

the dry and exudative forms (Merkel). **Digitalis** as an antipyretic (R); the tincture in doses of a drop every 3 hours for a child of 2 years (J. Lewis Smith). **Gelsemium** is highly serviceable (B); the dangers attending the large doses required counterbalance its advantages (W). **Potassium Iodide** to promote absorption of effusion, given steadily for a long time (R); is of value (W). **Iodine** painted over the chest daily on each wall alternately (B); in chronic pleurisy with large effusion (W); as injections with great benefit and without risk, in empyema and hydrothorax (P). **Burgundy Pitch**, the plaster externally as a mechanical support (P). **Asclepias**, the popular pleurisy-root, is a favorite remedy in the South (W). **Pilocarpus**, in subacute cases to remove fluids (Caro); or Pilocarpine Nitrate, gr.  $\frac{1}{4}$  bis die, for children (Vigier); is too depressing and therefore unsafe (Smith). **Sodium Chloride**,  $\mathfrak{ss}$  in  $\mathfrak{ss}$  of water, flavored with Licorice, in tablesp. doses every 3 hours, often very useful in causing absorption of pleuritic serous exudations; but is contraindicated when exudation is purulent (Br). **Theocine** gr. iv thrice daily, as a powerful diuretic, efficient in pleuritic effusion (Meinertz). **Diuretin** has removed a large effusion by its diuretic action. **Antipyrine** promotes the absorption of pleuritic effusions. **Guaiacol** painted on the chest, remarkably promotes absorption. **Glycerin** as the official Cataplasm of Kaolin, is an excellent application in the early stage in place of poultices. **Bloodletting**, by cups or leeches, useful by reason of counter-irritation produced, and to relieve pain, only in robust sthenic cases (B). **Blisters**, often greatly abused; are harmful during inflammatory stage (B). **Poultices**, large, hot, and frequently renewed (R). **Water**, cold wet-pack to chest probably better than a hot one, pinned tightly to limit movement of chest-walls (B). **Thoracentesis**, by aspiration, to be done as soon as the presence of fluid is made out, is the only treatment needed for pleurisy with effusion; in fortunate cases there is no more pleurisy or effusion within 24 hours after aspiration, in a large number the disease is cured within a week, and none should be sick longer than 2 weeks if so treated (Delafield). [For CHRONIC PLEURISY see EMPYEMA, also compare HYDROTHORAX, PLEURO-PNEUMONIA.]

R. Potassii Acetat.,.....  $\mathfrak{ss}$ .  
 Infusi Digitalis,..... q. s. ad  $\mathfrak{ss}$ iv.  
 M. Sig.—Teasp. every 3 hours to a child  
 of 4 or 6 years, in the second stage.

R. Morph. Sulph.,..... gr. j.  
 Tinct. Aconiti,.....  $\mathfrak{xxiv}$ .  
 Liq. Potassii Citratis,.....  $\mathfrak{ss}$ ij.  
 M. Sig.—A teasp. every 3 hours.

### Pleurodynia.

**Cimicifuga**, curative when rheumatic and valuable in sympathetic cases, from irritability of uterus (P); or uterine derangements (R, Wa). **Croton Oil**, in obstinate pleurodynia especially when blackened feces (R). **Belladonna**, the plaster or liniment; the latter generally best (R). **Chloral**, made liquid with an equal weight of Camphor and rubbed in gently, often affords instant relief (R). **Ichthyol** as a liniment, also internally in doses of  $\mathfrak{ij}$  twice or thrice daily, gives good results (Schmitz). **Sodium Salicylate**, gr. xv-xx, every 2 or 3 hours, useful in most cases (Hughes). **Ether**, as spray, sometimes immediately and permanently removes the pain (R). **Opium**, as liniment rubbed in after warm fomentations (Wa); or a hypodermic injection of Morphine (R). **Iodine**, as liniment painted on the chest, often relieves where mustard fails (R). **Blistering**, often successful when other means fail; sometimes strong vesication is necessary (R). **Rest**, is important and may be obtained by strapping the affected side with strips of adhesive plaster. **Poultices**, very hot, followed by application of lint and oilskin; Belladonna Liniment generally better (R). **Mustard**, as a poultice, is generally efficient, and can be renewed when the pain returns (R). **Phototherapy**, the ultra-violet rays are specific for relief of the pain (Rosenberg). [Compare MYALGIA, NEURALGIA, PLEURITIS.]

