhaled).

Open mouth with gags. Pull out tongue with forceps, insert finger into mouth and pharynx to make sure that there is no obstruction e. g. artificial teeth. Extend head, push jaw forward, loosen clothes, fresh

air, artificial respiration; raise foot of table so tha the head may be lower than the rest of the bod Flapping, oxygen inhalations. Faradism (poles at p of stomach and over larynx). Inject Pituitar Strychnine, Ether, Alcohol or give intravenous A ropine. Brandy Enema. Hot sponge to perinæum.

CHLOROFORM—(swallowed)

Stomach tube or emetic. Olive oil or ghe Stimulants hypodermically or per rectum. Flappin with wet towels; faradism; strong hot coffee 1 pint o inject caffeine Sod. Salicylate.

CHROMIC ACID—

Stomach tube. Half an ounce of chalk in 1 ounces of water. Gruel, Conjee.

COAL-GAS—

See Carbon Monoxide.

COCAINE—

Stomach tube or emetic, if swallowed. Stimul ants; Amyl Nitrite inhalations. Strong hot coffee Brandy. Chloroform for respiratory spasm.

CODEINE—

See Opium.

COPPER SALT—

White of egg and water, milk, then stomach tube if vomiting has not occurred. Gruel, Conjee Warmth to the body. Morphia.

CORROSIVE SUBLIMATE—

See Mercury.

CROTON OIL—(Jamal Gota)

Stomach tube or emetic. Stimulants. Morphia ¼ gr. hypodermically or 30 minims of Tinct. Opii in one

ounce of water by mouth or re Warmth to the body. Hot poultic

CYANIDE OF POTASSIUM—

See Acid Hydrocyanic.

DIGITALIS—

Stomach tube or emetic. Apomorpine Give Glycerine Tannic 2 dr. or Tannic Acid grains either in 5 oz. water, Strong tea, coffee. Atropine $\frac{1}{50}$ gr. inject. Maintain recumbent posture. Hot applications to epigastrium.

DOVER'S POWDER—

See Opium.

DATURA—

Same as Belladonna.

ERGOT—

Stomach tube or emetic. Recumbent posture Glycerine Tannic 2 dr. or Tannic Acid 30 gr. either in 5 oz. of water. Amyl Nitrite inhalations, warmth, Friction, stimulants.

ESERINE—(Physostigmina)

Stomach tube or emetic. Glycerine Tannic 2 dr or Tannic Acid 30 gr. in 5 oz. of water. Inject Atropine Sulph. $\frac{1}{50}$ gr. or give by mouth Tinct. Belladonna every fifteen minutes till pupils dilate, chloral hydrate 10 gr. in water every 15 minutes for four doses. Artificial respiration. Stimulants.

ETHER—(inhaled)

Same as Chloroform inhaled.

ETHER—(Swallowed)

Same as Chloroform swallowed.

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Stomach tube. Half an ounce of chalk in 1 ounces of water. Gruel, Conjee.

COAL-GAS—

See Carbon Monoxide.

COCAINE—

Stomach tube or emetic, if swallowed. Stimul ants; Amyl Nitrite inhalations. Strong hot coffee Brandy. Chloroform for respiratory spasm.

CODEINE—

See Opium.

COPPER SALT—

White of egg and water, milk, then stomach tube if vomiting has not occurred. Gruel, Conjee Warmth to the body. Morphia.

CORROSIVE SUBLIMATE—

See Mercury.

CROTON OIL—(Jamal Gota)

Stomach tube or emetic. Stimulants. Morphia $\frac{1}{4}$ gr. hypodermically or 30 minims of Tinct. Opii in one

ounce of water by mouth or rectum. Friction. Warmth to the body. Hot poultices to abdomen.

CYANIDE OF POTASSIUM—

See Acid Hydrocyanic.

DIGITALIS—

Stomach tube or emetic. Apomorpine inject. Give Glycerine Tannic 2 dr. or Tannic Acid grains 30, either in 5 oz. water, Strong tea, coffee. Atropine $\frac{1}{50}$ gr. inject. Maintain recumbent posture. Hot applications to epigastrium.

DOVER'S POWDER—

See Opium.

DATURA—

Same as Belladonna.

ERGOT—

Stomach tube or emetic. Recumbent posture Glycerine Tannic 2 dr. or Tannic Acid 30 gr. either in 5 oz. of water. Amyl Nitrite inhalations, warmth, Friction, stimulants.

ESERINE—(Physostigmina)

Stomach tube or emetic. Glycerine Tannic 2 dr or Tannic Acid 30 gr. in 5 oz. of water. Inject Atropine Sulph. $\frac{1}{50}$ gr. or give by mouth Tinct. Belladonna every fifteen minutes till pupils dilate, chloral hydrate 10 gr. in water every 15 minutes for four doses. Artificial respiration. Stimulants.

ETHER—(inhaled)

Same as Chloroform inhaled.

ETHER—(Swallowed)

Same as Chloroform swallowed.

FLY-PAPERS—

See Arsenic.

FUNGI—

Stomach tube or emetic. Castor Oil. Inject Atropine $\frac{1}{50}$ gr. or give Tinct. Belladonna by mouth or rectum. Warmth to the body. Stimulants.

HYOSCYAMUS—

See Atropine.

IODINE—

Stomach tube cautiously, or emetic. Wash out stomach with diluted Liq. Potassæ. gruel, conjee. Lime water or solution of Sodium Hypo-sulphite. Amyl Nitrite inhalations. Later Morphia.

KEROSINE OIL—(Petrol).

Stomach tube or emetic. Stimulants. Warmth, friction.

LAUDANUM—

See Opium.

LEAD—(its salts).

Stomach tube or emetic. Preferably Zinc Sulph. Mag. Sulph. 4 dr. or Soda Sulph 1 oz. in 5 oz. of water or Acid Sulphuric, dilute 30 m. in half a pint of water. Milk. White of egg and water, demulcents. Hot poultices to abdomen. Morphia.

LOBELIA—

Recumbent position. Stomach tube or emetic. if required. Glycerine Tannic 2 dr. or Tannic Acid gr. 30 either in 5 oz. of water or one pint of strong tea. Warmth, friction, stimulants.

METHYLATED SPIRIT—

See Alcohol.

MORPHINE

See Opium.

MOTHER'S FRIEND—(Bala Goli)

See Opium.

MERCURY SALTS—

Do not empty stomach before giving large quantities of white of egg and water, or flour and water. Leave in stomach some white of egg and water. Stimulants. Warmth. Later Morphia for pain; plenty of water for anuria.

NICOTINE—(Tobacco).

Recumbent position. Stomach tube or emetic. Glycerine of Tannic 2 dr, or Tannic Acid gr. 30 either in 5 oz. of water or strong tea half a pint. Charcoal. Inject Strychnine. Warmth to the body. Oxygen.

NITRO-BENZENE—(Nitro-Benzol).

Stomach tube or emetic. Stimulants, warmth to the body. Friction, faradism. Artificial respiration. Oxygen,

NUX VOMICA—(Zer Kecholi).

See Strychnine.

NITRO-GLYCERINE—

Recumbent posture. Cold affusion. Inject Ergot or Atropine $\frac{1}{50}$ gr.

NITROUS OXIDE—(Laughing Gas).

Insert finger in mouth and throat to remove any obstruction (artificial teeth) if present. Extend head,

push jaw forward. Pull tongue out by forceps. Loosen clothes; fresh air. Recumbent position. Artificial respiration. Oxygen. Flapping with wet towels.

OPIUM—

Stomach tube or emetic. Wash out stomach half-hourly with Liq. Pot. Permanganate diluted with five times its quantity of warm water, leaving 5 oz. of the diluted solution in stomach. Use a weak solution for stomach wash in cases of Morphia poisoning. Hypodermically inject Atropine Sulphate $\frac{1}{30}$ gr.; strong coffee by mouth. Inject Strychnine, or Caffeine; Smelling salts, Oxygen. Artificial respiration. Empty bladder, Faradism repeatedly. Dash cold water on face. Make patient walk about.

PARALDEHYDE—

See Chloral.

PAREGORIC—

See Opium.

PHENOL—

See Acid Carbolic.

PHOSPHORUS—

Stomach tube or emetic Copper Sulphate gr. 3 in water every five minutes till vomiting occurs, then again after 15 minutes (it is also an antidote) or Hydrogen Peroxide 30 mins. repeated, or wash out stomach with Liq. Pot. Permanganate diluted 10 times. Purge with Mag. Sulph. 1 ounce in 4 oz. of water. Avoid oils, fats, milk.

PTOMAINES—

Glycerine Tannic 2 dr. or Tannic Acid 30 gr. either in 5 oz. of water. Strong Tea. Treat collapse.

RAT-POISONS—(Paste).

Contain either Arsenic or Phosphorus or both.

SILVER SALTS—

Half an ounce of common salt in one pint of water. Stomach tube, white of egg and water. Milk.

SNAKE-BITES—

See pages

STRYCHNINE—

Unless jaw is tightly fixed, inject Apomorphine. Inject Sod. Luminal 0.4 grammes (5-6 grains) in Solution. Wash out stomach half-hourly with Liq. Pot. Permanganatis diluted 3 times its quantity of warm water. Chloral Hydrate large doses by mouth or rectum. Pot. Bromide. Chloroform inhalations for severe convulsions. Artificial respiration.

TURPENTINE—

Stomach tube or emetic. Mag. Sulph. half an ounce in two ounces of water. Milk, white of egg and water, later Morphia

VEGETABLE IRRITANTS—

Stomach tube and emetic. Glycerine Tannic Acid 2 dr. or Tannic Acid 30 gr. either in 5 oz of water or Strong Tea, white of egg or gruel or conjee. Friction, warmth, stimulants. Later Morphia.

VERONAL—(Barbitonum)

Sulphonal, Trional and Luminal.

Wash out stomach thoroughly with warm water, then introduce strong coffee one pint and one ounce of castor oil, or use emetic Stimulants. Strychnine. Isotonic Saline hypodermic or per rectum. Oxygen; artificial respiration. Warmth Empty bladder.

ZINC SALTS—

Stomach tube or emetic (rarely needed) Soda Bicarb. or Pot. Bicarb. half an ounce in half a pint of water; milk, strong tea, Morphia.

Preparation of patients for various X-Ray examinations.

1. **Kidney, Ureters and Bladder.**

Ol. Ricini 1 oz. to be given the day before the examination at bed time, followed next morning by ordinary soap water enema. A cup of weak tea only may be given early in the morning. The patient to be sent to the X-Ray department beforo 9.30 a. m, (B. T.)

2. **Dorso-lumber spine and sacrum and cccoyx.**

As above.

3. **Stomach and Duodenum.**

Patients to be sent to the X-Ray department on an absolutely empty stomach. No purgative to be given,

4. **Intestinal Tract.**

No purgative to be given. Only ordinary soap water enema to be given in the morning. The patient to be sent to the X-Ray department before 9.30 a. m. (B. T.) on an absolutely empty stomach.

5. **Large Intestines.**

Barium enema to be given. No purgative but an ordinary soap water enema to be given in the morning of the day of examination. The patient to be sent to the X-Ray department at 9.30 a. m. on an absolutely empty stomach.

6. **Gall Bladder (Graham's test).**

Preparation of the patients for the X-Ray visualisation of the Gall Bladder (Graham's test). Same as for kidneys, ureter and bladder.

The patient to be sent to the X-Ray department in the morning. He is to be starved upto 6 o'clock in the evening. At 6, patient is given fatty free diet. At 7-30 p. m. sodium Tetra Iodophenophthalin shado-col should be dissolved in water according to directions on the label and drunk immediately by the patient to be followed by drinking plenty of water. The patient should go to bed lying on the right side as far as possible. Next morning i. e. about 14 hours later, the patient is to be sent to the X-Ray department before 9-30 a. m. (B. T.); nothing to be given by mouth that morning, not even a drop of water. Other instructions will be given in the X-Ray department.

7. **Pyelography and Uroselectan test.**

The patients are to be prepared as in the case of kidney patients.

GENERAL RULES

1. All wounds and ulcers to be dressed with ordinary sterile dressings, without any medication: the use of lotions, ointments and safety pins should be avoided.

2. For all patients for the examination of the gastro-intestinal tract, gall bladder and kidney. all medication should be stopped till the X-Ray examination is over.

3. For skiagrams in case of fracture of bones, the aluminium splints may be removed, if the surgeons so desire.

LABORATORY NOTES ON METHODS EMPLOYED IN THE WARD LABORATORIES.

Specially written by

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TABLE OF CONTENTS

COLLECTION OF MATERIAL FOR LABORATORY INVESTIGATIONS

1. Urine.

For qualitative examination :

When it is desired to make only qualitative tests, a sample voided at any time will answer. It should be labelled with the time of voiding and the time when the last meal was taken.

For quantitative examination :

As the excretion of sugar, albumin, casts, pus and other important urine constituents is known to vary at different times, the examination of the specimen collected over 24 hours is recommended. No quantitative test can be of value unless a sample of mixed 24 hour's urine is sent. The patient should be directed to void all the urine during the 24 hours into a clean 8 ozs. bottle to which about 0·5—1 gramme (about 108 grains) of Thymol is added. The patient should be told to empty the bladder, say at 8 a.m. and to discard the urine and to save all the urine voided upto 8 a.m. of the next day. At that time he should empty the bladder whether he feels the need for it or not, and add this final amount to the quantity collected. The whole of the urine is mixed well, measured and 6 to 8 ounces of the urine so mixed is submitted for examination.

For cultural examination :

The urine must be collected in a sterile test tube or flask with every precaution to avoid contamination. In case of women this necessitates catheterization. In males it will suffice to wash well the glans penis, after retracting the prepuce and the margin of the urethral orifice with sterile saline. The urine is then voided and the first portion is allowed to escape, the later portion only being saved. The prepuce should not be allowed to come in contact with the cleaned part nor should the urine be permitted to flow over the prepuce, till the sample of urine is collected. The plug of the sterile test tube or flask should never be allowed to come in contact with the urine, when the urine is dispatched to the laboratory.

For rabbit ovulation test in pregnancy.

An early morning sample of urine is collected in a clean container (catheter specimen is not needed) and stored in an ice chest or a refrigerator. If a precipitate is present it is removed by filtering or centrifugalisation. A total quantity of 24 c.c. is needed for injection in the marginal ear vein of each rabbit. (5. c. c. quantities are injected in isolated mature female rabbi's at intervals of not less than 2 hours. The ovaries are examined 48 hours after the 1st injection)

2. Blood.

For cytological examination :

The finger should be warm with free circulation of blood. The hand may be immersed in warm water if the patient is anæmic. The end of one of the fingers is washed with alcohol and dried thoroughly. It should never be pricked

when wet. The end of the finger is tightly held with the thumb and first finger, the point of the needle touched to the skin and a bold quick prick is made. A triangular or a lance shaped needle is used. The prick should be deep enough to give a free flow with gentle squeezing. The first drop or two are wiped away. It is advisable to first fill in the hæmoglobinometer pipette followed by the red and white corpuscle pipettes. Finally the smears are prepared for the differential count of leucocytes. A good sized drop of blood is allowed to well up for the filling of each pipette.

(i) Hæmoglobin :

The graduated tube of Hellige's normal Hæmometer is filled with decinormal hydrochloric acid upto the mark 20. The 20 c. mm. pipette is filled with blood to the mark on the pipette. The excess of blood on the outer side of the tip of the pipette is wiped off and the blood placed immediately under the acid solution in the graduated tube. The last trace of blood is removed by drawing and expelling the solution in the pipette several times.

(ii) Leucocytes :

A fresh drop of blood is allowed to well up and the pipette with the white bead is filled upto mark 0·5 or 1, excess on the outer side of pipette wiped off and the diluting fluid for white blood corpuscles (*1*) is filled upto the mark 11 and mixed thoroughly by rotating the pipette in a horizontal position between the palms of the hand.

(iii) Red blood cells :

The pipette with the red bead is filled to the mark 0·5 or 1 with blood, depending upon the quality of the blood and diluted to 101 with the red blood cell diluting fluid (*3*) and mixed thoroughly. The Hæmocytometer pipettes should

always be carried in a horizontal position a
filling. The tip of the pipettes should not com
contact with cotton, lint or any other absorb
material. The ends of the pipettes can be clo
with the two ends of the rubber tubing (af
removing the mouth piece) used for filling t
pipettes.

(iv) Differential Count:

Two or more smears are prepared on perfect
clean, grease free slides. A small drop of blood
spread on a slide with a second slide by allowi
the blood to follow the edge of spreading sli
which is held at an angle of about 45 degree
Then with a quick movement, the spreading sli
is pushed forward towards the other end of th
under slide. The film will be too thin if it
spread too slowly. The films should be rapidl
dried in air, by quickly moving the slides, to an
fro for a few seconds.

Oxalated blood can be used for the cytologic
examination. The blood is collected from the ve
by the usual technique but tourniquet should b
released if more than 2 minutes are required fo
securing sufficient blood. 20 mgms. of Potassium
Oxalate are used for 10 c.c. of blood. The needl
from the syringe is removed before running th
blood into the tube containing the oxalate a
hæmolysis is likely to result if the blood is force
through the needle. The test tube is closed wit
a rubber stopper (never use cotton gauze or lint)
and the blood is mixed well with the oxalate by
revolving the test tube for a minute or two between
the palms. The blood is thoroughly mixed before
the pipettes are filled. The pipettes can be filled
after taking the blood on a paraffined watch
glass. (Solid paraffin is melted and used to coat
the watch glass). The test tube must be kept

stoppered at all times. It is advisable to prepare the blood smears with the blood directly taken from the vein, rather than from the oxalated blood. The pipettes should be filled with this blood within 3 hours of its collection although a slightly longer time will not introduce clinical error.

For blood grouping.

The blood is collected from the vein by the usual technique with a 10 c.c. syringe as some blood will be necessary for the Kahn's test, as well as for excluding the presence of blood parasites in the donor's blood. Half a c.c. of the blood is run into a test tube containing 1 c.c. of citrated saline solution (3) and mixed gently. A smear is prepared with a drop of uncitrated blood on a glass slide. Rest of the blood is placed in a dry test tube for the separation of serum.

