Atropine, Ammonia, and small doses of Alcohol, Ether and Chloroform. *The motor convolutions* in the brain are stimulated by Alcohol and Cocaine in moderate doses, also for a brief period by Ether and Chloroform. *The end-organs of the motor nerves* are stimulated by the local use of Electricity, Strychnine and friction; and are irritated by the internal administration of Aconitine, Nicotine, Camphor, Pilocarpine and Pyridine.

Mydriatics (*μυδρίασις*, mydriasis),—are agents which cause dilatation of the pupil of the eye. They are used by ophthalmologists to prevent or break down adhesions of the iris, and to dilate the pupil for ophthalmoscopic and other examinations. Most of the mydriatics produce paralysis of the ciliary muscle (cycloplegia), resulting in temporary loss of accommodation, the eye remaining focussed for distant objects only, and the intra-ocular tension being increased The principal mydriatics are named in the following list:—

Atropine.	Duboisine.	Cocaine.
Homatropine.	Hyoscyamine.	Gelseminine.
Daturine.	Coniine.	Euphthalmin.

Atropine and its congeners act as mydriatics by paralyzing the terminations of the 3rd nerve in the circular fibres of the iris, and stimulating the sympathetic filaments which supply its radiating fibres. *Atropine* paralyzes the ciliary muscle completely, leaving the eye adjusted for the far point only. Its effects last from 10 to 14 days. *Homatropine* paralyzes the muscle less completely, its effects lasting only a day or two. *Cocaine* acts as a mydriatic by stimulating the sympathetic filaments, and has very slight action on the ciliary muscle. Its effects last only a few hours. *Euphthalmin* is a rapid and safe mydriatic, neither impairing accommodation nor increasing intra-ocular tension. The *General Anesthetics* cause mydriasis by central action, both early and late in the course of their administration. [See under MYOTICS.]

Myotics (*μύειν*, to close),—are agents which cause the contraction of the pupil. They act by stimulating the motor oculi nerves supplying the circular muscular fibres of the iris, and produce this effect when locally applied or internally administered, except *Morphine*, which acts centrally, and does not affect the pupil when applied locally. *Physostigmine* (Eserine) is the chief myotic for local use, and the only one employed in ophthalmic practice. Others are *Muscarine*, *Pilocarpine*, and *Nicotine*.

Physostigmine also contracts the ciliary muscle, leaving the eye accommodated for the near point only, and lessens intra-ocular tension, antagonizing exactly the eye-actions of Atropine. *Morphine* given internally produces myosis by stimulation of the oculo-motor centres probably, the dilatation which occurs as death approaches being due to final paralysis of the same (Wood). The *General Anesthetics* dilate the pupil in the first and last stages of their action, but contract it in the middle stage, that of complete anesthesia. When in this stage dilatation occurs, it is a dangerous sign of failing respiratory power, unless it is accompanied by symptoms of returning consciousness, as reflex movements and vomiting.

Narcotics (*νάρκη*, stupor), are agents which lessen the relationship of the individual to the external world. At first more or less excitant to the higher brain and stimulant to the mind and to all the bodily functions, the next stage of their action is one of profound sleep characterized by increasing stupor, and this, if the dose has been sufficient, is followed by coma and insensibility (narcotism), and finally death occurs from paralysis of the medullary centres which govern respiration and the other functions of organic life. Narcotics and stimulants are closely related, Alcohol and Opium affording good illustrations, in the different stages of their action, of stimulation followed by narcosis. Narcotics, in proper medicinal doses, give us the power of lowering morbidly acute perception, of relieving pain and allaying irritation, nervous agitation and spasm, of inducing sleep, and of regulating the vital functions by rest—all of which are means of great therapeutical value. The chief narcotics are:—

Opium, Morphine.	Alcohol.	Phenol.
Belladonna, Atropine.	Ether.	Hydrocyanic Acid.
Hyoscyamus.	Chloroform.	Oil of Turpentine.
Stramonium.	Hydrated Chloral.	Other Essential Oils.
Cannabis Indica.	Bromal Hydrate.	Carbonic Acid Gas.

