

REFERENCE HAND-BOOK
FOR
NURSES

—
AMANDA K. BECK

Third Edition
Revised

Jessie R. Adams
Lincoln, Nebr.

Febr. 10, 1907

1950
Betty Lansing

A REFERENCE HAND-BOOK FOR NURSES

BY

AMANDA K. BECK

Graduate of the Illinois Training School for Nurses

Third Edition, Revised

PHILADELPHIA AND LONDON

W. B. SAUNDERS COMPANY

1917

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printed August, 1905, July, 1906, June, 1907, and January,
1908. Revised, reprinted, and recopyrighted August,
1908. Reprinted March, 1909, February, 1910,
July, 1910, March, 1911, February, 1912,
and August, 1912. Revised, reprinted,
and recopyrighted February, 1913.
Reprinted October, 1913, May,
1914, November, 1914, Jan-
uary, 1915, May, 1915,
September, 1915, and
June, 1916

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Reprinted January, 1917

PRINTED IN AMERICA

PRESS OF
W. B. SAUNDERS COMPANY
PHILADELPHIA

TO

ISABEL McISAAC

For many years Superintendent of the Illinois Training School
for Nurses, of Chicago

AND TO

IDORA C. ROSE

Formerly her Assistant and now her Successor

THIS BOOK IS AFFECTIONATELY INSCRIBED

PREFACE TO THE THIRD EDITION.

THE continued demand for this Handbook prompts me to keep it "up to date." The changes in this edition consist of the addition of a number of new formulas and simplified methods which recent experimentation has proved to be valuable, the elimination of some tables whose use has been largely superseded, and the insertion of considerable new material. The suggestions for various kinds of baths, the best way of giving them, and the articles needed for the treatments should be of much value; so also should the list of instruments used in various surgical operations.

For much of the new material I am indebted to the Faculty of the Illinois Training School for Nurses, to the Presbyterian School for Nurses, and to Miss Robb, Supervisor of the Cook County Hospital, Chicago, operating-rooms.

A. K. BECK.

PREFACE.

As a probationer doing class and hospital work and as a graduate trained nurse I took notes of all the various formulæ, directions, etc., that might at some time be useful to me in the pursuit of my duties. My class work was productive of many valuable items of information; these and such other items as I gathered in the course of my hospital work and while on private duty, and others which were the result of my own experience and observation, I kept in a memorandum book which soon became indispensable to me, and which I used until the leaves became worn and fell apart. I rewrote this memorandum book three times, and the task of its fourth rewriting made me wish that I had its contents in a form more easily preserved. The inspiration followed that my notes in book form would be of general use to most nurses and of some use to many physicians. This little volume is the result.

To my own notes, all of which have been submitted to competent authorities for criticism, I have added several articles by eminent physicians and superintending nurses, which tend to round out the usefulness of the book. I have kept in mind, however, my original intention of pro-

ducing a hand-book of convenient size for quick reference.

To the authors of these articles, to the friendly critics to whom my notes were submitted, and to the kind friends who encouraged me in this work, I extend my sincere thanks.

AMANDA K. BECK.

REFERENCE HAND-BOOK

FOR

NURSES.

ABBREVIATIONS.

ABBREVIATION.	LATIN.	ENGLISH.
aa	Ana	Of each.
A. c.	Ante cibum	Before meals.
Ad lib.	Ad libitum	At pleasure.
Alt. hor.	Alternis horis	Every other hour.
Aq.	Aqua	Water.
B. i. d. or B. d.	Bis in die	Twice daily.
C.	Conguis	Gallon.
c̄.	Cum	With.
Cap.	Capsular	A capsule.
C.c.	Centimeter cubicum	Cubic centimeter.
Cerat	Ceratum	A cerate.
Chart.	Chartula	A small paper.
Colet.	Coletur	Let it be strained.
Collyr.	Collyrium	An eye-wash.
Comp.	Compositus	Compound.
Decoct.	Decoction	Decoction.
Def.	Defecatio	Defecation.
Dil.	Dilutus	Dilute.
Disp.	Dispensa	Dispense.
Divid.	Dividendus	To be divided.
Dr., ʒ	Drachma	A dram.
Emuls.	Emulum	Emulsion.
En., Enem.	Enema	A rectal injection.
Et	Et	And.
Ext.	Extractum	An extract.
Ext. fl.	Extractum fluidum	Fluid extract.
Filt.	Filtra	Filter.
Fl.	Fluidum	Fluid.
Ft.	Fiat	Let it be made.
Garg.	Gargarisma	A gargle.
Gm.	Gramma	A gram.
Gr.	Granum	A grain.
Gtt.	Gutta	A drop.
H.	Hora	An hour.

Id.	Idem	The same.
I. e.	Id est	That is.
Ind.	In dies	Daily.
Infus.	Infusum	Infusion.
L.	Liter	A liter.
Lb., lb.	Libra	A pound.
Lin.	Linimentum	A liniment.
Liq.	Liquor	A solution.
Lot.	Lotion	A lotion.
M.	Misce	Mix.
Mas.	Massa	A pill mass.
M., m	Minimum	A minim.
Mist.	Mistura	A mixture.
N. b.	Nota bene	Note well or take particular notice.
No.	Numerus	Number.
Noct.	Nocte	At night.
O.	Octarius	A pint.
Omn. hor.	Omni hora	Every hour.
P. C.	Post cibum	After meals.
Pil.	Pilula	A pill.
Præp.	Præparatus	Prepared.
P. r. n.	Pro re nata	When necessary.
Pulv.	Pulvis	A powder.
Q.	Quaque	Every.
Q. i. d. or Q. d.	Quatuor in die	Four times a day.
Qq. hor.	Quaque hora	Every hour.
Q. s.	Quantum sufficit	A sufficient quantity.
R	Recipe	Take.
S.	Sine	Without.
Scrup., $\mathfrak{d}$	Scrupulum	A scruple.
Sig.	Signa	Mark or sign.
Solv.	Solve	Dissolve.
S. O. S.	Si opus sit	If necessary.
Spt.	Spiritus	Spirit.
Ss.	Semis	A half.
Stat.	Statim	Immediately.
Syr.	Syrupus	Syrup.
T. i. d. or T. d.	Ter in die	Three times a day.
Tinct. or Tr.	Tinctura	A tincture.
Troch.	Trochiscus	A lozenge.
Unc., $\mathfrak{z}$	Uncia	An ounce.
Ung.	Unguentum	An ointment.
U. S. P.		United States Pharmacopœia.
Vel	Vel	Or.
Vin.	Vinum	Wine.
Vitel. ovi	Vitellus ovi	Yolk of egg.
Viz.	Videlicet	Namely

GLOSSARY OF MATERIA MEDICA.

In the following Glossary will be found short definitions of many of the terms employed in the Dispensatory to designate the medical properties of the remedies; most of the words are commonly employed as nouns, and sometimes as adjectives.

Absorbents.—Drugs used to produce absorption of exudates or diseased tissues.

Abstergents.—Detergents (cleansing agents).

Alteratives.—Medicines used to so modify nutrition as to overcome morbid processes.

Analeptics.—Restorative medicines or food.

Analgesics.—Medicines used to allay pain.

Anaphrodisiacs.—Medicines used to allay sexual feeling.

Anesthetics.—Medicines used to produce anesthesia or unconsciousness.

Anodynes.—Medicines used to allay pain.

Antacids.—Medicines used to neutralize acid in the stomach and intestines.

Anthelmintics.—Medicines used to destroy intestinal worms.

Antiarthritics.—Medicines used for the relief of gout.

Antihydropsics.—Medicines used for the relief of dropsy.

Antilitics.—Medicines used for the relief of calculous affections.

Antiperiodics.—Medicines used for the relief of malarial fevers.

Antipyretics.—Medicines used for the reduction of bodily temperature in fevers.

Antiseptics.—Substances which have the power of preventing putrefaction.

Antispasmodics.—Medicines used for the relief of nervous irritability and minor spasms.

Antisyphilitics.—Medicines used for the relief of syphilis.

Antizymotics.—Substances which have the power of killing disease germs.

Aperients.—Mild purgatives.

Aphrodisiacs.—Substances used to increase sexual power or excitement.

Aromatic Bitters.—Medicines which unite the properties of the aromatic and simple bitters.

Aromatics.—Medicines characterized by a fragrant or spicy taste and odor, and stimulant to the gastro-intestinal mucous membrane.

Astringents.—Medicines having the power of influencing vital contractility, thereby condensing tissues.

Bitters, Simple.—Medicines which have a bitter taste and have the power of stimulating the gastro-intestinal mucous membrane, without affecting the general system.

Blisters.—Medicines which when locally applied cause inflammatory exudation of serum from the skin, and are used as revulsants.

Calefacients.—Medicines used externally to cause a sense of warmth.

Cardiac Depressants.—Medicines used to lower the heart's action.

Cardiac Stimulants.—Medicines used to increase the heart's action.

Carminatives.—Medicines containing a volatile oil used to excite intestinal peristalsis and provoke an expulsion of flatus.

Cathartics.—Purgatives.

Caustics.—Medicines used to destroy living tissues.

Cholagogues.—Medicines which provoke a flow of bile.

Constringents.—Astringents.

Convulsants.—Medicines which cause convulsions.
Correctives.—Medicines used to correct or render more pleasant the action of other remedies, especially purgatives.
Corrigents.—Correctives.
Demulcents.—Mucilaginous principles which are used in solution to soothe and protect irritated mucous membranes and other tissues.
Deobstruents (term obsolete and not very definite).—Medicines which overcome obstruction; aperients.
Deodorants.—Substances which destroy or hide foul air.
Depilatories.—Substances used to remove hair.
Depressants.—Sedatives.
Depressomotors.—Medicines which lessen motor activity.
Depurants.—Medicines which act upon the emunctories so as to cause excretion and thereby purify the system.
Detergents.—Medicines which cleanse wounds, ulcers, etc.
Diaphoretics.—Medicines which produce sweating.
Digestants.—Ferments and acids which have the power of aiding in the solution of food.
Diluents.—Medicines which dilute secretions and excretions.
Disinfectants.—Substances which have the power of destroying disease germs or the noxious properties of decaying organic matter.
Diuretics.—Medicines which increase the secretion of urine.
Drastics.—Purgatives which cause much irritation.
Ecbolics.—Medicines which produce abortion.
Eccoprotics or Ectoprotics.—Laxatives.
Emetics.—Medicines which cause vomiting.
Emmenagogues.—Medicines which stimulate menstruation.
Emollients.—Substances used to mechanically soften and protect tissues.
Epispatics.—Blisters.
Errhines.—Medicines which increase the nasal secretions.
Escharotics.—Caustics.
Evacuants.—Medicines which evacuate; chiefly applied to purgatives.
Excitants.—Stimulants.
Excitomotors.—Medicines which increase motor activity.
Expectorants.—Medicines which act upon the pulmonic mucous membrane and increase or alter its secretions.
Febrifuges.—Medicines which dissipate fever.
Galactagogues.—Medicines which increase the secretion of milk.
Hemostatics.—Medicines which arrest hemorrhages.
Hydragogues.—Purgatives which cause large watery discharges.
Hypnotics.—Medicines which cause sleep.
Laxatives.—Mild purgatives.
Local Anesthetics.—Medicines which when applied locally destroy sensation.
Mydriatics.—Medicines which cause mydriasis, or dilation of the pupil.
Myotics.—Medicines which cause myosis, or contraction of the pupil.
Narcotics.—Powerful anodyne hypnotics.
Neurotics.—Medicines which act upon the nervous system.
Nutrients.—Medicines which modify the nutritive processes.
Nutrients.—Substances which nourish.
Oxytocics.—Medicines which stimulate uterine contractions.
Peristaltics.—Medicines which increase peristalsis.
Prophylactics.—Medicines which prevent the taking or development of disease.
Protectives.—Medicines which protect a part when applied to it.
Ptyalagogues.—Sialagogues.
Purgatives.—Medicines which produce copious discharges from the bowels.
Refrigerants.—Medicines which lessen bodily temperature.
Revulsants.—Medicines which by causing irritation draw nervous force and blood from a distant diseased part.

Rubefacients.—Medicines which cause irritation and redness, and are used as revulsants.
Sedatives.—Medicines which lower functional activity.
Sialagogues.—Medicines which excite salivary glands to secretion.
Somnifacients.—Soporifics.
Soporifics.—Medicines which cause sleep.
Sorbefacients.—Medicines which cause absorption.
Specifics.—Medicines which have a direct curative influence on certain individual diseases.
Stimulants.—Medicines which increase functional activity.
Stomachics.—Stimulants to the stomach.
Styptics.—Hemostatics.
Sudorifics.—Medicines which produce sweating.
Tenicides.—Medicines which kill the tapeworm.
Tonics.—Medicines which permanently increase the systemic tone by stimulating nutrition.
Vermicides.—Medicines which kill intestinal worms.
Vermifuges.—Medicines which cause the expulsion of intestinal worms.
Vesicatories.—Blisters.

ROMAN NUMERALS.

I—1	VII—7	XIII—13	XIX—19	LXX—70
II—2	VIII—8	XIV—14	XX—20	LXXX—80
III—3	IX—9	XV—15	XXX—30	XC—90
IV—4	X—10	XVI—16	XL—40	C—100
V—5	XI—11	XVII—17	L—50	D—500
VI—6	XII—12	XVIII—18	LX—60	M—1000

POPULAR AND OFFICIAL NAMES OF MEDICINAL PREPARATIONS.

Baking soda . . .	Sodium bicarbonate.	Sodii bicarbonas.
Basham's mixture . . .	Solution of iron and ammonium acetate.	Liquor ferri et ammonii acetatis.
Blaud's pills . . .	Pills of iron carbonate.	Pillulæ ferri carbonatis.
Blue mass or blue pill.	Mass of mercury.	Massa hydrargyri.
Blue ointment . . .	Ointment of mercury.	Unguentum hydrargyri.
Borax	Sodium borate.	Sodii boras.
Brown mixture . . .	Compound licorice mixture.	Mistura glycyrrhizæ compositæ.
Calomel	Mild chlorid of mercury.	Hydrargyri chloridum mite.
Castor oil		Oleum ricini.
Cod-liver oil		Oleum morrhuzæ.
Corrosive sublimate.	Corrosive chlorid of mercury.	Hydrargyri chloridum corrosivum.
Cream of tartar . .	Potassium bitartrate.	Potassii bitartras.
Croton oil		Oleum tigllii.
Dover's powder . . .	Powder of ipecac and opium.	Pulvis ipecacuanhæ et opii.
Epsom salt	Magnesium sulphate.	Magnesiæ sulphas.
Fowler's solution . .	Solution of potassium arsenite.	Liquor potassii arsenitis.
Glauber's salt . . .	Sodium sulphate.	Sodii sulphas.
Gum Arabic		Acacia.
Heroin	Diethylmorphin hydrochlorid.	
Hive syrup	Compound syrup of squills.	Syrupus scillæ compositus.
Hoffmann's anodyne.	Compound spirit of ether.	Spiritus ætheris compositus.
Huxham's tincture.	Compound tincture of cinchona.	Tinctura cinchonæ compositæ.
Jaborandi		Pilocarpus.
Lady Webster's pill.	Pill of aloes and mastic.	Pillula aloes et masticæ.
Laudanum	Tincture of opium.	Tinctura opii.
Licorice powder . . .	Compound licorice powder.	Pulvis glycyrrhizæ compositus.
Lugol's solution . .	Compound solution of iodine.	Liquor iodi compositus.
Magendie's solution.	Solution of morphin sulphate.	Liquor morphinæ sulphatis.
Male fern	Filix mas.	Aspidium.
Muriatic acid	Hydrochloric acid.	Acidum hydrochloricum.
Mustard		Sinapis.
Nitroglycerin		Glonoïn.
Oil of wintergreen . .	Oil of gaultheria.	Oleum gaultheriæ.
Paregoric	Camphorated tincture of opium.	Tinctura opii camphorata.
Phenol	Carbolic acid.	Acidum carbolicum.
Prussic acid	Hydrocyanic acid.	Acidum hydrocyanicum.
Rochelle salt	Sodium and potassium tartrate.	Sodii et potassii tartras.
Salt	Common salt, sodium chlorid.	Sodii chloridum.
Seidlitz powder . . .	Compound effervescing powder.	Pulvis effervescens compositus.
Sweet spirit of niter.	Spirit of nitrous ether.	Spiritus ætheris nitrosi.

WEIGHTS AND MEASURES.

Tartar emetic . . .	Antimony and potassium tartrate.	Antimonii et potassii tartras.
Washing soda . . .	Sodium carbonate.	Sodii carbonas.
Witch-hazel		Hamamelis.

WEIGHTS AND MEASURES.

TROY WEIGHT.

24 grains = 1 dwt.	12 ounces = 1 pound.
20 dwts. = 1 ounce.	

Used for weighing gold, silver, and jewels.

APOTHECARIES' WEIGHT.

20 grains = 1 scruple.	8 drams = 1 ounce.
3 scruples = 1 dram.	12 ounces = 1 pound.
The ounce and pound in this are the same as in Troy weight.	

AVOIRDUPOIS WEIGHT.

27 1/2 grains = 1 dram.	4 quarters = 1 cwt.
16 drams = 1 ounce.	2000 lbs. = 1 short ton.
16 ounces = 1 pound.	2240 lbs. = 1 long ton.
25 pounds = 1 quarter.	

DRY MEASURE.

2 pints = 1 quart.	4 pecks = 1 bushel.
8 quarts = 1 peck.	36 bushels = 1 chaldron.

LIQUID MEASURE.

4 gills = 1 pint.	31 1/2 gallons = 1 barrel.
2 pints = 1 quart.	2 barrels = 1 hogshead.
4 quarts = 1 gallon.	

TIME MEASURE.

60 seconds = 1 minute.	24 hours = 1 day.
60 minutes = 1 hour.	7 days = 1 week.
28, 29, 30, or 31 days = 1 calendar month.	
(30 days)	1 month in computing interest).
365 days = 1 year.	366 days = 1 leap year.

CIRCULAR MEASURE.

60 seconds = 1 minute.	30 degrees = 1 sign.
60 minutes = 1 degree.	90 degrees = 1 quadrant.
4 quadrants = 12 signs, or	360 degrees = 1 circle.

LONG MEASURE.

12 inches = 1 foot.	40 rods = 1 furlong.
3 feet = 1 yard.	8 furlongs = 1 statute mile.
5 1/2 yards = 1 rod.	3 miles = 1 league.

CLOTH MEASURE.

2 1/4 inches = 1 nail.	4 quarters = 1 yard.
4 nails = 1 quarter.	

MARINERS' MEASURE.

6 feet = 1 fathom.	5280 feet = 1 stat. mile.
20 fathoms = 1 cable length.	6085 feet = 1 naut. mile.
7 1/2 ca. lgh. = 1 mile.	

MISCELLANEOUS.

3 inches	= 1 palm.	18 inches	= 1 cubit.
4 inches	= 1 hand.	21.8 in.	= 1 Bible cubit.
6 inches	= 1 span.	2½ feet	= 1 military pace.

SQUARE MEASURE.

144 sq. in.	= 1 sq. ft.	40 sq. rods	= 1 rood.
9 sq. feet	= 1 sq. yd.	4 roods	= 1 acre.
36½ sq. yds.	= 1 sq. rod.	640 acres	= 1 sq. mile.

NUMERICAL TABLE.

12 things	=	1 dozen.
12 dozen	=	1 gross.
12 gross	=	1 great gross.
20 things	=	1 score.
24 sheets	=	1 quire.
20 quires, or 480 sheets	=	1 ream.

SIMPLE FRACTIONS.

$\frac{6}{10}$ of 15	=	$6 \times 15 \div 10 = 9$
$\frac{3}{10}$ of 15	=	$3 \times 15 \div 10 = 4\frac{5}{10}$
$\frac{3}{10}$ of 60	=	$3 \times 60 \div 10 = 18$
$\frac{6}{10}$ of 60	=	$6 \times 60 \div 10 = 36$

METRIC SYSTEM.

Meter	=	Unit of length.
Gram	=	Unit of weight.
Liter	=	Unit of capacity.

METRIC MEASURES OF LENGTH DECREASING.

Decimeter (dm.) = one-tenth, .1, or $\frac{1}{10}$ of a meter.
 Centimeter (cm.) = one-hundredth, .01, or $\frac{1}{100}$ of a meter.
 Millimeter (mm.) = one-thousandth, .001, or $\frac{1}{1000}$ of a meter.

METRIC MEASURES OF LENGTH INCREASING.

Decameter (Dm.)	=	10 meters.
Hectometer (Hm.)	=	100 meters.
Kilometer (Km.)	=	1000 meters.

APPROXIMATE EQUIVALENTS OF METRIC AND STANDARD MEASURES OF LENGTH.

1 meter	=	39.37 inches.
1 centimeter	=	$\frac{1}{2}$ inch.
5 centimeters	=	2 inches.
30.5 centimeters	=	12 inches.
1 millimeter	=	$\frac{1}{25}$ inch.
25 millimeters	=	1 "

METRIC WEIGHTS.

1 gram (Gm.)	=	weight of 1 cubic centimeter of water.
1 decigram (dg.)	=	one-tenth, .01, or $\frac{1}{10}$ of a gram.
1 centigram (cg.)	=	one-hundredth, .01, or $\frac{1}{100}$ of a gram.
1 milligram (mg.)	=	one-thousandth, .001, or $\frac{1}{1000}$ of a gram.
1 Decagram (Dg.)	=	10 grams.
1 Hectogram (Hg.)	=	100 grams.
1 Kilogram (Kg.)	=	1000 grams.

APPROXIMATE EQUIVALENTS OF METRIC AND APOTHECARIES' WEIGHTS.

0.001 gram	=	$\frac{1}{24}$ grain.
0.002 "	=	$\frac{1}{12}$ "
0.008 "	=	$\frac{1}{3}$ "
0.01 "	=	$\frac{1}{8}$ "
0.065 "	=	1 "
0.1 "	=	1.5 grains.
0.2 "	=	3 "
0.5 "	=	7.7 "
1.0 "	=	15.4 "
10.0 grams	=	154 "
100.0 "	=	1543 "
$\frac{1}{100}$ grain	=	0.00065 gram.
$\frac{1}{50}$ "	=	0.0013 "
$\frac{1}{30}$ "	=	0.002 "
$\frac{1}{20}$ "	=	0.003 "
$\frac{1}{10}$ "	=	0.0065 "
$\frac{1}{8}$ "	=	0.008 "
$\frac{1}{4}$ "	=	0.016 "
$\frac{1}{2}$ "	=	0.03 "
1 "	=	0.065 "
10 "	=	0.65 "
15 "	=	1.0 "

METRIC MEASURES OF CAPACITY.

1 liter (l.)	=	the measure of 1000 grams of water.
1 deciliter (dl.)	=	$\frac{1}{10}$ or 0.1 of a liter, or 100 cubic centimeters.
1 centiliter (cl.)	=	$\frac{1}{100}$ or 0.01 of a liter, or 10 cubic centimeters.
1 milliiliter (ml.)	=	$\frac{1}{1000}$ or 0.001 of a liter, or 1 cubic centimeter (c.c.).
1 decaliter (Dl.)	=	10 liters.
1 hectoliter (Hl.)	=	100 liters.

APPROXIMATE EQUIVALENTS OF METRIC AND APOTHECARIES' MEASURES OF CAPACITY.

1 liter	=	2 pints.
1000 c.c.	=	2 pints.
100 c.c.	=	3.4 fluidounces.
30 c.c.	=	1 fluidounce.
10 c.c.	=	2.7 fluidrams.
1 c.c.	=	16 minims.

TABLES FOR PERCENTAGE OF SOLUTIONS.

The following tables are sufficiently correct for practical purposes:

APOTHECARIES' MEASURE.

	For 1 ounce.	For 1 pint.	For 1 quart.	For 1 gallon.
1 per cent. (1:100) . .	5 M. or 5 grains	75 M. or 75 grains	2½ drams	10 drams
2 " (1:50) . .	10 " 10 "	2½ drams	5 "	2½ ounces
3 " (1:33) . .	15 " 15 "	3¾ "	7½ "	3 oz. and 6 drams
4 " (1:25) . .	19 " 19 "	5 "	10 "	5 ounces
5 " (1:20) . .	24 " 24 "	6½ "	13 "	6 oz. and 4 drams
10 " (1:10) . .	48 " 48 "	13 "	26 "	13 ounces

METRIC MEASURE.

	30 C.c.	500 C.c.	1000 C.c.	4 liters.
1 per cent. (1:100) . .	0.30 gram	5.00 grams	10.00 grams	40.00 grams
2 " (1:50) . .	0.60 "	10.00 "	20.00 "	80.00 "
3 " (1:33) . .	0.90 "	15.00 "	30.00 "	120.00 "
4 " (1:25) . .	1.20 grams	20.00 "	40.00 "	160.00 "
5 " (1:20) . .	1.50 "	25.00 "	50.00 "	200.00 "
10 " (1:10) . .	3.00 "	50.00 "	100.00 "	400.00 "

WEIGHTS AND MEASURES.

1 minim	=	0.06 c.c.
10 minims	=	0.6 c.c.
20 minims	=	1.25 c.c.
30 minims	=	2.0 c.c.
1 fluidram	=	3.75 c.c.
2 fluidrams	=	7.5 c.c.
1 fluidounce	=	30.0 c.c.
16 fluidounces	=	474 c.c.

APOTHECARIES OR TROY WEIGHT.

20 grains (gr.)	=	1 scruple (ʒ).
3 scruples (ʒ)	=	1 dram (ʒ).
8 drams (ʒ)	=	1 ounce (ʒ).
12 ounces (ʒ)	=	1 pound (lb.).

APOTHECARIES' OR WINE MEASURE.

60 minims (m.)	=	1 fluidram (fʒ).
8 fluidrams (fʒ)	=	1 fluidounce (fʒ).
16 fluidounces (fʒ)	=	1 pint (O).
8 pints (O).	=	1 gallon (Cong.).

APPROXIMATE FLUID MEASURES.

1 teaspoonful	=	1 fluidram, or fʒj.
1 dessertspoonful	=	2 fluidrams, or fʒij.
1 tablespoonful	=	4 fluidrams, or fʒiv.
1 wineglassful	=	2 fluidounces, or fʒij.
1 teacupful	=	4 fluidounces, or fʒiv.

SOLUTIONS.

TO MAKE A 1:500 SOLUTION.

Add 1 gr. or 1 m.	to 1 ounce of water.
Add 15 " 15 "	1 pint "
Add 30 " 30 "	1 quart "
Add 120 " 120 "	1 gallon "

To make 1:1000 sol.	take 1 part of 1,500 sol. and 1 part water.
To make 1:2000 "	" 1 " 1,500 " 3 parts water.
To make 1:4000 "	" 1 " 1,500 " 7 "
To make 1:5000 "	" 1 " 1,500 " 9 "

To make a 1:500 solution of formaldehyd add 38 minims of formalin (a 40 per cent. solution of formaldehyd) to 1 pint of water.

A HANDY SOLUTION TABLE WITH DOMESTIC MEASURES.

SOLUTION.	DOMESTIC MEASURE.
1:1000	1 teaspoon to gallon.
1/10 of 1 per cent.	15 drops to quart.
1:500	2 teaspoons to gallon.
1/4 of 1 per cent.	30 drops to quart.
1:200	5 teaspoons to gallon.
1/2 of 1 per cent.	14 teaspoons to quart.

1 : 100	2½ teaspoons to quart.
1 per cent.	1½ teaspoons to pint.
1 : 50	5 teaspoons to quart.
2 per cent.	2½ teaspoons to pint.
1 : 25	2½ tablespoons to quart.
4 per cent.	5 teaspoons to pint.
1 : 20	3 tablespoons to quart.
5 per cent.	1½ tablespoons to pint.

TO PREPARE A 1 : 500 SOLUTION.

There are 7680 m. in 1 pint of solution (water); therefore, we divide 7680 by 500 as follows:

$$500 \overline{) 7680} (15 \frac{3}{8} \text{ m. to 1 pint of solution (water).}$$

$$\begin{array}{r} 500 \\ 2680 \\ \hline 2500 \\ 1800 \\ \hline 1500 \end{array}$$

300, or $\frac{3}{8}$ of a m.

N. B.—Divide the number of m. in 1 pint by the strength of the solution, and then divide the result by the percentage of original strength of the article.

When original strength of solution is less than 100 per cent., as, for example, formaldehyd, which is 40 per cent., divide the quotient above resulting by the percentage of strength—viz. :

$$40 \overline{) 15.36} (36 \frac{3}{8} \text{ m. to 1 pint of solution (water).}$$

$$\begin{array}{r} 120 \\ 336 \\ \hline 320 \\ \hline 16 = \frac{3}{8} \end{array}$$

To get a $\frac{1}{100}$ of a grain dose of any drug out of a solution of 60 minims containing $\frac{1}{32}$ of a grain of that drug, compute as follows:

$$\frac{32}{160} \text{ or 1 grain} = 32 \times 60, \text{ or } 1920 \text{ m.}$$

$$\frac{1}{160} = \frac{1}{160} \text{ of } 1920 \text{ m.}$$

$$100 \overline{) 1920} (19 \frac{2}{5} \text{ m.}$$

$$\begin{array}{r} 100 \\ 920 \\ \hline 900 \end{array}$$

20, or $\frac{1}{5}$ m.

RULE.—Multiply the quantity of the solution on hand in minims by a number indicating the fractional amount of the drug therein contained, and divide by a number indicating the fractional amount of the drug desired.

In 20 parts of solution we have 1 part of carbolic acid.

In 1 part " " $\frac{1}{20}$ " " "

In 100 parts " " $100 \times \frac{1}{20} = 5 \text{ pt.}$ " "

So that $\frac{1}{20}$ solution is a 5 per cent. carbolic acid solution.

40 parts contain 1 part of carbolic acid.

1 part contains $\frac{1}{40}$ " " "

100 parts contain $100 \times \frac{1}{40} = 2\frac{1}{2}$ parts of carbolic acid.

So that $\frac{1}{40}$ solution is a $2\frac{1}{2}$ per cent. carbolic acid solution.

ACTION, USES, AND DOSES OF THE MOST IMPORTANT DRUGS.

Acetanilid.—This substance, a derivative of anilin, is used to lower temperature; to relieve headaches and neuralgic pains; and to allay spasm, as in chorea and whooping-cough.

Toxic doses cause lividity, cold sweats, ringing in the ears, and heart failure.

The dose is from 5 to 10 grains (0.3–0.6 gm.).

Arsenic.—Arsenic is used internally as a tonic in anemia, an alterative in chronic constitutional diseases, as a special remedy in chorea, and as an antimalarial. Externally, it is occasionally used as a caustic.

The indications of its too free use are puffiness under the eyes, or griping pains in the abdomen, with diarrhea.

Toxic doses cause abdominal pain, vomiting, purging, swelling of the face, and collapse.

Preparations of arsenic should be given after meals. The dose of *arsenous acid* is from $\frac{1}{40}$ to $\frac{1}{20}$ grain (0.0016–0.0032 gm.); of *Fowler's Solution* (Liquor Potassii Arsenitis), 1 minim (0.06 c.c.), very gradually increased to 10 minims (0.6 c.c.).

Aconite.—This drug depresses the heart, slows the pulse, and lowers temperature. Externally, it causes numbness and anesthesia. Internally, it is employed chiefly as a heart sedative in hypertrophy of the heart, and as a febrifuge in acute febrile disease when the pulse is strong and rapid. Locally, it is sometimes employed in liniments in neuralgia and muscular rheumatism.

Aconite is a powerful poison, causing in overdoses tingling of the lips, tongue, and extremities, cold sweat, pallor, a feeble pulse, and collapse.

The dose of the *tincture* (Tinctura Aconiti) is from 1 to 5 minims (0.06–0.3 c.c.).

Alcohol.—In moderate cases alcohol stimulates the heart, favors digestion, and lessens tissue-waste.

For these reasons it is a useful remedy in low fevers, like typhoid fever, diphtheria, and pneumonia. On account of its prompt action, it is a valuable circulatory stimulant in sudden heart failure. It has been recently recommended also as an antidote in carbolic-acid poisoning. Externally, it is used as a cleanser for the skin and as a stimulant application in the prevention of bed-sores.

Preparations.—*Wines* are produced by the spontaneous fermentation of fruits. The strongest are port, Madeira, and sherry, each of which contains about 20 per cent. of alcohol. The *dose* is from 4 to 8 drams (15–30 c.c.). The weakest wines are the clarets and Rhine wines, which contain about 8 per cent. of alcohol. The *dose* of these is from 1 to 2 ounces (30–60 c.c.).

Champagne is prepared by adding sugar to an ordinary wine, and allowing the mixture to ferment in corked bottles, the carbon dioxid thus being retained. It contains from 10 to 12 per cent. of alcohol. The *dose* is from 1 to 2 ounces (30–60 c.c.).

Whisky is made by subjecting fermented grains to distillation. *Rum* is made by distilling fermented molasses. *Gin* is prepared by distilling fermented grain and adding oil of juniper berries to the distillate.

Brandy is a spirit produced by the distillation of a wine.

Whisky, rum, gin, and brandy contain from 40 to 50 per cent. of alcohol. The *dose* of each is from 1 to 4 drams (4–15 c.c.).

Beer, ale, and porter are made from an infusion of malt—that is, fermented barley, flavored with hops. They each contain from 4 to 6 per cent. of alcohol.

In large doses alcohol in any form causes mental excitement, delirium, loss of coördination, and finally stupor and coma. Death may result from paralysis of the heart or respiration.

Ammonia.—This is a gas employed medicinally in the form of a watery solution (water of ammonia) or an alcoholic solution (spirit of ammonia).

These preparations are used internally as heart stimulants, respiratory stimulants, gastric antacids, and externally as counterirritants. The *dose* of the *Aromatic Spirit* (*Spiritus Ammoniae Aromaticus*) is from $\frac{1}{2}$ to 1 dram (2–4 c.c.), well diluted. Large doses of ammonia preparations cause burning pain in the throat and abdomen, vomiting, purging, and collapse.

Antipyrin.—This drug has about the same action and uses as acetanilid, and may be given in the same *dose*.

Antitoxin of Diphtheria.—This is obtained from healthy horses which have been rendered artificially immune to diphtheria from having received a prolonged course of treatment with diphtheria toxin in doses gradually increased. The immunity is due to the formation in the blood of a substance which in some way counteracts the poison or toxin of the disease. This substance is known as the antitoxin. It exists in the serum of the blood, and so far has not been separated from it. The dose of the serum is measured in units, a unit being ten times the amount of antitoxin required to save the life of a guinea-pig which has been injected with 100 fatal doses of diphtheria toxin.

Antitoxin acts both as a curative and a preventive remedy. Since its introduction the mortality of diphtheria has been reduced more than one-half. The *curative dose* is from 2000 to 5000 units, to be repeated in from six to twelve hours, if necessary. The *prophylactic dose* is 500 units. The protection afforded is only temporary, lasting from two to three weeks.

The injections are sometimes followed by a rise of temperature, pain in the joints, or a cutaneous rash, but these symptoms are without serious significance.

Atropin. See *Belladonna*.

Belladonna.—This drug owes its activity to the alkaloid *atropin*. It is employed internally to stimulate the respiration; to stimulate the circu-

lation; to allay local spasm, as in asthma and whooping-cough; to check excessive secretion, as in the night-sweats of phthisis; and to stimulate peristalsis in atonic constipation. Locally, it is employed in the form of solutions of atropin to dilate the pupil of the eye, and in the form of a liniment or plaster of belladonna as a sedative application in various inflammatory conditions. Toxic doses of belladonna cause dilatation of the pupils, dryness of the throat, quickening of the pulse and respiration, delirium, and a diffuse red rash resembling that of scarlatina.

The *dose of atropin* is from $\frac{1}{150}$ to $\frac{1}{50}$ grain (0.00043–0.0013 gm.); of the *Tincture of Belladonna* (Tinctura Belladonnæ), 5 to 20 minims (0.3–1.2 c.c.); of the *Extract of Belladonna* (Extractum Belladonnæ), $\frac{1}{8}$ to $\frac{1}{4}$ grain (0.008–0.016 gm.).

Bismuth.—The insoluble preparations of the metal—*subnitrate*, *subcarbonate*, and *subgallate*—are used internally as mild antiseptics, sedatives, astringents, and antacids in various inflammatory diseases of the stomach and bowel. They are scarcely poisonous when taken internally in any amount. The usual *dose* of any one of the preparations named is from 5 to 30 grains (0.3–2 gm.) in dry powder or stirred in milk or water.

Bromids.—The salts of bromin in common use are the bromids of potassium, sodium, ammonium, and strontium. The action of these is very similar. They are especially useful as depressants to the central nervous system. They are employed to produce sleep, to check convulsions, and to relieve headache and neuralgic pain. Large doses depress the heart and respiration. The continued use of the bromids causes a condition known as *bromism*. This is characterized by fetor of the breath, a rash on the skin, languor, and somnolence. The *dose* of the *bromin salts* is from 10 to 60 grains (0.6–4 gm.).

Caffein.—This is an alkaloid obtained from coffee. It is a heart stimulant, respiratory stimulant, brain

stimulant, and kidney stimulant (diuretic). The *dose* is from 1 to 5 grains (0.06–0.3 gm.).

Carbolic Acid.—Externally, this acid is used in weak solutions (1 : 40 to 1 : 20) as an antiseptic, and in concentrated form as a caustic. Weak solutions are also employed to allay itching in skin diseases. Internally, carbolic acid is used as an antiseptic in dyspepsia and diarrhea. Applications of carbolic acid, even when dilute, should never be prolonged, as they are liable to cause gangrene. Poisoning by carbolic acid is characterized by white patches on the lips, the odor of the drug on the breath, burning pain in the abdomen, vomiting, purging, unconsciousness, and collapse. The *dose* is from $\frac{1}{2}$ to 3 minims (0.03–0.2 c.c.).

Castor Oil.—This is an oil expressed from the seed of an East Indian plant. The seeds themselves are acrid poisons. It is a mild purgative, unloading the bowels very thoroughly in from four to six hours. It may be given in flexible capsules, in emulsion, or with equal parts of lemon-juice and glycerin. The *dose* is from $\frac{1}{2}$ to 1 ounce (15–30 c.c.).

There are two simple methods of taking castor oil without producing nauseating effects. Have the patient wash out the mouth with water as hot as can be borne, then swallow the oil, and follow this by rinsing out the mouth well with hot water. The other method is to hold a piece of ice in the mouth long enough to chill the lining membrane, swallow the oil, and rinse the mouth with ice water.