For Micro filaria:

1. Wet method:—Puncture finger as usual and place a large drop of blood on a slide. Immediately cover with a cover glass and examine with a low power lens. The larvæ can be located by the disturbance they produce among the corpuscles. Some species appear periodically in the peripheral circulation and in the case of Filaria Bancrofti they are more numerous at night. It is best to examine for this parasite at about 2 a.m. Should the above examination fail to reveal larvæ, the concentration method is recommended.

2. Concentration method: Collect about one c.c. of blood from a finger puncture in 4 c.c. of 1% Acetic or 2% Oxalic acid. Mix well and centrifuge. Spread the sediment on a slide, cover with a cover glass and examine under microscope (×80 magnification).

3. Staining method: Make blood smears in the usual manner or from the sediment obtained by the concentration method. Dry, fix and stain by Giemsa, Leishman or Hæmatoxylin and Eosin.

For chemical examination:

The blood is generally collected from a vein. The syringe with the needle to be used for collection of the blood should be washed with sterile saline, if it is sterilised by boiling in water. The saline from the syringe is blown out as much as possible. It is preferable to sterilise the syringe and the needle in oil or vaseline heated to 160°c. and kept ready for use in a sterile test tube. The blood is transferred from the syringe into a 20 c.c. Erlenmeyer flask or a test tube containing 20 milligrammes of finely powdered Potassium oxalate, sufficient for 10 c.c. of blood and well shaken to insure proper mixing, after closing it with a rubber stopper. It is important not to use an unnecessarily large amount of oxalate as the excess makes the complete precipitation of the proteins, more difficult. 1 mgm. of Lithium oxalate per c.c. of blood is used instead of Pot. oxalate for Uric acid determination.

The second method for the collection of blood is by capillary puncture. This is used mainly for chemical estimations by micro methods. In some cases this method is inevitable although experience points to the greater accuracy obtained by using larger amounts wherever possible. This capillary puncture is to be resorted to in children, particularly if repeated observations are to be made. This method is also of value in the case of extremely fat persons. A finger is generally selected if it is decided to adopt capillary puncture method. The hand is immersed in warm water to promote

free circulation. A sharp jab is given with a triangular or a lance shaped needle after cleaning and drying the finger. The blood is collected in a watch glass coated with solid paraffin over a few fine crystals of Potassium Oxalate which are mixed well with the blood. The blood is immediately collected in the pipette. It is well to avoid squeezing or "milking" the finger since it tends to dilute the blood with tissue fluids.

The concentration of various constituents of blood is materially altered for a time following meals. It is therefore necessary to obtain blood after a 12 hour fast i.e. before any food is taken in the morning.

1. Blood for Glucose tolerance test:

The patient takes his usual meal on the previous night. He does not take any breakfast the following morning. Fasting samples of blood (in oxalate) and of urine are collected. The patient is then given 50 gms. of glucose in 200 c.c. of water to drink, and samples of blood (in oxalate) and of urine are collected at intervals of ½ hour for 2 hours for the estimation of glucose in them.

2. Urea concentration test:

The patient does not take any breakfast on the morning of the test. The fasting sample of urine is collected. The blood is also collected at the same time for the estimation of urea nitrogen and non-protein nitrogen. The patient is then given 15 grammes of urea in about 150 c.c. of water. The solution is flavoured with fresh lemon juice. Samples of urine are collected in clean flasks at intervals of an hour for three hours to estimate the urea contained in them. It is essential to lable the flasks correctly and to note the time of passing the urine into them.

3. Urea clearance test:

The test is performed in the morning, with the patient resting in bed. The patient empties his bladder about an hour after an ordinary light breakfast without any coffee. He is asked to drink a glass of water, especially in hot weather. A stop watch is started and fifty minutes later a sample of blood is taken from the vein for urea determination. The bladder is emptied *exactly* one hour and two hours, after starting the stop watch. The volumes of these hourly specimens are *accurately* measured and the concentration of urea determined in them. It is advisable to obtain the 1st and 2nd hour urine samples by catheterisation in women and men over 40 years.

For serological examination:

The blood is collected from the vein in the usual way. The syringe with the needle sterilized in boiling water is washed with sterile saline. The needle is removed from the syringe before running the blood into a dry test tube. It is then plugged with cotton wool and the blood allowed to clot. Due care must be taken to prevent the blood from coming in contact with the cotton wool. Undue agitation of the blood is avoided as it may induce hæmolysis.

It is advisable to take the blood in the morning before any food is taken, particularly if the serum is required for Kahn's precipitation test, as any fat containing food tends to produce chylous serum, which interferes with the result of the test. One should avoid as far as possible taking blood for Wassermann reaction during febrile periods and periods of acute alcoholism.

In suspected cases where the Kahn or Wassermann reaction is negative and the patient has not received an antisyphilitic treatment, a provocative injection of 0.15 gm. of Neosalvarsan

is given intravenously and the blood collected as above, after a lapse of 5 to 6 days. (0.3 gm. is given in a previously treated case.) In cases where the arsenical injection is not practicable a 4 c.c. intramuscular injection of Bismuthiodol may be substituted.

Interpretation of Kahn Test
and
the clinical procedure recommended for further tests.

Kahn	Clinical Signs	Remarks
††† or †††	Definite	Diagnosis established.
††† or †††	Doubtful	Repeat test. If the test on repetition is either †††† or †††, the diagnosis is established If the test on repetition is †† or †‡ look for some other etiological factor.
††	Definite	Repeat after a provocative dose of Neo-Salvarsan. If †††† or ††† diagnosis established.
††	Doubtful	Neglect the Kahn report.
‡† or †		Is of value only in cases which have received or are receiving treatment for syphilis.

About 2 c.c. of blood is similarly collected in suspected cases of enteric fever, in the 2nd week of illness, for an Agglutination reaction (Widal). If it is not possible to obtain the blood from a vein, it may be collected from a finger prick in a Wright's capsule (0-5-2 c.c.).

For cultural examination:

The skin in front of the patient's arm at the bend of the elbow is cleaned with rectified spirit, painted with Tincture Iodine and cleaned again with rectified spirit or ether. A tourniquet is applied to the arm and the patient is first asked to open and close the hand vigorously and then to keep the fist clenched on a roll of bandage. 5-10 c.c. of blood is collected by a puncture of one of the veins with a sterile syringe and needle. The tourniquet is then released, the clenched fist is opened and the needle withdrawn from the vein. The needle is then removed from the syringe. A flask containing 100 c.c. of sterile 1% Glucose broth is opened and inoculated with the blood. The mouth of the flask is held near the flame of a spirit lamp while inoculating. It is then closed with the cotton plug after passing it through the flame. The broth flask is then carefully shaken to mix the blood with the broth and incubated at 37° centigrade. The broth should be observed for one week before declaring the blood as sterile.

3. Gastric Contents:

For analysis by fractional method (Rehfuss):

The patient is asked to eat a light supper, and to drink a glass of milk with four charcoal biscuits or a teaspoonful of medicinal charcoal powder the night previous to the examination. On the following morning before any food or drink has been

taken, the patient is made to swallow a Ryle's tube. It consists of a rubber tubing free at one end and terminating at the other end by a metal bulb and having a diameter of a No. 8 catheter. The type usually employed is completely covered with rubber and has two fairly large holes bored through the tube just above the bulb. The action of swallowing the tube is carefully explained to the patient who should hold it with his lips and be told to breathe freely through the nose. After it has been swallowed upto the mark on the tube indicating the depth of the fundus (two black bands) the stomach is emptied by suction with a syringe, aspiration being continued till no more fluid can be removed. The volume is noted and the specimen is set aside. Washing out with about 20 c.c. of water will in many cases lead to a more complete emptying, but this part of the aspirated specimen is to be rejected. The injection of a syringeful of air may also assist in the aspiration.

The test meal is made by boiling two tablespoonfuls of oatmeal Quaker Oats or rice) in a quart of water until the total bulk is reduced to a pint; the meal is then strained through coarse muslin and may be flavoured with salt if one hour specimen is not to be used for the estimation of chlorides. Milk or sugar should not be added to the meal. The white colour of the meal enables the detection of bile or blood to be made out easily.

One pint of this preparation is given to the patient to drink as soon as the resting juice has been removed. About 10 c.c. specimens are then withdrawn every 15 minutes for two and half hours, or until no further fluid can be aspirated. In the former case as much fluid as possible is aspirated and the tube withdrawn. When difficulty is experienced in the aspiration it must be re-

membered that this may be due to the tube being occluded by solid particles or mucus. These may be dispelled by blowing a little air down from the syringe prior to aspiration. A further not infrequent cause of failure to aspirate is the tendency of a strongly contracting stomach to seize the tube and block its apertures; slight withdrawal or further swallowing of the tube will remedy this.

4. Fæces.

The patient should be directed to take a light meal on the previous night. It is advisable not to allow at that meal any food rich in fats. The next morning the patient is given (except in cases of acute dysentery or diarrhœa) 2 to 3 drachmes of Magnesium Sulphate or some other saline purgative to induce 2 to 3 liquid motions. Preparations such as castor oil, paraffin liq. etc.; should not be used as mild purgatives. The second liquid motion is collected in a vessel cleaned with warm water. The fæces and mucus if any are taken up into a sterile petri-dish with a sterile spoon, or the patient may be asked to pass the fæces into the smaller half of the petri-dish directly, which should be covered up with the other half of the petri-dish. The bigger half of the petri-dish should be labelled as "top", so that the sample may be carried to the laboratory without spilling. In no case should the fæces be allowed to mix with urine or water. The specimen should be examined within an hour (if possible) from the time it is passed.

5. Sputum.

(*a*) *For routine examination:*

A 24 hours specimen is recommended for the detection of tubercle bacilli. For a general examination sterile containers are not necessary, they should however be clean. Phenol or Tricresol may be used as preservatives. As a rule it is advisable for the patient to wash the mouth and teeth before collection, especially of single specimens. The patient should be instructed to distinguish between saliva and sputum. As far as possible the former and post-nasal secretions should be avoided and deep bronchial secretions collected.

(*b*) *For bacteriological examination:*

The sputum should be collected in a sterile petri-dish with a minimum amount of contamination in the mouth by the saliva.

As a general rule the morning specimen is to be preferred. The patient is instructed to wash the mouth with boiled water or sterile saline before coughing. In suspected "whooping cough" sputum may be collected in this manner in the case of older children and adults. In young children faucial secretions may be collected on swabs. The specimen is dispatched to the laboratory as soon as possible. The patient as well as the messenger who delivers the sputum to the laboratory should be instructed to carefully avoid contamination of the outside of the petri-dish, as the material may be dangerous to handle. Specimens kept for 24 hours or longer after collection are useless for bacteriological examination except for the detection of tubercle bacilli by smear method; older specimens and especially those kept at room temperature deteriorate rapidly for guinea-pig inoculation and for cultural examination.

6. Cerebrospinal Fluid:

The cerebrospinal fluid is generally obtained by lumbar puncture with a sterile needle about

6-8 cm. long and about 1 mm. broad (outside diameter). The needle should have a short bevel at its extremity and provided with a well fitting stylet. As the spinal cord terminates in the adult opposite the lower border of the body of the first lumbar vertebra, the dural sac can be pierced in either interspace between the 3rd and the 5th lumbar vertebrae. In this region the nerves of the cauda equina leave a space about 2—5 mm. wide on either side where a needle could be introduced without fear of damaging the nerves.

The skin overlying the lower lumbar vertebrae is well cleaned, and painted with Tincture Iodine. The hands are carefully washed and aseptic precautions are observed throughout the procedure. A small amount of local anaesthesia is desirable.

A line joining the highest points of the iliac crests passes over the spine of the 4th lumbar vertebra. The space above or below this spine is determined by palpation. The needle with the stylet in place is pushed either in the middle line or at about 1 cm. on either side of it. The depth to which the needle passes varies from one cm. in a small child to about 10 cms. in a fat adult. The needle is first pushed straight forwards and then slightly upwards. It soon encounters the resistance of lig. subflavum. A little extra pressure perforates the ligament and the needle enters the dural space.

On withdrawal of the stylet the spinal fluid should flow from the needle. The fluid is received in a clean, sterile 30 c.c. test tube. The tube is plugged with sterile gauze and care should be taken to ensure that at no stage, the fluid comes in contact with the plug. A sterile rubber stopper should be used if the test tube could not be carried in an upright position.

If only a few drops of blood escape, the point

of the needle is probably lying in the spinal canal outside the dural sheath and the blood is escaping from one of the torn spinal veins. The stylet should be put back in place and the needle pushed further in. Sometimes on piercing the dural sheath the needle comes in contact with one of the nerves of the cauda equina and the patient experiences a sudden pain shooting down one of the legs. This is of no importance. A manometer attached to the needle is useful in estimating the pressure of the fluid which is normally about 8-10 mm. of mercury. In the case of lateral puncture the needle is directed slightly inwards as though one wished to reach the middle line at a depth of 4-5 cms. from the surface. It is advisable to keep the patient in a lying posture for a short time after the removal of cerebro-spinal fluid.

Note:—About 8—10 c.c.s. of fluid are necessary for routine pathological investigation and at least 4 c.c. are required for Wassermann test.

7. Material for detection of :

Gonococcus :

In the male The urinary meatus is cleaned with gauze swabs soaked in saline. The discharge is pressed out from the urethral canal and drops are taken on microscopic slides. In chronic cases "the morning drop" is used for microscopic investigation or films are prepared from the secretion after a careful prostatic message.

In the female Films are prepared from secretions obtained from the urethral meatus and from cervix uteri after examining it with the aid of a vaginal speculum.

The smears are stained by Gram's method, and counterstained by Saffranin 0,

Diphtheria Bacillus :

The tongue is depressed with a depressor or the handle of a spoon. The back of the throat and the nose and the tonsils are carefully examined for any evidence of congestion, or the presence of an exudate or a membrane. A small bit of the suspected material is secured on a sterile cotton swab or a stiff platinum loop.

The material is carefully planted on a couple of tubes of Loeffler's serum; and slides are prepared, fixed and stained by Gram's method and by Loeffler's Methylene Blue. It is necessary to examine slides stained by both these methods.

Leprosy Bacillus :

From a suspected nodule Clean the suspected nodule with rectified spirit and allow it to dry. Hold the nodule with a pair of toothed forceps and snip off a piece with sterile curved scissors. Prepare smears from the deeper surface of the tissue by rubbing it on a couple of clean slides. Fix and stain by Ziehl-Neelsen's method using 6 per cent. sulphuric acid for decolourisation. The acid-fast organisms are massed in clumps and are chiefly found in the dermis grouped in histiocytes.

From the nose Smears of material from posterior nares obtained by means of a nasal swab or from the ulcers on the nasal septum are prepared and stained as above. It is necessary to rub hard with the swab on the mucous membrane. A previous administration (2 days before) of Potassium Iodide (total 60 grains) to produce a definite running from the nose is advisable.

Leishmania Tropica :

Remove the scab on the suspected sore by repeatedly placing over it cotton wool swabs moistened with normal saline. Abrade the surface of the sore with the edge of the scalpel or

of a triangular needle to scrape off some cells from its base. Care should be taken as far as possible to prevent bleeding. Allow some time for the serum to ooze out; prepare smears from the exudate, fix in methyl alcohol and stain with Giemsa. A method particularly useful for the cultivation of Leishmania bodies is to clean the skin at the edge of the ulcer and to make a deep prick with a cutting needle parallel to the surface. A fine Pasteur pipette is pushed in the track of the needle so as to obtain some fluid and tissue cells from beneath the ulcer. Leishmania bodies are found in groups or singly in the cytoplasm of histiocytes.

Spirochaeta Pallida.

Dark ground illumination : The slides and coverslips used for the preparation must be very clean and free from grease and scratches. The slides must not be more than 1.0—1.1 mm. thick. The preparation must be thin and of a uniform thickness. A special Paraboloid condenser is inserted in place of the usual Abbe condenser in the microscope. A powerful electric frosted lamp or a small arc lamp is used as a source of illumination. Surface exudates should not be used, as the spirochaetes are situated in deeper tissues. An effort should be made to obtain tissue fluid with as little blood as possible. All applications of antiseptics should be omitted for at least several hours before the examination is made.

The lesion is grasped between the thumb and forefinger (protected with rubber gloves or gauze) cleaned with cotton wool soaked in saline to remove surface secretions and sloughs. It is then gently rubbed with dry wad of cotton wool and time is allowed for serous fluid to exude from the raw surface. It is sometimes advisable to place a

small wad of cotton wool soaked in rectified spirit on the lesion and to hold it in place for a couple of minutes. The fluid is then collected by means of a clean pipette and a thin wet preparation is made taking care to avoid formation of air bubbles. If the amount of fluid obtained is small it may be diluted with a little quantity of normal saline. Put a drop of distilled water on the condenser and then raise it gently till it touches the back of the slide. Examine with (×40) lens with ×15 eyepiece.

8. Tissues from Biopsy and Autopsy.

The pieces of tissue for histological examination should be put into 10% Formaline saline (*17 a*) or Bouin's fluid (*18*) as soon as they are removed from the body. The volume of the fixative should not be less than 20 times the volume of the tissues. The thickness of the tissue should not be more than 1 centimeter if paraffin is to be used for embedding it.

Note :—Tissues for histological examination should never be allowed to dry in a kidney tray or immersed in pure formaline or left in water.

(*a*) *Method of sending the tissues for histological examination to distant laboratories* :—

If the tissue is small, it can be sent in a bottle full of 5% Formaline Saline, tightly closed and sealed with paraffin. If it is a big specimen it is fixed in 5% Formaline for several days, and packed in a tin between layers of cotton wool or tow, soaked in 5% Formaline Saline Solution. The tin is then soldered to make it water tight.

Note :—The time for fixation will depend on the thickness of the specimen. 2—3 days will suffice for a specimen under an inch in thickness. The fixing fluid must be changed after 24 hours and again after 4 days whenever possible.

