

THE PHILOSOPHY

— OF —

PHYSIOMEDICALISM

ITS THEOREM, COROLLARY, AND LAWS OF APPLICATION
FOR THE CURE OF DISEASE

BY

J. M. THURSTON, M. D.,

PROFESSOR OF NERVOUS AND MENTAL DISEASES
PHYSIOMEDICAL COLLEGE OF INDIANA
INDIANAPOLIS

*BEING A PLEA FOR A MORE EXALTED IDEA OF THE
VITAL INTEGRITY OF THE HUMAN ORGANISM
AND A HIGHER MEDICAL EDUCATION*

WITH MANY COLORED ILLUSTRATIONS
AND SIX ANALYTIC TABLES IN COLORS

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To my Friend and Comrade,
Reverend Jackson E. Webster,

Whose brotherly love and comradeship for more than thirty-five years, since we

both laid aside our soldier's uniform for the duties of civil life, has ever

been true and helpful as we have, though on different lines,

touched shoulders in the service of humanity's weal,

This Book

is

Respectfully Dedicated.

Preface.

This book is an earnest effort to systematize and logically correlate the principles and theories of Physiomedicalism, and the abstract truths of medicine as known and understood to-day, so as to enable the student to clearly comprehend them, and the practitioner to carry them into bedside practice. How far I have succeeded in this, of course the readers must decide. Certainly I feel as keenly the great disproportion between the task of thus dealing with, what seems to me, the most profound medical philosophy in the world, and my personal ability to successfully accomplish the same, as my most adverse critics would care to express. Only the liberty I felt of drawing upon the extensive fragmentary literature on the subject in hand, found in journal articles and society papers, together with the valuable text-books of Curtis, Cook, Redding, Lyle, and others, coupled with the fact of an urgent need of a concise and complete exposition of Physiomedicalism, has given me courage for this arduous undertaking.

In this connection I must acknowledge my indebtedness to the foremost living teachers of this philosophy, viz.: Professors George Hasty, William Tait, E. Anthony, H. J. Treat, C. T. Bedford and J. Redding, for the groundwork, furnished in their lectures and writings, of many valuable ideas in the construction of this work; and our noble dead - Alva Curtis, William H. Cook, S. E. Carey, G. N. Davidson - from whose teachings my first conceptions of Physiomedicalism were derived, whose grand lives of untiring labor and unstinted sacrifice shall ever stand as stately examples to the coming profession, to elevate and ennoble our science. To the teaching and practical exemplification of these splendid lives, I owe all that I may have achieved.

Should this book be favored with readers educated in another system of medicine, I speak for the profession in assuring you that we claim no exclusive rights to Physiomedical Philosophy, or its practice; there can be no patent on truth, and we place no embargo on whatever of scientific and practical aids it may contain, but bid you welcome to, and God-speed in the use of any and all that you may find in these pages that will aid you in the relief and cure of suffering humanity. The earnest, honest physician can apply the practical truths of Physiomedical Philosophy in the healing of the sick, no matter what school of medicine he may happen to affiliate with. All we ask is proper credit for whatever of science and truth we may have developed.

In accordance with advanced methods of our English word-construction, I have taken the liberty to omit the hyphen in the word "Physiomedical," throughout this work, believing it not only shortens the word, but gives it a more composite significance.

To Hugo P. Thieme, Ph. D., of the University of Michigan, I am much indebted for valuable services in proof corrections.

I am under many obligations to E. V. Brower, M. D., of Richmond, Indiana, who has rendered it possible to put this book in press much earlier than I could otherwise have done.

Richmond, Indiana, January, 1900.



Introductory.

The new century brings a spirit of unrest along the line of general education, which is none the less apparent in the dissatisfaction of advanced minds with even our most progressive notions of medicine. Faith in traditional medicine has long since waned with the abandoned blood-letting, *ad libitum* doses of calomel, etc. The antiseptic idea has advanced surgery beyond mechanical expertness and art, closely approaching a true science. Yet, notwithstanding, the observant readily discerns disquietude under sectarian restraint of "regularism" in medicine, a heresy in therapeutic certainty, and a broadening of heretofore proscriptive materia medica, together with a growing realization of the necessity of a medical philosophy as a basis of medical education and practice, instead of that empirical idea of "traditions" and "accumulated experience of the profession."

The candid seeker after absolute medical truth, and a system whose bedside application yields unerring results, cannot but deeply regret the total absence, in the Old School or "Regular" medicine, of a basic hypothesis, or fundamental principles of philosophical reasoning, around which the vast and almost chaotic mass of empirical, or purely experimental facts may be grouped into a harmonious system of scientific medicine. The sore need of such a medical philosophy is exhibited in the continual train of meteoric experimental achievements, that flash athwart the medical horizon and sink into oblivion - Brown-Sequard's "Elixir of Life"; Koch's Tuberculine, the promised panacea for our vast army of consumptives; Pasteur's Antitoxine, to eradicate childhood's most relentless scourge, diphtheria. All these, seeming so scientifically and unerringly evolved from the experimental laboratory, and so fraught with promises of glad tidings of great joy to afflicted humanity,

only to prove dismal failures at the bedside! Nay, worse than failures, because they are founded on the false dogma of creating one disease to cure another disease - *allos pathos*. Had these brilliant and painstaking experimenters lifted their energies from out the laboratory, to nature's unerring operations in the vital activities of the physiological whole, and reasoned that, in introducing into the blood current of a consumptive the putrescent sputa from another consumptive, modified by spending its virulency apace upon guinea pigs; or, injecting diphtheria poison from a case of diphtheria, tamed slightly by invading the blood of a horse, into another diphtheria patient, was directly opposed to every known law of Biology and Physiology; and the slight benefit that might accrue by this rude invasion of the vital sanctuary, would be counterbalanced by a huge sum of evil to the physiological integrity of the organism, they would no doubt have spent those long hours of patient research to much better advantage on more rational lines.

Again, the promises of clinical medicine, with its vast accumulated mass of experimental therapeutic observations, has signally failed to give us even an approach to precision in therapeutic effect; because we have simply an aggregation of abstract facts without syllogistic continuity, being devoid of legitimate premise in physiological truisms. As, also, the resort to chemical philosophy, endeavoring to frame a chemico-therapy, in other words, assuming that the functional activities of the organism are due to chemical disintegration of the tissues, and on this false premise, reasoning that medicines act by chemical equations, giving in some unknowable way a functional result, if given by formulae, analagous to the synthetic results obtained in retorts and test tubes.

Lastly, the germ theory of disease-causation, and antiseptic surgery, though within a decade passing the excitement of novelty, regression, progression, and final recognition, with many doubts and qualifications by the medical laity, is still in a state of uncertainty, grievous to its ardent advocates, all of which is due to that same lack of a working hypothesis founded on immutable laws of Physiology,

that shall embrace and harmonize the entire domain of functional expressions in every organized being from monad up to man. Until this, the only basis of an exact science of medicine, is adopted as the foundation for its medical superstructure, the “Regular” school, with all its vaunted progress and advanced methods, will ever remain a splendid conglomerate of experimental concrete facts, and their therapeutics an aimless empirical application of agents according to formulae, and clinical traditions; the same agent at one time being a virulent poison, at another a “blessed medicine,” according to quantity and conditions, *things that the physician can never absolutely control.*

Added to the above incubus on higher medical education, is that unfortunate idea that all lines of medical thought, pioneering, development and progress, should be dogmatical and exclusive. In other words, that all medical hypotheses and medical schools should be obliterated (except one, the “Regular”), and that medical men should travel single file in one narrow pathway, cut on a sectarian line through the forest of medical superstition, ignorance, and bigotry. So long as medicine remains without the pale of exact sciences, which it must until a broad and rational hypothesis is accepted by all, there will of necessity be different schools of medicine, and there will ever be different sects and followings in any school of medicine, because there will always be certain unknown and unknowable phenomena in the manifestations of that mysterious Vital force, of whose essential nature and identity we can know nothing, it being immaterial to our material means and methods of investigation. How narrow and unprogressive, then, to lay an embargo on higher education and medical progress, prohibiting medical pioneering in divergent lines of thought and investigation, demanding annihilation of schools and sects.

On the other hand, we have in the Homeopathic and Eclectic schools of medicine, examples of a too narrow hypothesis. The Homeopathic system is founded on the exclusive dogma of “*Similia similibus curantur.*” Its hypothesis formulated, is, that because

certain substances produce derangements of the body-functions as manifest by a complex of symptoms, therefore they will correct a complex of symptoms produced by other substances or influences closely resembling that caused by the remedy; provided, however, that the proposed remedy be given in exceedingly minute doses, highly diluted. Rigidly carried out on this hypothesis, the Homeopathic materia medica soon became loaded with agents most virulently opposed to the normal life manifestations, and consequently valuable for their pathological potentiality, as the greater the number and severity of symptoms a substance could cause in the human organism, the greater its ability to overpower those of the disease-causation; and their textbooks presented sad evidence of erroneous premises in a ridiculous list of medicines, prominent among which were snake-poison, bed-bugs, spiders, and honey-bees. (See Hull's *Jahr*, pp. 542, 593, 621, 763, articles *Crotalus*, *Rattlesnake-poison*; *Cimex Lectularius*, common Bed-Bug; *Diadem Arena*, Papal Cross Spider; *Lachesis*, Virus of the Lance-headed Serpent.) But we must give the Homeopathic system full credit with not only its magnificent pioneering in medical progress, demonstrating the inherent vital resistance of the organism to large and virulent doses of medicine, but their principles of therapeutics and materia medica have kept such pace with progressive medicine that *Similia similibus curantur* is now little more than a banner decoration.

The Eclectic school, like the "Regular," attempts to avoid a dogma, but in so doing has swung tangential beyond all sectarian restraints, to a general piracy upon the belongings of other medical schools. The eclectic idea - for it cannot be called an hypothesis, and is too narrow to be even dignified with the term dogma - is, without leave or license, to raid the materia medica of all other schools, and select the best therefrom as their remedial armamentarium. But the result, now apparent in the decimated ranks of Eclectic practitioners, fully demonstrates that it is simply impossible to make a systematic selection of the best from other schools of medicine, and maintain an integral Sect, without a working hypothesis,

or medical philosophy. The popularity of this school of medicine, for a time, was because of a dire need of radical reform in the Old School of practice, and the bright promise it gave of this reformation. But an impartial bedside test has shown it deficient; and its popularity has greatly lapsed in the last two decades, while the "Regulars" have quietly gathered up the essential truths, incorporating them into their own practice, by the magic word "Officinal." And there now remains little else to identify the Eclectic school except its empty title.

The essential cause of failure in these schools of medicine to fill the requirements of an exact medical science, and call to their ranks the largest following, as well as the acknowledged inability of even advanced Old School or "Regular" practice to meet the demands of an exact science of medicine, is all due, we contend, to two causes, namely: First, the absence of a correct and broad-working hypothesis upon which to build a logical philosophy and definite practice of medicine; second, and as a sequence, their failure to recognize the human organism as an essentially Vital domain, and not a machine, subject to the whims and happenings of physical, chemical, electrical, any or all of the blind forces for its functional manifestations and organic operations in health or disease.

No science has yet been established except through the evolving of an essentially correct and comprehensive hypothesis, and correlative philosophy. Substantial progress in the development of any of the established sciences of today had been impossible until a working hypothesis was evolved, broadly based upon universal truths, and comprehensive enough to harmonize all known facts along certain correlated lines. Galileo, Kepler, Descartes, Wren, Halley, Hooke, and Huygens had successfully discovered and demonstrated nearly all the laws promulgated in Newton's *Principia*, he adding little more than that of gravity. But astronomy was, as yet, by no means a science: it was a mass of facts and theories in a chaotic state, its votaries distracted by conflicting theories, and contending sects. But the moment Newton promulgated his hypothesis of the

laws of motion, broad and comprehensive, a revolution began which commanded the following of the whole scientific world, and astronomy advanced from uncertainty into an exact science.

A great mountain of experimental facts concerning the behavior of different forms and conditions of matter toward each other in combination, had accumulated from the earliest "alchemists" down to the brilliant discoveries and ideas of Lavoisier, who banished the old theories of phlogiston by introducing the principles of combustion, the balance, and quantitative methods of investigation; and the further developments of Watts in the law of volumetric combinations only added to this valuable mine of potential truths, until Dalton evolved the atomic hypothesis, which gave a central comprehensive idea around which the vast chaotic cumulus of facts could be harmoniously grouped, and chemistry took its place among the exact sciences. The atomic idea is purely hypothetical - simply a concept; no one ever has or probably ever will see and physically demonstrate an atom of matter. So that when demanded to prove the existence of an atom, we can only point to the fact that all demonstrable phenomena in chemical action and interchange take place in perfect accord and harmony with the atomic theorem. And no one can hope to become a chemical expert without fully comprehending the atomic hypothesis. The same is true of every other exact science. They have all passed through the developmental stages; abstract conceptions and ideas, developed facts and principles through observation and experimentation, until someone, out of these accumulated facts, was able to formulate a definite hypothesis to which their correlative adjustment would naturally assemble into a coherent and systematic whole, upon which practical results could be predicated and unerringly obtained.

No one well acquainted with the subject of medicine will attempt to deny that, instead of a medical science to-day, we are only in the cumulative stage, and while pregnant with brilliant discoveries of great principles and abstract facts in every department of specialized lines, it must be admitted by all candid minds that this great mass of

experimental medical facts is practically in a chaotic state, giving rise to conflicting opinions, theories and dogmas, because, as we contend, of a failure to establish a working hypothesis.

In view of this state of medicine, in this our twentieth century, the author holds that no apology is necessary for this effort to present the Physiomedical Theorem and Philosophy, to which he honestly believes all well demonstrated truths and principles of biology, histology, physiology, and all phenomena manifest in the living organism in health and disease, will naturally adjust themselves; and by which an exact and universally accepted science of medicine can be evolved.



PART FIRST.

THEOREM AND PRINCIPIA OF MEDICINE.

I.

THE THEOREM.

The living organism is essentially a vital realm dominated by Vital force, an energy inherent in the nuclear mass of bioplasm (protoplasm), or living matter of tissue-units.

All functional operations of the organism, in health or disease, are the aggregate expression of Vital action in the living matter of tissue-units.

This Vital force, manifest only through bioplasm, or living matter, is endowed with integrating and definite developmental instincts, and from the basic germ builds up the organism, and maintains its functional integrity.

Vital force, through living matter, is always resistive, eliminative, and reconstructive, in intent and purpose, when the vital domain is invaded by inimical substances, forces, or influences.

In objection to this Theorem it may plausibly be urged that we cannot physically demonstrate the independent existence of a Vital force; also, the materialist can say that bioplasm, or this living matter, is only a specialized condition of universal matter, simply a form of matter, and the manifestations occurring therein are purely physical - a mode of motion - due to the molecular arrangement of its atoms as everywhere exhibited in the conservation of energy and correlation of forces.

As to the first objection, we answer, neither can the existence of a molecule, or atom of matter, be physically demonstrated; yet

everything happens in chemical interchanges and reactions, yielding exact and infallible results, just as though the atom existed, and consequently chemical analogy proves its existence. So, also, we aver, without fear of contradiction, inviting most rigid tests of our Theorem, that all phenomena manifest in the human organism, in health and disease, occur in perfect accord with this Hypothesis. As to the latter argument, the Hypothesis neither affirms nor denies that Vital action or energy in the living matter is due to its molecular arrangement and a purely physical result of potential energy of its atoms. Indeed, our Theorem affords equal premises alike for both sides. The vitalist can, with as legitimate a premise, argue the existence of an identical Vital force independent of matter, that this force is the result of atomic conditions of matter; yet both arguments have no effect on the functional results of this initial causative phenomena, which we call Vital action in living matter of the tissue-units. Therefore, our Hypothesis will yield the same unerring practical results at the sick bedside, as well as in prophylactic and sanitary work, whether the materialist or the vitalist be right.

II.

THE PRINCIPIA.

The sum of all known and demonstrable facts as accepted to-day, together with the accumulated experimental observations of the past, as afforded by advanced Biology, Histology, Anatomy, Physiology, and Pathology, constitutes the material from which our Theorem is evolved, and, as we believe, it is the basis of a universal system of medical philosophy, as follows:

1. The human Organism is essentially a vital commonwealth, dominated by Vital force, with integrative, constructive, and regenerative instinct, and whose inherent nature is resistive, prophylactical, eliminative, and reconstructive when the vital domain - living organism - is invaded by inimical or disease-causations.