Opium is the typical member of the group. *Humulus* (hops) and *Lactucarium* (lettuce) are generally included among the narcotics, but their action is so feeble that they are seldom used for that purpose.

Oxytocics or Ecbolics (*ὀξύς*, quick, *τόκος*, childbirth; *ἐκβολή*, abortion),—are agents which stimulate the muscular fibres of the gravid uterus to contraction, and may therefore produce abortion. In small doses the same remedies are emmenagogue as a rule. Their mode of action has not been clearly made known, but it is generally believed to be due in some cases to direct stimulation of the uterine centre in the cord, in others to congestion of the uterus producing reflex stimulation. The principal oxytocics are those named in the following list:—

Ergot.	Hydrastis.	Pilocarpine.
Ustilago.	Borax.	Viscum Flavescens.
Savin.	Cotton-root Bark.	Strong Purgatives.
Potassium Permanganate.	Oil of Rue.	

Any drastic purgative, or gastro-intestinal irritant, may produce abortion by reflex action. The *Volatile Oils* act in this manner, also *Colocynth* and many other agents used by women to produce abortion, as *Tansy*, *Pennyroyal*, *etc.*, all of which are dangerous to life in doses sufficient to excite the action of the gravid uterus.

According to Boissard there are no abortifacient drugs in the strict sense of the term, though some drugs given in toxic doses may cause abortion and the death of the woman. Such drugs are therefore useless in any except the most reckless hands. The oxytocic and ecbolic drugs belong to another class, having the power of strengthening the intensity of the uterine contractions after they have been aroused (oxytocics), or of arousing and aiding uterine contractility (ecbolics). The action of the former is certain, that of the latter is very doubtful.

Pancreatic Stimulation may be obtained by the administration of *Ether*, or by galvanism of the gland itself. The secretion is depressed by *Atropine*, also by any agent inducing nausea and vomiting.

Parasiticides (*παρασίτος*, a parasite, *cædo*, I kill),—are agents which destroy the animal and vegetable parasites found upon the human body. They are generally applied in the form of lotions, ointments or oleates, and include the following-named substances:—

Sulphur.	Mercury.	Phenol.
Sulphides.	Ammoniated Mercury.	Petroleum.
Sulphurous Acid.	Mercuric Chloride.	Storax.
Sulphur Iodide.	Mercuric Nitrate.	Staphisagria.
Iodine.	Mercuric Oxide.	Balsam of Peru.

Protectives are agents of a mechanical nature employed to cover and protect an injured part from the air, water, friction, etc. *Collodion* and *Gutta-*

percha are those in general use, but certain plasters, as the adhesive, the lead or the soap plaster, may be employed for this purpose, also cotton.

Pulmonary Sedatives diminish cough and dyspnea by lessening the irritability of the respiratory centre or that of the nerves of respiration. Some act by directly depressing the respiratory centre; others by removing some irritant from the passages, or by lessening local congestion, as the expectorant group; and others by lowering the excitability of the vagus end-organs in the lungs and that of other afferent filaments throughout the respiratory tract. The principal pulmonary sedatives are named in the following list:—

Opium.	Hydrocyanic Acid.	Turpentine.
Morphine. Codeine.	Potassium Cyanide	Ethyl Iodide.
Belladonna.	Amyl Nitrite.	Conium.
Stramonium.	Quebracho.	Tobacco.
Hyoscyamus.	Cannabis.	Lobelia.

Opium has the most powerful influence as a sedative to the respiratory centre, and mucilaginous or saccharine substances soothe the local irritation, hence the latter are so frequently used as vehicles for the former in cough mixtures. *Hydrocyanic Acid* has a similar sedative action, hence the use of Prunus Virginiana and other substances containing it against cough. *Belladonna* stimulates the respiratory centre, but at the same time lessens the excitability of the vagus terminations in the lungs, and completely arrests secretion from the bronchial mucous membrane. *Stramonium* acts similarly.

