

## EXPLANATION.

For Signs and Abbreviations used, see pages 503 to 515, and page 568.

Average Adult Doses of the U. S. Pharmacopœia, for each drug and preparation, are given in brackets, thus—[av. gr. x.].

Unofficial Synonyms are placed in parentheses after the official synonyms.

Numerals unqualified, under the subtitles *Preparations* in Part I, denote grammes for solids and cubic centimeters for liquids.

## INTRODUCTION.

**Drugs** (*drugan*, to dry),—is a term which was formerly applied to dried medicinal plants, and is still employed by writers and others in that sense. By extension, however, it has been made to cover all material substances used for the treatment of disease, including remedial agents from the animal and mineral kingdoms as well as those belonging to the vegetable kingdom.

**Pharmacology** (*φάρμακον*, a drug, *λόγος*, a discourse),—is the science which treats of drugs and therefore properly embraces in its scope all of materia medica and therapeutics relating to drugs. By some writers this term is employed in a more restricted sense, including only the physiological action of drugs, a subject which is more correctly designated by the word *Pharmacodynamics* (see below).

**Pharmacy** is the name of the art which supplements the science of pharmacology, namely—the art of preparing drugs according to the requirements of the pharmacologist and of dispensing them on the prescriptions of the therapist. It includes a thorough knowledge of the materia medica, an acquaintance with the theories and manipulations of chemistry and an intimate practical experience in many operations peculiar to itself.

**Materia Medica** is the branch of Pharmacology which treats of the substances used as medicines and describes their origin, composition, physical characteristics, chemical properties, modes of preparation and administration, also their physiological and toxicological actions. Two of its divisions are—

**Pharmacodynamics** (*φάρμακον*, a drug, *δύναμις*, power), means the discussion of the physiological action of drugs, which is their modifying power upon the normal physiological activity of the human organism.

**Toxicology** (*τοξικόν*, a poison, *λόγος*, a discourse), describes the effects of drugs administered in poisonous doses, and treats of the antagonists and antidotes by which their effects may be neutralized or the poisons themselves rendered innocuous and removed from the organism.

**Therapeutics** (*θεραπεύειν*, to attend upon), comprises all the science and art of healing, and includes the use of medicines and all other agents and measures which are known to alleviate or cure disease. The operations of Nature herself are properly embraced in the general term Therapeutics, which may be subdivided as follows:—

**NATURAL THERAPEUTICS**, includes the operations of the *Vis Medicatrix Natura*, the healing power of Nature,—those modes and processes of heal-



and that all real advance towards the establishment of therapeutics as a science must be made upon the lines laid down by Haller, namely, drug-proving upon the healthy human organism. Still, in the words of Brown-Séguard, "Therapeutics will cease to be empirical, only when this last kind of knowledge shall be fully obtained;" but its fulness will never be fully realized unless the results have been thoroughly considered with regard to the differences due to the action of drugs *in different doses on the human organism* in health and disease.

A thoroughly-prepared materia medica of half-a-dozen standard drugs, such as Aconite, Arsenic, Belladonna, Mercury, Opium and Quinine, based upon their actions and uses in different doses and under different states of the organism, would be of more real value to the physician who wishes to do his work accurately and with his eyes open, than all the contents of the dispensaries, plus the entire literature of the "new remedies," and every symptom in the ten quarto volumes of the largely discredited and partly repudiated homeopathic materia medica. If medical students would devote but one month of their annual college vacation to the personal investigation of some one feature of the action of some one drug, under such safe-guards against error as would secure the acceptance of the resulting observations, a mine of therapeutic gold would soon yield its solid truth to eager eyes. Formally laid down by Haller in 1755, cultivated to some extent by Alexander in 1768, Crumpe in 1793, Thommassini, Curtis, etc., urged by John Hunter, Sir Thomas Watson, Dr. King Chambers, and many other luminaries of the medical profession, the scientifically guarded proving of drugs on the human organism has lain, like the similar work of Jenner, neglected these many years, waiting for another Koch to re-inaugurate the work.