### Pneumonia.

**Aconite**, gives good results in catarrhal and fibrinous forms (B); has marked effect (R); very valuable in first stage (P); in several cases it apparently cut short the attack (Wa); to reduce circulation either Aconite or Veratrum Viride until the pulse

is impressed (Da C). **Veratrum Viride**, valuable (P); in the very incipency (B); opinions differ as to whether it should be used in sthenic or asthenic cases (R). **Ergot** is highly efficient in the first stage (Davis); is used with good results in pulmonic congestions (W). **Creosote** gtt. j every 3 hours gives good results (Van Zandt). **Creosotal**  $\mathfrak{xx}$  xvj every 3 hours has given satisfaction (Philips); gives remarkably good and uniform results (Weber); in acute pulmonary inflammations its use is one of the great life-saving discoveries of the century (Van Zandt). **Guaiacol Carbonate**, gr. xx in emulsion every 2 hours, gave excellent results in a case of double pneumonia (Thomson); in 13 cases successfully treated it was practically the only remedy used (Cassonte); is almost specific in this disease (A. H. Smith); preferred to the salicylates after the stage of congestion, in feeble cases and when cardiac lesions exist (Bridges). **Thiocol** gr. xv every 2 hours gave prompt and excellent results in a severe case of influenzal pneumonia, and has some specific action in this disease (Heil); is preferable to other creosote preparations (Eberson). **Quinine or Salicylic Acid**, to reduce temperature (R); Quinine as a tonic in cases which are asthenic from the first (P); in conjunction with Aconite and Veratrum, gr. viij-xij daily at start, is beneficial (Da C). **Quinine Salicylate** is most useful as a tonic and general alterative (Sir J. Moore). **Sodium Salicylate**, in large doses, not less than  $\mathfrak{ss}$ ij daily, proved curative in 72 consecutive cases (Liegel); has antibacterial power in pneumonia (A. H. Smith). **Strychnine Sulphate**, in addition to guaiacol or the salicylate, to obviate cardiac depression, also for its action on the nervous system (Bridges); in a full dose hypodermically, repeated if necessary, for impending cardiac failure; is more useful in 1 or 2 full doses than in smaller doses more frequently (Pye-Smith); gr.  $\frac{1}{30}$  every 3 or 4 hours with free use of alcohol, the uniform treatment in the U. S. Navy, and to it the Surgeon-General attributes the unusually low percentage of mortality in his service from this disease. **Antipyrine** may be employed as an antipyretic (W); is more serviceable than quinine (Wa); with Camphor successful in all of 22 cases of croupous pneumonia so treated at the Lom Hospital, Antipyrine gr. viij, Camphor gr. ij, Morphine Hydrochloride gr.  $\frac{1}{16}$ , in powder every one or two hours (Ivanoff). **Camphor**, in olive oil, in doses of from gr. j to gr. ij three or four times a day, hypodermically, in adynamic cases, used simultaneously with the above antipyrine and camphor powder (Id); in fibrinous pneumonia these injections lower the temperature about a degree and ameliorate the general condition. **Ammonium Carbonate**, at crisis for depression; in infusion of Senega (B); is useful late in disease when lung tissue breaks down (Da C). **Ammonia**, the Aromatic Spirit as a substitute for the Carbonate, in doses of  $\mathfrak{ss}$  in simple elixir (Da C). **Turpentine**, as stimulant at crisis (B);  $\mathfrak{ss}$  j to  $\mathfrak{ss}$ iv of boiling water, the vapor to be inhaled as an irritant to provoke cough and expulsion of the products, in cases so exhausted that expectorants fail (Murray). **Serpentaria** with Ammonium Carbonate in low types of pneumonia, as a stimulant for the crisis. **Digitalis** is of doubtful value; may be useful for high temperature, ischemia, and low tension of vessels (B); as case goes on and circulation is to be further controlled, Digitalis is indicated (Da C); the best agent to slow the heart in infantile pneumonia, with Belladonna as an adjuvant (Brown). **Bryonia**, when pleural complications (P); is often of great service in pleuro-pneumonia to limit the effusion and promote its absorption (P). **Phosphorus**, especially when typhoid symptoms; approved by Fleischmann (R). **Belladonna** is useful in the first stage (P); Harley esteemed it highly in pneumonia (Wa); as an adjuvant to Digitalis in infantile pneumonia, to soothe the irritable nervous system and curtail superabundant secretion (Brown). Atropine as a stimulant to the circulation for cases of sudden collapse as seen in the pneumonia of young children (W). **Arnica**,  $\mathfrak{xx}$  of the tincture every 3 or 4 hours in pleuro-pneumonia, to control the cardiac action (Wa). **Collargol** by inunction and intravenous injection, cured a left pneumonia with purulent effusion by the sixth day (Netter); 6 cc. of a 1 to 200 solution, three such intravenous injections checked the disease in a woman of 81 years (Thiroloux). **Phenol** pure, in 2 per cent. solution by parenchymatous injection once or twice daily, is remarkably successful in pleuro-pneumonia (B). **Pilocarpine** gr. ss, or  $\mathfrak{ss}$ ij of the tincture, benefits in pleuro-pneumonia (Wa). **Potassium Iodide** gr. x-xv every 2 hours in milk night and day throughout the disease, has remarkably beneficial effect (Altshul). **Ammonium Iodide** with Arsenic to prevent the caseation of inflammatory products (R). **Ethyl**

