An introductory lecture to the institutes of medicine / by Samuel Jackson.

Jackson (S.)

AN

INTRODUCTORY LECTURE

TO THE

INSTITUTES OF MEDICINE.

BY

SAMUEL JACKSON, M. D.

ASSISTANT LECTURER TO THE THEORY AND PRACTICE OF MEDICINE AND CLINICAL MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

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To Professor Dunglison with the compliments of the Medical Chap of the University of Pennsylvania.

Sir,

At a meeting of the Medical Class of the University of Pennsylvania, held this morning, we were constituted a committee to request a copy of your Introductory Lecture to a Course on the Institutes of Medicine, for publication. It affords us much pleasure to add that this application is attended with a spontaneous and general desire of the students. By acceding to their wishes you will confer a particular obligation on them, and extend a gratification to the medical public.

Yours, very respectfully,

Wm. M. Fahnestock,
C. W. Pennock,
W. Whelan, jr.

Samuel Jackson, m. d.

Philad. Dec. 5, 1827.

Gentlemen,

I should not have thought of committing to the press the production, of which a copy is requested for publication. The favourable opinion expressed by the Medical Class of the University of Pennsylvania of this occasional essay, is certainly very flattering and highly gratifying. The "spontaneous and general desire of the students," I feel to be an obligation upon me, a compliance with which cannot be refused.

With my sincere acknowledgments to the class, be pleased to convey to them my sentiments of respect and esteem; and accept for yourselves the assurances of sincere regard from your friend, &c.

Samuel Jackson.

To Messrs. W. M. Fahnestock,
C. W. Pennock,
W. Whelan, jr.

Philad. Dec. 6th, 1827.

INTRODUCTORY LECTURE.

On the establishment of the Medical Department of this University, the Institutes, or Theory and Practice of Medicine and Clinical Medicine, were assigned as the duties of the same professor. Clinical medicine, though so important a part of medical instruction, was either entirely neglected, or scarcely received attention. It is only within the last four years that clinical lectures, conducted on a systematic plan, have been delivered to the medical class. With strict justice, I believe it may be asserted, that this course is superior to any at present attempted in this country, and is surpassed by few in Europe.

Independent of Clinical medicine, experience has demonstrated, that in the shortness of the session of the medical school, it is impossible to treat the interesting and important subjects of the Institutes and Practice of Medicine, in the ample and satisfactory manner requisite to sound and safe instruction, in the same course of lectures.

The late Professor Rush appropriated nearly two thirds of his course to the Institutes; while little more than a

month was devoted to the Practice of medicine; to the history, causes, symptoms, character and treatment of the great catalogue of diseases to which the human species is subject; modified as they are by climate, by individual differences of constitution, temperaments, habits, previous diseases, &c., all of which more or less influence the character and symptoms of diseases, and demand a diversity of treatment. This portion of his lectures was necessarily defective.

The present incumbent of the chair of the Theory and Practice, who has given so much satisfaction to the numerous students that have attended his lectures, strikingly displayed in the marked testimony of respect and esteem unanimously conferred upon him by a late class, attempted in the first years of his appointment to include the Institues and the Practice in the same course. A very short time produced a conviction, that one or the other department must be sacrificed. It was impossible to complete a course, in the period allotted for its delivery, unless subjects of great moment should be slurred over in a very superficial manner, or matters of importance be entirely omitted. The Practice of medicine was correctly regarded as the most useful, instructive and important to the student: it consequently received the preference, was retained, and the Institutes were discontinued.

Practical medicine has sustained, and is undergoing at this moment, very considerable changes, and has received

vast accessions of valuable improvements. The pathology of various diseases has been elucidated, been rendered more definite by the flood of light thrown upon it by pathological anatomy; diagnosis has become infinitely more accurate; the value of symptoms and signs are more justly appreciated; the sympathies that connect the tissues and organs, and their influence in a morbid condition of the economy, are better understood; and the treatment, in consequence of these meliorations, is in the process of an extensive reform, has acquired a more rational and philosophical character, attained a high degree of precision in its calculations, and a more favourable tendency in its results.

Increasing his subjects with the progressive advancement of practical medicine, notwithstanding the omission of the institutes, the professor has found it a difficult task to finish, during the session of the school, his lectures on the practice of medicine, enlarged by the description and history of diseases; by the consideration of the causes, nature, and seat of the morbid derangements of the system; the signs by which we are enabled to recognise those derangements wherever they may exist, and which instruct us as to the degree of danger with which they are connected; by an examination of the diversity of symptoms manifested by the same disease, from various causes, in different individuals, or in different years, under an epidemic or atmospheric influence; together with the treatment required

under common circumstances, and anomalous deviations. Situated as I have mentioned, and acting upon the views that have been alleged, who, that is possessed of the slightest sense of justice or spirit of candour, can breathe a censure on the proceeding that was adopted? who will deny, that, under those circumstances, it was not the best for the interests of the class, and the welfare of the school?

Those conversant with the affairs of the University, are perfectly acquainted with the fact, that soon after the discontinuance of the institutes in the course of instruction of this school, different schemes were agitated to supply the deficiency. Difficulties arising from one source, obstacles originating from another, constantly defeated every attempt to accomplish an arrangement to that effect. Finally, however, on a renewed application from the medical faculty, the board of Trustees of the University passed a resolution last October, authorising the Professor of the Theory and Practice of Medicine and Clinical medicine, to select an assistant. I have received the flattering distinction of being the object of this selection, which was concurred in by a unanimous vote of the medical faculty; and in consequence, I now have the honour to address the most numerous, the most respectable, and, I may add, the most intelligent class of medical students, assembled in the United States.