Chloral.—This substance is an active depressant of the brain and spinal cord. In large doses it also depresses the heart and respiration. It is employed to produce sleep and to check convulsions. The *dose* is from 10 to 30 grains (0.6–2 gm.) in some agreeable syrup.

Poisonous doses cause unconsciousness, embarrassed breathing, and collapse.

Chloralamid.—This is a comparatively safe and reliable hypnotic, producing sleep without causing much depression of the heart or disagreeable after-

effects. The *dose* is from 10 to 30 grains (0.6–2 gm.), well diluted. Hot liquids decompose it.

Chloroform.—This substance is employed by inhalation as a general anesthetic, by the mouth as a sedative in colic, neuralgia of the stomach, and obstinate cough, and externally in the form of liniment as a counterirritant in muscular rheumatism, sprains, etc. As a general anesthetic it is more powerful than ether, more readily inhaled, but not so safe. Death from chloroform is usually the result of heart failure. The *dose* of *Spirit of Chloroform* (*Spiritus Chloroformi*) is from 5 to 30 minims (0.3–2 c.c.); of *Chloroform-water* (*Aqua Chloroformi*), 1 to 8 drams (4–30 c.c.).

Cinchona (Peruvian Bark).—This is the bark of an evergreen tree growing in the tropics. It owes its medicinal properties to *quinin* and *cinchonin*, especially the former. It is used as a general tonic, as a stomachic, as a febrifuge, and as an antimalarial. Large doses cause ringing in the ears, headache, deafness, dimness of vision, convulsions, and coma. The *dose* of *quinin* and its salts is from 1 to 30 grains (0.06–2 gm.); of *cinchonin*, 1 to 30 grains (0.06–2 gm.); of the *Compound Tincture of Cinchona* (*Huxham's Tincture*), 1 to 4 drams (4–15 c.c.).

Cocain.—This is the alkaloid of a shrub (*coca*) growing in South America. Applied to mucous membranes or raw surfaces, or injected under the skin, it blanches the part and produces anesthesia. Applied directly to the skin, however, it is without effect, as it is not absorbed from the unbroken skin. Internally, it is sometimes employed to stimulate the heart, to stimulate the respiration, and to allay vomiting. Its repeated use, even as a local remedy, is dangerous, in that it is prone to cause a habit, the symptoms of which are mental failure, loss of flesh and strength, anemia, and intense craving for the drug. The symptoms of acute cocain-poisoning are excitement, delirium, a rapid pulse, hurried breathing, convulsions, and coma. The *dose* of *cocain* is from $\frac{1}{8}$ to $\frac{1}{2}$ grain (0.008–0.03 gm.). As an anesthetic it is usually employed in from 2 to 4 per cent. solutions.

A $2\frac{1}{2}$ -grain tablet of cocain, dissolved in a teaspoonful of water, makes a 2 per cent. solution; a $4\frac{1}{2}$ -grain tablet, in the same amount of water makes a 4 per cent. solution; a $10\frac{1}{2}$ -grain tablet in a like amount furnishes a 10 per cent. solution. These percentages are not mathematically correct, but are sufficiently exact for any surgical purposes.

Cod-liver Oil.—This is more of a food than a medicine. It is preferable to other oils in being more readily digested. When well borne by the stomach, it is a valuable remedy in wasting diseases, especially phthisis. The *dose* is from 1 to 4 drams (4–15 c.c.). It may be given in emulsion, in flexible capsules, or pure, dropped in the froth of porter. It is best taken two hours after meals.

Creasote.—This is an oily substance obtained from the slow burning of beechwood. It is chiefly used internally as an antiseptic in dyspepsia and diarrhea, and as an expectorant in purulent bronchitis and phthisis. Large doses produce the same toxic effects as are observed in carbolic-acid poisoning. The *dose* is from 2 to 20 minims (0.1–1.2 c.c.) in capsules, in milk, or in some bitter tincture, like that of gentian. The *dose* of *creasote carbonate* (*creosotal*), which is free from the unpleasant odor and taste of pure creasote, is from 5 to 20 minims (0.3–1.2 c.c.).

Croton Oil (Oleum Tiglii).—This is an oil expressed from the seed of a small tree growing in Asia. Locally it is an active vesicant; internally it is a powerful purgative. Large doses cause severe inflammation of the stomach and bowels. The *dose* is from 1 to 2 drops (0.06–0.12 c.c.) in glycerin, olive oil, or bread-crumbs. A bland vehicle is necessary to prevent the vesicating effect of the drug on the throat. Diluted with from 2 to 4 parts of olive oil, and applied with friction, it is sometimes used as a counterirritant in inflammatory diseases of the chest.

Digitalis.—This is a powerful circulatory stimulant, strengthening the contractions of the heart, con-

stricting the peripheral blood-vessels, and slowing the pulse. By increasing the blood-pressure in the kidneys it also increases the flow of urine. It is chiefly used as a stimulant in heart disease when there is failure of circulation, and as a diuretic in various forms of dropsy. The effects of the drug should be carefully watched; too large doses cause marked slowing and irregularity of the pulse, and a decrease rather than an increase in the urine. The *dose* of *powdered digitalis leaves* is from $\frac{1}{2}$ to 2 grains (0.03–0.13 gm.); of the *Tincture* (Tinctura Digitalis), 5 to 20 minims (0.3–1.2 c.c.); of the *infusion* (infusum digitalis), 1 to 4 drams (4–15 c.c.); of *digitalin*, an important principle of the leaves, $\frac{1}{100}$ to $\frac{1}{60}$ grain (0.00065–0.001 gm.).

Ergot.—This is a fungus growing on rye. It is employed to contract the blood-vessels in internal hemorrhage and to stimulate the uterine contractions in the second stage of labor when post-partum hemorrhage is feared. Its use in the early stage of labor to hasten delivery is dangerous, since it may cause tetanic spasm of the uterus and asphyxiation of the child, or even rupture of the uterus.

The *dose* of the *Extract of Ergot* (Extractum Ergotæ) is from 1 to 15 grains (0.065–1 gm.); of the *Fluid Extract* (Extractum Ergotæ Fluidum), $\frac{1}{2}$ to 1 dram (2–4 c.c.); of the *Wine* (Vinum Ergotæ), 1 to 4 drams (4–15 c.c.); of *ergotin*, a concentrated extract, 2 to 5 grains (0.13–0.3 gm.). When given hypodermically abscess is likely to form, even under the most strict antiseptic precautions.

Ether.—Next to nitrous oxid, this is the safest of the general anesthetics, although it is not so readily inhaled as chloroform, and is more apt to produce unpleasant after-effects, such as nausea and vomiting. The latter may sometimes be relieved by the inhalation of hot vinegar fumes.

Death from ether is usually the result of asphyxia, and not, as in the case of chloroform, from heart failure. Internally, by the mouth or hypodermic-

ally, ether is sometimes used as a circulatory stimulant in sudden heart failure. Great care should be exercised in handling ether in the neighborhood of lighted gas-jets, as the vapor of the drug is highly inflammable. Ether should be stored in well-stoppered containers, in a cool place, remote from lights and fire.

The *dose* of ether as a circulatory stimulant is from 5 to 30 minims (0.3–2 c.c.) in ice-water or hypodermically.

Formaldehyd.—This gas is employed in the form of a 40 per cent. solution (*formalin*). It is used as an antiseptic, disinfectant, and deodorant. It is the best disinfectant for sick-rooms that we possess, although on account of its lack of penetrating power it can not be used for disinfecting bedding, stuffed furniture, carpets, books, etc. To be effective the gas must be generated from formalin in a special apparatus, or from paraform tablets heated over a suitable lamp. Attempts to vaporize solution of formaldehyd from an open vessel placed on a stove are unsuccessful, since this treatment converts most of the formaldehyd gas into crystals of paraform. Solutions of formalin—1 : 2000 to 1 : 500—are sometimes used for irrigating suppurating cavities and disinfecting instruments. A solution of 1 part of formalin to 20 parts of water makes a good disinfectant for stools, urine, and sputa.

Iodids.—The salts of iodine—potassium, sodium, ammonium iodid—resemble each other in their action and uses. They are used as alteratives in constitutional diseases, like chronic rheumatism and gout, as absorbents of exudates in chronic inflammatory diseases, and as eliminants in chronic mineral poisoning. Their continued use occasions a group of symptoms—frontal headache, nasal discharge, sore throat, and a cutaneous eruption—termed *iodism*. The *dose* is from 5 to 30 grains (0.3–2 gm.), well diluted, after meals.

Iodoform.—This drug owes its virtues to iodine, of which it contains about 50 per cent. When

brought into contact with raw surfaces it exerts a mild anesthetic effect, liberates its iodine, and thereby acts as an antiseptic. When applied too freely it may be absorbed and cause toxic effects—headache, elevation of temperature, restlessness, a diffuse red rash on the face and limbs, delirium, stupor, and collapse. The unpleasant odor of the drug can be removed from the hands and from instruments by oil of turpentine.

Ipecac.—This drug is used as an emetic and expectorant. As an emetic it is safe, but somewhat slow in action. It is especially useful in the young and feeble, as it causes but little depression.

The *dose* of powdered ipecac, as an emetic, is from 20 to 30 grains (1.2–2 gm.); of the *Syrup* (*Syrupus Ipecacuanhæ*), as an expectorant, from 10–60 minims (0.6–4 c.c.); as an emetic, from 2 to 4 drams (8–15 c.c.); of the wine, as an expectorant, from 10 to 30 minims (0.6–1.8 c.c.); as an emetic, 1 dram (4 c.c.).

Iron (Ferrum).—The various preparations of iron are employed as tonics and astringents. As tonics, they are especially indicated in simple anemia; as astringents they are employed locally in bleeding, and, internally, in diarrhea.

The *dose* of *Reduced Iron* (*Ferrum Reductum*) is from 1 to 5 grains (0.06–0.3 gm.); of the *Pills of Iron Carbonate* or *Blaud's Pills* (*Pilulæ Ferri Carbonatis*), 1 to 3 pills; of the *Tincture of Ferric Chloride* (*Tinctura Ferri Chloridi*), 5 to 10 minims (0.3–0.6 c.c.); of the *Solution of Iron and Ammonium Acetate* or *Basham's Mixture* (*Liquor Ferri et Ammonii Acetatis*), 1 to 4 drams (4–15 c.c.); of the *Sulphate of Iron* (*Ferri Sulphas*), 1–3 grains (0.06–0.2 gm.); of the *Syrup of Iodide of Iron* (*Syrupus Ferri Iodidi*), 5 to 60 minims (0.3–4 c.c.). The *Solution of Iron Subsulphate* (*Monsel's solution*) is used only as a hemostatic, and *Iron Hydrate with Magnesia* as an antidote in arsenic-poisoning. The *dose* of the latter is a tablespoonful every ten to fifteen minutes.

Lead.—The preparations of lead are used internally and externally as sedatives and astringents. *Lead Acetate* (*Plumbi Acetas*) is employed internally in

diarrhea. The *dose* is from 1 to 3 grains (0.06–0.2 gm.), in pill form.

The *Solution of Lead Subacetate* (*Liquor Plumbi Subacetatis*) is employed externally. Diluted with from 5 to 6 parts of water it is used as a sedative application in ivy-poisoning and erysipelas.

The *Dilute Solution of Lead Subacetate* (*Liquor Plumbi Subacetatis Dilutus*) is known as *lead-water*, and is chiefly employed in making the sedative preparation known as *lead-water and laudanum*. As usually dispensed it contains 1 dram (4 c.c.) of laudanum and 4 drams (15 c.c.) of lead-water to 2 ounces (60 c.c.) of water.

Acute lead-poisoning is characterized by a burning pain in the abdomen, a metallic taste in the mouth, vomiting, purging, coma, and collapse.

Chronic lead-poisoning is characterized by anemia, intestinal colic, constipation, a blue line on the gums (deposit of lead sulphide), and paralysis of the forearms (wrist-drop).

Magnesium Sulphate (Epsom Salt).—This salt is an excellent hydragogue cathartic, producing in the course of a few hours copious watery stools. It is also employed as an antidote in acute lead-poisoning and carbolic-acid poisoning.

To secure the most prompt and powerful cathartic effect the drug is best given before breakfast, in a single dose, and with but a small quantity of water. *Dose*, from 1 to 8 drams (4–31 gm.).

Magnesium Oxide (Magnesia).—This is a white, tasteless, and insoluble powder. It is a cathartic, but much milder in action than Epsom salt. *Dose*, from 10 to 60 grains (0.6–4 gm.).

Magnesium Citrate.—An effervescent solution of this drug is most used as an agreeable laxative. The *dose* is from 6 to 12 ounces (180–360 c.c.).

Mercury.—The most important preparations of this metal are calomel, blue mass, corrosive sublimate, oxide of mercury, iodide of mercury, nitrate of mercury, and ointment of mercury.

Calomel (*Hydrargyri Chloridi Mite*).—This preparation is employed internally as a cathartic and

gastric sedative, and externally as a stimulating and antiseptic dusting-powder. As a cathartic its best effect is secured by giving it in *doses* of from $\frac{1}{10}$ to $\frac{1}{8}$ grain (0.006–0.01 gm.) every half hour or hour, until a grain has been taken. In this way the whole amount ingested is absorbed. When large doses are employed much of the drug escapes absorption.

Blue Mass or *Blue Pill* (Massa Hydrargyri).—This is a mixture of mercury, glycerin, honey, and licorice. Its action is much like that of calomel.

Corrosive Sublimate or *Bichlorid of Mercury* (Hydrargyri Chloridum Corrosivum).—Although irritant, toxic, and destructive to instruments, no other drug has supplanted this salt as an antiseptic for use in general surgery. The following are the strengths of the solutions usually employed for various purposes: for the skin, 1 : 1000 to 1 : 500; for wounds, 1 : 10,000 to 1 : 2000; for cavities of the body, 1 : 20,000 to 1 : 5000. Corrosive sublimate is not a good disinfectant for stools, sputa, etc., as it forms an impenetrable coagulum on the outside of the mass. Internally, corrosive sublimate is used as an alterative in constitutional diseases in *doses* of $\frac{1}{60}$ to $\frac{1}{12}$ of a grain (0.001–0.005 gm.).

Oxid of Mercury.—This appears in two forms—yellow oxid and red oxid. Both preparations are employed externally in the form of ointments for their alterative properties.

Iodid of Mercury.—This salt occurs in two forms: Red Iodid or Biniodid (Hydrargyri Iodidum Rubrum) and Yellow or Green Iodid (Hydrargyri Iodidum Flavum). The first is an irritating preparation, somewhat resembling corrosive sublimate in its action; the latter is comparatively unirritating, and is much used internally as an alterative. The *dose* of the *red iodid* is from $\frac{1}{60}$ to $\frac{1}{12}$ grain (0.001–0.005 gm.); of the *yellow or green iodid*, $\frac{1}{10}$ to $\frac{1}{2}$ grain (0.006–0.03 gm.).

Nitrate of Mercury.—This preparation is used in the form of a solution (Liquor Hydrargyri Nitrat) as a powerful caustic.

Ointment of Mercury, or Blue Ointment (Unguentum Hydrargyri).—This is an ointment of metallic mercury. It is used as a stimulant and absorbent application in chronic inflammatory swellings, as a parasiticide in certain skin diseases, and by inunction in syphilis. When used for the latter purpose about a dram (4 gm.) should be rubbed in the axilla, groin, or inner surface of the arm or thigh daily, a different region being selected each time, so as to avoid irritation of the skin.

Mercurial Poisoning.—Patients taking mercury continuously, even in small doses, should be carefully watched, as symptoms of *ptyalism* or *salivation* sometimes arise very speedily. This condition is manifested by fetor of the breath, soreness of the teeth when the jaws are brought together, increased flow of saliva, redness and swelling of the gums, and finally by ulceration of the tissues, loss of the teeth, and necrosis of the jaw bones. On the slightest evidence of these symptoms the drug should be suspended, and the mouth washed out frequently with a solution of hydrogen peroxid (1 : 4) or of potassium chlorate (1 dram to 8 ounces of water).

The ingestion of a single large *dose* of an irritant salt of mercury, such as the bichlorid or biniodid, gives rise to severe burning pain in the abdomen, vomiting, bloody purging, and collapse.

Nitroglycerin.—This drug is a depressant to the central nervous system, a heart stimulant, and a dilator of the peripheral blood-vessels. It is useful in certain local spasms (asthma), in heart failure, and in neuralgia of the heart. Owing to its action in dilating the vessels, it sometimes causes, even in small doses, headache, dizziness, and flushing of the face.

The *dose* of nitroglycerin is from $\frac{1}{200}$ to $\frac{1}{50}$ of a grain (0.003–0.013 gm.). The *dose* of the 1 per cent. alcoholic solution (Spiritus Glonoini) is from 1 to 5 minims (0.06–0.3 c.c.). The latter should be kept in well-stoppered bottles, in a cool place, remote from lights or fire.

Nux Vomica.—This is the seed of an East Indian tree. Its activity depends upon an alkaloid *strychnin*. It is a general stimulant, acting especially upon the spinal cord, respiratory center, heart, stomach, and intestine. It is employed in a great variety of affections in which there is deficient functional activity.

The limit of tolerance is indicated by restlessness, stiffness of the neck muscles, and jerking of the limbs. Toxic doses cause violent spasms closely resembling those of lock-jaw or tetanus. The convulsions of strychnin-poisoning, however, come and go, the muscles being completely relaxed in the intervals, and, moreover, they rarely involve the muscles of the jaw.

The dose of the *Tincture of Nux Vomica* (Tinctura Nucis Vomicae) is from 5 to 20 minims (0.3–1.2 c.c.); of the *Extract of Nux Vomica* (Extractum Nucis Vomicae), $\frac{1}{4}$ to $\frac{1}{2}$ grain (0.01–0.016 gm.); of *Strychnin Sulphate* (Strychninae Sulphas), $\frac{1}{60}$ to $\frac{1}{20}$ of a grain (0.001–0.003 gm.).

Opium.—This is the dried juice of a species of poppy growing in Asia. It contains several alkaloids, the chief of which are *morphin* and *codein*. From morphin are prepared artificially two alkaloids—*apomorphin* and *heroin*.

Opium depresses the brain, depresses the respiration, stimulates the heart slightly, lessens the peristaltic movements of the bowel, and diminishes all secretions, except the sweat. It is employed to induce sleep, to relieve pain, to allay cough, to check diarrhea, and to promote perspiration.

Opium-poisoning is marked by three stages: the *first* stage is short and characterized by mental exhilaration; in the *second* stage the pupils are greatly contracted (pin-point), the respirations are slow, the pulse is slow and full, and there is deep stupor. In the *third* stage the patient can no longer be aroused (coma), the respiration becomes shallow and irregular, the pulse becomes rapid and weak, the pupils finally dilate, and the patient dies from failure of the respiration.

Even after small doses of opium many patients suffer from headache and nausea. Children are much more sensitive to its action than adults. Morphin resembles opium in action, but is more powerful, less nauseating, and less constipating. Codein is less powerful as a hypnotic and less depressing than morphin.

The dose of *opium* is from $\frac{1}{2}$ to 1 grain (0.03–0.65 gm.); of the *Extract of Opium* (Extractum Opii), $\frac{1}{8}$ to $\frac{1}{2}$ grain (0.008–0.03 gm.); of the *Tincture of Opium* or *Laudanum* (Tinctura Opii), 10 to 20 minims (0.6–1.2 c.c.); of the *Camphorated Tincture of Opium* or *Paregoric* (Tinctura Opii Camphorata), $\frac{1}{2}$ to 4 drams (2–15 c.c.); of *Dover's Powder* (Pulvis Ipecacuanhae et opii), 5 to 10 grains (0.3–0.6 gm.); of *morphin* and its salts (sulphate, hydrochlorate, etc.), $\frac{1}{8}$ to $\frac{1}{2}$ grain (0.008–0.03 gm.), and of *codein*, $\frac{1}{2}$ to 1 grain (0.03–0.06 gm.).

Heroin is chiefly used to allay cough. The dose is from $\frac{1}{12}$ to $\frac{1}{8}$ of a grain (0.005–0.008 gm.).

Apomorphin is employed as an emetic and as an expectorant in bronchitis. The dose as an emetic is from $\frac{1}{10}$ to $\frac{1}{4}$ of a grain (0.006–0.01 gm.), always hypodermically; the dose as an expectorant is from $\frac{1}{20}$ to $\frac{1}{10}$ of a grain (0.003–0.006 gm.), always by the mouth.

Paraldehyd.—This is an oily liquid, having a peculiar unpleasant odor and taste. It is used chiefly as a hypnotic. While comparatively safe and reliable, its disagreeable taste and persistent odor on the breath detract from its usefulness. The dose is from $\frac{1}{2}$ to 1 dram (2–4 c.c.), in some pleasant vehicle.

Phenacetin.—This anilin derivative has properties very similar to those of acetanilid, and is used for the same purposes. Dose, 5 to 10 grains (0.3–0.6 gm.).

Physostigma.—This is the seed of a climbing plant growing in Africa. Its activities depend upon an alkaloid known as *eserin* or *physostigmin*. It depresses the spinal cord, stimulates the peristaltic movements of the bowel, and, when applied to the eye, contracts the pupil. It is employed to check

certain convulsions (tetanus and strychnin-poisoning), to overcome atonic constipation, and, locally, to contract the pupils.

The dose of the *Tincture of Physostigma* (Tinctura Physostigmatis) is from 5 to 20 minims (0.3–1.2 c.c.); of the *Extract of Physostigmatis* (Extractum Physostigmatis), $\frac{1}{12}$ to $\frac{1}{4}$ of a grain (0.005–0.01 gm.); of *eserin* or *physostigmin* and its salts, $\frac{1}{150}$ to $\frac{1}{50}$ of a grain (0.0004–0.0013 gm.).

Pilocarpus, or **Jaborandi**.—This is the leaves of a South American plant. Its virtues depend entirely upon an alkaloid known as *pilocarpin*. The chief action of the drug is on the secretions—sweat, saliva, and urine—which it markedly increases. Large doses depress the circulation. Locally, in the eye, it contracts the pupil like *eserin*. It is mainly employed internally as a diaphoretic in Bright's disease and dropsical conditions. The dose of the *Fluid Extract* (Extractum Pilocarpi Fluidum) is from 20 to 60 minims (1.5–4 c.c.); of *pilocarpin* and its salts, $\frac{1}{8}$ to $\frac{1}{2}$ grain (0.008–0.03 gm.). The latter are usually administered hypodermically.

Salicylates.—These salts are employed in medicine chiefly as antirheumatic remedies. Their manner of action, however, is unknown. They are also used, both internally and externally, to some extent as antiseptics. Large doses cause ringing in the ears, headache, deafness, nausea, and a greenish discoloration of the urine.

The dose of *salicylic acid* or its salts (ammonium, sodium, strontium) is from 5 to 20 grains (0.3–1.3 gm.); of *Oil of Gaultheria* (Methyl Salicylate), 5 to 20 minims (0.3–1.2 c.c.). These preparations should be given after meals, well diluted.

The following remedies have properties like the salicylates, but are less powerful and less irritant to the stomach: *Salol*, dose, 5 to 20 grains (0.3–1.3 gm.); *salophen*, 5 to 30 grains (0.3–2 gm.); *aspirin*, 5 to 20 grains (0.3–1.3 gm.).

Silver.—The most important salt of this metal is the *nitrate*. Locally, in concentrated form, the latter

is a caustic; in dilute form it is a sedative, astringent, and antiseptic. Internally, in small doses, silver nitrate is useful as an astringent and antiseptic in inflammatory and ulcerative conditions of the stomach and bowel.

The prolonged use of the drug, even in small doses, is followed by a permanent grayish discoloration of the skin (argyria) from the precipitation of the metal in the tissues.

Toxic doses of silver nitrate cause burning pain in the abdomen, vomiting of white, curdy matter, and bloody purging.

The dose of silver nitrate is from $\frac{1}{8}$ to $\frac{1}{2}$ of a grain (0.01–0.3 gm.), usually in pill form.

Several combinations of metallic silver with albumin are much used as antiseptics and astringents in inflammatory diseases of mucous membranes. They have advantage over silver nitrate in being less irritating and in not being decomposed by the juices of the tissues. The most important of these organic compounds are *protargol* and *argyrol*. They are usually applied in solutions of from 1 to 10 per cent. A soluble form of metallic silver is also employed in the form of 15 per cent. ointment, known as *Credé's ointment*. It is recommended as an antiseptic in various infectious diseases.

Sparteïn.—This is an alkaloid from the broom plant. It is used to some extent as a heart tonic and diuretic in doses of from $\frac{1}{4}$ to $\frac{1}{2}$ grain (0.015–0.03 gm.).

Strophanthus.—This is the seed of a climbing plant growing in Africa. Its action very closely resembles that of digitalis, for which it is sometimes substituted. The dose of the *tincture* (Tinctura Strophanthi) is from 3 to 10 minims (0.2–0.6 c.c.).

Sulphonal.—This artificial compound is used almost entirely as a hypnotic. In single doses it is comparatively safe and reliable, but slow in its action. Languor, headache, and drowsiness not infrequently follow its use. The repeated administration of sulphonal over several days or weeks is distinctly dangerous, being often followed by

chronic poisoning. The latter is marked by a red coloration of the urine, colicky pains, profound depression, weakness, and collapse.

The *dose* of sulphonal is from 10 to 30 grains (0.6–2 gm.). It is best given in hot tea or hot milk, one or two hours before bedtime.

Trional.—This remedy resembles sulphonal in action, and is used for the same purpose. It may also be given in the same *dose* and manner as sulphonal.

Urotropin.—This compound, prepared by the action of ammonia on formaldehyd, is employed as a powerful urinary antiseptic in *doses* of from 3 to 5 grains (0.2–0.3 gm.). Large doses may cause pain in the bladder, frequent urination, and bloody urine.

Veratrum Viride.—This is the root of a North American herb. Its action resembles that of aconite in that it depresses the heart and slows the pulse. It is, however, more nauseating than aconite, and when locally applied does not cause numbness, tingling, and anesthesia. Large doses cause vomiting, muscular weakness, dizziness, sweating, failure of pulse, and collapse. It is used as a sedative in acute inflammatory diseases to subdue overaction of the heart.

The *dose* of the *tincture of veratrum viride* (*tinctura veratri viridis*) is from 1 to 5 minims (0.06–0.3 c.c.).

DOSAGE.

The following general rules will aid the student in remembering the safe dose of many important preparations:

1. Tinctures of very active drugs, such as opium, digitalis, belladonna, physostigma, nux vomica, gelsemium, arnica, and capsicum may be given in *doses* of from 5 to 20 minims (0.3–1.2 c.c.), except the *tinctures of aconite, veratrum viride, iodine, and cantharides*, the *dose* of which is from 1 to 5 minims (0.06–0.3 c.c.).

2. Tincture of less active drugs, such as gentian, calumba, krameria, quassia, valerian, cinchona, kino, may be given in *doses* of from $\frac{1}{2}$ to 1 dram (2–4 c.c.).

3. Solid extracts of active drugs may be given in *doses* of from $\frac{1}{4}$ to $\frac{1}{2}$ of a grain (0.01–0.016 gm.).

4. Solid extracts of less active drugs may be given in *doses* of from $\frac{1}{2}$ to 5 grains (0.03–0.3 gm.) or more.

5. Dilute acids (hydrochloric, nitric, nitrohydrochloric, sulphuric) may be given in *doses* of from 5 to 20 minims (0.3–1.3 c.c.), except *dilute hydrocyanic acid*, the *dose* of which is from 1 to 5 minims (0.06–0.3 c.c.).

6. All medicated syrups, except the *syrup of iodid of iron* and the *compound syrup of squill*, may be given in *doses* of 1 to 2 drams (4–8 c.c.) or more.

7. All infusions may be given in *doses* of $\frac{1}{2}$ to 1 ounce (15–30 c.c.) or more, except the *infusion of digitatis*, the *dose* of which is from 1 to 4 drams (4–15 c.c.).

8. All official mixtures may be given in *doses* of from 1 to 4 drams (4–15 c.c.).

9. All spirits may be given in *doses* up to 1 dram (4 c.c.), except the *spirit of nitroglycerin* (glonoin), the *dose* of which is from 1 to 5 minims (0.06–0.3 c.c.), the *spirit of phosphorus*, the *dose* of which is from 5 to 15 minims (0.3–1 c.c.), and the *spirit of bitter almond*, the *dose* of which is from 5 to 10 minims (0.3–0.6 c.c.).

10. All *waters* (aquæ) may be given in *doses* up to 1 ounce (30 c.c.), except *aqua ammoniacæ*, *aqua chlori*, and *aqua laurocerasi* (cherry-laurel), the *dose* of which is about $\frac{1}{2}$ dram (2 c.c.).

11. Volatile or essential oils may be given in *doses* up to 5 minims (0.3 c.c.) or more, except the *oil of bitter almond*, the *dose* of which is from $\frac{1}{4}$ to $\frac{1}{2}$ minim (0.015-0.03 c.c.).

TO ASCERTAIN DOSES OF MEDICINE FOR CHILDREN.

The following rule of Young is sufficiently accurate for most drugs: Add 12 to the age and divide by the age to get the denominator of the fraction, the numerator of which is 1. Thus, for a child of two years, $\frac{2+12}{2} = 7$, and the dose is $\frac{1}{7}$ of that for an adult.

For children up to twelve months of age, Young's rule may be worked out as follows: Add 144 to the age in months, which sum becomes the denominator of the fraction, the numerator of which is the child's age. Thus, for a baby of eight months, $\frac{8}{8+144} = \frac{8}{152}$ or $\frac{1}{19}$ of an adult's dose; for a baby of six months, $\frac{6}{6+144} = \frac{6}{150}$, or $\frac{1}{25}$ of an adult's dose.

The following table, based on Young's rule, is sufficiently accurate in ordinary cases, and its use will avoid the necessity of mathematic calculations on the part of the physician:

Child aged one month . . .	$\frac{1}{145}$	of an adult's dose.
" " two months . . .	$\frac{1}{73}$	" " "
" " three months . . .	$\frac{1}{49}$	" " "
" " four months . . .	$\frac{1}{37}$	" " "
" " five months . . .	$\frac{1}{30}$	" " "
" " six months . . .	$\frac{1}{25}$	" " "
" " seven months . . .	$\frac{1}{21}$	" " "
" " eight months . . .	$\frac{1}{19}$	" " "
" " nine months . . .	$\frac{1}{17}$	" " "
" " ten months . . .	$\frac{1}{15}$	" " "
" " eleven months . . .	$\frac{1}{14}$	" " "
" " twelve months . . .	$\frac{1}{13}$	" " "

Child aged two years . . .	$\frac{1}{7}$	of an adult's dose.
" " three years . . .	$\frac{1}{5}$	" " "
" " four years . . .	$\frac{1}{4}$	" " "
" " five years . . .	$\frac{1}{3}$	" " "
" " six years . . .	$\frac{1}{3}$	" " "
" " seven years . . .	$\frac{1}{3}$	" " "
" " eight years . . .	$\frac{1}{2}$	" " "
" " nine years . . .	$\frac{1}{2}$	" " "
" " ten years . . .	$\frac{1}{2}$	" " "
" " eleven years . . .	$\frac{1}{2}$	" " "
" " twelve years . . .	$\frac{1}{2}$	" " "

Of powerful narcotics, such as opium, scarcely more than one-half of this proportion should be used. In the case of mild cathartics, however, two or even three times this proportion may be given.

THE DOSE OF DRUGS ADMINISTERED SUBCUTANEOUSLY AND BY THE RECTUM.

The dose of a drug given *hypodermically* is usually about *one-half* the quantity given by the mouth, while *twice* as large a dose is generally given by the *rectum* as would be given by the mouth.

PROPER TIME TO TAKE MEDICINES.

Alkalis should be given before food. Iodin and iodids should be given on an empty stomach, when they rapidly diffuse into the blood. If given during digestion the acids and starch alter and weaken the digestion. Acids, as a rule, should be given between the digestive acts, because the mucous membrane of the stomach is in a favorable condition for the diffusion of the acids into the blood. Acids may be given before food when prescribed to check the excessive formation of the acids of the gastric juice. By giving it before meals you check the osmosis stomachward of the acid-forming materials. Irritating and dangerous drugs should be given directly after food, such as the salts of arsenic, copper, zinc, and iron, except where local conditions require their administration in small doses before food. Oxid and nitrate of silver should be given after process

of digestion is ended; if given during food, chemic reactions destroy or impair their special attributes and defeat the object for which they were prescribed. Metallic salts, especially corrosive sublimate, also tannin and pure alcohol, impair the digestive power of the active principle of the gastric juice, so should appear in the stomach during its period of inactivity. Malt extracts, cod-liver oil, phosphates, etc., should be given with or directly after food, so that they may enter the blood with the products of digestion.

POISONS AND ANTIDOTES.

General Treatment.—Eliminate if possible by emetics, as zinc sulphate, 10 to 20 grains; copper sulphate, 5 grains; or hypodermic injection of apomorphin, $\frac{1}{10}$ grain. Use stomach-pump or -tube where vomiting cannot be produced, observing great care if irritant poison has caused injury to tissues. In cardiac failure give stimulants. In narcosis keep patient awake. In threatened paralysis of respiratory movements use alternate hot and cold spray to chest, slapping, and artificial respiration. Ammonia, atropin, caffen, and strychnin are useful respiratory stimulants.

Acetanilid.—Emetic; rest in recumbent position; stimulants—ammonia and strychnin; artificial respiration; oxygen inhalations; external heat.

Acid, Carbolic.—Alcohol or Epsom salt as an antidote. Three or four ounces of diluted alcohol, followed by lavage with a solution of Epsom salt; external heat; demulcents; stimulants hypodermically.

Acid, Hydrocyanic.—Fresh air; artificial respiration; oxygen inhalations; ammonia by inhalation and by intravenous injection.

Acid, Oxalic.—Chalk or lime as an antidote; demulcents, like oil or egg-albumin.

Acids, Mineral.—Chalk, magnesia, soap, or white-wash from wall to neutralize poison; demulcent drinks—bland oils or egg-white; stimulants hypodermically.

Aconite.—Recumbent position; empty stomach with pump with patient flat on back; external heat; stimulants—alcohol, ammonia, strychnin—hypodermically.

Ammonia.—Vinegar with lemon-juice to neutralize the poison; white of egg or oil to allay irritation.

Antimony (Tartar Emetic).—Tannic acid as an antidote; use stomach-pump; external heat; stimulants.

Antipyrin.—Same as Acetanilid.

Arsenic.—Stomach-pump or an emetic; freshly precipitated ferric hydrate (tablespoonful every ten minutes) made by adding magnesia to any iron solution; demulcents—oil or egg-albumin.

Atropin.—Same as Belladonna.

Belladonna.—Emetic or stomach-pump; tannic acid as an antidote; cold to head; enema of warm black coffee.

Cantharides.—Emetic or stomach-pump; egg-white; mucilaginous drinks in abundance; *avoid all oily substances.*

Chloroform.—Withdrawal of drug; lowering of head; pulling tongue forward; artificial respiration; stimulants—strychnin, digitalis, ammonia.

Colchicum.—Stomach-pump or emetic; external heat; white of egg; stimulants; opium for pain.

Copper Sulphate.—Yellow prussiate of potassium, soap, or magnesia; milk and albumin freely; opium for pain.

Corrosive Sublimate.—White of egg freely; milk; emetic or stomach-pump; opium for pain.

Creosote.—Same as Carbolic acid.

Croton Oil.—Emetic; mucilaginous drinks; opium.

Cyanide of Potassium.—Same as Hydrocyanic acid.

Digitalis.—Recumbent position; stomach-pump with patient recumbent; external heat; tannic acid.

Elaterium.—Emetic; external heat; demulcents; opium.

Gas, Illuminating.—Fresh air; artificial respiration; oxygen inhalations; injections of ammonia and strychnin.

Iodin.—Starch-paste as an antidote; emetic; external heat; demulcents; opium.

Lead Salts.—Epsom salt as antidote; emetic; milk or egg-white.

Lobelia.—External heat; tannic acid; stomach-pump; stimulants.

Matches.—Same as Phosphorus.

Morphin.—Same as Opium.

Mushroom, poisonous (Toad-stools).—Emetics;

atropin ($\frac{1}{100}$ gr.) hypodermically; castor oil; stimulants.

Nux Vomica.—Same as Strychnin.

Opium.—Stomach-pump or emetic; repeated lavage; black coffee enema; potassium permanganate (5 gr.) in tumblerful of water, or tannic acid as an antidote; keep patient awake with cold affusions or electric brush; artificial respiration; respiratory stimulants—atropin, ammonia, strychnin, cocain, caffein.

Phenacetin.—Same as Acetanilid.

Phosphorus.—Copper sulphate as an emetic; dilute peroxid of hydrogen or potassium permanganate as an antidote; Epsom salt as a purge; *avoid all oils and fatty substances.*

Potassa or Soda (Lye).—Vinegar or lemon-juice as an antidote; oils or egg-white; opium.

Rat Poison.—This usually contains arsenic or phosphorus (q. v.).

Silver Nitrate.—Solution of common salt as antidote; emetic; demulcent drinks. Silver nitrate stains on the skin may be whitened and their removal much expedited by the application of a solution made according to the following formula:

Mercury bichlorid,	gr. v;
Ammonium chlorid,	gr. v;
Aqua,	℥ij.

Stramonium.—Same as Belladonna.

Strychnin.—Absolute quiet; if convulsions have begun, do not use stomach-pump unless the patient first be etherized; tannic acid as antidote; inhalations of chloroform or amyl nitrite for convulsions; potassium bromid (℥j) and chloral (gr. xxx) by mouth or rectum.

Tobacco.—Emetic; external heat; stimulants.

MISCELLANEOUS FORMULÆ.

SEMMOLA'S MIXTURE.

Sodium iodid,	gr. xv ;
Sodium phosphate,	gr. xxx ;
Sodium chlorid,	gr. cx ;
Aqua,	$\bar{3}$ xxxvj.

A diuretic and laxative mixture.

NORMAL SALT SOLUTION.

Stock salt solution is kept for the purpose of making normal salt solution quickly and accurately. Use sodium chlorid (common salt) dried sufficiently to granulate.

Stock Salt Solution by Weight.

Sodium chlorid,	$\bar{3}$ jss (47 gm.);
Water,	$\bar{3}$ viiij (237 c.c.).

Boil in a closed vessel fifteen minutes.

When cold make up with sterile water to $\bar{f}\bar{3}$ j-viiij.

Strain through sterile cotton into a sterile bottle, and keep tightly corked.