Iodide gtt. v-xx thrice daily by inhalation, is valuable in the catarrhal form (B). **Sodium Iodide** is useful in catarrhal pneumonia (Da C). **Ipecacuanha**, the wine in infantile pneumonia, should never be dispensed with, as it promotes expectoration, controls hemorrhage and regulates secretion (Brown). **Senega**, in advanced stages as expectorant, when cough is dry, irritating and painful, tightness and oppression of chest (P). **Opium**, or Morphine by injection, sometimes needed for severe pain (R); Opium is very desirable in many cases, relieves the symptoms and arrests delirium (Wa); is often dangerous, as it reduces the cough, which is a necessary evil (Burt). **Copper Acetate** has proved curative, under it the mortality was only 4.3 per cent. (Kissel). **Tartar Emetic** in full doses, formerly used as part of the so-called contrastimulant treatment, now abandoned (W); gr.  $\frac{1}{2}$  every 3 hours, also Calomel purgation and venesection, with blisters, gave a mortality of almost nothing in former times (Sheets). **Sanguinaria** as a contra-stimulant when the fever has abated and the graver symptoms have amended (P). **Adrenal Extract** gr. j-iiij every 2 or 3 hours, as a powerful cardiac tonic (Gray). **Alcohol** is adding poison to that already present (Anders); is dangerous, and with other anesthetic drugs is responsible for the increased mortality in this disease of late years (Davis); for alcoholic subjects, in asthenic cases, those of malignant type, and those of aged persons (Wa). **Antipneumococcic Serum** has been used with excellent results in many cases (Ed. Therap. Gaz.). **Venesection** in the first stage followed by sedatives and alteratives (Davis); is of very great value if a pint or more be taken (Rochester); to a pint or more and replaced by the same quantity of normal saline solution by hypodermoclysis, a valuable procedure in cyanosed cases (Reyburn). **Hypodermoclysis** by 600 to 1000 cc. of hot normal saline solution, when respiration is shallow, intermittent and irregular, extreme cyanosis, almost imperceptible pulse, and coma with profound asthenia (Thompson). **Sweating** by dry hot air to relieve toxemia (Rochester); towards the time for a crisis is very satisfactory (Quimby). **Cupping** vigorously over the lungs for pain, relieves better than morphine (Rochester). **Blisters**, useful at very beginning only, or at crisis of disease, harmful in inflammatory stage (B); to lessen the pain, but should be used in moderation (R). **Wet-pack**, hot, tightly pinned to limit motion of chest-walls (B). **Poultices**, encircling the whole chest in children (R); the poultice-jacket belongs to the dark ages of medicine (Rochester): local applications to the chest have no influence whatever upon the course or outcome of the disease (Thompson). **Glycerin** in the form of the official Cataplasm of Kaolin, makes an excellent poultice for the chest and fulfils many indications in pneumonia. **Diet** should be farinaceous, with mucilaginous drinks and rest in bed in a warm room (R).