2. The living organism is a systematic and purposeful aggregation of minute tissue-units, "organic cells." Each and every cell is developed synthetically, under vital guidance, from a homogeneous, transparent mass devoid of organic continuity, motile, and vivified by virtue of the Vital force, which works in or through it wholly. This peculiar form of matter, standing alone, above all other forms of matter in the world, endowed with vital, constructive, and functional potentiality that gives it mighty possibilities for an organic systemization, is called "bioplasm," "protoplasm," and "living matter," by different observers, all meaning one and the same thing. And this peculiar inherent force, nowhere else manifest - no other form of matter capable of exhibiting such autokinesis - is called Vital force.

3. The Vital force, working only in, or by means of the living matter - bioplasm - under proper and definite environments, takes in pabulum from the surrounding media, and finally from a systematic circulating plasma, converting by its inherent assimilative power the pabular material into its own substance; thus increasing, dividing, and finally condensing into formed or organized material in definite, though variously shaped minute cells or tissue-units, each consisting of a central nucleus of still uncondensed living matter, surrounded by formed material - condensed living matter.

4. From these minimal tissue and structural elements is built the mighty organic vital unity; cell by cell the tissues are built, their variety of form and function depending upon the cell variety; from tissues the structural form and variety spring, and organs and systems are differentiated, the unerring result is the wonderfully perfect and functionally powerful organic body - the material, simply transparent, structureless plastic living matter; the builder, Vital force. No human skill and ingenuity can even counterfeit this bioplasm or living matter, and no human genius and cunningness of workmanship has, or ever will, so far approach in a mechanical way the potentiality of this builder - the Vital force - as to even produce a single tissue-unit - organic cell.

5. This Vital force continuing its control of every functional action through the central nucleus of living matter in every tissue-unit - organic cell - after the organism is fully matured, maintains the vital integrity and functional vigor of the organic whole, continually resisting and eliminating from the vital commonwealth all adverse influences and extrinsic inimical matters.

6. Laying aside all unknowable and unknown speculative questions, such as: From whence came the first or primitive bioplasm or living matter? Why is it that this living matter and vital force, always the same in constitution and manifestation so far as our present means of knowledge goes, in one instance builds up a plant, in another develops the human body, and again a minute microscopic being? Whether Vital force is the result of a molecular arrangement of matter, or a pre-existing individualized Force. Even passing the correlation of forces, and conservation of energy, we take the above undisputed facts and principles of the vital endowments, the organic potency, and functional unity of the organic body, as plainly exhibited and definitely manifested in these functional, constructive, and resistive activities of the physiological whole, and upon this certain foundation we build our PRINCIPIA OF MEDICINE.

7. These foundation principles are admitted facts by all schools, sects, and doctrines of medicine, who are in the van of biological, histological, and physiological sciences of to-day; and they represent the accumulated experimental observations and knowledge of all candid scientific observers and students of these sciences for hundreds of years. Consequently, they are not dogmatic, and a medical philosophy founded upon these principles could not in any sense be construed as founded on an exclusive dogma. And a medical practice in conformity with such a philosophy may continually advance and widen its scope of observation and philosophy, as well as the extent and variety of its materia medica - as such a medical philosophy and practice must necessarily

do - and yet in no sense be an empirical, dogmatic, or exclusive school or system of medicine.

8. This Philosophy looks upon disease as an enforced departure of vital activities from the normal standard of functional integrity, because of invasion of the normal tissue-units, tissues and structures, any or all, by extrinsic inimical substances, forces, or influences. The primary effect of such extrinsic invasion is always manifest upon the living matter forming the central vital nucleus of these minimal functional units - tissue-elements or organic cells - and constitute the conditions of disease; and the functional perversions, such as exaggerated or depressed and subnormal functional activities, are the secondary effect or functional consequence of the primary disturbance of vital action in the bioplasm of the tissue-units.

9. Therefore, disease is *a tissue-state per se*. For it follows, as a logical and scientific sequence, that any substance or influence that will pervert or derange the normal vital standard of functional potency in the living matter of tissue-units, must secondarily and proportionately pervert the functional integrity and harmony of the organized tissues and structures. And as no other matter in the organism is capable of vital manifestations or action, except the central nuclear mass - bioplasm or living matter - of tissue-units, consequently, no substance or influence can alter the functional activities except it change the essential conditions of this living matter or bioplasm; now, if these conditions be normal, then physiological or normal functional operations follow; if a substance produce abnormal conditions of the living matter, it is inimical, and perverted functions result.

10. The Vital force itself is irresponsible alike as to the influence of salutary or inimical substances upon the bioplasm, but always makes the best of depraved conditions of its media - bioplasm - when it is invaded by inimical substances and influences, increasing its prophylaxis by more vigorous functional activities, elevating the eliminative functions, or slowing up the functional motions until

the inimical influence shall be spent. These departures of the vital manifestations from the normal standard are neither due to the inherency of bioplasm, nor Vital force, but to the inimical changes wrought in the bioplasm of tissue-units by the extrinsic substance as influence; therefore, the perverted vital action must always ensue from extrinsic inimical substances or influences. The term extrinsic, as here used, is not limited wholly to substances that originate outside the organism.

11. The above propositions having been clearly demonstrated biologically, histologically, and physiologically, it may be asserted, without fear of controversy, that our hypothesis is founded on *absolute truth*. This being true, it follows, beyond question, that those concomitant phenomena, such as "inflammation," "fever," "irritation," "pain," etc., following this perverted and depraved condition of the living matter of tissue-units, are simply consequent functional aberrations, and not disease *per se*, but the *symptoms*, or *signs of perverted tissue-state*.

12. It also having been established by the same logical physical premises that the inherent nature and intent of this Vital force is always integrative, resistive, and reconstructive, it follows that in diseased conditions and consequent functional aberrations, or symptoms of disease, it maintains its integrity of purpose, and even in the most violent of these aberrant functional activities there is still manifest the same vital resistive and regenerative efforts, plainly exhibiting its inherent sanative nature. It cannot but be not only an outrageous impeachment of this ever loyal Vital force, and a travesty upon nature's God, but a most fatal blunder in pathology, to reason that because disastrous consequences follow these symptomatic manifestations - fever, inflammation, pain, etc. - the Vital force is therefore responsible for its failure to overcome physical impossibilities, and restore functional equilibrium; and hence this same Vital force is at one time a regenerative force, and at another time a degenerative and disintegrating force. If the physician should be weighed

by the rule of such logic in the judgment of his clientele, and held personally responsible for the failure of his good intentions, charged with the crime of manslaughter for every death occurring under his treatment, he would deem their judgment unjust and heartless.

13. As a legitimate conclusion of the foregoing premise, it follows that a complete revolution in the pathology and treatment of disease is inevitable. This revolution will by no means affect the integrity of facts already known and accepted by all schools; neither does it demand the discovery of a single new fact or principle. All that it demands is a readjustment of old truths and principles to a basic hypothesis which will admit of perfect harmony and rational continuity of each and every known fact into an exact and scientific system, whose practical workings will invariably, under proper and reasonable environments, yield unerring and definite results. But it requires a plane of new and higher medical education, upon which every medical man, who is imbued with a reasonable ambition to maintain the usefulness and dignity of his profession, can stand, regardless of school or sect. A universal and sure foundation upon which a medical education may be built from any standpoint, and from which each may work outward, traversing various and divergent lines of thought and investigation into the limitless realms of abstract truth, which will eventually converge again to the central nucleus of our BASIC HYPOTHESIS. And thus we may have, as there should be, divergencies, discussions, contentions, honest disagreements as to details, diverse leaders with their followings and disciples, as there are in all the other sciences, and as there ever will be until *absolute knowledge of all ultimate truth shall be attained*, yet medicine will always be an exact science if its facts be adjusted in accord with such an universal practical theorem.

III.

PHYSIOMEDICALISM.

1. Basing a definition wholly upon our Theorem, we define Physiomedicalism to be: *A medical philosophy founded on the Theorem of a Vital force or energy, inherent in living matter of tissue-units, whose aggregate expression in health and disease is the functional activities of the organism; and whose inherent tendency is integrative and constructive; resistive, eliminative, and reconstructive to inimical invasion, or disease-causations.*

2. The Physiomedical philosophy inculcates into the student-mind a wholesome reverence for the *Vital integrity* of the living organism, an enthusiastic admiration for its wonderful economics in vital expenditures and supplies, eliminative strategy, reconstructive statesmanship, and resistive valor; failing not in the face of a forlorn hope, and dying in the last ditch, so to say. And as a practitioner of medicine he must feel honored by the position of simply a trained and trusted assistant to the Supreme Ruler of the Vital realm. With disinterested devotion to the integrity and safety of this physiological commonwealth, a ripe, skillful judgment, valiant arm and hand of firm kindness, he plies the sanative munitions, and surgical shrapnel against pathogenic invaders.

3. But is there a Supreme Ruler of the Vital domain? Ask the skilled and thoughtful surgeon - when he has tied the last suture, applied the dressings, and his patient is gently borne from the operating table - in what does he now trust to crown the final success of his deftly-handled instruments? However brilliant the operation and consummate its execution, with none the less appreciation of the after treatment required of him, he must feel the littleness of human skill in the presence of this great, integrative, constructive Vital force. Indeed, the physiomedicalist is a medical practitioner, who takes the oath of allegiance to the Vital realm, lays his all of scientific knowledge and skill upon its altar and accepts a commission

under Vital force, flings out the banner of sanative medicine and swears, “wherever that flag is unfurled, there shall it stay.”

4. Next to the invariable tendency, because of the inherent salutary purpose of Vital force and living matter, to ultimate attainment and maintenance of the functional integrity of the living organism, the Physiomedical practitioner must thoroughly understand and constantly bear in mind the immutable law of *Vital Resistance*; which is fixed and unchangeable as truth itself. This Vital resistance has ever been the grief of young physicians and stumbling block of many a veteran practitioner. Write across the breast of that figure which too often misrepresents our courts of justice, *Vis vitae, vindex injuriae*, and you have the statue of the goddess of Vital resistance. Blindfold to tempting bribes of pleasant pellets, exquisite parvules and elegant aromatic potions, glittering gold and silver plated instrumental surgical armamentarium, beneath whose honeyed coat elixired breath and instrumental glamour lies, virulent invasive potencies inimical to the vital integrity of living matter, violent unjust and aggressive surgical interference, she poises her balance and weighs only the deed, utterly blind to the very best intentions of the physician, she strikes without mercy with her sword of resistance at his intended remedial measures, and the well meaning doctor finds himself unwittingly a party to a warfare against the very power he intended to befriend. In which warfare let him not hope to succeed in extricating himself with the bat’s subterfuge in the fabled battle between birds and beasts, for while the Vital force despite his hindering therapy may win the victory, and he will be able to make patient and friends believe “we” killed the bear, again the result may be such that the mourners know too much as to who killed the patient.

5. Now what we desire to impress on student and practitioner is, that all therapeutic measures should be undertaken with a full recognition of Vital force as the supreme curative power, and the inherent resistive and eliminative nature of the Vital actions as

manifest even in the exaggerated and finally perverted functional operations arising from diseased conditions, if carefully observed and scientifically understood, they will unerringly guide him in his remedial measures, and respond kindly and in harmony with the therapeutic means applied, even though the emergency demands violent and destructive measures. While on the other hand mild and seemingly sanative agents, if contra-indicated and applied in direct opposition to the sanative functional intent, will place the Vital activities on the defence, arouse the inherent resistive and eliminative forces into a stubborn, relentless battle that is most disappointing to the physician and grievous to the patient. And it therefore follows, that when thus scientifically applied in harmony with the resistive efforts and sanative intent, the emergencies for violent and destructive procedure will rarely present themselves, and the almost unbroken rule will be non-poisonous and kindly sanative therapy. But this important subject will be fully discussed further in its proper order under the principles of Therapeutics.



PART SECOND.

COROLLARY ADJUSTMENT OF DEFINITIONS TO THE THEOREM.

HEALTH, DISEASE, INFLAMMATION, CONGESTION, IRRITATION, PAIN.

I.

HEALTH.

The most essential tenet of our Theorem is, that in both health and disease, all functional action is the expression of Vital force through living matter and tissue units, upon tissues, structures, organs and systems. And the logical premises are that vital action in the living matter of tissue-units is not only sufficient to afford the necessary degree of functional action required to maintain the proper balance between assimilation and disassimilation, waste and supply, of the body elements, which, theoretically, is the normal condition, or a *state of health*, but that there is in each bioplast of the tissue-units, besides this kinetic energy, a large potential or reserve force; so that in health the body is capable of an immense amount of work, compared with the required amount of functional energy to maintain simply the state of health. Thus, in seeking a definition for disease, we must first find the conditions of *health*. And as there is a great disproportion between the amount of vital energy required to maintain the normal balance in the essential organic functional work, and the potential force for physical and mental labor of the healthy individual, we must bear in mind that the moment diseased conditions of tissue-units cover sufficient area to derange functional work of organs and systems, this potential or

reserve vitality is then required for extra functional work, in resisting and eliminating the disease-causation, and repairing any lesional damage that may have resulted from the invasion; and that *during the temporary engagement of the reserve vital energy, the individual is incapacitated for physical or mental labor, because of a withdrawal of vital energy for interior resistive, eliminative, and reconstructive functional work.* This reserve vitality, then, is inseparable from the ordinary kinetic energy. Therefore, any definition of health must necessarily include both the kinetic and potential vitality. Our Theorem comes at once to guide us, not only in defining both health and disease, but affords us a solid basis to work from, in the practical application of our definitions.

Health, therefore, is *that state of the whole organism, or any part of the vital domain, in which there is sufficient vital vigor in the tissue-units, and functional activity in tissues and structures, to maintain physiological co-ordination between assimilation and disassimilation, nutrition and waste, of the normal body elements, with sufficient potential vitality for all reasonable extrinsic body-work, and intrinsic resistive, eliminative and constructive functional action.*

II.

DISEASE.

With the above conception of the health-state, we readily understand disease to be *enforced resistive, eliminative, and reconstructive extra-functional intrinsic, activities, general or local, because of invasion, exhaustion, or destruction of living matter and tissue-units, by extrinsic inimical substances, forces, influences, or environments, sufficient to disturb or destroy the physiological harmony between assimilation and disassimilation.*

The utility of a working hypothesis fundamental to all reasoning upon scientific questions, is clearly shown in the inconsistency of their definitions of health, disease, fever and inflammation, shown in the text books of the regular or old school of medicine.

For instance, Pepper's System of Medicine, Vol. I., page 35, says: "Disease is to be regarded as representing the result of a series of processes called morbid or pathological, from the fact that they are manifested by disturbances in the organism. The processes concerned are the same in kind as those essential to health, but they are modified in time, place and quantity. Morbid processes, therefore, are to be considered as modified physiological processes, tending to cause disease."

The logical mind naturally inquires, if disease is the result of morbid or pathological processes, and modified physiological processes cause these morbid or pathological processes, or even *tend* to cause them, what would be a healthy state of the body? And how is it possible for the organism to maintain a healthy state with any degree of certainty and regularity? This author, in same volume, page 148, says: "For the purpose of the medical practitioner, all professional studies unite to the end of furnishing preparation for the diagnosis and treatment of disease. At the bedside the cardinal questions are, 'How does the present condition of our patient differ from health?' and, 'What ought we to do to bring about his recovery?'"

Quain's Dictionary of Medicine, page 1,101, tells us that "Pathology is the name generally accepted as the science of disease, but the subjects which it may include cannot be exactly defined. For, ease and disease, well and ill, and all their synonyms, are relative terms, of which none can be defined unconditionally. If there could be a fixed standard of health, all deviations from it might be called disease; but a chief characteristic of living bodies is, not fixity, but variation by self-adjustment to a wide range of varying circumstances, and among such self-adjustment it is not practicable to mark a line separating those which may reasonably be called healthy, from those which may as reasonably be called disease."

One cannot refrain from almost as much sympathy for the befogged beginner, as for his patient, as he vainly struggles to solve the cardinal bedside question, "How does the present condition of

my patient differ from health?" These are only random selections; we could cite pages from the otherwise splendid text-books of those medical schools devoid of a foundation-hypothesis and coherent philosophical superstructure.

Thus, as we certainly believe, by our Theorem and Principia, we avoid confusion, and obtain accuracy in classifying all phenomena of the organism, both in health and disease, without the disadvantage of a confusing and unapt pathology. Simply because the external signs of disease, as exhibited in functional aberrations, upon which we sometimes must rely solely, occasionally come long after diseased conditions in the tissue units have been fully established, is no logical argument against the accuracy of our biological and histological data as to where the state of health ceases and disease begins. For immediately the tissue-units are invaded to any extent, even locally, a warning pain, ache, or distress comes, and we know where *ease* ceases and *disease* commences. The fact that the vital force may quickly resist, and the excretory organs totally eliminate the disease-causation, so that the illness is transient, and the individual continues in the even tenor of physical and mental body-work, cannot be taken as an indefinite line between health and disease.

III.

FEVER.