Normal salt solution should contain 90 grains of salt in 1 quart (1 L.) of water.

Normal Salt Solution.

Stock salt solution,	$\bar{f}\bar{3}$ j (30 c.c.);
Sterile water,	Oij (1 L.).

Salt Solution.

Distilled water,	Oiv ;
Purified salt,	$\bar{3}$ xij.

CARBOLIC ACID SOLUTION (5 PER CENT.).

Cold sterile water,	gal. j ;
Carbolic acid (95 per cent.),	$\bar{3}$ iv.

1:20 SOLUTION GLYCERIN FORMALDEHYD.

Sterile glycerin,	$\bar{3}$ viiss (23 c.c.);
Solution formaldehyd,	Oj (500 c.c.).

SOLUTION (1:1000) OF BICHLORID OF MERCURY (CORROSIVE SUBLIMATE).

Mercury bichlorid or corrosive sublimate,	gr. xv (1 gm.);
Common salt,	gr. xv (1 gm.);
Sterile water,	Oij (1 L.).

The salt in this formula is added to prevent decomposition of the mercurial salt by the albuminous juices of the tissues.

ALKALINE SOLUTION OF CYANID OF MERCURY.

Some surgeons recommend cyanid of mercury in solutions of 1:1000 or 1:2000 in place of the bichlorid of mercury. It is a powerful antiseptic that does not coagulate albumin, irritate the tissues, or attack metals.

Mercury cyanid,	gr. viiss (0.5 gm.);
Sodium borate,	gr. xv (1 gm.).

These tablets are made to correspond to bichlorid tablets.

Compressed tablets, each containing $7\frac{1}{2}$ grains (0.48 gm.) of corrosive sublimate with tartaric acid, are also in common use. One of these added to 1 pint of water makes a solution of 1:1000.

SATURATED BORIC OR BORACIC-ACID SOLUTION.

Boric acid crystals,	$\bar{3}$ jss (47 gm.);
Hot sterile water,	Oij (1 L.).

This solution may also be made by putting an excess of the crystals into the water, then sterilizing by boiling twenty minutes and straining through sterile cotton.

SOLUTION OF POTASSIUM PERMANGANATE.

This substance is used in a solution of royal blue or purple color, which should be freshly made. Place a few crystals in a piece of sterile gauze, and suspend in sterile water of the required quantity and temperature until the right color is obtained.

IODIN SOLUTION.

This solution is made by adding to sterile water of the required temperature sufficient tincture of iodine to make the color of sherry wine. Add the iodine a few drops at a time, stirring until the sherry color is produced.

SOLUTIONS OF FORMALDEHYD.

All the preparations on the market (formalin, formal, formolose, etc.) contain 40 per cent. of formaldehyde gas.

As the gas is the true germicidal principle, it is much the better plan, in stating the strength of dilute solutions of these preparations, to give the proportion of the gas present, and this is done in the formulæ below.

1:100 or 1 per cent. of True Formaldehyd Gas.

Solution of formaldehyd, $\text{f}\text{3}\text{vj}$ (23 c.c.);
Cold sterile water, Oij (1000 c.c.).

This solution is approximately equivalent to

1:500 or $\frac{1}{5}$ per cent. Solution of Formaldehyd.

Solution of formaldehyd, $\text{m}\text{xxxviii}$ (2.3 c.c.);
Cold sterile water, Oj (500 c.c.).

THIERSCH'S ANTISEPTIC SOLUTION.

Saturated boric acid solution, Oj (500 c.c.);
Sterile water, Oj (500 c.c.);
Salicylic acid, gr. lxxv (5 gm.).

Mix the salicylic acid with sufficient alcohol to dissolve it. Pour mixture into solution, and shake thoroughly.

HARRINGTON'S SOLUTION.

Bichlorid of mercury, gr. xxxij ;
Hydrochloric acid, 2400 c.c.;
Distilled water, $12,000$ c.c.;
Alcohol (95 per cent.), $25,600$ c.c.

PICRIC-ACID SOLUTION FOR BURNS.

Picric acid crystals, gr. xx (1.3 gm.);
Alcohol (95 per cent.), $\text{f}\text{3}\text{ij}$ (8 c.c.);
Cold sterile water, $\text{f}\text{3}\text{viij}$ (250 c.c.).

CHLORID OF LIME SOLUTION.

Chlorid of lime, $\text{3}\text{v}$ (160 gm.);
Water, Oviij (4 L.).

SOLUTION FOR SORE NIPPLES.

1. Glycerin, $\text{f}\text{3}\text{ss}$ (15 c.c.);
Boric solution, $\text{f}\text{3}\text{ss}$ (15 c.c.);
Alcohol (95 per cent.), $\text{f}\text{3}\text{ss}$ (15 c.c.);
Tannic acid, gr. xx (1.3 gm.).

2. Compound tincture of benzoin, $\text{f}\text{3}\text{j}$ (30 c.c.).
Apply with a cotton swab or camel's hair brush.

NIPPLE OINTMENT.

Sulphur sub., gr. x ;
Acid tannic, $\text{3}\text{j}$;
Borax pulv., $\text{9}\text{j}$;
Syrup simp., $\text{3}\text{j}$;
Glycerini, $\text{3}\text{ss}$.

Wash off before nursing.

ARISTOL OINTMENT FOR CRACKED NIPPLES.

Aristol, gr. xxv (1.6 gm.);
Vaselin, $\text{3}\text{j}$ (30 gm.).

SOOTHING LOTIONS FOR THE HANDS.

1. Spirits camphor, $\left. \begin{array}{l} \text{Glycerin,} \\ \text{Tr. benzoin,} \end{array} \right\} \text{aa } \text{f}\text{3}\text{j}$ (30 c.c.);
Alcohol (95 per cent.), $\text{f}\text{3}\text{v}$ (150 c.c.).
2. Alcohol (95 per cent.), $\left. \begin{array}{l} \text{Glycerin,} \\ \text{Tr. benzoin,} \end{array} \right\} \text{aa } \text{f}\text{3}\text{j}$ (30 c.c.);
Distilled extract of hamamelis
(witch hazel), $\text{f}\text{3}\text{ij}$ (60 c.c.).
3. Alcohol, $\text{f}\text{3}\text{ij}$ (60 c.c.);
Glycerin, $\text{f}\text{3}\text{ij}$ (60 c.c.);
Lemon juice, $\text{f}\text{3}\text{ss}$ (15 c.c.);
Tr. myrrh, $\text{f}\text{3}\text{ss}$ (15 c.c.).

4. Water, Oj (500 c.c.);
Boric acid crystals, $\text{3}\text{ij}$ (12 gr.);
Gum tragacanth, $\text{3}\text{ij}$ (8 gr.).

Allow mixture to stand 8 hours, then dissolve by boiling; strain through cotton.

While stirring briskly add:

Alcohol (95 per cent.), Oss (250 c.c.);
Glycerin, Oss (250 c.c.);
Attar of roses, $\text{3}\text{ij}$ (ad lib.).
Color with chlorophyl if desired.

5. Glycerin, $\left. \begin{array}{l} \text{Whisky,} \\ \text{Peroxid,} \end{array} \right\} \text{aa}$

AN INUNCTION FOR THE HANDS WHEN THE SKIN IS DRY AND HARSH.

Lanolin,	$\mathfrak{z}$ ij (90 c.c.);
Olive oil,	$\mathfrak{z}$ j (30 c.c.).

LASSAR'S PASTE FOR ECZEMATOUS SORES AND ULCERS.

Salicylic acid,	gr. x (0.65 gm.);
Pulverized starch,	$\mathfrak{z}$ ij (8 gm.);
Zinc oxid,	$\mathfrak{z}$ ij (8 gm.);
Vaselin,	$\mathfrak{z}$ ss (16 gm.).

UNNA'S PASTE.

Zinc oxid powd.,	$\frac{1}{2}$ pound;
Sheet gelatin,	$\frac{1}{2}$ pound;
Glycerin,	$\mathfrak{z}$ xiv;
Water,	$\mathfrak{z}$ xx;
Salicylic acid powd.,	gr. xvj.

Dissolve gelatin in water and glycerin. Heat in a double boiler and stir in zinc oxid.

CARRON OIL FOR BURNS.

Lime water,	} Of each, equal parts.
Raw linseed oil,	

BORATED VASELIN.

Boric acid,	gr. xx (1.3 gm.);
Sterile vaselin,	$\mathfrak{z}$ j (30 gm.).

Mix thoroughly; do not heat.

CARBOLATED VASELIN.

Carbolic acid (95 per cent.),	$\mathfrak{m}$ v (0.3 c.c.);
Sterile vaselin,	$\mathfrak{z}$ j (30 gm.).

BORATED GLYCERIN.

Boric acid,	$\mathfrak{z}$ iss (6 gm.);
Sterile glycerin,	$\mathfrak{f}$ $\mathfrak{z}$ ij (60 c.c.).

FORTIFIED OIL.

Croton oil,	$\mathfrak{m}$ xj;
Castor oil,	$\mathfrak{m}$ xj-xiv.

SANITAS JELLY.

Vaselin,	$\mathfrak{z}$ j (30 gm.);
Sanitas,	gtt. iv.

SALOL VASELIN FOR BURNS.

Salol,	gr. xx (1.3 gm.);
Sterile vaselin,	$\mathfrak{z}$ j (30 gm.).

SWEATING OF THE FEET AND AXILLA.

Solution of formaldehyd,	$\mathfrak{f}$ $\mathfrak{z}$ ss (2 c.c.);
Water,	$\mathfrak{f}$ $\mathfrak{z}$ vij (210 c.c.).

One application is usually sufficient. Further applications should be made with great caution.

ENEMAS FOR FLATULENCE.

1. White of 1 egg (beaten),
Oil of turpentine (add drop by drop), $\mathfrak{f}$ $\mathfrak{z}$ j (4 c.c.);
Olive oil, $\mathfrak{f}$ $\mathfrak{z}$ j (30 c.c.);
Warm water, Oj (500 c.c.).
2. White of 1 egg (beaten),
Glycerin, $\mathfrak{f}$ $\mathfrak{z}$ ij (60 c.c.);
Oil of turpentine (add drop by drop), $\mathfrak{f}$ $\mathfrak{z}$ ij (8 c.c.);
Warm water, Oj (500 c.c.).
3. Warm water, qt. j;
Yeast, $\frac{1}{2}$ cake.
Mix thoroughly
4. Hot water, qt. j;
Pulv. alum, $\mathfrak{z}$ j (by measure).
5. Molasses, $\mathfrak{z}$ viiij;
Milk, $\mathfrak{z}$ viiij.

Follow by 1 pint of warm water within five minutes to secure better result and to relieve fermentation that follows the injection.

6. Milk of asafetida, $\mathfrak{z}$ j;
Warm water, Oj.

GLYCERIN ENEMA.

Glycerin,	$\mathfrak{z}$ j-iv (30-120 c.c.);
Warm soapy water,	$\mathfrak{z}$ j-iv (30-120 c.c.).

OX-GALL ENEMA.

Ox-gall,	$\mathfrak{z}$ ss (15 gm.);
Warm water,	Oij (1 L.).

COMPOUND OX-GALL ENEMA.

Ox-gall,	$\mathfrak{z}$ j (4 gm.);
Castor oil,	$\mathfrak{f}$ $\mathfrak{z}$ iv (118 c.c.);
White of 2 eggs,	
Warm water,	Oj (500 c.c.).

SALINE ENEMA.

Magnesium sulphate (Epsom salt), $\mathfrak{Z}\text{j}$ (30 gm.);
Hot water, sufficient to dissolve.

1-2-3 ENEMA.

Magnesium sulphate, $\mathfrak{Z}\text{j}$ (30 gm.);
Glycerin, $\mathfrak{f}\mathfrak{Z}\text{ij}$ (60 c.c.);
Hot water, $\mathfrak{f}\mathfrak{Z}\text{ij}$ (90 c.c.).

COMBINATION ENEMA.

Turpentine, $\mathfrak{Z}\text{j}$;
Olive oil, $\mathfrak{Z}\text{j}$;
White of one egg;
Tr. asafetida, $\mathfrak{Z}\text{j}$; or
Milk of asafetida, $\mathfrak{Z}\text{j}$.

Beat egg well and with olive oil make an emulsion of the turpentine.

STARCH-WATER ENEMA.

Starch, $\mathfrak{Z}\text{j}$ (30 gm.).

Mix with sufficient cold water to make a thick paste; pour on boiling water until it becomes of the consistence of mucilage. From 10 to 30 minims (0.6-2 c.c.) of laudanum are often added to this enema.

STIMULATING ENEMAS.

1. Black coffee, $\mathfrak{Z}\text{viiij}$;
Whisky, $\mathfrak{Z}\text{j}$.
2. Hot N. S. S., $\mathfrak{Z}\text{viiij}$;
Whisky, $\mathfrak{Z}\text{j}$.
3. Black coffee, $\mathfrak{Z}\text{viiij}$; or
Hot N. S. S., $\mathfrak{Z}\text{xij}$;
Without whisky.

NOURISHING ENEMAS.

1. Malted milk, $\mathfrak{Z}\text{ss}$ (15 gm.);
Somatose, $\mathfrak{Z}\text{j}$ (4 gm.);
Water, $\mathfrak{f}\mathfrak{Z}\text{iv}$ (118 c.c.);
Sodium chlorid, gr. xx (1.3 gm.);
White of 1 egg,
Add peptonized milk or brandy, p. r. n.
2. Peptonized milk, $\mathfrak{f}\mathfrak{Z}\text{x}$ (300 c.c.);
White of 2 eggs,
Alcohol (95 per cent.), $\mathfrak{f}\mathfrak{Z}\text{ij}$ (8 c.c.);
Pinch of salt.

THE METHOD OF ADMINISTERING NUTRITIVE OR STIMULATING ENEMAS.

Prepare the fluid and heat to between 100°-110° F. Pour the mixture into an enema pail or douche bag. To the tubing attach a large rubber catheter or small rectal tube by means of a glass nozzle. Place the patient on the left side with the knees flexed. Permit the fluid to flow through the tube to expel the air and then make pressure close to the point until ready to introduce it. Lubricate the catheter with vaselin or oil and insert gently eight or nine inches. Do not slip the catheter forward or backward unless absolutely necessary to encourage the fluid to flow, for it only increases the peristalsis and induces the patient to expel the contents which should be retained. Press the tube sufficiently to allow the solution to run very slowly, and occasionally make intermittent stoppage until it has all been given. Upon withdrawing the tube make digital pressure with a soft cloth against the anus for a minute or two. The use of an enema pail in place of a funnel insures more favorable results. Moreover, it is an easier and cleaner method and gives the advantage of having only the tube to take care of.

AMOUNTS TO BE GIVEN IN CLEANSING ENEMAS.

Adults,	Oj-iv ;
Children,	$\mathfrak{Z}\text{viiij-xvj}$;
Infants,	$\mathfrak{Z}\text{ij}$.

TEMPERATURE OF ENEMA FLUIDS.

Nutritive enema,	100° F.
Stimulating enema,	116° F.
Cleansing enema,	100° F.

MUSTARD PLASTER.

Mustard,	1 tablespoonful;
Flour,	3 tablespoonfuls;
Glycerin,	1 tablespoonful;
Baking soda (dissolved in hot water),	1 teaspoonful.

Beat well and spread between two layers of muslin or soft linen. Apply from 15 to 30 minutes.

MUSTARD POULTICE.

Mustard, 2 parts ;
Ground flaxseed, 4 "
Hot water, a sufficient quantity.

FLAXSEED POULTICE.

Ground flaxseed, $\frac{1}{2}$ cupful ;
Olive oil, 2 teaspoonfuls.

Add enough boiling water to make a thick paste. Cook for a few minutes, and beat thoroughly.

ONION POULTICE.

Slice a large onion and fry in lard or olive oil. Place between layers of soft cloth. It should not be warmed over.

TURPENTINE STUPES.

1. Add 3 teaspoonfuls of oil of turpentine to 1 pint of boiling water. Immerse the flannel and stir. Remove the flannel, wring it out in a twisted towel until it no longer drips. Anoint the skin with olive oil, and then apply fomentation until it causes some discomfort or redness. If allowed to remain too long, it will blister the skin.

2. Oil of turpentine, 1 part ;
Olive oil, 7 parts.

Apply with applicator or soft cloth every 4 or 6 hours, and fomentations p. r. n.

SPICE POULTICE.

Powdered cloves ; powdered ginger ; powdered cinnamon, of each from 1 to 2 teaspoonfuls ; flour, a tablespoonful ; whisky, enough to make a paste sufficiently soft to spread on flannel.

CANTHARIDES BLISTER.

Cantharides is used for this purpose, either as a plaster or in liquid form ; that is, in the form of vesicating collodion. Its most frequent use is as a plaster, rarely over one and a half inches square. Scrub the parts well with soap and water, and dry and rub

with a soft cloth until the skin is red, then apply the plaster and bandage lightly, so there may be plenty of room for the formation of the blister. Vesication is produced generally within four to eight hours ; if it is not, the plaster should be removed and the operation completed by applying a poultice. Great care should be exercised when blistering patients suffering from kidney affections. Cantharides is an acute irritant, and not infrequently causes strangury or acute nephritis. When the cantharidal collodion is used the space to be covered is outlined with oil to prevent spreading ; the collodion is applied with a camel's hair brush or other applicator, and covered with a layer of soft lint and oil silk.

Dressing the Blister.—Puncture the lower part of the bleb ; absorb the fluid with a piece of soft cotton ; anoint with pure vaselin, and apply a soft dressing. Bandage lightly.

Sometimes it is desirable to have the fluid reabsorbed into the system, in which case precautions must be taken to prevent the blister from rupturing.

APPLICATIONS FOR PEDICULOSIS (LICE).

1. Pulverized larkspur seed, $\mathfrak{zj}$ (30 gm.) ;
Boiling water, $\mathcal{Oj}$ (500 c.c.).

2. Pulverized sabadilla seed, $\mathfrak{zj}$ (30 gm.) ;
Boiling water, $\mathcal{Oj}$ (500 c.c.).

One application of these infusions is usually sufficient.

3. Kerosene oil is a cheap and excellent application ; it also removes dandruff : Rub lightly upon the scalp for one or two nights and follow in the morning by a shampoo of soap and water. To destroy the nits apply hot vinegar every other day.

4. Wash hair and scalp thoroughly with a good soap, then saturate hair with hot vinegar and tie up securely. Repeat for a few days.

HAIR TONICS.

1. Resorein, gr. xlviij (3 gm.) ;
Glycerin, $\mathfrak{f}\mathfrak{z}\mathfrak{i}\mathfrak{j}$ (8 c.c.) ;
Alcohol (50 per cent.), $\mathfrak{f}\mathfrak{z}\mathfrak{i}\mathfrak{j}$ (60 c.c.).
Rub into the scalp each night.

2. Tincture of cantharides, f3ij (8 c.c.);
 Tincture of nux vomica, f3ss (15 c.c.);
 Tincture of capsicum, f3j (4 c.c.);
 Bay rum, f3ij (60 c.c.).
 Rub into the scalp at night.
3. Tincture of cantharides, f3ij (8 c.c.);
 Quinin bisulphate, gr. xx (1.3 gm.);
 Bay rum, f3iv (120 c.c.);
 Rain-water or distilled water, f3iv (120 c.c.).
 Rub into the scalp each night.

FOR MATTED HAIR.

Use white vaselin freely each day. Untangle the ends and work gradually toward the scalp.

THERMOMETRY.

In the *Fahrenheit* scale there are 180 degrees between the melting-point of ice and the boiling-point of water. In the *Centigrade* scale there are 100 degrees between the freezing- and boiling-point of water.

RULES FOR CONVERTING ONE SCALE INTO THE OTHER.

To convert Fahrenheit degrees into those of Centigrade: Subtract 32, multiply by 5, and divide by 9. For example:

$$104^{\circ} \text{ F.} - 32^{\circ} = 72; 72 \times \frac{5}{9} = 40^{\circ} \text{ C.}$$

To reduce Centigrade degrees into those of Fahrenheit: Multiply by 9, divide by 5, and add 32. For instance:

$$40^{\circ} \text{ C.} \times 9 = 72 + 32 = 104^{\circ} \text{ F.}$$

TABLE OF THERMOMETRIC EQUIVALENTS.

36° Centigrade	96.8° Fahrenheit.
37° "	98.6° "
38° "	100.2° "
39° "	102.2° "
40° "	104.0° "
41° "	105.8° "
42° "	107.6° "

TO CONVERT THERMOMETER READINGS.

A correspondent of the "Lancet" (London) offers a new alternative method of converting degrees centigrade into degrees Fahrenheit, which may be found easier to perform mentally than the usual method, because the factors can be more easily retained in the memory. This method consists of multiplying the centigrade figures by 2, deducting one-tenth of the product, and adding 32. Example (a), 30° C. = 86° F. Method: $30 \times 2 = 60$. $60 - 6 = 54$. $54 + 32 = 86$. Example (b), 37° C. = 98.6° F. Method: $37 \times 2 = 74$. $74 - 7.4 = 66.6$. $66.6 + 32 = 98.6$. Example (c), 40° C. = 104° F. Method: $40 \times 2 = 80$. $80 - 8 = 72$. $72 + 32 = 104$.

RULES OF TAKING TEMPERATURE.

Per mouth.—Retain thermometer from 1 to 3 minutes.
 " rectum " " 3 " 5 "
 " axilla " " 10 " 15 "
 Temperature per rectum is $\frac{1}{2}^{\circ}$ F. higher than per mouth.
 " " axilla is $\frac{1}{10}^{\circ}$ to $\frac{3}{10}^{\circ}$ F. lower than per mouth

TEMPERATURE OF WATER.

Cold signifies a temperature below 65° F.
 Cool " " between 65° F. and 80° F.
 Tepid " " 80° " 90° "
 Warm or neutral " " 90° " 100° "
 Hot 100° " above.
 Very hot or very cold indicates extremes of temperature.

PULSE RATE.

Six to twelve months 105-115.
 Two to six years 90-105.
 Seven to ten years 80-90.
 Eleven to fourteen years 75-85.
 Adults 60-78.

RESPIRATIONS.

Two months to two years 35 per minute.
 Two months to six years 23 " "
 Six months to twelve years 20 " "
 Twelve months to fifteen years 18 " "
 Fifteen months to twenty-one years 16-18 " "

URINE ANALYSIS.

Normal urine is a clear, watery fluid, with an acid reaction and a specific gravity of from 1018 to 1020. It is composed of inorganic salts, organic constituents, together with some coloring and a small amount of mucus.

The most important of these inorganic salts are chlorid of sodium, phosphate of potassium, and the sulphates of calcium and magnesium. The inorganic constituents are chiefly urea, uric acid, and poisonous inorganic substances found in the body. The normal amount of urine voided by an adult weighing 160 pounds is from 40 to 70 ounces in twenty-four hours. The amount may be increased by drinking large quantities of fluid, especially water, and diminished by perspiration, emotion, and copious bowel-movements.

Normal urine is aromatic. In health it may be faintly alkaline at certain times of the day. Urine passed in the morning has an acid reaction, a high specific gravity, and a dark color. After a hearty meal it may be turbid—perhaps alkaline, and of low specific gravity. Large quantities are pale, and vary with concentration. When just passed it is clear; then it collects a cloudy material made up of mucous corpuscles, which can be easily shaken up. Concentrated urine, when it cools, deposits a pinkish (brick-dust) precipitate. Gentle heat clears it up. When highly concentrated the crystals are red. When they collect and adhere together they become stones; if all precipitate on heating it is normal urine.

Alkaline urine throws down phosphates that are held in solution and clears up on addition of any acid; if urine is cold and acid in reaction, sediment, if present, may be urates, but is not phosphates; if urine is alkaline, they are normal phosphates.

TO TEST REACTION.

Litmus-paper is used. Acid changes the blue to

red. Alkaline changes red to blue. When urine does not affect litmus-paper it is said to be neutral.

Pus in urine is turbid or milky in appearance; after standing a while it settles down.

Albumin in urine is held in solution, and therefore cannot be seen.

A SIMPLE AND RAPID TEST FOR ALBUMIN.

Fill an ordinary test-tube half full of urine, and add a half dram or more of potassium-ferrocyanid solution (1 to 20). After thoroughly mingling the urine and the reagent, add a few drops of acetic acid (50 per cent.); then pause for a half minute and note the change. If albumin be present it will come plainly into view within half a minute to a minute, in the form of white, milk-like opacity, diffused throughout the whole contents of the tube. The above method precipitates all modifications of albumin. On the other hand, it gives no reaction with phosphates, peptones, mucin, the alkaloids, urates, or the pure acids. The reaction that sometimes occurs on long standing between the acid and potassium ferrocyanid should not be mistaken for albumin. The albuminous reaction appears within half a minute or so, while the other occurs only after ten minutes to half an hour, and is mingled with more or less blue coloration.

TO OBTAIN A 24-HOUR SPECIMEN OF URINE.

Begin early in the morning. *Throw away the first urination.* Save all further urinations for the next twenty-four hours. For instance: Patient urinates at 6 A.M. *This first urination is thrown away,* or saved for an A.M. specimen if required and patient's bladder is empty. Save all succeeding urinations for the next twenty-four hours, at the end of which time (6 A.M.) request the patient to urinate, and *save the last urination* also, to complete the specimen. This gives us twenty-four hours' secretion.

The addition of solution of formaldehyd (f3ij) to a twenty-four hour specimen of urine will preserve it, and prevent fermentation before the analysis is made.

INFANT FEEDING.

1. If the bowel movements are curdy, we may take it as an indication of an excess of proteids.
2. Sour vomiting often indicates too much fat.
3. Stools that are very watery but without curds may result from too much sugar or too much fat.
4. Vomiting of hard, curdy masses may indicate too much proteids.
5. Should the child seem to do well on its food in every way except that it does not gain in weight, it may be that the sugar is too low.
6. Vomiting may mean that the child has eaten too much.
7. Breast milk is the best infant food.
8. No artificial food can or should be trusted which does not contain the essentials of breast-milk—viz., fat, proteids, and sugar.
9. The elements named are to be found only in milk, cows' milk being the only one available for general use.
10. Cows' milk must be modified, because it does not contain the same proportions of the elements named.

CONSTITUENTS OF GOOD MOTHER'S MILK.

Reaction Alkaline.

Contains 3 to 4 per cent. of fat . . .	} Sp. gravity 1030.
" 6 to 7 " " of sugar .	
" 1 to 2 " " of proteids }	

Inorganic materials $\frac{1}{10}$ to $\frac{2}{10}$ of 1 per cent.

Average percentage, 12 per cent. of solids to 88 per cent. of water.

REGULATING THE COMPOSITION OF MOTHER'S MILK,

The percentage of proteids is increased by	{ Increased frequency of nursing; Increased liberality of nursing and insufficient exercise.
The percentage of fat is increased by	
	{ Deficiency of proteid food; Excess of fatty foods and fasting.

The percentage of water } Increased fluid diets.
is increased by

The percentage of water } Saline cathartics and diminished
is diminished by } fluid diets.

Percentage of sugar and ash vary little.—DR. COTTON.

RULES FOR STERILIZING BOTTLES.

Boil bottles and nipples in 2 per cent. soda solution for five minutes, then in clear water for five minutes. Keep empty bottles and nipples not in use in sterile water or weak boric solution. Plug with raw cotton.

TO STERILIZE MILK.

Support bottles containing milk in a vessel of water. When water reaches 167° F. draw the vessel to a cool part of the stove, and let it remain for twenty minutes. Then remove bottles, and keep in a cool place.

TO PASTEURIZE MILK.

Prepare as for sterilizing, but place milk bottles in water only when it has reached 167° F., then let the water cool slowly, keeping the bottles therein for fifty minutes. As soon as bottles are cool place on ice. It is said that the heating of milk sufficient to kill bacteria impairs its nutritive value to some extent; when obtainable, clean, pure milk, used raw, is much better, and there is a rising demand for it.

FORMULAE FOR ARTIFICIAL FEEDING FOR BABIES.

	Age.
1. Sugar of milk Sterile-water Lime water Cream Milk	$\frac{3}{j}$ $\frac{1}{xij}$ $\frac{ss}{ss}$ $\frac{ss}{ss}$ } From 3d to 14th day.
2. Sugar of milk Sterile water Lime-water Cream Milk	$\frac{3}{j}$ $\frac{1}{xij}$ $\frac{3}{j}$ $\frac{3}{j}$ $\frac{3}{j}$ } From 2d week to 6th week.

	Age.
3. Sugar of milk Sterile water Lime-water Cream Milk	$\frac{3}{j}$ $\frac{1}{x}$ $\frac{1}{j}$ $\frac{1}{j}$ $\frac{1}{j}$ } From 6th week to 11th week.
4. Sugar of milk Sterile water Lime-water Cream Milk	$\frac{1}{j}$ $\frac{1}{vij}$ $\frac{ss}{ss}$ $\frac{1}{j}$ $\frac{1}{j}$ } From 11th week to 5 months.
5. Sugar of milk Sterile water Lime-water Cream Milk	$\frac{1}{j}$ $\frac{1}{vij}$ $\frac{ss}{ss}$ $\frac{1}{j}$ $\frac{1}{jss}$ } From 5 months to 9 months.
6. Granulated sugar Sterile water Cream Milk ¹	$\frac{1}{ss}$ $\frac{1}{v}$ $\frac{1}{j}$ $\frac{1}{iv}$ } From 9 months to 12 months

¹ It is sometimes desirable to substitute whey for milk and water.

AMOUNT OF FEEDING FOR INFANTS.

1 week old	$\frac{3}{j}$ every 2 hours.
2 weeks "	$\frac{1}{2}$ every 2 hours.
3 " "	2 " " "
4 to 6 weeks old	2½ " " "
6 to 8 " "	3½ " " "
8 to 16 " "	4 " 2½ to 3 hours.
16 to 24 " "	4½ " 3 hours.
24 to 32 " "	5 " " "
32 to 34 " "	6 " " "
34 to 36 " "	7 " " "
36 to 40 " "	7½ " " "
40 to 44 " "	8 " " "
44 to 48 " "	8½ " " "
48 to 52 " "	9 " " to 3½ hours.

BABIES' FEEDINGS.¹**DIRECTIONS FOR MAKING BUTTERMILK FROM LACTOSE TABLETS.**

Fresh skim milk,	1 quart;
Hot water,	1½ to 2 cupsful;
Salt,	½ teaspoonful.

Lactone tablet No. 1.

Add hot water to milk; then salt; then the lactone tablet well crushed. Stir well, cover with clean towel, and leave at ordinary room temperature. When the milk becomes thick and fermented, set in ice-box for use. Before using, heat the buttermilk until perfectly smooth.

ALBUMEN-WATER.

White of one egg;	
Water,	3 viij;
Pinch of salt.	

Add white of egg to cold boiled water and pinch of salt. Shake thoroughly or break with fork and strain through one thickness of gauze to remove froth.

LACTOSE SOLUTION.

To each ounce of milk-sugar add 1½ oz. of water (boiled). Heat until all the sugar is dissolved. Filter, put in a sterile bottle, plug with sterile absorbent cotton, and put on ice.

Use 3 iiss for every 3 of sugar ordered. Subtract this amount from the total amount of water ordered.

RENNET TABLET FORMULA.

Milk,	1 pint;
Rennet or junket tablet No 1,	gr. j.

Measure milk in double boiler and raise to temperature of 98° or 100° F. Dissolve tablet in cold water 3 ss to one tablet. Stir rennet through milk and let stand at same temperature for thirty or forty minutes. Cut into cubes and raise to temperature of 155° or 160° F. to stop the action of the rennet. Strain through gauze and put on ice. Do not use pressure in straining.

MILK ALBUMEN.

Milk,	1 quart;
Chymogen,	1 dram;
Buttermilk,	1 pint.

I. Boil milk for five minutes.

II. Cool to temperature of 100° to 105° F.

III. Add chymogen (dissolved in 3 j of cold water) and let stand for one hour at temperature of 100° to 105° F.

¹ *Babies' feedings* were taken from the list in the Children's Hospital of the Cook County Hospital, in Chicago, Illinois.

IV. Let drain through cheese-cloth for one and a half hours, and then throw out the whey.

V. Press the curd through the colander twice, adding the buttermilk as the curd is pressed through.

VI. Make up the quart by adding sterile water.

When the food is to be given to the baby, heat only enough to take off the chill, as more vigorous heating will cause the curd to clump at the bottom of the bottle in large curds.

If there is any clumping, shake the bottle well before giving to the baby.

Never put the baby directly from a milk diet to a milk albumen diet, but give one intervening feeding of barley-water before giving milk albumen diet.

CHYMOGEN USED INSTEAD OF RENNET.

Boil milk two minutes. Cool to 100° F. Add 60 gr. of chymogen to the quart. Let stand until clabber forms. Then drain curds.

FLOUR BALL.

Four cups of flour; place in close muslin bag; place in warm water and boil six hours.

After taking out of bag, remove outer part; then break up in chunks, place in radiator or slow oven to dry out. Pulverize by grinding and use instead of sugar.

RICE-WATER AND OATMEAL-WATER

are made in the same way as the barley-water, using the same proportion of the flour or grain.

LOEFJUND'S MALT SOUP.**Solution No. I.**

Malt soup,	3 iij;
Warm water,	Oj.

Dissolve the malt soup in the warm water.

Solution No. II.

Suspend or mix 3 ounces (in measure), or 2 ounces (in weight) of wheat flour in one pint of milk. Then strain the wheat flour and milk solution. Add Sol. No. I. to Sol. No. II. and bring slowly to a boil, stirring constantly, over a slow fire.

For weak or young children, dilute Loefflund's soup mixture with one-third part water.

VEGETABLE SOUP FOR BABIES.

1 handful of spinach;
1 beet;
2 carrots.

Chop fine and boil two hours in one quart of water. Strain through gauze and add one quart of sterile water.

BARLEY-WATER.

1 tablespoonful Robinson's barley flour;
1 quart water.

Boil twenty minutes or longer, then strain.

BUTTERMILK.

Buttermilk, 1 quart;
Barley flour, 2 even tablespoonfuls;
Milk-sugar, 1 tablespoonful.

Mix flour with the water; stir constantly and cook slowly for twenty minutes. Then add to buttermilk. Then add milk-sugar, one tablespoonful, or cane-sugar, two tablespoonfuls.

BEEF JUICE.

I. Cut meat into one-inch cubes; broil slightly and press out juice with meat-press or lemon-squeezer. One pound of meat will make two or three ounces of juice.

Serve warm or cold with a little salt.

Do not heat enough to coagulate albumen in juice.

II. Cold method:

Finely chopped beef, 1 lb.;
Water, 3vij.

Put in covered jar; allow to stand on ice from six to twelve hours; then squeeze out by twisting in coarse muslin.

Season with salt and serve as above.

This contains a smaller amount of extractives.

It may be served with sherry wine or celery salt.

If added to milk in the proportion of two or three tablespoonfuls to the feeding, the taste will not be noticed. The milk should not be heated over 100° F., as the albumen will coagulate.

No. I. contains twice the amount of extractives as No. II. If the stronger juice is desired, No. II. may be made by adding only 3iv of water instead of 3vij.

PASTEURIZED MILK.

Put milk in double boiler and raise to a temperature of 150° to 155° F. Let stand at this temperature for twenty to thirty minutes.

WHEY: ESSENCE OF PEPSIN FORMULÆ.

1 pint skim milk;
2 teaspoonfuls essence of pepsin or rennet.

Let milk in double boiler heat to a temperature of 105° F.; add essence of pepsin; stir for a moment and let stand at same temperature for thirty to forty minutes. Cut into cubes and raise the temperature to 155° or 160° F., to

stop the action of the rennet or pepsin. Then strain through several thicknesses of gauze or muslin and put on ice. Do not use pressure while straining.

PARTIALLY PEPTONIZED MILK.

Milk, Oj;
Water, 3ij;
Peptonizing powder, 1 tube.

Put milk and water into a bottle and add the peptonizing powder. Shake well and place bottle in warm water from 105° to 115° F., and leave about ten minutes at that temperature. Shake from time to time.

COMPLETELY PEPTONIZED MILK.

The process is exactly the same as the partially peptonized milk, except that it is continued for two hours, which is required for the conversion of all the proteins into peptones. For older children, the bitter taste may be covered by lemon-juice and cane-sugar. One even teaspoonful of cane-sugar and two teaspoonfuls of lemon-juice being added to 3iv of milk.

TOOTHACHE: Its Forms, Diagnosis, and Treatment for Relief.

The **sharp, paroxysmal, shooting** pain which is caused by the application of cold, heat, sweets or sour, or by biting some substances into a cavity, is due to a live pulp, and the treatment is quite simple. Clean out the cavity as well as possible, then saturate a small pellet of cotton with oil of cloves, or one drop of carbolic acid, or a solution of cocaine hydrochlorate and clove oil. Place this in the cavity and add another pellet of cotton to prevent the solution from being washed out by saliva. Relief should be immediate, but if not, reapply within a few minutes.

The **dull, throbbing** pain, with swelling of the face and a sensation of elongation of the tooth, is caused by either a putrescent pulp or an imperfect root canal filling. There is infection; therefore, the first thing to do is to remove the pus.

Dental Treatment.—If there is a large cavity in the tooth, try to enter the root canals and remove the putrescent matter. If the face is badly swollen, make a digital examination, and over the root of the affected tooth you will find a spot about the center of the swelling where it seems to be spongy, appearing to hold the impress of the finger. Take a clean, sharp, cycle-shaped lancet, place on the spot, holding the patient's head firm with your other arm for fear of his moving. Press the lancet firmly and directly through to the bone, then draw it out with a pulling motion so as to make a cut about an eighth of an inch or more. If this has been done properly, a creamy flow of pus should follow the lancet. Place the fingers on either side of the incision and massage toward incision. To relieve the pain, give *hot* foot baths, *cold* applications to face (never *hot*), and some other sedative internally, such as remedies given for a headache. When a tooth is sore to percussion, so that the food cannot be masticated, but is without pain when left at rest, if there is no pain over the root of the tooth, it is best to give the

tooth a rest, and apply counterirritants over the roots of the adjacent teeth.

This condition is called **apical pericementitis**, an inflammation of the layer of bone about the fangs of teeth. For relief, give hot foot-baths and pain remedies, as in abscessed tooth. A dead pulp in a tooth will form gas and cause the sensation of elongation and soreness. If the putrefaction is not removed, an abscess will result. At first there will be no soreness to pressure over the root, but on application of heat, such as drinking hot coffee, there will be pain, while cold water will temporarily remove it.