Refrigerants (*refrigero*, I cool),—are remedies which allay thirst and impart a sensation of coolness. They include the Vegetable Acids, the Mineral Acids (greatly diluted), Ice, Water if cold, effervescing drinks, fruit juices, and many diaphoretics.

Respiratory Depressants lower the activity of the respiratory centre, rendering the respirations slow and shallow. The chief agents of this class are:—

Opium (large dose).	Gelsemium.	Alcohol.	Caffeine.
Physostigma.	Aconite.	Ether.	Colchicine.
Muscarine.	Veratrine.	Chloroform.	Nicotine.
Lobeline.	Hydrocyanic Acid.	Chloral.	Quinine.
Phenol.	Conium.	Saponin.	Camphor.

The ten last named first excite the centre for a brief period and then depress it.

Respiratory Stimulants exalt the function of the respiratory centre, quickening and deepening the breathing. Such agents are:—

Strychnine.	Opium (small dose).	Quebracho.
Brucine.	Thebaine.	Zinc and Copper Salts.
Atropine.	Caffeine.	Tobacco (briefly).
Duboisine.	Ammonia.	Alcohol (briefly).
Emetine.	Hydrocyanic Acid.	Ether (briefly).
Chloralformamide.	Digitalis.	Cold Douche.

Strychnine also stimulates the vagus tract. *Electricity*, applied to the nerve-trunks or to the inspiratory muscles, is a direct respiratory stimulant. *Veratrine*, *Physostigmine* and *Muscarine* stimulate the vagus terminations, quickening the respiration, but afterwards slow it by depressing the respiratory centre. *Aconite* stimulates the end-organs of the vagus when given in small doses.

The Respiratory Centre is situated in the medulla oblongata, close to the termination of the calamus scriptorius. It probably consists of thoracic and diaphragmatic *Inspiratory Centres*, the act of expiration being considered normally a passive one, due to the natural contraction of the walls of the air vesicles, and the return of the diaphragm and thoracic walls to the position from which they were moved by the inspiratory effort. An *Expiratory Centre* must exist for the initiation of forced expiration, as in the production of voice, cough, sneezing, etc. The chief *Inspiratory Nerves* are the pulmonary branches of the vagus. *The Expiratory Nerves* are the nasal branches of the fifth, the superior and inferior laryngeal, and the cutaneous nerves of the chest and abdomen.

Restoratives are agents which promote constructive metamorphosis, including the Foods, Hematics and Tonics, as well as many agents called Stimulants in other classifications.

Foods, are substances which, when introduced into the body, supply material to renew some structure or to maintain some vital process; being distinguished from medicines in that the latter modify some vital action but supply no material to sustain it.

The food of man is derived from all three of the kingdoms of nature, the animal, vegetable, and mineral, and includes many substances treated of in the Materia Medica, as Oils and Fats, Sugar, Starch, Gum, Alcohol, Beverages like Coffee and Tea, Water, Calcium Phosphate, Sodium Chloride.

Hematics (*αἷμα*, the blood), are medicines which augment the quantity of hematin in the blood, and thus restore the quality of that tissue by enriching its red corpuscles. They consist chiefly of Iron and Manganese and their compounds.

Tonics (*τόνος*, tension), are agents which improve the tone of the tissues on which they have specific action, restoring energy and strength to debilitated subjects by a scarcely perceptible stimulation of all the vital functions, their effects being apparent in an increased vigor of the entire system. The chief tonics are enumerated in the foregoing lists under the heads of the organs or tissues particularly affected by them. [COMPARE STIMULANTS, RESPIRATORY STIMULANTS, CARDIAC TONICS, VASCULAR TONICS, GASTRIC TONICS, etc.]

The most typical medicinal agents which impart *general tone and strength* are Strychnine, Quinine, Iron, and Vegetable Bitters. Those especially acting upon the *stomach*, are Arsenic, Bismuth, Cinchona, Hydrastis, and Nux Vomica; on the *spinal cord* and general circulation, Strychnine,; on the *heart*, Digitalis, Squill, Convallaria and Cimicifuga; on the *nervous system*, Phosphorus, Quinine and the Valerates; on *muscular tissue*, Tannin; on the *blood*, Iron, Manganese, Cod-liver Oil and other fats.