The physician who fights fever as an entity, or views it as a violent vagrant effort of a blind force, which, goaded to madness by inimical influences, may either destroy the organism in its delirious efforts, or accidentally eject the disease and allow the organism to escape, though damaged, to eventually regain the equilibrium of health, may treat fevers with even good success, but he does so simply by rote and recipe, and is a true type of empiric. The necessarily scientific physician who understands the basic relation of disease-causation to functional effect, and views the phenomena

as purely the resistive efforts of an instinctively sanative Vital force, to whom he stands as a trained assistant, to second these salutary vital endeavors, when compared with the *fever doctor*, is as the navigator of a vessel to the coal heaver.

IV.

DEFINITION OF FEVER.

An exaggerated state of vasomotor function, resulting from invasion of the tissue-units by inimical substances, influences or forces, involving sufficient area of tissue-elements to require extra functional action of the general vasomotor apparatus.

While the temperature in fever is a valuable guide to the general condition of the patient, and gravity of the case, yet in the light of our Theorem and rational philosophy of disease, it becomes only one sign of disease, and its value is weighed co-ordinately with all other aberrant functional manifestations, and where it stands only as a unit in the symptom-complex. Thus we avoid the illogical practice of placing the temperature as the one distinguishing characteristic, and the fatally erroneous idea of combating the fever and subduing the temperature with depressing and devitalizing therapeutic measures.

Every definition of fever, and all treatment, in the current literature and practice of those schools of medicine who ignore a theorem and corollary philosophy of medicine, trusting the empirical traditional experiment and custom, places the temperature as paramount in fever. The term is derived from the Latin *fevere*, to glow. Galen (A. D. 200) was the first to associate the phenomena with conditions; previous conceptions assigning the causation to the possession of the organism by an evil spirit or malignant entity. He, however, only modified previous etiology by making heat the entity, and there has been no material change of Galen's idea to the present time. True, the clinical thermometer and more advanced

methods of observation have added accurate scientific facts concerning the phenomena of fever as manifested by the functional operations, yet the temperature remains the paramount conception of fever. "Of all those manifold evidences of fever," says Pepper, page 38, Vol. I., "the elevation of temperature is the one whose cause, range and results have been most carefully and critically investigated." Quain's Dictionary of Medicine, page 509, says: "Fever plays so important a part in acute diseases generally, is accepted so universally as a mark of the severity of the disease, and so often presents itself as apparently the chief antagonist with which the physician and surgeon has to contend, that the attempt to penetrate the secret of its essential nature has always been a favorite task, and every school in every age has had its theory of the febrile process." The Twentieth Century Practice, to which we would naturally look for advanced ideas in medicine, thus informs us: "Of all the symptoms of acute infectious diseases, fever is the most constant, yet of the manner of its production, and its influence upon the course of these diseases, we are almost wholly ignorant. At the present time the immediate practical importance of this question is very great, since so large a part of the treatment of these diseases consists in combating the fever which is so constantly present. The fallacy of such treatment is apparent, if in fever we have one of the salutary influences which bring about the natural recovery from these diseases." - Vol. XIII, page 185. Thus on the threshold of a new dispensation, the Physiomedical idea of fever being a functional resistive salutary influence to bring about natural recovery, the author, in this Twentieth Century Practice, by the word "if" allows himself to be enticed from the higher pathway and turns back to the idea of combating fever in his treatment of infectious diseases.

V.

INFLAMMATION.

An exaggerated state of vasomotor functional activities because of invasion or destruction of living matter and tissue-units involving a more or less circumscribed area.

Quain's Dictionary, page 698, says: "Very numerous definitions have been given of inflammation. The most generally received has been that attributed to Celsus, which gives the four marks of inflammation as *rubor, tumor, calor, dolor*, * * * * Although the four 'cardinal' signs may be recognized in what we call inflammation, the definition is best derived from a cause known to be capable of producing it, and we say that *inflammation is a series of changes in a part identical with those which are produced in the same part by injury*; and for the sake of precision, *injury by a chemical or physical irritant.*"

Practically, one fails to discern any but disadvantage in adding the above to Celsus' or Erastus' definitions, even founded as they are on the superficial appearances of redness, tumefaction, heat and pain, thus naming inflammation after anything that happens to cause it, "a chemical or physical irritant," - ax, hammer, etc. - till we have as many kinds of inflammation as there are causes for the same. And the mind that thinks and forms concepts of its own, cannot but wonder how a student of medicine, who is taught that inflammation is the changes produced in a part by traumatic injuries, can ever hope to pass the stage of a mere empirical prescriptionist.

We contend that a candid comparison of the difference and far-reaching practical results at the bedside, between the above definition, and that grand conception of inflammation afforded by this philosophy which views inflammation as a complex of correlated signs of abnormal tissue-states, will enable student and practitioner to form more accurate ideas of its treatment; for this definition tersely tells the whole story of these resistive and eliminative states of the functional activities because of inimical and disintegrative invasion of the vital commonwealth.

VI.

CONGESTION.

Inability of the vasomotor function to maintain the normal balance between assimilation and disassimilation, locally or generally, because of functional obstruction, vital depression, or lesion of tissue-units of the vasomotor apparatus.

The inability of vasomotor functional action, whether it be local or general, is always at once manifest by a number of invariable signs, symptoms, but the chief or cardinal sign is disturbance of the normal balance between nutrition and waste - physiological integration and disintegration - assimilation and disassimilation; and these become a projected and amplified picture, which is all the patient sees of his disease, and too often is as far as the physician's perceptive faculties reach. Hence, we deem it most practically essential to base a definition of this, as well as all other abnormal phenomena, upon the tissue-state, which in congestion, as the definition affirms, is an obstruction of the circulation or trophic state of the ganglionic nerves from Vital depression, or an actual lesion. But a full discussion of these unit- and tissue-states resulting in the symptom-complexes - disease manifestations - herein defined, must form the subject matter of a following section.

VII.

IRRITATION.

Exaggerated local and reflexed impressability of peripheral sensory nerves, arising from long continued inefficient inflammatory action.

If this statement be true, and it simply relates the facts with regard to the actual tissue-states that must be present before the symptoms recognized as what authorities all agree is the pathological signs of irritation, then it follows that *irritability* must be a property or resultant of the tissue-state, and symptom-complex, called *irritation*.

If all could agree on the above definition, founded on the physiological and pathological facts, and establish but one definite meaning for this, as well as many other medical terms which are used too vaguely, it would certainly aid medicine toward the much desired goal of an exact science.

In general literature three or four different meanings for the same term may be tolerated, but it is exceedingly unfortunate for medicine to make one word do duty for from six to ten conditions, and ideas, that are not correlative and are even contradictory. For instance, Foster's Encyclopedic Medical Dictionary, Vol. III, gives six different definitions for Irritability, as follows: "1. Susceptibility to stimulation, a property inherent in some animal bodies and in some vegetables. 2. A condition of the mind which manifests itself by fretfulness, fault-finding, complaining about trifles, or of things which are imaginary; impatience. 3. Susceptibility of the whole, or a part of the body to irritating influences. 4. Of Brown, the activity or excitability of the muscular system. 5. In pathology a morbid state of a part characterized by irritation; also the capability which tissue elements possess of undergoing nutritive and formative changes on the application of a physical or chemical stimulus. 6. In botany, the susceptibility of some plant-organs to react against an irritation of external agents; according to M. Foster, an attribute of all protoplasm by virtue of which a slight stimulus is capable of releasing a disproportionately large amount of energy." Then follow definitions of *six different kinds* of irritability, which is equal to saying that irritability is six different things, and there are six different kinds of six different things called irritability!

One of the kinds of the six-irritability he defines as "Muscular Irritation, the property of muscular tissue by which it responds to some stimulus by contraction. The stimulus may be the result of nervous action or a mechanical, thermal, or electrical action directly on the muscular substance itself. Sometimes, but incorrectly, the term is made synonymous with contractility." The same author

defines irritation as: "1. The act or process of being irritated. 2. The state of being irritated." And then follows with an even dozen different kinds of this dual thing, irritation (the act or process, or the condition - tissue-state), which may be either itself or something else. Among the multi-irritations he names "Formative Irritation," which must certainly be integrative; and "Morbid Irritation," which certainly cannot be other than disintegrative irritation; "Nutritive Irritation," which is constructive irritation. Thus we are left at liberty to conclude that nutrition, reparation and muscular function, all the great functional work of the body in short, are the result of a state and process of the organism which may be either physiological or pathological. The harm to the student-mind inculcated by such vagueness, contradiction, and confusion of terms, is almost incalculable. It would occur to the thoroughly practical mind that, if not so elegant, it would be none the less scientific, and certainly much less confusing to name the good kind, William Irritability and the bad one, Bill Irritability.

VIII.

PAIN.

We search in vain through the innumerable volumes of the other schools of medicine for a definition of pain that will serve a practical purpose in the methods of its relief. The great number of special works on diseases of the nervous system, strange to say, are most conspicuous in their efforts to steer clear of this stumbling stone of neurology. This paucity of exact ideas of the phenomena of pain, and physical distress, becomes even more accentuated as we observe the literature and armamentarium of these schools, directed mainly to the relief of pain.

Applying to the Theorem for a practical conception of this most important phenomenon, we first understand that it is a vital manifestation, though an aberrant nerve function; and, therefore, physical unease, pain, as well as mental distress, cannot be the normal

function of the nervous system. Hence, the initial tissue-state of this phenomenon is not in the nervous system at all; so that pain is simply the result of a tissue-state. If the pain-causation resided in the nervous system, either center or periphery, then anesthesia would be impossible, and pain a normal function.

With a good microscopic outfit, by the Nissl method one can study the nerve cells of the cerebral cortex of a mouse or other small animal, freshly removed; under the influence of ether or chloroform, the bioplasm becomes distended and wholly dormant to electrical stimulus, again contracting, indicating a state of exhaustion, when the anesthetic vapor is dispelled. The anesthetic, occupying more or less completely the sensory cells of the cerebral cortex, for the time being renders them unreceptive of peripheral impressions - anesthetized - hence incapable of recognizing violent impressions upon the tissue elements of tissues and structures at the periphery. In short, the cerebrospinal nervous system only, is anesthetized, while the ganglionic nervous system, perhaps because of the location of its centers, and efferent - repellant - direction of its nerve currents, is unaffected, and the organic functions are practically undisturbed during anesthesia.

The sensory nerve circuits have only the power or function of conveying impressions from the surface (periphery) to the centers (sensory nerve cell-groups in brain and spinal cord); and it does not matter what the character of these impressions are, they will be faithfully carried to the cell-groups. If these impressions are mild and pleasurable in character, they produce correspondingly pleasant, easeful sensations in the cerebral centers; if harsh, violent, and antagonistic to the vital welfare of the organism, they produce discordant, painful, resistive impressions and percepts at the centers, so that pain and unease are not in the nerves, but represent the ability of the nerve-arcs or circuits to convey, and the nerve-centers to recognize and differentiate the nature of impressions and disturbances

of the tissue-units of organs and systems; while the pain-causation must be in the peripheral tissues generally.

Basing a definition thus on the premise of the tissue-state-causation, we are in harmony with our Theorem, and have no trouble in framing a definition of pain as, *Exaggerated functional action upon sensory nerve centers, due to violent disturbance, or destruction, of the normal relation, or condition of tissue-elements.*

Such a definition and idea of pain, it seems to us, certainly ought to afford a more practical clue to its rational treatment than the following: "Bodily or mental suffering. Distressing or agonizing sensation. It is usually due to irritation of a sensory nerve, although there are said to be pains of central origin." - Gould's Dictionary of Medicine, page 959.

The following we quote from the exhaustive Encyclopaedic Dictionary of Medicine, by Foster, to show the difficulty of defining abnormal manifestations without basing them upon the tissue-state, and disease conditions:

"Pain: A local sensation due to injury or disease, the expression of an abnormally severe impression on a sensory nerve (exclusive of nausea, the feeling of distention, itching, etc., although it may be associated with any of them)."

One naturally wonders what the nausea, feeling of distention, and itching, which this definition avowedly cannot cover, really is, but we search in vain through the four great volumes of this dictionary for a definition of these phenomena. Nausea, he defines as "sickness at the stomach, with desire to vomit," and itching, as "pruritus."

Our definition, thus founded in the disturbance, or destruction, of the normal relation of tissue-units, not only covers nausea, itching, feeling of distention, but it includes mental distress, and physical unease of whatever degree or character, nor does it

Corollary Adjustment to the Theorem. 37

matter if the causation or disturbing influence be peripheral or central; and we appeal to the practical scientific mind, that if such a definite conception of pain will not certainly serve the physician in his bedside solution of the problem of the rational means of its permanent relief, far better than vague and unsystematized notions of pain from a purely symptomatic standpoint.



PART THIRD.

ANATOMICAL AND PHYSIOLOGICAL VALUES.

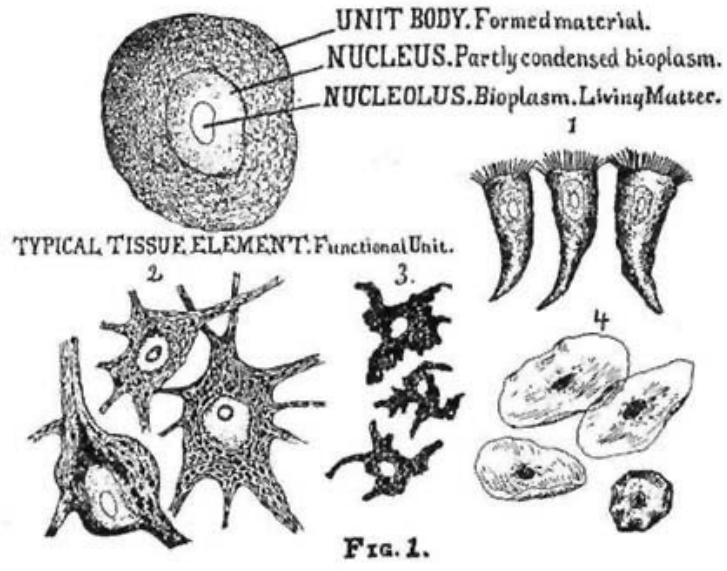
ESSENTIALS OF MEDICAL EDUCATION; NECESSITY FOR ACCURACY IN USE OF TERMS; DEFINITIONS OF HISTOLOGICAL PARTS; ORGAN, APPARATUS, SYSTEM; THE VASOMOTOR APPARATUS; THE GANGLIONIC NERVOUS SYSTEM; VASOMOTOR FUNCTIONS; DEFINITION OF SECRETION; EXCRETION, AND EXCRETORY ORGANS.

I.

ESSENTIALS OF MEDICAL EDUCATION.

Corollary to our Theorem, and essential to the practical application of its principles and philosophy in the cure of disease, is, as we have already said, a readjustment of our best knowledge of biological and histological genesis of the organism, its minute anatomy and practical physiology. Indeed, the successful practitioner of any school of medicine cannot be ignorant in any essential of a scientific medical education; but, adjusted to our Philosophy, we believe such education is immeasurably enhanced.

He who undertakes this System of practice with a superficial education, devoid of proper appreciation of his grave position, and his duty to suffering humanity, the integrity of Vital functioning, and the true import of sanative medication,



TYPICAL TISSUE - ELEMENTS. - 1. Ciliated epithelial cells from nasal mucous membrane. 2. Nerve cells or neurons (Barker). 3. Pigment cells or elements. 4. Squamous elements or flat cells from the epidermis.

soon fails, and then blames these methods instead of his own incompetency, and drifts away into the easy-going placebo and palliative practice, smothering whatever of ambition he may have had, in the outset of his career, to render *earnest, honest* service, and uphold the *nobility* of the profession.

Such a physician may attain a measure of success, financially, in an intelligent community, too, and even gain fair reputation as a skillful practitioner; but when placed in comparison with the physician endowed with an education founded in a basic theorem and philosophy of medical science, and matured by sufficient years of careful observation, conscientious and thorough application of his accurate knowledge at the bedside, his inadequacy serves as a striking object-lesson for the indifferent medical student.

II.

NECESSITY FOR ACCURACY IN USE OF TERMS.

It is impossible to fully understand and successfully practice Physiomedicalism, without a definite and systematic idea of the various tissue arrangements, structural genesis, functional relations and correlative values of the different organs and systems of the aggregate organism.

The necessity for much readjustment of general facts and principles of medicine, required by this Philosophy, is none the less imperative when we come to consider the special subjects of anatomy and physiology. Indeed, we believe that no small share of the confusion and contradiction found in the notions and definitions, as shown in the previous section, with respect to fever, inflammation, pain, etc., arises from the wide variance of medical writers in the use of terms.