The branch of medical instruction confided to my charge, is the Institutes of Medicine. They consist, 1st.

of Physiology, or a knowledge of the remote and proximate elements of the animal organization; of the natural organic actions, and the healthy functions of the various tissues and organs of the economy:—in other words, Physiology is the science of life.

2d. Of Pathology, or a knowledge of the derangements of the organic actions and the disturbances of the functions, resulting from morbific agents or other causes; of the tissues and organs the seats of those lesions, and the alterations of structure, in which diseases consist. Pathology is, properly speaking, morbid Physiology.

3d. Of Therapeutics, or a knowledge of the mutations or disturbances produced in the organic actions and functions of the different tissues and organs, by remedial or medicinal agents. From a knowledge of these physiological effects of those agents, are deduced the therapeutic principles, or laws, for their employment in the treatment of diseases.

4th. Of Symptomatology, of Semeiosis, of Diagnosis, and of Prognosis; or the symptoms and the signs of diseases, manifested in the exterior habitudes, movements, and the various organs and functions; the value of these signs indicating the precise state of the tissues and organs; the designation of those that are in a natural condition, those the seat of morbid lesions and the nature of those lesions, the kind of treatment to be adopted, and degree of

activity to be pursued; instructing in what is favourable, and inspiring hope in what is sinister and fatal in its augury.

Lastly, of Hygiene, or the rules for preserving health, both individual and public.

From this outline, it is manifest, that the Institutes of medicine embrace a great variety of subjects of the highest importance. They constitute the basis, they furnish the very elements of practical medicine, and are indispensible to the formation of an accomplished and judicious practitioner. It is also apparent, that the ground they occupy, spreads over an extended surface, far too ample to permit its different departments, in the time appropriated to my course, to be treated with the depth of research that would be expected, were each the object of a distinct course of lectures. Avoiding all historical details, and an examination of the numerous speculations and hypotheses that have swept like fleeting clouds over the horizon of medicine, obscuring the beauty of its day, it will be my object, without looking back to the darksome past, to make you acquainted with the science of the present enlightened period; to lay before you the matter that I believe will be useful in your profession; to collect, as it were, into a focus all the facts and principles that throw light on the occultness of disease, displaying the nature, seats, and character of the morbid lesions in which it consists, and thus establishing the foundation of a rational method of treatment. The two last of the departments in-

cluded in the institutes, embracing subjects highly interesting and of primary importance, I do not expect I shall be able to reach in the present season. Their omission will be unavoidable.

From the Institutes of medicine are to be extracted the principles or the Theory of medicine. With many, theory in medicine is regarded as futile, nugatory, and delusive. Experience, it is alleged, is the only guide in which confidence is to be reposed, and can lead to substantial improvements. Nothing, however, is more deceptive, or rests on a more unsubstantial base, than this oft reiterated proposition. It appears to be one of those maxims, uttered by some authority without reflection, and repeated by hundreds without examination. I hold it to be a thesis susceptible of demonstration from the history of the science, that, as a science, medicine is indebted to theory, for all the real improvements and advances it has made; while experience, from its direct results, has contributed in a very slight degree to aid its progress. On the contrary, it has often fastened upon medicine a mis-shapen load of extravagant errors, of absurd and often fatal practices, that have weighed and pressed it down to the most humiliating and degraded condition. Shall I refer, to maintain my position, to the long era of Galenical despotism; that period of Egyptian darkness through which no ray of truth could penetrate? For thirteen hundred years, the science, bound in the shackles of the idlest of hypothe-

ses, and the extravagant doctrines of humoralism, made not a single advance towards improvement. And what aid did experience lend to rescue medicine from this state of debasement?—Absolutely none. On the contrary, every vain hypothesis that issued from the prolific brain of the oracle of Pergamos, received its sanction; and the irrational superstitions, and absurd treatment, followed during that extended period, derived from it full confirmation. It was theory—the theory of solidism—that put a term to this deadening thraldom, and gave to the Galenical humoral system, its complete and final overthrow. It was theory, that, after so long a deviation from its true route, restored medicine to philosophical observation and reason, which alone can conduct to its ultimate perfection.

Shall I cite, as additional authority, the treatment of febrile diseases for several centuries, by stimulating sudorifics, alexipharmics, narcotics, all kinds of excitants, hot drinks and air, with the patient buried beneath a load of covering:—a practice that converted the remittent fever, so often epidemic in Europe, but with a very moderate mortality, in this age, into the most terrific of scourges,—the black, and various other plagues, petechial, miliary, putrid and gangrenous fevers, that for so long a time devastated different portions of Europe, and which numbered as their victims, nearly all whom they attacked? Yet experience never detected the destructiveness of this practice, which was sustained by the full force of its counte-

nance and authority. When a salutary reform was accomplished, it was the work of theory, and met a long but unavailing resistance, from what was alleged to be experience. Why are those diseases, once so formidable, and spreading terror whenever they made their appearance, no longer found in the rolls of nosology? For no other reason than that a more rational practice, derived from a sounder theory, has taken the place of an incendiary treatment, that aggravated the inflammations of the most important and vital organs to the highest degree of disorganizing intensity; that created the very mischief it was intended to remedy.