R̄. Tinct. Veratri,..... ℥xl.  
Spt. Ætheris Nitrosi,..... ℥vj.  
Liq. Potassii Citratis,..... ℥ivss.  
Syr. Zingiberis,..... q. s. ad ℥vj.  
M. Sig.—A tablesp. every 3 hours, in the early stage. (Da Costa.)

R̄. Ammonii Carbonat.,..... gr. xl.  
Infusi Serpentariae,..... ℥iv.  
M. Sig.—A tablesp. every 3 hours, as a stimulant about the crisis. (B.)

R̄. Sodii Iodidi,..... ℥iij.  
Morphinae Sulph.,..... gr. j.  
Elixir Simplicis,..... ℥iv.  
M. Sig.—A tablesp. ter die, also blisters over the apex. In catarrhal pneumonia. (Da C.)

R̄. Ammonii Iodidi,..... gr. xl.  
Spt. Ammonia Aromat.,..... ℥ij.  
Elix. Simp. et Aquæ,..... ad ℥viii.  
M. Sig.—Two tablesp. thrice daily. In syphilitic lobar pneumonia. (Da C.)

### Poisoning.

A **Poison**, in the medical and toxicological sense, is any substance of inherent deleterious character and incapable of self-reproduction, which, acting chemically or physiologically upon the tissues or fluids of the body, will seriously injure the health or destroy life.

The most energetic poisons are Hydrocyanic Acid, Potassium Cyanide, Nicotine, Strychnine, Phenol, and some reptile venoms. The poisons usually selected by poisoners for criminal purposes on others are those which produce effects resembling

the symptoms of natural disease, as Arsenic, Colchicine, Tartar Emetic, Strychnine, Morphine and Aconite. Those generally chosen for suicidal purposes are such as may be most readily obtained by the laity, namely—Phenol, Morphine, Illuminating gas, Charcoal gas and Potassium Cyanide; the first being easily purchased for disinfecting purposes, while the last is commonly used in the arts.

**General Principles of Treatment.** The following Rules are laid down by high authority: (1) Lose no time. (2) Use the best remedy obtainable at once. (3) Get rid of the poison. (4) Stop its action. (5) Remedy the mischief already done. (6) Fight against the tendency to death (Tanner). In the treatment of poisoning, whether by mineral or vegetable substances, if the poison is known the first indication is to administer the proper chemical *Antidote*, so as to render it harmless or comparatively so. Next, the stomach should be emptied and washed out, lest the newly-formed compound be absorbed after a time, also to remove any poison which may have escaped the action of the antidote. Next, the appropriate *Antagonist* should be administered, to counteract the effects of such portion of the poison as may have been absorbed. Lastly, such *Antagonistic Measures* should be employed as may sustain the action of any organic function showing signs of failure. In most cases of alkaloidal poisoning absorption has proceeded so far before professional assistance is obtained that antidotes are of no value, hence reliance can be placed only upon the physiological antagonist and such supporting measures as will tend to maintain vitality until the poison can be eliminated by the natural channels.

### ANTAGONISTS.

**Antagonists** are agents which oppose each other in their physiological action, and may be employed against each other as counterpoisons, to neutralize their effects upon the organism. They do their work in the blood and tissues, after absorption, and are especially available against poisons administered hypodermically, in which cases antidotes are useless. *Substances* so employed are generally the active principles of plants, a few being chemicals, as Oxygen and Chloral. *Antagonistic Measures* include such proceedings as tend to neutralize the remote effects of poisons, as artificial expiration, faradism of the respiratory muscles hot and cold applications, douching, constant motion or absolute repose, etc.

### ANTIDOTES.

**Antidotes** affect a poison, either physically or chemically or both, so as to remove it from the body or alter its character before absorption, and thereby prevent its toxic action upon the organism. They do their work in the alimentary canal or in the respiratory passages, and are applicable to vegetable as well as mineral poisons, but they are not available against poisons administered hypodermically. Among them are Emetics, Cathartics, Washes, Injections, Ligatures, Poultices, the use of the Stomach-pump, of tourniquets, etc., which are termed *Mechanical Antidotes*; and the *Chemical* or *True Antidotes*, which include Albumin, Milk, Charcoal, Soap, Starch, Oils, Tannin, Turpentine, Acids, Alkalies, Potassium Permanganate, Carbonates, Hydrates, Sulphates, Sodium Chloride, Iodine, Iron preparations, etc.