Salts are compound bodies formed:—(1) by the interaction of an acid and a base, which may be an element, an oxide, or a compound containing a weaker acid radicle than the acid employed; the base displacing some of the hydrogen from the acid, as HNO_3 and K, forming KNO_3 Potassium Nitrate: (2) by the interaction of two elements, as Na with Cl, forming NaCl Sodium Chloride or common salt: (3) by the union of two or more oxides of elements having opposite electrical states, as SO_3 and BaO, forming $BaSO_4$ Barium Sulphate. Most salts contain three elements, one being Oxygen, and its comparative amount is shown by the terminal of the name of the salt; those ending in *—ate* being formed by an *—ic* acid and having the greater quantity of oxygen, those ending in *—ite* being formed by an *—ous* acid and having the lesser amount of oxygen.

The prefixes *hyper-* (or *per-*) and *hypo-* indicate respectively a greater or lesser amount of oxygen than can be represented by the terminations *–ate* and *–ite*. Salts formed by the union of two elements and containing no oxygen have the termination *—ide*, which indicates that they contain nothing but the elements designated in their names. Salts may be divided into six classes, viz.—

Normal Salts,—in which the Hydrogen of the acid is fully displaced by a single element, as KNO_3 Potassium Nitrate.

Acid Salts,—in which some displaceable Hydrogen still remains, as $KHCO_3$ Acid Potassium Carbonate.

Mixed Salts,—in which two or more bases are present, as KNa $(C_4H_4O_6)$ Potassium Sodium Tartrate.

Double Salts,—in which two complete salts unite to form a definite compound, generally crystalline, as $K_2SO_4 . Al_2(SO_4)_3$ Potassium Aluminum Sulphate.

Oxy-salts,—also called *subsalts* or *basic salts*, in which oxygen takes the place of one or more of the acid radicles, as $Bi\ NO_3O$ Bismuth Oxy-nitrate or Bismuth Subnitrate.

Haloid Salts,—are salts formed by the *Halogen* (salt-forming) elements (Chlorine, Bromine, Iodine, Fluorine) and the compound radicle Cyanogen, uniting with other elements, without the aid of oxygen, as NaCl Sodium Chloride, common salt. Their names have the termination *—ide*, indicating that they contain nothing but the elements represented in their names.

Sedatives (*sedo*, I allay),—are agents which exert a soothing influence on the system by lessening functional activity, depressing motility and diminishing pain.

General Sedatives include the narcotics and anesthetics. *Local Sedatives* include Aconite, Opium, Ice, etc. *Pulmonary Sedatives*, as Hydrocyanic Acid, Veratrine and the nauseants and emetics. *Spinal Sedatives*, as Physostigma, Gelsemium, Potassium Bromide. *Stomachic Sedatives* include Arsenic, Bismuth, Silver Nitrate, Sodium Bicarbonate. *Vascular Sedatives*, as Digitalis, Tobacco, Aconite, Veratrum, and the emetics. *Nervous Sedatives*, among which are Potassium Bromide, Tobacco, Lobelia, and the group of spinal depressants.

Sialogogues (*σίαλον*, saliva, *ἄγω*, I carry off),—are agents which increase the secretion and flow of saliva and buccal mucus, either by reflex action from the local irritation produced when anything is taken into the mouth, or by stimulating the glands during their elimination. The principal sialogogues are divided into two groups, the first or *topical sialogogues* acting by reflex stimulation; the second, *general sialogogues*, acting through their systemic influence on the glands or their secretory nerves; and include the following-named substances:

Topical Sialogogues.

Acids and Alkalies.
Ether, Chloroform, etc.
Mustard. Ginger.
Pyrethrum. Mezereon.
Tobacco. Cubebs.
Capsicum. Rhubarb.
Horse-radish.