Shall I adduce, to strengthen my argument, the management of Variola or Small Pox, century after century, by sweating, by stimulating remedies, shutting the patients up in rooms heated to suffocation, by hot, exciting drinks, combined with the sovereign virtue of red blankets and red curtains to the bed? This practice, that rendered Small Pox the most dreadful of pestilences, received from experience the stamp of its approbation. When the philosophic Sydenham, imbued with the spirit of the Greek medicine, formed from his observation a more just theory of the disease, reversed the treatment, and introduced sanguine depletion, cool air and cool drinks, the daring innovation was opposed by a host arrayed in defence of a practice sanctioned by time, and himself denounced as a vain theorist, who would array his empty speculations against

the solid lessons of a many centennial experience. Other examples, not less cogent, could be adduced, even to the present day, of error and experience in close alliance, and contending against the real improvement of the science, and the establishment of rational medicine.

What, I would ask, is there in theory, that renders it peculiarly hazardous and to be distrusted? To theorise is to think; to exercise the noblest of our faculties, reason and judgment, in the investigation of knowledge, and the pursuit of truth. Theory is no more than the evident logical inference of the intellect, from an examination and comparison of the facts offered by observation, experiment, and enlightened experience. When a theory is incorrect, most generally the facts on which it rests are false. Dr. Cullen has truly said, there are more false facts than false theories in medicine. Let the facts of science be cleared of the rubbish of crude and indigested observations, of experience unworthy of trust, of experiments inaccurately observed, or badly devised and incorrectly performed; let them be determined with precision, and the theories of medicine will no longer want stability in character, or truth in their principles and precepts.

Experience is the quality of an individual. He may improve by it, and be led to contribute to the progress of knowledge. It may enable him to observe better, to think better, to theorise better; it may impart a tact in the detection, discrimination and treatment of diseases, but

which cannot be imparted to another. It dies with himself. Experience partakes of the character of the individual, and deserves confidence only as he is intelligent, well informed, free from credulity and prejudices, with a well balanced mind, capable of clear conceptions, logical arrangements, and unembarrassed deductions, the fruits of an exercised judgment. Without these requisites, experience is a base and counterfeit coin, of no value, and which receives currency only from ignorance and imposition. How little of the vaunted experience of those, who have consigned it in the fasti of the science, has stood the test of time and the advancement of information.

Notwithstanding this general defectiveness of experience, we every day continue to hear, even those who do not rise above a routine practice, boast of their experience as an infallible test, and elevate it as an impassable barrier to the encroachments of theory.

Experience, besides, to be fully entitled to a claim on our confidence, ought to be submitted to comparison. Of what worth is that experience, consisting in a constant perseverance in one plan, no matter for what length of time, whose results are not contrasted with those of another and different system? But this comparison is impracticable in private practice. It can be accomplished only in public or hospital practice, from which, until within a few years, and by a limited number of hospitals, no documents

have been furnished, on which an accurate comparison can be established. If theory have its delusions, experience is not without its deceptions. With the father of our science, and the profoundest of medical observers, we can give full accordance to the dictum—experientia fallax.

I wish not to be misunderstood. It is not my intention to decry experience, or to underrate its utility. I attack only pretensions that are unfounded; I would strip it of borrowed attributes, and place it in its true position.

Experience and theory are, by nature, intimately united: let none put them asunder. Bartholomeus Kruger judiciously observes, by the assistance of both, medicine advances. "Nec enim sola experientia, sed tamen ratione nititur, duobus veluti cruribus, medicina." Hebenstreit, also, notices the profitableness of each. "Amica quidem nobis sit ratio, amica tamen et experientia."—Experience combined with sound discriminating observation, furnishes the facts from which theory is derived, while the truth of a theory can be alone determined by experience and observation. The union of the two is of mutual advantage; they sustain and strengthen each other; they afford a mutual protection against the numerous errors to which each is separately exposed, and in their combined operation, are most efficient in forwarding the true interests and progress of science. Disunited, they soon fall into excesses and degenerate in character: the

one becomes a prey to baseless speculations; the other sinks into a dull, unenlightened routine; neither of the slightest advantage to medicine, but rather embarrassing and retarding its advance.

The repugnance manifested towards theory in medicine, often arises from confounding it with hypothesis, to which it has no relationship. This last is mere gratuitous assumption, devoid of proof, or at most sustained only by probabilities. It is false and treacherous: as the illusive mirage mocks the senses of the thirsty traveller of the parched and burning desart, with the visions of cooling streams and limpid waters, tempting him to wander from his rout, hypothesis assumes to the votary of science the image of truth, beguiles him from its path, and plunges him into the intricacies of error and delusion.

The numerous doctrines that have prevailed in medicine, are often appealed to, as conclusive evidence of the fallaciousness of theory. But if they be examined with the slightest attention, few will be found meriting the appellation of a theory. Most are no more than the crude and idle fancies of an overteeming imagination, and an arrogant presumption of knowledge. Many had their origin in the wildest superstition and grossest ignorance, while others were founded on the principles of collateral sciences, as chemistry and mechanics, wholly inapplicable to medicine, instead of drawing them from "the source

undefiled," the phenomena of life manifested in the actions of the animal economy.

The elements of a correct theory had, in fact, no existence. The philosophic physician who felt it his duty to restrict himself within the bounds of certain knowledge, was confined to observation and experiment: whoever departed from these limits fell into inextricable difficulties, and was soon lost in a labyrinth of speculative illusions.