Dental Treatment.—Open the chamber and remove the putrescent pulp, being careful not to go beyond the apical foramen. Use a barbed broach, then wash out with peroxide of hydrogen on a thread of absorbent cotton wrapped smoothly about the broach. Do not push the instrument up into the canal very far for fear of sending some putrescent matter beyond the tooth. Then withdraw the broach and apply oil of cloves or carbolic acid, leaving the canal open and clean for the gas to escape. Hot foot-baths and headache remedies will relieve the pain.

Gum-boils are abscessed teeth, and may be deep-rooted or very superficial. The treatment is the same as given above. Hot applications are very often prescribed, but as an infection will always follow the line of least resistance, it can be readily understood why such a treatment should not be given. The abscess may gather in the cheek, necessitating lancing, which will leave a scar. Cold cloths will allay the infection and simplify the treatment to the gums alone. Teeth are withdrawn, leaving unsightly cavities, which could be avoided by a more deliberate treatment. Treat the abscess of the tooth the same as an abscess in any other part of the body, thereby saving the root of the tooth, if not the entire portion, which can be crowned and give a permanent good tooth.

Mastication is the most important part of the digestive system, and mastication cannot be done without good teeth. Therefore, it behooves everyone to preserve his own teeth and to give this benefit to

others who may not have had dental treatment. There are dentists who will extract a tooth upon the patient's request, and it is best to seek the most progressive and modern dental doctors for the preservation of the teeth to prevent the untimely loss of a tooth, which means also many times a preventive against other ailments affecting the digestive tract. A good dentist should be consulted at least once a year, although the teeth may appear sound and in good condition.

ERUPTION OF THE DECIDUOUS OR MILK-TEETH.

Lower central incisors, 6 to 9 months.

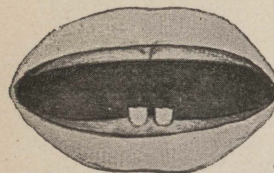
Upper " 8 " 10 "

Lower lateral " 15 " 21 " { also first molars.

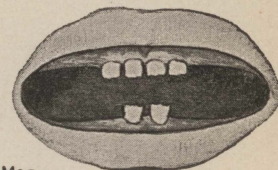
Canines, 16 " 20 "

Second molars, 20 " 24 "

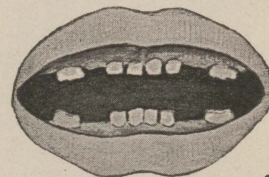
6-9 Mon.



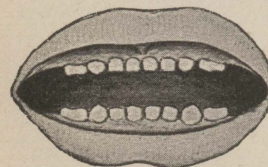
9-10 Mon.



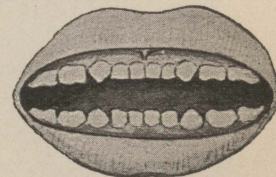
12-16 Mon.



18-22 Mon.



20-24 Mon.



Eruption of the deciduous teeth (Frühwald and Westcott).

Twenty teeth in all: eight incisors, four on each jaw; four canines, two on each jaw; eight molars, four on each jaw.

Permanent teeth :

First molars coming back of baby molars,	6	years.
Centrals,	7	"
Laterals,	8	"
First bicuspid,	9	"
Second "	10	"
Canines,	11-12	"
Second molars,	12-13	"
Third " or wisdom teeth,	17-21	"

NURSING IN ACUTE FEVERS.

TYPHOID OR ENTERIC FEVER.

Typhoid fever is an acute infectious disease, excited by the *typhoid bacillus*. It is most prevalent in the autumn, although it occurs at all seasons. The disease is not directly contagious, and can only be acquired by taking the special bacillus into the alimentary canal. This is usually accomplished through the medium of polluted water, milk contaminated with infected water, raw vegetables (celery, lettuce, water-cress) which have grown in infected soil, or raw shell-fish (oysters) taken from the beds of polluted streams. Occasionally physicians and nurses are infected directly in handling the patient or his clothing which has become soiled with his discharges.

The bacilli are contained in nearly all the secretions of the patients, especially in the stools and urine.

While the bacilli are widely distributed through tissues, the only characteristic lesions of the disease are in the glands of the intestines (Peyer's patches), which in the first few days become red and swollen, about the beginning of the second week soft and pale, and in the third week ulcerated. If the patient survive, cicatrization usually begins in the fourth week.

Death may result from exhaustion, the result of the systemic poisoning, from perforation of the bowel by an ulcer, from intestinal hemorrhage, the result of erosion of a blood-vessel, or from some complication, like pneumonia.

Symptoms.—The *initial symptoms*, which may last a week or two before there is any fever, are headache, weakness, loss of appetite, nose-bleed, and perhaps slight diarrhea.

The *fever* rises gradually, reaching its maximum (104°-105° F.) in about a week; it remains stationary for one, two, or three weeks, and then falls, reaching the normal in another week, thus making

the febrile period of the disease of four or five weeks' duration. Throughout its course the evening temperature is apt to be two or three degrees higher than the morning temperature.

The abdominal symptoms consist of distention of the abdomen (tympanitis), pain and tenderness in the right iliac region, and often diarrhea.

Between the seventh and ninth days a rash usually appears on the abdomen, consisting of small rose-red spots. These come out in crops and disappear on pressure.

The pulse becomes rapid and feeble, and the heart-sounds become weak and dull.

The *respiratory symptoms* include cough, hurried breathing, and slight expectoration.

Nervous symptoms are not always marked. In severe cases there may be delirium, stupor, twitching of the muscles, picking at the bedclothes, and coma.

The *face* is dull and listless. The *tongue* is coated and tremulous. In severe cases it becomes dry, brown, and fissured, and sordes tend to collect upon the teeth.

Relapses are common. In some cases they are due to the too early use of solid food, to excitement, or to overexertion.

When typhoid fever is prevalent, the most reliable *preventive measures* consist in thorough boiling of all water and milk used for drinking purposes and the avoidance of uncooked vegetables, oysters, and shell-fish.

Management.—Unless otherwise directed take *temperature, respiration, and pulse* every three hours, in mouth or axilla, as desired. If for any reason a change is made in taking temperature, it should be noted on the chart. Note the effect of *sponging* or of *bathing* upon temperature and pulse. Note the character of pulse, and effect, if any, which stimulants have had upon it. Note the amount of *cough*, and the character and quantity of the *expectoration*; also any pain that may occur in the chest.

Note the amount of *flatulence* and the number and character of the *stools*; especially be on the lookout for blood or undigested food in the discharges.

Note carefully any *abdominal pain*, any *increase in the distention*, as these symptoms, with or without a rather abrupt fall in temperature, chills, and *pinched features*, are suggestive of perforation.

Treatment for Hemorrhage.—Stop all orders immediately, including diet. Elevate the foot of the bed. Give morphin sulphate, gr. $\frac{1}{4}$ (gm. .015), hypodermically, and apply an ice coil or iced compresses to the abdomen until the physician arrives.

Note the occurrence of *vomiting* and the character of vomit.

Be on the lookout for retention of *urine*, which is quite common. Note the amount of urine passed in a day and any abnormalities connected with its appearance.

Note the condition of the *skin and tongue*.

Note the amount of *sleep*, its character, whether quiet or restless and whether or not there have been delirium, stupor, or twitching of the muscles.

Note the exact amount and character of *nourishment* taken, and the time it was given; also the amount, time of administration, and effect of *medicines and stimulants*.

Cleanse the mouth and teeth frequently with some antiseptic wash, such as listerine, 1 part; water, 3 parts.

Bed-sores can nearly always be prevented by keeping the patient and bedding perfectly clean, the skin absolutely dry, and the bed-linen smooth. Changes of position are also important. Parts subjected to pressure and soiling should be washed at least twice daily with soap and water, thoroughly dried, gently rubbed with alcohol, and then dusted with a powder like the following:

Boric acid,	1 part;
Starch,	1 "
Zinc oxid,	1 "

If the skin be reddened and tender it may be painted with collodion and then dusted. When the part cannot be kept dry, it should be smeared with zinc ointment and powdered. In very prolonged

cases it usually becomes necessary to use water- or air-pillows or water- or air-beds.

To *disinfect the feces and urine*, use a solution of chlorinated soda (Labarraque's solution). Cover the urine and feces with the solution and leave the contents stand for an hour. Cleanse pan thoroughly and pour into it the Labarraque solution.

PNEUMONIA.

Pneumonia is a general infection, excited by a special organism—the pneumococcus—and manifested by a local inflammatory process in the lung and severe systemic disturbances.

Exposure to cold and lowered vitality from overwork, alcoholism, or some previous disease render persons liable to infection.

Symptoms.—These consist in a decided chill, pain in the side, fever rising rapidly to 104°–105° F., and lasting for five, seven, nine, or eleven days, and then rapidly falling; cough; tenacious bloody expectoration, shortness of breath, delirium and stupor, and physical signs indicating a solid condition of the affected lung.

In fatal cases death usually results from exhaustion, the result of the systemic poisoning, but occasionally it is due to a failure of the heart to propel the blood through the solid lung, to suffocation, or a complication, such as inflammation of the covering of the heart (pericarditis) or lining of the heart (endocarditis).

Management.—The room should be well ventilated, but free from drafts. The temperature should be maintained between 65° and 70° F. Cool water should be given freely. The points mentioned in connection with temperature, respiration, and pulse in dealing with typhoid fever are applicable here. Note the frequency of cough, the amount and character of expectoration, and whether the latter is raised readily or with difficulty. Note the occurrence of pain and its location; also amount of sleep, amount of nourishment, amount of urine, number of stools, etc., and the effect of sponging, of medicines, and of local applications. Clean the mouth and

teeth at intervals, being extremely careful, however, in all manipulations not to tire or exhaust the patient.

SCARLET FEVER.

Scarlet fever is an acute, highly contagious disease characterized by a sudden onset with chill, vomiting, or convulsions; a high fever of from a week to ten days' duration; a very rapid pulse; severe sore throat; a bright red rash, appearing on the second day, lasting about a week, and followed by desquamation and a marked tendency to nephritis.

The most serious complications are nephritis, suppurative inflammation of the middle ear (otitis media), inflammation of the endocardium or pericardium, and pneumonia.

Scarlet fever, while contagious at all periods, is probably most so during the period of desquamation. The organism may cling to furniture, clothing, etc., and reproduce the disease after very long periods. The contagion may be carried by persons coming in contact with the sick, or the disease may be transmitted through the air of the sick-room or through clothing, utensils, etc., which have been used by the sick.

Prevention of contagion consists in isolating the patient; in disinfecting everything that has been in contact with him; in anointing the patient's body with an antiseptic oil until desquamation is complete; and in thoroughly disinfecting the room after the patient's removal.

Management.—Have the patient, if possible, in a large, airy room, preferably at the top of the house. Keep the temperature uniform and the room well ventilated. Wear a loose wrapper and cap, and leave these inside the room when obliged to leave it.

With cloths moistened with a 3 per cent. solution of carbolic acid wipe the floor, furniture, sills, door-knobs, mantelpiece, etc., once a day, but never dust or sweep. Thoroughly disinfect the secretions of the patient and all articles used by him before they leave the room.

Allow the patient no food except what has been

ordered, which will usually be milk, koumiss, junket, fruit-juices, and gruels. Encourage the patient to drink water freely. Apply to the body, at least once a day, a bland ointment. Note temperature, respiration, pulse, stools, quantity of nourishment, sleep, and effect of baths and medicine as in typhoid fever. Note especially the quantity and appearance of the urine, and have a sample in a clean bottle ready each day for the physician's examination.

Keep the nose and throat clean with mild antiseptic sprays or washes. Relieve pain in the throat, unless otherwise directed, with ice-poultices or hot-water compresses.

MEASLES.

Measles is an acute contagious disease characterized by moderate fever of about a week's duration; by an eruption on the skin, appearing on the third or fourth day as small red spots that soon coalesce into crescentic blotches, remain three or four days, and then disappear with a branny desquamation; and by catarrhal symptoms involving the eyes, nose, and bronchial tubes (conjunctivitis, coryza, and bronchitis). The most common complications of the disease are catarrhal pneumonia, inflammation of the gastro-intestinal tract, and inflammation of the middle ear.

Management.—The preventive measures described in connection with scarlet fever are applicable in measles. The room should be maintained at a temperature of 70° F., and should be moderately darkened. The bed should be so arranged that the face will be directed away from the light. Milk, broths, and gruels are suitable forms of nourishment. The temperature, pulse, respiration, hours of sleep, quantity of nourishment, amount of urine, and the effects of therapeutic measures should be carefully noted as in other fevers. Daily inunctions of the body with cold cream or olive oil are useful. Spraying the nose and throat with a mild antiseptic solution, and washing the eyes with boric acid solution (15 grains to the ounce of water) are usually ordered. Hot baths and hot drinks are indicated

when the rash is delayed. Fever is generally controlled by sponging. Great care is necessary during convalescence to avert complications.

DIPHTHERIA.

Diphtheria is an acute contagious disease characterized by moderate fever of an irregular type, and of from one to two weeks' duration; by considerable weakness and prostration; and by the formation of a grayish or whitish false membrane upon the throat, nose, larynx, and adjacent parts. The exciting cause of disease is the *bacillus of diphtheria*, which is found chiefly in secretions of the affected mucous membrane. The constitutional symptoms are due to the absorption of a toxin produced by this bacillus.

Diphtheria involving the larynx is sometimes termed *true croup* or pseudomembranous croup. This form is characterized by irregular fever, hoarseness of the voice, croupy cough, and progressive difficulty in breathing. Death frequently results from suffocation, unless tracheotomy or intubation of the larynx be performed.

The chief complications of diphtheria are pneumonia, degeneration of the heart-muscle, inflammation of the middle ear, and paralysis the result of an inflammation of the nerves.

Preventive measures consist in isolation of the sick, the thorough disinfection of the bedroom, bedding, clothing, and all articles used by the sick, and the administration of an immunizing dose (500 units) of antitoxin (see page 20) to those who have already come in contact with the patient or who have otherwise been exposed to the contagion. The sick-room should be well ventilated and maintained at a temperature of 70° F. The atmosphere should be made moist by slaking lime in the room or by generating steam in a kettle. In membranous laryngitis treatment in a steam-moistened tent is desirable. On account of the tendency to sudden heart-failure absolute quiet and rest are to be enjoined. The diet should consist of milk, unseasoned broths, koumiss, junket, and eggs.

The patient's temperature, pulse, respiration,

nourishment, urine, sleep, and bowel movements should be noted as in other fevers. Local applications of boric acid solution, hydrogen peroxid (1 : 3), or normal salt solution are usually ordered; they should be made with utmost gentleness. Externally, ice-poultices or hot fomentations are useful in relieving soreness.

The utmost care should be exercised during convalescence to guard the patient against undue effort, as at this time sudden heart-failure is especially liable to occur.

DISINFECTION OF FECES AND URINE.

Disinfect the feces and urine by mixing with each evacuation double its volume of 1 per cent. chlorid of lime solution or double its volume of 5 per cent. carbolic acid solution. Cover the vessel and allow it to stand for from one to two hours before emptying its contents into the closet.

Put all typhoid linens in cans used for that purpose only. Sprinkle with formalin and keep covered until sent to laundry.

N. B.—While performing work in which the hands come in contact with soiled linen and bed-pans, fill finger-nails with soap to keep them clean and to prevent them from acting as carriers of disease.

A WASHING FLUID FOR SOILED CLOTHES.

One can of lye,	10 cents ;
Lump of ammonia,	5 " ;
Salts of tartar,	5 " .

Put in a stone jar and set it in the open air. Pour over it 1 gallon of boiling water. Use $\frac{1}{2}$ cupful to a boiler of clothes and add $\frac{1}{2}$ bar of soap. Soak clothes over night in cold water; then place clothes into the boiler and boil for twenty minutes. Plain pieces need very little rubbing. Rinse two or three times in clear water before hanging clothes out to dry.

INCUBATION PERIOD AND QUARANTINE.

A constant period of incubation is not to be expected. In most instances, as will be seen from the following table, the difference between the maximum

and the minimum period is not very great. It seems remarkable, however, that a disease should show such extremes as typhoid fever :

	Normal.	Maximum.	Minimum.
Variola	12 days.	14 days.	9 days.
Varicella	14 "	19 "	13 "
Measles	10 "	14 "	4 "
Rubella	18 "	21 "	8 "
Scarlatina	2 "	7 "	1 day.
Influenza	3 "	5 "	1 "
Diphtheria	2 "	7 "	2 days.
Typhoid fever	12 "	23 "	5 "
Mumps	19 "	25 "	12 "

It is a peculiar fact that the diseases in which the period of incubation is shortest are those in which the infection persists the longest.

The period of quarantine must be guided largely by the period of incubation, hence the subject is an important one for a variety of reasons. The "Medical Magazine" (London) states that the period of quarantine should be at least a day longer than the maximum period of incubation for each disease. This is a very uncertain rule, however, for the patient should be free from all signs of illness, and especially from fever. The period of infection is very doubtful. It may be greatly prolonged by complications. This is especially true of smallpox, diphtheria, typhoid and scarlet fevers. The period during which a disease may be infectious cannot be stated definitely. It varies with different diseases, and must be determined according to the symptoms and character of the case. Measles, chicken-pox, and mumps lose the direct power of infection very early, and the infective principle does not remain active for a long period in the room in which the patient has been ill. Measles, mumps, and chicken-pox may be infectious in the earlier stages before becoming definite in character. Smallpox is not actually dangerous until the eruption appears.

THE CARE OF THE SKIN AND MOUTH IN FEVERS.

BY HARRIET HIGBEE,
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From the American Journal of Nursing.

THE prevention and treatment of bed-sores have been and are frequently discussed in medical books and journals. But as it is a subject that often taxes the nurse's ingenuity to the extreme, it can not be dwelt upon too frequently. Many preventive measures are familiar to us, as the soap-and-water bath for cleanliness, followed by rubbing with alcohol and dusting with boric-acid powder, or boric-acid powder and bismuth subnitrate in equal parts for dryness.

The relief of pressure is most important. Make use of air-cushions, cotton-pads, pillows, water-bed and frequent change of position where that is possible. In addition to these, there are a few measures not generally used which after a thorough test have proved satisfactory. One is a simple inexpensive contrivance used to relieve pressure of heel, elbow, and ear. It is a pig's bladder filled two-thirds full of either warm or cold water, as the case requires, tied securely, and placed under a cotton ring. The weight of the head or elbow rests on the ring and the tender point rests on the soft fluctuating mass. If the skin is inactive, as in paralysis, or there is frequent or constant moisture from perspiration or involuntary evacuations of urine or feces, the alcohol and boric acid, etc., are of very little value. They do not prevent the absorption of the moisture by the skin and its subsequent softness or excoriation, which is commonly followed by infection. In such cases the back should be washed with soap and water every six or eight hours, or after every involuntary evacuation, and thoroughly rubbed with a small

amount of oil-substance, as camphorated oil or a mixture like the following :

Mutton tallow,	3i;
Olive oil,	1℥i;
Carbolic acid, 95 per cent.,	℥j.

Render out mutton tallow on the back part of the stove ; do not brown it. Strain through a piece of muslin ; add the olive oil and carbolic acid ; set dish into cold water and beat its contents until set. This will make an ointment the consistence of vaseline, and it will keep indefinitely. If the skin needs a great deal of stimulation, camphorated oil or, better still, castor oil may be substituted for the olive oil in the above recipe.

When the skin becomes excoriated the part should be cleansed as mentioned before, not with soap and water, but with boric-acid solution, normal salt solution, or sterile water ; then gently painted with oxide of zinc ointment made into liquid form by the addition of olive oil, castor oil, and balsam of Peru in equal parts, or castor oil alone, and covered with a clean cloth fastened on with a binder. Gentle massage may be used around the excoriated surface with excellent results.

The treatment of bed-sores is usually directed by the physician ; but if it is left to the nurse, she will find the following method helpful. If there is necrotic tissue or suppuration present, she may irrigate the cavity once daily with peroxid of hydrogen, one glass syringeful, followed by normal salt solution, boric-acid solution, or sterile water. Then apply a hot boric-acid dressing, one inch thick, every four hours until wound is clean. If the stimulation of the tissues is needed, fill the cavity with a sterile dressing saturated with balsam of Peru and castor oil, equal parts bovine, castor oil, or camphorated oil alone. When the depression is filled with granulation tissue, it can be treated as an excoriation.

THE MOUTH.

The subject of the care of the mouth in fever nursing is equally as important as that of prevention of

bed-sores. An unclean mouth is not only very unpleasant and often painful to the patient, but is a source of infection. The accumulation of food and mucus is a fertile field for the lodgement of bacteria. If this infected material is allowed to remain, it can easily spread to the middle ear and the mastoid cells, and cause abscesses or be carried by the food to the already overburdened alimentary tract to add to its infection. When the accumulation of sordes is profuse and persistent the patient's mouth ought to be cleansed after every feeding. This may be done by wrapping a two-inch square piece of linen or gauze, saturated with the mouth-wash, around the little finger and wiping every portion of the cavity—not far enough on back of the tongue to provoke nausea. If it is necessary to clean the throat, a small swab may be employed. For thorough cleaning of the mouth several sponges are necessary. These may be received in a piece of paper and at once burned. While cleaning the mouth of a delirious patient the nurse for her own protection must place some hard substance between the patient's teeth. A rubber cork is the best, but if that is not available, a fork-handle may be used. Its prongs must be carefully wrapped to avoid an accident. If the cork is used, the nurse must hold it in place to prevent its falling down the patient's throat. There are numerous preparations used for cleaning the mouth, as :

- | | |
|--------------|-------|
| 1. Listerin, | f℥j; |
| Water, | f℥ij. |

Dobell's Solution.

- | | |
|------------------------------|--------|
| 2. Borax, | ℥ss; |
| Sodium bicarbonate, | ℥iv; |
| Listerin, | f℥j; |
| Carbolic acid, 95 per cent., | ℥viii; |
| Warm water, | f℥x. |
| 3. Boric-acid solution, | f℥j; |
| Alcohol, | f℥ss; |
| Glycerin, | f℥j; |
| Tincture of myrrh, | ℥ij. |
| 4. Glycerin, | |
| Water, of each, | f℥ss. |

The following three formulæ have been found excellent for special cases :

For Mucus-coated Mouth.

- | | |
|------------------------|--------|
| 1. Sodium bicarbonate, | gr. x; |
| Glycerin, | f℥ij; |
| Water, enough to make, | f℥ij. |

If the coating be of long standing, thick and dry, this solution may be applied with an applicator every five or ten minutes for one hour, and then the cleansing may be done with sponges. In these cases it is necessary to use a toothpick to gently loosen the sordes between the teeth.

For dry or fissured lips and tongue, and for anointing the baby's nose, the following will be found useful :

- | | |
|---|-------|
| 2. Lanolin, | |
| Vaselin, of each, | ℥j; |
| Oil of gaultheria, | ℥xxx. |
| Apply small quantity several times daily. | |

In rare cases there is a persistent bleeding from the gums. The application, several times daily, of the following solution is effectual :

- | | |
|-----------------------|-------|
| 3. Tincture of myrrh, | ℥xxx; |
| Water, | f℥j. |

Mouth Wash.

A solution of potassium chlorate and cinnamon water.

DISINFECTION OF ROOMS.

Seal all crevices about doors and windows. Keep the room closed for twenty-four hours to allow dust to settle. At the end of this time vaporize in a lamp from fifty to sixty paraform tablets to each 1000 cubic feet of space or vaporize 1 pound of formaldehyd solution in a *special apparatus* designed for the purpose. If no special apparatus is obtainable, sprinkle sheets with the following solution, using a gallon of the mixture for a medium-sized room, and fill the room with steam :

Formaldehyd sol.,	4 parts ;
Glycerin,	1 part ;
Water,	2 parts.

The steam and glycerin prevent to some extent the conversion of the formaldehyd gas into paraform, which in itself is useless.

Another and more modern method is to pour 12 ounces of formaldehyd into a vessel and then add 4 ounces of crystals of potassium permanganate. Place the vessel in the room and leave the room closed for from four to six hours. To get rid of the fumes quickly after the disinfection is completed, sprinkle 4 ounces of ammonia on a sheet and leave the sheet in the room until the ammonia is evaporated.

Sulphate of copper solution is a very cheap disinfectant, and may be used to advantage in typhoid fever.

After this treatment again keep the room closed for four or five hours. Then wipe floor, walls, and woodwork with corrosive sublimate solution (1 : 2000) or carbolic acid solution (3 per cent.).

DISINFECTION IN PRIVATE NURSING.

In a private home (M. D. P., *American Journal of Nursing*) if contagion has taken the family by surprise and a room has not been especially prepared, leave in the room all the furniture and fittings in order that everything may be disinfected finally.

During the progress of the disease no blankets, coverings, etc., must ever be shaken from the windows. They can only be aired within the room, or rooms, occupied by the patient. Moist sheets hung outside the door leading to the rest of the house prevent the passage of dust from the sick-room. It is sufficient to keep them sprinkled with plain water, as the important thing is the moisture. However, a solution of carbolic acid may be used. They should be kept wet by some one on the clean side of the house. Soiled linen from the sick-room should be placed in a wash-boiler or metal can full of water, never taken to the laundry in a dry condition. Here also a weak solution of carbolic acid may be used, or a very weak solution of soda. However, plain water will be sufficient. They should be boiled for at least half an hour. Patients' dishes and silver should be kept in the room, and before returning to the house should be boiled.

All cleaning within the patient's room during illness should be done with moist cloths, which should be put into paper bags and burnt.

Upon leaving the room the patient should receive an unusually thorough bath, hair and all, with tincture of green soap, a dilute alcohol rub, and finally a sponge-bath of bichlorid of mercury, 1 : 2000 to 1 : 4000, according to age.

The mode of disinfecting rooms is, generally, to use formaldehyd.

Before setting free formaldehyd in any form the nurse should put on rubber gloves, glasses, and a thick mouth and nose protector, as the fumes are very irritating. After leaving the room she should seal up the door and leave all over night, and then thoroughly air and house-clean on the morrow. Mattresses and pillows had better be steam-sterilized if there is any sterilizing plant in the town, or, in the country, made over and sunned thoroughly.

SURGICAL SUPPLIES.

TO STERILIZE INSTRUMENTS.

1. All instruments should be boiled for at least fifteen minutes in a 1 per cent soda solution. *Wrap the blades of knives and scissors in cotton*, put them in a separate towel, and in one corner stick the needles before folding it. Some surgeons prefer to have the latter simply washed and placed in absolute carbolic acid and then in alcohol for a few minutes. Water *must boil* before instruments are put in and the boiler must be kept closely covered.

2. In a German medical journal, published at Leipzig, Gerson corroborates his former assertions as to the efficacy of disinfection of instruments with tincture of soap, citing extensive bacteriologic tests in evidence. He wraps the blades in Brun's cotton, impregnated with tincture of soap. The cotton protects them from the air and the tincture is an efficient disinfectant. The instruments are then ready for use at any moment. After using them he rubs them clean with cotton moistened with the same tincture, then wraps them in a fresh piece and lays them aside. No boiling or steaming is required, and the instruments are not harmed by the process. He recommends this method especially for military and other practice where steam disinfecting appliances are not available. He has found that instruments infected with pus, etc., and not even wiped off after having been used, proved perfectly sterile after a few days in the wet cotton wrapper. No colonies developed when they were rubbed on agar plates or soaked in bouillon.

To Arrange Instruments for the Convenience of the Operator.—Instruments for immediate use are laid in trays on a small movable table on the operator's right hand. Instruments that may not be needed are kept in another tray. A separate tray is used for suturing material, needles, a pair of sharp-pointed scissors, and long forceps. Before placing instruments in the tray, dry with sterile towels.

TO CLEAN INSTRUMENTS.

First of all, the knives, scissors, and needles should be laid carefully aside and cleaned at once. Scrub all instruments in cold water to remove blood and pus, then in hot water with plenty of soap. Rinse thoroughly in hot water, then place in boiling water, take them out singly and dry; *do not drain*. Following pus cases all instruments must be boiled for at least fifteen minutes in 1 per cent. soda solution.

TO STERILIZE GLOVES.

Examine carefully to see that they are in perfect condition. Select a pair, then wrap each one in a separate piece of gauze, fasten together, and boil at least 15 minutes in salt solution.

TO DRY STERILE GLOVES.

Cover a table with a sterile sheet. Prepare hands and person as for an operation, and draw on a pair of sterile gloves. Then dry gloves with sterile towel, and powder them inside with sterile powdered talcum.

TO CLEAN GLOVES.

Soak in cold water, then wash with green soap and hot water. Rinse and dry. If used in pus cases, boil 15 minutes before laying away.

TO STERILIZE SILK-WORM GUT OR SILK THREAD.

Boil in sterile water 20 minutes and preserve in alcohol, 95 per cent., or first sterilize in steam sterilizer for 20 minutes, then boil in sterile water for 20 minutes and preserve in alcohol, 95 per cent.

TO STERILIZE HORSE-HAIR,

1. Wash thoroughly in green soap and water. Rinse several times. Soak in ether 24 hours. Boil in sterile water 20 minutes. Preserve in alcohol, 95 per cent.

2. Soak in bichlorid solution 1:1000 for 6 hours. Then boil 3 minutes in sterile water. Place in alcohol, 50 per cent.

TO STERILIZE CATGUT (FORMALDEHYD METHOD).

Immerse in formaldehyd sol., 5 per cent., for 24 hours. Wash by soaking in sterile water for 24 hours, which must be changed every hour. Then boil in sterile water and basins about 10 minutes, according to size of the catgut. Lift out carefully, and place on a sterile towel until all moisture is absorbed. Prepare table, hands, and person as for an operation. Cut in required lengths, from 14 to 25 inches. Coil smoothly, and preserve in glass jars (which have been previously boiled for 20 minutes) containing the following solution :

Corrosive sublimate,	1 part ;
Boiled glycerin,	200 parts ;
Alcohol, 95 per cent.,	1000 "

CHROMIC CATGUT.

1. Soak in ether 1 to 2 weeks, according to size.
2. Wind on glass spools.
3. Soak in chromic acid solution, 5 gr. to 1 pint water, 3 to 6 hours, according to size.
4. Dry in sun 3 days.
5. Boil in 95 per cent. alcohol 1 hour, under 15 pounds pressure, in autoclave.

Use Mason fruit jars. Do not screw the top down when in sterilizer.

TO STERILIZE LINEN THREAD.

Wind several yards of thread into coils. Boil for 30 minutes in a 1 per cent. solution of bicarbonate of soda. Wash in fresh cold water, and allow to stand in cold distilled water for 6 hours. Then boil in fresh water for 30 minutes. Place in absolute alcohol for 48 hours, then in a solution of Schering's celloidin with equal parts of alcohol and ether. The mixture must stand for 12 hours, or until dissolved ; keep tightly corked. When ready for use add 1 per cent. of sterile oleum ricini, and immerse thread for 48 hours. Then wind upon a frame to dry. This will require from 1 to 3 days. When dry, cut into lengths and coil or wind on glass slides.

Boil for 1 hour in normal salt solution. Preserve in Chinesol solution, 1 : 500.

To Sterilize Glycerin or Any Kind of Oil.—Place bottle uncorked in a vessel of boiling water for 2 hours.

TO PREPARE RUBBER TUBING.

Place different sizes in a deep dish of water. Add bicarbonate of soda to make a 10 per cent. solution. Let come to a boil over a slow fire, then with a stiff brush or cloth rub each piece well. This removes all sulphur, leaving a black surface. Rinse several times, then boil in clean water 15 minutes. Boil 15 minutes before immediate use.

TO PREPARE SIX YARDS OF IODOFORM GAUZE.

Prepare the following solution :

Sterile iodoform,	3ijj ;
Sterile glycerin,	3ij.

Mix thoroughly, gradually add alcohol (95 per cent.), f3ijj, then very quickly, ether, f3vij. Have gauze ready in desired lengths, and drop into solution. Press gauze uniformly to preserve evenness of color. Work rapidly. Prepare table, hands, and person as for an operation. Roll strips, and place in sterile glass jars.

TO PREPARE IODOFORM GAUZE (GREEN-SOAP METHOD).

To saturated boric-acid solution Oj, add green soap to make a good suds. Boil half an hour. To this add iodoform 3j, then boil 15 minutes. When cool add carbolic acid (95 per cent.) 3j, stir solution, dip gauze, and roll in strips. Keep in sterile glass jars.

Castile soap is a good substitute for green soap.

IODOFORM EMULSION.

I. Nine parts sterile glycerin in 1 part of iodoform. Dissolve powder for eight hours in bichlorid solution (1 : 500). Pour off solution and break up

the iodoform after having rinsed it thoroughly in sterile water. Then mix with glycerin.

II. Iodoform, $\mathfrak{z}\text{j}$; sterile glycerin, $\mathfrak{z}\text{ix}$. Put the iodoform in a sterile basin. With a sterile spoon stir in glycerin, a few drops at a time, until a smooth paste has been made. Then add remainder of glycerin.

TO PREPARE PROTECTIVE STRIPS.

Scrub with green soap and rinse well in sterile water. Cut into strips. Disinfect in bichlorid (1 : 500) for twenty-four hours. Keep in sterile water three hours. Then place in boric-acid solution. Put in normal salt solution when preparing for immediate use.

TO PREPARE TINCTURE OF GREEN SOAP.

Green soap,	3 parts ;
Alcohol, 95 per cent.,	2 "
Ether,	1 part.

To prepare by cold process : Mix ingredients in a pitcher and stir briskly for a few minutes every hour until a solution is formed.

To prepare by warm process : Melt the soap over a slow fire ; then remove it to a cool place and stir occasionally. Before it hardens add solutions and mix thoroughly.

Caution : Prepare where there is no danger of the ether igniting.

STERILIZING HAND BRUSHES.

1. Clean with green soap and water ; rinse thoroughly.
2. Place in saturated oxalic solution for 30 minutes.
3. Place in sterile water 30 minutes.
4. Change water twice.
5. Keep dry.

TO PREPARE A PATIENT FOR A SURGICAL OPERATION.

The preliminary preparations are of the *greatest importance*. The usual standing orders should be followed only when no directions have been given by the surgeon. When express directions for preparation are given by the surgeon, the usual standing orders must be disregarded. Caution in the use of cathartics can not be too strongly emphasized, for even a simple laxative at such a time may cost the patient's life.

The usual standing orders are : For the previous day, liquid diet only. Give a cathartic, a bath, and a hair-wash during the afternoon, and flush the bowels thoroughly a few hours later. Surgical preparations should be completed before retiring time for the night.

Have room and all preparations ready before disturbing patient. Keep patient covered as much as possible. Protect table with a Kelly pad or a good substitute for same. Have at hand a drainage-pan and a bucket.

Shave field of operation.

Scrub with tincture of green soap and rinse with sterile water ; then cleanse with ether, followed by alcohol, 70 per cent.

Put on dry sterile dressing (a towel), apply a suitable bandage and fasten securely.

Douches are given only by direction of the surgeon—sterile water preferred.

The final preparation is given in the operating-room a few minutes before the operation is begun, consisting of a heavy coating of tincture of iodine, applied by the surgeon in attendance.

Morning of Operation.—Have a specimen of urine ready for analysis. No food six hours before operation. If patient cannot urinate a few minutes before going to the operating-room, catheterize, with doctor's permission. Remove false teeth, jewelry, and protect patient from the cold.

TO PREPARE A ROOM FOR A MAJOR OPERATION.

BY EVELEEN HARRISON,

Graduate of the Post-Graduate Hospital, New York.

From the American Journal of Nursing.

Of necessity this is far more extensive than the requirement of a minor operation, and should be commenced the day before if possible.

The selection of the room comes first, and as an abundance of clear light is more essential than anything else in an operating-room, let the choice of the room depend on that. When possible avoid using a room into which the sun will shine directly during the time of the operation; but in any case, take the room that gives the most light.

When the house is large enough to allow it, and your choice is not limited, use a room adjoining, or at least on the same floor as the one to be occupied afterward by the patient, and as near the bathroom as possible.

Sometimes it is necessary to use your patient's bedroom, in which case the bed, after being prepared, should be pushed up in a corner out of the way.

All the furniture that it is possible to remove is taken out of the room; any large piece that has to remain should be covered completely with sheets fresh from the laundry. Carpets and curtains must be removed, *unless the surgeon prefers to have them covered with moist sheets*, and the room thoroughly cleaned, floor scrubbed, windows washed, etc.

As the surgeon will need all the light you can give him, cover only the lower panes of the window with thin muslin curtains, cheese-cloth, or—what will answer the purpose equally as well and is ready at hand—a thick lather of soap rubbed all over the panes and allowed to dry, thus shutting off the gaze of outsiders without excluding valuable light.

The temperature should be about 75° F. and the room well aired beforehand, as no window will be opened during the operation.

A list of articles usually required for a major operation is as follows:

Bandages.	One gallon of cold boiled
One strong kitchen table.	water, and always keep a
Four small tables.	kettle of water boiling on
Three common chairs.	the stove.
One fountain syringe.	Antiseptic solutions as ordered.
Three large basins and	Alcohol.
pitchers.	Safety-pins.
One small basin and pitcher.	Green or synol soap.
One piece of rubber sheeting	Absorbent cotton.
for table.	Sterilized gauze.
Two slop-jars or foot-tubs.	New wooden nail-brush.
One gallon of hot boiled	Two dozen towels, and plenty
water.	of clean soft cloths.

This list is an outline of the articles usually required; the surgeon will supplement what is necessary for each particular operation, but when a nurse is called upon to prepare for an operation in a private house, where the conveniences of the hospital are not at hand, she will be thankful to have ready a list of the things that are indispensable. I well remember my first operation outside the hospital, and how difficult I found it to construct a modern operating-room from the limitations of a small country house.

All supplies, when possible, should be on hand the night before the operation, and the room cleaned ready for work.

Facing the best light, and about five or six feet from the window, place the kitchen table, and cover it with a double blanket or comfortable, rubber sheeting, and a sheet fresh from the laundry, the whole pinned firmly at the four corners with safety-pins. Lay on the top a small single sheet, a blanket, and very small, firm pillow.

The little tables are to be arranged around the large one, leaving plenty of room to walk between. Cover them with sterilized sheets; if they have polished tops, first put on a piece of oilcloth or rubber sheeting to prevent damage. These tables

are for the instruments, gauze, sponges, sterilized towels, and basin of solution for the surgeon's hands.

A strong screw must be fastened in the wall near the window at the height of about seven feet to support the fountain syringe, which will be filled with whatever solution the surgeon requires for irrigating the wound.