General Sialogogues.

Pilocarpus (Jaborandi).
Muscarine.
Physostigma.
Mercurials.
Iodine compounds.
Antimonials.
Tobacco. Ipecacuanha.

Agents which diminish salivary secretion are termed *Antisialics*. The principal member of this group is *Atropine*, which paralyzes the terminals of the nerves of secretion. *Physostigma* counteracts this paralysis, but in large doses acts also as an antisialic by lessening the blood supply to the glands. *Opium* diminishes the reflex excitability of the reflex centre and also lessens the secretion directly. Others acting locally are—

Borax.
Potassium Chlorate.
Soda.
Lime.
Lithia.
Magnesia.

Insipid or nauseous articles of food or medicine.

Smell is one of the senses which is increased by *Strychnine*. It is decreased by all cerebral depressants and by those agents which produce changes in the nasal mucous membrane, as *Potassium Iodide*.

The cerebral centre for this faculty is probably situated either at the tip of the temporal lobe, or in the limbic lobe, and the terminal branches of the olfactory nerve are distributed upon the mucous lining of the upper portion of the nasal fossæ. Strychnine probably stimulates the former, and all drugs acting upon the latter region have more or less effect upon the power of distinguishing smells.

Stimulant (*stimulus*, a goad),—is a term which is used in various senses when applied to medicinal agents. Alcoholic preparations, which are true narcotics, are commonly termed "stimulants," and the same expression is employed to designate any agent which excites even briefly the organic action of any part of the system. All excessive stimulation reacts into depression, and most of the agents which stimulate the nerve centres at first will soon depress and finally paralyze them. In many cases the action is one of progressive stimulation primarily and progressive paralysis afterwards, affecting the centres in the inverse order of their development, the highest or latest developed centres being affected first, the lowest or oldest ones last. These laws are well exemplified in the action of Alcohol upon the nervous system. [Compare the article entitled ALCOHOL in Part I.]

Diffusible Stimulants are those which have a prompt but transient effect on the general system, such as Alcohol, Ammonia, Camphor. *Spinal Stimulants* exalt the functions of the cord, as Strychnine, Picrotoxin, Ergot, Atropine, Phosphorus. *Cardiac Stimulants* increase the action of the heart, as Alcohol, Adrenalin, Strychnine, Atropine, and Morphine in small doses; also Squill, Convallaria, Cimicifuga and Digitalis, which slow but strengthen the cardiac action. *Respiratory Stimulants* directly stimulate the respiratory centre, as Ammonia, Strychnine, Apomorphine, Belladonna. *Vascular Stimulants*, as Alcohol, Chloroform, Ether (all three in very small quantities), Adrenalin, Ammonia, Strychnine, Digitalis, and Squill, acting on the vaso-motor centre; and the Nitrites, Belladonna, Electricity, Volatile Oils, acting as local dilators of the vascular system. *Cerebral Stimulants*, as Alcohol, Opium, Belladonna, Caffeine, Cocaine, Cannabis, Chloroform, Ether, Tobacco. *Renal Stimulants*, as the diuretic group. *Stomachic Stimulants*, as the Aromatics, Volatile Oils, Vegetable Bitters, Mineral Acids, Nux Vomica, Mustard, Capsicum. *Hepatic Stimulants*, as Nitro-muriatic and Nitric acids, and the cholagogue purgatives Podophyllum, Jalap, Leptandra, Euonymin, Iridin. *Intestinal Stimulants*, as Mercurials, Elaterium, Colocynth, Jalap, Scammony, Podophyllum, which affect the glandular apparatus,—and Belladonna, Physostigma, Nux Vomica, Rhubarb, Senna, Aloes, Frangula, Cascara, which chiefly affect the muscular fibres and the intestinal nerves. *Cutaneous Stimulants*, as the diaphoretic group, and the rubefacients Mustard, Capsicum, Turpentine, Ammonia,

Local Stimulants increase common sensibility to the extent of producing pain, chiefly by direct action upon the end-organs of the sensory nerves in the skin, though some act probably

by stimulating the local circulation, as in inflammation. The principal members of this subdivision are:—

Faradism.	Chloroform.	Volatile Oils.
Heat.	Phenol.	Acrid Essential Oils.
Cold.	Creosote.	Metallic Salts.
Alcohol.	Mineral Acids.	Veratrine (at first).
Ether.	Ammonia.	Cantharis (at first).

