

INTRODUCTORY LECTURE

ON THE

CLAIMS OF THE MATERIA MEDICA,

DELIVERED IN THE

UNIVERSITY OF PENNSYLVANIA,

OCTOBER 10th, 1859.

BY

JOSEPH CARSON, M. D.,

PROFESSOR OF MATERIA MEDICA AND PHARMACY.

PUBLISHED BY THE CLASS.

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At a general meeting of the Medical Class of the University of Pennsylvania, held October 21st, for the purpose of publishing the Introductory Addresses of the Professors, Mr. Serapio Recio, of Cuba, was called to the chair, and Mr. Samuel J. Jones, of Pennsylvania, appointed secretary.

The following committee were appointed to carry out the desire of the Class:—

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CORRESPONDENCE.

UNIVERSITY OF PENNSYLVANIA,
October 25th, 1859.

PROFESSOR JOSEPH CARSON, M. D.—

DEAR SIR: We, the undersigned, have been appointed a special committee by the Medical Class of the University of Pennsylvania, to request a copy of your Introductory Address for publication.

Hoping that you will accede to this request of the Class, we are,
Very respectfully, yours,

SERAPIO RECIO,
SAMUEL J. JONES,
EDWARD C. FRANKLIN,
GEORGE H. PEETS,
GEORGE W. MILLER.

UNIVERSITY OF PENNSYLVANIA,
October 30, 1859.

GENTLEMEN: I with pleasure accede to your request for the MS. of my Introductory Lecture, with the view to its publication, and at the same time desire to express to the Class, through you, the full appreciation of the compliment.

With the deepest interest in your behalf, and sincere wishes for your success, I am affectionately,

Your obedient servant,

JOSEPH CARSON.

To MESSRS. RECIO, JONES, FRANKLIN,
PEETS, and MILLER.

INTRODUCTORY LECTURE.

GENTLEMEN:—

The pleasing duty has fallen to my lot of first presenting to you our cordial greeting, and of expressing the sincere gratification afforded by again meeting so many of our former friends and pupils. There are many, also, with whom, for the first time, we are now brought into personal intercourse; who, having enrolled themselves under the banner of the University, are strangers to us no longer. The same interest in their success and prosperity will be felt, as for those who have already won our affections. On the part of my colleagues and for myself I tender you all a warm and sincere welcome.

You are aware, gentlemen, that it is my province to teach *Materia Medica* in this school of medical science, and I therefore, in advance of our regular course of instruction, may be permitted, in the form of an introductory lecture, to urge the claims of my immediate branch, and in a general way endeavor to bespeak for it that attention and interest to which I am assured it is fully entitled. It is sometimes alleged that an inordinate estimate may be entertained of the value of a pursuit with which one is conversant, which

constitutes, as it were, the primary object of study, thought, and research throughout a lifetime; that, in the concentration of the faculties upon it, the proper appreciation of equally deserving objects may be masked; and that, in a mind circumscribed in its view or partial in its perceptions, these objects may find no place at all. At the outset we deprecate any such narrow interpretation of what may be set forth in furtherance of the design with which we are now occupied. In fact, as the effort to exhibit the true claims of our department will show, its merit is in a large degree based upon its universality, its entire destitution of exclusiveness, and its world-wide ability to throw light upon and illustrate other departments of intellectual exploration.

The idea is commonly entertained, and especially is this apt to be the case with the student when first entering upon his labors, that the *Materia Medica* constitutes a dry, and difficult, if not repulsive subject; that it is made up of technicalities fatiguing to be recollected, of facts and statements which, from their isolation, or want of connection, tire and perplex the understanding; that it has been extended over so indefinite a space as to baffle the most industrious habits, and defy the power of ultimate mastery; in a word, as its objects and bearings are not seen or recognized from a superficial survey, this branch is regarded with least favor in a course of well-regulated medical instruction.