One slop-jar stands at the side or end of the large table, the other beside the table that holds the basin of sponges.

The bureau (covered with a sheet) or the mantle-shelf will serve to hold the dressings and rubber gloves. A small stand or table will be needed by the doctor who gives the anesthetic for his hypodermic, clean towels, and ether or chloroform.

All the basins, towels, and pitchers to be used during the operation must be thoroughly washed in warm soap suds and then boiled for an hour, or—when that is not possible—allowed to stand all morning in a 1 : 1000 bichlorid solution, and then rinsed off with sterilized water before using. Two of the basins are filled with sterilized water or salt solution for washing the sponges, another basin holds the wet sterilized towels, and the fourth the solution for the surgeon's hands.

A small bowl is needed for the soft soap to wash off the part of the body to be operated on, also a small pitcher of 1 : 2000 bichlorid and some alcohol.

In the bath-room arrange plenty of clean towels, a bowl of 1 : 2000 bichlorid, and one containing alcohol, synol, or green soap, and a sterilized nail-brush for the surgeon's hands. The surgeon will send instruments, sutures, and anesthetic.

You cannot err in having ready a good supply of sterilized water, as an emergency may arise in which a double quantity would be required. Clean the wash-boiler thoroughly, fill it almost to the top, and boil for half an hour. One boilerful must be prepared in time for the water to grow cold before the operation; it is then poured into pitchers that have been washed in warm soap suds, and rinsed off with the sterilized water. Cover the pitchers with sterilized towels or napkins.

It is of the utmost importance that everything should be in perfect readiness when the surgeon arrives. The nurse will do well to go over the list carefully, so that nothing may be missing.

TO PREPARE A ROOM FOR AN OPERATION.

BY JESSIE MCCALLUM,

Graduate Johns Hopkins School for Nurses.

From the American Journal of Nursing.

1. THE room selected for the operation should be near the bath-room, as a porcelain tub filled with bichlorid solution of the strength of 1 : 1000 makes an excellent arrangement for disinfecting the wash-bowls, pitchers, platters, plates, etc., which are to be used during the operation for the solutions, instruments, needles, and ligatures.

2. If the carpet cannot be removed, it may be protected with oilcloth, rubber sheeting, or newspapers, over which sheets can be pinned.

3. The windows can be frosted by rubbing sapolin on the inner surface, thus preventing any possible observation from the outside.

4. Two small tables placed together to form one of the required size, old blankets being used to make the tables of uniform height and also to furnish a comfortable surface for the patient, can be used for an operating-table, care being taken to cover the blankets with a bed-rubber or table oilcloth and a sheet, securely folded under, and tied to the table with muslin bandages.

5. A Kelly pad can be improvised by tightly rolling a blanket and covering it with a rubber sheet, two ends of which are to be pinned together and used to conduct the solutions into the foot-tub below.

6. An ironing-board or the leaf of an extension table, supported by two chairs, makes a good table for instruments or solution basins.

7. An ordinary clothes-boiler, one-third filled with water, can be used as a sterilizer, the instruments rolled in gauze, and the brushes and orange sticks (for the doctor's hands) being immersed therein. The necessary dressings, towels, sheets, fountain

syringe, etc., are sterilized by hanging them in a hammock or sling hung from the handles of the boiler. A kitchen fork, lengthened by securely fastening to it an iron spoon, makes a convenient utensil with which to remove the articles from the boiler.

8. An ordinary sheet folded over at the top makes an excellent gown for the operator, if the ends be carefully taken up under the arms, crossed in the back, and used as sleeves for the shoulders and upper part of the arm, the middle of the upper hem of the sheet being pinned to the collar in front.

9. Water boiled in the clothes-boiler or tea-kettles can be quickly cooled by placing pitchers of it, covered with sterile towels or cloths, in a dish-pan or foot-tub of cracked ice.

10. A kettle of water kept boiling during the operation is a great convenience.

11. Salt solution filtered into household preserving jars can be sterilized in the wash-boiler with the other articles.

12. A stretcher can be improvised by slipping two window-poles or broom-handles into the folds of a sheet folded the proper size and securely fastened with safety-pins.

13. The Trendelenburg position can be secured by using an ordinary kitchen chair comfortably padded with a rubber-covered pillow and sheet, the back of the chair being placed under the patient.

14. The patient can be put in the lithotomy position by placing under the knees a padded walking-stick, to the ends of which is fastened a sheet folded diagonally, and passed under the shoulders.

AN EMERGENCY STEAM STERILIZER.

Take an ordinary wash-boiler. Make a crate of three light boards and a few slats to fit the interior. Boards should be about six inches high, to escape the water. The slats laid across will support all goods necessary for an operation. Pack parcels lengthwise to permit the full circulation of steam. Sterilize under full pressure of steam for one hour. Then take out and place on a table to dry.

TO STERILIZE AN OBSTETRIC SET OR SMALL PACKAGES.

Use a boiler or small kettle which has two handles. Make a hammock of strong muslin, tie corners to the handles and place packages in the sling suspended an inch or two above the boiling water. Cutting the muslin in a square and folding it on the bias gives more room, as the goods will stretch.

INSTRUMENTS TO USE FOR OPERATIVE CASES.

CURETMENT SET.

- | | |
|--------------------------------|------------------------------|
| 1 pair scissors. | 1 uterine probe, long. |
| 2 forceps, 8-inch. | 4 " curets, sharp and dull. |
| 2 tissue forceps, long. | 6 hemostats, 6-inch. |
| 1 placenta forceps, Barrett's. | 2 tenacula. |
| 1 uterine dressing forceps. | 2 volsella. |
| 3 " sounds. | 1 Sims' speculum. |
| 1 " dilator. | 1 retractor, deep and broad. |
| 1 " douche point. | |

HERNIA SET.

- | | |
|-------------------------------------|--------------------------------|
| 2 pairs scissors. | 6 hemostats, 4-inch. |
| 2 scalpels. | 18 " 6- " |
| 2 pairs tissue forceps. | 3 " 8- " |
| 1 grooved director. | 1 needle-holder. |
| 1 Kocher " | 2 perineum needles. |
| 1 Fenger " | Suturing material and needles. |
| 1 probe. | |
| 2 pairs retractors, sharp and dull. | |

AMPUTATION SET.

- | | |
|-------------------------------------|-----------------------------------|
| 2 pairs scissors. | 6 hemostats, 4-inch. |
| 1 scalpel. | 18 " 6- " |
| 2 pairs tissue forceps. | 2 " 8- " |
| 1 bone saw. | 2 curets. |
| 1 cutting forceps. | 2 periosteotomes, long and short. |
| 1 holding " | 1 bone elevator. |
| 2 bone-holding forceps. | 2 probes. |
| 1 lion jaw. | 1 hammer. |
| 1 rongeur. | 2 chisels. |
| 1 grooved director. | 1 needle-holder. |
| 1 Koch " | Needles and suturing material. |
| 2 pairs retractors, sharp and dull. | |

LAPAROTOMY SET.

- | | |
|----------------------------------|--------------------------------|
| 1 pair scissors, curved. | 2 pairs retractors, broad. |
| 1 " " straight. | 2 " " narrow. |
| 2 scalpels. | 6 hemostats, 4-inch. |
| 2 pairs tissue forceps. | 18 " " 6- " |
| 1 grooved director. | 3 " " 8- " |
| 1 Kocher " " | 2 " " curved, 8-in. |
| 1 Fenger " " | 2 tenacula. |
| 1 probe. | 2 volsella. |
| 2 pairs retractors, superficial. | 2 perineum needles. |
| 2 pairs retractors, sharp. | 1 needle-holder. |
| 2 " " dull. | Needles and suturing material. |
| 2 " " deep. | |

GALL-STONE SET.

- | | |
|----------------------|--------------------------------|
| 1 laparotomy set. | 2 gall-stone scoops. |
| 1 lithotomy forceps. | Aspirating syringe and needle. |
| 1 long probe. | |
| 2 bone curets. | |

SKIN-GRAFT SET.

- | | |
|--------------------------|----------------------|
| 1 scalpel. | 2 curets. |
| 1 pair scissors. | 3 hemostats, 8-inch. |
| 1 tissue forceps, plain. | 6 " " 6- " |
| 1 " " rat-tooth. | 2 razors. |
| 1 Fenger director. | |

SKULL FRACTURE SET.

- | | |
|----------------------------|----------------------------|
| 1 pair scissors, straight. | 2 retractors, superficial, |
| 1 " " curved. | dull. |
| 2 scalpels. | 18 hemostats, 6-inch. |
| 1 bone-holding forceps. | 6 " " 4- " |
| 1 bone-cutting " " | 4 " " 8- " |
| 1 probe, long. | 3 bone curets. |
| 1 " " short. | 2 gouges. |
| 1 Fenger grooved director. | 2 periosteotomes. |
| 1 Kocher grooved director. | 1 rongeur. |
| 2 retractors, superficial. | 1 lion jaw. |
| sharp. | 2 trephines. |
| | 1 deVilbiss. |
| | 1 hammer. |

- | | |
|----------------------------|------------------------|
| 2 chisels. | 2 aneurism needles. |
| 1 aspirating syringe. | 1 bone elevator. |
| 1 " needle. | 2 pair tissue forceps. |
| Needle-holder and needles. | 1 ether mask. |

HEMORRHOID SET.

- | | |
|-------------------------|----------------------|
| 2 pair scissors. | 1 grooved director. |
| 2 knives. | 6 hemostats, 6-inch. |
| 1 clamp. | 2 " " 8- " |
| 2 retractors. | 2 " " "T." |
| 2 tooth tissue forceps. | 1 bone curet. |
| 1 plain " " | 1 rectal dilator. |
| 1 probe. | Cautery. |

PROSTATECTOMY SET.

- | |
|-------------------------------|
| 1 laparotomy set, suprapubic. |
| 1 hernia set, perineal. |

Add to either set :

- | | |
|----------------------------|-----------------------------|
| 6 sounds, graduated sizes. | 6 filiform bougies. |
| 2 metal catheters. | 1 rubber catheter, size 16. |
| 2 grooved staves. | 1 " " " 18. |

SURGICAL SETS FOR STRANGULATED HERNIA, GASTRO-ENTEROSTOMY, GUNSHOTS, ETC.

- | | |
|-------------------|----------------------|
| 1 laparotomy set. | 4 intestinal clamps. |
| 2 Murphy buttons. | |

TUBERCULOUS GLAND AND GOITER SETS.

- | | |
|----------------------|---------------------|
| 1 hernia set. | 2 aneurism needles. |
| 6 hemostats, 6-inch. | 1 ether mask. |

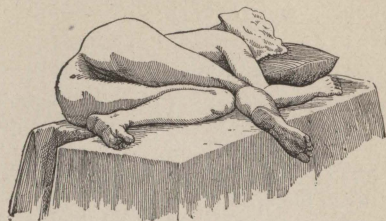
WIRING OF BONE.

- | | |
|-------------------|----------------------------|
| 1 amputation set. | 4 drills. |
| 2 drill-holders. | Wire or plates and screws. |

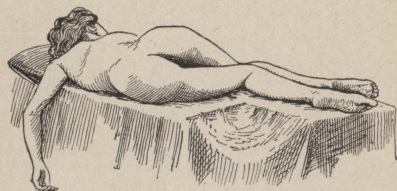
SURGICAL SETS FOR VARICOSE VEINS, VARICOCELE, HYDROCELE.

- | |
|---------------|
| 1 hernia set. |
|---------------|

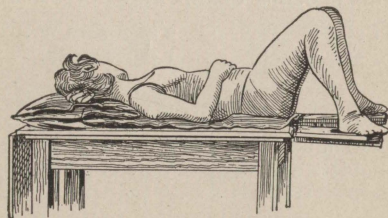
SURGICAL POSTURES.



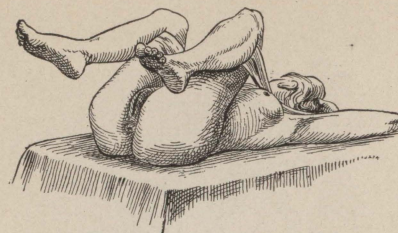
Sims's posture, anterior view.



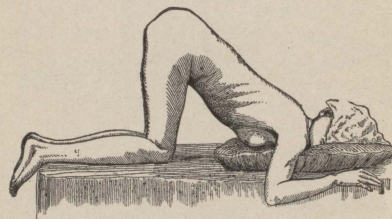
Sims's posture, posterior view.



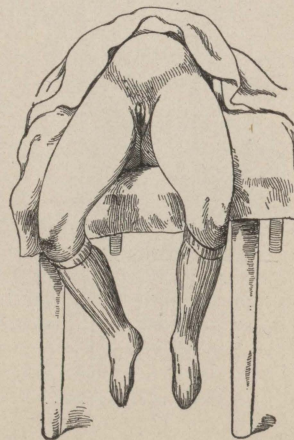
Dorsal recumbent posture.



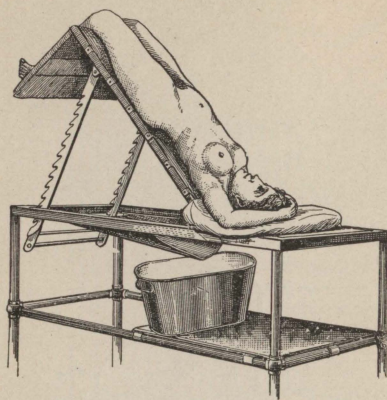
Dorsosacral posture, with leg-holder applied.



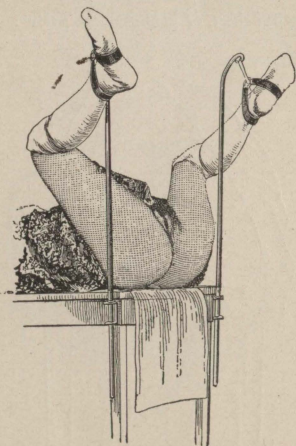
Knee-chest, or genupectoral, posture.



Walcher posture.



Trendelenburg posture.



Edebohls's dorsal posture

OPHTHALMIA.

PURULENT OPHTHALMIA (SUPPURATIVE INFLAMMATION OF THE CONJUNCTIVA).

BY CASSIUS D. WESCOTT, M. D.,

Assistant Professor of Ophthalmology at Rush Medical College,
Chicago, Ill.

PURULENT ophthalmia is caused by a specific germ, and is very contagious.

Local Treatment.—Irrigate with warm boric-acid solution or normal salt solution every hour. Anoint the edges of the lids with sterile vaselin to permit free drainage. Castor oil and glycerin, of each, equal parts; or borated vaselin may be used for the same purpose. Astringents and caustics, silver nitrate, etc., are usually applied by the doctor.

For an anodyne, atropin is principally employed, also cold or hot compresses; in the use of the latter care must be taken to prevent irritation of the skin that will show itself in a permanent livid hue.

In case of excessive swelling a leech may be applied, or the doctor may resort to scarification.

Medicines consist of cathartics, diuretics, diaphoretics, opiates, tonics.

General Treatment.—Frequent baths, plenty of fresh air. Temperature of the room should be uniform. Moderate and subdued light.

Diet should consist of nutritious food, liquid or soft, according to the condition of the patient.

The gravity of each case depends largely upon the extent to which the cornea is involved.

Treatment must, of course, be modified according to the virulence of the inflammation.

To Apply a Leech.—Leeches are applied to relieve congestion. Put one in a small vial with a mouth large enough for the leech to crawl through. Cleanse the patient's temple, and with a sterile needle scratch the skin until the blood shows. Directly over this

place the mouth of the vial. The leech will bite almost instantly, and will drop off when it is gorged. If the occasion requires the leech to be taken off before it is gorged, sprinkle a little salt on its head. Hemorrhage should not be checked unless profuse, in which case a piece of ice or alum applied to the spot will arrest the flow. *If possible, the patient should be kept in ignorance of the application.*

OPHTHALMIA NEONATORUM.

When the disease develops it will be manifested, as a rule, from three to five days after birth by redness of the eye and a slight discharge. It is the duty of the nurse, as well as of the accoucheur, to examine the eyes of the new-born babe each day during the lying-in period, and at the first sign of trouble, if discovered by the nurse, the attention of the physician should be directed to the matter. During the first two or three days after the disease begins there is usually little or no pus present, and comparatively little swelling of the lids, except in the most violent cases. During this so-called first stage the treatment should be that of an ordinary acute catarrhal conjunctivitis—viz. : iced compresses applied for an hour twice a day if the baby is well and strong ; gentle flushing of the conjunctival sac with a warm saturated solution of boric acid. As soon as pus begins to form, the eyes must be cleansed more frequently—every hour during the day and every two hours during the night—and the edges of the lids should be kept constantly anointed with sterile vaselin to prevent their agglutination and the retention of the discharge. Drainage is indicated whenever there is suppuration, and if we can prevent the sticking together of the lids in this way, we allow free drainage and reduce the irritation which invariably results from retention of the discharges in these cases.

In all cases it will be noticed that after the discharge has been washed away from the everted lids there are strings or shreds of mucus in the folds of the conjunctiva. The nurse should endeavor at

each cleansing to wash them out by continuous flushing and gentle manipulation of the lids. If she does not succeed in keeping the eyes free from these shreds the physician will remove them at least once a day.

If the conjunctiva of the globe becomes swollen and edematous and rolls up over the edge of the cornea, the nutrition of this precious membrane becomes threatened, and inflammation of the cornea, with ulceration or sloughing, is the cause of the blindness which follows this disease. At the slightest indication of haziness of its surface the iced compresses should be discontinued and hot fomentations resorted to. They may be applied every three hours for fifteen minutes each time. Great care and judgment are necessary in order that the heat be sufficient to be effective without burning the delicate skin of the lids and that it be continuous. The compresses should be changed at least every sixty seconds during their application. When the cornea becomes ulcerated great care must be used in the manipulation of the lids not to make pressure upon the eyeball for fear of causing perforation. If the lids are slippery from the presence of vaselin or discharge, a single thickness of gauze or a little cotton held between the finger and the lid will be found a great help in opening the eye.

As the discharge of pus begins to diminish, which may not be for several weeks in bad cases, we may somewhat modify our treatment ; the strong applications need not be quite so strong, and the cleansing need not be quite so frequent ; but the most important item in the treatment of all these cases is the frequent thorough cleansing of the eyes, and if the cleansing is thoroughly done as above described each hour and the lids kept constantly anointed, in order to prevent accumulation of the irritating discharge, more frequent cleansing will not be necessary. Great care must also be exercised to prevent much crying by these little patients. They must be kept warm, regularly nursed or fed, and the slightest derangement of the alimentary canal must be attended to. If the cause of the crying cannot be ascertained and

removed, it is wiser to soothe the baby with a simple anodyne than to permit the crying to go on.

It should not be necessary to point out the danger which lies in all things which come in contact with the discharge from these eyes.

Blennorrhœa neonatorum is responsible for at least 25 per cent. of all the blindness in the world, and yet not one case in a hundred should result disastrously if skilfully and patiently managed.

EMERGENCIES.

HEMORRHAGES.

HEMORRHAGE from the arteries may be recognized by its bright red color and by the spurting jets by which the blood leaves the wound. Venous (from the veins) hemorrhages flow in a steady stream and are darker in color. Arterial hemorrhage may be checked by firm pressure over the side nearest the heart or above the wound. Venous hemorrhages may be checked by firm pressure on the side distant from the heart or below the wound. Large veins like the jugular should be compressed both above and below the wound because the vein may bleed from both ends. If possible, digital pressure should be made directly over the bleeding point.

Hemorrhage from the *leg* may be checked by firm pressure upon the femoral artery, in the middle of the groin at the top of the thigh.

Hemorrhage from the *forearm* by compression under the inner edge of the biceps against the humerus.

Hemorrhage from the *upper arm* by compression of the axillary artery against the humerus in the axilla.

Hemorrhage from the *cheek* by compression on the facial artery against the lower jaw just in front of the masseter muscle.

Flexing the limbs at the joints with a pad between them to make the compression secure and then binding the part may prove a successful method of arresting the flow of blood. A constrictor of rubber tubing twisted firmly around the limb is a ready appliance and a most successful way of checking a flow of blood from an injured limb. But it should not remain on longer than absolutely necessary or gangrene may result from complete stoppage of the circulation.

Wounds should be packed fully and evenly with some absorbent material. Applications of heat and cold are common methods of checking hemorrhages,

heat being at all times preferable. Hot water poured on open wounds will encourage coagulation. Bleeding from an ulcer of the leg, which often results from varicose veins, should be stopped by firm pressure over the wound.

Hemorrhage from the Lungs.—A teaspoonful of salt taken internally may stop it. Place an ice-bag over the chest. Morphin, gr. $\frac{1}{4}$ – $\frac{1}{2}$, may be given under the instructions of a physician. In all cases put patient in bed and enjoin complete rest until medical aid arrives.

Nose-bleed (Epistaxis).—First of all, position and rest should be attended to. The patient should not lie down unless very weak. The higher the head the better. Loosen clothing about the neck and thorax. Caution patient against coughing or sneezing. Holding the nostril tightly closed, with cold applications to the back of the neck, is sometimes successful. Insufflation of ice- or alum-water, or of tannic acid solution may induce coagulation. Profuse bleeding will require packing of the nostrils.

FRACTURES.

Compound Open Fracture.—The bone is broken and the wound extends from the seat of the fracture to the outside. Such wound may be caused by the injury itself, or may occur secondarily from the protrusion of pieces of bone through the skin.

A comminuted fracture is one in which the bone is broken into a number of fragments.

An Impacted Fracture.—The broken ends have been forcibly driven into one another, and are thus fixed.

Multiple Fracture.—The bone is fractured at different points, or when different adjoining bones are broken.

A complicated fracture is one associated with a serious injury to some important adjacent part—*e. g.*, a large vessel.

A green stick or incomplete fracture occurs where the bone is soft and bends, and is only partially fractured; it is most frequent in children.

Symptoms of fractures are usually pain, loss of

function, deformity (seen or felt by passing the fingers over the seat of pain), crepitus or the grating sound produced and felt on rubbing the broken ends against each other, abnormal mobility in the course of the bone, swelling, and discoloration.

The principal point is to keep the part immovable and in a position to give as little pain as possible. Support the limb with something stiff and padded with cotton or remnants of yielding material. Bandages can be made of handkerchiefs, strips of linen, ribbon, etc., to keep the splint firm.

For the *forearm* padded splints long enough to take in the hand from above the elbow should be applied. Tie firmly with bandages and suspend in a sling.

If the *upper arm* be fractured, bind it tightly to the side. For the *thigh*, the splints should extend from under the arm to the ankle and should be bound to the body and leg with long towels or sheets torn into strips. A splint made of blankets, rolled up tightly from both sides on broomsticks, allowing space for the limb to rest between the supports, is a good and ready appliance. Always make extension to prevent contractions of the muscles, as this would result in shortening the leg.

For a broken *clavicle* (collar-bone) bind the arm to the chest. Put the patient on the flat of his back with a small pad between the shoulder-blades. This will keep the broken ends in a normal position.

N. B.—In every case elevate and support the injured member on a pillow, keep in position and give complete rest until medical aid arrives.

DISLOCATIONS.

Dislocation is a displacement of the joint. It may occur with a break of the limb, but usually results from a fall or strain.

There may be deformity and inability to move the injured part. Sometimes an abnormal projection is the first sign. If inflammation arises, apply cold applications. The only treatment a nurse may give is to keep the patient quiet and await skilled help.

SPRAINS.

There may be extreme pain, swelling, inflammation, discoloration, and inability to use the joint. Support and elevation of the limb is of the greatest importance. Use hot or cold applications to allay the inflammation and pain. Cover with a thin soft pad, and bandage evenly and firmly. A sprain should not be neglected, as it may cause future disease of the injured part.

For recent bruises cold applications are best. Give the patient complete rest, support and elevate the injured limb, apply cold or hot applications, and await skilled help.

BURNS AND SCALDS.

In severe cases the constitutional treatment is of more importance than the application of local remedies. If the patient is in shock wrap him in warm blankets, and give him stimulants. In superficial cases where the skin is not broken powder with bicarbonate of soda (baking soda). A ready domestic application is sweet oil. *Exclude the air at all times.* When vesicles have been produced they should be punctured with a sharp instrument, and the serum gently evacuated with absorbent cotton. Apply soothing ointments or wet dressings. IN CASE OF SEVERE BURNS OF THE BODY immerse the patient in a warm bath, keeping it at even temperature. Separating a layer of common white cotton wadding, and wrapping it about the injured part will allay the pain, and the cotton has the advantage of not adhering to the raw surface. Splints and bandages should be employed to prevent contractions.

BURNS OF THE EYE.

For burns resulting from molten lead, strong alkalis, lime, or acids, flush freely with warm water or boric-acid solution, and anoint with pure vaselin or a few drops of castor oil. Do not rub the injured tissues. The applications should be made quickly and very gently. Put on cold compresses until medical aid arrives.

INJURIES TO THE EYE.

For surface injuries a drop of castor oil may be applied, and the eye kept closed for the day with a pad of wadding and a bandage.

SYNCOPE (FAINTING OR SWOONING).

Place the patient in a recumbent position. Loosen all clothing, and dash cold water on the face and chest. Spirits of ammonia or smelling salts should be used with caution, and not brought too near the nostrils. The pulse and general appearance will indicate if condition is serious. Give whisky and strychnin sulphate ($\frac{1}{80}$ gr.) hypodermically if necessary.

HYSTERIA.

In hysteria the patient may be apparently unconscious; the body is normal to the touch, the pulse is full and regular, the color is natural, and if an attempt is made to raise the eyelid it will be met with resistance. Do not leave the patient alone, but do not disturb her until she recovers.

EPILEPSY.

The attack comes on very suddenly. The patient utters a sharp cry, and falls to the ground. The muscles are rigid, the eyes staring, and there may be frothing at the mouth. The muscles soon relax, and there are twitchings of the whole body. The attack may last only a few minutes. Place the patient on his back with the head slightly elevated, and loosen all clothing. Put a wedge between the teeth, give him plenty of fresh air, and do not attempt to stop the movements.

DROWNING.

Begin artificial respiration at once, then soon as possible remove or loosen all clothing about the back, chest, and abdomen. Free the throat and mouth from mucus and foreign substances. Secure the tongue with a dry cloth or handkerchief; keep it drawn forward and to one side, as this opens the

windpipe. Then turn the patient face downward, allowing the abdomen to rest on a roll of goods. Make firm pressure on the back and on both sides of the thorax to evacuate the lungs. Envelop the body in warm blankets, apply heat to the feet, and stimulate with hypodermic of strychnin, whisky, and coffee.

SUSPENDED ANIMATION FROM NOXIOUS GASES.

Remove patient at once into the fresh air. Employ artificial respiration, apply heat, and stimulate hypodermically.

METHODS OF ARTIFICIAL RESPIRATION.

Sylvester's Method.—Lay the patient upon his back; kneel above the head, take firm hold of the arms above the elbow, and move them horizontally—first away from the body, then over the head until the hands touch behind; pull them backward for a few seconds. This process expands the chest cavity, and the lungs are filled with air, inducing inspiration. Return the arms to the first position, and make strong pressure on the sides of the chest and epigastrium to expel the air and effect expiration. Movements should not be too rapid; they should be repeated about sixteen times a minute. In case of apparent want of success, persist in the treatment until it has been ascertained that the heart has ceased to beat.

Marshall Hall's Method.—Roll the patient over on his breast, make gentle pressure on the back, then turn the body gently but completely on the side, and again make gentle pressure on the back. Repeat these movements fifteen times every minute.

Artificial respiration may be kept up for hours before the faintest symptoms of life are shown.

SUNSTROKE.

Two conditions result from exposure to excessive heat: thermic fever and heat exhaustion.

In **thermic fever**, after prodromal symptoms consisting of headache, nausea, and vomiting, there are

stupor or coma, fever ranging from 105° to 110° F., flushing of the face, contraction of the pupils, a rapid, full pulse, and noisy respirations.

Management.—Pack the patient in ice, and rub with ice. Ice-water enemas may also be given. Bleeding and the subcutaneous administration of normal salt solution are sometimes efficacious.

In **heat exhaustion** consciousness is not lost; the skin is cold and moist; the respirations are shallow and rapid, but not noisy; and the pulse is feeble.

Management.—The patient should be covered with blankets and surrounded with hot bottles. Aromatic spirit of ammonia (30 minims), whisky, and black coffee are useful stimulants.

BATHS AND PACKS.

WARM PACK FOR PNEUMONIA PATIENTS.

Articles needed:

- | | |
|------------------------------|-------------------------|
| 4 blankets. | Foot-tub for hot water. |
| 1 rubber and towel for head. | Basin and ice. |
| | 2 compresses for head. |
| 1 long rubber sheet. | |

Place under patient: First, blanket, then rubber sheet, covered with second blanket. Place small rubber piece, covered with the towel, under patient's head. Third blanket put over patient. Leave patient on side while woolen blanket is wrung out of hot water. Place this blanket quickly under and about the patient, removing lower dry one at the same time. Leave feet out of wet blanket, wrapping them up dry, and use hot-water bottle if necessary. Cold compresses to head. Leave in pack 45 minutes. Wipe dry; give alcohol rub. Take temperature and pulse every half-hour after removing from pack.

COLD PACK TO REDUCE TEMPERATURE.

Articles needed:

- | | |
|------------------------|----------------------------|
| 1 long rubber sheet. | Foot-tub. |
| 3 blankets. | Pitcher or sprinkler. |
| Basin of ice. | Rubber and towel for head. |
| 2 compresses for head. | |

Place under patient: First, blanket, then rubber sheet, covered with second blanket. Have blanket over patient with patient on side. Wring a cotton blanket or sheet out of warm water to wrap about patient, leaving feet out, covering them with a dry blanket, using hot-water bottle if necessary. Compress on head. Sprinkle with tepid water. Use friction. Turn patient once in midst of pack and iron back with ice, and again just before he is removed. Leave in 30 minutes. Change compresses frequently. Give plenty of water to drink. Have sea sponge to

take up water. Leave patient between blankets; give alcohol rub. Take temperature and pulse half an hour after removing the pack.

SPONGING TO REDUCE TEMPERATURE.

Articles needed:

- | | |
|----------------------------|---------------------------------|
| 2 blankets. | Basin of ice. |
| 3 towels. | Basin of warm water. |
| Rubber and towel for head. | Compresses or ice-cap for head. |

Place patient between blankets. Rubber and towel under head. Towel across loins. Wash face and apply cold compress to head. Sponge chest, arms, legs, and back with warm water. Cool water and sponge chest. Apply cold compress across chest. Turn patient on side. Sponge arms, leaving upper part of body exposed. Fold blanket up and sponge back. Change compresses frequently. Give plenty of water to drink. Continue sponging from 20 to 30 minutes. Rub with alcohol and put patient to bed. Take pulse and temperature half-hour after sponging.

HOT PACKS TO INDUCE PERSPIRATION.

Articles needed:

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|------------------------|------------------------|
| 4 blankets. | 1 sheet. |
| 2 long rubber sheets. | Basin of ice. |
| 1 short " sheet. | Foot-tub of hot water. |
| Rubber piece for head. | Old woolen blanket. |
| 2 towels. | 2 compresses. |

Place under patient: First, blanket, then rubber sheet, covered with the second blanket. Third blanket place over patient. Wrap feet up dry. Have patient on side. Wring fourth blanket out of hot water and place quickly about patient, bringing well up around neck and in between the arms. Wrap well about the legs. Bring under rubber sheet up about the neck well and place a long rubber sheet snugly over that. Wrap feet, then bring under blanket up over rubber sheet, and top blanket tucked over all, seeing that all folds of blankets are snug around the

neck. Rubber and towel under head. Compress to head. Place sheet over patient not tucked in. Give hot drinks freely unless liquids are restricted. Take pulse before placing patient in pack and every 15 minutes while in. Leave patient in 45 minutes and then in dry blankets half an hour. Take out of pack, rub dry, and give alcohol rub.

TUBBING.

Articles needed:

- | | |
|--------------------------|-------------------------|
| 1 long rubber sheet. | 1 sea sponge. |
| 2 blankets. | 2 pails. |
| 1 tubbing sheet. | Basin of ice. |
| 1 towel. | Siphon. |
| 2 compresses or ice-cap. | Piece of rubber tubing. |
| 1 bath towel. | |

Place under patient: One blanket covered with long rubber sheet, then with tubbing sheet, over which place muslin sheet widthwise. Place towel over loins. Bring sheet up around patient, tubbing sheet rolled in from sides and tied to the four corners of the bed. Use four pails of tepid water, gradually cool to 60° or 70° F. Apply friction most of the time. Compresses to head. Give water freely. Leave feet out of water. Turn patient and use friction on back once while in and before taking out. Take pulse frequently. Leave patient in pack 20 minutes. Turn patient and remove water with siphon and sea sponge. Lower patient, removing tubbing and wet sheet, leaving patient between blankets with hot-water can at feet. Take temperature half-hour after removal. Give alcohol rub and make bed.

ALCOHOL SWEAT.

Articles needed.

- | | |
|-------------------------|----------------------|
| 6 old blankets. | 8 hot bricks in bags |
| 1 piece of old blanket. | (woolen preferred), |
| 2 long rubber sheets. | 12 x 12 inches. |
| 1 short " sheet. | Basin of ice. |
| 1 piece " for head. | 2 compresses. |
| 1 towel. | Alcohol. |
| 1 sheet. | Hot drink. |

Place under patient blanket covered with a long rubber sheet and then second blanket. Wrap shoulders in a blanket. Place folded blanket and small rubber sheet around the feet. Cover patient with blanket, and over that place long rubber sheet. Fold back upper rubber sheet blanket over patient and then one under patient. Place covered bricks on folds of lower blanket. Pour one tablespoonful of alcohol on hot bricks covered with outer edge of blanket, on which bricks rest, then with blanket over patient, folding it in between bricks and patient. Bring under rubber sheet up and upper one down. Tuck each rubber sheet and blanket well in about the neck. Bring folded blanket and short rubber sheet over feet, under the long rubber sheet. Arrange opposite side in like manner. Place over all 2 blankets and tuck in. Cover these with clean sheet, not tucked in. Rubber and towel under head. Apply the cold compress to head and change frequently. Give a hot drink unless contraindicated. Take patient's pulse before placing in sweat and every 10 minutes while in. More often as condition of patient indicates. Leave in one hour. Do not expose patient while removing bricks and blankets. Leave one blanket under and two over patient for half an hour. Tuck blanket about patient, sheet over all. When removing these blankets dry patient and give alcohol rub.

MASSAGE—MECHANO-THERAPY.

BY DANIEL R. BROWER, M. D.,

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MASSAGE (meaning to knead or manipulate) is one of the oldest therapeutic measures employed for the relief of disease. It is probable that the Chinese used this method of treatment several thousand years ago. The Japanese and the Greeks and Romans also were ancient users of massage. To-day it is recognized as one of our most useful adjuvants in the treatment of a great many disorders. Unfortunately, like some other therapeutic measures, it has been misused for personal gain by unscrupulous parties to the great detriment of this form of treatment; because of this many physicians have hesitated to adopt its use extensively for fear of being classed with the army of quacks and charlatans who endeavor to guile the public with a pretended knowledge of massage. It not being possible for all nurses to become proficient in the art of massage while doing general nursing (as it requires time, patience, and a great deal of experience to succeed), massage has become somewhat specialized, and we find many nurses who devote their time and attention exclusively to this work. Yet all nurses should have a general knowledge of the physiologic effects of massage and how to give it. The best results are obtained only when massage is given under the direct supervision of a physician, as massage may influence the function of almost every organ and tissue of the body.

Some general rules may be given as to the hour and duration of each treatment. A great deal depends upon the nature of the disorder in each individual case. In the treatment of neurasthenic patients where insomnia is often a troublesome symptom, massage given one or two hours before the

patient quiets down for the night frequently results in improved sleep. Again, other patients will do better to have the treatment one or two hours after the morning meal. Individual peculiarities must be considered always in giving massage. The room should be of such temperature that the patient when exposed will not feel chilly. Absolute quiet should be maintained during the treatment, and after the treatment the patient should remain quiet in a recumbent posture for an hour or two as the condition may require. The oft-used expression "that a masseur or masseuse possesses a great deal of electricity which is transferred during the treatment to the patient," should find no place in the intelligent mind in considering the effects of massage. It is true that one operator by his method of administering massage may please a patient and accomplish more than another, but this is due only to the fact that one understands how it should be given, and the other does not.

All the different movements in massage may be classed under the following: First, stroking; second, friction; third, kneading; fourth, vibration; fifth, percussion; sixth, joint movements.

Stroking.—This procedure may be given with two or three fingers or the palmar surface of one or both hands. The movement should be gentle, and the contact made as lightly as possible. Stroking should be done always in one direction, and, as a rule, in the direction of the blood currents in the arteries. The physiologic effects when properly applied should be sedative, as the purpose should be to diminish the blood-supply to the part. It produces a certain effect upon the cutaneous nerves which is very quieting. It is often found useful when applied about the forehead for sleeplessness. Nervous headache may be relieved by the same procedure. Neuralgic pains and the vague, but nevertheless uncomfortable, sensations complained of by neurasthenic patients are often relieved by this measure.

Friction.—In this procedure the whole or part of the palmar surface of the hand is moved over the sur-

face of the body with considerable pressure. The principal effect of friction is upon the superficial blood-vessels and the lymphatics. In the lower extremities the movement should be from below upward in the direction of the venous flow. The same may be said of the upper extremities. The thumb may be made to follow the course of the larger veins, in this manner stimulating the venous circulation. Some patients object to friction applied by the dry hand, in which case some lubricant may be used; pure vaselin, cocoa-butter, and talcum powder are among the best for this purpose. Friction should always be used in the beginning of massage, especially if the surface of the body is cold.

It is not the intention here to give minute instruction as to the methods of procedure with all the different parts of the body; only general instructions can be here given, and those requiring further information should consult text-books upon this subject.

Physiologic Effects of Friction.—First, reflex effects upon the vasomotor nerves producing dilatation of the peripheral blood-vessels with increased circulation, aiding the venous and lymphatic circulation. It is useful in all conditions accompanied by poor peripheral circulation. It not only stimulates the circulation, but aids materially in elimination and increased nutrition. It aids in the relief of general dropsy and hastens the absorption of inflammatory exudates resulting from sprains and various joint affections, etc.