(*a*) *Method of sending Material and Tissues for Medicolegal Investigation to the Chemical Analyser.*

9. In case of death from suspected poisoning the following viscera and materials should be sent to the Chemical Analyser:

1. *Viscera* :

(a) The stomach. The two ends of the stomach are tied to retain the contents and the stomach is removed from the body. The organ is placed in a clean tray and is carefully opened along the greater curvature. Any evidence of irritation, inflammation or necrosis is carefully noted and any suspicious particles adhering to the mucous membrane picked up and placed in a clean phial. The contents of the stomach are poured in a clean jar. The stomach, the contents of the stomach and the suspicious particles are put in separate jars and labelled.

(b) Liver—a piece not weighing less than 12 oz.

(c) Kidney—One whole kidney.

(d) Uterus, together with any foreign body found in or expelled or removed from the urogenital tract.

(e) Small intestine—The contents of small intestine and portions of small intestine in cases suspected of Dhatura poisoning.

2. *Materials (contents etc.)*

(a) The vomit or any other matter, or part of the body including substances found on the person or near the body of the deceased which may be of assistance to the analyser in determining the cause of death. Each substance should be put in a separate jar.

(b) Smears on slides from vaginal and anal mucous membrane (in cases of rape or unnatural

offences). The slides should be dried in air and wrapped separately in clean paper.

(c) In cases of suspected violence, abortion or of rape, any garment bearing any suspicious stains should be sent to the Analyser. The stains should be outlined with ink or coloured pencil to draw his attention to the spots. It is preferable to send entire garments however, if the stains are too small pieces of garment bearing the stains should be carefully cut out and placed in pill boxes between layers of cotton wool (not boric wool). The labels should be stitched and not gummed on the garment. If the entire garment is sent, care should be taken not to fold it at the stained portion. Spermatozoa are distorted out of recognition by crushing or crumpling the garment.

(d) In cases of medico-legal complications foreign bodies or substances taken out from the body of the patient should also be sent unwashed to the Analyser.

Note: All the above material should be sent in separate clean glass jars or bottles and fitted with glass stoppers or "sound" corks.

Preservation of organs.

If any material is likely to decompose during the period of transit it should be preserved by the following methods:—

1. In cases not suspected of alcohol, phosphorous or carbolic acid poisoning:—

Rectified spirit is poured in the bottles sufficient to keep the material immersed under the surface irrespective of the position of the bottle during transit. The volume of the spirit should in no case be less than one third of the volume of the material. In the case of solid organs it is desirable to cut them up in thin parallel slices.

Note: The common bazar spirit contains substances which would vitiate the analyser's findings; if no other form of spirit is available the bazar spirit could be used on condition that a separate sample of the spirit is sent in a sealed bottle.

2. In cases of alcohol, phosphorous or carbolic acid poisoning:—The bottles are filled with saturated salt solution (about 30 %) to within half an inch of the stopper. The stomach washed with distilled water could be sent separately in rectified spirit.

Methods of Sealing Jars or Bottles.

The corks or stoppers of all bottles and jars should be ringed with melted bees wax or paraffin wax to prevent evaporation or escape of fluid. The whole stopper is covered with a piece of cloth and sealed. The same seal and sealing wax should be used on all the material sent at any one time and the seal should bear a distinct impression of a device, which should not be the impression of a coin or a button and should not be composed of only a series of straight or curved lines.

Note: The Chemical Analyser destroys articles sent to him a fortnight after the examination. The Analyser should therefore be definitely informed of any article which is required to be returned for production before a Court etc.

Forms to be sent with the material.

All materials sent to the Analyser should be accompanied by the prescribed yellow forms 23 e and 24 e. Attention should be paid to the following points in filling these forms:—

i. Impression of the seal which was used should be sent in marking ink or lamp black and not in wax.
ii. The date of the post-mortem and of the collection of the specimen.
iii. List of viscera, contents etc, sent,

iv. Detailed account of post-mortem findings in case of death or facts or observations of medico-legal importance in non-fatal cases.

v. If the person was receiving medical care before death, the symptoms which were observed along with the date and hour of the onset of illness and the treatment which was prescribed should be described. Date and hour of death.

vi. Name and address of the forwarding officer.

vii. The date and hour of exhumation if the body was exhumed.

viii. The preservatives used.

1. EXAMINATION OF URINE

PHYSICAL CHARACTERS—

Note the quantity (24 hours), colour, transparency and sediment, reaction to litmus and specific gravity.

CHEMICAL EXAMINATION—

Albumin:

Heat and acid test:—

Filter the urine till it is clear. It is advisable to do this test on the clear urine obtained after centrifugalizing. Pour it into a test tube until it is about 2/3rds full. Boil the top part of the column of the urine without shaking. A turbidity indicates albumin or earthy phosphates. Add a drop or two of glacial acetic acid. If turbidity persists, it is due to the presence of albumin. Earthy phosphates will dissolve after the addition of the acid.

Heller's test:—

Place about 3 c. c. of pure nitric acid in a narrow test tube. Float about 3 c. c. of filtered urine on the surface of this, using a pipette to

run the urine along the side of the test tube to avoid mixing. A white ring at the junction of the fluids indicates the presence of albumin.

Sulpho salicylic acid test:—

To 1 or 2 c. c. of the clear filtered urine add a few drops of sulpho salicylic acid reagent (4). A cloud or precipitate indicates the presence of albumin.

Bence-Jones' Protein.

If necessary make the suspected urine faintly acid with acetic acid. Heat carefully by immersing in a beaker of warm water. The urine becomes turbid at 40°—50°c and shows a flocculent precipitate at 60°c. On raising the temperature to 100°c, the precipitate partially or completely disappears. A rough idea about the presence of Bence-Jones' protein can be obtained while testing for albumin by boiling test.

Albumin quantitative test:—

Fill the albuminometer to the mark U with urine. Add Esbach's reagent (5) to the mark R. Stopper the tube and invert it slowly several times to mix the fluid. Allow the tube to stand for 24 hours and read the height of the column of sediment.

Calculation:—The graduations on the albuminometer indicate grammes of albumin per litre of urine.

Sugar :

Fehling's test:—

Boil 3 to 5 c. c. of Fehling's solution (6) (equal quantities of A and B) to ascertain whether the Rochelle salt in solution B has been decomposed into reducing substances. If no reduction occurs

boil the same volume of urine in another tube, Reboil the Fehling's solution and mix the two and boil for a short time. If any appreciable amount of glucose is present, a red or yellow precipitate will appear.

Benedict's test:—

To 5 c. c. of Benedict's reagent (qualitative) (7) in a test tube add 8 drops of the urine. Boil vigorously for 2½ to 5 minutes and allow to cool spontaneously. It is advisable to place the tubes in a boiling water bath for 5 minutes. If glucose is present the entire body of the solution will be filled with a precipitate which may be red, yellow or green in colour, depending on the amount of sugar present in the urine.

Sugar quantitative test:—

25 c.c. of Benedict's quantitative reagent † (8) (corresponding to 0·05 gms. of glucose) is pipetted into a porcelain capsule or a small flask. 3 to 4 grammes of anhydrous sodium carbonate and 4—6 glass beads are added and the whole is brought to boil. Diluted urine (1 in 10 or 1 in 5 depending upon the colour of the precipitate obtained when doing a qualitative test; 1 in 10 when it gives yellow or red precipitate, and 1 in 5 when the colour is green or when there is a slight yellow precipitate) is run in from a burette slowly until the reagent turns from clear blue to an opalescent bluish white colour. At this stage the additions are made more carefully until the blue colour disappears.

Calculation: Divide 5 by the quantity of the undiluted urine in c.c. required for the titration. The result is the quantity of glucose in grammes per 100 c.c. of urine. Supposing 12·5 c.c. of 1 in 10 diluted urine was required, the amount of undiluted urine required will be 1.25 c.c.

$\therefore$ 5÷1.25=4 grammes of glucose in 100 c. c. of urine or 4%.

Acetone bodies:

Rothera's test for acetone and aceto-acetic acid.—To 10 c.c. of the urine add an excess of solid Ammonium Sulphate so that the urine is completely saturated. Then add two or three drops of freshly prepared 5% solution (aqueous) of Sod Nitroprusside and 2 or 3 c.c. of concentrated Ammonia. Allow to stand for at least 30 minutes. A characteristic permanganate colour indicates the presence of acetone and aceto-acetic acid.

Aceto-acetic acid:—

Gerhardt's test:

To about half a test tube full of fresh urine add 10% Ferric Chloride solution (aqueous) drop by drop, until the phosphates are precipitated. Filter. To the filtrate add more of the ferric chloride solution. If aceto-acetic acid is present the solution will turn Bordeaux red or violet red in colour. A similar colour may result in the presence of phenol, salicylates, antipyrine, sod, bicarbonate and other substances. Therefore it is necessary to repeat the test as follows:—

To 5 c.c. of urine add 5 c.c. of water and boil down to 5 c. c. After cooling add Ferric Chloride solution as above. Since boiling drives off aceto-acetic acid, the development of colour indicates that it is due to other substances.

The urine should be tested for aceto-acetic acid by Gerhardt's test if Rothera's test is positive.

Bile salts:—

Hay's test :

Sprinkle the surface of the urine in a test tube with flowers of sulphur. The particles fall to bottom of the tube if bile salts are present.

Bile pigments:—

Gmelin's test :

Take a few c. c. of yellow nitric acid in a test tube, and by means of a pipette carefully place on the surface an equal quantity of urine. Shake the tube very gently from side to side and note the play of colours. Proceeding from acid to urine the colours are yellow, red, voilet, blue and green.

Urobilin:—

Schlesinger's test :

To 20 c.c. of urine add a few drops of Lugol's Iodine, (10) acidify with acetic acid and extract the urobilin by gently inverting with 5 c.c. of amyl alcohol. The amyl alcohol layer is pipetted off and a few drops of a 10 % alcoholic solution of Zinc chloride or Zinc acetate are added to it. If a green fluorescence develops, the test is positive. A positive reaction demonstrates an excess of urobilin.

Indican:—

To 10 c.c. of urine add 5 c.c. of copper sulphate solution (Fehling's A solution), 5 c.c. of chloroform and equal volume of concentrated hydro-chloric acid. Close the mouth of the tube

with the thumb and cautiously invert a few times. The amount of indican present is proportional to the depth of colour of the chloroform extract. If indican is present the chloroform will be coloured blue. The urine of the patient taking iodides will give a reddish violet colour. A drop of Aq. Sod. Hyposulphite solution will clear the colour of iodide retaining the colour of indican if present.

Estimation of Urea:—

Fill the Hind's apparatus (Ureometer) with Sodium Hypobromite solution prepared as follows:—

Break an ampoule of bromine (2. c. c.) into a beaker containing 23 c.c. of 40% Sodium Hydroxide solution. Always use the reagent freshly prepared. *Great care should be exercised in opening bromine ampoules.*

Fill the side tube upto the mark O with urine. Turn the stopcock and run in very slowly, exactly 1 c.c. of urine. Read off the amount of gas collected in the long tube after one hour. Exactly 1 c.c. of urine is added with a bent pipette if Doremus' Ureometer (without a side tube) is used. The readings on the long limb indicate the amount of urea in the quantity of urine added.

MICROSCOPIC EXAMINATION OF SEDIMENT

The sediment obtained after centrifugalising the urine is either organised or unorganised. Organised sediments consist of casts, epithelial cells from the different parts of genito-urinary tract, pus, blood cells, spermatozoa, parasites etc. Unorganised sediments vary with the reaction of the urine. The more common varieties are given below;—

Sediment in Acid urine.

Uric acid: Light yellow to dark reddish-brown crystals, of very varied forms—rhombic prisms, wedges, rosettes, dumb-bells, whetstones etc. soluble in sod. hydroxide and reprecipitated by hydrochloric acid.

Urates: Pinkish, soluble on warming, sometimes amorphous, sometimes crystalline as "thorn-apples", fan shaped clusters of prismatic needles.

Calcium Oxalate: Octahedra with an envelope like appearance (squares crossed by two diagonals), also as dumb-bells, insoluble in acetic acid, easily soluble in hydrochloric acid.

Calcium Hydrogen Phosphate (stellar phosphates): In a rosettes and in dumb-bells.

Cystin: Colourless hexagonal plates, soluble in ammonia, insoluble in acetic acid.

Sediment in Alkaline Urine.

Ammonium magnesium phosphate (triple phosphates): Colourless prisms (coffin lids and knife rests) or feathery stars. Easily soluble in acetic acid.

Alkaline earthy phosphates of calcium and magnesium (amorphous.): Insoluble on warming and in alkalies; soluble in acetic acid.

Calcium Carbonate: Dumb-bells or spheres with radiating structure.

Ammonium urate:—Yellow or brownish amorphous masses or "thorn apple" crystals, soluble on warming.

2. EXAMINATION OF BLOOD

CYTOLOGICAL EXAMINATION

Hæmoglobin.—

Dilute the hæmolysed blood in the graduated tube (Hellige's Hæmometer) by adding distilled

SEDIMENTS IN ALKALINE URINE.
A. TRIPLE PHOSPHATES. B. AMORPHOUS PHOSPHATES.
C. AMMONIUM BIURATES. D. TYROSINE. E. LEUCINE.
F. TRIPLE PHOSPHATES (FEATHERY).
G. CALCIUM SULPHATES.

SEDIMENTS IN ACID URINE.
A. URIC ACID.
B. CALCIUM OXALATES.
C. CYSTIN.
D. TYROSIN.

water drop by drop and shaking the tube at intervals to ensure thorough mixing. Take the reading on the white scale on the tube when the colour of the fluid matches that of the standard in its intensity and tint.

The percentage of Hb. can be obtained in the following way:—

$$\frac{r \times 17}{15.8} \text{ in case of males.}$$

$$\frac{r \times 17}{14.26} \text{ in case of females.}$$

When r represents the reading on the white scale and 15.8 and 14.26 are the quantities of hæmoglobin in gms. per 100 c. c. of blood in case of normal men and women respectively. For example reading on the white scale in case of a man is 70

$$\therefore \text{ Hb. is } \frac{70 \times 17}{15.8} = 75.3\%$$

Red Blood Cells. —

Place the cover glass in position over the ruled area of the Neubauer counting chamber. The counting chamber and the cover glass should be absolutely clean, free from dust, grease or cotton fibres.

Rotate the pipette between the palms of the hand for several minutes. Blow out a few drops of the suspension from the pipette and immediately touch the polished stage of the chamber bearing the ruling, with the tip of the pipette at the edge of the cover glass, allowing a drop of fluid to flow under it. The suspension should neither flow into the moats, on either side, nor should any bubbles form under the cover glass. Allow some time for the corpuscles to settle. Use high power lens (×40) for the counting. Carefully

avoid touching the cover glass with the lens. Count the number of red blood corpuscles in the area marked in the diagram. Count the cells lying on the lines above and to the right. Do not count those lying on the lines below and to the left.

Calculation:—

$n \times 2/3 \times 10{,}000$ = number of cells per c. mm. when the dilution of the blood is 1 in 100.

$n \times 4/3 \times 10{,}000$ = Number of cells per c. mm. when the dilution of the blood is 1 in 200.

(*n represents the number of red blood cells in the marked area*).

White Blood Cells.—

Place a drop on the counting chamber (as above) from the leucocyte pipette and count cells in four large squares (the corner squares marked on the diagram).

Calculation:—

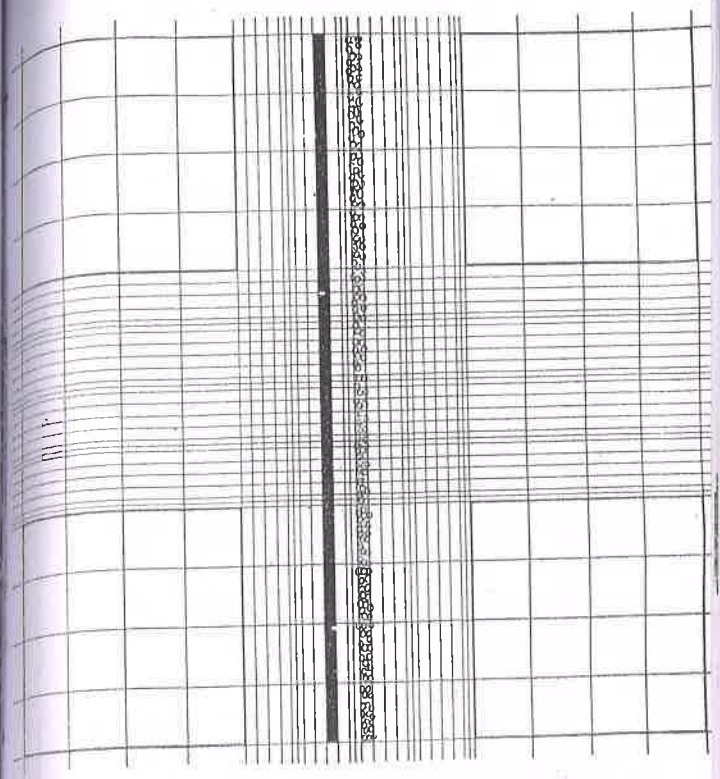
$n \times 50$ = No. of w. b. c. per c. mm. when the dilution of the blood is 1 in 20.

$n \times 25$ = No. of w. b. c. per c. mm. when the dilution is 1 in 10.

Colour Index.—

The colour index is obtained by dividing the percentages of hæmoglobin by the percentage of red blood corpuscles using 5,510,000 and 5,016,000 as 100 per cent cells for the men and women respectively.

$\frac{\text{Percentage of Hb.}}{\text{Percentage of r. b. c.}}$ = Colour index.



— BREADTH $1/20$ MM. X LENGTH 3 MM. X DEPTH $1/10$ MM. $= 3/200$ C. M.

4 (DO 1 MM. X DO 1 MM. X DO $1/10$ MM.) $= 4 \times 1/10$ C. M.

NEUBAUER'S RULING.