**Acids.** Vegetable acids, as Acetic (or vinegar), Citric (or lemon-juice), and Tartaric, are employed as antidotes against the poisonous alkalies and alkaline carbonates. Sulphuric Acid well diluted with water, is antidotal to the soluble salts of Barium and Lead, with which it forms insoluble sulphates; also as a prophylactic against lead poisoning.

**Albumin** is an ideal chemical antidote, being harmless, easily procured, and forming compounds (which are more or less insoluble) with most of the metallic salts, corrosive alkalies and mineral acids, as also with Iodine, Bromine, Chlorine, Creosote, Aniline, and alcoholic solutions of most of the Alkaloids. It is especially suitable against inorganic poisons, and was recommended by Orfila for invariable use, even on the mere suspicion of poisoning. It should be well diluted, the whites of four eggs to a quart of

lukewarm water; and should be followed by emetics and cathartics, as many of its compounds are soluble in an excess of itself.

**Ammonia**, diluted, used by inhalation, is an efficient antidote against the vapors of corrosive acids and Nitrobenzol, also against Chlorine, Bromine, and Hydrocyanic Acid.

**Calcium Hydroxide and Carbonate**, in the form of lime-water, chalk, eggshells or powdered oyster-shells, are used against Acids, both mineral and organic, and especially against Oxalic Acid and the acid oxalates, which they neutralize and convert into the insoluble calcium oxalate.

**Carbonates and Bicarbonates of Sodium and Potassium** are employed against most of the poisonous metallic salts, especially those of Zinc, which they immediately decompose, forming insoluble basic compounds; also against Iodine, Bromine, and Potassium Dichromate, forming the neutral chromate with the latter and harmless salts with the former. They are useful in dilute solution against Acids, but are less easily tolerated than magnesium sulphate. They are contraindicated in poisoning by Oxalic Acid, with which they form dangerous compounds. Ammonium Carbonate, in dose of 5 grains, administered hypodermically in the vicinity of wounds caused by poisoned arrows, was repeatedly used by Dr. Parke, the surgeon of Stanley's last expedition in Africa, with entire success in saving life when it was employed immediately after the injury. Persons so wounded, if they were at too great a distance to receive this treatment, invariably died within a short time.

**Cathartics** are generally employed after the use of a chemical antidote, to remove the compounds formed thereby from the intestinal canal. The best are Castor Oil, Croton Oil, Senna, and Magnesium Sulphate (Epsom salt). *Castor Oil* protects the mucous membrane and obstructs absorption, but is contraindicated in poisoning by phosphorus, phenol, copper salts, or cantharis, the absorption of which is aided by oils and fats. *Croton Oil* is rapid and powerful in the dose of from 1 to 5 minims, in a bread pill. *Magnesium Sulphate*, in the dose of 1 to 4 oz., well diluted, is of special service in chronic lead poisoning and to remove antidotal compounds from the intestines. Senna, Gamboge, and other drastics are the best cathartics in narcotic poisoning.

**Charcoal** has some antidotal value against many alkaloids, the metallic salts, and Phosphorus, slowing their toxic action and postponing their effects, probably by a protective action upon the gastric walls. It has the valuable property of absorbing gases, but enters into no fixed compound with any mineral or vegetable poison. Fresh animal charcoal is the best, though wood charcoal is efficient, but in less degree.

**Chlorine**, in the form of Chlorine Water, Labarraque's solution, or Javelle Water, is employed externally as an antidotal wash for snake-bites and other poisoned wounds; also, well diluted, internally against alkaloids and other vegetable and animal poisons; and as a spray for antidotal inhalation against coal gas (Carbonic Oxide), Ammonia, Phosphoretted and Sulphuretted Hydrogen, also Hydrocyanic Acid.

**Copper Carbonate**, in dose of 3 to 6 grains, with sugar and water, preceded and followed by an emetic, is recommended in phosphorus poisoning, being supposed to coat the particles of Phosphorus first with a layer of copper phosphide and then with one of copper itself, thus preventing their solution in the fluids of the stomach.