## CONSTITUENTS OF ORGANIC DRUGS.

Drugs are derived from all the three kingdoms of nature. Those which belong to the mineral kingdom may be termed *inorganic drugs* and are resolved by chemical analysis directly into their ultimate principles, the elementary bodies of which they are composed. *Organic drugs* are those which are taken from the animal and vegetable kingdoms. They are to some extent composed of inorganic materials (water, gases, salts, etc.), but chiefly consist of organic compounds (proximate principles) obtained by a proximate analysis. The further reduction of these proximate principles to their elementary constituents shows that Carbon plays the leading role therein, associated with Hydrogen, Oxygen, Nitrogen and other elements. The proximate principles of vegetable drugs may be divided into insoluble and soluble groups; the first containing those

which resist the action of ordinary solvents, the second including those which may be dissolved in suitable menstrua and thereby separated from those which are not soluble in a particular menstruum.

The *Insoluble Constituents* are substances which make up the cell-walls of vegetable drugs, namely—Cellulin (Cellulose), Lignin and Sclerogen. They are extremely intractable to the action of solvents and yet find places in the materia medica under various forms. Cellulin in the form of Cotton is used extensively by both the surgeon and the pharmacist, and by the action of strong acids or alkalies thereon, there is obtained Pyroxylin (Gun-cotton), which dissolved in ether makes Collodion. By the destructive distillation of cellulin and lignin a large number of solid, liquid and gaseous products are obtained, including acetic acid, methylic alcohol, phenol, creosote and tar. From their natural decomposition result amber, coal, coal-tar and the many derivatives of the latter substance. The *Soluble Constituents* include some principles which are medicinally inert and also many active principles.

The *Active Principles* include carbohydrates, alkaloids, glucosides, neutral principles, organic acids, resins, fixed oils and fats, waxes, volatile oils, camphors, miscellaneous principles (phenols, ketones, etc.), protein bodies (albuminoids) and ferments. Some of these are not proximate principles from the strict chemical point of view, as they are not simple bodies (*e. g.*, fixed oils, fats, waxes, and many of the volatile oils), but for the purposes of the materia medica it is convenient to so classify them. Others are active chiefly as foods, though in some cases they are employed as medicinal agents. For the methods of extracting the soluble principles from drugs see the articles entitled MACERATION and PERCOLATION, in Part II of this book.

*Carbohydrates* are properly regarded as foods rather than as medicines, yet many of them possess remedial qualities due to their neutral, bland, demulcent, lubricant, protective or soothing action. They include the *Amyloids*, cellulose, starch, dextrin, inulin, etc., the *Sugars*, as glucose, levulose, lactose (milk sugar), maltose (malt sugar), saccharose (cane sugar), etc., and the *Gums* and *Pectin Bodies*, as arabin, pectin, bassorin, cerasin, etc

*Gums* are not proximate principles but amorphous, transparent substances which are widely disseminated in plants and yield *Mucic Acid* when treated with nitric acid. They form sticky preparations with water and are precipitated by alcohol. *Arabin* is the main constituent of soluble gums. *Bassorin*, which swells up in water, is one of the constituents of gum tragacanth, also of cherry and plum gums. [Compare the articles entitled ACACIA and TRAGACANTHA, in Part I.]

*Alkaloids* (*alkali*, εἶδος, resemblance)—are organic basic substances existing in many plants, usually in combination with organic acids. They readily combine with acids to form crystalline salts which are soluble in water, the alkaloids themselves being almost insoluble therein though dissolving in alcohol. They are odorless, of more or less bitter taste, and generally possess powerful physiological actions. They are easily decomposed by alkalies or alkaline carbonates, and are precipitated from their solutions by several reagents, including iodine in a solution of potassium iodide, potassio-mercuric iodide, auric chloride, also picric, tannic, phospho-molybdic and phospho-tungstic acids. Their Latin names terminate in *-ina*, their English names in *-ine*, as Morphina, *Morphine*.