Examination of smears.—

Immerse the rapidly dried blood film in methyl alcohol; allow it to stand for 3 minutes, dry; stain with diluted Giemsa stain (9 a & b) for 15—20 minutes by placing the slide in a staining dish with the film side down but not touching the bottom of the dish, and pouring the diluted stain by the side of the slide so that the film comes in contact with stain. Wash with distilled water, dry and examine under oil immersion lens.

(a) Differential count of leucocytes.

Count at least 200 cells.

(b) Immature white cells.

Look for Myelocytes, Myeloblasts, Lymphoblasts etc.

(c) Immature and abnormal red cells.

Look for 1. Immature red cells, Normoblasts Megaloblasts. 2. Abnormal red cells. Anisocytosis, Polychromatophilia, Poikilocytosis or Basophilia.

(d) Blood parasites.

If they are not found while doing a differential count of leucocytes, in suspected cases, it is advisable to collect blood in thick drops on a glass slide. Hæmolyse the drops with distilled water, dry, fix in methyl alcohol and stain with Giemsa (dilute).

Blood coagulation time:

With a small syringe puncture a vein at the elbow and collect 1 c. c. of blood without using suction. *Note the time.* Remove the needle from the syringe and collect the blood in a test tube having a diameter of 8 millimeters. The test tube should be absolutely clean and rinsed with physiological salt solution, just before the blood is placed in it. Set the tube upright in a rack at room temperature. At half minute intervals

tilt the tube to see if the blood still flows. As soon as it fails to flow and can be inverted, coagulation has taken place. The interval between the time when the blood was removed from the vein and the time when tube could be inverted, is the coagulation time.

Bleeding time:

Puncture the lobe of the ear or the finger so that the blood flows drop by drop without applying any pressure. Note the time the first drop appears. Remove with a filter paper each drop as it forms, care being taken so that the skin is not touched. Note the time when the bleeding stops. The interval between the appearance of the first drop and the removal of the last represents the bleeding time.

3. EXAMINATION OF FAECES

Note the colour, consistency and mucus, if any. Adult worms or segments are looked for after passing the fæces through a sieve. Small drops of saline and Lugol's Iodine (*10*) are taken at two places on a glass slide. A small quantity of fæces or mucus, if any, is taken with a platinum loop and emulsified in the saline first and then in Iodine. A coverslip is placed on each drop and examined under a microscope.

Examine the saline preparation for:

Undigested material; its condition; parasites or their ova or cysts.

Protozoa:—Amœbe, vegetative and cystic forms. Redblood cells.

Leucocytes and phagocytic cells.

Examine the Iodine preparation for:

Cysts of Protozoa.

Concentration method for the detection of ova:

Mix equal parts of glycerine and saturated aqueous solution of magnesium sulphate in a centrifuge tube and emulsify a small quantity of fæces in it. Centrifuge and touch the surface of the fluid with a platinum loop. Place the drops on a glass slide and without placing coverslips on them examine under low power (×8) for ova, which float on the surface.

Concentration method for ova and cysts:

Emulsify a small quantity of fæces in normal saline. Add equal quantity of 5% Aqueous solution of acetic acid. Filter through sieve in a conical urine glass and add excess of 5% acetic acid; allow to stand. Throw away the supernatent fluid without disturbing the sediment. Fill 1/3 centrifuge tube with the emulsion of the sediment and equal quantity of ether; mix well and centrifugalize with hand centrifuge (or with electric centrifuge at a low speed). Examine the sediment microscopically, for cysts, ova and larvæ after throwing away all the upper fluid.

Occult Blood.

Benzidine test:—In a test tube dissolve a knife tip-full of Benzidine (special for blood tests) in 2 c.c. of glacial acetic acid; add 20 drops of 3% solution of Hydrogen Peroxide. Make a thin suspension of fæces in about 5 c.c. of water and heat to the boiling point to inactivate the oxidizing enzymes. Add to the reagent 2 or 3 drops of the cooled fæcal suspension. A blue or green colour indicates the presence of occult blood.

4. EXAMINATION OF SPUTUM

PHYSICAL EXAMINATION:

Note consistency, appearance, colour and the presence or absence of visible blood (localised, uniformly distributed, bright red or dark).

MICROSCOPICAL EXAMINATION:

Wet Method: Carefully select suspicious particles and place on slides. Place cover glasses on them. Examine for elastic fibres, Charcot-Leyden crystals, etc.

Dry smears: 1. Stain the alcohol fixed (Methyl alcohol) slide with Giemsa's stain, (9 a & b) as described for the staining of blood smears and examine for:

Eosinophiles.

Polymorphonuclears.

Erythrocytes.

Variety of epithelial cells, etc.

2. Fix a slide by heat and stain by Ziehl-Neelsen's method. Cover the smear with carbol fuchsin (*11*). Warm the slide until steam rises from the surface of the stain. Do not boil. Decolourise with 20% sulphuric acid (*12*) till all visible colour is washed out. Wash with distilled water. At this stage it may be differentiated with alcohol to exclude confusion with Smegma bacilli. Counterstain with dilute Methylene Blue (*13*) for about 20 seconds. Wash, dry and examine under oil immersion lens for Bacillus Tuberculosis, which is stained red.

3. Fix a slide by heat and stain by Gram's method as follows:—

Stain the smear with Oxalated Gentian Violet (*14*) for 1 to 5 minutes. Drain off the stain and without washing pour Gram's iodine on the slide. Keep it for 1 minute. Wash with tap water. Decolourize with Rectified spirit, by allowing it to fall drop by drop on a horizontally held slide and allowing it to flow over the stained area before falling off the end. Decolorising agent should not be allowed to act for more than two minutes. Wash well with water, counterstain with Saffranin O (*16*) for 20 seconds. Examine for the types of micro-organisms and the preponderence of any particular type over others.

5. EXAMINATION OF BODY FLUIDS

a. Pleural, Peritoneal and fluids from cysts.

PHYSICAL CHARACTERS

The following characters should be noted.

1. The appearance.
   Clear, serous, fibrinous, purulent, hæmorrhagic, chylous.
2. The specific gravity if possible.
3. Presence or absence of partial or complete coagulation and rapidity of coagulation.

EXAMINATION OF CELLS

The type and character of cells in the fluids is of great importance in the examination of body fluids. These are studied by a careful microscopic examination of wet films and stained preparations from centrifugalised deposit.

CHEMICAL EXAMINATION

Proteins.—Globulin and albumin—(See tests for Cerebro-spinal fluid below.)

BACTERIOLOGICAL EXAMINATION

Examine smears of the material or the sediment obtained after centrifugalizing the fluids and staining by Gram's and Ziehl-Neelsen's method. In case of cystic fluids, examine for hooklets or scolices in the sediment. (T. echinococcus) Examine for tubercle bacilli by staining the smears of the deposit.

Cultural examination. Inoculate on different suitable media.

b. Cerebro-spinal fluid.

APPEARANCE

Normal fluid is perfectly colourless like water.

Colour: May be recorded as follows:—

a. Colourless
b. Yellow or yellowish (Xanthochromia) due to altered Hæmoglobin, Jaundice, etc.
c. Red or reddish (erythrochromia) due to blood or Hæmoglobin.
d. Greenish, greyish or purulent in meningitis.

Coagula and sediments.—Normal spinal fluid does not coagulate. Fibrinogen may be present in acute and chronic meningitis or passive congestion.

The following are the characteristic appearances in spinal fluids in different diseases.

a. Numerous small coagula in paresis.
b. "Cobweb" or 'pine tree' coagulum in tuberculous meningitis.
c. Heavy sunken coagulum and sediment in acute suppurative meningitis.

EXAMINATION OF CELLS

Total count:—Draw filtered diluting fluid (*19*) to the mark 1 in the white blood cell counting pipette and draw the spinal fluid to the mark 11,

mix well. The stain is allowed to act for 10-15 minutes before the counting chamber is filled. Mix well and fill one of the counting chambers Fuchs-Rosenthal or Neubauer as for leucocyte count. All the cells in the entire ruled space are counted.

Calculation:

In case of Fuchs-Rosenthal chamber:—

$n \times 11/32$ or roughly $n/3$ is equal to the number of cells per c.mm. when n represents the number of cells counted in the whole ruled area (4×4× 0.2 mm.)

In case of Neubauer $n \times 11/9$=No. of cells per c.mm. when chamber n represents the number of cells counted in the whole ruled area.

Differential count:—Centrifugalise fresh fluid, prepare smears fix and stain by Giemsa stain as in the case of blood. Count and differentiate cells (Lymphocytes, polymorphonuclears, and endothelial cells) and determine the number of each variety per 100 cells.

CHEMICAL EXAMINATION—

Globulin:—

Pandy's test:—

Place about 1 c.c. of phenol reagent (*20*) add a drop of the spinal fluid to be tested. Bluish white ring or cloud immediately formed indicates increased amount of globulin.

Nonne-Apelt test:—

Globulin.—Phase 1.—In a small test tube place 1 c.c. of spinal fluid and 1 c.c. of Ammonium sulphate reagent (*21*) Allow to stand for 3 minutes compare with spinal fluid, a normal fluid gives no reaction or a very faint opalescence.

Albumin.—Phase 2.—Filter contents of the tube (phase 1) acidulate with acetic acid and

boil. A normal fluid remains clear or faintly opalescent.

Note.—None of these tests are applicable to cerebro-spinal fluids containing even microscopic amount of blood. Heavy bacterial contaminations may also yield false positive reactions.

Sugar:—

In a test tube place 0.5 c.c. of Benedict's qualitative reagent and add 4.5 c.c. of distilled water. Heat to boiling and add 1 c.c. of Cerebro-spinal fluid. Boil for one or two minutes and allow to cool. A change of colour to turbid greenish yellow is a normal reaction due to the normally present sugar in spinal fluid. No change in colour shows absence of sugar and is pathological.

BACTERIOLOGICAL EXAMINATION:

a. Centrifugalise the fluid, prepare smears, dry, fix by heat and stain by Gram's and Ziehl-Neelsen's stain and examine for the micro-organisms.

b. Inoculate the fluid or sediment on suitable media, such as Glucose broth or blood agar.

SEROLOGICAL EXAMINATION:—

3 c.c. of the spinal fluid are needed for the Wassermann test.

Limits of normal variation by the methods employed in the Hospital Laboratories.

Blood:—

Average for normal men and women in Bombay:—

	Men	Women
Red blood cells per c. mm.	5,510,000	5,016,000
White blood cells per c. mm.	7,800	7,700
Hæmoglobin per 100 c. c. of blood	15.8 gms.	14.26 gms.

Fragility of red blood cells—Hæmolysis begins in 0·45% NaCl and is complete in 0.34%

Coagulation time of blood	5 to 10 minutes
Bleeding time	1 to 3 minutes

Chemical Constituents:—

Sugar	80 to 120	mgms. per 100 c.c. of blood
Urea Nitrogen	10 to 15	,, ,, ,, ,,
Nonprotein Nitrogen ...	20 to 35	,, ,, ,, ,,
Uric acid ...	2 to 3.5	,, ,, ,, ,,
Creatinine ...	1.5 to 3	,, ,, ,, ,,
Calcium	9 to 11	,, ,, ,, ,,
Cholesterol ...	150 to 190	,, ,, ,, ,,
Chlorides (as NaCl	450 to 500	,, ,, ,, ,,

Differential count of leucocytes:—

Neutrophiles.	68 to 70%
Eosinophies.	1 to 3%
Basophiles.	0.5 to 1%
Lymphocytes.	22 to 35%
Large hyalines.	3 to 7%

Cerebro-spinal Fluid:—

Cells per c.mm.	0 to 5 (lymphocytes)

Chemical constituents:—

Proteins	13 to 30 mgms. per 100 c.c. of fluid.
Glucose	48 to 58 ,, ,, ,, ,, ,,
Chlorides (as NaCl)	725 to 750 ,, ,, ,, ,, ,,
Urea	3 to 19 ,, ,, ,, ,, ,,

Urine:—

Quantity in 24 hour	1200 to 1500 c.c.
Specific gravity	1010 to 1024
Urea per 100 c.c. of urine	1 5 to 2 grammes

pH Values of Body Fluids:—

Gastric juice (maximum)	1.8 strongly acid
Infant's gastric juice	5.0 Acid
Urine (normal)	6.0 slightly acid
Human milk	6.8 Almost neutral
Normal blood	7.4 Faintly alkaline
Pancreatic secretion	8.3 Alkaline

pH 7.0 represents a neutral reaction.

METHODS OF VACCINATION, IMMUNIZATION AND SUSCEPTIBILITY TESTS

A. Immunization and administration of bacterial vaccines:—

1. *To vaccinate against Typhoid:—*

Three injections, seven days apart are given subcutaneously. For an adult the first dose is usually 0.5 c. c. (750,000,000 bacteria) while the second and third doses are 1 c. c. (1,500,000,000 bacteria).

2. *To vaccinate against Plague:—*

3 c. c. of the old or 4 c. c. of New Haffkine Vaccine subcutaneously or better in 2 doses of 1 c. c. and 2 c. c. subcutaneously after an interval of a week.

3. *Autogenous vaccines:—*

Autogenous vaccines are best used when given in small doses subcutaneously and frequently repeated over a long time. It has been suggested that the initial dose be 0.1 c. c. gradually increased until local reaction occurs. When such a reaction does occur the dose should not be increased until the injection of that amount can be given without reaction.

B. Immunization and administration of antitoxic sera:—

Intramuscular administration of serum is preferable to subcutaneous injection since by this means a more rapid absorption is effected. In some cases intravenous or intrathecal injection is called for. Erythema may appear some hours or even days after an injection of serum as also slight local pain, numbness and occasionally, pain in the joints. These are, as a rule, transitory, and need excite no alarm; small doses of sodium salicylate or aspirin are reported to hasten their subsidence. Anaphylaxis is the most serious complication that may be encountered and is liable to occur when previous injections of horse-serum have been given. Should a patient give a history of previous administration of serum it is desirable to make a skin test by injecting intradermally a drop of the serum to be used (diluted 1 in 10 in normal saline). A positive reaction shown by a wheal and surrounding erythema denotes sensitivity to the serum and the need for caution in its administration. In such

a case the serum should be administered slowly and diluted with warm saline. A hypodermic injection of 1/50 to 1/100 gr. of Atropine may be given beforehand and a solution of Adrenalin chloride 1/1000 should always be kept ready for use if symptoms appear.

Diphtheria immunization:—

Prophylaxis:

Passive immunization—usually 1,000 to 2000 units (American) of antitoxin are given intramuscularly.

Active immunization — The toxin-antitoxin is used. The dose of toxin—antitoxin is 1. c.c. given subcutaneously at weekly intervals for 3 doses. Toxin immunization should be used in individuals hypersensitive to horse serum.

Treatment:

Therapeutically diphtheria antitoxin can be given in the following way:—

In children upto 12 years of age from 5,000 to 40,000 units intramuscularly, and upto 20,000 units intravenously. It should be noted that the dose varies with the severity and stage of the disease and not with the age of the patient.

Tetanus immunization.

Prophylaxis:

1500 to 3000 units (American) intramuscularly should be given promptly after injury. A larger dose should be used if the injury is on the face or close to the head.

Treatment:

Antitetanic serum can be given intravenously intraspinally and intramuscularly. Large doses should be used promptly.

Anti-dysenteric serum (Shiga, Flexner and Hiss-Y).

Indicated in all cases of Bacillary Dysentery. In mild cases 10 c. c. of the serum should be injected intramuscularly at intervals of from six to ten. hours. If necessary in severe cases from 60 to 100 c.c. may be given intravenously.

Anti-Gas Gangrene serum (Welchii).

As a prophylactic 4000 units; when infection is already present this dose or more should be repeated in six to eight hours and subsequently every twelve hours as necessary.

C. Intradermal Tuberculine Reaction (Mantoux test).

Use 0.1 c.c. of 1/1000 old tuberculin (equivalent to 1/10 mg.) intradermally. Either variety of the tuberculine, human or bovine may be used. Diluent to be used is normal saline (0.85% Sod. Chloride) to which 0.5% of phenol has been added as a preservative.

Method of dilution :—

Stock solution A— 10% solution—

1 c. c. of tuberculine
9 c.c. of diluent.

This solution will keep for about one year.

Solution B—

Solution A 0.1 c.c.
Diluent 0.9 c.c.

This solution is used for the test.

Directions for the test:—

An all-glass 1 c. c, syringe (Tuberculine syringe) and a special intradermal needle are almost essential as the reading of the results could be grossly misleading unless the tuberculin is injected entirely intradermally. No blood

should flow on withdrawal of the needle, and there should be a raised white wheal a quarter of an inch in diameter. To get a satisfactory wheal it is advisable to grip the forearm at the site of the injection very firmly and exert considerable tension on the skin, when the insertion of the needle is not felt at all. The flexor surface of the mid forearm makes a satisfactory site. Readings are taken after 24 and 48 hours.

Positive reaction : A circular or elliptical wheal of varying diameter upto 1½ inches composed of two definite strata, an outer erythema and an inner brawny oedema. In more acute type there is also a central vesicular area, the extent of the erythema being greater. The outer layer fades quickly usually after 3 to 5 days; the other desquamated area and the brown discolouration persists, for some time.

Negative reaction : The wheal disappears an hour or so after injection and nothing further is visible on the arm at any time.

SOLUTIONS, STAINS AND CULTURE MEDIA

1. Diluting fluid for leucocytes

Acid Oxalic	2 gms.
Distilled Water	100 c. c.

Dissolve the acid and filter.

2. Diluting fluid for Red Blood Cells

a. Sodium Chloride 0·8 grammes dissolved in 100 c.c. of distilled water.

b. Neutral Formalin. Formalin (40% Formaldehyde) neutralised with powdered calcium carbonate and filtered.

Solution a.	95 c. c.
,, b.	5 c. c.

Filter and use.

3. Citrated Saline.

Sodium Chloride	0.85 gms.
Sodium Citrate (Neutral). ...	2 gms.
Distilled water.	100 c. c.

4. Acid sulphosalicylic reagent.

Acid Sulphosalicylic	20 gms.
Distilled water.	100 c. c.

Note:—This reagent is not a mixture of sulphuric and Salicylic Acids.