In no other profession, and certainly in no science, do we find such indefinite and contradictory use of terms; and we certainly think that this is one of, or rather, the second reason, why medicine

has not had a systematic development like the sciences. This disagreement, and unlimited application of terms, renders systematized form and scientific advancement impossible, and causes a sporadic state of medical terms and nomenclature that is painful to the contemplation of scientific methodical minds, in a great degree lowering the scientific value of our otherwise splendid literature.

In the hope of aiding, to some extent at least, in bringing about greater definiteness of terms, and a more expressive and explicit medical phraseology, as well as a systematic knowledge of the relative functional values of the various anatomical and physiological components of the organism, we have constructed the following definitions, endeavoring to keep in strict accord with advanced histology, anatomy, and physiology.

III.

DEFINITIONS OF HISTOLOGICAL PARTS.

1. TISSUE ELEMENT. FUNCTIONAL UNIT. ORGANIC CELL - *The smallest integral part of the organic body*, consists of the UNIT BODY, or envelope of condensed bioplasm or formed matter for tissue material; a NUCLEUS, of protoplasm, or partly condensed bioplasm, or forming material; a NUCLEOLUS, the central mass of bioplasm or living matter, which is the essential functioning causation.

In Figure 1 is shown, first, the typical tissue element, with its well defined, so-called, "cell wall," of formed tissue-matter, nucleus; and the NUCLEOLUS, which is the life-element of the whole organism. In this minute central speck of transparent, semi-fluid, delicate plasma, so quiescent and insignificant in appearance, resides the potentialities of the mighty functional work - thought, word and deed - of the great Vital commonwealth. It is in and through this minimal potency that the astounding constructive, resistive, eliminative and reconstructive action of Vital force begins; here is the initial causation which, carried on in rhythmic unity of purpose,

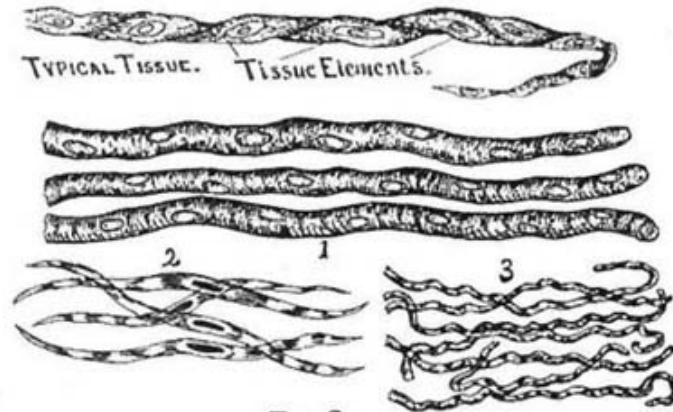


FIG. 2.

TYPICAL TISSUES. - 1. Voluntary muscular fibrilla. 2. Involuntary muscular tissues. 3. Elastic tissues.

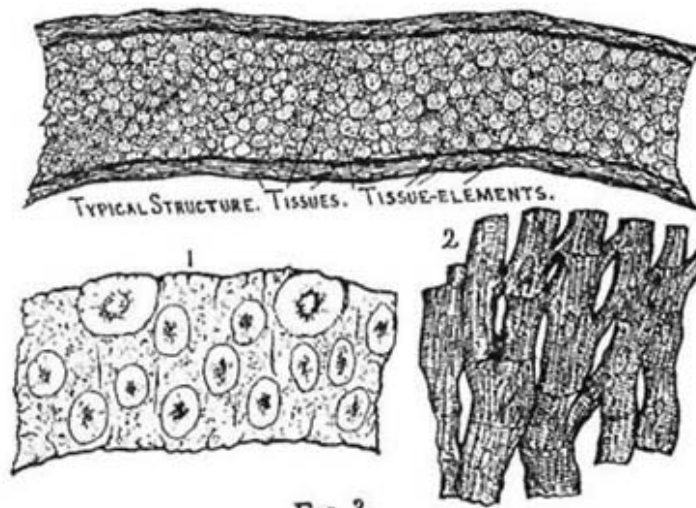


FIG. 3.

TYPICAL STRUCTURES. - 1. Section through neural tube (Barker). 2. Muscular structure of heart (Frey).

through tissues, structures, organs, and systems, results in the magnificently effective and purposeful functional operations of this vital economy.

Nos. 1, 2, 3 and 4, of Figure 1, give some of the various forms of tissue elements. No. 1 are elements taken from the mucous membrane of the trachea - ciliated epithelium; they constitute the protective covering of mucous membranes, set on end closely together like the brick in a pavement, they get the name of pavement cells, or epithelium.

No. 4 are flat, or squamous elements - squamous epithelium - they are really dead elements, "cell corpses;" the bioplasm, or living matter - nucleolus - has become first slowly starved, being pushed, by the more vigorous elements beneath, away from the capillary vessels, their base of pabulum, or food supply, until it has now a dead and desiccated nucleus, and the cell-body flattened by pressure into a thin scale forms the epidermis - "scarf skin" - covering the entire surface of the body, like a coat of mail, protecting the living cells, delicate capillary blood-vessels, nerves, etc., beneath.

No. 3 are pigment elements; they have been naked masses of bioplasm, which, becoming crowded full of coloring matter, are deposited thickly among the other elements of certain parts, as, for instance, the iris, and the skin of certain races; they give color to these parts, and, therefore, may be called color-units.

No. 2 are nerve units - neurones - from the spinal cord of a rabbit, copied from the most excellent work on *The Nervous System*, by Lewellys F. Baker, M. B., Tor. of the Johns Hopkins University.

The variety of forms of tissue-elements is not very great. In fact, primitively, they are very few and simple, as spheroidal, stellate, and cylindrical; many secondary forms result from environments and mechanical pressure. Yet from these few forms, organically arranged by that ingenious Vital constructive instinct, the great variety and wonderfully perfect structure-forms are built.

2. TISSUE. STRUCTURAL ELEMENT - *A number of tissue elements in organic systematic continuity.*

By unerring laws of organic developmental and constructive Vital intent, the naked motile structureless bioplasts, removed apace from the base of pabulum (food) supply, pass into a state of condensation, which process being vito-physical, obeys, under Vital restraint, the law of tangential condensation, and proceeds from surface to center, so that the nucleolus of the tissue-unit is simply uncondensed bioplasm. Now in the vast and varied circulating stream of the blood there must be, through the capillary net work, innumerable sources and directions of supply coming to the millions upon millions of forming and developmental bioplasts. A little study of the circulation in the web of a living frog's foot under the microscope, will serve to impress one with the striking importance of this varied and shifting current of supply, and recession, of pabulum-base during the constructive and developmental epoch of the organism.

This process of condensation, following these rigid vito-physical laws, occurs in such perfect and purposeful harmony, that organic continuity of each tissue-element results, and the tissues are thus produced, each with its own peculiar form and in its proper place in perfect harmony with the position it must take as a unit in the structural formations of the organic whole.

In Figure 2 are given a few of the forms of tissues; 1, for instance, are a few muscular fibrillae of the heart; 3 are elastic tissues that go to make up the elastic coats of blood vessels, etc.

3. STRUCTURE. ANATOMICAL ELEMENT - *A number of tissues by organic continuity woven into the various anatomical elements of the body.*

The tissue element is not only the functional unit, by virtue of the Vital potency of its nucleus of protoplasm or living matter, but it is also the structural unit; for although the arrangement of tissues is a factor in the structure variety, the tissue-unit maintains its identity and independent formative power from the tissue up to

PLATE 1.



THE SYSTEMS.

<i>Bony System.</i>	{ BONES. { CARTILLAGES. { LIGAMENTS.
<i>Muscular System</i>	{ VOLUNTARY MUSCLES. { TENDONS.
<i>Cerebrospinal Nervous System.</i>	{ CEREBROSPINAL AXIS. { CEREBROSPINAL GANGLIA. { NERVE TRUNKS. { PERIPHERAL NERVES.
<i>Ganglionic (Sympathetic) Nervous System.</i>	{ GANGLIATED CORDS. { SEMILUNAR GANGLIA. { SOLAR PLEXUS. { VASOMOTOR PLEXUSES.
<i>Connective System.</i>	{ SUBDERMOID CONNECTIVE TISSUE. { FASCIA. { INTERMUSCULAR SEPTA. { MUSCULAR SHEATHS. { NERVE SHEATHS. { VASCULAR SHEATHS.

organs and systems, giving to each and every part its individuality of form, color, etc., and specialty of functional work in the Vital commonwealth.

In Figure 3 is a longitudinal section of a seminiferous tubule which serves well as a typical structure, showing its tissue-elements and continuity of tissue, into the structural organization. This is from the excellent *Microscopic Anatomy of the Human Body*, by Arthur Hill Hassall, M. B., member of the Royal College of Surgeons of England, etc.; 1 is a section of the embryonal neural tube (after Barker), and serves most excellently to illustrate the biogenesis of the organic tissue-element, tissue, and structural development by the simple yet mighty minimal condensation of the elemental and unformed bioplasm, or living matter; 2 is a section of muscular structure of the heart (after Frey).

Thus, having presented a definite conception of structural genesis, we are prepared to study the various anatomical elements of the organism, with reference to their systematic correlations and functional values.

IV.

ORGAN. APPARATUS. SYSTEM.

For the purpose of definite and systematic adjustment of the anatomical elements of the organism, we group them into Organs, Systems, and Apparatuses, and make the following distinctions, to some extent arbitrary, of course, but in harmony with the anatomy and physiology of the organic whole.

1. ORGAN - *A structural continuity of definite form, whose tissues and structural arrangement is not repeated in other parts of the organism, and it performs an independent individual function, by means of special membranes and cavities.*

The heart, for instance, has a special tissue continuity, and structural arrangement peculiar to the heart, while its tissue-elements

do not differ from the muscle-element of the voluntary muscles distributed so generally throughout the body; yet the tissue formation and structural arrangement of these muscle-elements are found nowhere else but in the heart-structure; see No. 1, Figure 2, and No. 2, Figure 3. Also, the heart function is performed by means of cavities, the auricles and ventricles; therefore our definition places the heart in the list of organs.

Again, the kidneys are made up of blood-vessels, found everywhere; fibrous tissue, the most universal tissue of the body; cellular membranes, nerves, etc.; in fact, all their tissue-elements and tissue materials differ little from those of many other regions, but the capillary vessels and cellular membranes are made to construct vascular tufts - glomeruli - and convoluted tubes, while the fibrous tissue is arranged into a framework forming a globular bean-shaped body about four inches long, two inches in breadth, and one inch thick. This structure is repeated in no other part, and its function is performed in cavities - glomeruli, tubules, pelvis, and ureters; thus we place the kidneys in our list of organs. With this understanding, it is easy to classify the various organs according to their anatomical structure and physiological purpose.

While these organs possess an essential individuality of tissue and structure formation, and a peculiar independence of function, yet they stand as simply a physiological unit in the vital commonwealth; and were it not for the intimate association and functional correlation of these organs, the co-ordinate general body-functions would be impossible. Hence, we have certain of these organs associated, or grouped functionally, for the performance of a general function. For instance, for the completion of the general function of digestion, there are associated the mouth, esophagus, stomach, intestines, liver, spleen, and pancreas, each performing its individual functional work, as a step in the general function.

2. Such an association of different organs for the successive steps of a general function, we call an APPARATUS. Plate I gives a list

of the organs of the body, and by brackets, and lines, groups them, into the various apparatuses.

3. SYSTEM - *A tissue arrangement, and organic structural formation, repeated in different and distant parts of the body, performing a general function by means of compactly aggregated structures.*

This definition makes a definite practical distinction between an organ, and system, which we hope to show that, if kept constantly in mind, will aid the practitioner materially, both in diagnosis and treatment. The physiological distinction is founded, as will be observed, in the fact that a system performs its functional work through compact structures; the muscular systems, voluntary and involuntary, for instance, consist of widely distributed tissues of like character, closely aggregated into compact structure, and by means of this compact parallel structural formation, and their attachments at opposite points, the muscular function results in the various movements and locomotion of the body; the muscles, therefore, constitute a system. So also with the bones, fibrous tissue, etc., while the organs, on the contrary, complete their function-work and results in, or through, cavities of various forms, sizes, etc.

Not only are organs thus associated in serial steps of a general function, but both organs and systems are grouped, and their function-work correlated in the completion of general functions; in the great vasomotor apparatus (see Plate III) we have the ganglionic nervous system, and the circulatory apparatus thus combined into a complex association of systematic and functional performances. A practical knowledge of the functional values of these various organs and systems, by thus associating and grouping them in physiological harmony, with the ultimate functioning purpose of Vital action in living matter of their function-units, cannot but aid the scientific physician and surgeon in his bedside study of abnormal functional manifestations in the sick. For thus, by analysis and synthesis - ever keeping in mind the basic tissue-state as the cardinal point from which these aberrant functional operations arise - he is enabled to

trace each symptom to its source, and to assign to each deranged organ its proper position as to gravity of its tissue-state, and importance of its unit-value in the symptom-complex, or sum of the disease-manifestations.

These various organs and systems, in health, as do all components of the organism, work in united harmony, though each maintains its individuality in the functional whole. So, also, in disease, this same balance of function-harmony of apparatuses and systems is still maintained, and the aberrant functional manifestations - signs of disease - if thus studied in their continuity of associate actions, will yield definite data in the making up of a comprehensive and accurate estimate of the patient's condition, and the prognosis of any given case. And all physicians of much practical experience agree that once a correct diagnosis is arrived at, the battle is more than half fought.

In Plate II we have grouped, analytically and synthetically, the various systems and their anatomical components for a more comprehensive study.

V.

THE VASOMOTOR APPARATUS.

The term vasomotor, as defined by medical dictionaries, is applied "to the motility of the nonstriped muscles of the arterial system; regulating the tension of a blood vessel; vaso-constrictor." - Gould.

By the Vasomotor apparatus I propose to systematically group all the anatomical elements - organs, systems, and apparatuses - associated in the inhibition and completion of the two great processes, assimilation and disassimilation; that is to say, by the former, digestion, nutrition, and the reparation of functionally worn tissue-elements, and by the latter is included the whole general function of excretion, or elimination of worn-out tissue-molecules. The Vasomotor apparatus, therefore, consists of the Circulatory apparatus,

THE VASOMOTOR APPARATUS.



and the Ganglionic (Sympathetic) nervous system; but the vasomotor inhibition extends, as we have already shown, to the digestive, secretory and excretory apparatuses, and indeed the entire cycle of organic life-functions.

This very broad assignment of scope and importance to the vasomotor function is not the view we are accustomed to see in the text-books generally. But a little careful thought on this important subject will suffice to convince anyone well versed in minute anatomy and physiology, that our view-point of the Vasomotor apparatus and its functional value is by no means overdrawn; and that the idea of vasomotor function being restricted simply to the control of the blood-volume exerted by the ganglionic (sympathetic) nerves through the unstriated (involuntary) muscular coats of the blood-vessels, is not in accord with the anatomical and physiological facts, and conveys to the student of medicine such narrow and indefinite views of these great organic operations that it will surely render his diagnosis and practical procedure, in the treatment of disease, empirical, temporizing and inefficient.

VI.

THE GANGLIONIC NERVOUS SYSTEM.

It is unfortunate for medicine that the Ganglionic (Sympathetic) nervous system, owing to its remote anatomical situation, and its eminently vital functional work, to a great extent precludes its exact experimental observation and study; and it is still more unfortunate for practical medicine that much valuable data already obtained, even under these difficulties, has not been systematized into practical utility. The fact is, that the average practitioner of medicine has about as definite ideas of the ganglionic nervous system as he has of the constitution of the rings of Saturn, and as little use for the very little accurate knowledge he may possess of this solar system of organic life, as he would for a fifth wheel to his phaeton.

The writer prophesies that within the next decade, radically different notions will be held concerning the independence of this division of the nervous system. Just as the ground has been fought over, in the battle of ideas concerning the individuality as a function-unit of the neurone, or nerve-cell, in the realms of neurology, and the cause won for the independence of the tissue-element, so must the functional independence of the ganglionic nervous system be won, and its divorcement, so far as its autogenesis or inhibition of the organ-functioning is concerned, from the cerebrospinal nerve centres. Histologically and anatomically, this independence is as much asserted as in the cerebrospinal system.