It is only within the last century, and especially in the latter portion, that the groundwork and materials of a theory, for which a claim to accuracy and truth could be correctly raised, have been prepared. A very brief sketch of the state of medicine, in its various stages, will establish the correctness of this assertion.

Passing by the period when, in the hands of the priesthood, medicine consisted in the performance of certain religious rites, of empirical and superstitious practices, we find it, amongst the Philosophic sects of Greece, a purely speculative or abstract science. Destitute of well observed facts, which, by induction, might conduct to truth, it was believed that it could be attained by the sole powers of the reasoning faculties exercised in profound meditation. Some sects entertained the doctrine, that the archetypes of all truths had an existence in the intellect, which might be developed by abstraction, reflection, and reason. Highly gifted with intellectual powers, as were the leaders of the Grecian philosophic schools,

who midst their fellow mortals shone like Gods, their systems of philosophy, founded on those principles, can be accounted as little more than reveries, brilliant as the productions of exalted genius, and a boundless imagination, yet of no more worth than "such stuff as dreams are made of." It must be acknowledged, however, that, amidst the numerous speculations emanating from the schools of Greece, we are surprised by occasional approximations to many important fundamental truths that have of late been demonstrated by analytical philosophy; a system of induction less dazzling than the splendid theoretical combinations of the Greek philosophers, but practical, conclusive, and positive in its results.

Medicine under the auspices of Hippocrates assumed a new aspect. From being either empirical or purely speculative, he formed it, into what alone it was suceptible of becoming in that age, a science of observation. The finest specimens of observations in medicine, are contained in the epidemics of Hippocrates. They stand unrivalled for terseness, graphical character, and truth of description. The writings attributed to Hippocrates are not entirely free from speculations, which partake of humoralism, though the importance of the solids is fully recognised. He may be regarded as the founder of the doctrine of the solids. In his practical writings, few traces of the hypothetical opinions of his other works are met with. They are rigidly confined to observation, or embody its

results, as in the Aphorisms, Prenotions, Coacæ and Prorrheticæ, works that have called forth the admiration and extorted the praise of every enlightened practitioner, and cannot be read without instruction and advantage.

Omitting to notice the various sects that succeeded Hippocrates, of which the empirics and methodists were of most consequence, but which gave no permanent impulse to the science, we arrive at the most remarkable epocha in medicine.

Galen, a native of Pergamos, exercised medicine at Rome. He was one of those extraordinary men whose birth forms a memorable event in history; who, by the force of their character and extent of their genius, sway the destinies of the age, when possessed of power, or change the face of a science, to the cultivation of which they may be devoted.

Gifted with an intellect of the highest order, richly furnished with all the knowledge of the time; possessing an unbounded confidence in the extent of his powers and resources, he disdained what he regarded as the humble office of an observer and interpreter of nature. With arrogant pretensions, he ordained himself her high priest and oracle. All her mysteries, that had, heretofore, been concealed, he pretended to lay open; every hidden movement of the animal system in health and disease; the secret virtues and innate properties of medicines, by which they cure diseases, he undertook to explain. In these vain at-

tempts he drew without limits on his imagination; hypothesis was raised on hypothesis, until an entire system of medicine was composed, of no more substantial materials, than the "coinage of his brain." Frail as was this edifice, it had the singular fortune to prove the most durable of all the systems that have prevailed in philosophy or science. For a thousand years no one dared to question its truth, and it received its final coup de grace, as late nearly as our own time, from the system of Cullen.

The doctrines of Galen produced a disastrous influence on medicine. The minds of its professors were turned from observation and a study of nature, to the sole study of his writings, on which interminable commentaries were composed.

From the time of Galen, medicine rapidly deteriorated. In a space of several centuries, but two or three authorities, by any novelty of observation, will repay a perusal.

After the overthrow of the Roman empire, when was extinguished in Europe, the light of the sciences, letters and the arts, medicine found protectors amongst the Arabians, by whom it was cultivated with distinguished ardour. The Arabian medicine was chiefly Galenical, with the addition of some hypotheses of their own creation, and a mixture of alchemy and astrology.

Medicine, on its reappearance in Europe, was derived from the Arabians. As in its first era, the practice of medicine, or rather the empirical treatment of diseases, as so-

ciety began to recover from the rude shock it had sustained, was exercised by the priesthood, and was one of the occupations of the cloister.

Leo Africanus, a distinguished warrior, and the most erudite scholar of the age, had sought, in the monastery of Salernum, a refuge from the persecutions of his enemies. In recompense of the hospitality accorded to him, he communicated to his hosts the knowledge of medicine he had acquired in the schools, in the hospitals, and from the libraries of Bagdad; and translated for their use the most esteemed of the Arabian medical authors. Furnished with these lights, Salernum soon became a distinguished school of medicine, to which resorted students from every part of Europe. Other schools shortly after were established, and the profession of medicine became regularly organised. No philosophic sects, however, arose to cast over medicine the lustre of genius and intellect, to raise it to the elevation and dignity of a science; no Hippocrates appeared to restrain its license, and place it under the guidance of observation and reason. Ignorance and superstition spread over Europe a murky vapour, through which the lights of science and of letters dimly gleamed, with a faint and nearly expiring lustre.