5. Esbach's reagent.

Acid Picric.	1 gm.
Acid Citric.	2 gms.
Distilled water.	100 c. c.

6. Fehling's solutions.

Solution A. Copper Sulphate Solution:—

Copper Sulphate crystals.	34.64 gms.
The copper sulphate crystals are dissolved in distilled water and the volume made upto	500 c. c.

Solution B. Alkaline Tartarate Solution:—

Soda et Potass Tartarate ... ... (Rochelle salt).	175 gms.
Pot. Hydroxide.	60 ,,
Dissolved in water and the solution made upto...	500 c. c.

Fehling's solution:—Mix 1 volume of **A** and 1 volume of B just before use.

7. **Benedict's Reagent (Qualitative):—**

Dissolve 173 grammes of sodium citrate and 90 grammes of anhydrous Sodium Carbonate in about 600 c.c. of distilled water by boiling. Pour through a folded filter paper and make upto 850 c.c. Dissolve 17.3 grams. of crystallised Copper Sulphate in 100 c. c. of water; Pour the carbonate citrate solution into a large beaker and add copper sulphate solution slowly with constant stirring, and make up the volume to 1000 c. c. The solution is ready for use and does not deteriorate on long standing.

8. **Benedict's solution (Quantitative):** †

With the aid of heat dissolve:—	
Sodium citrate	200 gms.
Sodium carbonate (Cryst.) (or anhydrous sod. carb. 75 gms).	200 ,,
Potassium Thiocyanate (same as Sulphocyanide).	125 ,,

in enough distilled water to make about 800 c.c. of the mixture and filter and cool to room temperature. Dissolve 18 gms. of the purest air dried crystalline copper sulphate in about 100 c.c. of distilled water and pour it slowly into the other liquid with constant stirring. Add 5 c.c. of a 5 per cent. solution of Pot. Ferrocyanide and then distilled water to make the total volume 1000 c.c. in a volumetric flask. The solution keeps indefinitely. *10 c. c. of this solution corresponds to 0.03 gms. of glucose.*

9. **Giemsa stain :**

Azur Gemisch (nach Giemsa)	0.76 gms.
Methyl alcohol (Kahlbaum or Merck)	80 c. c.

Glycerine bidistilled.... ... ... 20 c. c.
Warm the glycerine to 60°C. Shaking constantly add it to the powder in a glass mortar to make it into a thin paste; add methyl alcohol at 60°C. shaking constantly. All the glass-ware to be used should be very clean (chemically)
b. Dilute stain for use—8 drops of the above stain are added to 10 c.c. of distilled water. Stain for 15 to 20 minutes, wash with distilled water.

10. **Lugol's Iodine: (Triple Strength).**

Iodine resublimed.	1 gm.
Potassium Iodide.	2 gms.
Distilled water.	100 c. c.

11. **Carbol Fuchsin:**

Saturated alcoholic solution of Basic fuchsin	10 c. c.
5% Aqueous solution of carbolic Acid ...	90 c. c.

Filter stain before use.
Saturated alcoholic solution of Basic fuchsin *10%*

12. **20% Sulphuric Acid.**

Pour 20 c. c. of sulphuric acid in about 50 c. c. of water, cool and make the volume to 100 c. c. (*Never add water to concentrated sulphuric acid*).

13. **Methylene Blue:**

Saturated alcoholic solution of Methylene blue.....30 c. c.
Solution of Caustic potash in water (1 in 10,000) (Conveniently made by adding 1 c.c. of a 1% solution to 99 c. c. of water.) ... ... 100 c.c.
Filter stain before use.
Saturated alcoholic solution of Methylene Blue *7%*
Note—This solution on ripening by slow oxidation (8-10 months) becomes Polychrome Methylene Blue.

14. Oxalated Gentian Violet:

Saturated alcoholic solution of Gentian violet.....10 c. c.
1% Aqueous solution of Ammonium Oxalate.
Filter stain before use.

Saturated alcoholic solution of Gentian violet ... ...40 c. c. 4·8%

15. Gram's Iodine:

Iodine resublimed	... ...	1 gm.
Potassium Iodide	... ...	2 gms.
Distilled water	... ...	300 c. c.

Dissolve Pot. Iodide in a small quantity of water, add Iodine. Shake it till it dissolves. Make up the volume to 300 c.c.

16. Dilute Saffranin O. Solution.

Saffranin O.	... ...	0.5 gms.
Distilled water	... ...	1000 c. c.

Filter stain before use.

17. 10% Formalin Saline:

0.85% Aqueous solution of Sod. Chloride 90 c. c.
Formalin (40% Formaldehyde) 10 c. c.

18a. Bouin's Fluid:

A. Saturated alcoholic solution of Picric acid in 80% Alcohol.	... ...	50 c. c.
B. Formalin.	... ...	20 c. c.
C. Glacial acetic acid.	... ...	5 c. c.

Mix A. B. C. in the quantities given above just before use.

Saturated alcoholic solution of Picric acid 0.3%

18b. Carnoy's Fluid:

Glacial Acetic Acid	... ...	10 c. c.
Chloroform	... ...	30 c. c.
Alcohol (95%)	... ...	60 c. c.

19. Staining Fluid for Cerebro-Spinal Fluid.

Methyl violet.	... ...	0.2 gms.
Glacial acetic acid.	... ...	10 c. c.
Water distilled.	... ...	90 c. c.

Filter before use.

20. Pandy's Phenol Reagent for Cerebro-Spinal Fluid.

Place 10 c. c. of pure carbolic acid (Melt, the crystals by placing bottle in hot water) in a bottle and add water upto 100 c. c.; shake vigorously and keep in the incubator for several days. Carefully pipette off supernatant fluid or use it direct from the bottle without disturbing the layer of acid.

21. Ammonium Sulphate for Nonne-Apelt test.

Place 85 gms. of Merck's neutral Ammonium Sulphate and add 100 c. c. of distilled water in a beaker; heat to boiling until all of the salt is dissolved. Cool slowly and filter.

22. Decinormal Hydrochloric Acid (N/10 HCl).

15 c.c. of concentrated Hydrochloric Acid (sp. gr. 1·16-20°Be) diluted with distilled water and the total volume made to a litre and saturated with chloroform to prevent the growth of moulds.

23. Nutrient Broth (pH. 7.4).

Peptone siccum (Merck)	... ...	1 gm.
Sodium Chloride	... ...	0.5 ,,
Meat extract	... ...	100 c. c.

Meat extract made by leaving finely minced mutton (freed from fat) in contact with twice

its volume of water for 12 to 24 hours in an ice-box. The mixture is then strained through muslin, meat residue expressed and the fluid boiled for 10 minutes, cooled, filtered and made to original volume. The pH. value is adjusted to 7.6 and the fluid sterilised in Arnold for ½ hour periods on 3 successive days.

24. Glucose Broth.

Glucose ... ... 1 gm,
Nutrient Broth ... ... 100 c. c.
Sterilize in Arnold for half an hour on three successive days.

25. Nutrient Agar (pH. 7.4).

Agar-agar (dry weeds) ... ... 3 gms.
Nutrient broth ... ... 100 c. c.
Dissolve the agar, adjust the reaction, clear with white of egg and filter. Tube and sterilize in autoclave at 20 lbs. pressure for 15 minutes.
Slope.

6. Blood Agar.

Defibrinated blood ... ... 5 drops
Nutrient Agar melted and the temperature brought down to 45 degrees centigrade ... ... 5 c. c.
Mix well and slope.

7. Acid Hæmatoxylin and Eosin Stain.

Solution A.

Glycerine ... ... 240 c. c.
Saturated solution of Pot. Alum in distilled water (about 25 gms.) 240 c. c.
Keep in a well stoppered bottle, shake frequently for 2 or 3 days, filter through wet filter paper,

Solution B.

Dissolve 16 gms. of Hæmatoxylin (light) in 480 c. c. of 96 % alcohol.

Mix solutions A and B, expose to light in a bottle plugged with cotton wool for about a fortnight. Add 24 c. c. of Glacial Acetic Acid; mix well and filter the next day. Keep in a well stoppered bottle in the dark. Use after 6 months. The staining solution should always be filtered before use.

Eosin W Gelb. (Grübler) 1% solution in distilled water.

IDENTIFICATION OF THE COMMON POISONOUS SNAKES OF INDIA

The chief poisonous snakes of India are the Cobras, Kraits, Vipers and Sea Snakes.

Out of nearly 300 kinds of land snakes found in India about 40 are poisonous. Some of the poisonous kinds like the Cobra are seen more often and contribute a proportionately greater number of snake-bite cases. However, even when a person is bitten by a poisonous snake, it does not necessarily mean that he will die if he is not treated. The snake might have bitten some animal just before and used up all its poison for the time being; or the snake might not have got a good bite and was unable to inject much poison; or the bite might have been inflicted on a part covered by clothes and most of the poison might have been spilt on the garments.

Identification.

The snakes are usually identified by the markings of the skin, the character of the scales and the character of the teeth.

Skin Markings.

The colour and the markings of snakes vary to some extent according to their age and their surroundings. Certain markings are however very characteristic. As for instance, a row of black rings or spots on the middle of the back with another row along the sides in the Russels Viper; a whitish mark like a bird's foot print and white sinous lines on the sides of the back in the saw-scaled viper (Echis); Monocle or Spectacle

marks with 2 or 3 dark bands on the under surface of an expansile neck, in the common Indian Cobra; and bands beginning at some distance from the head and continuing nearly to the tip of the tail, in the common Krait.

Character of the Scales.

The skin of the snakes is covered by scales. These are named according to their situation in the body as Vertebrals, Dorsals, Ventrals, Supra and Infra labials and so on. They are further distinguished according to their form. When the width of a scale is much in excess of its length, it is called a '*Plate*' whereas when the length is greater than the breadth, it is called a '*Shield*'. The distinguishing arrangement of scales in the commonly found Indian snakes is summarised in the accompanying table.

Character of teeth.

Snakes have four rows of teeth—in the upper jaw. Two medial rows or Palate-teeth and two lateral rows or marginal teeth. Majority of poisonous snakes have well developed fangs which are grooved or tubular and replace the marginal teeth anteriorly. "If a pin is taken and passed along the margin of the upper jaw and it strikes any teeth in front, the snake is most probably harmless. But if one tooth only is struck, which is rather prominent the snake is poisonous".

Characteristics of the most common poisonous snakes found near Bombay.

Ventrals extending completely across the belly; head pear shaped (triangular with angles) sharply separated from the rest of the body and covered with small scales with three longitudinal series of diamond shaped

white edged markings on the back and the sides ... ... Russel's Viper

Pear shaped head, covered with small scales, a pit between the eye and nostril on each side, ventrals extending completely across the belly ... ... Pit Viper

Scales on the sides of the body have serrated keels; shields on the under surface of tail arranged in a single row. Mark of bird's foot print (or mark resembling Government arrow) on the head ... ... Echis

Scales, 2-3 dark bands on the under surface; the neck smooth; neck can be dilated to form a hood; third supralabial scale touches the eye and nasal scale. "Pair of Spectacles" on the hood ... ... Cobra

The central row of scales on the back (vertebrals) are largest and white arches on the back beginning at a distance from head and ending across the tail; shields on under surface of tail arranged in a single row, 4th infra-labial scale largest ... ... Common Krait

Symptoms of snake poisoning.

The symptoms of poisoning in the case of a bite by a poisonous snake vary according to the amount and manner of injection of the venom. They also vary according to the type of the snake. The symptoms following a Cobra, a Krait or a Sea snake bite resemble one another and vary generally from those following the bite of a Viper. These may be roughly summarized as follows:—

Cobra Venom:—

1. *At the site of the bite:*—burning pain, tingling

and later numbness, with swelling and oozing of reddish fluid.

2. *General Symptoms:*—creeping paralysis with feeling of weakness and drowsiness. Later the person is unable to move, or speak and saliva dribles from his mouth. Nausea and vomitting frequently occur, till gradual paralysis of respiratory muscles sets in and finally breathing stops. Death usually takes place in from 5 to 12 hours.

In the case of a bite by a Krait, the symptoms are very much like those mentioned above except that the patient complains of severe abdominal pains.

Viper Venom:—

1. *The site of the bite* is very painful and there is evidence of marked swelling and discolouration.
2. *General symptoms:*—The patient feels sick, sweats profusely and vomits. If a large amount of poison has been introduced he may rapidly collapse and die of heart failure, but there is no evidence of progressing paralysis. In milder cases there is bleeding from the mucous membranes and under the skin. The bite wounds suppurate and the person may die of septicæmia. Death may occur within a few hours or may not take place for a couple of weeks.

In considering the symptoms of snake poisoning, it should be borne in mind that as a result of the snake poison a person never faints or becomes unconscious soon after being bitten, nor does he get violent and uncontrollable.

Treatment.

When a person bitten by a snake is seen, it should be quickly decided, whether poison has been injected

in the bite or not. From a description of the snake or from an examination of its carcass it could be determined if it was a poisonous snake. In case the snake was non-poisonous every effort should be made to allay the fear of the patient, and the wound should be cleaned and dressed to prevent infection. If the local signs (1) swelling, (2) continuous thin reddish discharge for some hours from the puncture wounds, (3) a greenish, bluish or sometimes purplish discolouration of the skin surrounding the bite suggest the poisonous nature of the snake or the killed snake is identified as of a poisonous variety, the treatment should be prompt and positive, as the bite of a poisonous snake is like a double simultaneous hypodermic injection of a very potent poison by the two fangs. A ligature of some type (strip of cloth, a large handkerchief, or a piece of heavy cord) should be bound at a moderate distance above bitten part. The ligature should be sufficiently tight to indicate a stoppage of circulation. Ligation should not continue for more than half an hour and always slacked off at regular intervals.

With the absorption of the poison retarded the fang wounds should be opened by an incision into the puncture to a depth of about three eights to quarter of an inch. The incision should be made with care so as not to injure a bone or to cut into a blood vessel. The poison is then extracted by a cupping device (drainage is sometimes induced by sucking the wound, there being no danger from this if the lips and mouth are free from sores). The mechanical drawing away of the poisoned blood in the vicinity of the wound is of the greatest importance. Every thought should be centred in making this measure as efficacious as possible and it should be repeated again and again after the ligature is slacked off about every ten minutes to re-establish circulation. It is advisable to wash the incision with a mild aqueous solution of Potassium Permanganate as this fluid is believed to

neutralise by oxidation the venom it may reach. The use of a strong solution of Permanganate or of rubbing pure crystals of Permanganate is not only unwise but dangerous as there is much tissue destruction following it. The fang wounds should never be cauterised as such procedure seals the poison within the tissue.

The region of the bite as well as a considerable area surrounding it is damaged and subjected to bacterial invasion from micro-organisms introduced in the wound along with the saliva of the snake. The wound should, therefore, be covered with a heavy layer of wet dressings and kept saturated with antiseptic solutions. This not only retards or prevents infection, but induces copious drainage, through a discharge of large quantities of serous fluids.

When the patient is seen early and before symptoms have set in, 40 c. c. of anti-serum (antivenene) should be injected at one time subcutaneously into any part of the body where the skin is loose (preferably in the flanks). When the snake is a large one or symptoms continue, the dose should be repeated. Intravenous injections are more effective than the subcutaneous. This should necessarily be the method of injection, in a case where the patient is not seen until symptoms have set in or is in a late stage of poisoning. If there are any albuminous deposits or flocculi in the serum it should be filtered through a clean cloth into a sterile vessel before giving it intravenously. The albuminous precipitate in the serum does not indicate contamination and would be quite harmless when given subcutaneously. The serum contains no toxic substances of any kind. The serum should always be stored in a cool dark place. Antivenene as obtained in India is specific for bites of both the Cobra and the Russell's Viper.

It is a mistake to dose the patient with alcohol, ammonia or strychnine. Hot coffee or tea cannot possibly do any harm and may do some good.

APPENDIX

Synopsis of changes in 1932 Pharmacopœia.

Omissions.

The most important are:—

Acetanilidum.
Acetum Cantharidini.
Acids—Dilute. Acida Hydriodici, Nitrici, Nitro hydrochlorici, Sulphurici Aromat., and Sulphurosi.
Aconitina.
Ammon. Bromidum.
Bismuthi Subnitras.
Butyl Chloral Hydras.
Caffeinæ Citras.
Decoctions.
Plasters (4) including Emp. Calefaciens, Hydrarg, Mentholis, and Saponis
Extracts (17) including Ext. Aloes, Cannabis Indicæ, Colchici, Ergotæ, and Opii Liquidum.
Glycerina Pepsini, Plumbi Subacetat and Tragacanthæ.
Infusions (11) including Inf. Aurantii Co., Chiratæ, Cinchonæ Acidum, Ergotæ, Rhei, Scoparii, and Uvæ Ursi.
Injections:—Injectiones Apomorphinæ, Cocainæ, Ergotæ, Morphinæ, and Styrchninæ Hydrochlor.
Liniments (8) including Lin. Ammoniæ, Calcis, Chloroformi, Croton., Hydrarg., Opii, and Pot. Iodidi cum Sapone.
Liquors (20) including Liq. Arsenicalis Hydrochor., Atropinæ, Hamamelidis, Morph. Acetat. and Morph. Tart.
Lithii Carbonas, Citras, and Citras Effervescens,

Morphinæ Acetas.
Oils (13) including Ol. Copaibæ, Crotonis, Cubebæ, Gaultheriæ, Juniperi, Sinapis etc.
Phosphorous.
Pills (11), including Pil. Aloes et Myrrh. Colocynth Co., Ipecac. cum Scilla, Plumbi cum Opio, Quin Sulph.
Powders (9)—Pulveres Antimonialis, Catechu Co. Kino Co., Opii Co., Scammoniæ Co.
Sodii Arsenas Anhydrosus.
Spirits (8) including Sp. Cinnamomi, Juniperi, Lavenduiæ and Rosmarini.
Strychnina (alkaloid).
Succi (all).
Syrups (12) including Syr. Calcii Lactophos., Chloral., Codeinæ Phos., Ferri Phosph.
Tinctures (36) including Tr. Aconiti, Cannabis Indicæ Chloroformi et Morphinæ Co., Ergotæ, Ferri Perchloridi, Opii Ammon., Podophylli, Quininæ, Sennæ Co., Valerianæ Ammon.
Trochisci (10) including Troch. Catechu, Guaici, Ipecac, Morphinæ, Santonini, Sulphur.
Unguenta (27) including Ung. Aconiti, Atropinæ, Belladonnæ, Cantharidini, Cocainæ, Gallæ cum Opio, Hydrarg. Oxidi Flavi. Iodum, Iodoformum.
Vina (all).