A sentiment may be noticed, which was at one time promulgated, and, from the high source whence it emanated, came wellnigh receiving favor to the detriment of the *Materia Medica*; it is that this depart-

ment is a subordinate one, secondary in importance to what are termed the practical departments, and that it needs less effort to acquire what is really essentially pertaining to it. This opinion originated in the neglect, for a time, it met with at the hands of those who undertook to represent its interests, and the lack of ardor or ability on their part to keep pace in its culture with its accumulating materials. But, thanks to the more recent illustrious individuals who have appeared to vindicate its claims, a new era has arisen in its destiny, and it now stands prominent in its true position, indispensable in the scheme for the acquisition of medical knowledge, secondary to none, giving, as it receives from them, aid and support to its sister departments.

The impression cannot be otherwise than made upon the reader of medical history, and which becomes strengthened as he advances, what high degree of importance has been in all ages attached to the exploration of the *Materia Medica*; at how early a period it was cultivated; how much has been written upon it; and how perseveringly researches have been conducted by the great number of zealous and eager inquirers who have devoted their energies to its extension and perfection. Nor has it been a favorite subject solely with those whose profession necessarily induced application to pharmacological studies. Men, eminent in their day for intellectual accomplishments, who have been distinguished as philosophers, moralists, and politicians, have seen its attractiveness and been seduced by its allurements. The schoolman, Aristotle,

whose philosophy for centuries held spell-bound the reasoning intellect, and his modern rival, Bacon, who disenthralled the mind from slavish philosophic fetters, were both sedulous inquirers after pharmacological knowledge. Nor has the naturalist neglected it when expatiating amid the marvellously created wonders of the globe; for Pliny, Tournefort, and Linnæus turned aside from admiration of them to present a contribution to our branch of science. But, further, if enthusiasm expended upon a pursuit can be alleged to be an argument in its favor, where has enthusiasm been to a greater extent called forth, or more profitably led on its votary, than in supporting, through days and nights of toil, ardent cultivators of the *Materia Medica*? What but an inherent love for its advancement, and pleasure in treasuring up its records, could have prompted the labors of Dioscorides and Avicenna; of Pomet and Lemery; of Allston and Cullen; of Thompson, Christison, and Pereira; and of our own Barton and Wood? Surely, then, I may speak warmly and strongly of the claims of this ancient department of medicine.

The first aspect in which we would desire to place our subject is that arising from its strictly educational relations. Every science, indeed, is serviceable from the educational training incident to its study, in proportion to its range and the expenditure of memory and thought required by it; and, although the application of the truths acquired constitutes the aim of every systematized branch of information, the process through which the mind must pass, in the acquisition of them, increases the facility of turning them to account when

needed. Much stress has been laid upon suggestive power in the adaptation of means to the fulfilment of certain ends: this undoubtedly has its foundation in association, and he is most efficient whose possession of details affords the largest scope of associations to aid in their production. The *Materia Medica* is fertile in details, which, with their associations, strengthen the mental faculties when exercised upon them, and give superior skill when they are called into requisition for practical purposes.

But, it may be asked, why is it clogged with technicalities which render its acquisition difficult, perplex the uninitiated, and lead to error in those not conversant with its learning? In the present advanced state of science, simplicity itself consists in technicalities, by which positive and definite ideas are conveyed; and to abandon them would entail all the jargon of circumlocutory language, and plunge the present generation into the doubts and perplexities of ill-constructed and badly-understood terms of expression. Every vocation, every art, every science, has its technicalities, and the only question which presents itself is their applicability and euphony. In some, the latter matters little. The seaman, to navigate his vessel, must acquire the technical name of each part and appendage belonging to her; the lawyer has likewise technicalities as old as the black letter learning of his profession; while theology, to the unlearned, is as mystical as cabalistic devices. I might go the round of the industrial employments and find a peculiar form of language belonging to each one of them. Why, then, charge as an opprobrium to our

science what every pursuit exhibits, and what would seem to be indispensable?