The fate of medicine was most unhappy. It became the prey of the ignorant, the illiterate, and the superstitious. The most learned professor had no ambition beyond a commentary on Dioscorides, Galen, Avicenna,

Rhazes, Albucasis, or other Arabian writer, or for a moment conceived there existed any other sources of knowledge than their works. The great fountain of nature, pouring forth its ever living stream, was lost in the obscurity, and buried beneath the rank overgrowth of the wilderness. There were none to drink of its renovating waters. The larger number of those who professed medicine, ill acquainted with, or wholly ignorant of the great oracles of medicine, embraced the most irrational and frequently ridiculous opinions. With them every trace of the science was effaced and lost in a perfect chaos of humoral, theosophical, alchymical, cabalistic, astrological and magical doctrines; to which were added those of the signatures, of sympathetic influences, and the chemical and mechanical hypotheses.

The first ray that broke on this darkly confused mass, was the revival of the solidism of Hippocrates, in the commencement of the sixteenth century, by Pierre Brissot. This was the breaking dawn that proclaimed the approaching day. It was not, however, until special and pathological anatomy unfolded the structure of the body, and displayed the changes the solids suffered in disease; it was not until Baglivi, Glisson, Pitcairn, Hoffman, Haller and his disciples, by inductive reasoning, observation, and experiment, had demonstrated beyond all cavil and doubt its truth, that solidism acquired the influence of an established doctrine. It was then recognised, that every vital pheno-

menon depended immediately on the actions of the solids. As this great truth became revealed, the dark cloud, with all its fantastic shapes, that had so long enveloped the science, and obscured its path, was dispelled. Emerging from its gloom, medicine, reunited to reason, observation and experience, resumed its long abandoned route and onward progress.

From this time, speculations on the principles of medicine assumed a more rational character. With the exception of the doctrine of Boerhaave, a medley composed from the humoral, chemical and mechanical hypotheses, physiological actions were taken as the basis of theoretical inductions. This was making a great advancement, and became a guarantee against a return to the imaginative speculations that had proved so baneful to the science. But physiological actions themselves depend on the state of the solids, which experience in every disease more or less modification of structure. This change of the solids is, then, an essential element in the consideration of every disease. The neglect of pathological anatomy, at that period, proved fatal to every attempt for the construction of a theory. Anatomy and physiology had not, in fact, reached that state of improvement, when they could furnish the means to seize on even the principal points of the ground a complete system would occupy. From these causes the system of Cullen, an extension only of that of Hoffman, and which was pure solidism, had

a short-lived existence. It was, besides, established on a single set of symptoms, a single type of disease. It was, consequently, too exclusive, had too much individuality, and proved inadequate to solve the great mass of pathological phenomena.

Brown will for ever retain the glory of having announced one of the most important truths in medicine: that life is maintained by stimuli. From this axiom must all reasoning in physiology and pathology commence. He also revived the doctrine of Themison, that diseases are to be arranged in two great classes; the one having excess of action, the other diminished action. Having established these principles, his deficiency of correct anatomical, physiological and pathological knowledge, led him to make a most erroneous application of them, and the most serious mistakes as to the character of diseases.

Darwin adopted the principles of Brown, but mystified them by an alliance with metaphysics and by clothing them in a nomenclature difficult to comprehend. His pathology, though different from Brown's in its details, is not less wide of the truth. The system of Darwin never rallied around it a sufficient number of disciples to form a school.

The hurried sketch that has been given of the science, its mutable fortunes, the disastrous reverses it experienced, its devious wanderings in the trackless desert, abandoned to idle hypotheses, empty speculations, igno-

rance and superstition, will be sufficient to sustain the assertion, that few of what have been called systems and doctrines in medicine, have possessed the principles, the character, or even could offer pretensions to the name of theory. Those to which this title might be accorded, proved abortive, not from any defect in theory itself, but from the paucity and inaccuracy of the facts on which they reposed. They failed of necessity, for the science had not reached that stage when it was prepared for the generalization of facts, or, in other words, the construction of a theory.

Analytical and inductive philosophy, introduced by Bacon, as the only means to arrive at truth in the sciences, was slow in finding its way into medicine. For this improvement we are indebted to the French schools. While the English medical profession appear almost to have forgotten their illustrious countryman, the founder of practical philosophy, or neglect its application to their science, the French physiologists and physicians are the most rigid of its disciples, and admit neither facts nor reasonings that have not been submitted to its decision.

This system of philosophy, applied to medicine, gave origin to general anatomy, the doctrine of the tissues, or, as it may be expressed, the decomposition of the animal structure into its proximate elements. The conception of this beautiful and original doctrine belongs to Bordeu. Macbride, in England, saw it in a clear and distinct man-

ner, but producing no evidence in its support, little attention was paid to his opinion. John Hunter, in many of his pathological observations, appears to have stumbled on the differences of the tissues, but did not understand, or improve the discovery he had made. Pinel gave great extension to the doctrine, and in his Nosographie Philosophique, he classed the phlegmasiæ according to the tissues in which they are seated. Bichat, by his genius, his labours, and his admirably conducted researches, demonstrated its truth to absolute conviction, and has acquired imperishable fame, as the discoverer and founder of General Anatomy.

The appearance of Bichat's treatise on the membranes, and his greater work on General Anatomy, constitutes a memorable epoch in medicine. It is the termination of one era—the olden and hypothetical medicine; and the commencement of another—modern, physiological, or philosophical medicine.