ADDITIONS.

The more important are as follows:—

Acid. Hypophosphorosum Dilutum 5-15 mins.
Acid Trichloraceticum,
Acriflavina, (Flavine, Tryaflavin).
Amidopyrina, (Pyramidon.) 5-10 grs.
Amylocainae Hydrochloridum Stovaine, Subcutaneous, 1/3- ¾ gr. Intrathecal 1/3- 1½ grs.
Antimonii et Sodii Tartras, 1/32 1/8 gr. Emetic, ½-1 gr. Intravenous ½-2 gr.

Barbitonum, (Veronal,) 5-10 grs. Barbitonum Solubile (Medinal,) 5-10 grs.
Belladonna Pulverata, ½-3 grs.
Benzo-caina Anaesthesine, 5-10 grs.
Bismuthum Præcipitatum, Intramuscular injection 1½-3 grs.
Caffeina et Sodii Benzoas, 5-15 grs. By injection, 2-5 grs.
Carbonei Tetrachloridum, 30-60 mins.
Carbromalum (Uradal), 15 grs.
Cataplasma Kaolini.
Chloramina Tolamine.
Chlorbutol, Chloretone, 5-20 grs.
Cinchophenum, Agotan, Atophan, Quinophan, 5-15 grs.
Digitalis Pulverata, ½-1½ grs. Single doses, 3-10 grs.
Elixir Cascarae Sagradae, 30-60 mins.
Emetinae Hydrochloidum, ½-1 gr.
Emetinae et Bismuthi Iodidum, 1-3 grs.
Ephedrinæ Hydrochloridum ½-1½ grs.
Ergota Preparata. 5-15 grs.
Ergotoxinae Æthano Sulphonas. By subscutaneous or intramuscular injection, 1/120-1/60 gr.
Erythritylis Tetranitras Dilutus, ½-2 grs.
Extractum Cinchonae, 2-8 grs.
Extractum Colchici Liquidum, 2-5 mins. Siccum. ¼-1 gr.
Extractum Hepatis Liquidum. 1 oz Siccum 225 grammes.
Extractum Hyoscyami Lquidum, 3-6 mins.
Extractum Pituitarii Liquidum, subcutaneously. 3-5 mins.
Fluoresceinum Solubile.
Gelatinum Zinci.
Hydrargyri Oxycyanidum, intramuscular, 1/12-1/6 gr. Intravenous, 1/6 gr.
Ichthammol, Ichthyol, 5-10 grs.
Indicarminum, subcutaneous or intramuscular ¾-1¼ gr. Intravenous, 1/8-1 gr.
Infusum Digitalis Recens 120-240 ms. Single dose 1-4 ozs, (B. P. orders freshly prepared),

Injections for Intramuscular use Injectiones Bismuth, 8-15 mins. Bismuthi Salicylatis 10-20 mins. Ferri, 15-30 mins. Hydrarg, 5-10 mins. Hydrarg. Subchlor 10-20 mins.
Injectio Sodii Chloridi et. Acaciae.
Insulin, subcutaneous, 5-100 units.
Iodophthaleium, ⅓-½ gr. per pound of body weight, up to 75 grains intravenously up to 45 grains.
Ipecacuanha Pulverata, ½-2 grs.
Liquor Ergosterolis Irradiata, Prophylactic, daily for infant, 5-15 mins. Curative daily for infant, 25-50 mins.
Liquor Iodi Simplex 3-15 mins.
Methylthioniæ chloridum 1-5 grs.
Mistura Magnesii Hydroxidi, 3i-3iv.
Neoarsphenamina (Neosalvarsan,) intravenously, 2-14 grs.
Nux Vomica Pulverata, 1-4 grs.
Oculenta (eye ointments) Atropinœ cum Hydrarg Oxido. Cocainæ, Hydrarg Oxidi, Hyoscinae, Iodoformi, Physostigminae.
Opium Pulveratum, ½-3 grs.
Orthocaina, Orthoform, 1½-3 grs.
Pancreatinum, 3-10 grs.
Pasta Zinci Oxidi Composita.
Phenobarbitonum, Luminal ½-2 grs. Solubile, ½-2 grs.
Procainae Hydrochloridum, Novocaine Kerocaine, ½-2 grs. Subcutaneously upto 15 grs. Intrathecal up to 2½ grs.
Quininæ Sulphas, 3-10 grs.
Sodii Citras, 15-60 grs.
Strophanthinum. By intramuscular or intravenous injection, 1/240-1/60 gr.
Sulpharsphenamina. By subcutaneous or intramuscular injection, 1½-10 grs.
Syrupus Ferri Phosphatis Compositus, 3i-3ii.
Theophyllina et Sodii Acetas, Theocin, 2-5 grs.
Thyroxinosodium, 1/640-1/64 gr.
Tinctura Ipecacuanhae, 10-30 mins Emetic ½ 1 oz.

Tinctura Zingiberis Fortis, 5-10 mins.
Totaquina, 1-10 grs.
Unguenta, Acidi Tannici, Aquosum, simplex.
Zinci Stearas.

Antitoxinum Diphthericum—Prophylactic 500-1000 units, Therapeutic, 10,000-20,000 units, By injection.

Antitoxinum Tetanicum— Prophylactic, 1000—2,000 units. (Therapentic) 10,000-20,000 units By injection.

Antitoxinum Welchicum—Prophylactic. 4,000 units. (Gas Gangrene) 10,000—20,000 units. By Intravenous injection.

Toxinum Diphthericum Calefactum—Schick Control. Dose by intradermal injection, 3 mins.

Toxinum Diphthericum Detoxicatum, (Diphtheria Prophylactic.) Dose by subcutaneous injection (as stated on label) on two or three occasions at intervals of two to four weeks.

Toxinum Diphthericum Diagnosticum (Schick Test Toxin) Dose by intradermal injection, 3 minims.

Tuberculinum Pristinum. Old Tuberculin—Diagnostic by subcutaneous injection, 1/60-1/12 min. Therapeutic, 1/60,000 min. gradually increased.

Vaccinum Typho-Paratyphosum, T. A. B. Vaccine.—Dose by subcutaneous injection, first dose 8 mins. second dose after seven to ten days' interval, 15 mins.

Vaccinum Vaccinæ— Dose by scarification, 1 min.

CHANGES IN NAME.

1914.	1932.
Acidum Arseniosum.	Arseni Trioxidum.
Acidum Carbolicum.	Phenol.
Acidum Picric.	Trinitrophenol.
Aether Purificatus.	Aether Anaesthecticus.
Antimony Tartras	Antimonii et Potassii Tartras.

Arseni Iodidum.	Arseni Triididum.
Emplastrum Resinae.	Emplastrum Colophonii.
Glycerinum Acidi Carbolici.	Glycerinum Phenolis.
Liquor Ammon Acet.	Liq. Ammon. Acet Dil. Liquor Quininæ Ammoniatus is the new name for the former ammoniated tincture.
Liquor Arsenicalis,	The former alkaline solution and corresponding acid one, have now been replaced by a neutral colourless liquid. Dose as before.
Liquor Trinitrini.	Liq. Glycerylis Trinitratis.
Pil. Ferri.	Pil. Ferri Carb.
Pulv. Ipecac. Co.	Pulv. Ipecac. et Opio.
Resina.	Colophonium.
Strophanthi Semina.	Strophanthus.
Supposit. Acidi Carbolici.	Supposit. Phenolis.
Tabella Trinitrini,	Tabella Glycerylls Trinitratis.
Thyroideum Siccum.	Thyroideum.
Tinct. Camph. Co.	Tinct. Opii Camphorata.
Tinct. Iodi Fortis.	Liquor Iodi Fortis.
Tinct Iodi Mitis,	Liquor Iodi Mitis.
Trochiscus Acidi Carboli i.	Trochiscus Phenolis.
Ung. Acidi Carbolici.	Ung. Phenolis.

CHANGES IN DOSAGE.

1932.	1914.
Acetum Scillae, 5-30 mins.	5-15 mins.
Acid. Hydrochlor. Dil, 5-60 mins.	5-20 ,,
Acid. Lactic, 5-20 mins.	15-30 ,,
Acid. Phosphoricum Dil, 5-60 mins.	5-10 ,,
Acid. Sulphuricum Dil, 5-60 mins.	5-20 ,,

Apomorphinæ Hydrochlor. Expectorant (mouth) 1/64-1/32 gr. hypnotic and emetic, 1/32-1/8 gr.	1/10-¼ gr. ¼-½ gr.
Argentum Nitras, 1/8-1/4 gr.	¼-½ gr.
Arseni Trioxidum, 1/60-1/12 gr.	1/64-1/16 gr.
Arseni Triiididum, 1/16-¼ gr.	1/20-1/5 gr.
Atropina and Atropinæ Sulph, 1/240-1/60 gr.	1/200-1/100 gr.
Diamorphinæ Hydrochlor, 1/24-1/8 gr.	1/25-1/8 gr.
Extract. Belladonnæ Liq. ½-1 min.	—
Extract. Ergotae Liq. 10-20 mins.	10-30 mins.
Extract. Hamamelidis Liq. 30-60 mins.	5-15 mins.
Extract. Hyoscyami Liq 3-6 mins.	— —
Extract. Hyoscyami Siccum, ½-1 gr.	— —
Ferri et Ammon Citras—5-15 grs.	5-10 ,,
Ferri et quin Citras, 5-15 gr.	5-10 grs.
Ferrum Redactum, 1-10 grs.	1-5 grs.
Hydrargyrum, ½-3 grs. (intra muscular).	— —
Hydrarg. Subchlor, ½-3 grs.	½-5 grs.
Liquor Adrenalini. 2-8 mins. (subcutaneously).	10-30 mins.
Liquor Arseni et Hydrarg Iodidi, 5-15 mins.	5-20 ,,
Liquor Morphinae Hydrochlor. 5-30 mins.	5-60 ,,
Phenacetinum, 5-10 grs.	5-15 grs
Phenazonum, 5-10 grs.	5-15 ,,
Physostigminæ Salicylas, 1/100-1/50 gr.	1/64-1/32 gr.
Pil. Ferri Carb, 5-30 gr.	5-15 grs.
Plumbi Acetas, ½-2 grs.	1-5 ,,
Pulv. Ipecac, et Opii. 5-10 grs.	5-15 ,,
Strychninæ Hydrochlor, 1/32-1/8 gr.	1/64-1/16 gr.
Tinct. Belladonnae, 5-30 mins.	5-15 mins.
Tinct. Digitalis, 5-15 mins. Single doses, 30-90 mins.	5-15 ,,

Tinct. Ipecac. 10-30 mins, Emetic, ½-1 oz.	— —
Tinct. Nucis Vomicæ, 5-30 mins.	5-15 mins.
Tinct. Opii-5-30 mins.	5-15 ,,
Tinct. Scillae, 5-30 mins.	5-15 ,,
Tinct. Stramonii, 5-30 mins.	5-15 ,,

ALTERATIONS IN STRENGTH.

Acetum Scillae— The strength is reduced to 10 per cent of squill.

Acid. Aceticum Dilutum—An increase in strength from 5-6 per cent.

Extractum Filicis—Strength increased from 20 to 25 per cent.

Infusum Digitalis—A new fresh infusion intended to possess 0.05 unit a millilitre.

Liquor Iodi Mitis.—The proportion of potassium iodide is reduced to 1-5 per cent.

Oxymel Scillae.— The strength is now equivalent to about 5 per cent of squill.

Phenol Liquefactum—Now 80 per cent of phenol (reduced)

Pil Colocynth. et Hyoscyami contains 12.5 per cent of dry hyoscyamus extract.

Syrupus Ferri Phosph. cum Quinina et Strychnina—1/60 gr. of Strychnine in each drachm instead of former 1/32 gr. per drachm.

Syrupus Scillae—The strength is equivalent to about 4-5 per cent of squill.

Tinctura Scillae—The strength is equivalent to about 10 per cent of squill.

Tinctura Stramonii.—0.025 per cent alkaloid; about half the former strength.

Names of drugs and their vernacular names.

Araches oil—Ground nut oil, Mugphali oil.
Arsenic—Somul.
Acaciæ cortex (Arabica)—Babul tree bark.
Abrus Precatorius—Gunj.
Aconite—Bachanaga.
Aloes—Eliya.
Alum—Phatakdi.
Ammon. Chloride—Nausagar.
Aniseed—Sonf, Ervadas.
Asafoetida—Hing.
Borax—Kunkankhar.
Camphor—Kapoor.
Capsicum—Mirchi.
Caraway—Jira.
Cannabis Indica—Bhang, charas, ganja.
Coriander seed—Dhania.
Copper Sulphate—Morthuthu.
Croton—Jamal gota.
Catechu—Katha.
Cubebs—Chini Kabab.
Ferrous sulphate—Herakusee.
Galls—Maiphal.
Glycyrrhiza—(Liquorice) Jethimudh.
Holarrhena antidysenterica—Kurchi-Indrajav.
Hydrargyrum—(Mercury) Para.
Hydrargyri perchloridum—(Corrosive Sublimate) Rasa kapur.

Hydrargyri sulphidum Nigrum (Black sulphide of mercury)—Rasa Sindhur.

Hydrargyri Sulphidum Rubrum (Red sulphide of mercury)—Hingalo, Cinnabar.

Myrrh—Hirabol.
Nux vomica—zer kuchulo
Potassium Nitrate (Nitre)—Shora, Shoorokhar.
Ptycholis—Ajwan.

Vernacular names of common drugs and their English equivalent.

Adhatoda-Vasaka=Arusha is Expectorant and respiratory antispasmodic.

Ajwan=Ptycholis.
Anantamula=Sarsaparilla.
Bachanag=Aconite.
Dhania=Corriander seeds.
Gulancha (Gulvel)=Vinospora corchifolia—A bitter stomachic antiperiodic, alterative-diuretic.
Gurjan Oil=Wood oil.
Hingalo=Red sulphide of mercury.
Hirakusee=Ferrous sulphate.
Indrajava-Kurchi=Holarrhena antidysenterica.
Jatamansi=Indian spikenard.
Jamal gota=Croton.
Jethimudh=Glycyrrhiza (or Liquorice).

Kababchini=Cubebs.
Kaladana=Phabitis seeds, a cathartic allied to jalap.
Kalijira (Somraj) seeds of veronica anethelmentica.
Kankankhar (Tankankhar-Sohag)=Borax
Kapur=Camphor.
Kakmari=Cocculus Indicus seed (source of picrotoxin).
Katha=Catechu.
Loban=Styrax Benzoin.
Morthuthu=Copper sulphate.
Maiphal=Galls.
Nausagar—Ammonium chloride.
Rasakapur=Hydrargyri Perchloridum (Corrosive Sublimate).
Rasasindur=Black sulphide of mercury.
Somul=Arsenic.
Sonnamakki=Senna.
Zer Kurchulo=Nux vomica.

Table of proportionate doses for different ages.

GAUBIUS' TABLE

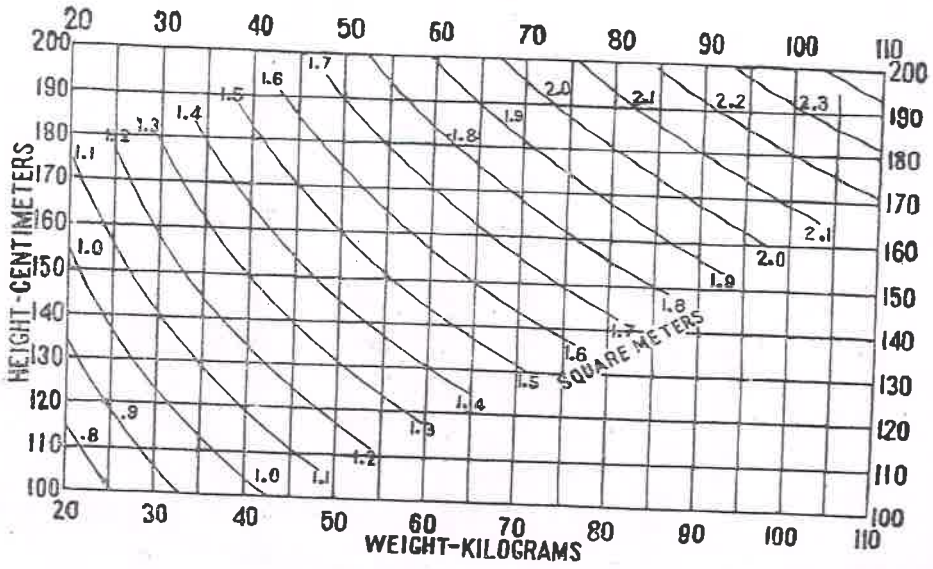
The following is the scale of doses employed, at Guy's Hospital London, the adult dose being represented as 1:—

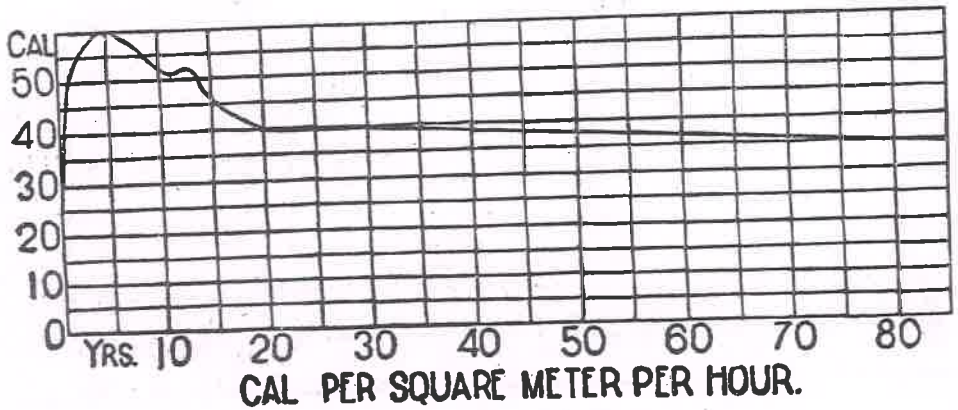
Age.	Dose.	Age.	Dose.
Under 1 year ...	... 1/12	Under 7 years ...	... 1/3
,, 2 years ...	... 1/8	,, 14 years ...	... 1/2
,, 3 years ...	... 1/6	,, 20 years ...	... 2/3
,, 4 years ...	... 1/4	21 to 60 years ...	... 1

Under 12 years the proportionate dose may be calculated by the formula $\frac{\text{age}}{\text{age}+12}$ (Young's).