Upon turning to the records of our department, it will be evident to what extent advantage has been gained by the adoption of a well-devised and well-arranged system of technicalities. I may instance the difference in nomenclature exhibited in the older works upon the *Materia Medica*, and those of recent origin. In the one a full description of an article, couched in not the tersest terms, frequently fulfilled the office of its name; now a single word, or at most two, will indicate it clearly, and bring before the memory the characteristics which belong to it. Indeed, it has been found impossible, from vague and ambiguous descriptions, and the want of a technical language to indicate them, to identify many of the substances pertaining to antiquity. It has been proposed to use our own vernacular expressions instead of the elaborated language of science; to employ the English names in our prescriptions and descriptions of the articles of the *Materia Medica*, instead of those derived from the Greek and the Latin. But this would lead to greater difficulties, to more numerous errors, and "confusion worse confounded." In a vernacular the terms are ill selected, indiscriminately applied, or loosely constructed. Turn to the Dispensatory and ascertain how many drugs are known as snakeroot, how many as puccoon, as Indian hemp, as American ipecacuanha. Are we to use the mongrel vocabulary of aborigines or herb-venders? The answer is plain to all cavillers against our terminology.

The present time is not suited to an exposition of our

nomenclature, or to an examination of its peculiar merits. It is sufficient to affirm that it has been laboriously and carefully constructed, is admirably suited to the wants of the profession, and is to be sedulously acquired by the student, now, as a potent means of strengthening his memory, augmenting his associations, and ultimately conferring practical efficiency in directing materials to be employed for the relief of his fellow-beings. True scholarship is tested by scrupulous attention to minutiae of this description; and our national medical character may be judged abroad from the observance or neglect of them. The great defect in our medical literature has sprung from this source, and, strong and otherwise meritorious as it is, it falls short frequently of the elegance which a compliance with rigid rules would give it. To indite prescriptions in terms half English and half Latin, without an apparent comprehension of the force of either, is inexcusable; yet this may be met with in contributions to the journals, and, we regret to say, even in the *Transactions of the American Medical Association*.

We might insist, next, upon the benefit derived from the study of the *Materia Medica* by the discipline to which the senses are subjected, and by calling forth the habit of accurate comparison and nice discrimination. That such is the result is self-evident from the fact that its objects are tangible, requiring scrutiny into their sensible properties, and a perfect familiarity with them. In this it resembles other demonstrative branches of science, justly valued for their education of the faculty of observation. I will not dwell, however, on what

becomes more appropriately a portion of our course, and will pass to the consideration of those points in which there is found a bond of connection with the exterior universe.

It is to be recollected that the substances forming the armamentarium of the physician are derived from nature. There is nothing especially occult or incomprehensible about their formation or production, and they are amenable to the same laws and influences as other natural objects by which we are surrounded, and which may be congeneric in character. As products then of the material world, they are subject to the order, arrangement, and harmony which have been stamped upon creation by an infinitely wise and skilful Creator, who has apportioned to its place each animal, plant, or mineral, and given to man the privilege of making them subservient to his gratification, to his wants, and, in the dark hour of his suffering, to his relief and comfort. It is impossible to disconnect the investigation of medicinal properties from that of nature, and in this light we would wish to regard it.

The inquiry may be suggested, What has the medical man to do with nature? His calling is to administer to the suffering and diseases of humanity. He studies medicinal agents to effect this great purpose, and has not the leisure, even had he the taste and the inclination, to go beyond the circle of his avocations. Restricted as may be his immediate pursuit, he cannot be other than a naturalist, for with the laws of nature must he be occupied; he must render himself familiar with, and be guided

by them. The merest pathologist becomes a naturalist, as his study is the natural history of disease, manifested in scrutable phenomena. The true physician, while investigating modifications of human structure, seeks also to discover the elements from which they are produced—the sources which originate them. He invokes to his assistance all the succor which physical and chemical science can afford; pries open as far as possible the secret springs of life, to aid in his deductions. Still further, he appeals to agents to carry out intentions that may be formed with reference to the removal of disease; and these are composed of natural principles, which have such an influence upon the structure of the organs, or their modes of vitality, as to check and eradicate morbid derangements of them. Herein consists the difference between the physician and the empiric. The first must have the spirit of the naturalist.