Before the establishment of this doctrine, anatomy, physiology and pathology were nearly unconnected: they were distinct sciences, they afforded little aid to each other. In the present improved state of medicine, they are most intimately combined. In science they are divisions only of the same chapter; their principles are drawn from one source; their facts are similar and never in collision; they possess a perfect harmony and unity of character.

The union of General Anatomy, Physiology, and Pathology, with the efficient aid afforded by Pathological An-

atomy, for the first time, since the cultivation of medicine as a science, presents the means and the opportunity of preparing a foundation, broad, deep and unshakeable, on which a permanent system may be erected. While they continued disconnected, and were studied separately, it was not possible to observe with clearness, or even to detect the laws, that preside over organised matter, and govern its movements. But it is in the knowledge of these laws that consists the true theory of medicine.

That vital actions are immediately influenced, under all circumstances, by invariable laws; that every phenomenon of organised matter is the direct result of those laws; that they are susceptible of elucidation, as existing in the human system, and capable of being reduced to calculation, are points that may be rendered evident and conclusive.

Man enters into the order of nature. He forms no exception to the general uniformity and harmony of her works, but is subject to the same species of government that universally prevails throughout creation. Into whatever department of nature we extend our researches, or of whatever branch of science, whose principles have been established, we make our inquiries, this truth is every where proclaimed—Nature, in all her operations, governs by general and invariable laws. These laws, few in number, and of remarkable simplicity, produce infinitely diversified, but unchangeable results. Let us consult the astro-

nomer for information. He lays out the heavens in a chart; he ascertains the distances of the planets; he measures their magnitudes; he determines their diurnal and annual revolutions; he calculates to a second of time the conjunction of the planets, and the occurrence of eclipses for centuries to come; or entering on the "dark backward and abysm of time" for ages past, he fixes the exact period of those that have occurred. Matter in its magnitudes of greatest size—the planets rolling through their immense orbits, in their ever-during and silent course; the bright luminaries that spread their glory through the regions of infinite space, must, for the accomplishment of these results, be subjected to forces that act with unvarying tenor. These laws, it is the proudest triumph of man that his genius has disclosed, and mastering difficulties apparently insurmountable, he has reduced them to the precision and accuracy of mathematical problems.

Let us visit the laboratory of the chemist. His investigations are directed on matter, in its minutest forms—its atoms. We there learn that the atomic particles of the same or different substances, unite in certain numbers, and after definite proportions; tables of the affinities existing between nearly all the known substances are formed, which can be relied on with confidence; a compound whose analysis has been once accurately made, is invariably the same, in its proportions, wherever it may be found. The changes that will take place on the admixture of two

different bodies, whose affinities are known, are predicted with unerring certitude. The most beautiful order, harmony of principles and facts, and lucid system, preside over the science. Some of the forces by which the combinations, the compositions, and decompositions of bodies are accomplished, have been discovered, and the laws under which they take effect, are amongst the most familiar and best established facts of science. Matter in its minutest forms, as in its largest magnitudes, is thus seen to be subjected to forces acting by determinate general laws.

Let us pass from physical to organic matter, and the same truth will be found to prevail. Present to a well instructed zoologist a single tooth or a bone with an articulating surface, or even the track of the foot of an animal, and from these apparently imperfect data, he will construct the whole skeleton, even though it be of an undescribed or extinct animal. He is enabled to accomplish this task by the correlation of forms, or the proportion, correspondence and dependency of parts; a law discovered by Cuvier.* The development of the osseous frame of ani-

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* Heureusement l'anatomie comparée possedait un principe, qui, bien developpé, etait capable de faire évanouir tous les embarras: c'etait celui de la correlation des formes dans les êtres organisés, au moyen duquel chaque sort d'être pourrait, à la rigueur, être reconnue par chaque fragment de chacune de ses parties.

Tout être organisé forme un ensemble, une système unique et clos, dont les parties se correspondent mutuellement, et concurent

mals must, consequently, be in accordance with forces of a determinate mode of action. If this be true of one part of the structure, it must be equally true of every part. A stronger exemplification is to be derived from the permanency of the different genera of animals, especially those that approach each other in general conformation. Many of the lower animals have organs of similar structure and functions, to those of the superior orders, but of inferior development and office. Beyond their prescribed bounds, however, they never pass. Thus far shalt thou go, and no farther, is a law from which there is no deviation, in the animal form.

The evidence that the human system itself is not exempt from the government of general laws, is equally con-

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à la même action définitive par une réaction réciproque. Aucune de ces parties ne peut changer sans que les autres changent aussi; et par consequent chacune d'elles, prise séparément, indique et donne toutes les autres.

Recherches sur les Ossemens Fossiles, p. 47, vol. i.

Cette seule piste donne donc à celui qui l'observe, et la forme des dents, et la forme des mâchoires, et la forme des vertèbres, et la forme des tous les os des jambes, des cuisses, des epaules, et du bassin de l'animal qui vient de passer. C'est une marque plus sûre qe toutes celles de Zadig.—*Ib.* p. 50.