Caloric Requirement per square metre of body surface (Du Bois).

Age.	Males.	Females.	
10—12	51·5	50	Calories per hour.
12—14	50	46·5	
14—16	46	43	
16—18	43	40	
18—20	41	38	
20—30	39·5	37	
30—40	39·5	36·5	
40—50	38·5	36	
50—60	37·5	35	
60—70	36·5	34	





CAL PER SQUARE METER PER HOUR.

Approximate food values in grammes per one ounce of common articles of diet in Bombay.

	Protein Grammes.	Carbo-hydrate Grammes.	Fat Grammes.	Calories per oz.
Rice	2	23·5	0·25	104
Wheat, flour, atta	3·5	20	0·8	104
Bajri flour, ...	2	21·5	0·5	98
Suji	4·2	14·2	0·68	80
Sago	0·2	24	0	96
Tapioca	0·1	25	0	100
Arrowroot	0·2	25	0	101
Dal massur	7·6	16·5	1	104
Milk, cow	1	1·2	1	19
,, Buffalo	1	1·2	2	28
Butter milk	0·75	1·3	0·1	10
Pistas	6·5	4·8	16	190
Almonds	6	5	16	190
Pea-nut or Ground-nut	7·5	7·2	11	160
Strawberries	0·3	2·0	0·2	12
Sugar		28·5	0	116
Loaf Bread	2·6	15	0·3	75
Ghee, Butter, Oil, pure	0	0	24	216
Egg	4	0	3	45
Fish Light	5	0	0	20
Goat's meat	7	0	0	35
Mutton (fatty)	4	0	10	106
Meat Lean	0	0	3	51
Chicken	6	0	1·0	34

The following articles of food are rich in various vitamins and minerals:—

Vitamin A

Fat, oils from fish, liver, kidney, egg yolk, butter, ghee, whole milk, green leafy vegetables, sprouted grain, yellow root vegetables such as carrots, sweet potatoes, tomatoes and bajri.

Vitamin B

Yeast, tomatoes, leafy vegetables, whole grain cereals, bajri, dal, milk, eggs, liver, brain, heart and kidney.

Vitamin C

Oranges, lemons, tomatoes and other fresh fruits, raw carrot, fresh green leafy vegetables, sprouted grain, milk and liver.

Vitamin D

Cod-liver oil, egg yolk, fish, milk, butter and ghee, vegetables and grains grown in sun light.

Vitamin E

Whole bread, seeds, vegetables, egg yolk, muscle meat.

Calcium

Milk, curds, cheese, butter-milk, whey, egg yolk, dals, nuts, leafy vegetables and fruits.

Iron

Liver, red meats, eggs, dal, whole wheat, bajri, leafy vegetables, fruits.

Phosphorus

Milk and its products, egg, meat, fish, beans, lentils, nuts, wheat, leafy vegetables, bajri, raddish, carrots and cucumbers.

Iodine

Sea fish, green leafy vegetables.

WEIGHTS AND MEASURES.

Imperial system		Measure of mass (weights)
1 grain (gr.)		
1 Ounce (avoir) oz.	=	437·5 grains
1 Pound (avoir) lb.	=	7000 grains

Measure of capacity.

1 minim=min.
1 Fluid Drachm=fl. dr.=60 min.
1 „ Ounce =fl. oz.= 8 fluid drachms.
1 Pint (O) ... ... 20 fluid ounces.
1 Gallon (G) ... 8 pints.

One minim is the volume at 16·7° C. (62°F) of 0·91114583 grains of water.

Table of approximate equivalents of weights and measures.

1 Gramme=15 grains.
1 Kilogramme (Kilo)=35·2 ounces or 2·2 pounds.
1 Cubic centimetre or 1 mil=17 minims.
1 Centimetre=$\frac{2}{5}$ inch.
1 Metre=39⅜ inches.
1 Grain=0·065 grammes.
1 Ounce (avoir)=437·5 grains=28·5 grammes.
1 Pound (avoir)=16 ounces=7000 grains=454 grammes.

Indian equivalents.

One tola=180 grains=weight of one rupee.
80 tolas=one seer (Bengal)=2 pounds.
40 seers=One maund

THERMOMETRY

Comparison of Fahrenheit and Centigrade Thermometers

°C.	°F.	°C.	°F.
35	95	39	102·2
35·5	95·9	39·5	103·1
36	96·8	40	104
36·5	97·7	40·5	104·9
37	98·6	41	105·8
37·5	99·5	41·5	106·7
38	100·4	42	107·6
38·5	101·3		

TABLE OF PERCENTAGE SOLUTIONS

QUANTITY OF MEDICAMENT REQUIRED FOR MAKING—

Percentage	1 fluid drachm	1 fluid ounce	1 pint	Parts
1	gr. 0·547	gr. 4·375	gr. 87·5	1 in 100
2	gr. 1·094	gr. 8·750	gr. 175·0	1 in 50
3	gr. 1·640	gr. 13·125	gr. 262·5	1 in 33·33
4	gr. 2·187	gr. 17·500	gr. 350·0	1 in 25
5	gr. 2·734	gr. 21·875	gr. 437·5	1 in 20
6	gr. 3·281	gr. 26·250	gr. 525·0	1 in 16·66
7	gr. 3·828	gr. 30·625	gr. 612·5	1 in 14·28
8	gr. 4·375	gr. 35·000	gr. 700·0	1 in 12·5
9	gr. 4·922	gr. 39·375	gr. 787·5	1 in 11·11
10	gr. 5·468	gr. 43·705	gr. 875·0	1 in 10

Dentition Table.

Milk-Teeth.—The first dentition begins at the sixth or seventh month, and is completed by about the second year.

Central incisors	(1) lower, 6th month; (2) upper, 7th month
Lateral incisors	(1) upper, 9th month; (2) lower, 10th month
First molars	12th month
Canines	18th month
Second molars	2nd year (often later)

The full primary dentition is 20 teeth; 10 in each jaw.

Permanent Teeth

First molars...	6½ years
Lower central incisors	7 ,,
Upper central incisors	8 ,,
Lateral incisors	9 ,,
First bicuspid	10 ,,
Second bicuspid	11 ,,
Canines	12 ,,
Second molars	13 ,,
Third molars (wisdom) ...	17 to 25 years —or at any later period

The full permanent dentition is 32 teeth; 16 in each jaw.

Obstetric Dates.

To ascertain the date upon which labour should take place, add the number of the day of the month on which the last menstruation occurred to the date in the following table placed in italics after the month concerned.

Month in which menstruation occurred.	Add day of month to—	Month in which menstruation occurred.	Add day of month to—
January.....	*October 7.*	July	*April 6.*
February	*November 7.*	August.....	*May 7.*
March	*December 5.*	September .	*June 7.*
April	*January 5.*	October ...	*July 7.*
May.....	*February 4.*	November .	*August 7.*
June	*March 7.*	December...	*September 6.*

Pulse and Respiration at different ages.

	Pulse per min.	Respiration per min.
In utero—150 to 140		
In new born 140 to 130		
During 1st year	130 to 115	35=1st year
,, 2nd ,	115 to 100	25=2nd ,,
,, 3rd ,,	100 to 95	20=Puberty
8th to 14th ,,	average 84	18=adult
Adult	,, 72	
Old age ...	,, 76	

POSOLOGICAL TABLE

B. P.—1932

(ORAL)

Acidum Aceticum Dil.	... 30 to	60 ms.
Acetum Scillæ	... 10 to	30 ms.
Acidum Acetyl Salicylicum	... 5 to	15 grs.
Acid. Benzoicum	... 5 to	15 grs.
,, Boricum	... 5 to	15 grs.
,, Citricum	... 5 to	30 grs.
,, Hydrobrom. Dil.	... 15 to	60 ms.
,, Hydrochlor. Dil.	... 5 to	60 ms.
,, Hydrocyanic. Dil.	... 2 to	5 ms.
,, Hypophosph. Dil.	... 5 to	15 ms.
,, Lacticum	... 5 to	20 ms.
,, Oleicum	... 5 to	15 ms.
,, Phosphoric Dil.	... 5 to	60 ms.
,, Salicylicum	... 5 to	10 grs.
,, Sulphuric Dil.	... 5 to	60 ms.
,, Tannicum	... 5 to	10 grs.
,, Tartaricum	... 5 to	30 grs.
Æther	... 15 to	60 ms.
Agar	... 60 to	240 grs.
Aloe	... 2 to	5 grs.
Aloinum	... ¼ to	1 gr.
Alumen	... 5 to	10 grs.
Amidopyrina	... 5 to	10 grs.
Ammon, Bicarb.	... 5 to	10 grs.
,, Carb.	... 5 to	10 grs.
,, Chloridum	... 5 to	60 grs.
Amyl. Nitris	... 2 to	5 ms.

(inhalation)

Amylocainæ Hydrochlor.	... ⅓ to ¾ gr.
Antim. et Pot. Tart.	1/32 to ⅛ gr. ½ to 1 gr. (emetic)
,, et Sod. Tart.	1/32—⅛ gr. ½ to 1 gr. (emetic)
Apomorph. Hydrochlor.	1/64 to 1/32 gr. (expectorant) 1/32-⅛ (Hypnotic Emetic)
Aqua Anethi Conc.	... 5 to 15 ms.
,, ,, Dest.	... ½ to 1 fl. oz.
,, Camph.	... ½ to 1 fl. oz.
,, Chlorof.	... ½ to 1 fl. oz.
,, Cinnamom. Conc.	... 5 to 15 ms.
,, ,, Dest.	... ½ to 1 fl. oz.
,, Menth. Pip. Conc.	... 5 to 15 ms.
,, ,, ,, Dest.	... ½ to 1 fl. oz.
Argenti Nitras	... 1/8 to ¼ gr.
Arseni Triiodidum	... 1/16 to ¼ gr.
,, Trioxidum	... 1/60 to 1/12 gr.
Asafoetida	... 5 to 15 grs.
Atropina	... 1/240 to 1/60 gr.
Atropinæ Sulph.	... 1/240 to 1/60 gr.
Balsam Peru.	... 5 to 15 ms.
,, Tolu.	... 5 to 15 grs.
Barbitonum	... 5 to 10 grs.
Barbition. Solub.	... 5 to 10 grs.
Belladonna Pulverata	... ½ to 3 grs.
Belladonnæ Radix	... ½ to 2 grs.
Benzocaina	... 5 to 10 grs.
Benzoinum	... 10 to 30 grs.
Betanaphthol	... 5 to 10 grs.
Bismuth. Carb.	... 10 to 30 grs.
Bismuth. Salicylas	... 10 to 30 grs.
Borax	... 5 to 15 grs.
Buchu	... 15 to 30 grs.
Caffeina et Sodii Benzoas	... 5 to 15 grs.
Caffeina	... 2 to 5 grs.

Calcii Carb.	... 15 to 60 grs.
,, Chloridum	... 10 to 30 grs.
,, Hydroxidum	... 5 to 15 grs.
,, Lactas	... 15 to 60 grs.
,, Phosph.	... 10 to 30 grs.
Calumba	... 10 to 30 grs.
Camphor	... 2 to 5 grs.
Capsicum	... ½ to 2 grs.
Carbon. Tetrachloridum	... 30 to 60 ms.
Carbromalum	... 5 to 15 grs.
Cardamomum	... 10 to 30 grs.
Carum	... 10 to 30 grs.
Caryophyllum	... 2 to 5 grs.
Cascara Sagrada	... 20 to 60 grs.
Cassia	... 60 to 120 grs.
Catechu	... 5 to 15 grs.
Chloral. Hydras	... 5 to 20 grs.
Chlorbutol	... 5 to 20 grs.
Chloroformum	... 1 to 5 ms.
Cinchona	... 5 to 15 grs.
Cinchophen	... 5 to 15 grs.
Cinnamomum	... 5 to 20 grs.
Cocaina	... ⅛ to ¼ gr.
Cocainæ Hydrchlor.	... ⅛ to ¼ gr.
Codeina	... ¼ to 1 gr.
Codeinae Phosphas	... ½ to 1 gr.
Colchici Cormus	... 2 to 5 grs.
Colchici Semen	... 2 to 5 grs.
Colocynthis	... 2 to 5 grs.
Conf. Sennæ	... 60 to 120 grs.
,, Sulphuris	... 60 to 120 grs.
Copaiba	... 10 to 30 ms.
Coriandrum	... 2 to 15 grs.
Creosotum	... 2 to 10 ms.
Cresol	... 1 to 3 ms.
Creta	... 15 to 60 grs.
Cupri Sulphas	¼ to 2 grs. 5 to 10 grs. (emetic)

Diamorphinæ Hydrochlor	... 1/24 to ¼ gr.
Digitalis Pulverata	¼ to 1 gr. (repeated) 3 to 10 grs. (single)
Elixir Cascaræ Sagradæ	... 30 to 60 ms.
Emet. et Bismuth Iodidum	... 1 to 3 grs.
Ephedrin. Hydrochlor.	... ¼ to 1½ grs.
Ergota Præparata	... 5 to 15 grs.
Erythrityl. Tetranit. Dil.	... ½ to 2 grs.
Eucalyptol	... 1 to 3 ms.
Ext. Belladon. Liq.	... ¼ to 1 m.
,, Belladonnæ Sicc.	... ¼ to 1 gr.
,, Cascar. Sagrad. Liq.	... 30 to 60 ms.
,, Cascar. Sagrad. Sicc.	... 2 to 8 grs.
,, Cinchonæ	... 2 to 8 grs.
,, Cinchon. Liq.	... 5 to 15 ms.
,, Colchici Liq.	... 2 to 5 ms.
,, Colchici Sicc.	... ¼ to 1 gr.
,, Colocynth. Co.	... 2 to 8 grs.
,, Ergot. Liq.	... 10 to 20 ms.
,, Fell. Bov.	... 5 to 15 grs.
,, Filicis.	... 45 to 90 ms.
,, Gentian.	... 2 to 8 grs.
,, Glycyrrhiz.	... 10 to 30 grs.
,, Hamamelidis Liq.	... 30 to 60 ms.
,, Hepatis Liq.	... 1 fl. oz.
,, Hepatis Sicc.	... equivalent to about ½ lb. of fresh liver.
,, Hyoscyami Liq.	... 3 to 6 ms.
,, Hyoscyami Sicc.	... ¼ to 1 gr.
,, Ipecac. Liq.	... ½ to 2 ms. 10 to 30 ms. (emetic)
,, Kramer Sicc.	... 5 to 15 grs.
,, Malti	... 60 to 240 ms.
,, Malti c. Ol. Morrh.	... 60 to 240 ms.
,, Nucis. Vom. Liq.	... 1 to 3 ms.
,, Nucis. Vom. Sicc.	... ¼ to 1 gr.
,, Opii. Sicc.	... ¼ to 1 gr.

Ext. Senegæ Liq.	... 5 to 15 ms.
,, Sennæ Liq.	... 10 to 30 ms.
Ferri Carbonas Sacch.	... 10 to 30 grs.
Ferri et Ammon. Citras	... 5 to 15 grs.
,, et Quin. Citras	... 5 to 15 grs.
,, Sulphas	... 1 to 5 grs.
,, ,, Exsicc.	... ½ to 3 grs.
Ferrum Redactum	... 1 to 10 grs.
Filix Mas	... 60 to 180 grs.
Foeniculum	... 5 to 10 grs.
Gentiana	... 10 to 30 grs.
Glycerinum	... 60 to 120 ms.
Glycerin. Acid. Boric.	... 10 to 30 ms.
,, Acid. Tannic.	... 10 to 30 ms.
,, Aluminis	... 30 to 60 ms.
,, Boracis	... 30 to 60 ms.
,, Phenol.	... 5 to 15 ms.
Glycyrrhiza	... 15 to 60 grs.
Guaiacol	... 5 to 10 ms.
Hexamina	... 10 to 30 grs.
Homatropin. Hydrobrom.	... 1/64 to 1/32 gr.
Hydrarg. Iodidum Rubrum	... 1/32 to 1/16 gr.
,, Perchlor.	... 1/32 to 1/16 gr.
Hydrarg. Subchlor.	... ½ to 3 grs.
Hydrargyrum	... ½ to 3 grs.
Hydrarg. c Creta	... 1 to 5 grs.
Hyoscin. Hydrobrom.	... 1/200 to 1/100 gr.
Hyoscyamus	... 3 to 6 grs.
Ichthammol	... 5 to 10 grs.
Inf. Aurantii Conc.	... 30 to 60 ms.
,, Aurantii Recens	... ½ to 1 fl. oz.
,, Buchu Conc.	... 60 to 120 ms.
,, Buchu Recens	... 1 to 2 fl. oz.
,, Calumbæ Conc.	... 30 to 60 ms.
,, Calumbæ Recens	... ½ to 1 fl. oz.
,, Caryophylli Conc.	... 30 to 60 ms.
,, Caryophylli Recens	... ½ to 1 fl. oz.