Stomachics or **Gastric Tonics** are agents which increase the appetite and promote gastric digestion. They include a number of substances, dietetic and medicinal, some acting by stimulating the production of gastric juice, others by stimulating the local circulation, and several by exciting the activity of the nervo-muscular apparatus of the stomach. The first indication is met by the use of dilute alkaline solutions before meals,—the second by administering any of the pungent carminatives, as the Aromatic Oils, Pepper, Mustard, etc., or by Alcohol and Ether in small doses, or by the Aromatic Bitters, as Gentian, Orange, or the simple bitters, as Calumba;—while the third desideratum is secured by the use of such agents as Nux Vomica, Hydrastis, Arsenic, the dilute mineral acids and the volatile oils.

Adjuvants to digestion are the digestion-ferments, Pepsin, Ingluvin, Papain, and also dilute HCl acid; all of which may be used to supplement the gastric juice when sufficient in quantity or quality. The juice of the *Pineapple* contains a very active digestive principle, and may be employed as an aid to digestion with excellent results. *Pepsin* acts in acid media, and is only applicable to gastric indigestion; *Pancreatin* acts in alkaline media, is destroyed by acids, and is only applicable to intestinal indigestion; while *Papain* exercises its proteolytic power in either acid, alkaline or neutral solutions, and is equally applicable to either gastric or intestinal indigestion

Styptics and Hemostatics (στύφω, I contract, αἷμα, blood, στάσις, a standing),—are agents which arrest bleeding; *Styptics* being those which are applied locally, and *Hemostatics* those which are administered internally. Some of the former act mechanically, by promoting the formation of a clot in the mouths of the bleeding vessels; others cause the vessels themselves to contract, thereby checking the flow of blood. The principal members of this class are the following named:—

Styptics.		*Hemostatics.*
Acids.	Ferric Sulphate.	Adrenalin.
Alum.	Lead Acetate.	Gelatin.
Antipyrine.	Silver Nitrate.	Cotarnine.
Collodion.	Zinc Sulphate.	Hydrastinine.
Gelatin.	Spider's Web.	Ergot. Digitalis.
Adrenalin.	Cold (locally.)	Gallic Acid. Matico.
Cotarnine.	Cauterization.	Lead Acetate.
Hydrastinine.		Dilute Sulphuric Acid.
Tannic Acid.		Ipecacuanha.
Vegetable Astringents.		Hamamelis.
Matico.		Oil of Turpentine.
Ferric Chloride.		Heat (locally).

Taste is not much affected by drugs except as each drug makes its own peculiar impression on the nerves of taste, and may overcome that of another agent. Smell has much to do with taste in many instances, the expedient of holding the nose while swallowing castor oil being familiar to every one.

The "after-taste" of drugs is often different to their original taste; thus *Bitters* are said to leave a sweet after-taste, and the same is claimed for *Quinine* if given in acid solution so as to be entirely dissolved, and if washed out of the mouth with water immediately after swallowing. Substances which are excreted from the system in the saliva (as Iodides) leave a very persistent after-taste.

Urinary Acidifiers include the Acid Sodium Phosphate, Benzoic and Salicylic Acids and several of their salts, Vegetable Acids in excess, Urotropin, and Salol; also excess of proteids, sugar and starch in the food, and certain wines and spirits. The mineral acids have little or no influence on the acidity of the urine, being excreted as neutral sulphates, chlorides, phosphates, etc.