La moindre facette d'os, la moindre apophyse ont un charactère déterminé, relatif à la classe, à l'ordre, au genre, et à l'espèce auxquels elles appartiennent, au point que toutes les fois que l'on a seulement une extrémité d'os bien conservée, on peut, avec de l'application, et en s'aidant avec un peu d'addresse de l'analogie et de la comparaison effective, determiner toutes ces choses aussi sûrement que si l'on possédait l'animal entier.—*Ib.* p. 52.

clusive and irresistible. The formation of the human organic structure proceeds through different gradations, undergoes particular changes at certain periods, with perfect regularity. In the fœtal state, structure after structure, organ after organ, member after member, are formed at stated times, from the first nisus formativus until birth. A perfect anatomist can thus fix the fœtal age by an examination of its structure. The same observations apply equally after birth. Infancy and childhood, the age of puberty, youth, manhood, old age, succeed each other in regular stadia, each with its characteristic traits.

The organic and functional actions, not less than the structure, afford an additional and equally striking exemplification. Heat and the normal stimuli exalt or increase the organic actions; cold and other sedatives diminish them. Increase and diminution of the organic actions, in individuals, in the same circumstances, are productive of similar effects; and in all are attended with the same trains of symptoms. Sleeping and waking, fasting and repletion, exercise and rest, fatigue and repose, occur in regular succession. The function of nutrition furnishes a striking illustration in support of this position. The various solids of the animal system, vessel, nerve, membrane, gland, follicle, muscle, ligament, bone, &c., assimilate out of the same material, the blood, each its own particular substance; and this is accomplished in the most perfect manner, even

in the complex tissues, in which several of the solids are mingled in the most intricate manner.

The system in a pathological state is not less rich in illustrative examples. Morbific causes, the various miasmata, or malaria, contagions, abuses of the natural functions, &c., occasion the same organic and functional lesions, produce the same series of symptoms in the individuals subjected to their influence. A disease once accurately described, its symptoms are recognised in all succeeding periods. From the constancy of these occurrences, and the uniformity with which lesions of organs are manifested by peculiar symptoms, and their states by particular signs, diseases are susceptible of being systematised, can be arranged into classes, genera, orders and species; and opinions can be pronounced on their results. The pathological derangements of the economy, as well as its physiological actions, are under the control of general laws.

Therapeutic observations contribute no mean support in aid of the principle that is advanced. Medicinal agents exert their active powers on particular organs or structures, awakening certain operations. These effects take place with so much regularity, that medicines are prescribed with confidence in the actions they will excite, and are opposed by the practitioner to overcome and remove the morbid derangements existing in the system. Some medicines display their action on the stomach and excite vomiting; others on the bowels and cause purging; some

affect the nervous system, acting on the brain and producing sleep or disturbing the intellectual functions; or are confined to the spinal marrow and influencing the muscular system. Some excite the secretions, occasioning sweating, increase of urine, flow of bile, &c. From the uniformity of the effects they induce, medicines are capable of an arrangement into classes, founded on the organic actions they excite, the structure and functions they influence. Medicinal and remedial agents affect the organic and functional actions after a mode susceptible of generalization, or by general laws.

Multiplied examples might be adduced, drawn from the different sciences, lending their testimony to the truth of our doctrine. There exists not a single phenomenon in animate or inanimate nature, that does not announce physical and organic matter to be subjected to the control and influence of forces, that are regulated by general laws.

Man, endowed with superior intelligence, mysterious in its nature, and inexplicable in its operations, claims an affinity with a higher order of beings, and a more elevated state of existence. Humiliated with the reflection, that by a mere physical organization, he is the brother of the reptile that crawls at his feet, he hesitates to admit, that in his material frame, he differs in no respect from the animal race that occupy the scale below him. Vain is the attempt to disguise the truth, and to refuse our

convictions to the undeniable facts that are presented to observation by nature. In the class to which man belongs, the vertebral animals, a single type prevails, unfolding gradually from the lowest species, until, in his formation, it reaches its complete expansion and ultimate perfection. He is the head of the animal scale, but in his physical organization he is still an animal.

It is man, in his physical, organised or animal structure, that is the object of our science. His psycological nature, and moral qualities, except as they influence his organs, are not within its domains. They are the province of another, and venerated profession, engaged in the high and important concerns of his moral excellence and future condition. As medical philosophers, we know man only as a collection of organs, whose conjoined actions constitute life. His structure, the forces by which animated, its actions, and the laws they observe, are the subjects of our study and research. These are to be conducted in the spirit and on the principles of the physical sciences; by observation, experiment, analysis, analogy, combination and deduction. When once thoroughly explored, and they have received a full exposition, the theory of medicine will be a work of easy completion, and the science will have arrived at its state of perfection.

What, it may be inquired, is to be understood by the perfection of medicine? Is it supposed with some enthusiasts of the profession, that medicine will invariably

prove successful in its contests with disease, and that old age and accidents will be the only outlets of human life? Most certainly not. It is the destiny of man that he shall be the victim of disease and mortality, even from his fœtal condition to the ultimate period of his allotted existence. In the divine government of creation, the preservation of the races of beings appears to be the chief intention of its provisions, even at the expense of individuals. To secure this end, production is always in excess, while to guard against the evils that would be its consequence, the means of individual destruction every where exist to confine it within proper bounds.

Diseases—the thousand maladies that "flesh is heir to," are the chief instruments, provided by a governing and protecting providence, to repress the accumulation of the human race, for its security and happiness, within the limits of an active and vigorous organization of society.