The two great ganglionated cords, commencing in the cranial fossa, with the four cephalic ganglia on each side (ophthalmic, sphenopalatine, otic, and sub-maxillary) they form a chain lying in front and to each side of the spinal column, through the neck (3 cervical), the cavities of the chest (12 dorsal), abdomen (4 lumbar), pelvis (5 sacral), and uniting at the one coccygeal ganglion, they form a ganglionated cycle around the two semilunar ganglia and great solar plexus, lying immediately behind the stomach, and over the abdominal aorta as it comes through the diaphragm. The semilunar ganglia and solar plexus of nerves corresponds to the brain and cranial nerves, while the ganglionated cords or cycles are the counterpart of the spinal cord. This anatomical and functional independence of the ganglionic system does not by any means imply that the cerebrospinal and ganglionic nervous systems are not intimately correlated, histologically and functionally. But because nerve filaments from the ganglionic (sympathetic) centres are traced to intimate relation with the so-called ganglion-cells of the spinal cord, and that in their embryonal development the ganglionic centres seem to have their origin in common with the spinal ganglia, is not a legitimate reason why this system should be viewed as only a division or offshoot of the cerebrospinal nervous system. Such a narrow view cannot but be fraught with practical disaster to accurate and efficient clinical work.

According to His, who has, perhaps, made more extensive and accurate investigations of this system (sympathetic) than any other one investigator, the original development of its function-units or ganglion-cells are from undeveloped (uncondensed) naked bioplasts, that apparently wander away from the developing spinal ganglia, traveling in the direction of the least resistance, and towards the largest pabulum supply, and their wandering, like that of the Children of Israel, is presided over by a higher Power, the Vital force, and they are finally colonized into ganglia, forming the two great ganglionated chains, central semilunar ganglia, and solar plexus.

“The sympathetic cells differ in many ways, both structurally and functionally, from all other ganglion cells; a fact which is not surprising when we consider the peculiarities of their origin and of their environment. Whereas, all other nerve cells tend to be aggregated in large cell communities, more or less sharply separated from the tissues in general, those of the sympathetic system are much more isolated, being gathered together only in small heaps, while in many instances single cells, maintaining their existence far from all their fellows, are completely isolated in the wilds of the body tissues, retaining communication with the centers only by means of their non-medullated axones. Under such circumstances it is, perhaps, little wonder that these cells, like the pioneers of the back-woods, should present peculiarities both in habits and conduct.” - *The Nervous System*, page 192; L. F. Barker, D. Appleton Co., 1899.

From the above biological, histological, and anatomical facts, as agreed to by all the most eminent authorities on this subject, and many physiological facts concerning this system, foreign to our legitimate scope to here discuss, chiefly of which is its most eminent functional position in the organic entirety, the author believes it to be not only far more correct anatomically and physiologically, but eminently more advantageous to practical diagnosis, to view the ganglionic nervous system (sympatheticus) as not only possessed of anatomical independence, but a physiological differentiation from all

other systems; though, of course, reflexly in intimate correlation with the cerebrospinal nervous system. Therefore, we shall continue to speak of it as, in this sense, a nervous system, instead of "a division or accessory of the cerebrospinal system." Furthermore, from this on we shall apply to it only the term *ganglionic* nervous system, as this name is certainly more correct and scientific than the ancient misnomer, *sympathetic* nervous system.

VII.

VASOMOTOR FUNCTIONS.

By a careful consideration of the foregoing, and a thorough study of the Vasomotor Apparatus, as analytically presented in Plate III, we are prepared to study in detail the vast and important functions of this functioning apparatus, a correct and comprehensive knowledge of which we deem essential, in order to rightly interpret, and practically treat, the many tissue-states and functional departures that arise in the multi-forms of diseases. As we have already seen, the whole process of nutrition and repair of every part of the organism is effected through the Vasomotor apparatus; this implies a direct functional control of every other organ and apparatus, and indirectly through the nutritive supply and waste, of every system of the organism, such as the voluntary and involuntary muscular systems, bony, and nervous systems, etc. Moreover, this apparatus is directly concerned in the various functional work of the many organs, and apparatuses of disassimilation, which includes all the excretory processes, as previously stated. But the important practical question that should be settled - and the writer believes there already exists quite sufficient data to at least form a sure basis from which to work out a final definite solution to this most urgent need - is, whether the ganglionic system possesses sufficient innervating and inhibitory nerve-energy, within its own centres, for all this vast and varied control, or must it depend upon the cerebrospinal axis for its nerve force and inhibition?

Replying to this question, with the facts for the affirmative named in their proper order of importance, we state:

1. Its anatomical extent, and relations with every other part of the body. From these, the ganglionated cycle, central semilunar ganglia, and solar plexus, efferent or out-going nerves follow the blood vessels, forming plexuses at numerous points around the large arteries, especially where they divide before entering the organs they are to supply; also every organ has a special ganglionic plexus for its innervation; so that we have the aortic, carotid, axillary, iliac plexuses supplying these arteries; and the cardiac, pulmonary, gastric, hepatic, splenic, mesenteric, etc., plexuses supplying these organs. Now, wholly unlike the nerve plexuses of the cerebrospinal system, all these secondary special plexuses of the ganglionic system have in their midst groups of cells of greater or less size, some of them, indeed, consisting of but one or two large ganglion nerve-cells - neurones or nerve function-units - but they are *nerve centres* just the same, being *secondary*, or more properly speaking, *re-enforcement centres*.

These efferent ganglionic nerves following the great vessels to, and supplying the cerebrospinal axis, instead of forming plexuses in the brain and spinal cord, as they do in other organs and parts, simply pass in along with the nerve filaments of this system, helping thus to make up the cerebrospinal nerve trunks, but they are easily distinguishable under the microscope, from the cerebrospinal nerve fibers, as they have no axis cylinder, and are called the non-medullated nerve fibers; arriving in these cerebrospinal centres, they end in their own peculiar form of neurone, or nerve-cell, which are also easily distinguishable from the neurones of the brain and spinal cord, and are called "ganglion cells." They should be called ganglion system-cells, or neurones. These ganglion system-neurones - so-called "cerebrospinal ganglion cells" - are found most numerous in the anterior cornua of the gray matter of the spinal cord, less so in the corpus dentatum and floor of the fourth ventricle of the Medulla

Oblongata; but they continue in groups and layers in the basal ganglia, and cerebral cortex. In fact, wherever the vasomotor function extends, which means blood supply and nutrition of every part of the brain and spinal cord, there are found ganglionic system-neurones (nerve-cells) and centres. We say nerve-centres, insisting that the continuity of anatomical and physiological independence of this system may be maintained; for notwithstanding its nerve-units are thus mixed up and intimately associated with the cerebrospinal nerve-units, they still maintain their anatomical individuality, being thus readily distinguished microscopically. This histological independence of its function elements, the writer claims, is, in the absence of any definite experimental data to the contrary, safe ground to predicate by analogy, an affirmative to our question, by assuming that the ganglionic nervous system of the Vasomotor apparatus is correlated with the cerebrospinal system; first, and mainly, for the purpose of *effecting the physiological assimilation (nutrition) and disassimilation (excretion) of this system, the same as any other part of the organism*; second, for the purpose of general nerve function and inhibitory co-ordination, when occasional emergencies may demand.

2. *The actual functional work, as demonstrated by the most reliable experimental observations, of the Vasomotor apparatus.* Of all the many experiments, there is not one that conclusively proves that the cerebrospinal axis has anything more than a reflex influence upon the *Vasomotor apparatus*, as we have grouped it in our Plate III. On the contrary, the majority of trustworthy experiments and observations point to the idea of its supreme innervating and inhibitory powers over all the functions of assimilation, nutrition, reparation, and disassimilation. Of these experiments, we only mention as most reliable those of Tecklenburg (Jenna, 1894), Leubuscher, (*Jenaische Zeitschrift*, XVIII, p. 851, 1885), who conducted a series of very careful experiments, by exciting the medulla of a dog, with the view of ascertaining its influence upon the process of absorption

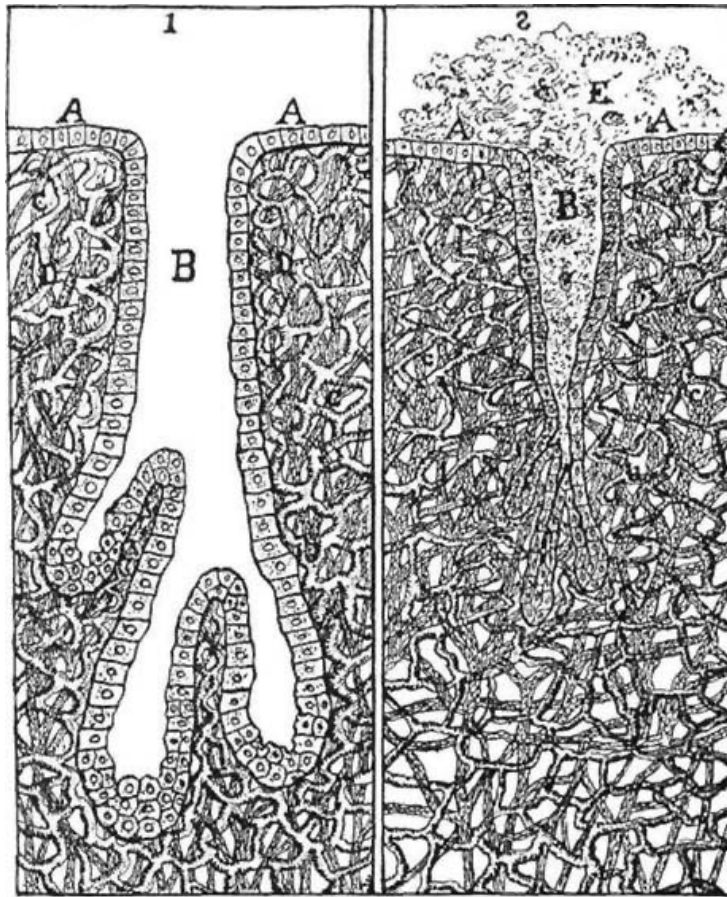


Fig. 4.

SCHEMATIC OF SECRETION - A GASTRIC PEPTIC GLAND. - A - Epithelial or cell layer. B - Lumen or duct of the gland. C - Involuntary muscles. D - Capillaries. No. 1 - Shows the secretory cells filled with gastric juice. No. 2 - Shows the gland compressed by the involuntary muscles and the secretion ejected into stomach. - (J. M. T.)

from the intestinal mucous membrane - a purely vasomotor function; the results showed only a slight increase of absorption, no more than would naturally result from stimulation of peripheral ganglia of this (ganglionic) system of the vasomotor apparatus anywhere else. The same results are true of the very careful experiments of Prof. E. Wymouth Reid, *The Journal of Physiology*, London, p. 298, Vol. XX.

From this view-point let us examine the functional performances of the Vasomotor apparatus. Take secretion for instance; materials are brought by the capillary blood-current to the secretory cell-tissue elements of the gland, the living matter (bioplasm) of these secreting tissue elements selects in the same way as it does pabulum from the constantly moving capillary blood-stream, certain elements, by a purely vital process, so-called vito-chemic, more properly metabolism, and synthetically combining these in the cell, the secretion is thus produced; the fact is, that this anabolism, or secretory construction, occurs by vital instinct of alimentation, resident in the living matter of the secretory cells. Now, this alimentivity of the cell-bioplast is so great that it amounts to voracity, and thus the bioplast becomes engorged; this engorgement can be relieved only by escapement into the lumen, or duct of the gland, see Fig. 4, B, but this escape of the secretion into the duct B is by no means in obedience to pure physical laws, but by systematic and rhythmical contraction of the involuntary muscular bands in which are arranged about the cell-layers of the gland in such a manner that when they contract, pressure is exerted in an equally distributed force from within out toward the lumen, or duct, B, and the cell-contents, or the secretion, is thus squeezed into the duct of the gland, and escapes (2 E) to do its part in the digestive, or other organ-work. At the same time, the contraction of these involuntary muscles, to empty the gland cells, also greatly diminishes the extra-vascular spaces, or areola, through which the dense network of capillary blood-vessels wind, and they are consequently very much compressed, nearly stopping

the blood-flow to the gland-cells, until they are emptied into the duct, when the muscles (*m*, 2) relax, again allowing the blood to flow freely to the cells, and their secretory work is resumed. Thus, this wonderful work of the secretory gland goes on, with the same rhythmical harmony and precision as respiration, or the heart's action, under inhibition of the ganglionic nervous system, and withal a purely vital process.

Neurological anatomists and physiologists have assigned to the nervous system special sets of nerves, which they claim are directly concerned in some way with the vasomotor function. It is claimed that in the cerebrospinal centres - brain and spinal cord - there are special centres from which controlling nerves pass to the ganglionic (sympathetic) nervous system, and through it regulate the nutrition of the tissues and structures of the body; these are called "trophic" centres, and nerves. They even have cerebrospinal centres, and nerves that preside over secretion and excretion; and special centres that regulate the blood-volume in the blood vessels, called vasomotor-dilators and vasomotor-constrictors. However, these special excretory nerves are disputed by most authorities, secretory nerves by a considerable number of leading authorities. These trophic nerves, to which are assigned "the control of nutrition, digestion, and assimilation," Gould; while admitting that some special centre or influence must preside over these important operations, there is great uncertainty and confusion as to the location of such centres, most writers placing them in the spinal cord. As to vasomotor-compressors and dilators, it is pretty generally agreed that these functions belong essentially to the ganglionic system, under the suzerainty, so to say, of the cerebrospinal centres.

The writer has carefully, and wholly without bias, gone well over the ground of experimental observations on the above subjects, in his efforts to teach only the best, up-to-date knowledge of the nervous system and its diseases, the bibliography of which we regret

that space will not allow here, and the following are our honest convictions:

1. The vasomotor function resides per se in the Vasomotor apparatus.

2. The Vasomotor apparatus through, and by means of, its accessory organs and apparatuses - Digestive, Secretary, Excretory, etc. - see Plate 1 - absolutely controls the waste, and repair, of every tissue-element, tissue, and structure of the organism, and co-ordinates the functional work of every organ, system, and apparatus, except the voluntary muscular system.

3. The "trophic" influence, or special local nutrition of every organ and system, including the cerebrospinal nervous system, is essentially a vasomotor function; and malnutrition, with consequent degeneration of a part, is always the result of obstruction to the vasomotor function, either local or general.

4. The location of the trophic Sense, or influence, is neither in the cerebrospinal or the ganglionic nerve centres, but originates in the vital instinct of the living matter, tissue-elements generally, and is the aggregate expression of the tissue-elements of the organism.

This aggregate expression of the trophic requirements of the tissue-units locally, or generally, as the case may be, reflected through the afferent nerves to the ganglionic (vasomotor) centres, brings a response through the afferent nerves from the centres by vasomotor-compression, or dilation, adjusting and inhibiting the blood-motion, and function-unit motility, in perfect harmony with the tissue-demands of functional waste and repair.

5. The essential nature of the vasomotor function is primarily motile, and secondarily motor, its general function we denominate ganglionic or organic motion. All the other nerve-functions - common sensation, voluntary motion, and special sense - reside in the cerebrospinal system; the nerves of both cerebrospinal and ganglionic systems, efferent and afferent, are, as a matter of vital economics, often associated in the

same nerve-cords and trunk-lines, and both are intimately associated in their ultimate distribution; while the great centres of both systems are correlated by associate nerve-fibers.

With this, as we believe, legitimate data and premises, as to the actual value of the functional position of the Vasomotor apparatus, we proceed to the physiological and practical adjustment of the most important functional processes to these Physiomedical ideas, hoping to attain to a more excellent way of meeting its departures under diseased conditions.

VIII.

DEFINITION OF SECRETION.

The secretions, as we have shown, are products of the function-units (cells) of the secretory organs or glands, which have a tissue-genesis and structural synthesis, wholly different from the excretory organs or glands, or any other structural organization of the body, and peculiar to the purpose of their work. Their functional products, therefore, as would naturally be supposed, are, in fact, radically different from the products of excretory glands, and peculiar to the secretory organs only. The secretions are accessories, either directly or indirectly, to the process of nutrition and reparation. The digestive secretions - saliva, gastric juice, bile, pancreatic and intestinal juices, are digestive fluids, and under vital inhibition, partly by physical laws (admixture), and partly by chemic reactions, convert the crude alimentary (food) substances into proximate principles, which, suspended in intimate solution in this now assimilative (absorptive) fluid-media, they are, by the assimilative circulatory apparatus - lacteals, or lymphatics, and portal circulation - finally converted into reparative material - pabulum - for the living matter of tissue-units.

Other secretions, mucous, serum, synovia, etc., serve a mechanical purpose, and are adventitious secretions. But the most distinctive character of a secretion is that it either is directly, or may be

TABLE III

SECRETIONS & SECRETORY ORGANS.