Benzoic Acid and its salts are among the very few agents by which morbid alkalinity of the urine can certainly be neutralized, though this is denied by some clinicians. *Salol* is much quicker in its action on the urine than is Ammonium Benzoate; as ordinarily in a day or so, under its administration, the urine in chronic cystitis loses its alkalinity and foul odor, and becomes clear (Dr. Mansel Sympson). *Potassium Bitartrate*, being an acid salt, will in most cases acidify an alkaline urine. *Acid Sodium Phosphate* is one of the most efficient agents for this purpose (Hutchinson). *Urotropin* is a reliable agent to render an alkaline urine acid.

Urinary Alkalinizers include the alkalies, particularly Potassium and Lithium Salts, but excepting Ammonia, which is broken up in the organism. Sodium salts, being partly excreted by the bile and the bronchial mucus, and partly locked up in the system as the neutral chloride, while sodium urate is insoluble, are not so efficient in this regard as are other alkalies. Fruits, milk and fish also act in the same manner by means of the salts which they convey into the economy, and a strictly vegetable diet plays an important part towards the same end.

Urinary Sedatives and Astringents, when administered internally, act in a sedative manner upon the whole extent of the urinary tract through the medium of the urine, which, being charged with them, brings them into contact with the genito-urinary mucous membrane. Some of them may be applied locally as far as the urethral and vesical mucous surfaces, the portion above the latter being inaccessible to direct local medication.

Instances of the application of these agents are the use of *Potassium* and *Lithium Salts* to diminish the acidity of the secretion,—*Cubebs*, *Copaiba*, and *Santal Oil* as antiseptics and astringents,—and urethral injections of *Alum*, Acetates of Zinc and Lead, Boric Acid, Chloral and Zinc Chloride, etc., for a similar purpose. *Copaiba* is one of the most efficient agents for rendering the urine antiseptic, and should be more employed in cystitis and urethritis than it is. *Oil of Eucalyptus* is nearly as efficient, and *Stigmata Maidis* (Corn Silk), in tincture, is well thought of for its general alterative influence on the urinary tract.

Uterine Depressants lower the activity of the nervo-muscular apparatus which controls the uterine contractions. The most in portant of these agents are—

Opium.	Chloral.	Tobacco.
Bromides.	Chloroform.	Copper Sulphate.
Cannabis.	Tartar Emetic.	Emetics.
Viburnum Prunifolium.		Piscidia Erythrina.

Uterine Stimulants—See Oxytocics.

Uterine Tonics and Alteratives, are medicines which are considered to have such specific influence over the uterus. Authorities differ very much regarding the action and use of these agents, but those named in the following lists are generally believed to have considerable value in uterine therapeutics, viz.—

Uterine Tonics.		*Uterine Alteratives.*	
Potassium Bromide.	Pulsatilla.	Iodine.	Glycerin.
Potassium Chlorate.	Cimicifuga.	Iodoform.	Hydrastis.
Helonias Dioica.	Savin.	Iodized Phenol.	Galvanism.
Astringents (locally).		Silver Nitrate.	

Those in the first list, except Astringents, are used internally; those in the second list are employed as topical applications to the uterine cavity or cervix.

Vascular Contractors increase the contractile power of the vessels, lessening the circulation therein and raising the blood-pressure; hence they are used to check hemorrhage and cut short inflammations. The principal agents included in this group are—

Adrenal Extract.	Atropine (small doses).	Iron. Camphor.
Adrenalin.	Opium (small doses).	Sulphuric Acid.
Antipyrine.	Cocaine.	Barium Salts.
Cotarnine.	Ergot.	Lead Salts.
Hydrastinine	Digitalis.	Silver Salts.
Strychnine.	Squill.	Zinc Salts.
Hamamelis.	Strophanthus.	Cold (locally).

These agents act upon the local vaso-motor mechanism in the walls of the vessels, *Hamamelis* affecting the venous system especially. *Cold* is one of the most powerful agents of this class, and is also a cardiac sedative. *Adrenal Extract* produces an enormous rise of the blood-pressure, due to its extraordinary contractile power over the muscular fibres in the walls of the arterioles. *Adrenalin* is said to be 625 times more powerful in this respect than the extract. *Digitalis*, *Squill*, and *Strophanthus*, in small doses contract the vessels, but in large doses dilate them.