Kneading.—Kneading is one of the most important procedures in massage. It consists in the alternate compression and relaxation of the tissues, the hand not being allowed to slip over the surface as in friction. It may be administered in various ways, such as rolling, wringing, and the use of the palm or fingers. Furthermore, it may be deep or superficial. Superficial kneading stimulates all the functions of the skin, increases superficial circulation in the blood-vessels and lymphatics. In deep kneading the object is to influence the deep-lying muscles, and care should be exercised in this procedure not to injure the large blood-vessels and nerves. Here a knowl-

edge of anatomy is essential. In the beginning of deep kneading little pressure should be exercised until tolerance is established; then greater pressure may be exercised without discomfort to the patient. It is quite essential that each muscle group be gone over carefully and thoroughly, so that every muscle so far as possible shall be included in the treatment. The physiologic effect of deep kneading is a stimulation of the functions of the nerves, blood-vessels, lymphatics, and cellular metabolism of the muscles. It is of especial benefit to patients who are unable to take a sufficient amount of active exercise, such as those suffering from neurasthenia, rheumatism, chronic neuritis, locomotor ataxia, and from localized disturbances, such as fractures, sprains, etc.

Vibration.—This procedure consists of vibratory movements to the body of the patient through the hand of the operator. It may be given by using the palmar surfaces of the hand or the finger-tips. This procedure stimulates the superficial circulation and acts as a mild general stimulant. It may be used in conditions of poor circulation from any cause, but is contraindicated in conditions of hypersensitiveness.

Percussion.—This procedure consists of blows or taps with varying degrees of force. The tips of the fingers may be used, the two hands alternating, or the palmar or the ulnar surface of the hands may be used for the same purpose. In any case, the force should not be sufficient to bruise the tissues. The physiologic results of percussion are stimulation for functions of the skin and a marked effect upon the underlying structures, muscles, nerves, and blood-vessels. It is useful in such conditions as sciatica, inactivity of the liver, chronic constipation, poor circulation from various causes, and to produce reaction after a cold bath, etc.

Joint Movements.—Under this procedure we may mention flexion, extension, abduction, adduction, pronation, supination, circumduction, and stretching. The movements may be passive or resistive. In passive movements the exercise is almost entirely confined to the joint, the patient offering no muscular resistance. With the resistive

movements a certain degree of muscular activity is enforced by the patient, thus not only exercising the joints, but the muscles connected with the joints. The physiologic effect of joint movements is to markedly stimulate all the parts about the joint, and is indicated in various joint disorders which may have resulted in the lessening of the normal movements of the part, as in rheumatism, gout, chronic synovitis, and the stiffness that follows immobilization of the joint in the treatment of sprains, fractures, etc. Care should be exercised in the beginning not to use too much force in the manipulation, otherwise the existing condition may be aggravated, and more harm result than good. Increased force may be exercised with each treatment, always bearing in mind the necessities of each case.

ELECTRICITY.

By DR. JAMES C. GILL,

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ELECTRICITY is a useful and important therapeutic agent, and an understanding of its effect when applied to the human body is as essential as a knowledge of any other therapeutic measure. Too often the therapeutic use of electricity is committed to those having very little knowledge of it, and consequently good results are not obtained.

It is a great mistake to allow or advise patients to use electricity themselves; no greater mistake would be made or more harmful results follow if they were advised to go to the drug store, and help themselves to any drugs they might choose. Electricity should be administered by a physician, or under the directions of a physician by a nurse who has been thoroughly taught its use.

In medicine we have usually considered three different forms of electricity: First, Galvanism or Chemical Electricity; Second, Faradism or Induced Electricity; Third, Franklinic or Static Electricity. Now, we add a fourth and a very important one—namely, X-ray. A nurse should have a general knowledge of these different manifestations of electricity and their effect when applied to the body.

In electricity we have units of measurements as we do in weights and measures. For instance, the force that drives the current of electricity along, as we might express it, is called the electromotive force, and its unit of measurement is a volt. The resistance which the current must overcome is measured in ohms, and the strength of the current is measured in amperes, or, as we measure it in medical electricity, the thousandth part of an ampère, a milliampère.

Galvanic or chemic electricity has certain properties not obtainable in the other forms. Com-

paratively speaking, it is a current of considerable quantity, but low electromotive force. The galvanic current passes always from the positive to the negative pole. It possesses the power to decompose various compounds, such as water, the tissues of the body, etc. This is called the electrolytic action, and may be used to destroy certain tumors, for the removal of superfluous hair, etc. Again this current has the power to convey certain substances in solution into the tissues. This is called cataphoresis, and is used to produce local anesthesia by the use of cocaine applied to the positive pole. This is one of the best methods we possess of obtaining local anesthesia.

The effect of iodine may be obtained by the use of a solution of potassium iodide, and the negative pole may be used to affect local swellings, etc. Muscular tissue may be made to contract by the application of the current, either when applied to the motor nerve supplying the muscle or when applied directly to the muscle. Upon sensory nerves the positive pole is sedative, and may be used to relieve pain in cases of neuralgias, etc. The negative pole is stimulating, and may be used in conditions requiring increased nutrition, etc.

In using galvanism a good battery and outfit are essential. First, it is necessary to have a milliamperè meter, an instrument to measure the strength of current used. The quantity of electricity used should be measured the same as the quantity or dosage of drugs prescribed. Another essential instrument is the rheostat, by which the current strength may be gradually increased or decreased without interrupting the current. The electrodes which are attached to the poles of the battery may be metal, metal covered with sponge, cotton, etc., preferably cotton, which may be renewed with each application, thus avoiding the possibility of infection, always present in the use of a sponge-covered electrode, which cannot be changed with each application.

In the use of galvanism we may speak of two different methods. First, what is called cerebral

galvanism, second general. By experimentation it has been clearly demonstrated that all the deeper tissues and organs of the body, such as the brain, spinal cord, liver, etc., may be influenced by galvanism. In cerebral galvanism the object is to influence the brain and spinal cord. In applying it to the head, a sponge or cotton-covered electrode 4-5" in diameter may be used. The positive electrode is applied to forehead, the negative at nape of neck, using a current of 5-10 milliamperès for from five to fifteen minutes, care being taken not to suddenly make or break the current, as this would produce a disagreeable shock to the patient. The circulation of the brain may be affected also by placing an electrode at the nape of the neck, and a smaller electrode (1-2" in diameter) passed up and down along the border of the sternocleidomastoideus muscle, using a current of 3-5 milliamperès. Galvanism used in this way is beneficial in such conditions as cerebral anemia, neurasthenia, insomnia, etc. In applying to the spine, one electrode may be used at the upper and the other at the lower part of the spine; or a large-sized electrode may be placed over the abdomen, and the other electrode moved up and down the spine without breaking or interrupting the current, the strength of which may be from 10-20 milliamperès, and the duration of each application varied to suit the condition of the patient. This treatment is indicated in such disorders as neurasthenia, infantile spinal paralysis, locomotor ataxia, etc.

General galvanization may be given by placing a large-sized electrode at the spine, over the abdomen, or at the soles of the feet, the other electrode, smaller in size, being passed over the entire surface of the body without interrupting the current, which may be from 5-8 milliamperès. This procedure will stimulate the peripheral circulation, elimination, and nutrition. The muscles may be exercised by using an interrupted current of sufficient strength only to cause contraction. General galvanization is very beneficial in such conditions as neurasthenia requiring the rest treatment, convalescence from various dis-

eases, paralysis, multiple neuritis, etc. In the use of electricity it should be remembered that patients show idiosyncrasies as in the use of drugs, so that each case should be given the amount of electricity best suited to individual peculiarities. Unless this point be kept in mind, we will be surprised to find at times that the use of electricity aggravates the patient's condition.

Faradism, or the induced current, is characterized by a high electromotive force and a low amperage or quantity. It is an interrupted current, and from the secondary coil it is an alternating current. It cannot be used like the galvanic for electrolytic-cataphoric purposes. Its effect upon the body is almost entirely mechanical; also unlike the galvanic, there is practically no polarity. It cannot be used to affect the deep-lying structures, such as the brain, spinal cord, etc. The current-strength is not measured by a milliampère meter. It will produce muscular contraction only through the motor nerve supplying the muscle. This is a point to be remembered. Its use is confined largely to exercising muscles and stimulating peripheral circulation, and is useful in such conditions as paralysis where the cause of the paralysis is in the brain (because where the lesion producing the paralysis is in the spinal cord or peripheral nerves the muscle will not contract when faradism is applied), and in convalescence and all conditions requiring exercise which cannot be obtained actively. In applying this form of electricity (if the object be to stimulate circulation), the strength of the current should be regulated to suit the feelings of the patient. The technic is practically the same as described above for general galvanization. If we wish to exercise the muscle, then that current should be used which is just strong enough to produce muscular contraction and no stronger, care being necessary not to over-stimulate and exhaust the muscle. As a means of muscular exercise only this current is preferable to galvanism, being easier of application and less likely to produce harm.

Franklinic, or static electricity, is seldom adminis-

tered by a nurse unless in a hospital or in a physician's office. The current is produced by machines of various makes, such as glass and mica. The plates vary in diameter from twenty inches to three feet or more, and in number from two to sixteen or more. Its current then generated is characterized by an enormously high electromotive force, but a very minute quantity or ampèrage. Unlike the other two forms of current described, its use does not necessitate the removal of clothing. It may be used by placing the patient on an insulated platform and charging him with this current of high electromotive force, which very markedly stimulates circulation; or it may be used by applying or drawing sparks directly from the patient's body, in this manner producing counterirritation, stimulating circulation, relieving localized pains, etc. It has been found useful in such conditions as chorea, neurasthenia, muscular rheumatism, lumbago, chronic inflammation of nerves, etc.

Nurses probably will never be called upon to use the *x*-ray, but this most wonderful manifestation of electro-force has recently taken a prominent position as a diagnostic and therapeutic agent. Parts of the human body heretofore only revealed by the use of the knife or post mortem are now plainly discernible during life through the use of this force. The field of its therapeutic application is a large one, and disorders which have been considered incurable or difficult of cure by other means now yield readily to the *x*-ray.

THE PREPARATION OF FOODS FOR THE SICK.

TO PEPTONIZE MILK.

- | | |
|------------------------|----------|
| 1. Pepsin, | grs. xx; |
| Cold water, | ℥iv; |
| Milk, | ℔j. |
| 2. Pancreatin, | grs. v; |
| Soda bicarbonate, | grs. xv. |
| 3. Peptonizing powder, | grs. xx; |
| Warm water, | ℥i; |
| Milk, | ℔j. |

Directions.—Place the contents of one of the vials into a well-cleaned quart bottle. Pour upon it a gill of cool water and shake the mixture thoroughly. Then add to the mixture a pint of fresh milk and place the bottle in a vessel containing water as hot as can be borne by the hand without discomfort. Let it stand, with occasional shaking, for ten to twenty minutes, or until it has acquired a slightly bitter taste, when it should be removed from the hot water and placed upon the ice or in a cool place, to check digestion and keep from spoiling. If it is not quickly cooled the digestion will continue and the milk become too bitter to be palatable.

Milk thus peptonized may be sweetened if the patient desires it. It may also be flavored with wine or rum as desirable.

Cold Process.—This consists in adding to the milk the peptonizing powder as above, using cool water and milk, and then placing the mixture upon ice without warming it at all.

N. B.—If it be found that the milk ferments after following the above directions, boil the milk first, let cool, and then peptonize. "*The bacteria in uncooked milk cause fermentation when pepsin is added.*"

PEPTONIZED BEEF.

To a quarter-pound of finely minced, raw lean beef add a half-pint of cold water; cook over a slow fire to boiling and boil for a few minutes, stirring constantly from the beginning. Pour off the liquor and set it aside; rub the meat to a paste and put it into a clean glass jar or bottle with the liquor and a half-pint of cold water; add

Extractum pancreatis,	20 grs.;
Soda bicarbonate,	15 grs.
Mixed thoroughly into one powder.	

Shake all well together and stand in a warm place, about 110° to 115° F., for three hours, stirring or shaking occasionally, then *boil quickly*, strain, or clarify with white of egg in the usual manner; season to taste.

This final boiling is essential; if omitted, digestion will progress until the food is spoiled.

For the great majority of cases it is not necessary to strain the peptonized beef, for the portions remaining undissolved are so softened under the action of the extractum pancreatis that they are diffused in an almost impalpable condition—in a form readily susceptible to digestion in the body.

Chicken meat, alone or mixed with an equal portion of beef, may be prepared in the same way.

A cereal gruel of wheat, arrowroot, etc., may be incorporated with the beef, thus giving a food combination that is often highly desirable.

The gruel is prepared in the usual manner, the dry cereal mixed perfectly smooth with cold water and cooked slowly in a double boiler until gelatinized. Four ounces of this gruel may be added to the meat paste, liquor, water and peptonizing powder as directed above, and the further details of the process carried out just as with the beef alone.

The extractum pancreatis will at the same time digest both the meat and starch (of the gruel). The broth with the cereal is more agreeable than when made of meat alone.

The peptonized beef or peptonized beef and cereal may also be made into a jelly.

PEPTONIZED OYSTERS.

To a half-dozen large oysters with their juice add a half-pint of cold water; heat in a saucepan to boiling; and boil briskly for a few minutes; pour off the broth and set it aside.

Mince the oysters finely and reduce to a paste with a potato-masher in a wooden bowl; put in a glass jar with the broth and add:

Extractum pancreatis,	15 grs.;
Soda bicarbonate,	15 grs.
Mixed thoroughly into one powder.	

Let the jar stand in hot water or in a warm place, where the temperature is not above 115° F., for an hour and a half. Then pour into a saucepan, stir in a half-pint of milk and heat slowly to boiling-point. Season to taste and serve hot.

The boiling is essential—to prevent further digestion and keep the broth from spoiling.

If heated gradually the milk will be sufficiently digested before the mixture boils.

The very small bits of oyster that remain undissolved may be strained out, or rejected in eating the soup, but are rarely unacceptable to the stomach.

GUM ARABIC WATER (ACACIA).

Dissolve 1 ounce of gum arabic in 1 pint of boiling water; add 2 teaspoonfuls of sugar, a wine-glass of sherry or juice of 1 lemon. Good for poison cases.

LIME WATER.

Into 2 quarts of water place a lump of unslaked lime the size of an egg. After standing awhile, stir thoroughly and pour off the solution; add fresh water and keep covered.

ARROWROOT WATER.

Moisten 1 teaspoonful of arrowroot with cold water; smooth into a paste; add 1 pint of boiling water and boil five minutes, stirring continuously.

ALBUMIN WATER.

Beat lightly the white of 1 egg; stir into a glass of water; sweeten if permissible.

OATMEAL WATER.

Teaspoonful of oatmeal to a quart of water. Boil down to a pint; then strain.

BARLEY WATER.

Wash in cold water 2 ounces of pearl barley. Boil five minutes; then drain. Pour on 2 quarts of boiling water and boil down to a quart. Flavor with thinly cut lemon rind; add sugar to taste. Strain only at patient's request.

RICE WATER.

Wash 2 tablespoonfuls of cleaned rice; put in a granite saucepan with a quart of boiling water; simmer until the rice is softened and partially dissolved; strain; add salt. May be served either warm or cold.

TOAST WATER.

Put into a pitcher 3 slices of dark-brown toast; pour in a quart of boiling water and cover closely. When cold strain. Wine and sugar may be added.

COFFEE.

1. Best mixture, 2 parts Java to 1 part Mocha. Grind roasted beans just before using. Fair strength, 1 tablespoonful of coffee to 1 pint of water. With the ground coffee, mix white of 1 egg and a little cold water. Pour over it boiling water; simmer five minutes and steep for ten minutes.

2. Scald a granite coffee-pot. Mix cup of coffee, 1 egg, half-cup of cold water; add 6 cups of boiling water and boil three minutes. Remove to the back of the stove and add a half-cup of cold water. Let settle for ten minutes.

WHITE-OF-EGG LEMONADE.

The *New York Medical Journal* gives the following directions (by R. F. Leftwich) for the preparation

of this beverage as a nutritive drink for febrile disorders: "Two lemons, the whites of 2 eggs, 1 pint of boiling water, loaf sugar to taste. The lemons must be peeled twice, the yellow rind alone being used, while the white layer is rejected. Place the sliced lemon and the yellow peel in a quart jug with 2 lumps of sugar; pour on them the boiling water and stir occasionally. When cooled to about the ordinary temperature of tea, strain off the lemons. Now insert an egg whisk, and when the lemonade is in full agitation add slowly the white of the egg and continue the whisking. While still hot strain through muslin, and serve when cold. The white of the egg will be found to impart a blandness which makes the addition of sugar almost unnecessary. This absence of sweetness is greatly appreciated in pyrexial cases, and has its obvious value for diabetics. For non-febrile cases with clean tongues more than 2 eggs may be used to the pint if desired. This drink is contraindicated only in cases of true Bright's disease. It is very useful in the febrile diseases of childhood. It also possesses antiscorbutic properties which replace those lost from milk by boiling and sterilization. It is recommended as part of the diet in typhoid fever, forming a relief from the monotony of milk, and does not have the constipating and flatus-producing effects that lie in beaten-up eggs that include the yolk. The author states that the patient who takes plenty of this lemonade in addition to 4 pints of milk per day will emerge from the pyrexial period of typhoid fever in a much stronger condition than without its use."

CREAM LEMONADE.

Fill bottom of glass with cracked ice. Beat white of 1 egg to stiff froth, and sugar to taste. To this add juice of 1 lemon, stirring all the time, and then add one-half cup of cream. This will make 2 glass-fuls.

FLAXSEED LEMONADE.

Tablespoonful of flaxseed, pint of water. Boil one hour, then add juice of 1 lemon. Strain, and sweeten to taste.

MILK LEMONADE.

Tablespoonful of sugar, juice of 1 lemon, 2 table-spoonfuls of sherry, half-cup of milk, half-cup of water.

MILK PUNCH.

Cup of milk, 2 tablespoonfuls of brandy. Sweeten to taste. Grated nutmeg may be added.

WHEY.

To half-pint of warm milk add 1 teaspoonful of essence of pepsin, liquid pepsin, or liquid rennet. After the mixture forms, beat the curd with a fork, and strain off the whey.

WHEY FOR BABIES.

Add sodium bicarbonate, gr. x, to half-pint of whey to render it alkaline, and sugar of milk, 3j, to raise the sugar to 6 per cent.

WINE WHEY.

Put 2 pints of milk into a saucepan, and place on fire. When about to boil add 2 wineglasses of sherry. Simmer fifteen minutes, skimming off the curds as they rise. Add a tablespoonful of sherry. Skim again, and strain through clean linen. If preferred, 2 tablespoonfuls of lemon juice may be used instead of wine.

JUNKET.

Heat half-pint of fresh milk. Add teaspoonful of essence of pepsin. Stir enough to mix. Pour into custard cups, and let stand until firm. Serve plain or powder with sugar or nutmeg.

KUMISS.

One tablespoonful of sugar in a quart of fresh milk. Dissolve one-fifth of a small cake of yeast in a little cold water, then stir it into the milk. Put the mixture into strong patent-stoppered bottles. Shake the bottles for one minute, then stand them on end in a refrigerator or other cool place. After three days

place the bottles on their sides, and turn them occasionally. Five days will be required to perfect the fermentation.

BEEF TEA.

Free a pound of lean beef from fat, skin, etc. Chop up fine. Put into a pint of cold water to digest two hours. Simmer for three hours, but do not let boil. Make up for water lost by adding cold water. Press and strain. The best meats for beef tea are the round and rump. Cold water draws out the albumin; boiling water coagulates it.

BEEF JUICE.

Cut thin, juicy meat into pieces one and one-half inches square; broil one and one-half minutes over a hot fire. Squeeze with a hot lemon squeezer; season with salt and pepper. May be added to milk or poured over toast.

BEEF EXTRACT.

Heat a select piece of round steak so that the juice may be freely pressed. Cut steak into pieces that will fit into a lemon squeezer, and squeeze juice into a cup. Set cup in a dish of warm water, which must not be allowed to boil. Season to taste. May be served on toast.

CHICKEN AND VEAL EXTRACT.

Make chicken broth from an old hen and cook down until it jellies.

Cook a neck of veal until broth jellies; cool, and skim off fat. As needed, use equal parts of each. The nourishment is in the veal and the chicken gives it flavor.

N. B.—The most delicate stomach can digest this.

SCRAPED BEEF SANDWICH.

From a piece of steak scrape all the fiber from the connective tissue with a knife. Season with salt and pepper. Serve spread between slices of buttered toast.

CORNMEAL GRUEL.

Mix 2 tablespoonfuls of cornmeal, tablespoonful of flour, teaspoonful of salt, teaspoonful of sugar, into a thin paste with a little cold water. Add quart of boiling water, and cook three hours. Add cup of milk, and serve.

CRACKER GRUEL.

Two tablespoonfuls of cracker crumbs rolled fine, teaspoonful of salt, teaspoonful of sugar, cup of boiling water, cup of boiling milk. Mix salt, sugar, and crumbs; add boiling water, then milk; simmer two minutes.

OATMEAL GRUEL.

Two tablespoonfuls of rolled oats; teaspoonful of salt, teaspoonful of sugar, cup of boiling milk. Mix oatmeal, sugar, and salt; add boiling water; cook in a saucepan thirty minutes, or in a double boiler for two hours. Strain, and add hot milk. Bring to a boil, and serve hot.

OYSTER BROTH.

Chop a dozen oysters fine; put into a saucepan with a cup of cold water. Bring to boiling-point; simmer five minutes, then strain and season. By adding milk three minutes before broth is taken from the fire it is made more palatable.

SCALLOPED OYSTERS.

Clean oysters; roll crackers, and mix with melted butter. Sprinkle dish with crumbs, then place a layer of oysters, a layer of crumbs, another layer of oysters, and so on until all are used. Bake in a hot oven.

OYSTERS ON THE HALFSHELL.

Wash the shells, and put them on hot coals or upon the top of a hot stove, or bake in a hot oven. Open the shells, taking care not to lose any of the liquor. Serve at once on hot plates with toast. Oysters may be steamed in the shells.

TO BOIL CLAMS.

Wash the shells clean, and put the clams (the edges downward) in a kettle; pour about a quart of boiling water over them. Cover the pot, and set it over a brisk fire for forty-five minutes. The boiling water will open the shells quickly, and let out the sand. When done remove the black skin which covers the hard part, trim clean, and put into a stewpan. Add some of the liquor in which they were boiled, and a large piece of butter; pepper and salt to taste. Serve hot.

CLAM BROTH.

Take several large clams; scrub them clean, and boil in a cup of water. The broth is simply the juice of the clams with the water, boiled for a minute or two. As soon as the shells open the broth is done.

MAYONNAISE DRESSING.

Yolks of 2 eggs, half-teaspoonful of salt, pinch of Cayenne pepper, 2 teaspoonfuls of mustard, and half-teaspoonful of powdered sugar. Mix the ingredients thoroughly, then drip in half-cup of olive oil, drop by drop, stirring all the time one way. When thick add a teaspoonful of lemon juice. When the dressing is thick and smooth add a tablespoonful of cream. Stir with a wooden spoon or paddle.

COCOA.

Cup of boiling water, cup of boiling milk, a teaspoonful of cocoa; sugar to taste.

CHOCOLATE.

Put one-third of a square of Baker's chocolate with 1 cup of boiling water and a tablespoonful of sugar into a saucepan. Set the pan over the fire and stir, moving piece of chocolate through water until it is melted. Ready to serve when boiling-point is reached. *If chocolate is allowed to boil, separation of the fat from the other ingredients takes place, rendering it indigestible.* If sweet chocolate is used, dispense with sugar.

CHOCOLATE SOUFFLE.

Half-pint of milk, 4 tablespoonfuls of boiled chocolate, 2 tablespoonfuls of sugar, 2 tablespoonfuls of flour, 4 eggs. Put milk in a double boiler; when hot, sieve the flour into it, gradually stirring all the time, and let it cook six minutes. Put the chocolate, sugar, and 2 tablespoonfuls of water on the fire until smooth and glossy, then stir into the boiler. Take from the fire, and add beaten yolks. When cool add the whites beaten to a stiff froth. Pour the batter into a buttered dish that will hold a quart. Set dish in hot water, and place in the oven for a few minutes. Serve with vanilla cream sauce.

VANILLA CREAM SAUCE.

Beat together 2 tablespoonfuls of butter, two-thirds cup of granulated sugar, 1 tablespoonful of vanilla; then gradually beat in 2 cups of whipped cream. Place bowl in a pan of hot water, and stir carefully for three minutes.

BAKED CUSTARD.

Milk 1 cup, 1 egg, pinch of salt, 1 tablespoonful of sugar. Heat milk in a double boiler, break into it a stick of cinnamon. Beat together egg, sugar, and salt; then pour hot milk over the mixture, stirring all the time. Pour into a bowl, set dish into a pan of hot water; bake until set.

WINE JELLY.

Gelatin one-fourth of a box, one-fourth cup of boiling water, one-fourth cup of cold water, half-cup of sugar, half-square inch of cinnamon, a few cloves, and half-cup of sherry. Put gelatin and cold water in a dish for half an hour, then add boiling water with cloves and cinnamon; lastly, sugar and wine. Stir until sugar and gelatin are dissolved. Strain, and pour into a mould. Set on ice or in cold water.

LEMON JELLY.

Prepare the same as wine jelly, and substitute lemons for the spices.

TO BONE A BIRD.

Select and dress a plump squab ; cut off the head and feet and the wings at the first joint ; singe, and with a sharp knife make an incision down the back and wings. Scrape away the bones without tearing the meat. Put into shape and broil between buttered paper.

STUFFED-BAKED POTATO.

Select a smooth potato ; scrub well, and bake in a hot oven about fifty minutes. Cut one end partly off lengthwise ; scrape out the potato into a dish ; add pepper, salt, and butter. Refill the skin, place a bit of butter in the top, and brown in an oven.

FRIED CALF'S BRAINS.

Soak the brains for a few minutes in cold water, drain, cover with boiling salted water, and cook for three minutes. Drain again, lay in iced water until cold, and set in the ice to get firm. Cut into pieces the size of an oyster, dip in egg and slightly salted cracker crumbs, and fry to a golden brown. Serve very hot.

BOILED MUTTON.

Wipe a leg of mutton with a damp cloth and put it into a large kettle with enough boiling water to cover it and bring to a boil, then cook slowly until done. After the boil is reached allow fifteen minutes for each pound of the meat. When nearly done add salt and pepper to taste and a small onion, a minced carrot, and a stalk of celery. Lift from liquor and lay on a heated platter. Serve with drawn butter or caper sauce.

SOFT-BOILED EGG.

Place egg in a vessel of boiling water, then withdraw at once to the back of the stove. Remove egg in nine minutes.

HARD-BOILED EGG.

Boil slowly for one-half hour.

POACHED EGG.

Pour hot water (or milk) into a saucepan, using saltspoonful of salt to each cup of water. Bring to boiling-point. Break egg into a saucer and slip into the pan. Withdraw the pan to a cooler part of the stove and cook till white of egg is set.

OMELET.

Separate 3 eggs. Beat whites to a stiff froth ; beat yolks. Heat half-cup of milk ; to it add 1 teaspoonful of cornstarch or flour ; then stir in the yolks and add lightly the whites of the eggs. Put a good-sized piece of butter into the frying-pan. When hot pour in the mixture, cover, and cook from five to seven minutes. When set, remove the cover, and place pan into the oven to brown the omelet. Serve on a hot platter.

BAKED-FLOUR PORRIDGE.

Pound of flour, packed lightly in a muslin cloth ; place in boiling water ; boil from six to eight hours. Cut off the outer portion and grate the hard one. Blend with a little milk ; stir into boiling milk to desired thickness.

WATER WAFERS.

Quart of sifted flour ; half-pint of cold water ; teaspoonful of salt ; mix thoroughly. Roll out thin, and cut into small cakes with a biscuit cutter. Put into a pan to bake in a hot oven.

RICE.

Take desired quantity of rice and wash three times in cold water, rubbing rice carefully between the hands ; then drain. Boil fresh water slowly. Put in the rice and cover vessel closely. Cook over a slow fire about twelve minutes, when grain should be perfect and separated ; drain in a colander. When dry, put rice into the oven to heat.

RICE CREAM.

Take 2 tablespoonfuls of cleaned rice, 2 cups of milk, saltspoonful of salt, 2 tablespoonfuls of

sugar, and cook in a double boiler until the grains of rice are soft; then press through a coarse strainer into a saucepan and return to the fire. Take 2 eggs, beat the whites and yolks separately, and add to the rice when it reaches the boiling-point, stirring mixture lightly for a few minutes; adding only the whites produces a white cream.

CREAM TOAST.

One pint of milk, 2 tablespoonfuls of butter, 2 tablespoonfuls of flour, half-teaspoonful of salt, half-teaspoonful of pepper. Put milk into a double boiler to heat. Put butter into a granite saucepan, and when it begins to bubble, slowly shake in the flour; then add hot milk, a small quantity at a time, and season with salt and pepper. Toast bread a rich brown and dip into salt water. Lay on a dish and pour sauce over it. Grated egg may be added.

FRENCH OR EGG TOAST.

Cup of milk or cream, 1 egg, 1 saltspoonful of salt, 3 slices of bread. Beat the egg a few minutes and add milk and salt. In this mixture soak the bread until it is soft. Place in a buttered omelet-pan and fry slowly till golden brown. Put a piece of butter on each slice; turn and brown the other side. Powder each slice with cinnamon and sugar and place in a covered dish. Serve very hot.

STEWED PRUNES.

Pound of prunes, half-pint of water, quarter-cup of sugar, juice of 1 lemon. Soak prunes in warm water for fifteen minutes; then wash and stew in a covered pan for two hours; add water as needed. When done, add the lemon juice.

EGG CREAM.

Juice of half a lemon, 2 eggs, 2 tablespoonfuls of sugar. Separate yolks and whites; beat yolks with sugar until well mixed; add lemon juice and place bowl in a dish of hot water over the fire. Stir

slowly until mixture begins to thicken; then add beaten whites and stir until the whole forms a thick cream. Remove from the fire, pour into dishes, and set aside to cool.

SPONGE PUDDING.

Half-pint of milk, half-cup of flour, half-cup of sugar. Boil together, stirring all the time. After taking from the stove, stir in 2 tablespoonfuls of butter. Beat 6 eggs separately. Put yolks into mixture; then add whites lightly. Pour into an earthen pudding-dish, set in a pan of hot water, and bake forty-five minutes.

SAUCE FOR THE PUDDING.

Beat to a cream 2 tablespoonfuls of butter, 3 tablespoonfuls of sugar. When ready for the table, add a half-cup of boiling water into which has been added 1 teaspoonful of cornstarch. Flavor as desired.

ICE CREAM ROYAL.

Tablespoonful of flour, $1\frac{1}{2}$ cups of sugar, saltspoonful of salt, pint of milk, 2 eggs, pint of sweet cream, tablespoonful of vanilla, half-teaspoonful of almond, half-cup of sherry, or quarter-cup of brandy. Mix the sugar, flour, and salt. Pour milk into a saucepan; when it reaches the boiling-point put in the mixture, stirring for a full minute. Beat the eggs very lightly, and slowly add the milk, stirring rapidly for a few minutes. Strain into a dish and set aside to cool. Add the cream and flavor before freezing.

ICE CREAM.

Cup of sugar, teaspoonful of vanilla, tablespoonful of brandy, and 1 pint of scalded sweet cream. The whites of 2 eggs may be added.

FROZEN CUSTARD.

Pint of milk, cup of sugar, 2 pinches of salt, yolks of 3 eggs, pint of milk or cream, and 1 ounce of wine or brandy.

SHERBET.

In preparing gelatin sherbert, soak gelatin in cold water about thirty minutes; then pour over it boiling water and add the other ingredients. When sugar is dissolved, strain mixture and freeze.

LEMON SHERBET.

Pint of boiling water, cup of sugar, and juice of 2 lemons. Do not add the lemon juice until ready to freeze. May add gelatin.

ORANGE SHERBET.

Tablespoonful of gelatin, cup of boiling water, cup of sugar, juice of 4 oranges, juice of 1 lemon, and 1 ounce of brandy. May omit gelatin.

STRAWBERRY SHERBET.

Pick and clean a pint of fresh strawberries; crush, add a quart of water, a sliced lemon, and a teaspoonful of orange-flower water. Let stand for a few hours. Put a pound of sugar in another dish. Strain the mixture through a coarse cloth into the sugar, and when it is all dissolved freeze or place on ice.

TAFFY.

Pint of water, 3 cups of sugar, half-cup of vinegar, and a piece of butter. Boil; do not stir. When it will thread off, cool.

BRAN BREAD FOR CONSTIPATION.

Bran flour, 1 quart; white flour, 1 pint; 1 teaspoonful of salt. Mix thoroughly. Dissolve 1 teaspoonful of baking soda in water, put in $\frac{1}{2}$ cup of molasses, and stir the mixture into the flour. Add 1 pint of buttermilk. Bake in a moderate heated oven.

BRAN BISCUITS FOR CONSTIPATION.

Four cups whole wheat bran, 2 cups graham flour, 1 teaspoonful of soda, 1 teaspoonful of salt, 1 cup molasses, 1 cup sour milk or water, $\frac{3}{4}$ cupful lard or butter, 1 cupful chopped figs. Spices to taste.

VEGETABLE SOUP FOR BABIES.

One handful of spinach, 1 beet, 2 carrots. Chop fine and boil two hours in one quart of water. Strain through gauze and add sterile water to make one quart of soup.

BARLEY SOUP FOR BABIES.

One tablespoon of barley flour to one quart of water. Boil twenty minutes.

FROZEN COCOA CREAM.

(A hospital recipe).

One-half pound box cocoa, 4 cups of water, 3 cups of sugar. Boil three minutes until it stiffens. Put on ice.

A. *To Prepare the Cocoa Syrup*.—One-half pound of cocoa, 4 cups of water, 3 cups of sugar. Boil about three minutes until it stiffens. Put on ice.

B. Beat white and yolk of eggs separately and thoroughly. Sweeten whites to taste.

C. *For the Beverage*.—Pour $\frac{1}{2}$ ounce of pure cream into a glass and 1 ounce of cocoa syrup. Add yolk and white of one egg. Beat thoroughly and cover with a dash of white. Drop a clot of cocoa syrup on the white and serve with a spoon. Ice-cream may be served in it.

GINGER SNAPS.

One pint of honey, 1 teaspoonful of ginger, and 1 teaspoonful of soda dissolved in a little water and two eggs. Mix all, then work in all the flour possible, roll very thin, and bake in a moderately hot oven.

PAPER INDICATES OVEN'S HEAT.

To judge of an oven's heat, try the oven every ten minutes with a piece of white paper. If too hot, the paper will blaze up or blacken. When the paper becomes dark brown, darker than ordinary meat, pie crust, the oven is fit for small pastry. When light brown, the color of nice pastry, it is ready for tarts.

When the paper turns dark yellow you can bake bread, large meat pies, or pound cakes. If it is just tinged, the oven is fit for sponge cake and meringue.

VINEGAR PREVENTS COOKING SMELL.

When cooking by gas always place a tin of water in the oven. A bowl of vinegar and water placed beside the stove will prevent the smell of cooking from spreading through the house.

SAUCES FOR MEAT.

With roast beef, grated horseradish.
 With roast veal, tomato or horseradish sauce.
 Roast mutton, currant jelly.
 Roast pork, apple sauce.
 Roast lamb, mint sauce.
 Roast turkey, chestnut dressing, cranberry jelly.
 Roast venison, black currant jelly or grape jelly.
 Roast goose, tart apple sauce.
 Roast quail, currant jelly, celery sauce.
 Roast canvasback duck, apple bread, black currant jelly.
 Roast chicken, bread sauce.
 Fried chicken, cream gravy, corn fritters.
 Roast duck, orange salad.
 Roast ptarmigan, bread sauce.
 Cold boiled tongue, sauce tartare or olives stuffed with peppers.
 Veal sausage, tomato sauce, grated parmesan cheese.
 Pork sausage, tart apple sauce or fried apples.
 Frizzled beef, horseradish.
 Pork croquettes, tomato sauce.
 Corned beef, mustard.
 Lobster cutlet, sauce tartare.
 Sweetbread cutlet, sauce bechamel.
 Reed birds, fried hominy, white celery.
 Cold boiled fish, sauce piquant.
 Broiled steak, maitre d'hotel butter or mushrooms.
 Tripe, fried bacon and apple rings.
 Broiled fresh mackerel, stewed gooseberries.

Fresh salmon, cream sauce and green peas.
 Cream sauce with sweetbreads.
 Orange salad with roast chicken.
 Celery sauce with quail.
 Stuffed olives with fish balls.
 Horseradish sauce with boiled beef.
 Horseradish and fried onions with liver.
 French dressing with sardines.
 Mint sauce with lamb.
 Yorkshire pudding with roast beef.
 Hard-boiled eggs and parsley with boiled salmon.
 Cream gravy, strawberry preserves with fried chicken.
 Oyster dressing for turkey.
 Celery and onion dressing with roast duck.
 Tart grape jelly with canvasback duck.
 Currant jelly with roast goose.
 Cucumber catsup with corned beef.

FOOD AND NUTRITION IN DISEASE.

A PHYSICIAN, writing to the *New York Medical Journal*, says the chemical composition of the body is quite similar to the composition of the foods which nourish it. Protein, fats, carbohydrates, mineral salts, and water are the compounds we need in our foods, and they are found in flesh foods and vegetables. Protein, the most important element, is derived principally from meat, eggs, and milk. It is also furnished by some vegetables, as beans, peas, and the gluten of wheat; but in these it is mixed with too much extraneous matter, as husks, bulbs, woody fiber, etc., to be useful in the diet of the sick. Extractives, as beef-tea, are included in the nitrogen compounds, but they neither build tissue nor furnish energy; they are appetizers and stimulants. Animal and vegetable fats are useful; these are found in meat, fish, milk, eggs, some cereals, olives, and nuts. The carbohydrates include sugars, starches, cellulose, and the fibers of plants. Potatoes, sago, farina, and arrowroot are rich in them. Fats should be used with caution in disease, because they retard the formation of hydrochloric acid, which excites the pancreatic secretion, an important factor in digestion. Man can live better without a stomach than without a pancreas. Physicians realize that they must rely on diet rather than drugs to cure indigestion, as the food varies in its proportion of fat, protein, and carbohydrates; the digestive juices are poured out or repressed and altered in strength and quantity.

Milk is not an ideal food for the sick, too large a quantity being required, and the large curds it forms in the stomach often rendering digestion difficult. Boiled with rice it forms an excellent diet.