It is the popular belief that the study of natural history proper is confined to the examination of external forms, to the determination of orders arising from them, and the classification of living or extinct beings. This is but a limited view of its attributes and scope. The whole organic constitution of the universe is the field of its researches. The reasoning and experimenting powers must penetrate into truths which are deeper than the surface. The discovery of the elementary principles and forces which have contributed to the metamorphosis of matter, is as legitimately its province as the designation of specific characteristics. Modes and processes are presented, whether dealing with cunningly devised animate existences, or the inanimate

matter that lies a written document of bygone ages. It cannot escape the notice even of a casual observer of the works of nature, that a systematic plan has been adopted, by which all things have been made to harmonize, by which have been entailed mutual dependence and support. Isolation without relation to surrounding bodies is an unknown fact in the constitution of the world. The elucidation of this plan in each department, and detecting the minutiae of its preservation and working, constitute the business of the philosophic naturalist, and his highest function is to ascertain the laws by which organic and inorganic nature is governed, from which practical results will follow as a necessary consequence. The constitution of a starch granule and its office of nourishment, by conversion into sugar, to the infant plant, or to infant man, become as much the subject of inquiry as the formation of a continent.

The cultivation of the *Materia Medica*, in its widest and most comprehensive sense, opens a boundless expanse for contemplation, and places at the command of the possessor of its stores of natural and physical knowledge, resources either of pleasure or utility. Each article of which it is composed possesses a history, and the details invite special scrutiny. It comes into the list loaded with associations, from which the dullest exposition of its qualities or virtues cannot free it, and which in their fullest extent constitute the delight of ardent and enlightened inquirers. It may be permitted us to exhibit such as will illustrate this statement with sufficient clearness.

As a large proportion of the articles belonging to the

Materia Medica are derived from the vegetable kingdom, this at once attracts attention from its prominence and ready application. Either portions of plants, or products which are yielded by them, are employed in the form of medicines. In the whole vegetable world organization is at the foundation of differences that may be recognized; and as in the study of the animal system histology is the groundwork of our knowledge, so is it in the vegetable. Commencing with simple formative structure, in which exists the cell-germ, an advance is made to more complex, organ upon organ being added to complete the noblest specimen of vegetative life. Upon this organization, whether simple or complicated, the laws of growth, change, and decay, as well as the generation of peculiar principles by the assimilation and reaction of external agents, must depend. Classification is founded upon it, and has been rendered perfect and practically useful in proportion to the advances made in unfolding it.

The most persistent and easily determined marks of difference between vegetables are discoverable in the reproductive organs, and to these has reference been made in framing schemes of classification. The one now universally adopted will be selected, that of Jussieu, so admirably exemplified and improved by De Candolle and Lindley. The beauty of this method is the entire dependence on structural characteristics, which are not mutable, but found under all circumstances, and their manner of association is in conformity with a fixed order, so that when a certain set of them is present we may look for all the others. Thus the union of vascular

and cellular tissue is linked with the production of flowers and seeds, the cellular alone with spores; hence we have *Phænogamia* and *Cryptogamia*, and synonymous with these classes are *Cotyledonous* and *Acotyledonous*, or those plants with seed-lobes, and those destitute of them. The first of these divisions is again separable into such as are formed by an external growth, and such as increase by an internal deposit, each with a peculiar structural arrangement of the primary tissues, and hence the specification of *Exogens* and *Endogens*, or, as the one has a double provision of seed-lobes, and the second but a single lobe, *Dicotyledonous* and *Monocotyledonous*. At the extreme ends of this arrangement are the giant oak and the creeping lichen. The one at the head of vegetative organized existences, exogenous in its growth, defies the tempest and flourishes for ages; gnarled and compact in its structure, it serves the floating bulwarks of a nation; while the other, lowest in the scale, tenacious of life as uncomplicated in organization, clings to its protector, and, like a wretched parasite, preys upon its vitality to finally complete its ruin. Between them an extensive range of structural gradations exists in accordance with the distinctions which have been given, the links so accurately defined as to give to each particular plant its true position.