Vascular Dilators produce dilatation of the peripheral vessels, and increase the rapidity of the circulation, thus equalizing the blood-pressure and relieving internal congestions. The most useful are *Alcohol* and *Ether*, as they stimulate the action of the heart simultaneously with the vascular relaxation. The chief members of this group are—

Alcohol. Ether.	Belladonna. }	Chloral.
Nitrous Ether.	Stramonium. } at last.	Chloroform
Nitroglycerin.	Hyoscyamus. }	Ammonium Acetate.
Amyl Nitrite.	Opium (full doses).	Tartar Emetic.
Potassium Nitrite.	Ipecacuanha.	Hydrocyanic Acid.
Sodium Nitrite.	Dover's Powder.	Aconite (?).
Erythrol Tetranitrate.	Thyroid Extract.	Heat (at first).

The dilating action of *Amyl Nitrate* and other Nitrites is due either to weakening of the muscular walls of the arterioles or to paralysis of the vaso-motor terminals therein. *Alcohol*, *Ether* and *Opium* probably depress the vaso-motor centre. *Aconite* does not affect the vaso-motor centre or the vaso-motor nerves, hence the lessened arterial tension induced by it is due to its depressant action on the heart alone (Ringer). *Atropine* and the drugs containing it or its congeners act on the vessels differently in different doses, and at different stages in its action.

The *Vascular Dilators* are often called *Vascular Stimulants* or stimulants of the circulation; but there is this difficulty of speaking of stimulants or sedatives of the circulation, that if both the heart and the vessels are stimulated at the same time, the action of the one tends to counteract that of the other. On the other hand, a drug which weakens the heart may increase the circulation by dilating the vessels, thus acting as a vascular stimulant (Brunton).

Vesical Sedatives are substances which lessen irritability of the bladder, relieving pain and decreasing the desire to micturate. *Opium*, Belladonna, Hyoscyamus, Zea, Sabal, Cannabis, lessen the irritability of the nerves; *Calcium Carbonate* relieves that due to the presence of calculi; mucilaginous drinks, such as Barley-water or Linseed tea, also astringents like Buchu, Uva Ursi, Pareira, diminish the irritation due to chronic cystitis; and antiseptics, as *Copaiba* and Cubebs, act in like manner, being carried by the urine to the bladder.

Vesical Tonics increase the contractile power of the muscular fibres in the wall of the bladder. By strengthening the detrusor they prevent retention of urine and by stimulating the sphincter they prevent incontinence. The most important members of this group are Cantharides, Belladonna, Strychnine and Potassium Bromide by internal administration, Silver Nitrate locally, and the use of a urethral bougie.

Cantharides stimulates the sphincter vesicæ by rendering the urine irritant thereto; *Strychnine*, by increasing the irritability of the nerve-centre which governs it. *Potassium Bromide* lessens reflex susceptibility from the bladder, so that the detrusor is less frequently called into action. *Belladonna* probably decreases the sensibility of the bladder to changes of pressure within it. *Silver Nitrate*, locally applied to the neck, acts in the same manner as the passing of a urethral bougie, namely,—by altering the direction of reflex action (Brunton).

Visions are caused by several drugs, the action of which is probably exerted on the sight-centres in the cerebrum rather than on the eye itself. The delirium and hallucinations produced by *Alcohol* are familiar examples,—the objects raised thereby being usually animals, as snakes, toads, and dogs. *Sodium Salicylate* in some persons produces very disagreeable visions. The *Bromides*, if taken in continued large doses may, during the typhoid condition which follows, cause visions of such intense character that they are often impressed permanently on a brain which, at the time, was utterly unconscious of all its real surroundings. *Digitalis* may produce subjective sensations of the continued presence of light, and *Cannabis Indica*, among the many curious effects produced by its ingestion in large doses, frequently gives origin to similar disturbances of the visual function, of an indefinite and varied but usually pleasant character.