In acute diseases lasting from four to six weeks no great effort should be made at forced feeding. Thin soups, flooding the stomach with unnutritious fluids, should be avoided. It is unnatural to take food

during physical or mental suffering. Appetite is wanting, and imperfect assimilation adds to the physician's worries and the patient's discomforts. When there is no appetite the digestive juices are absent. Feed a convalescent when, through conversation about some dainty dish, interest is aroused and saliva is secreted.

DIET-LIST.

Liquid diet consists of:

Water of all kinds.	Cocoa.
Ginger ale.	Kumiss.
Lemonade.	Buttermilk.
Orangeade.	Milk punch.
Albumin water.	Malted milk.
Broths.	Milk.
Tea.	Cream.
Coffee.	Egg-nog.

Soft diet consists of:

Liquids of all kinds.	
Soups (vegetable and strained).	
Milk toast.	Soft-boiled eggs.
Gravy "	Oysters.
Bread without crusts.	Baked apple.
Cereals.	Apple sauce.
Custard.	Stewed fruits (no seeds).
Rice.	Mashed potato.
Ice cream.	Baked "
Milk puddings.	Purées and milk.
Plain "	Toast.
Soft-poached eggs.	

Light diet consists of soft diet, including:

Whitefish.	Quail.
Codfish.	Sweetbreads.
Finnan haddock.	Chicken.
Bacon.	Chops.
Scraped beef.	Steak.
Squab.	

Vegetables only when ordered.

Typhoid diet, as soon as food is ordered, is as follows:

First week—

Coffee for breakfast.	
Tea for dinner.	
Cereals (well cooked and strained).	
Eggs lightly boiled.	
Poached eggs and soft toast.	
Broths (chicken, oyster, and meat).	
Scraped beef.	Custards.
Bread without crust.	Ice cream.
Milk toast.	Orange-juice.

A glass of milk, t. i. d.

To the foregoing may be added for

Second week—

Dry toast.	Chicken.
Baked potato.	Whitefish.
Baked apples.	Rice.
Asparagus.	Farinaceous puddings.
Chops.	Milk soup.
Steak.	Purées.

No vegetables, pastry, or raw fruits are allowed.

Liquid—

1. Milk, 3 parts;
Lime-water, 1 part.
2. Albumen-water.
3. Clear chicken or beef broth may be given three times in 24 hours.

DIABETIC DIET.

White of eight eggs;	
Dry oatmeal,	$\frac{3}{4}$ xij (by weight);
Butter,	$\frac{3}{4}$ viij-x.

Procedure.—Cook oatmeal 2 hours. When done, beat into it the melted butter. Then fold in the beaten whites of eggs.

MOTOR TEST-MEAL.

- A. White meat of chicken or fish.
- B. Coarse vegetables.
- C. Jam seeds (raisins or currants).
- D. Potatoes.
- E. Tea.
- F. Two slices of bread.

EWALD'S TEST-BREAKFAST.

- A. 2 shredded wheat biscuits, or 2 slices of bread.
- B. $1\frac{1}{2}$ glasses of water.

OBSTETRICS.

Puberty.—This is the period of transformation from childhood to adolescence. There is a marked development of the throat and chest, the breasts become fuller, more rounded, and there is also an enlargement of the pelvis. These outward signs are combined with certain internal changes, affecting especially the ovaries and the uterus, that are described under the terms of ovulation and menstruation.

Ovulation.—The ovaries produce ova that are retained in cavities termed ovisacs (Graafian follicles), which are scattered throughout the ovary. Sometimes an ovisac contains more than one ovum, but usually each ovisac contains but one. When the ovary becomes functionally active, some of the ovisacs in the deeper part of the organ increase in size and develop toward the surface. From time to time one of these ovisacs, having continued to increase in size so as to form a projection on the surface of the ovary, actually bursts and sets free an ovum. This frequently occurs in association with menstruation, but may take place at other periods. While this development of the ovisac has been taking place there is a special flow of blood to the pelvic contents, and the fringe-like processes of the Fallopian tube become more closely applied, so that a cup is formed by the fimbriated extremity of the Fallopian tube, into which the ovum drops. Eventually the ovum reaches the cavity of the uterus, and, unless it becomes fertilized or impregnated, it is in due course cast off from the uterus in the menstrual discharge and perishes.

When the uterus has become the seat of a fertilized ovum there is no further ripening of ovisacs. After the escape of an ovum from the ovisac the follicle is filled with blood, and this takes part in the formation of a structure known as the corpus luteum, which is formed within the burst ovisac. The corpus luteum varies in its development according as the ovum becomes fertilized or not. If pregnancy takes place it

remains to its close, but if the ovum is not fertilized it disappears in about three months. The ruptured ovisac always contains the elements of a corpus luteum, but its development depends on the fate of the ovum. Ovulation has been said to commence before menstruation; ovisacs may sometimes ripen and burst in childhood. Conception may take place before menstruation has set in.

Menstruation.—The blood is derived from the mucous membrane of the uterus (endometrium) and not from that of the cervix. The endometrium becomes swollen and thickened prior to the commencement of the flow, and the blood-vessels are distended. With the beginning of the flow this swelling gradually diminishes. A few superficial cells of the endometrium are usually cast off during menstruation, and this is regenerated during the interval between the periods. The mucous membrane of the uterus is thus never at rest until menstruation ceases for good.

Conception.—Fertilization of the ovum may occur anywhere in its course from the ovisac to the uterus, but ordinarily it takes place in the uterus. Certain changes take place in the uterus preparatory to the arrival of the fertilized ovum. The whole organ enlarges, it contains more blood than before; the mucous membrane becomes soft, spongy, thickens greatly, and is thrown into folds which are called the decidua vera.

Decidua Vera.—The part of the decidua vera to which the ovum becomes attached and where the placenta afterward forms is called the decidua serotina. The presence of the ovum acts as an irritant to the spot where it lodges, and active growth takes place. At the same time the ovum burrows into the mucosa and gradually becomes embedded. The vera closes over the ovum. The decidua vera is a mold of the interior of the uterus. The external surface is rough where it has been torn from the underlying tissues of the uterus, and the internal aspect which is in contact with the ovum is smooth. It is thickest at the third month; after this time the membrane becomes thinner and thinner, until by the end of pregnancy it is very thin. It is to a considerable

extent expelled at labor and forms part of the membranes.

Ovum.—As the ovum develops the decidua reflexa expands until it fills the decidua vera at the end of the second month, and by the end of the third month it has intimately united with the decidua vera to form one membrane. Until these two membranes have coalesced the ovum is not free in the uterine cavity, but is enclosed in the decidua reflexa.

Pregnant Uterus.—As pregnancy proceeds the uterus ceases to be a pelvic organ; it becomes rounded, and after the sixth month gradually assumes an ovoid shape. At the end of the third month it has reached to the brim of the pelvis. By the sixth month it is level with the umbilicus, and by the ninth it has reached to the tip of the sternum. During the last fortnight the organ sinks a little, and this relieves to some extent the shortness of breath which has been caused by the pressure on the diaphragm.

Fetal Membranes.—Inside of the decidual membranes we find the chorion and amnion. Whereas the decidua are maternal structures, the chorion and the amnion are derived from the ovum. The chorion is the more external of the two fetal membranes; it early surrounds the ovum and throws out processes (villi) toward the decidua reflexa and serotina. These processes are at first formed equally all over the chorion, but those which lie in connection with the decidua serotina grow more rapidly in size and complexity, and remain to form the main part of the placenta. The membrane in which the fetus lies is the amnion. Contained within the amnion is more or less fluid, the liquor amnii, in which the fetus rests as in a water-bed. It permits free movements on the part of the fetus and protects it from violence from the outside; it equalizes the pressure on the uterine walls, preventing pressure on the cord and placenta; and during labor it assists in the dilation of the os uteri and lubricates the maternal passages. From it also the fetus derives its supply of water. Occasionally water may form between the three membranes, and during labor the chorion may rupture and not the amnion, and the waters between them be dis-

charged. In like manner, water which has formed between the decidua and the chorion may come away. These, then, are two sources of fluid which may be discharged from the vagina in labor when the amnion is intact.

Umbilical Cord.—The organ by which the fetus is attached to the uterus is a whitish, glistening structure which springs from the fetus at the center of the abdomen, and passes to the internal aspect of the placenta. It contains two arteries and one vein surrounded by a gelatinous material (Wharton's jelly), the whole being covered with a layer derived from the amnion. The vessels usually run tortuously in the cord, thus lessening the danger of compression, which might otherwise occur. This arrangement also tends to regulate and equalize the circulation of the blood through its vessels.

Placenta.—The "after-birth" is a spongy cavernous organ and has a circumference of from 20 to 24 inches. It is made up of two elements, fetal and maternal, chiefly the former. The fetal surface, to which the umbilical cord is attached, is formed by the amnion. External to the latter is the chorionic tissue, consisting mainly of finger-like processes of villi, many of which extend to the decidua. These villi are mostly vascularized. The vascular villus is made of a capillary loop, lying imbedded in a connective tissue, the blood-vessels being derived from the umbilical vessels. The villi are surrounded by maternal blood, which circulates in the intervillous spaces. The maternal part is represented by the decidua serotina. Its surface is rough and irregular, being broken up into segments or cotyledons. It is made of two layers: (a) The deep or spongy layer, and (b) the compact, or layer to which the villi are attached. The decidua serotina contains large cavities or sinuses, which are formed by a dilation of the blood-vessels in the wall of the uterus. They communicate with the intervillous spaces of the placenta, and it is through the maternal blood circulating in them that nutriment is conveyed to the fetus through the medium of the villi. An interchange takes place between the fetal and maternal blood-

streams, though, of course, there is no direct continuity between them. The placenta thus has a two-fold function in acting both as an organ of circulation and of respiration. It is through the walls of the villi that this interchange of gases and fluids takes place; nourishment and oxygen passing through them to the fetus, and carbonic-acid gas and waste materials passing through them to the mother. There is no direct communication between the fetal and the maternal blood. The placenta, normally, is attached to the contractile part of the uterus, and on its separation the blood-vessels are closed by the contractions of the uterine wall. The placenta may be divided into two or more portions, or one or more of its cotyledons may be detached from the rest of the organ and have their own vascular supply. The importance of this lies in the fact that after the placenta is expelled these isolated masses may be left and give rise to hemorrhage or blood-poisoning.

SYMPTOMS OF PREGNANCY.

Suppression of the Menses.—The cessation of the periods may be due to other causes, but it is usually the first indication of pregnancy. Conception may take place and menstruation yet continue. It usually occurs but once or twice, and then only where conception took place immediately before an expected period.

Morning Sickness.—Nausea and vomiting continued for any length of time is almost a certain sign of pregnancy. It may begin as soon as conception takes place and last for many months; sometimes it may occur toward the end of pregnancy, or occasionally not at all.

Salivation.—The excessive secretion of saliva often accompanies the morning sickness. The secretion is tenacious and difficult of expectoration. Heartburn, abnormal appetite, longing or loathing for particular articles of food, toothache and the like may be present.

Quickening.—The first feeling of fetal life felt by the mother is usually between the fourth and fifth months, but may be experienced occasionally as early

as the third month, or be deferred until the sixth. Quickening occurs as soon as the uterus comes in contact with the abdominal wall. Improper elimination of the bowels, causing gastro-intestinal trouble, may produce movements not unlike this indication; therefore, this symptom is not reliable.

Enlargement of the Breasts.—The breasts grow larger toward the end of the second month. In some cases the enlargement is very marked, but in others there is scarcely any increase in size during the whole term of pregnancy.

Pigmentation.—Coloring of the skin takes place in different parts of the body. The face may show brownish spots. The skin darkens in the axilla and in the areola of the breasts. A dark line presents itself down the middle of the abdomen. The vagina takes on a violet tint, the cervix becomes purple, the various colors becoming more marked with the progress of pregnancy.

Changes in the Abdomen.—The abdomen grows larger gradually, and with it the gait and carriage of the woman change, to counterbalance the weight of the abdomen. It enlarges symmetrically unless the uterus is displaced by adhesions, or by a tumor in the uterus or external to it. The tearing of the under layer of the skin of the abdomen while distended produces streaks (stria), first pink and then white, which remain after the form resumes its natural shape; any other enlargement of the abdomen, especially when caused by a tumor, may produce the same result. The various conditions mistaken for pregnancy, due to changes in the abdomen, are fibroid in uterus; metritis; swelling of the tubes and ovaries, distended bladder, a pendulous belly; excessive fat; extra-uterine pregnancy; and inflammatory conditions, such as peritonitis. Pregnancy and any of the conditions named may coexist, and the former may be overlooked, while the latter is recognized.

Fetal Heartbeat.—The heart sounds are generally audible between the fourth and fifth months. The rate is from 120–140 a minute, being double that of the mother's pulse. About midterm is heard the uterine souffle, a blowing sound, quite unlike the fetal

heart, and its origin is the rushing of the blood through the enlarged and twisted arteries.

Ballottement.—In normal cases there is no pain on palpation. The uterine wall varies in consistence, being alternately soft and firm. The fetal parts may be felt through the abdominal wall in the late months.

Lightening.—In the last two weeks, especially in primiparæ, the child's head sinks into the pelvis, and its body falls a little forward. The uterus sinks down and forward with the child. The waist-line lowers, the stomach region is flatter, the navel more prominent. The patient breathes easier, but does not walk as well.

Duration of Pregnancy.—Average time is 280 days; protracted, 314; a short term about 245 days. There is no positive period.

Prediction of the Date of Labor.—Count 9 calendar months from the beginning of the last menstruation and add 7 days. An error of 2 or 3 weeks, however, is possible. (See Table on page 162.)

Premontory Symptoms of Labor.—(1) *Lightening.*—Dropping may be attended with slight pains similar to labor pains.

(2) *False Pains.*—These vary in nature and quality. They may be short and sharp, or long and continuous, or irregular. As a rule, they are marked by irregularity. They are mostly abdominal, rarely like true pains beginning in the sacral region and moving around to the region of the pubes. They may be caused by cramps in the abdominal wall, intestines, or in the distended bladder. They may be due to old inflammatory areas within the abdominal and pelvic cavities. They are frequent in cases in which there is marked bowel irregularity, and in conditions of over-fatigue. Some authors believe that they may be produced by irregular contractions of portions of the uterine wall. One important test is the condition of the uterine body during the pain. If there is no genuine contraction, the uterus will not become hard when pain is felt. This indication is not always reliable, however, since palpation may be unsatisfactory on account of the woman's nervous-

TABLE FOR CALCULATING THE PERIOD OF UTERO-GESTATION.

January	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	NOV.
OCTOBER . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	
February . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				DEC.
NOVEMBER . .	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5				
March	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	JAN.
DECEMBER . .	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	
April	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	FEB.	
JANUARY . .	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4		
MAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MAR.
FEBRUARY . .	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	
JUNE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	APRIL
MARCH	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		
July	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MAY
APRIL	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	
August	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	JUNE
MAY	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	
September . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		JULY
JUNE	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	
October	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	AUG.
JULY	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	
November . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		SEPT.
August	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		
December . .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	OCT.
SEPTEMBER . .	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	

EXPLANATION.—Find in top line the date of menstruation, the figure below will indicate the date when confinement may be expected, i. e., if date of menstruation is June 1st, commencement may be expected on March 8th, or one day earlier if leap year. (Dr. Ell.)

ness, her sensitiveness, or the thickness of the abdominal wall. If the cause be contractions of the uterus, partial hardening may be felt.

(3) *True Pains*.—The contractions of the uterus as they become stronger, in the great majority of cases, cause the woman pain. For this reason "true pains" is used synonymously with "uterine contractions." With their appearance the woman becomes restless, likes to sit down, to bend forward and to press on the sacrum. "True pains" are felt in the sacral region, gradually moving around toward the pubes. They begin slowly, increase in intensity, and slowly pass away. The pains are involuntary, and the woman tries to complain or cry out. Differences in this largely depend upon the nervous temperament of the patient, though they are also related to variations in the physical factors. "True pains" must be distinguished from "false pains."

(4) *The Show*.—Within twenty-four hours before labor really begins there is a discharge from the vagina of thick mucus, more or less stained with blood. This is called the "show," and is the plug of mucus which fills the cervical canal during pregnancy. Sometimes the show is absent or appears after labor has been in progress for awhile. If there is much pure blood with the discharge it is unusual, and the physician should be notified.

LABOR.

First Stage.—The first stage extends from the time of the labor pains to the complete dilatation of the os uteri. It may come on very slowly or act quickly. Slow dilatation occurs normally in a woman over thirty years of age; and it may be due to inflammatory conditions or appear in cases where the membranes lining the uterus are adherent. On examining the vagina there is found a bulging (which is a main factor in dilatation of the cervix) and a discharge of mucus tinged with blood. The dilatation increases until it is 4 in. across, and the bag of membranes bulges like a saucer. In abnormal cases it comes down into the vagina in the shape of a tube. When the os is fully dilated the membranes rupture,

a rush of water escapes down the vagina, and the first stage of labor is ended. Not all of the water comes away, for the head comes down and acts as a plug. It is very important for the nurse to recognize the true rupture and not mistake it for incontinence of urine.

Second Stage.—This comprises the period from the time of complete dilatation of the cervix to the end of the expulsion of the child. The patient has some relief after the first stage, and when the second stage comes on she holds her breath and contracts the abdominal muscles as much as she can in making expulsive efforts. The pains become of longer duration and more frequent; and upon examining the vagina the head is found down, the tissues bulge, the rectum becomes stretched, the majora and minora separate, and then, while the pain is on, there is some change in the position of the head as it recedes and advances again. Nature brings it slowly, for if the head plunged down it might produce complete laceration of the perineum. If the head is delayed too long there is swelling of the scalp. The most painful period is when the head passes the perineum. Then there comes a marked change in the position of the fetus, and it lies in that position for some time; following, comes a rotation to one side, the shoulders turn, and birth occurs. The cord is still in the vagina, and the third stage begins with a flushing of amnii fluid. The placenta is still in place in the uterus. The child may cry, and the pulsation may continue in the cord for as long as fifteen minutes, but ordinarily for about five minutes, while a new circulation is established in the infant and more blood is drawn from the placenta.

Third Stage.—The patient has a rest for some minutes. Then the contractions of the uterus continue until the membranes and placenta are expelled. The pains begin again; the uterus is smaller, firm, yet will recoil; it is rounded, and the fundus lies even with the umbilicus. If the fundus is above the umbilicus something is wrong. Painful contractions of the uterus follow and cause a squeezing off of the placenta. There is a flow of blood, the placenta

follows, passes out of the vagina, dragging the membranes after it. The fundus sinks, and the uterus, hard, contracted and firm, lies in the pelvis. In some cases it becomes soft, rises up and then relaxes. If it becomes too soft, the relaxation which follows may induce hemorrhage. The uterus should be carefully massaged until it hardens.

Period of Labor.—Fourteen hours is a normal range. First stage usually lasts about twelve hours; second stage about one hour, and the third stage from fifteen to thirty minutes.

Complications of Labor.—Labor may be brought on by extreme mental anxiety. The child may be born without any actual pain. It may be expelled while the patient has an evacuation of the bowels, especially if the bowel movement has been induced by enemata or a purgative. Children may be born without the usual progression of labor, yet with all normal conditions present. In cases where the mother dies during labor the uterus continues to contract until the child is born about fifteen minutes later. The child in such cases is sometimes saved by a Cesarean section.

CARE OF THE OBSTETRIC PATIENT.

Diet.—Diet should be regulated and consist of light, nutritious and predigested foods. Milk should be prepared in various ways palatable to the patient. Wine and fruits and vegetables in season may be included. For malnourished patients, malt and beef extracts may be added. Starches prepared in fat, and rich pastries should be avoided.

Elimination.—The bowels must move regularly, and laxatives may be given if necessary. Alkalies should be given before bedtime, and effervescent powders in the morning. Enemata should not be resorted to unless absolutely necessary, as the sudden expulsion of the contents may produce abortion. The kidneys may be regulated by giving simple diuretics; plenty of pure water is the best. The condition of the kidneys is a most important factor in pregnancy. The urine should be clear and of

sufficient quantity. Meats should be eaten but sparingly, as they over-produce albumin.

Baths.—Daily bathing in tepid water is very essential to encourage the elimination through the skin and to promote cleanliness. A cold sponge is stimulating and very agreeable to some patients.

Exercise.—Exercise should be moderate. Light work about the home may be encouraged, care being had to avoid over-lifting, over-reaching, etc. Walking should be insisted upon, to maintain correct carriage and posture of the body. Outdoor enjoyments may be had if indulged in with discretion. Tiredness may be overcome by the patient lying down on an incline, the head lower than the body, thereby relieving all tension of the muscles and nerves. Any recumbent position for comfort is beneficial.

Breasts and Nipples.—Plenty of room should be given to permit full growth and to encourage the nipples to prominence. Their inversion or depression may be remedied by massage and manipulation. No alcohol or other strongly astringent washes should be used. The nipples must not be hardened, but should be kept soft and pliable; cocoa butter or other healing ointments may be applied. Cracks and fissures not only render nursing difficult or impossible, but may lead to mastitis and subsequent abscess formations. There should be perfect cleanliness, to promote pure secretion and prevent sepsis.

Pelvic Organs.—Pelvic organs do not, under normal conditions, require douches. The normal vagina cleanses itself, and a hot douche may induce abortion.

LYING-IN PERIOD.

Confinement Room.—A quiet room should be selected, in which there has been no recent sickness and which is not in proximity to any sewerage. The room should be well ventilated, with no draughts, and at a temperature from 65°–75° F. The furnishings should be plain and few as possible. They should consist of a table or two, a few chairs, and a narrow iron bed of medium height. If the

bedspring is soft, a few boards may be placed under it to make it firm. If the patient is to be delivered in bed, it should be made up as follows: (1) Long rubber sheet; (2) long muslin sheet; (3) rubber draw-sheet; (4) muslin draw-sheet; (5) a large pad, 3 ft. square and 3 in. thick. All sheets should be fastened with large safety pins, and the pad left free to draw the patient to either side, if the bed is of the low-and-wide variety commonly used in many homes. The ideal way is to deliver the patient on a settee, or on two tables, covered with a small mattress; the physicians and nurses have less work to do and they work to a better advantage. Moreover, when the patient is carried from the table to her clean, warm bed she gets immediate comfort and avoids the usual disturbance and uncleanness attending the clearing away of soiled linen, etc.

Preparatory Treatment for Patient.—The patient should have a warm bath, and the genitals should be scrubbed thoroughly with soap and water. Shaving the parts is much to be desired if the patient has no objection, then an antiseptic pad should be applied. The nurse must be sure the bladder is empty; it is very important that a dribbling from an over-distended bladder should not be mistaken for frequent urinations; this is to prevent the danger of ruptured bladder from the constant pressure of a contracting uterus; also a distended bladder makes labor hard by interfering with the passage of the head.

During the First Stage.—The patient may be out of bed and encouraged to take exercise. She should not walk about too freely before the head is engaged, lest this induce a malpresentation or malposition. The patient's crying should not be prevented, and she should be told not to press down. She may have a cup of hot water or tea, but no stimulant, as an anesthetic may become necessary.

During the Second Stage.—All clothing should be removed but the night-dress. Pin the gown up under the arm, put on perineal drawers, and a sheet around the body, then place the patient in bed. The pain in the back may be relieved by pressure over the sacrum, and the patient should be encour-

aged to hold her breath. The nurse should now use tact to quiet the patient, having hitherto managed, if possible, to encourage calmness. For cramps in the limbs, the muscles may be moved and firm pressure applied. A handkerchief bound tightly around the affected part may relieve it. A sheet may be tied to either side of the bed, for the patient to grasp, and a block placed at the foot of the bed for a brace for her feet.

Patient After Labor.—The soiled skin should be gently and quickly bathed with warm solution, the vulva and perineum carefully cleansed and an antiseptic pad applied. The binder should be pinned firmly about and below the hips, allowing freedom over the upper part of the abdomen. If there is any anxiety that the uterus may relax after kneading it, a tightly folded towel may be placed over the fundus, and kept in position by the binder. A vaginal douche is never given without orders from the physician. External douches of lysol, 1 or 2 per cent., are given three or four times daily until the lochia becomes scant. The patient should be watched during the first few hours for symptoms of hemorrhage. The room should be kept quiet and dark, and light, warm covering be used on the bed. The patient may have a cup of hot water or milk to induce sleep and relieve thirst.

Diet.—During the first twelve hours the patient should be kept on liquid diet. On the second day, butter toast, milk toast, oyster stew, and chocolate may be added. On the third day, if the bowels move freely, soups, with rice or barley, and cereal foods may be given. Stewed fruits (omitting those strongly acid) may be included. After the fourth day, fresh fish, a chop, chicken, and pigeon may be given. Even after ordinary diet is ordered, heavy meats and rich pastry should be avoided for awhile.

Bowels.—The bowels are usually constipated for the first few days. A dose of castor oil may be given, to be followed in six hours by a saline enema. The patient should be encouraged to drink freely of pure water, to secure proper elimination of the kidneys. If the patient can not urinate, after the different methods

to produce urination have been tried, she may be catheterized. The urine should be measured for some days to ascertain if the quantity is sufficient.

Colostrum.—The first secretion in the breasts contains no nourishment, but is a laxative for the child. The baby should be put to the nipple as soon as the mother has had some sleep and feels rested. Nursing assists the uterine contractions, preventing hemorrhage from the torn placental vessels and cleansing the organs from secretions still being discharged at intervals.

Breast and Nipples.—The nipples should be cleansed after each nursing with warm boric solution. If they are cracked and sore a lubricating ointment should be applied and a nipple shield should be used. If the breasts become distended they should be massaged gently every two or three hours, and they may be pumped if necessary. In this state the patient must not have regular liquid diet, and the bowels must be kept freely open with saline laxatives. A compressed binder is comforting and beneficial. If the child, for some reason, does not nurse, the secretion may be dried by an application of belladonna in the form of a plaster, permitting the nipples to protrude through an opening cut into the center of it. The belladonna ointment is good but very unclean. Atropin may be given internally.

Conditions During which the Child Should Not Nurse.—Depressed or cracked nipples; inflammation of the breasts; poor health of the mother; marked anemia; kidney or heart disease; nervous or general febrile affections; tuberculosis; syphilis.

Menstruation.—If the return flow of the menses occur during the nursing period the milk becomes impure, and the child may suffer from the effects of it. If menstruation takes place normally and the child does not become ill, it is because the mother is strong and can endure the drain upon her system with no other bad result than losing flesh. In such a case it is best to wean the baby, especially after it is nine months old.

CARE OF THE BABY.

Upon Birth.—As soon as the eyes are cared for, by flushing them with warm boric solution (the physician may use Credé's method—1 to 2 per cent. nitrate of silver solution, followed by weak salt solution), the baby should be wrapped in a warm, soft, sterile cloth (cotton flannel), and placed in a warm crib until the mother has been attended to. After that the baby should be anointed with warm olive oil, especially in the groin, axilla, in the folds of the neck and behind the ears. The nurse should then wash and sterilize her hands to dress the cord. Apply alcohol, 95 per cent., and then boric acid powder or any other antiseptic dressing the physician may order; it may be kept in place by a thin flannel binder, going around the abdomen but once and be fastened in the back (not too tightly) by sewing it together. Pins of any kind should be used only where absolutely necessary. The baby should be dressed in as few garments as possible.

Bathing.—Until the umbilicus is healed the child should not be put in the full bath. The face, hands, and head may be sponged daily with tepid water. Gently massaging the body every day with warm olive oil, and rubbing with a soft towel, will not only keep the baby clean, but prove beneficial. The genitals should be washed well once daily and sponged after each evacuation of the bowels. During the first few weeks a little oil rubbed into the parts is better than powder; in most cases powder will dry the skin too quickly and rub off the delicate epithelium.

General Care of the Baby.—The eyes, the mouth, and navel should be given the usual daily attention. The bowels, if constipated, should be encouraged by small doses of castor oil given with a medicine dropper. If the urinations are not clear and of sufficient quantity the baby may have warm water, about 1 oz. at a time, three or four times daily. Leave the infant with the mother *only* during the nursing period.

Nursing the Baby.—Practical experience is daily upsetting the theory that a set of rules and regulations can be laid down and followed for the nursing of all

babies; that nursing must be done at certain hours and after certain intervals. While babies are alike in nearly every respect, speaking physiologically, there are only a few who can be awakened at regular intervals to be nursed by the mother or fed by the bottle. Some babies can not be awakened sufficiently for nursing, even after four or five hours' sleep. Others will nurse for twenty minutes (the rules say it should not be longer than ten minutes) at two- or three-hour intervals during the day and then sleep all night.

Of course, where the child can be fed regularly, this helps the mother to regulate her own habits, and is comforting to all concerned. Therefore, nurses should not lack in determination to encourage such a system. But no such regularity should be insisted upon where both baby and mother suffer during the interval when nursing is denied; the former, hungry and crying lustily, and the mother under a nervous strain that is harmful to both. Let there be no hard-and-fast rules. Babies who feed as often as they feel like it (being allowed proper, though not necessarily long, intervals for digestion) generally suffer no ill effects and are healthy and strong. Mother's milk, the natural feeding, should always be given, rather than any artificial food, when the supply is sufficient and good.

OBSTETRIC SUPPLIES.

Solutions:

- Antiseptic solutions.
- Normal salt solution.
- Spiritus frumenti
- Fluid extract of ergot.
- Plenty of sterile water (hot and cold).

Articles:

- Rubber sheeting.
- Plain roll of absorbent cotton.
- Abdominal binders.
- Vessel to receive placenta.
- Large drainage pan.
- Large- and medium-sized safety pins.

Sterilized Accessories:

One-half dozen sheets.
 One dozen towels.
 One night gown.
 One doctor's gown.
 Accouchement pad.
 Two dozen vulva pads.
 Receiving pad for baby.
 Maternity leggings.
 Gauze sponges.
 Cotton pledgets.
 Applicators.
 Tape for the cord.
 Rubber and glass catheters.
 Douche points.
 Douche bag.
 Vaseline.

SUPPLIES FOR BABY BASKET.

Blunt-pointed scissors.
 Needle, thread and thimble.
 Medium-sized and small safety pins.
 Rectal and bath thermometer.
 Bar of pure mild soap.
 Jar of pure olive oil.
 Wide-mouthed bottle of alcohol, 95 per cent.
 Wide-mouthed bottle of boric solution.
 Sterile gauze to dress the navel.
 Sterile applicators.
 Two slips.
 Two shirts.
 Abdominal binders.
 Diapers and old soft cloths.

FETAL CIRCULATION.

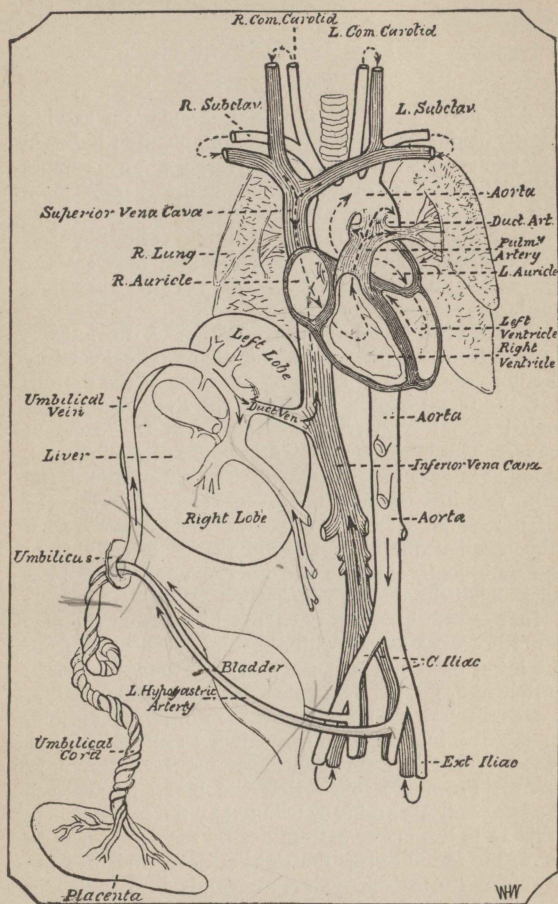
From Kimber's Anatomy.

THE peculiarities of the fetal circulation, leaving details aside, are: the direct communication between the two auricles of the heart, through an opening called the foramen ovale; the communication between the pulmonary artery and descending portion of the arch of the aorta, by means of a tube called the ductus arteriosus; and the communication between the placenta and the fetus, by means of the umbilical cord.

The arterial blood for the nutrition of the fetus is carried from the placenta along the umbilical cord by the umbilical vein. Entering the fetus at the umbilicus, the blood passes upward to the liver and is conveyed into the inferior vena cava in two different ways. The larger quantity first enters the liver, and, alone or in conjunction with the blood from the portal vein, ramifies through the liver before entering the inferior vena cava, by means of the hepatic veins. The smaller quantity of blood passes directly from the umbilical vein into the inferior vena cava, by a tube called the ductus venosus.

In the inferior vena cava the blood from the placenta becomes mixed with the blood returning from the lower extremities of the fetus. It enters the right auricle and, guided by a valve—the Eustachian valve, passes through the foramen ovale into the left auricle. In the left auricle it unites with a small quantity of blood returned from the lungs by the pulmonary veins. From the left auricle the blood passes into the left ventricle and is distributed by the aorta almost entirely to the upper extremities by the superior vena cava, the blood enters the right auricle, and, passing over the Eustachian valve, descends into the right ventricle, and from the right ventricle into the pulmonary artery. As the lungs in the fetus are solid, they require very little blood, and the greater part of the blood passes through the ductus arteriosus into the

descending aorta, where, mixing with the blood de-



Diagrammatic view of the fetal circulation (Dorland).

livered to the aorta by the left ventricle, it descends to supply the lower extremities of the fetus, the chief

portions of this blood, however, being carried back to the placenta by the two umbilical arteries.

From this description of the fetal circulation it will be seen :

1. That the placenta serves the double purpose of a respiratory and nutritive organ, receiving the venous blood from the fetus, and returning it again charged with oxygen and additional nutritive material.
2. That the greater part of the blood traverses the liver before entering the inferior vena cava ; hence the large size of this organ at birth.
3. That the blood from the placenta passes almost directly into the arch of the aorta and is distributed by its branches to the head and upper extremities ; hence the large size and perfect development of those parts at birth.
4. That the blood in the descending aorta is chiefly derived from that which has already circulated in the upper extremities and, mixed with only a small quantity from the left ventricle, is distributed to the lower extremities ; hence the small size and imperfect development of these parts at birth.

NURSING IN DISEASES OF CHILDREN.

Spasmodic Croup.—Spasmodic croup is due to a sudden closure of the glottis.

Causes.—Exposure to a cold, damp atmosphere, indigestion, or irritation of the throat. There may be some hoarseness a few hours preceding the attack and the child awakens suddenly in the paroxysm of the sharp croup cough, experiences difficulty in breathing and has the cyanotic appearance so terrifying to the mother, but which need give no cause for serious alarm.

Treatment.—Apply hot compresses about the throat. If the attack is severe give an emetic—one dram of salt or mustard in one-half cup of warm water, and repeat in twenty minutes if necessary; an enema of warm water should be given and steam inhalation resorted to. Keep the child in an even temperature, restrict diet for a few days, and keep bowels active.

Parotitis (Mumps).—An infectious disease characterized by inflammation of the parotid glands. Incubation is from two to three weeks.

Symptoms.—The disease comes on with a mild chill, pain below the ear and swelling of the glands. There is great discomfort and the tension is very disagreeable.

Treatment.—Keep patient in bed during the height of the disease. Give liquid and soft diet. Bowels should be opened freely. No medicine is required unless fever is high. Apply cold compresses to the affected part, though, if preferred, hot ones may be used. A pad of cotton with oiled silk is the best application. In cases of extreme redness or tenderness of the glands, leeches may be applied. In cases of delirium use the ice-cap. For orchitis, lubricate the parts with camphorated oil and support with a soft cotton pad.

Duration of disease, from seven to ten days.

Whooping Cough.—An infectious disease, beginning with catarrh of the air-passages, like an ordi-

nary cold. The short expiratory coughs following each other in rapid succession and the period of drawing a long breath give rise to the whoop characterizing pertussis.

Incubation.—A week to ten days.

Treatment.—Isolate patient and if attack is severe put him in bed. Fresh air is the most essential element. If the cough is distressing, ipecacuanha wine and paregoric may be given. During convalescence the child should be watched carefully, as at this period bronchopneumonia and tuberculosis are apt to develop. Change of air is advisable. Tonics and cod-liver oil should be employed. The diet should be easily digestible, nourishing food. After each paroxysm and after the child has recovered from the exhaustion it produces give nourishment. There will be a partial if not complete absorption of the food before another attack. Duration of the disease from six to twelve weeks.

Colic.—*Causes.*—Constipation, indigestible foods, flatus, overfeeding, improper foods and exposure to cold.

Symptoms.—Child cries out very suddenly and sharply. There is a convulsive movement of the extremities, the hands are tightly closed, abdomen is tense.

Treatment.—Gentle pressure and massage with warm oil over the abdomen and a few doses of hot or peppermint water will expel the gas. Burnt brandy is good. The simple warm enema is a common remedy. Wrap warm flannels around the lower parts of the body and keep the hands warm.

Diarrhea.—Frequent loose evacuations without tenesmus.

Causes.—Impure water or food; irritating secretions poured into the bowels; bottled milk.

Diet should be restricted to cereal and albumin water. Flush the bowels very gently with warm water.

Dysentery.—*Symptoms.*—Fever, tenesmus and frequent small mucous, bloody stools. Treat as diarrhea. Keep child warm, especially about the abdomen.

Cholera Infantum (Summer Complaint).—

Symptoms.—Fever, intense thirst, continuous vomiting, and purging of the bowels. Stools soon become watery and pale-green in color, and the child has all appearances of complete prostration.

Treatment.—Stomach washing and intestinal irrigation carefully given. Restrict diet to barley water containing a few drops of brandy and give hourly for a few days.

Rickets.—A disease of infants, characterized by impaired nutrition of the entire body and alteration of growing bones.

Causes.—Want of sunlight; impure air; prolonged lactations and suckling.

Three General Symptoms of Great Importance.—

First, a diffuse soreness of the body, so that the child cries when an attempt is made to move it; second, slight fever; third, profuse sweating. Deformities may often be prevented if, in the early stages, constant care is taken that the child is properly held.

Thrush.—*Aphtha.*—Small white, furry mouth ulcers developing during the first and second year of infancy.

Cause.—Lack of cleanliness in the care of the mouth, especially after feeding with bottled milk. The patches are tenacious, grow larger, until sometimes they involve the entire gastro-intestinal tract, resulting in acute indigestion and bowel disorders.