Digestive:	{	SALIVARY FLUID:	{ PAROTID GLANDS, SUBMAXILLARY GLANDS, SUBLINGUAL GLANDS, BUCCAL GLANDS.
		GASTRIC JUICE:	{ GASTRIC PEPTIC GLANDS.
		BILE:	{ LIVER.
		PANCREATIC JUICE:	{ PANCREAS.
		INTESTINAL FLUID:	{ INTESTINAL GLANDS.
Adventitious:	{	MUCOUS:	{ MUCOUS GLANDS OF THE NOSE, MOUTH, PHARYNX, LARYNX, TRACHEA, BRONCHIA, STOMACH, INTESTINES, UTERUS, VAGINA, BLADDER, URETHRA.
			{ SYNOVIAL MEMBRANES, BURSAL SACS.
			{ LACRYMAL GLANDS.
			{ MEIBOMIAN GLANDS.
			{ AMOEBIC MEMBRANE.
			{ PLEURA,
			{ PERITONEUM.

with impunity, taken back into the blood current from whence it was elaborated by the glands; while most serious results occur from the absorption of excretions. For instance, all the digestive fluids, amounting to over twenty-one fluid pounds in twenty-four hours, are returned directly back into the circulation in the process of assimilation while serving as a menstruum for the digested aliment. The secretions of serous membranes, pleura, peritoneum, that of the arachnoid membrane - cerebrospinal fluid, are constantly, with greater or less rapidity, owing to the blood-pressure as regulated by the vasomotor control, taken back into the blood-current, and as constantly replaced by the secretory cells of these membranes.

These will be found important facts, as we shall try to explain further on, in our practical dealing with diseased conditions and their functional manifestations. And that the student and practitioner may be able to keep these distinctions of the secretory work and products constantly in mind, we have devised an analytic and synthetic table (Plate IV), which we hope will aid in more definite practical notions of this great vasomotor work. From these facts we define the secretions as follows:

Physiological products of the secretory glands, and follicles, serving as digestive ferments, assimilative menstrua, mechanical and adventitious accessories, of apparatuses and systems; and, after serving these purposes, are, by physiological processes, returned into the general blood current.

In Plate IV we have arranged the various secretions and secretory organs in analytic grouping for more comprehensive study.

IX.

EXCRETION, AND EXCRETORY ORGANS.

Numerous experimental observations have demonstrated that a true excretion, when introduced into the general circulation by absorption, injected into the tissues directly, or even retained in contact with the mucous surfaces for any considerable time, act as local or general poisons, causing more or less violent resistive functional aberrations. In fact, the so-called "ptomains" of pathogenic micro-organisms, which are believed to be the main factor in germ-causation of disease, are nothing more than the excretions of the disease-germ, or "pathogenic bacteria," and, therefore, the pathogenic action of these bacteria is mainly due to their excretory products.

It is also a well-known fact that retained disassimilative products - excretory matter of the individual - act as virulent poisons to the organism; such a condition is called "auto-intoxication," a more proper term for which would be *ideopathic infection*. Experiments have shown that a person can live longer without either food or drink, than with all the excretions wholly retained. Indeed, as we shall show further on, the cardinal point of the successful treatment of disease is that of maintaining full and unencumbered functional work of all the excretory organs, and harmonious actions of the excretory apparatuses; a point too often overlooked by the practitioner in his anxiety to relieve pain, or some other secondary manifestation, an oversight or neglect that must invariably bear sad fruit in all critical cases.

Then, in view of these important considerations and physiological data, and conforming to our Theorem, we define excretions as:

The products of the various excretory glands, follicles, tubules, and tubes, synthetically eliminated from the blood-current and dejected from the body. Being disassimilative, and, therefore, extrinsic in

EXCRETIONS & EXCRETORY ORGANS.

Excurrent,	URINE:	{	KIDNEYS.
	SUDOR:	{	SUDORIPAROUS GLANDS.
	MENSES:	{	UTERUS, OVARIES.
	FECES:	{	COLON, RECTUM.
	PULMONARY EXHALATIONS.	{	LUNGS.
Adipose,	SEBACEA:	{	SEBACEOUS GLANDS.
Assimilative,	LACTIS:	{	MAMMARY GLANDS.
Generative,	OVUM:	{	OVARIES, FALLOPIAN TUBES.
	SEMEN:	{	TESTES.

character, the excretions, as a rule, are foreign substances, and cannot directly re-enter the organism without inimical results.

Of course here, as everywhere else, in the closely correlated parts and functions of the organic whole, it is impossible to draw absolute lines of distinction, consequently, we claim more of practical utility than absoluteness for our definitions; in other words, like all general rules, they have exceptions; yet, practically, their value is not in the least impaired by the few exceptions, which are easily reconciled, however. For instance, the ovum, and seminal fluid, are neither true secretions or excretions, in the full sense of these definitions. But being elaborated by special glandular organs from the blood-current, eliminated, and dejected by the ejaculatory ducts, and tubes, we can, therefore, more consistently place them with the excretions, and so have designated them as *germinal* or *vital* excretions.

While it may not afford pleasure to the fastidious mind to say that our embryonal beginning originated in an excretion, we, nevertheless, prefer to adhere as rigidly as possible to the physiological facts. But exceptions may be more plausibly urged against placing the mammary product with the excretions; the idea of our good mother's milk, that solaced the infant griefs, that laid the first foundations of our stalwart youth and sturdy manhood; and, too, the flowing bowl of the kind Jersey's lactiferous offering, being nothing more than excrementitious matters - our biological start from an excretion, and our infant pabulum an excretion - is a proposition we are sure will not be gladly accepted by the majority of our readers; nevertheless, we contend that the weight of testimony is on the side of this unpleasant view of the subject.

In the first place, milk is not the only instance of an excretion answering as an alimentary substance. We have many other substances, such as juices, gums, and gum-raisins, that are vegetable excretions; honey, and several other insect excretions, all extensively used by the human race as aliment - John the Baptist, Sacred

History tells us, lived on honey and wild locusts, the sachine-gum of the locust being a fruit excretion; while many fowls and animals thrive on animal excrement.

Now, I know that the above view is opposed by many eminent authorities, and in most of the works on physiology milk is classed with the secretions. Yet all authentic experimental analyses show that the only constituent of milk not found as such in the blood is caseine, yet caseine is only an albuminoid allotrope, and albumin is one of the most extensive blood-constituents. The fat-globules, butter, etc., and its glycogenic constituents, such as lactose, etc., all have their isomerids in the blood-current. So that, accepting the distinction commonly made, which is entirely too narrow, between secretions and excretions, namely, that "All of the elements of excretion pre-exist in the blood, either in the precise condition in which they are discharged, or in some slightly modified form." - Flint's Physiology, Vol. III, p. 109. While secretions are formed in the gland *per se*, even then we should more properly place the mammary product with the excretions. But adhering rigidly to the best physiologic data, I have, in classifying milk with the excretions, given it the extreme limit approaching a secretion, and assign to it the distinction of an *assimilative or nutrient* excretion, see Plate V.

While these organs and apparatuses, and their products, are distinct in purpose and constituency, yet so wondrously complete is the adjustment of vital economics, that when the excretory organs fail, from overwork or disease, to do the requisite amount of eliminative work, the secretory organs, especially those belonging to the adventitious group, can perform double duty, so to speak, and eliminate dissimilative material along with their secretory products, thus relieving the organism of these dangerous, infective and toxic substances. But not so with the *excretory organs*; here nature's inscrutably wise Law-Maker has drawn the line of functional interchange; for, as is illustrated in albuminuria and diabetes, if these organs are permitted to take on the work of secretion, they soon drain the

organism of constructive and reparative materials. The practical value of these distinctions between secretions and excretions, and the proper classification and definitions of organs, systems, etc., if there were no other instances, is amply vindicated in the above facts; for remembering this important point, instead of giving diuretics, as is a too common error in the treatment of diabetes and albuminuria, as well as many other tissue-states, with aberrant kidney-function, we would direct our therapeutic measures to the secretory organs, instead of the kidneys. Indeed, the kidney function should only be increased when we find the *secretions excessive*, and, also, when containing urea or other excrementitious matters, and when the excretions are suppressed. Thus, by understanding, and keeping constantly in mind the functional values and correlations of the organs, systems, and apparatuses, we have the only rational key to accurate and scientific therapeutics.



PART FOUR.

THE PHENOMENA OF FEVER.

CAUSATIVE FEBRILE PHENOMENA; FUNCTIONAL CONSEQUENCES; SECONDARY RESULTS; CLASSIFICATION OF FEVERS; PRINCIPLES OF TREATMENT.

I.

Our definitions of fever, inflammation, etc., p. 29 to 36, furnishes us with the cardinal idea of vital, resistive and eliminative actions under disease invasions; and with the classification and adjustment of facts in the preceding section, we are prepared to systematically examine and correlatively arrange the various functional departures, or aberrations, viewing them purely as signs of disease, and secondary to tissue-state causes. This we deem very necessary, in order to demonstrate, beyond reasonable doubt, the position our Philosophy is so strongly grounded in, that no matter how violent these functional aberrations may be, in any and every form of disease, the salutary and sanative intent, inherent in vital force and living matter, remains unswerved in its loyalty to the organic integrity of the vital commonwealth, and to the best of their ability maintain functional balance of the organic activities, and harmony of work between systems and apparatuses, so as to bring about the best possible eliminative and reconstructive results, even under very adverse circumstances. If we can remove all doubt from the mind of the medical practitioner

as to the truth of the above statements, we can then readily bring him to a full realization of his true position as a loyal assistant of these inherent sanative purposes of vital action, in disease as well as health; and we hope to convince him of the crime of hindering and violent therapeutic measures, and aid him in becoming a close student and interpreter of these vital manifestations, which means an accurate diagnostician.

For the purpose of thus studying these phenomena of disease, and in a practical way familiarizing ourselves with the disease conditions, or tissue-states, and the logical relation of these conditions with the functional disturbances, or aberrant sequences of abnormal tissue-states, we have chosen the phenomena of fever; and by taking up each in their natural order of occurrence and relations with the functional departures, endeavor to obtain such a comprehensive conception of disease as may be of immense practical value. We therefore divide the phenomena of fever into: *a. Causative phenomena; b. Functional consequences; c. Secondary results.*

By causative phenomena we mean the primary results upon the tissue-units of any and all substances, forces or influences that are directly inimical to the best condition of their functional potency. Therefore, the causative phenomena are all abnormal states, and their primary results in the living matter of tissue-elements.

The functional consequences include all those departures of the organs, systems, and apparatuses, as manifest in the character of their functional work, when compared with the normal character of their activities.

By secondary results is meant tissue-states, as manifest in abnormal appearances and functional work of the organic structures, arising primarily from the causative phenomena, and secondarily from inefficient eliminative and reconstructive efforts of the Vital force.

II.

CAUSATIVE FEBRILE PHENOMENA.

Referring to No. 9 of our Principia, page 19, the reader will readily understand the seat and nature of the primary conditions that make up the initial phenomena of a febrile state of the organism; as there stated, no material in the organism is capable of vital motility, or vital action, but living matter of the tissue-units; therefore, no substance, influence, or force can alter the functional activities except it primarily affects this basis of all vital manifestations; it logically follows that the febrile state, no matter what cause it may arise from, or what form or variety it may assume, *is wholly dependent, primarily, on the causative changes affected in the bioplasm of tissue-units.*

From this, as we certainly believe, the only scientific standpoint, there can be no doubt, as elsewhere stated, p. 29, that it is a very grave error to view the temperature as the paramount condition of fever, when, as we shall see, it does not come until long after the causative conditions are fully established, and is therefore a functional *consequence*, and *not a state at all*. The invading influence, then, must in some manner be antagonistic and repulsive to the normal state of the bioplasm, or living matter, in order to induce abnormal results, and then immediately it arouses the resistive and expulsive instincts of the Vital force resident in, or a quality of, living matter.

Now, as there are in every individual organ, and every system, billions upon billions of tissue-elements more than are actually required for function-work under ordinary circumstances, and every tissue-element is possessed of a reserve or potential vital energy far in excess of the amount required of it as a unit in the ordinary functional work, it follows that if an invading influence or disease-causation affect consecutively these units, or even millions at a time, and although each unit springs into resistive warfare immediately

it is attacked, this unit-warfare would necessarily continue for a greater or less period without any appreciable effect upon the normal functional activities; because the invasion must engage sufficient units to call into action not only the reserve units, but the potential vital energy of each, before functional aberrations will be manifest. Then *the period of causative phenomena is that of primary unit-invasion up to the functional disturbance*. This corresponds to what most authors call the stage of invasion, but should be called the *prodrome*, which, as the term implies, "running before," is simply a forerunner, and is a basic condition of every form of disease; this is what we mean by the term TISSUE-STATE.

The *form of disease*, then, is determined wholly by the character of the functional departures or aberrations, and these we call the signs of disease or symptoms; and by grouping a number of correlated symptoms together in the logical sequence of their causative relations, we have a SYMPTOM-COMPLEX; to which the name *disease* is erroneously given, but as custom makes law, we shall continue to apply the term disease to the symptom-complex, as it is shorter, and makes no practical difference, so long as we know what we mean by the term.

Now, while every form and variety of disease has a common origin in unit-invasion, or in other words, disease is a unit, being always a condition, or *tissue-state*, yet the prodrome, or causative phenomena, must necessarily correspond to the effect of the invading influence upon the living matter of the tissue-unit. To speak more explicitly, *the nature of the causative phenomena is determined by the behavior of tissue-unit bioplasm, under the influence of the invading causation*. This fact shows us the importance of a knowledge of disease-causations; indeed, it is even more important to know the nature and influence of disease-causations, and their causative phenomena, than a knowledge of the therapeutic character of remedial agents; for, thorough knowledge of these facts would render prophylaxis absolute, and therapeutics unnecessary. The old adage of

an ounce of prevention equalling a pound of cure, is certainly corroborated by the scientific facts in this important instance.

The cardinal principle in the causative phenomena is the resistive potentiality of the tissue-unit; indeed, this inherent instinct of living matter of the tissue-elements, constituting *Vital Resistance*, determines not only the nature of all consequent functional actions, but it is the balance in which the fate of the diseased organism is weighed. Were it not for this inherent *resistive* instinct of Vital force in living matter, *there never would be a symptom or sign of disease*; the organism would, on the first attack of disease-invasion, die without a struggle or sign of disease. And were it not for the *eliminative* instinct of Vital force, the organism, even though surviving the invasion, would soon be a mass of diseased tissue; and should it survive under these terrible conditions, and being devoid of *reconstructive* instincts, the putrescent structures would fall apart, and the mutilated body finally degenerate beyond recognition.

From these premises, founded in the indisputable facts already advanced, and as is proper in this discussion, omitting the factor of therapeutic interference, it logically follows that the character of the invading causation, and the causative phenomena, or behavior of tissue-unit bioplasm under the causative influence, determines the nature of all functional aberrations or signs of disease, and the symptom-complex, or form of disease; while the resistive potentiality of tissue-unit bioplasm determines the eliminative and reconstructive integrity of the organs and systems of the invaded organism.

Then, this resistive or reactionary instinct of tissue-unit bioplasm being the primary force in determining the subsequent phenomena, we can easily understand that if the causative phenomena be well marked and pronounced in their manifestations, it means a high resistive potentiality of these units, and a consequent high grade of functional manifestations; while on the other hand, if the initial phenomena, or prodrome, is obscure, low grade, and prolonged, we

know that the vital resistance of tissue-units is inadequate, and a low febrile phenomena results.

Again, if these causative phenomena are extensive, pervading an extensive area of tissue-units, or if the invasion of even a limited area be violently inimical, demanding the utmost of the resistive forces, the result is a general reactionary attitude of the organism, and we have a *febrile prodrome, or febrile causative phenomena*. Now, this febrile prodrome does not necessarily imply that every tissue-element of the organism must be directly invaded before functional, eliminative, and reconstructive instincts can be brought into requisition. There is a bond of sympathy between the tissue-elements, a national loyalty so to speak, that an invasion of a serious character at any local point or area arouses, and the whole organism assumes a defensive attitude. For instance, in traumatic fever, the invasion of units is mechanical and violent, such as severe contusions, and lacerations; billions upon billions of tissue-units are either disintegrated, or their tissue-continuity wholly destroyed; the shock of violence, primarily by a repulsive action of the atoms of tissue-unit bioplasm, relaxes, and for the time being suspends vital action in the living matter; but secondarily, as the atoms again come together, their vital activity is intensified, and if the mechanical destruction of tissues be not carried beyond the recuperative possibilities of vital reconstruction, the whole vasomotor apparatus, with its vast army of defense - the circulatory, secretive and excretive apparatuses - spring into resistive and reparative action, and the result is a general febrile state of the organism. And so it is that the causative phenomena is the controlling element in all subsequent activities, no matter how extensive or varied they may be.

III.

FUNCTIONAL CONSEQUENCES.

As we have shown (page 26), in health each nuclear bioplast of the function-units (tissue-elements) is possessed of more energy than is required for the mere function-work necessary for assimilation and disassimilation, or maintenance of the organic integrity; this is the potential energy of the function-unit, while that constantly in use for the ordinary functional activities is its kinetic energy or vitality. And this reserve Vital energy is always sufficient to afford adequate strength and activity for a reasonable amount of body-work, of course, consistent with the constitutional construction or organic integrity of the individual.