Inf. Digitalis Recens	... 90 to 300 ms.
	1 to 4 fl. oz (single)
,, Gentian. Co. Conc.	... 30 to 60 ms.
,, Gentian. Co. Recens	... ½ to 1 fl. oz.
,, Quassiæ Conc.	... 30 to 60 ms.
,, Quassiæ Recens	... ½ to 1 fl. oz.
,, Senegæ Conc.	... 30 to 60 ms.
,, Senegæ Recens	... ½ to 1 fl. oz.
,, Sennæ Conc.	... 30 to 60 ms.
,, Sennæ Recens	... ½ to 2 fl. oz.
Iodoformum	... ½ to 3 grs.
Iodophthaleinum	½ to ½ gr. per lb. of body weight up to 75 grs.
Ipecacuanha Pulverata	½ to 2 grs.
	15 to 30 grs. (emetic)
Ipomæa	... 5 to 20 grs.
Jalapa Pulverata	... 5 to 20 grs.
Kaolinum	... ½ to 2 oz.
Krameria	... 10 to 30 grs.
Liq. Ammon. Dil	... 10 to 20 ms.
,, Ammon. Acet. Dil.	... ½ to 1 fl. oz.
,, Ammon. Acet. Fortis	... 15 to 60 ms.
,, Arsenicalis	... 2 to 8 ms.
,, Arsen et Hydrarg. Iod.	... 5 to 15 ms.
,, Calc. Hydrox.	... 1 to 4 fl. oz.
,, Ergosterol. Irrad.	... 5 to 15 ms. (prophyl.)
	25 to 50 ms. (curative)
,, Ferri Perchlor.	... 5 to 15 ms.
,, Glyceryl. Trinit.	... ½ to 2 ms.
,, Hydrarg. Perchlor.	... 30 to 60 ms.
,, Hydrogen. Peroxid.	... 30 to 120 ms.
,, Iodi Mitis	... 5 to 30 ms.
,, Iodi Simplex	... 3 to 15 ms.
,, Magnes. Bicarb.	... 1 to 2 fl. oz.
,, Morph. Hydrochlor.	... 5 to 30 ms.
,, Quinin. Ammon.	... 30 to 60 ms.
,, Strychn. Hydrochlor.	... 3 to 12 ms.

Lobelia	... 1 to 3 grs.
Mag. Carb. Lev.	... 10 to 60 grs.
,, Carb. Pond.	... 10 to 60 grs.
,, Oxid. Lev.	... 10 to 60 grs.
,, Oxid. Pond.	... 10 to 60 grs.
,, Sulph.	... 30 to 240 grs.
Menthol	... ½ to 2 grs.
Methyl Salicylas	... 5 to 15 ms.
Methylsulphonal	... 5 to 20 grs.
Methylthioninæ Chlori.	... 1 to 5 grs.
Mist. Magnes. Hydroxidi	... 60 to 240 ms.
,, Sennæ Co.	... 1 to 2 fl. oz.
Morph. Hydrochlor.	... ⅛ to ¼ gr.
,, Tartras	... ⅛ to ¼ gr.
Mucil. Acaciæ	... 60 to 240 ms.
,, Tragacanth.	... 60 to 240 ms.
Myristica	... 5 to 10 grs.
Myrrha	... 5 to 15 grs.
Nux Vomica Pulverata	... 1 to 4 grs.
Oleum Amygdalæ	... ½ to 1 fl. oz.
,, Anethi	... 1 to 3 ms.
,, Anisi	... 1 to 3 ms.
,, Arachis	... ½ to 1 fl. oz.
,, Cajuputi	... 1 to 3 ms.
,, Cari	... 1 to 3 ms.
,, Caryophylli	... 1 to 3 ms.
Oleum Chenopodii	... 3 to 15 ms.
,, Cinnamom.	... 1 to 3 ms.
,, Coriandri	... 1 to 3 ms.
,, Eucalypti	... 1 to 3 ms.
,, Gossypii Seminis	... ½ to 1 oz.
,, Hydnocarpi	... 5 to 15 ms. increasing to 60 ms.
,, Hydnocarpi Aeth	... 5 to 15 ms. increasing to 60 ms.
,, Lavendulæ	... 1 to 3 ms.
,, Limonis	... 1 to 3 ms.

Oleum Lini	... ½ to 1 fl. oz.
,, Menthæ Pip.	... 1 to 3 ms.
,, Morrhuæ	... 30 to 120 ms.
,, Myristicæ	... 1 to 3 ms.
,, Olivæ	... ½ to 1 fl. oz.
,, Ricini	... 60 to 240 ms.
,, Rosmarini	... 1 to 3 ms.
,, Santali	... 5 to 15 ms.
,, Santali Austral	... 5 to 15 ms.
,, Sesami	... ½ to 1 fl. oz.
,, Terebinth.	... 3 to 10 ms. 120 to 240 ms. (anthelmintic).
Opium Pulveratum	... ½ to 3 grs.
Orthocaina	... 1 to 3 grs.
Oxymel	... 30 to 120 ms.
Oxymel Scillæ	... 30 to 60 ms.
Pancreatinum	... 3 to 10 grs.
Paraffinum Liq.	... ¼ to 1 fl. oz.
Paraldehydum	... 30 to 120 ms.
Pelletierinæ Tannas	... 2 to 8 grs.
Pepsinum	... 5 to 10 gs.
Phenacetinum	... 5 to 10 grs.
Phenazonum	... 5 to 10 grs.
Phenobarbitonum	... ½ to 2 grs.
,, Solubile	... ½ to 2 grs.
Phenol	... 1 to 3 grs.
,, Liq.	... 1 to 3 ms.
Phenolphthaleinum	... 1 to 5 grs.
Physostigminæ Salicylas	... 1/100 to 1/50 gr.
Pilocarpinæ Nitras	... 1/20 to 1/5 gr.
Pil. Aloes.	... 4 to 8 gr.
,, ,, et Asafæt.	... 4 to 8 grs.
,, ,, et Ferri.	... 4 to 8 grs.
,, Colocynth. et Hyoscyami	4 to 8 grs.
,, Ferri Carb.	... 5 to 30 grs.
,, Hydrargyri	... 4 to 8 grs.
,, Rhei Co.	... 4 to 8 grs.
Pix. Liquida.	... 2 to 10 grs.

Plumbi Acetas	... ½ to 2 grs.
Podophylli Resina	... ¼ to 1 gr.
Podophyllum	... 2 to 10 grs.
Podophyllum Indicum	... 2 to 10 grs.
Potassii Acetas	... 15 to 60 grs.
,, Bicarb.	... 15 to 60 grs.
,, Bromidum	... 5 to 30 grs.
,, Carb.	... 2 to 5 grs.
,, Chloras	... 5 to 10 grs.
,, Citras	... 15 to 60 grs.
,, Iodidum	... 5 to 30 grs.
,, Nitras	... 5 to 15 grs.
,, Permang.	... 1 to 3 grs.
,, Tartras Acidus.	... 15 to 60 grs.
Procainæ Hydrochloridum	... ½ to 2 grs.
Prunus Serotina	... 15 to 30 grs.
Pulv. Cretæ Arom.	... 10 to 60 grs.
,, ,, ,, c. Opio	... 10 to 60 grs.
,, Glycyrrhiz. Co.	... 60 to 120 grs.
,, Ipecac. et Opii	... 5 to 10 grs.
,, Jalapæ Co.	... 10 to 60 grs.
,, Rhei Co.	... 10 to 60 grs.
,, Tragac. Co.	... 10 to 60 grs.
Quassia	... 2 to 8 grs.
Quillaia	... 1 to 3 grs.
Quinidinæ Sulphas	... 3 to 10 grs.
Quinin. Bisulph.	... 1 to 10 grs.
Quinin. Dihydrochlor.	... 1 to 10 grs.
,, et Aethyl. Carb.	... 1½ to 15 grs.
,, Hydrochlor.	... 1 to 10 grs.
,, Sulphas	... 1 to 10 grs.
,, Tannas	... 1 to 15 grs.
Resorcinol	... 1 to 5 grs.
Rheum	... 3 to 15 grs.
Saccharin. Solub.	... ½ to 2 grs.
Salicinum	... 5 to 15 grs.
Santoninum	... 1 to 3 grs.
Scammoniæ Resina	... ½ to 3 grs.

Scilla	
Senega	... 1 to 3 grs.
Sennæ Folia	... 6 to 12 grs.
Sennæ Fructus	... 10 to 30 grs.
Serpentaria	... 10 to 30 grs.
Sodii Benzoas	... ¾ to 1½ grs.
,, Bicarb.	... 5 to 30 grs.
,, Bromid.	... 15 to 60 grs.
,, Carbonas	... 5 to 30 grs.
,, Carbonas Exsic.	... 5 to 15 grs.
,, Citras	... 2 to 5 grs.
,, et Potassii Tartras	... 15 to 60 grs.
,, Iodidum	... 120 to 240 grs.
Sodii Nitris	... 5 to 30 grs.
,, Phosph.	... ½ to 2 grs.
,, Phosphas. Acidus.	... 30 to 240 grs.
,, Phosph. Effervesc.	... 30 to 60 grs.
,, Salicylas	... 60 to 240 grs.
,, Sulph.	... 10 to 30 grs.
,, Sulph. Effervesc.	... 30 to 240 grs.
Spt. Aetheris	... 60 to 240 grs.
,, Aetheris Nitrosi	... 15 to 60 ms.
,, Ammon. Aromat.	... 15 to 60 ms.
,, Cajuput.	... 15 to 60 ms.
,, Camphoræ	... 5 to 30 ms.
,, Chloroformi	... 5 to 30 ms.
,, Menth. Pip.	... 5 to 30 ms.
Stramonii Folia	... 5 to 30 ms.
Strychninæ Hydrochlor.	... ½ to 3 grs.
Styrax	... 1/32 to 1/8 gr.
Sulphonal	... 10 to 30 grs.
Sulphur Præcip.	... 5 to 30 grs.
,, Sublim.	... 15 to 60 grs.
Syrup. Aurant.	... 15 to 60 grs.
,, Ferri Iod.	... 30 to 120 ms.
,, Ferri Phosph. Co.	... 30 to 120 ms.
,, Ferri Phosph. cum Quin. et Strych.	... 30 to 120 ms.
	... 20 to 60 ms.

Syrup. Limonis	... 30 to 120 ms.
,, Pruni Serot.	... 30 to 120 ms.
,, Scillæ	... 30 to 60 ms.
,, Sennæ	... 30 to 120 ms.
,, Tolu.	... 30 to 120 ms.
,, Zingiberis	... 30 to 120 ms.
Tab. Glyceryl. Trinitrat.	... 1 to 2 tablets
Terebenum	... 5 to 15 ms.
Theobrom. et Sodii Salicyl (Diuretin)	10 to 20 grs.
Theophyll et Sodii Acetas	... 2 to 5 grs.
Thymol	to 2 grs. 15 to 30 grs. (anthelmintic)
Thyroideum	... ½ to 5 grs.
Thyroxinsodium	... 1/640 to 1/64 gr.
Tinct. Asafœtidae	... 30 to 60 ms.
,, Aurantii	... 30 to 60 ms.
,, Belladonnæ	... 5 to 30 ms.
,, Benzoin. Co.	... 30 to 60 ms.
,, Calumbæ	... 30 to 60 ms.
,, Caspsici	... 6 to 15 ms.
,, Card. Co.	... 30 to 60 ms.
,, Catechu	... 30 to 60 ms.
,, Cinchonæ	... 30 to 60 ms.
,, Cinchonæ Co.	... 30 to 60 ms.
Tinct. Cocci	... 5 to 15 ms.
,, Colchici	... 5 to 15 ms.
,, Digitalis	... 5 to 15 ms.
,, Gent. Co.	... 30 to 60 ms.
,, Hyoscyami	... 30 to 60 ms.
,, Ipecac.	... 10 to 30 ms. ½ to 1 fl. oz. (emetic)
,, Krameriæ	... 30 to 60 ms,
,, Limonis	... 30 to 60 ms,
,, Lobeliæ Aetheri	... 5 to 15 ms.
,, Myrrhæ	... 30 to 60 ms.
,, Nucis Vomicæ	... 20 to 30 ms.
,, Opii	... 5 to 30 ms.

Tinct. Opii Camph.	... 30 to 60 ms.
" Quassiæ	... 30 to 60 ms.
" Quillaiæ	... 30 to 60 ms.
" Rhei Co.	... 30 to 60 ms.
" Scillæ	... 30 to 60 ms.
" Senegæ	... 5 to 30 ms.
" Strammonii	... 30 to 60 ms.
" Strophanthi	... 5 to 30 ms.
" Tolutana	... 2 to 5 ms.
" Valerian. Ammon.	... 30 to 60 ms.
" Zingiberis Fort.	... 30 to 60 ms.
" Zingiberis Mit.	... 5 to 10 ms.
Totaquina	... 30 to 60 ms.
Trinitrophenol (Picric Acid)	... 1 to 10 grs.
Urea	... 1 to 5 grs.
Valeriana	... 15 to 240 grs.
Zinc. Oxidum	... 5 to 15 grs.
Zinci Sulphas	... 5 to 10 grs.
Zingiber	1 to 3 grs. 10 to 30 grs. (emetic)
	... 5 to 15 grs.

INJECTIONS

Adrenalina	
Amylocainæ Hydrochlor.	... 1/600 to 1/120 gr.
	... ½ to ⅔ gr. (subcutaneous) 1/3 to 1½ grs. (intrathecal).
Antim. et Pot. Tart	... ½ to 2 grs.
Antim. et Sod. Tart	... ½ to 2 grs.
Antitox. Diphthericum	... 500 to 1000 units. (prophylactic). 10000 to 20000 units (therapeutic).
Antitox. Tetanicum	... 1000 to 2000 units (prophylactic). 20000 to 40000 units. (therapeutic).

Antitox. Welchicum	... 4000 Units. (prophylactic). 10000 to 20000 units (therapeutic, intravenous).
Apomorph. Hydrochlor.	... 1/32 to ⅛ gr. (hypnotic & emetic) (subcutaneous)
Bismuth. Salicylas	... 1 to 2 grs. (intramuscular)
Bismuth. Præcipitatum	... 1½ to 3 grs. (intramuscular)
Caffeina et Sodii Benzoas	... 2 to 5 grs.
Calcii Chloridum	... ½ to 1½ grs. (intramuscular) 5 to 15 grs. (intravenous)
Camphora	... 1 to 3 grs. (subcutaneous)
Emetinæ Hydrochlor.	... ½ to 1 gr.
Ergotox. Æthanosulph.	... 1/20 to 1/60 gr. (subcutaneous or intramuscular).
Ext. Pituitarii Liq.	... 2 to 5 units. (subcutaneous).
Glycerinum	... 30 to 120 ms. (rectal)
Hydrarg. Oxycyanidum	... 1/12 to 1/6 gr. (intramuscular) 1/6 gr. (intravenous)
Hydrarg. Subchlor.	... ½ to 1 gr. (intramuscular)
Hydrargyrum	... ½ to 1 gr. (intramuscular).
Indicarminum	... ½ to 1½ gr. (subcutaneous or intramuscular) ⅓ to ¼ gr. (intravenous)

Injectio Bismuthi	... 8 to 15 ms. (intramuscular).
Injectio Bism. Salicylatis.	... 10 to 20 ms. (intramuscular).
Injectio Ferri	... 15 to 30 ms. (intramuscular).
Injectio Hydrargyri	... 5 to 10 ms. (intramuscular).
Injectio Hydrarg. Subchlor	... 10 to 20 ms. (intramuscular).
Insulinum	... 5 to 100 units. (subcutaneous).
Iodophthaleinum	... $\frac{1}{3}$ to $\frac{1}{2}$ gr. per lb. of body weight up to 45 grs. (intravenous).
Liq. Adrenalin. Hydrochlor	... 2 to 8 ms. (subcutaneous).
Neoarsphenamina	... $2\frac{1}{2}$ to 14 gr. (intravenous).
Oleum Hydnocarpi	... 30 ms. increasing to 75 ms. (subcutaneous and intramuscular).
Oleum Hydnocarpi Aeth.	... 30 ms. increasing to 75 ms. (subcutaneous and intramuscular).
Procainæ Hydrochloridum	... $\frac{1}{2}$ to 2 grs. up to 15 grs. (subcutaneous). up to $2\frac{1}{2}$ grs. (intrathecal).
Quininæ Dihydrochlor.	... 5 to 10 grs. (intravenous or intramuscular).
Serum Antidysentericum (Shiga)	... 4000 to 10,000 units.

Strophanthinum	... 1/240 to 1/60 gr. (intramuscular and intravenous)
Sulpharsphenamina	... $1\frac{1}{2}$ to 10 grs. (intramuscular and intravenous)
Toxinum Diphthericum Calefactum	... 3 ms. (intradermal)
Toxinum Diphthericum Diagnosticum	... 3 ms. (intradermal)
Tuberculinum Pristinum	... 1/60 to 1/12 m. (diagnostic). 1/60,000 m. (therapeutic)
Vaccinum Typho-paratyphosum (T. A. B.)	... 0,5 mil. (first dose). 1.0 mil. (second dose after 7 to 10 days interval). (subcutaneous)
Vaccinum Vaccinæ	... 1 m. (by scarification).

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Tonsillitis

Soda Salicylas gr x̄ or
Tr. quininae ammoniata ʒss
Pot chloras
Mist oxymelis co. ℥i. gr vii
℥ss

Mist. & inhalation

℞
Tinct Quin. Amm. mXX
Pot chloras gr vi
Soda Salicylas gr xv
Soda Bicarb gr x
Tr. Ipecacuan. liq. m I
Tinct Opii Camphor mxxv
Pot nitras gr X
Oxymel ʒi
Aquae ℥i

———x———

Diarrhoea: ℞
Mag Carb gr xv
Soda bicarb gr xv
Bismuth Carb gr xx
Salol gr v
mucilage ʒs
aqua Chloroformi ℥i

Mist Sodii Co

Soda bicarb gr X
Tr Rhei co ʒss
Tr zingiberis mXX
Sp. amm aromatic mx
Sp. Chloroformi mx
Aqua menthae pip. ℥i
℥ss

Mist Saline

Soda bicarb gr x
Tr Zingiberis mx
Spr. Chloroformi mx
Mag Sulph ʒiv
Aqua ℥i