Could our science be brought to the perfection that has vainly been imagined for it, a curse would be inflicted, not a benefit conferred on man. Subsistence being limited, a population diminished only by the decay of nature, would soon become redundant. Disorder, confusion, violence and outrage, would invade society; its firmest bonds would be dissevered, and its tenderest ties dissolved. Anarchy and revolution would shatter the frame of governments—all charitable and humanly sentiments, would be extinguished, in the predominancy and intensity

of selfish feelings, generated by sufferings and the necessities of self-preservation. Children would utter denunciations against the fecundity of parents, and parents exclaim against the wants of their offspring.

The benefits that medicine confers, are and will always be restricted to individuals. It diminishes the mortality of diseases; it palliates where it cannot cure; it lessens the mass of human sufferings and evils; it often saves from a premature tomb the great and the good—their country's stay and support,—the ornaments of society, the benefactors of humanity, the promoters and cultivators of science. In the hour of distress and despair, when the hopes and expectations of happiness, and of the means of subsistence of families, depend on the existence of a father, a mother, a child, stretched on the bed of disease, medicine with its salutary aid, like an angel of light dropping healing from its wings, dispels the gloom, wipes the tear from affliction's eye, and pours the balm of comfort in the anguished heart. These are the benefits that medicine bestows, and which its improvement will augment; that make it a blessing to humanity, and impart to it elevation and dignity of character; that render it, when exercised on the principles of an enlightened science, one of the noblest studies, and most exalted professions, to which man can devote himself.

The perfection claimed for medicine, is limited to a knowledge of the minute structure of the animal prox-

imate elements, the lesions of which are the primordial elements of disease, and the nature of those lesions; of the vital forces on which depend the organic or vital actions; of the phenomena attending these actions in health, and the mutations those phenomena manifest in disease; of the generality of fact, or the laws the vital forces observe and the vital actions obey, that preside over the connection of the tissues and organs of the complex and intricate mechanism of the human system in health, and which govern the sympathies in disease; of the functions of the numerous organs of the nervous apparatus, and of the nature of the nervous influence in vital phenomena; of the principles or theory of the science. Our knowledge on these subjects, in the process of time, and the course of investigation now pursuing, will be positive, open as the day; clouds and darkness will no longer rest upon them. When once determined, the practice of medicine will assume a settled and consistent character; it will cease to be empirical, a routine of prescriptions, or tentative, as it so frequently is at the present time; it will acquire clearness in its views, definiteness in its principles, certainty in its calculations. It will be rational in all its proceedings.

However far the improvement of medicine may be carried, there will always be diseases that will prove fatal. Lesion of structure is an element of disease. When of intense violence, disorganization rapidly, sometimes instantly ensues, or a total denaturalization of the solids is grad-

ually produced. These states once induced, the power to heal must be able to create—the attribute and prerogative of Deity. The catalogue of the opprobria medicorum may be reduced, by the improvement of our science, but it will never cease to exist.

The perfection attainable by medicine, is that which belongs to those sciences whose principles are demonstrated, but whose practical application is frequently defeated by defectiveness in its instruments, or by the force of uncontrollable accidents. Medicine, in this respect, will compare with navigation.

The principles or theory of navigation have received an improvement that may be regarded as complete; but how numerous are the circumstances that render them useless and their assistance unavailing. The skilful navigator, instructed in every branch of his profession, may conduct with safety his bark over the trackless deep, and through many a tempestuous gale and threatening storm: but in the tornado, the hurricane, the dread typhoon, when the embattled elements pour forth their fury and exhaust their rage; or when adverse currents and resistless winds, drive on a lee shore and iron-bound coast,—opposed to these, what is human power, what the skill, the knowledge, the efforts of man?

A strict analogy prevails in medicine. In the fatal derangements, congestions and effusions, that so often are rapidly induced in the vital organs and centres of life, the

instructed physician thoroughly understands the nature of the lesions, and the means by which relief could be procured. But where are they to be found? They exist not in nature, and his skill and knowledge remain impotent.

The perfection of medicine will consist in the complete cultivation of the departments of which it is composed, the certainty of its principles, the melioration of the practice. Its plans of treatment, and the means of cure, though improved, will remain defective, and its results will partake of uncertainty.

To this degree of perfection medicine rapidly advances, though this generation is not destined to witness its fulfilment. But, like the inspired seer on Pisgah's mount, to whose enraptured view was spread the promised land, luxuriant with ripening harvests and verdant plains, though denied its possession, we may behold in the distant future, our science elevated in its character, its state of perfection attained, taking rank with the certain sciences, enlarging its benefits, honoured by society, a blessing to our race.

I have trespassed, gentlemen, too long on your time and patience, and hasten to a close. In this discourse I have presented to you the subjects comprehended in the Institutes of medicine, and which it is my intention to treat in this course. I have endeavoured to impress a conviction that medicine, as a science, rests upon principles;

that its improvement depends on their cultivation and accurate development; and that by no other mode, can the treatment of disease be rendered rational, safe and methodical. I have placed before you the true character of our science, and what may be expected from its advancement to a state of perfection. Whatever may be the success with which I have handled these subjects, they are worthy your attention and reflection, to which I recommend them.

From the late period of my appointment and the severe illness that soon after ensued, I have been able to make but slight preparation for the course it is my duty to deliver. Zeal, application and industry, which I may promise you, heartily applied, cannot protect from numberless deficiencies and imperfections. For these I shall have frequent occasion to throw myself on your forbearance. In the unprepared state of my course, I have cause to experience apprehensions; but they are calmed by the reflection, that I shall address those whose liberal and generous sentiments will subdue the severity of censure, and to whose considerate indulgence an appeal will never be made in vain.