But, as with animals, plants have likewise their family groups, and in these will be found affinities and alliances which are unmistakable. I have mentioned the existence of principles in medicinal substances, which give to them efficiency, or which when separated are found to be infinitely more potent. Chemistry, which is the skil-

ful handmaid of every natural science, reveals to us the truth that these principles are found in families, and that the presence of any particular one is almost an identifying family characteristic. The *Solaneæ*, of which the potato is the type, are more or less noxious; and that indispensable source of nourishment is no exception, in its uncivilized condition. They owe this quality to the presence of an alkaloid, and assume what name it may, as *Solania*, *Hyoscyamia*, *Daturia*, from the progress of organic chemistry in that direction, they are most probably the oxides of a common base. The *Cinchonaceæ* contain quinia, extensively known as it is popular as a remedy, or some analogous principle, which renders the family so valuable in a commercial and therapeutic point of view. The *Pruneæ* resemble each other in their odor, arising from the presence of the compound substance amygdalin, which, from its reaction with emulsin, forms the noted sedative prussic acid. The *Rosaceæ* contain tannin, and the *Labiatae* yield a volatile oil, constituting our most grateful stimulants and perfumes. I might in this way go through the whole catalogue of Families pertaining to the *Materia Medica*, so admirably co-ordinated in their botanical, chemical, and therapeutic relations by De Candolle, in his "Essay upon the Medicinal Properties of Plants;" but sufficient has been said for the present purpose. Now is it possible for the physician whose dependence for the successful performance of his duties is on his acquaintance with roots, leaves, stems, flowers, and fruits, with their constituents and products, to limit his inquiries to just so much information as will enable him to prescribe them?

If rhubarb or jalap is presented, will the most obtuse curiosity not be operated upon, or interest aroused in their whole history and associations? If not, he is little fitted with endowments to assume the function (as every physician should be) of a high priest of nature, conversant with secret mysteries within the veil of the temple in which he officiates. We are told that Solomon could "speak of trees, from the cedar tree that is in Lebanon even unto the hyssop which springeth out of the wall," yet how much wiser in this species of knowledge may be the rightly inspired *Materia Medica* student of the present day and generation.

It would be pertinent to claim for our branch a further extension, and exhibit in what manner it will become the most appropriate introduction to the pursuits of horticulture, agriculture, and many of the manufacturing arts, especially those connected with the nicer operations of chemistry; and as in the crude state the disembowelled earth furnishes potent agents for medicinal application, I might expatiate upon the inducement given to the prosecution of geology; but I refrain, and desire to turn to other considerations.

The sources of the *Materia Medica* are not local; the articles composing it are brought to us from every quarter of the world; they may exist in lands as remote as the rising and setting of the sun; in countries teeming with life and animation from genial warmth and refreshing moisture, in arid deserts of the tropics, or in the congealed soils of polar regions. Drugs, then, are the representatives of the distinctive productions of the earth, brought together with toil and labor for one

specific purpose, the relief of the ills of life. Their derivation is associated with the manners and customs of all nations of the habitable globe, and in tracing their origin the student must become informed upon the subject of races of man and his condition, whether civilized or savage. In fact the exposition of the sources of medicinal agents becomes a book of travels from which may be gleaned instruction and amusement. At one time the Tartar is brought before him with the full picture of nomadic independence; at another the Chinese, with his strange, conventional civilization. Now the indolent Turk, and then the weak and confiding Hindoo; again the fierce Malay. Here the Laplander with his primitive covering and habits; there the Terra Del Fuegan and not less degraded Hottentot. Rhubarb, camphor, opium, pepper, and the spices, the nutritive mosses, Winter's bark, and aloes, each opens a chapter of ethnology. Besides, the influences derived from the physical formation of the earth, with its attendant soil and climate, cannot be overlooked in such researches. The cinchona of the lofty Cordilleras, or the sarsaparilla of the dark alluvial plains beneath them, both within a torrid zone, present pertinent examples of these influences.

The account of the *Materia Medica* is also connected with the progress of civilization. The commercial intercourse between distant nations has introduced the arts and appliances of the superior among inferior people. Commencing in its caravansary form, it has left the slow and plodding dependence on beasts of burden, and, guided by the compass, has spread its wings over every sea.