The first symptom is usually some evidence of painful distress in the infant's efforts to nurse; fever, diarrhea and vomiting occur and the trouble may become acute.

Treatment.—Absolute sterile cleanliness in the preparation and administering of the patient's food. The mouth must be cleansed with warm boric acid solution after every feeding. The patches should be touched gently with the same solution, and the lips anointed with a soothing lotion.

Convulsions.—The principal predisposing causes are infancy conditions affecting the nutrition of the brain and hereditary influences. The brain grows more during the first year than in later life, and this rapidity of growth is in itself an important predispos-

ing cause of functional derangement. After infancy attacks of convulsions are much less frequent, and after seven years they are relatively rare. Death may take place from a single attack in very young infants, especially those who are rachitic.

Convulsions may be thought to indicate the onset of some acute disease when they occur in a child over two years old, and when they come on suddenly or with only slight premonition in a child previously well; but the most important point is that they are accompanied by a high temperature— 104° – 106° F. Acute meningitis is the only other condition likely to produce these symptoms. Whether the convulsions mark the onset of lobar pneumonia, scarlet fever, malaria, or some other disease can be determined only by carefully watching the patient's symptoms for 24 or 36 hours.

In convulsions depending upon some disorder of the alimentary tract, we may get a history of chronic constipation or improper feeding, and in nursing infants, sometimes of passion or intoxication in the wet-nurse. Convulsions are so frequently due to digestive derangement that the condition of these organs should be one of the first things to be looked into. Examination of the urine should never be omitted in any case of convulsions of doubtful origin, even where no dropsy is present. This, both in infants and older children, is too often overlooked. In all cases of convulsions of doubtful or obscure origin occurring in infants, rickets should be suspected as the underlying cause, and the child carefully examined for other evidences of that disease.

Treatment.—Cold should be applied to the head, best by means of an ice-cap or cold cloths, and dry heat and counterirritation to the surface of the body and extremities.

The Mustard Pack.—The child is stripped and laid upon a blanket, and the trunk is surrounded by a large towel or sheet saturated with mustard water. This is made as follows: 1 tablespoonful of mustard, 1 quart of water. In this the towel is dipped and, while dripping, wound around the entire body. The patient should then be rolled in the blanket. This

pack may be continued for 10 or 15 minutes ; at the end of which time there will usually be a very decided redness of the whole body. It may be repeated, according to indications. Where it is desired to produce general counterirritation, the mustard pack is not quite as efficient as the mustard bath, but it has the advantage in causing much less disturbance to the patient. The mustard pack is useful in the conditions of collapse, or of great prostration from any cause whatever, in convulsions, and in cerebral or pulmonary congestion. The degree to which the counterirritant of the skin should be carried will depend upon the condition of the pulse and the cyanosis. The feet may be placed in mustard water while the child lies in its crib (Holt).

Infantile Paralysis.—Infantile paralysis is an inflammation of the nerve-cells in the gray matter of the spinal cord, which begins suddenly, is followed by a paralysis of the muscles controlled by the nerve-cells attacked, and may be transmitted to any member of a community it has once invaded. The inflammation which destroys the nerve-cells in the spinal cord is caused by a germ coming from another victim of the same disease. This germ, which is as easily acquired as the germ of diphtheria, and more readily than the bacillus of typhoid fever, most frequently passes into the system through the moist lining of the nose and mouth. It works its way into this soft tissue, travels through the blood-stream to the nerve-cells of the spinal cord, and begins its work of destruction. These nerve-cells in the spinal cord are the relay stations through which the brain sends messages to move the muscles in the arms, legs, and elsewhere all over the body. The cells are arranged in groups and each group controls a certain particular set of muscles. When any group or relay station is out of order it is impossible for the brain message to go through to that particular set of muscles. When the germs of this disease attack a group of these nerve-cells, the muscle group dependent on that cell group for power is paralyzed. If the nerve-cells are completely destroyed the resultant paralysis will be permanent ; if they are only injured, nature

will make the necessary repairs and the paralysis will disappear.

Symptoms of Onset.—Fever, rapid pulse, vomiting, severe headache and backache, stiff neck, twitchings, and convulsions. Pain and tenderness in back and extremities. The first symptoms may not be distinct, although usually there is a slight running of the nose. An extreme tenderness along the spine and of the limbs is noticeable ; the use of the muscles may be impaired, and then follows paralysis.

The child lies on its side with rigid neck and head a trifle retracted, is slightly delirious and in a state of semicoma, which differs materially from a natural sleep. Nervous twitching and tendency along the spine are marked. The tenderness on one or both thighs is so great that the child screams aloud if placed in a sitting position. If an arm is paralyzed, it will recall that the child cried whenever that arm was touched. The pulse is rapid, irregular running, often reaching a rate impossible to count. Temperature runs from 101° to 107° F. There may be digestive disturbances, but the physician usually finds a profoundly torpid condition of the organs of elimination. Paralysis usually follows in 48 hours. In fatal cases, death results from the third to the fifth day.

Infantile paralysis comes on the victim within from one to fourteen days after exposure to infection. The secretion of the nose and throat of the patient carries the poison, and other persons may be infected by these germs. It is not known how long after an attack the patient may still be secreting and spreading the germ, nor whether the germ has its winter habitat in human beings, in domestic animals, in vermin, or in houses. A mild case may transmit the disease in its most virulent form. Infantile paralysis has been confused with cerebrospinal meningitis, but they are entirely separate and distinct diseases.

Predisposing Causes.—Of the predisposing causes, the history of a fall is frequently given, and many parents to-day consider the short, sharp illness with fatal termination, or a milder attack with resulting paralysis of arm or leg, to be the effects of a bad tumble. This is not true. The fall is a result, not a cause.

The child, intoxicated with a fearful virus, and

feeling already the incipient motor paralysis, stumbles and falls. Rigidity, unconsciousness, convulsions, and paralysis may ensue and are attributed to the fall.

Swimming unduly prolonged, and exposure to cold and wet are frequently given as causing the disease, and here again most probably the effect is mistaken for the cause. The high fever and extreme nervous irritability would lead a child to the relief of a plunge in water—the swimming pool, in many instances. In one case a boy of twelve crawled under the garden hose and remained there for hours.

Treatment.—Paralysis may be the only symptom noted. A child fretful on retiring may wake with paralysis of leg or arm. The paralysis usually, however, comes on at the end of the second day of illness and gradually extends for the next seventy-two hours. It may appear as late as two weeks after the initial illness. The legs are more apt to be affected, as in the record cited above a trifle over 50 per cent. were paralyzed in one or both lower extremities. This paralysis is usually not total, and the child himself will make a hopeful prognosis when he discovers he can wriggle his toes. The paralysis will begin to clear, in favorable cases, from the fifth to the tenth day after it was first apparent, and may entirely disappear.

By some wonderful adaptation of nature, there is a great effort to make other nerve channels take up the work of the destroyed cells, and hence the value of keeping the muscles artificially active by the use of massage and mild electric treatment. This treatment should be used early in the case, and then only with the advice and supervision of a competent physician.

The destruction of nerve-cells in the segment of the spinal cord is sometimes so extreme that a total paralysis of one or more extremities follows. This is a grave shock to the growing child, and it may be that all growth of that member will stop. The long bones will not lengthen. If one group of muscles remain active and unopposed in their action, deformity will follow. These deformities can be corrected by the orthopedic surgeon, and can usually be checked if the physician's advice is sought.

A FEW NOTES ON MEDICAL DISEASES.

RHEUMATISM.

A CONSTITUTIONAL disease, characterized by fever, inflammation in and around the joints, occurring in succession, and a great tendency to induce the condition of endocarditis or pericarditis.

Cause.—Usually exposure to cold—chilling of the body—damp atmosphere.

Treatment.—Rest in bed is important. The bedding should be yielding, and the patient wear loose flannel night-clothes. Sleeping between blankets promotes perspiration, increases the activity of the skin, prevents exposure to cold and may reduce the liability to heart trouble. Change bed-clothing frequently.

Diet.—Should be easily digested food. Milk is the most suitable. Dilute with alkaline or mineral water. Barley- or oatmeal-water and lemonade may be given. Broths and soups may be substituted for milk at times. Regular feedings every two hours until patient convalesces.

GOUT.

Gout is characterized by sudden attacks of severe pain in the smaller joints, especially that of the big toe. There is a gradual deposit of urate of sodium in and about the joints, and presence of uric acid in the blood.

Causes.—Intemperate living, excess in drinking wines and liquors, overindulgence in rich foods, change of climate.

Treatment.—Proper elimination. Free use of all kinds of mineral waters, abstention from alcoholic drinks and moderation in eating. Exercise by walking and living in the open air may counteract any hereditary tendency to the disease. Cold baths, followed by massage, may be given to the sthenic patient, while the warm and tepid bath should be substituted for the asthenic type. Protect the body

from exposure to cold. Flannel underwear should be worn.

Diet.—Milk for liquid—no coffee or tea. Vegetables and fruit, excepting bananas, strawberries, tomatoes, oranges, lemons; fish, oysters and soup in small quantities; no fresh meat should be allowed for a time. Avoid hot breads, pastry of all kinds, spices and eggs.

DIABETES MELLITUS.

A disorder of nutrition, characterized by an accumulation of sugar in the blood, and excreted in the urine. The amount of urine is greatly increased, accompanied by progressive loss of flesh and strength.

Treatment.—Regulate diet, exercise and mode of living. A warm bath every other day and a Turkish bath every two weeks are very beneficial.

Diet.—Avoid sugar, starch and all liquors. Patient may eat soups without vegetables and flour; fish of all kinds; meats and fats cooked in any way except with flour; gluten bread. Of vegetables—lettuce, cucumbers, spinach, tomatoes, onions, celery, radishes, cauliflower, cabbage, egg-plant. Of desserts—custard, nuts, acid fruits, ice cream without sugar. Of drinks—coffee, tea and buttermilk, lemonade, beef tea, chicken broth, and egg-nog.

Fluid diet must be moderate, and sugar and flour must not be used in any form.

BRIGHT'S DISEASE.

(Acute Nephritis; Inflammation of the Kidneys.)

Due to the action of cold or toxic agents upon the kidneys.

Causes.—Cold, poisons of specific fevers, toxic agents, pregnancy, blows and injuries of the back, lesions of the skin as in burns or in chronic skin diseases.

Symptoms.—Fever, pain in the back over the kidneys, nausea, vomiting, frequent desire to urinate, puffiness of the face, swelling of the ankles, extreme pallor of the skin, shortness of the breath, with the general appearance of complete exhaustion. The urine is very scanty and highly colored.

Treatment.—Rest in bed until all symptoms disappear. To promote activity of the skin and kidneys, alcohol or steam sweats should be given daily. To eliminate and purge the bowels give saline cathartics; and alkaline mineral waters may be used freely.

Diet.—Buttermilk, gruels made of barley or arrowroot, or oatmeal water; animal broths and oysters; substitute cream-of-tartar lemonade or plain lemonade for tea or coffee. Pure milk should be taken freely.

UREMIA.

Uremia occasionally develops during the course of acute or chronic Bright's disease and other maladies, the result of the retention or accumulation in the blood of an excrementitious material, supposed to be urea, the flow of urine being either normal, lessened, or increased.

TREATMENT FOR TUBERCULOSIS.

Fresh air and sunshine, a rest in bed from one to three months, and proper food are the three vital points of importance. Do not give too many baths.

Diet should consist of starch foods—60 per cent. Stale bread and crackers may be prepared in variety. Give albuminoids and tender meats. Milk and eggs should be given about six times a day.

FOR PATIENT IN SITTING POSITION.

A contrivance easily made and very useful in nursing cases where the patient is to be kept in the semirecumbent or sitting position, as, for instance, in pneumonia, or in operations on the upper abdomen, is arranged by taking a broomstick with the broom part sawed off. Wrap around this stick a blanket, large pillow, or something to make it resemble a knee bolster. Place this under the knees of the patient, and to each end of the broomstick attach a stout cord, which may be securely tied to the bed-posts at the head of the bed. This will add to the comfort of the patient in preventing the constant sliding down which is so difficult to prevent. It will also save the nurse a great deal of tugging and lifting.

MISCELLANEOUS NOTES AND REMEDIES.

COLDS.

THIS was one of the subjects of discussion at one of the meetings of the New York State Medical Association.

One physician thought that cold was only a predisposing factor in these cases, microbes being the chief element in the affection. At the beginning of an ordinary cold in the head the serous flow was an effort of nature to relieve the congestion and eliminate the infection, hence it should not be interfered with at this stage.

Another doctor said that while cold was a separate disease in the minds of the laity, to physicians it always meant a condition secondary to something else. A person with nasal polypi, for example, would complain of almost constant stuffiness of the nose; one with an enlarged lingual tonsil became hoarse after very slight use of the voice in singing.

Dr. _____, of New York, took up the treatment of colds. He thought some colds in the head are communicable, and that isolation might sometimes be a useful protective measure. Cod-liver oil was a good preventive for those who were in the habit of constantly catching cold. If the temperature was over 100° F., he insisted on the patient staying in bed, or at least in the house. A moderate dose of quinin and Dover's powder at night, followed in the morning by a laxative, would cut short some colds. A hot mustard foot-bath increased the comfort of the patient. Rhinitis tablets were effectual if taken early, but persons susceptible to belladonna should be careful in using them. The alkaline treatment was often satisfactory—one dram of bicarbonate of soda in half a glass of water, with a few drops of lemon juice. Camphor internally and by inhalation often yielded good results. He was not a great believer in local treatment, though admitting that irrigation with saline

solution was often useful. It was, however, dangerous except in skilful hands. When colds showed a tendency to recur, he advocated tincture chlorid of iron in large doses for two or three days, also cod-liver oil, quinin, or the vegetable bitters. Sometimes change of climate was the only cure.

Cold a Germ Disease.—Walsh, in the *Medical News*, says a very striking indication that cold is due to *microbic invasion* is to be found in the fact that the process is nearly always accompanied by *fever*. A distinct period of incubation can be traced, and the efficient cause of the illness is commonly farther off than the patient imagines. The treatment advised when fever and chilliness occur is the use of calomel and hot drinks, especially cream-of-tartar lemonade, which acts as a diuretic as well as a laxative. A diaphoretic at the beginning of the affection will always give the patient comfort and may unload the system of enough depressed toxic material to enable it to react and bring about the abortion of a cold.

Other medical men objected to calling everything an infection. A common cold, they thought, was nothing else than the effect of the lowered temperature on the human system. The dry air of houses caused a chronic postnasal catarrh, which at times increased. To overcome susceptibility to catching cold, overdressing should be avoided and cold baths taken.

TREATMENT OF HYPERIDROSIS.

In sweating of the feet a single application of diluted formaldehyd will bring about permanent relief. For the axilla, use 10 drops of formaldehyd to 2 ounces of water.

TREATMENT OF ERYSIPELAS.

Apply a thick layer of white vaselin twice a day. Protect with linen and gauze bandages.

TO DISTINGUISH CHICKEN FROM SMALLPOX.

If the vesicle in chicken-pox is pricked with a needle, its contents can be completely evacuated and

the cell will collapse; whereas, in small-pox the vesicle can be pricked twenty times and it will be impossible to empty it.

TREATMENT OF FELON.

A felon *may sometimes be* aborted by the application of pure alcohol under exclusion of air. Cover the phalanx with a thin layer of absorbent cotton saturated with alcohol; over this put on a rubber finger-stall. In severe cases the tissues should be deeply incised.

TREATMENT OF BOILS.

Apply hot dressings; incise if necessary. The application of pure alcohol dressings and a plug of cotton saturated in the same solution and inserted in the wound promotes rapid healing.

TO DISLodge AN INSECT FROM THE EAR.

Saturate a piece of cotton-wool in salt and vinegar. Fill the ear with it. Have patient lie on the ear and give firm pressure with the hand. The insect may be found on the cotton when the plug is taken out. Oil may be used as a substitute.¹

RELIEF FOR EARACHE.

Make a small funnel of paper, and saturate a ball of cotton with chloroform; drop it into the funnel. Place the funnel in the ear, draw a long breath and then blow the breath into the large end of the funnel; the fumes of the chloroform are thus carried into the ear, and all pain ceases at once. No doubt, heat is the best remedy of all.

RELIEF FROM FLIES AND MOSQUITOES.

Pour into an atomizer half a teaspoonful of lavender oil. Add to this as much alcohol as will make a saturated solution. Use as a spray. Sweet clover hung about the room will banish flies and mosquitoes. The drier the clover becomes the more effectual it is.

¹ Foreign bodies in the ear usually cause far less trouble and harm than does the attempt to remove them by anyone not expert.

A BIT OF ANATOMY.

THE entire adult skeleton consists of 200 distinct bones, as follows:

The spine or vertebral column (sacrum and coccyx included)	26
Cranium	8
Face	14
Os hyoids, sternum and ribs	26
Upper extremities	64
Lower extremities	62
	200

The patellæ are included as separate bones; the smaller sesamoid bones and the ossicula auditus are not counted. The teeth belong to the tegumentary system.

THE WORLD'S DEATH-RATE.

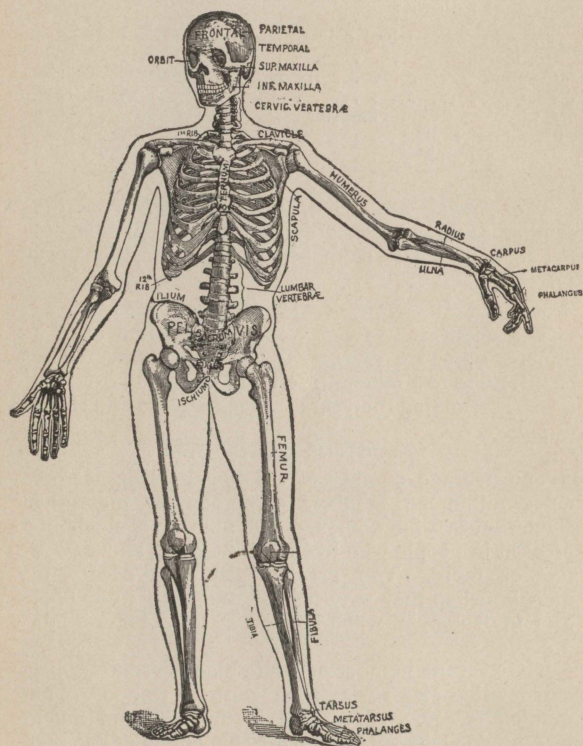
The death-rate of the globe is estimated at 68 a minute, 97,920 a day, or 35,740,800 a year. The birth-rate is 70 a minute, 100,800 a day, or 36,792,000 a year, reckoning the year as three hundred and sixty-five days.

BLOOD-CORPUSCLES.

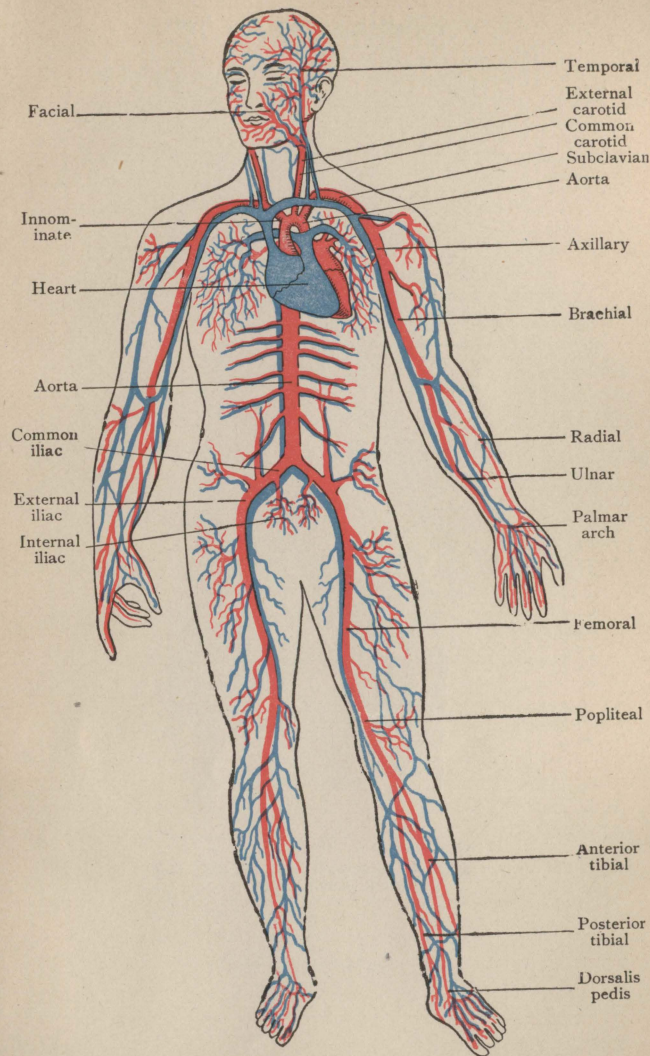
The average number of red blood-corpuscles per cubic millimeter is about 5,000,000 for men, and somewhat less for women. The number is much increased in people who live in altitudes of about 8000 feet or more. The greatest decrease occurs in anemia, when they may number less than 1,000,000, and in leukemia, when there may be not more than 2,000,000.

The average number of white blood-corpuscles per cubic millimeter varies from 5000 to 10,000. The number is usually decreased in anemia, and much increased in leukemia, when they may number 500,000 per cubic millimeter.

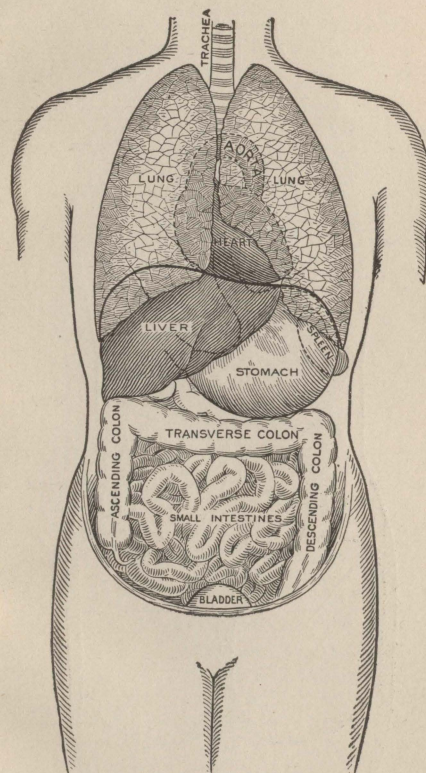
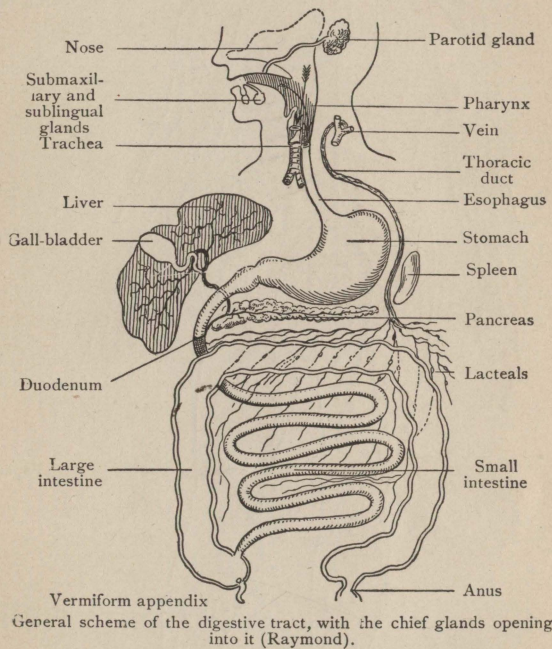
Blood should contain 100 per cent. hemoglobin. Hospital patients seldom have this amount. Patients are not considered safe for operation who have less than 50 per cent., and can not live long if they have 10 per cent. or less.

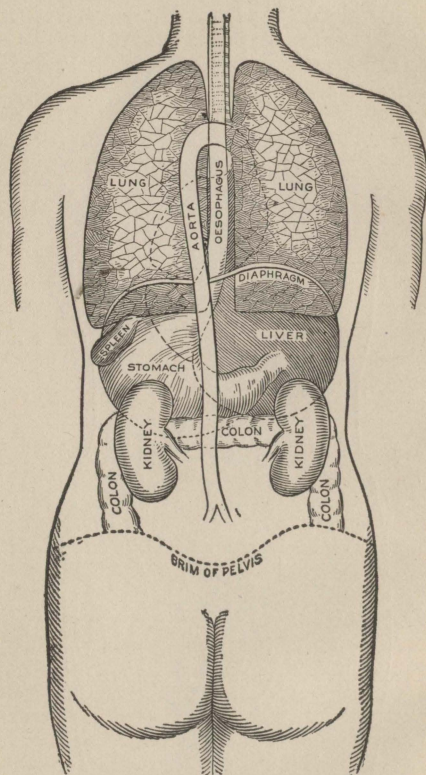


The skeleton.



The principal arteries and veins of the body (Morrow).





Position of the thoracic and abdominal organs, rear view (Morrow).

POSTAL INFORMATION. DOMESTIC MAIL MATTER.

RATES OF POSTAGE.

POSTAL CARDS, 1 cent each, go without further charge to all parts of the United States and Canada. Cards for foreign countries (within the Postal Union) 2 cents each.

LOCAL OR "DROP" LETTERS, that is, for the city or town where deposited, 2 cents where the carrier system is adopted, and 1 cent where there is no carrier system.

ALL LETTERS to all parts of the United States, Canada, and Mexico, 2 cents for each ounce or fraction thereof.

FIRST CLASS.—Letters and all other written matter, whether sealed or unsealed, and all other matter, sealed, nailed, sewed, or fastened in any manner so that it cannot be easily examined, 2 cents for each ounce or fraction thereof.

SECOND CLASS.—Only for publishers and news agents, 1 cent per pound.

Newspapers and periodicals (regular publications) can be mailed by the public at the rate of 1 cent for each 4 ounces or fraction thereof.

THIRD CLASS.—Printed matter, in unsealed wrappers only (all matter enclosed in notched envelopes must pay letter rates), 1 cent for each 2 ounces or fraction thereof, which must be fully prepaid. This includes books, circulars, chromos, engravings, handbills, lithographs, music, pamphlets, proofsheets and manuscript accompanying the same, reproductions by the electric pen, hectograph, metallograph, papyrograph, and, in short, any reproduction upon paper, by any process except handwriting, the copying press, typewriter, and the neostyle process. Limit of weight, 4 lbs., except for a single book, which may weigh more.

FOURTH CLASS.—All mailable matter not included in the three preceding classes which is so prepared for mailing as to be easily withdrawn from the wrapper and examined, 1 cent per ounce or fraction thereof. Limit of weight, 4 lbs. Full prepayment compulsory.

REGISTRATION.

All kinds of postal matter, except second-class matter, can be registered at the rate of 10 cents for each letter or package, in addition to the regular rates of postage, to be fully prepaid by stamps. Each package must bear the name and address of the sender, and a receipt will be returned from the person to whom addressed. Mail matter can be registered at all post-offices in the United States and by any rural carrier. The Post Office Department or its revenue is liable for the loss of any sealed, registered mail matter for its value up to \$50.

SPECIAL DELIVERY.

A special delivery stamp (value, 10 cents), or 10 cents in ordinary stamps in addition to the lawful postage, secures the immediate delivery of any piece of mail matter at any United States post-office within the letter-carrier limits of city-delivery offices and within a one-mile limit of any other post-office. When ordinary stamps are used to obtain immediate delivery of mail matter, the words "Special Delivery" must be written or printed on the envelope or covering.

FOREIGN MAIL MATTER.

RATES OF POSTAGE.

The rates of postage applicable to articles for foreign countries are as follows:

	Cents.
Letters for England, Ireland, Newfoundland, Scotland, and Wales, per ounce	2
Letters for Germany by direct steamers, per ounce	2
Letters for all other foreign countries, and for Germany when not dispatched by direct steamers:	
For the first ounce or fraction of an ounce	5
For each additional ounce or fraction of an ounce	3
Single post cards (including souvenir cards), each	2
Reply post cards, each	4
Printed matter of all kinds, for each two ounces or fraction of two ounces	1
Commercial papers, for the first ten ounces or less	5
For each additional two ounces or fraction of two ounces	1
Samples of merchandise, for the first four ounces or less	2
For each additional two ounces or fraction of two ounces	1
Registration fee in addition to postage	10

Private mailing cards are transmissible to foreign

conform to the conditions prescribed for similar cards in our domestic mails. If entirely in print and bearing no personal message, they may be sent at the rate of 1 cent each. Those addressed to Canada, Cuba, Mexico, Republic of Panama, and Shanghai may be sent at a rate of 1 cent each.

INTERNATIONAL MONEY ORDERS.

Fees for money orders payable in the United States (which includes Hawaii and Porto Rico) and its possessions, comprising the canal zone (Isthmus of Panama), Guam, the Philippines and Tutuila, Samoa; also for orders payable in Bermuda, British Guiana, British Honduras, Canada, Cuba, Mexico, Newfoundland, at the United States Postal Agency at Shanghai (China), in the Bahama Islands, and in certain other islands in the West Indies:

For orders from \$	0.01 to \$	2.50	3 cents.
"	"	\$ 2.51 to \$	5 "
"	"	\$ 5.01 to \$	8 "
"	"	\$ 10.01 to \$	10 "
"	"	\$ 20.01 to \$	12 "
"	"	\$ 30.01 to \$	15 "
"	"	\$ 40.01 to \$	18 "
"	"	\$ 50.01 to \$	20 "
"	"	\$ 60.01 to \$	25 "
"	"	\$ 75.01 to \$	30 "
"	"	\$ 100.01 to \$	30 "

Fees for foreign money orders, when payable in Apia, Austria, Belgium, Bolivia, Cape Colony, Costa Rica, Denmark, Egypt, Germany, Great Britain and Ireland, Honduras, Hongkong, Hungary, Italy, Japan, Liberia, Luxemburg, Natal (with Zululand), New South Wales, New Zealand, Orange Free State, Peru, Portugal, Queensland, Russia, Salvador, South Australia, Switzerland, Tasmania, The Transvaal, Uruguay, and Victoria:

For orders from \$	0.01 to \$	2.50	10 cents.
"	"	\$ 2.51 to \$	15 "
"	"	\$ 5.01 to \$	20 "
"	"	\$ 7.51 to \$	25 "
"	"	\$ 10.01 to \$	30 "
"	"	\$ 15.01 to \$	35 "
"	"	\$ 20.01 to \$	40 "
"	"	\$ 30.01 to \$	45 "

For orders from	\$40.01 to \$ 50.00	50 cents.
" "	\$50.01 to \$ 60.00	.60 "
" "	\$60.01 to \$ 70.00	.70 "
" "	\$70.01 to \$ 80.00	.80 "
" "	\$80.01 to \$ 90.00	.90 "
" "	\$90.01 to \$100.00	\$1.00

Fees for foreign money orders when payable in Chile, France (including Algeria and Tunis), Greece, Netherlands, Norway, and Sweden:

For orders from	\$ 0.01 to \$ 10.00	10 cents.
" "	\$10.01 to \$ 20.00	.20 "
" "	\$20.01 to \$ 30.00	.30 "
" "	\$30.01 to \$ 40.00	.40 "
" "	\$40.01 to \$ 50.00	.50 "
" "	\$50.01 to \$ 60.00	.60 "
" "	\$60.01 to \$ 70.00	.70 "
" "	\$70.01 to \$ 80.00	.80 "
" "	\$80.01 to \$ 90.00	.90 "
" "	\$90.01 to \$100.00	\$1.00

PAYMENT.—A money order will be paid to the person named therein, or his indorsee, or his agent or attorney upon his written order.

A money order drawn in favor of a person residing on a rural route may be paid through the carrier if entrusted to him for collection, with a written request addressed to the postmaster that payment be so made.

Dietetics

Juices Enzymes Action
Salivary Ptyalin Starches to
(alkaline) dextrin.

Gastric Pepsin Protein to pepton
Rennin Curdles milk

Pancreatic Trypsin Proteins to pepton
Amylopsin Starch to dextrin
Steapsin Emulsifies fat.

Bile
Intestinal.

— — — — —
An Enzyme is an agent produced by living cells capable of changing substances into other substances without itself being weakened or destroyed in any way.

Digestion is the process of changing food into a soluble and digestible form.

Assimilation is the process of transferring the digestive food to where it can be used by the cells.

A calorie is the amount of heat required to raise 1 gram of water to 1° Centigrade.

313 Cal. = Cows milk

319 " = human "

365 " = goats "

Pasteurized milk is milk heated to 167°F 20 to 45 mins. + rapidly cooled to 45°F.

Sterilized milk is milk boiled for 10 minutes

Heart stimulants - Digitalis - Strychnia

Respiratory " = Ammonia - atropine.

General tonics = Iron - Strychnia - arsenic

Usual dosage

Strychn. Sulph. gr $\frac{1}{60}$ - $\frac{1}{20}$

Morph. " gr $\frac{1}{8}$ - $\frac{1}{4}$

Atropine " gr $\frac{1}{20}$ - $\frac{1}{60}$

Chloral Hydrate gr $\overline{v}$

Pot. Bromide gr $\overline{x}$ - $\overline{xx}$

Tincture Aconite m $\overline{i}$ - $\overline{iv}$

" Digitalis m $\overline{v}$

Respiratory depressants = Heroin
Chloroform

Drugs acting on Bronchia = Codeine
Heroin - opium.

Gastric Tonics = Nuxvomica - Pepsin

Bone tissue = compact & cancellated
Nourishment obtained from marrow
 and thro' the blood vessels entering
 thro' the periosteum.

Red corpuscles carry oxygen.

Pulse is the alternate contraction
 and expansion of the artery when
 finger is placed on artery.

Points to be noted in taking
 pulse - frequency, strength,
 regularity, equality.

Insanity is a prolonged departure
 from the individuals normal of
 being, thinking, acting.

Insanity is the manifestation by
 language or conduct of the
 disease or defect of the brain. (Arnold)

An illusion is a perverted real
 percept.

Hallucination is perverted sense.

A delusion is a morbidly false idea.

A percept is the conscious
 recognition of the external cause
 of a given stimulus.

Memory is the ability to retain
 a given impression and to recall same.

Ideation is process of grouping
 percepts together.

Habit is the result of repeated
 percepts over a definite route.

Mind is sum total of human ex-
 perience. dependent upon the
 nervous system.

Fracture Symptoms

Pain

Discoloration

Swelling

Loss of power.

Varieties

Simple

Comminuted

Compound

Impacted

Greenstick.

Pott's fracture is a fracture of the lower end of fibula.

Colles' fracture is a fracture of the lower end of radius.

Diet during Puerperium
 To 4th Day - Tea milk, toast, ^{oyster} stew
 after " small piece meat. chop
 fish, chicken.
 5th Day - eggs, pudding, baked apple
 jellies. Stew of fruits as
 prunes peaches.

Avoid acid fruits. Lemons, oranges
 grape fruit, strawberries.
 Boiled tomatoes onions.
 Spiced sauces & mayonnaise
 Potatoes, beans, peas cause flatul

Incubation		Cause	Onset	Symptoms	Time	Isolation	Comp.	Seq.
Scarlatina Scarlet fever	1-7 days	Unknown	Sudden	Throbbing fever Sore throat Convulsions	3-6 wks	6 wks	Nephritis Otitis Media	Septicemia Nephritis
	2-3 "usual"							
Rubeola Measles	8-14 days	Unknown	Gradual	Running eyes nose coryza chilliness	2-3 wks	3 wks	Conjunctivitis Broncho Pneumonia	Otitis Media J. B.
Rubella Ger. Measles	10-14 da.	Unknown	Gradual	Mild coryza Sore throat Chilliness	3-5 da.	7 da.	None	None
Varicella Chickenpox	14-16 da.	Unknown	Sudden	slt. fever Chilliness Mild headache	2 wks.	3 wks.	None	None
Variola Smallpox	8-15 da.	Unknown	Sudden	Chill. headache Vomiting, nausea headache	4-5 wks	6 wks	Pneumonia Septic	
Pertussis Whooping Cough	7-16 da.	Unknown	Gradual	Bronchitis	6 wks	6 wks	Broncho. Pneumonia	Chronic Bronchitis J. B.
Parotitis Mumps	2-3 wks	Unknown	Sudden	Swell. parotid	10-14 da.	3 wks.	Otitis Media	None
Diphtheria	1-7 da. 2-3 da. usual	Klebsiella Bacillus	Sudden	Fever headache Chills headache	varies	after 2 cultures.	Broncho Pneumonia nephritis toxic heart	nasal catarrh Anemia paralysis
Typhoid	8-23 da.	Bacillus typhosus B. of Ebert	Gradual	Malaise headache Anorexia Epistaxis	28 da. or more	lysis	Hemorrhage prostration paritonitis	gallstones Nephritis
Typhus	10-14 da.	Bacillus	Sudden	Chill fever eruption prostration	2 wks	5 weeks	Broncho pneumonia	Septicemia J. B.

Toxemia is a morbid condition characterized by the presence of toxins in the blood.
e.g. Diphtheria

Septicemia is a morbid condition characterized by the presence of Bacteria and their toxins in the blood. e.g. Typhoid.

Pyemia is a morbid condition characterized by the presence of pus producing germs in the blood, with formation of secondary purulent deposits or metastatic abscesses.

Sapremia is a morbid condition characterized by the presence in the blood of the products of decay or putrefaction.

The American Journal of Nursing.
2419-21 Greenmount Ave.

Baltimore Md.

" 2.00 per year. [19 West Main St
Rochester
N.Y.]

The Trained Nurse Hospital Review
Lakeside Pub. Co.
38-40 West 32 St.
New York

" 2.00 per year

The Nurse

The Nurse Pub. Co.

Jamesstown N.Y.

2.50 year.

No longer published.
3/5 '18

Mayonnaise

2 eggs beaten light
1 Tablesp. flour
 $\frac{1}{2}$ cup sugar
 $\frac{1}{2}$ " vinegar
 $\frac{1}{2}$ " water
 $\frac{3}{4}$ " cream or milk
1 Tablesp. butter
 $\frac{1}{4}$ teasp. mustard.

Mayonnaise $\frac{2}{3}$ cup sugar

Pinch salt & pepper

1 heaping $\frac{1}{2}$ teaspoon flour

2 eggs

1 cup cream (sweet or sour)

Boil $\frac{1}{3}$ cup vinegar.Add other mixture & cook
but do not boil.Cheese Sauce

1 tablespoon butter

1 " flour

Cream & add 1 cup milk

Cook 5 min. Then add

 $\frac{2}{3}$ cup ^{grated} melted cheese and
cook until melted

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