In this normal condition or state of health, the functional operations, which are the aggregate expression or result of the individual function-units (see Part First, page 15), are attuned to a definite standard, as to rate and time of these performances. The heart performs its revolutions of filling and discharging the blood-volumes, on an average of seventy-two times per minute; the lungs take in and expire a definite quantity of air, at the average rate of sixteen times per minute; the digestive apparatus disposes of a meal in an allotted time; the kidneys do so much work every twenty-four hours; sufficient animal heat is evolved to maintain the body warmth at about 98.5° F.; and so with every functional action; all organs, systems and apparatuses are attuned in perfect accord with a definite amount of work.

This rate of function-work constitutes normal action; and so long as this normal Vital action in function-units is uninterrupted, or the units are not invaded by disturbing influences, this normal rate of functional activities continues. But when the function-units are inimically disturbed, and the *causative phenomena* cover sufficient area of tissue-elements, then FUNCTIONAL CONSEQUENCES become manifest by a change in the function-rate, and in the quantity, as well

as quality, of function-work. This is functional departure from the normal state of action, and we use the term *functional aberration*, in this sense, as *enforced functional consequence of function-unit invasion*; and it is therefore a sequence of the *causative phenomena*.

Now, we must not be understood, in using the term *functional aberration*, as implying a vagrant and aimless departure from the normal; on the contrary, as we have endeavored to emphasize, the functional departures are aberrant only in the sense that the inherent resistive and defensive instincts of the tissue-unit bioplasm, in this febrile causative phenomena, *raises the function-rate to meet the increased resistive, eliminative, and reconstructive demands*, and these manifestations, therefore, are in the best interests of the vital commonwealth.

As a natural physical sequence of this acceleration of the normal attunement of function-rate, there is an exaggeration of the functional activities of all parts concerned in this defensive warfare. In febrile consequential function-work, we have the whole vasomotor apparatus involved in the exaggeration; which, by reference to Analytic Table No. III, is a most extensive and important involvement, and results in a wider range and higher degree of aberrant functioning than in any other form of disease-manifestations. From these facts we can easily see how it is that fever has taken front rank in pathology. As our view-point of this phenomenon implies (page 29), it is a general state of vital resistance, because of extensive tissue-unit invasion, and its most prominent and invariable functional consequences, namely, elevation of temperature and acceleration of the circulation, seemingly inconsonant with, and so overshadowing the causative phenomena - tissue-unit invasion - the superficial observer and unmethodical mind most naturally views the temperature as disease *per se*, and directs his therapeutic procedure only toward the temperature.

The circulatory acceleration, manifest by rapid pulse, vigorous and exaggerated heart-action, with correspondingly increased respiration,

all are the natural consequences of the resistive instincts and purposeful intent of Vital force, as exhibited in the ultimate results of spontaneous cures, which always occur without therapeutic aid when the inherent resistive force is equal to the emergency.

But the function-work of these exaggerated activities of organs, systems and apparatuses, are not always in accord with the sanative instincts and purposeful intent of the Vital Ruler of the organic commonwealth; and the mind, narrowed by a surface vision, seeing only increased body-heat, temperature, and exaggerated functional activities, very naturally ascribes every other functional inability to these superficial phenomena, and thus falls into grievous errors of therapeutic procedure. Now, the facts are, that each organ and system being attuned to a definite normal rate of work, and every functional operation in health being a fixed organic habit, just as the individual becomes a creature of habit in his every-day life, these organs and apparatuses cannot immediately change their normal function-habit, and adapt themselves to the emergencies of these inimical causative phenomena and disease conditions. Therefore, while their activities are exaggerated much above the healthy habit, the quantity and quality of their function-work falls measurably below the normal standard. Hence it is, that in fever the secretions become inefficient, and the excretions are dangerously diminished. Were it not for these two very important functional consequences, the aid of a physician would probably never be needed in any form of fever.

But why are the secretions and excretions, which exactly measure the great work of assimilation and disassimilation, thus withheld at the time of their sorest need, if the inherent instincts of Vital force and living matter are really resistive, eliminative and reconstructive, under disease invasion? In the vital interests of a higher and sanative intent of medical science, it behooves us to candidly face this question, and be sure that we are on solid ground in an unequivocal conclusion in harmony with our Theorem.

By the attunement of the organs and systems to a definite rate of function-work, we allude to their tissue and structural genesis. That is to say, that the kidneys, for instance, because of the diameter and number of their capillary vessels, the number of excretory cells and size of each glomerulus, the diameter and extent of uriniferous tubules, and finally, the capacity of the gross organ, can only produce so much urine in twenty-four hours kidney-work. And so with every other organ and system; the heart can work only up to a certain speed, and can propel only as much blood as its auricles and ventricles can hold; the nerves can convey impressions from surface to center, and vice versa, up to a definite speed of transmission, and further than that, it is simply a physical impossibility for these vital activities to carry the functioning speed or quality. Of course, as we have already shown, the potential Vital energy resident in the unit-bioplasm is sufficient not only to sustain a very considerable amount of body-work above the kinetic energy for the organic requirements, but this potential energy is also used in disease-invasion to work the function-speed of organs to their utmost limit. And unfortunately the innervating energy is increased much out of proportion to the capacity of the organs and systems to produce functional results under this increased speed. Hence, it is simply a logical physical sequence that the secretions and excretions are not proportionate in quantity or quality to the increased function-speed, under this elevated activity, or febrile functional consequences. The vasomotor compressors under the increased arterial pressure, exerted by exaggerated cardiac action, eventually tire, and the capillary vessels become overdistended, thus slowing up the blood current to the gland-cells, for instance, and not having sufficient material, their products - secretions and excretions - are lessened in quantity and lowered in quality.

Now, this inability of Vital force to overcome physical impossibilities and perform more than the miraculous, would lead the unobservant and illogical mind to conclude that the inherent forces

of the organism are helpless in the face of disease, and blind to resistive and reconstructive purposes. Such a physician imagines his position to be supreme in this battle against disease, and deluding himself with the idea that he is commander-in-chief of the curative forces, he is guilty of most grievous therapeutic inconsistencies, and eventually finds himself playing with his thumbs while waiting for nature to turn something up. And if his therapeutic blunders have not aided the disease-causation to make a hopeless case of it, the Vital force does at last succeed in harmonizing the vasoconstrictors and vasodilators with the secretive and excretive demands, equalizing the circulation and directing the activities of aberrant functioning into efficient eliminative work; the result is profuse perspiration, a lowering of temperature, slowing of function-speed to the normal attunement, and increased excretory functions. Thus proving beyond reasonable doubt the inherent sanative intent of the most violent aberrant functional actions; and that under all reasonable conditions, in every form of disease, the physician can safely trust the integrity of purpose of Vital force, and be sure that if guided by these vital indications his therapeutic measures will always be rational, in the line of cure, and invariably successful where a cure is at all possible.

We have alluded to the fact that the innervating energy in these febrile functional sequences is out of proportion to the function limit of organs and systems. This statement needs further explanation, as at the time being, this is really unfortunate to easy and rapid victory for the sanative intent of vital action. There is no doubt but the source of nerve energy is primarily in the tissue-units of the organism generally, and the afferent nerves carry this energy to the neurones - nerve cells - of the centres, where it becomes potential nerve force. This being so, in these increased activities of the function-units there must necessarily be increased liberation of this secondary energy-current, and the centres of the ganglionic nervous system become surcharged with nerve force, and this system being the source of functional inhibitory energy of the whole vasomotor

apparatus, we can easily see the difficulty under which the vital rational instinct labors for the time being. It is that of the driver of spirited horses, though the speed may be in excess of the necessary requirements, even in a tolerable emergency, yet he is thankful that he had not a team of jades, as he safely reaches the goal with their fiery spirit only curbed. And so it is, after all, most fortunate that there is too much, instead of too little nerve energy in the ganglionic centres, as any experienced practitioner well knows the sorry disadvantage he labors under with a patient whose nerve energy is at a low ebb, and refuses to respond as he plies his most reliable nerve stimulants and tonics.

To summarize the functional consequences in the febrile state: There is, earliest, a disturbance of the associate work of the component organs and systems of the apparatuses, some working too slow, others too fast; they do not readily adapt themselves to the new service, and the consequence is irregular and variable vasodilatation and contraction, producing rigor, sensations of heat and cold, following each other in quick succession, while the irregular pressure of involuntary muscles upon the nerve filaments produce sharp and vagrant pains, and the dilating arterioles, from the same impingement of these interstitial involuntary muscular bands, causes dull pains, throbbing aches, and vague unease. Next comes accelerated organ-action; the circulatory apparatus being the first to show exaggeration, and the increased rapidity of the blood-current by mechanical friction, more than by tissue-metabolism, as is generally supposed, develops heat, and thus elevates the body-temperature. All the organs, and the ganglionic system of the vasomotor apparatus become excited into increased activity. At first, until the capillary vessels of the excretory and secretory organs become engorged - the stage of capillary congestion - the excretions and secretions are increased. But soon the excretions, which are first to be involved, become greatly diminished, as also the secretions later on. This is the third stage of febrile functional consequences.

IV.

SECONDARY FEBRILE RESULTS.

As explained (page 63), we have to consider the secondary tissue-states, and structural results of these febrile phenomena. In fact, these secondary states or conditions of tissues and structures are sometimes even more important to the physician than the primary or causative phenomena; and certainly no careful practitioner would think of overlooking them; on the contrary, he endeavors to anticipate them by scientific foresight and prophylaxis. Too often it is that the physician, after he has "broken up the fever" - and the patient, too, if his therapeutic measures have been directed mainly to subduing the pulse and reducing the temperature with vital depressants - dismisses the patient, deserting the Vital reconstructive forces when his aid is really most needed. He should ascertain the exact after results of the warfare with disease, and put his patient on a course of treatment that will aid the Vital regenerative and reconstructive efforts to restore the organism to its original integrity. If the general practitioner was more careful to treat fevers of every form on the rational line of Vital indications, and give more attention to the secondary febrile results, the vocation of travelling "specialists" and patent medicine mongers would be unwholesomely curtailed, as would also that of the "chronic practitioner."

If the general commanding an ever so large and efficient fighting army, should not stop to bury the dead, and take no heed of his wounded soldiers, his regiments and brigades would ere long be reduced to skeletons. The most efficient hospital corps and equipments are considered the best military economy, because they enable a very large per cent, of the wounded to again go in service. So with the scientific physician, he is prompt to take the best care of the crippled structures that fail and fall in the heat of this battle against inimical invasion and disease conditions, and return them to active service as soon as possible.

One example will perhaps suffice to illustrate fully what we mean by *secondary febrile results*, without here going over in detail the innumerable secondary tissue-states that may arise; after which we will enumerate the principal general secondary conditions. We take the kidneys, as a typical instance: In the functional consequence already mentioned, that of congestion and over-dilatation of the renal capillary blood vessels causing a *stasis*, the glomeruli are compressed and their function-units - excretory cells - are hampered until the urinary excretory work is almost entirely suspended; the system soon becomes inundated with urinary ptomaines, toxic effects of which are manifest in the peculiar uremic symptoms. Now if this uremia is not adequately met at the proper time with efficient remedies, if the patient recovers from the fever, he will perhaps for years be the victim of severe recurring headaches. This is a secondary tissue-state, resulting from an irritability of the ganglionic neurones (nerve cells belonging to the ganglionic system, see page 51), lying in the sensory areas of the brain, the after effects of uremic poisoning of these units. This irritability of the ganglionic neurones is manifest, owing to changes in the circulation, by periodic local exaggeration of the vasomotor function, and the consequent capillary impingement upon the sensory neurones of the brain causes the pain - headache.

Returning, now, to the local functional consequences at the kidney, we find other most serious secondary results; the capillary *stasis* continuing, the plasma and white blood-corpuscles are extravasated into the intra-glomerule spaces and tubules, which, mixed with the scant normally eliminated urine, furnishes a culture media for bacteria, as it slowly comes to the pelvis of the kidney, and sluggishly flows down the ureter to the bladder. These bacteria often develop the most virulent pathogenic variety, and "auto-infection," more properly speaking, *ideopathic infection*, of the bladder, kidney, and sometimes entire systemic infection occurs, and the patient rapidly sinks into a hopeless state, the death report assigning "heart failure" as the death-cause. Again, this stasis-diffusion at the renal

capillaries contains either albumin or albumin-proteids; now the albuminoids, or proteids, are taken up and appropriated as pabulum, by the living matter of these kidney-units, because their normal pabulum-supply from the blood-current is blockaded, and they naturally fall back on this debris for food; and, like the man him-self, these bioplasts are prone to form an appetite for substances that are not good for their physical or moral well-being; hence it is, they develop an appetite, so to speak, for these albuminoids, and the secondary result is, that after the fever is gone the patient becomes a victim of albuminuria; for these bioplasts of the excretory kidney-units, to satisfy this depraved appetite for albumin, commit depredations upon the normal albuminoid constituents of the blood.

These are types of the secondary results of febrile phenomena; every organ and system of the body is liable to be thus left crippled in its tissue-state and function-work, not because of any disintegrative or destructive tendency of Vital force; it, like the military commander, goes into action not with the intention or desire of seeing his men slaughtered; on the contrary he resorts to every strategy, in the hope of preventing casualties. But the general commanding these unit-forces in this warfare of the vital commonwealth against disease invasion, comes out, as a rule, with whole battalions, though many unit-soldiers may have fallen; these secondary results being exceptions, and not the rule, even when the Vital force is handicapped with irrational and contra-therapeutic measures; and, if aided by intelligently applied sanative therapeutics, the exceptions will be far more exceptional.

The general secondary structural results of febrile tissue-states relate to the integrity of organs and apparatuses, with regard to their reconstructive activity, and is usually denominated the recuperative forces of the organism. In the first place, the inherent potential vitality or reserve force of tissue-unit bioplasm, not only varies in different individuals, as manifest by their constitutional vigor, power of endurance, and readiness with which their organism adapts itself

to adverse environments, but there is also a difference of endurance, adaptability and recuperative faculty in the various organs, systems and apparatuses, even in the same individual. The most common example of which we see in persons dying from pulmonary tuberculosis, and an autopsy reveals the fact that every other organ of the body was in a practically normal state, only the muscular system secondarily reduced in bulk from innutrition; showing that the lungs lacked inherent vigor or vitality, and consequent structural integrity; hence, their functional potentiality was deficient, and when subject to adverse environments, their resistive power being low, they succumbed to vicissitudes, and their lowered vitality with resulting depraved fluids, or adventitious secretions (see Plate IV) and extra-vascular blood-plasma - affording a culture field for the tubercle bacilli, which in undeveloped spore-state being already present, or accidentally as extrinsic matter bodily gaining access, results in the development of pulmonary tuberculosis.

In the second place, during the warfare against febrile causative invasion, incidental casualty to some local division of the vasomotor apparatus may occur, such as obstruction of the capillary net work - the renal capillaries, for instance - or weakening of the capillary walls and extravasation of undue blood-constituents into, and obstructing the extra-vascular spaces; occlusion of excretory ducts and retention of excrementitious matters; atheroma, or a degenerative state of vascular tissue-elements under the extra strain, and deficient pabulum supply for their bioplasm. Such accidents necessarily put these local organs or systems at a great disadvantage, and like a siege-ridden garrison, they come out of the warfare with their vital reserves completely exhausted, and very little recuperative force remaining. Again, as we have already shown, the secondary ganglia of the ganglionic system being isolated, and to a great extent independent, in their innervating functioning, especially their organ-re-enforcing ganglia (page 51), these will, under long continued febrile demands, become exhausted and the organ over which they

preside either becomes enervated, or, still possessing sufficient tissue-unit vital potency, and from lack of the ganglionic inhibitory restraint, it functions violently, and, like a runaway horse, soon exhausts itself in unpurposeful activity.

These facts teach us that even were it rational to devote entire attention to the temperature, as though the fever was high temperature and rapid pulse, it would even then be criminal in the physician to neglect these secondary or structural results, and leave these beleaguered local unit-forces unaided, flanked and surrounded, to fight against overwhelming odds.

Again, these facts corroborate what we may always observe in the practice of those physicians who gain the greatest reputation for the successful treatment of fevers; they are those who give little heed to "the fever," but carefully watch the general conditions of their patient, and with simple, yet efficient sanative agents, keep every organ, system and apparatus in even balance of function-work, urging on the excretory functions; and with rational reconstructive diatetics, in proper form, quality and quantity, maintain ample commissary supplies to the unit-forces on the firing line; and finally bring the patient out of a most violent febrile attack, as good as new. "Feed the fever patient," though in its day a most excellent maxim, has, we fear, degenerated from what should be an axiom, until, to-day, it has become the fad of *cramming* fever patients; and we should restore its axiomatic value by paraphrasing it to read: *feed the function-units - tissue elements - in febrile causative phenomena*; for we must know that food for the *patient*, does not always mean PABULUM FOR LIVING MATTER OF TISSUE-ELEMENTS. Of this we shall have more to say in the section on Therapeutics.