Wherever a keel can float, there is a mart for enterprising industry. The story of adventurous maritime daring, embraces that of medicinal articles, and we may follow De Gama or Cook in their perilous enterprises with an additional interest from the facilities they opened for the supply of health-restoring products of more distant regions. The jealousies and struggles of modern governments to maintain ascendancy, or to monopolize this trade in drugs, are not the less matters of inquiry. We learn how Portugal and Holland contended for an eastern supremacy; how Spain battled for a western, and how England, with her naval audacity and pre-eminence, has plundered both; and become the greatest colonizer of any age or nation. The Dutch, during their control of the Spice Islands of the Eastern Archipelago, so sedulously guarded their commercial interests, that not a living nutmeg was permitted to be exported, and, to maintain the price, what equalled a whole year's crop was once destroyed in Amsterdam to make room for the coming harvest.

Another association, that may still be mentioned, is with the career of illustrious individuals. This, indeed, would be too extensive a theme to enter upon and elucidate in the present sketch of the points of interest incident to our branch of medicine. It may be simply stated, that to eminent rulers, statesmen, and even military leaders, as well as scientific explorers, is it indebted for bringing prominently forward the resources of countries previously little known, or wholly undeveloped. The efforts of these men to extend the domain of information, and render it available to the advantage of their

native land and of mankind, cannot but elicit respect and commendation. I will refer but to a single instance. In the year 1798, Bonaparte undertook his celebrated expedition into Egypt. He has been called a heartless conqueror, a ravager and destroyer of the nations, led on by personal greed of fame and insatiate ambition; yet deeper views of policy and more elevated sentiments actuated him on this occasion. He desired to open a channel of intercourse between the East and the West, which has since become a highway, and to unfold the resources of the benighted region it was his object to control. With an eagle eye he looked upon the country of the pyramids as the richest field for exploration; he recollected the vast antiquity of its history, the abundance of its monumental remains, its undetermined records of the arts and sciences of a population long since departed, and he resolved they should be mysteries no longer. Aided by the chemist Berthollet, a corps of savans, each one eminent in his line, was brought together. It resolved itself into the Institute of Cairo. It produced a work, the summary of its labors, which, from its extent and magnificence, is a monument itself to the glory of the munificent patron under whose auspices it appeared, and which will outlive the memory of many a victory. To this work are we indebted for the scientific and commercial account of Senna, and other articles of the *Materia Medica*.

I have now, gentlemen, endeavored to present to your consideration the subject, on which a portion of your labor will be expended during the coming session, in such a way as to bespeak for it the degree of inte-

rest that it merits. With respect to the necessity of appropriating to yourselves that portion which is more strictly termed the Therapeutical division of Pharmacology, I have made but a passing allusion, and have not dwelt upon it as an argument in behalf of the claims of the *Materia Medica*. I have taken for granted that you are awake to the importance of thoroughly understanding all that is connected with the physiological and pathological action of medicinal agents, their modes of eradicating disease, or of establishing such tendencies in the vital operations of organs as will lead to its removal. To become accomplished philosophic physicians, above mere routinists, the effects of remedies under all phases of morbid derangement must become as familiar as one's own thoughts and feelings, and ample opportunity will be afforded of acquiring such knowledge in the several courses on the practical branches by the able teachers to whom they have been allotted, and in the therapeutical instruction received from this chair. I have rather sought to present a wider range than the application of the *Materia Medica* to the daily duties of the medical man, and to exhibit that in the thorough cultivation of at least one branch, there is afforded the means of tracing nature in her most intricate operations, of placing the medical student in his right position as an inquirer into all that relates to the animate or inanimate world, of giving to him food for thought, and solace in his weary course, of making him at home where'er he may bend his steps, and of securing to him, in society, the fully awarded title of a gentleman

and a scholar. With this spirit I would have you enter upon your studies, and desire to be the humble instrument of placing in your hands an Ariadne thread by which you can follow, with perfect satisfaction and success, paths which may now appear a labyrinthian maze.