**Emetics**, when employed, should be used without delay. They are often rendered needless by vomiting induced by the poison itself, or by the free use of diluent drinks; and are contraindicated when there is severe corrosion of the alimentary canal or when abdominal inflammation exists. The best emetics are: *Zinc Sulphate*, for stomachal administration, being non-nauseating, 20 to 30 grains in water, 5 grains for children. *Apomorphine*, gr.  $\frac{1}{16}$ – $\frac{1}{8}$ , hypodermically, when narcosis prevents the use of emetics by the mouth. It should be administered hypodermically, as it is very uncertain in action when given otherwise. The following may be used:—Copper Sulphate, 1 to 5 grains in water; Ipecac, in powder; Emetine, gr.  $\frac{1}{2}$  to  $\frac{3}{4}$ ; Tartar Emetic, 1½ grain, acts slowly and is depressant; Turpeth Mineral; Cadmium Sulphate; Sodium Chloride (common salt), 2 teaspoonsful in a pint of water; Mustard, 2 teaspoonsful in a cup of

warm water; also Olive Oil, Soap-suds, Snuff, melted Fats, and tickling the fauces with the finger or a feather. *Sodium Chloride*, as an emetic, is contraindicated in poisoning by tartar emetic or corrosive sublimate, and so also are Oils and Fats and substances containing them, in poisoning by phosphorus, cantharis, phenol or copper salts.

**Gelatin** is of especial value against Iodine, Bromine and the Alums, but requires too much time for its preparation, as it should be broken up, soaked in water for half an hour and reduced to the consistency of honey.

**Gluten** is of value against Corrosive Sublimate, but is less so than albumin and is not easily obtained.

**Gum Arabic**, in the form of mucilage, is chiefly used as a protective against corrosive poisons, and has been recommended in copious draughts against poisoning with the Bismuth salts.

**Iodine**, in very dilute solution, is used as an antidote against alkaloids and their salts, other vegetable poisons and snake-venom. All its compounds are more or less soluble and toxic, and must therefore be removed from the system as soon as possible. *Boucharlat's Antidote for vegetable poisons* consists of 3 grains of Iodine, 30 grains of Potassium Iodide, and 11 oz. of distilled water. The dose, which is from 1½ to 3 oz. should be repeated frequently.

**Iron**. The **Hydroxide**,  $\text{Fe}(\text{OH})_3$ , is by far the best antidote to Arsenic in solution or in a soluble form, as it combines with the latter to form a ferrous arsenate, and also protects the gastro-intestinal mucous membrane against the local action of the poison. In the proportion of 10 parts to one of arsenic the union is very complete, but its union with the salts of arsenic is limited even when it is in great excess, though much more effectual if there is added to it a small amount of ammonia or other caustic alkali, or if the basic ferric acetate is mixed with it. For the preparation of the official arsenic antidote see *Ferri Hydroxidum cum Magnesii Oxido*, under the title Ferrum in Part I. Dialyzed Iron, Saccharated Iron, and the basic Ferric Acetate have all been used with more or less success in arsenic poisoning.

**Magnesia** ( $\text{MgO}$ ), is obtained by heating Magnesium Carbonate, which is a compound of the Hydroxide and Carbonate of Magnesium with water. When the Carbonate is heated at a low temperature it becomes calcined, losing  $\text{CO}_2$  and  $\text{H}_2\text{O}$ ; then mixed with 25 times its weight of warm water it becomes gelatinized, in which condition it is best for antidotal purposes, in doses of from 1½ to 2 oz., at short intervals for a few doses, then at longer intervals. An excess does no harm, but rather benefits the patient by its cathartic action. Magnesia is the most efficient antidote against Acids and the acid salts, also against Oxalic Acid and the acid oxalates, in the absence of the calcium antidotes therefor. It is also valuable against Arsenic, Phosphorus, Mercury, Corrosive Sublimate and other metallic salts in solution, precipitating the corresponding oxides or basic salts.

**Milk** is a good substitute for Albumin, its antidotal action being nearly the same in range and due to its casein, albumin and free alkali. It is particularly valuable against metallic salts, corrosive acids and alkalies (especially Ammonia) and the alkaline earths, but it is contraindicated when fatty antidotes are to be avoided, by reason of its richness in fat.

**Oils and Fats** are efficient against the corrosive acids and alkalies, the metallic oxides and salts; but are contraindicated in poisoning by Phosphorus, Cantharis, Phenol, or Copper salts, the absorption of which they promote. With the caustic alkalies they unite to form soaps, liberating glycerin; they are inferior to albumin against the metallic salts, and as their action is slow they are less efficient than acids against alkalies. Those used are olive, cotton-seed, linseed and almond oils, also melted butter and lard.

**Potassium Ferrocyanide**, given in doses of 30 to 60 grains in water, is of special value against the Copper salts, but albumin is equally efficient and more easily obtained.

**Potassium Permanganate**, is the best antidote against organic poisons, if used promptly, before absorption has taken place, as it rapidly destroys them by oxidation,

It has been used successfully against Morphine and Strychnine salts and Phosphorus in the stomach, and locally for snake-poison.

**Soap**, as Castile Soap, dissolved in 4 times its bulk of hot water, to make "suds," and given by the cupful, is one of the most efficient antidotes against corrosive acids and metallic salts, especially Corrosive Sublimate, Potassium Dichromate, and Salts of Tin and Zinc. It is inferior to albumin against these, but is preferred to caustic alkalies against acids, as of itself it has no corrosive action. It should not be used against alkalies.

**Sodium Chloride** (Common Salt), in dilute solution, is the best antidote against the Silver salts, converting them into the insoluble chloride of silver. It may be given with albumin, which is also a very efficient antidote in this form of poisoning.

**Sodium Thiosulphate** in doses of 15 grains, in very dilute solution and frequently repeated, is a valuable antidote against Bleaching Powder (Calcium Hypochlorite), Labarraque's solution (Sodium Hypochlorite), and Javelle Water (Potassium Hypochlorite), which it reduces to chlorides, itself undergoing oxidation to the sulphate.

**Starch**, in paste, 1 to 15 of water, is the antidote for Iodine and Bromine, with which it forms compounds which are almost harmless. It has some value against Corrosive Acids, Corrosive Sublimate, and Zinc and Copper Sulphates, but it is not so efficient as Albumin, which is preferred for these poisons as well as for Iodine, since it has a greater affinity than starch has therefor.

**Stomach Pump** and **Stomach Siphon** are efficient, and do not weaken the patient as emetics do, but they are not always available, and cannot be used when there is corrosion of the stomach or esophagus, for fear of perforation. Washing of the stomach at regular intervals is a measure of great importance in the case of soluble poisons, some of which are excreted into the stomach [see *infra* under OPIUM]. These appliances are almost useless when the poison is in solid form and in large pieces (as meat, sausage, fish, cheese).

**Sulphates of Magnesium and Sodium** (Epsom and Glauber's salts), the soluble sulphates, are particularly efficient against Phenol and the salts of Barium and Lead.

**Tannin** (Tannic Acid), precipitates the Alkaloids and their salts, with which it forms compounds (tannates), which, though comparatively insoluble are not entirely inactive, and should be removed at once from the alimentary canal by emetics and drastic purgatives. It acts well against many metallic salts, though inferior to albumin for these, except against Tartar Emetic, which albumin does not affect, but tannin renders harmless. It is given in doses of gr. xv to xlv, in a 2 per cent. solution, every ½ hour; and if combined with about 10 per cent. of its weight of Iodine its antidotal effect on vegetable poisons is greatly increased. If not itself obtainable, decoctions or infusions of substances containing it may be used, as tea and coffee, nut-galls, kino, rhatany, catechu, and the barks of oak, willow and cinchona.

**Turpentine**, after long exposure to the air, therefore containing much oxygen is one of the antidotes against Phosphorus. It should be administered immediately after the ingestion of that poison, alone or in hot water, and in quantity 100 times that of the phosphorus supposed to be present.

**Antidote Bag**, designed by Martindale, of London, contains the following-named articles, labeled with directions for use, viz.—

Dialyzed Iron.	Spt. Ammonia Aromat.	Amyl Nitrite.
Syrup of Chloral.	Oil of Turpentine.	Zinc Sulphate.
Chloroform.	Acetic Acid.	Ipecacuanha.
Spt. Chloroformi.	Tincture of Digitalis.	Potassium Bromide.
Magnesia.	Tannic Acid.	Potassium Permanganate.

Also a Hypodermic Syringe and Solutions or Pellets therefor of—

Morphine Sulphate.	Apomorphine Hydrochloride.	Pilocarpine Nitrate.
Atropine Sulphate.		Strychnine Nitrate.

**General Antidotes** have been devised for use when the nature of a poison is unknown, with the object of a "shot-gun prescription," intended to hit something. One of the best is *Jeannel's*, composed as follows,—Liquor Ferri Sulphatis (sp. gr 1.45) ℥ijss, Magnesium Oxide ℥ij, Carbo Animalis ℥j, Aqua ℥xx. These ingredients should be kept separate—the solution of the sulphate in one vessel, the others together. When needed, the former should be added to the latter and violently agitated. Dose, ℥jss to ℥iij. This is a perfect antidote for Arsenic, Zinc, and Digitalin. It delays the action of the salts of Copper, Morphine and Strychnine, and slightly influences compounds of Mercury. It is valueless for Cyanide of Mercury, Tartar Emetic, Hydrocyanic Acid, Phosphorus, or the caustic Alkalies. *Boucharde's Antidote* is described on a previous page, under IODINE. *Bellini* considers the Iodide of Starch a valuable antidote to alkaline Sulphides, earthy Sulphides, vegetable and caustic Alkalies, and Ammonia. In the first two cases he considers it superior to all other antidotes.

A fresh mixture of the Sulphides of Iron and Sodium with Magnesia, is said to be a perfect antidote for Copper salts, Corrosive Sublimate and Mercuric Cyanide. If the nature of the poison is entirely unknown, a harmless yet effectual antidote in most cases is one composed of equal parts of Magnesia, Wood Charcoal, and the Ferric Hydroxide, given freely in plenty of water.

### Poisoning by

**Acetanilide.** ANTAGONISTS,—*Belladonna* or *Atropine*, to maintain the blood-pressure; *Strychnine*, for the respiration; *Oxygen* inhalations, to overcome cyanosis; *Heat*, externally applied. Stimulants and supporting measures. Death has occurred from a dose of 5 grains.

**Acid, Acetic.** ANTIDOTES,—*Magnesia* or Magnesium Carbonate, freely; Soap and water, Lime-water, Chalk, White-wash; also milk, oils and thick gruel may be given. ANTAGONISTS,—*Morphine*, gr. ½, to ward off shock.

**Acid, Carbolic** (Phenol). If the case is seen shortly after the ingestion of the poison *Apomorphine* may be administered hypodermically as an emetic; in any case the stomach should be washed out freely with alcohol and water. ANTIDOTES,—*Alcohol*, is a perfect antidote to the corrosive effects of phenol (Phelps). The routine practice in one emergency hospital is to wash out the stomach with alcohol and water, equal parts of each, and then to leave in the stomach about ℥viiij or ℥xx of the same mixture. This treatment has proved very efficient in a number of cases. Next in value is any soluble *Sulphate* to form the harmless phenolsulphonates; as Magnesium Sulphate ℥j or Sodium Sulphate ℥ss, dissolved in half a pint of water. Even if several hours have elapsed since the ingestion of the poison this treatment should be employed, as the antidotal action of the sulphates proceeds in the blood. In one case ℥ss of the 95 per cent. phenol was taken, and nearly ℥iij of Magnesium Sulphate was used, resulting in complete recovery from an apparently hopeless condition. *Liquor Calcis Saccharatus* is antidotal in the stomach, but is much less efficient than the sulphates. *Vinegar*, especially that made from cider, is antidotal, both locally and internally (Ames). *Soap* in strong watery mixture (suds) is said to have acted perfectly as an antidote in the stomach. *Oils* are contra-indicated, as they promote the absorption of the poison. *Vegetable Demulcents* (but no oils or glycerin), to protect the mucous surface. *Sodium Carbonate*, in strong solution locally, for the effects of its local use in excess; this also as a wash for the mouth, if necessary. ANTAGONISTS,—*Atropine* is a very complete antagonist to the systemic symptoms, maintaining the heart and respiration until elimination occurs: gr. ½ hypodermically. *Amyl Nitrite*, by inhalation, *Alcoholic* stimulants freely. *Heat* to the extremities, also Faradism and friction thereof. *Venesection* in desperate cases (Murrell).

**Acid, Carbonic** (Carbon Dioxide). See under Illuminating Gas, below, for the treatment of poisoning by Carbonic Acid and Carbonic Oxide gases.

**Acid, Hydrocyanic** (Prussic). Forty minims of the official diluted acid have proved a fatal dose. ANTIDOTES,—if time to do anything, *Cobaltous Nitrate* has proved