V.

CLASSIFICATION OF FEVERS.

As we have defined, and we hope satisfactorily demonstrated, by grouping the phenomena of fever in their symptomatic relations and sequence of occurrences, the term fever includes a number of phenomena which are the aggregate consequences of tissue-unit invasion by inimical extrinsic substances, forces or influences, in such a form and manner of attack as to call into resistive action the general organic and systematic functional activities; which is effected through exaggerated functioning of the whole vasomotor apparatus. Feeling that these facts cannot be too strongly urged, and impressed especially on the student of medicine, at the cost of seeming platitude, I have thus reiterated them here, that the fallacy of disease classification founded wholly upon functional consequences of disease conditions, in other words, founding a pathology on effects instead of primary cause, may be plainly understood. There can be but one rational and practical, as well as scientific classification of fevers, namely, that founded upon the primary disease conditions.

As the temperature is held paramount by the other methods of treatment, so the classifications held by these methods are founded either wholly on character of functional manifestations, symptoms or functional aberrations, or upon the nature of the disease causations. We necessarily have an endless, meaningless, and impracticable nosology growing out of either method of classification.

For instance, in Gould's Dictionary of Medicine, under Fever, there is given one hundred and sixty different kinds of fever! It is interesting to look over this curious list; one is prone to think the nosologist had forgotten his scientific dignity, and gone merrymaking. There is, "Amatory (love) Fever," "Bouquet Fever," "Dandy Fever," "Neapolitan Fever," "Country Fever," "Mountain Fever," "Barcelona Fever," "Gibralter Fever," "Levant

Fever," "Chickahominy Fever," "Bucket Fever," "Camp Fever," "Hush Fever," "Rock Fever," "Dairy Fever," "Milk Fever," "Lent Fever," "New Fever," "Shoddy Fever," "Catheter Fever," etc. In short, a nosology in accordance with such ideas of disease, fever, inflammation, etc., as we have already quoted from leading textbooks of medical schools devoid of a theorem or hypothesis (pp. 29, 30, 31), is forced to the endless task of assigning a fever for every possible thing that may produce it, and a fever for every locality that one might happen to be in when the possible thing gives him a fever.

Such ideas, resulting in this interminable and impracticable nomenclature, distracts the student's mind from the disease conditions, and cannot but result in a confused and unsystematic practice. Of course, as we have already shown, any rational or practical classification must necessarily take into consideration the nature of the febrile causation, otherwise there is no escape from a purely symptomatic nosology, which is even more unfortunate than the above confusion of thing-and-place-fevers; for the former leads to the error of treating symptoms, such as temperature, pulse, pain, etc., temporizing and only palliative, handicapping the Vital force in eliminating the cause and restoring normal conditions, thereby fastening secondary abnormal tissue-states, or chronic disease, upon the patient.

In accordance with our Theorem, a classification of fevers, as well as all other forms of disease, must be founded upon the causative phenomena; because the behavior of the tissue-unit bioplasm towards any substance or influence coming in contact with it, is a sure criterion as to the nature of the functional consequences that may follow; for the inherent instinct of resistance to inimical invasion of the vital domain is unerring, and will, if carefully observed and scientifically interpreted, afford the most reliable basis for a practical classification. And such a nosology also covers the symptomatic or functional consequences, and is therefore comprehensive and unconfusing.

Of course, our classification on this idea of fever-phenomena will seem very simple, and possibly inadequate, to those educated to the

belief that fever is anything that may happen to cause it, or any place it may occur, but we hope to show that it is of far more practical utility than these arbitrary methods. In fact our Theorem and Philosophy demand that every consideration of fever, as well as all other disease-phenomena, to render practical and scientific results in the sanative practice of medicine, must reason from the causative conditions of tissue-unit bioplasm, and the tissue-states that logically follow; and all other methods, even granting, for argument's sake, successful bedside results in the majority of cases, yet they are obtained by empirical experiment, and must result in an arbitrary, incongruent therapeutics, and unsystematic practice.

On the tissue-state basis of fever phenomena, we divide the febrile manifestations into two natural divisions:

1. Invasive febrile conditions, with resultant causative phenomena.

2. Traumatic febrile conditions, with resultant causative phenomena.

These are subdivided into various forms of fever, as follows:

1. - INVASIVE CONDITIONS.

(a) General Extrinsic Tissue-Unit Invasion.

The tissue-unit bioplasm is invaded by inimical substances, in subtle forms, as gases, vapors, or minute particles; gaining access through absorption from surface, inhalation, or taken in with food and drink. This invasion being sufficiently general to require extra vasomotor work, produces causative phenomena and functional consequences, which, by their symptom-complexes, are called *malarial fever, typhus fever, yellow fever.*

(b) Local Febrile Tissue-Unit Invasion, or Infectious Febrile Conditions.

The bioplasm of tissue-units, throughout a more or less circumscribed area, is infected by direct local intrusion of adverse influences, inimical organisms, or forces, whose presence, or whose

requirements, destroy the normal conditions or necessities of the unit functional potencies. The nature of these local invasive organisms is such that with favorable conditions, and of course unfavorable results to the tissue-units, they can reproduce their kind and multiply rapidly. Now this rapid reproduction and spread of the disease causation, with impending invasion of the entire organism, arouses the tissue-unit commonwealth into resistive, defensive, and eliminative warfare, the uninvaded organs, systems, etc., turning their functional force against the common enemy; the result is general febrile causative phenomena, and functional consequences or aberrations. These causations may reach the unit-bioplasm through the digestive tract, or from the cavities of the hollow organs, like the uterus, vagina, bladder, etc. Of course, they are extrinsic. Such causative phenomena cause functional consequences, or symptoms, that can be grouped into symptom-complexes (so-called diseases), which have been named *typhoid fever*, *septic fever*, and *puerperal fever*.

(c) Special Organic Unit-Invasion.

Sufficient unit-invasion of an organ may occur to arouse extra-functional resistive activities of certain other organs which are intimately associated with, or occupy a very important function in the general work of some apparatus. Owing to the important relation of this invaded organ, the whole apparatus is directly involved in the functional febrile consequences, and secondarily, as allies in the vital warfare against the inimical invasion, the whole apparatus becomes involved, resulting in general febrile functional aberrations, with the storm-centre at the invaded organ. For instance, the function-units of the lungs are invaded by inimical substances, forces, or influences; the causative phenomena are all local to the lungs, but soon, from the stasis in the pulmonary capillaries, the heart is functionally exaggerated, a general circulatory exaggeration resulting in febrile functional consequences occurs, with the storm-centre at the lungs.

These specialized local invasive phenomena, with their functional consequences, may be grouped into symptom-complexes, or forms of fever, called *pneumonia (lung fever)*, *gastric fever*, and *cerebrospinal fever*.

2. - TRAUMATIC CONDITIONS.

(a) *General Traumatic Invasive Conditions and Causative Phenomena.*

By extrinsic violence, or destructive influences, such as blows, shocks, chemical action, heat, cold, etc., tissue-units generally are wholly or partially disintegrated, or their tissue continuity, functioning relations, and vital potency deranged; the damage covering sufficiently large area to require immediate general resistive and reparative functioning of the vasomotor apparatus, when a general functional exaggeration immediately follows the shock of injury, and a traumatic form of fever results.

(b) *Local Traumatic Febrile Causative Conditions.*

The tissue-unit bioplasm is infected at a focal point, usually from the dermoid surface, though the invasion may occur from the mucous or serous surfaces, but the causation is eminently foreign and wholly extrinsic; the invasion is forcible and lesional, such as poisoned wounds, *glandular infections*, *malignant pustule*, etc., in which there is required for resistive and reparative purposes general accelerated functioning of the vasomotor apparatus, and consequent febrile functional manifestations: *Traumatic septic fever*.

(c) *Organic and Systemic Traumatic Febrile Causative Conditions.*

Lesional damage from external violence to some special organ, as the liver, kidney, stomach, etc., may be followed by general participation in the resistive and reparative functional activities, resulting in febrile manifestations: *Traumatic*, or *surgical fever*.

Again, in sudden and violent motion, and arrestment of the body, as in falls, railway collisions, etc., the function-units (tissue

elements) are, by shock, and counter-coup or jar, independent of actual lesions, disarranged; that is to say, their continuity with other units is so disturbed as to destroy or cripple, either temporarily or permanently, their harmony of functional potency in the tissues and structures. The efforts of Vital force to restore this continuity and functional balance, calling into requisition, as it necessarily must, the general vasomotor activities, though such invasive conditions involve only a single organ, or but one system, and the result is general febrile manifestations, with perhaps secondary or structural results. Such organic or systemic causative conditions present the symptom-complex, called *concussion* fever; cerebral and spinal concussion; and renal, splenic, cardiac, gastro-intestinal concussion, etc.

VI.

PRINCIPLES OF TREATMENT.

It will be readily seen from this classification of the febrile manifestations, that the general management of fevers, and especially the therapeutic measures, must necessarily be upon the TISSUE-STATE CONCEPT OF DISEASE, AND THE IDEA OF PRIMARY INDIVIDUALITY OF THE FUNCTION-UNIT OR TISSUE ELEMENT.

Farther on we will consider more in detail the treatment of forms of disease from this stand-point, and it is therefore only necessary here to discuss in a general way the laws of treatment of febrile forms. It must also be understood that the extent and scope of this work cannot permit of the detailed treatment; indeed, we doubt the propriety in any work of laying down special prescription-treatment of disease. If the student can be made to understand the principles of scientific TREATMENT OF TISSUE-STATES, AND THE PRIMARY CONDITIONS OF FUNCTIONAL ABERRATIONS, with a proper conception of the *modus operandi* of medicines and remedial measures, his judgment as to prescribing comes to him as if by intuition, and can scarcely be wrong.

“EQUALIZE THE CIRCULATION AND NERVOUS ACTION,” is an axiom of the immortal Alva Curtis, just as Samuel Thompson evolved the basic apothegm, that like his name, is as undying as very truth: “HEAT IS LIFE, AND COLD IS DEATH.” And science naturally assumes the burden of proving why heat is life, and cold is death; and the task is no more nor less than that of showing what constitutes life, and why is death. Hence the equilibrium of the circulation and nervous action - health - is the goal of all medical philosophy and practice, the only question being, what are the best methods and means of accomplishing this great *desideratum*.

The temperature in fever, as we hope has been satisfactorily shown, instead of being merely the result of exaggerated tissue waste from chemic oxidation, is an accurate measure of the vital resistive and eliminative integrity of the organism; just as a low or subnormal temperature means a lack of vitality or absence of functional potency in the unit-bioplasm, so a supernormal or high temperature denotes high potentiality of the unit-bioplasts; because, as already stated (pp. 72-3), the increased functional activities induce waves of kinetic energy which, converted into induction currents of vitality by the afferent nerves of the ganglionic system, surcharge these nerve centres with nerve force, which in turn enervates the rapidly functioning organs and systems.

Now, it may be plausibly asked that if supernormal temperature in fever means high resistive and eliminative action, while subnormal temperature points to low vital energy and lack of vital resistive efforts, why then is it that as death approaches, the temperature runs up rapidly, often reaching 110° just before the fatal end? To avoid confusing death phenomena with that of febrile causative phenomena, we have but to remember that both occur primarily in the unit-bioplasts; but *death* means DISINTEGRATION of unit-bioplasm, while *fever-causation* means INVASION of unit-bioplasm; the rest is then easily understood. In this disintegration of bioplasm, which is the first thing to occur when its nutrition is cut off, it is by very sudden

splitting up of its vital constitution into simple chemic elemental state, these most rapid chemical reactions evolve much heat, which, diffused through the now congested blood-plasma loaded with carbonaceous disassimilative materials, add fuel to the flame; and thus temporarily, and by pure physical process, the temperature is often rapidly raised to an extreme point in death from fever.

The temperature of death, therefore, is a pure physical phenomenon, while the febrile temperature is the logical sequence of purely vital processes, which we have already discussed under the group of *Causative Febrile Phenomena*, page 64.

This natural grouping of febrile manifestation into three classes, also groups the rational treatment of fever into three natural divisions. For if our premises be correct, no treatment for fever of any form can be complete and scientific, except it systematically deals with -

1. The primary tissue-unit conditions, and causative phenomena.
2. The functional consequences, or aberrant functioning of organs and systems.
3. Secondary results, or tissue-states and organic and systemic results of inefficient and obstructed eliminative, and reconstructive function-work in these febrile conditions.

1. - TREATMENT OF CAUSATIVE FEBRILE PHENOMENA.

As we have seen, the causative conditions, and phenomena arising therefrom, constitute the prodrome of the disease; the causative conditions precede even the apparent or knowable manifestations or phenomena of the early tissue-unit state and conditions. Yet when any considerable number of units are invaded, indeed a very few if the invasive causation be in any degree virulent, the resistive instinct quickly responds; so that the period between actual unit-invasion and the causative phenomena, is as a rule very short, from a few seconds to one or two hours. Though of course this is modified

and varied by the general vigor, and resistive powers of the individual organism, which is to say, a vigorous or weak constitution.

Therefore, it follows that the stage of unit-invasion is the most favorable for successful prophylactic treatment; and if this unit-invasion stage of fever can be diagnosed, and the conditions properly met with sanative therapeutic measures - *in fact, at this stage of treatment none but sanative measures dare be used, for the resistive functional activities are not yet fully aroused, and the patient could not stand "heroic" medicines* - there would never be any functional consequences, or in other words, the fever-complex would never be manifest.

So, also, even after the tissue-units are invaded, and the causative phenomena are manifest (the true prodrome), with accurate diagnosis and proper sanative treatment of the *conditions*, the functional consequences or aberrations would be anticipated and the treatment entirely preventive. Therefore, in the best interests of scientific medicine, as well as our clientele, to say nothing of individual reputation of the practitioner, it behooves us to use our utmost diagnostic endeavors in this, the causative conditions and phenomena of the febrile forms.

Although, as already indicated, the tissue-unit invasion and causative manifestations constitute the most obscure stage, being the vague and undeveloped state of disease-forms, yet notwithstanding, the educated and systematically observant physician can readily discern sufficient indications, which he weighs and groups, according to their pathologic values, into correlative unit-states and tissue-conditions; and then with therapeutic measures in kindly accord with the Vital indications, he cancels the initial causative phenomena or primary manifestations, successfully outflanking the invading forces, and rescues his patient from a long and dangerous attack of typhoid, or other form of fever.

It must be borne in mind that in dealing with the stage of invasion and causative manifestations, the physician is not dealing with

any form of fever, nor with well defined symptoms or functional aberrations, much less a symptom-complex. One who has been taught to treat nosology and fever nomenclature, will experience the greatest difficulty in obtaining a clear conception of the proper line of treatment at this stage. He will find himself in the position of the proverbial "fit doctor," and must wait till he gets his patient in the full development of fever; in other words, he must wait till the case is plain, before he knows how to treat it. This is both the difference and distinction between the physician who treats symptoms, and the one who treats conditions.

Unfortunately for the patient, less so for the doctor who treats conditions, he is not always called in at this stage of disease manifestation. The vagueness of his sensations of discomfort and insidiousness of many forms of fever causative manifestations are such, that the victim is deluded into the belief that his ailment is trivial and will subside without attention; or he undertakes to "work it off," and only succeeds in lowering the resistive resources of his organism and preparing it for the easy victory of disease causation.

In this primary condition, the manifest signs of disease are not sufficiently coherent or developed to admit of systematic grouping into a definite complex; the treatment, therefore, of these primary conditions or tissue-states do not necessarily belong to the discussion of the febrile symptom-group; and as we shall farther on consider fully the treatment of tissue-unit invasion and causative manifestations generally, we prefer to leave the matter for that section of this work and pass on to the treatment of febrile functional consequences; for the treatment of primary conditions of unit-invasion as hereafter discussed in detail in the section on Forms of Disease will amply cover the ground; and what symptoms or symptom-grouping, or form, or name of disease that might result, should prophylaxis and preventive treatment fail, cannot possibly matter after this stage has passed, providing our procedure has been rational and sanative.

2. - TREATMENT OF FEBRILE FUNCTIONAL CONSEQUENCES.

As temperature has been made the most important manifestation or storm-centre of febrile disease-form by the other schools, we conform to custom simply in discussing it first, and not that we consider it of more than a single unit value in fever. For as we have shown, it is only a result of increased functioning of the circulatory apparatus, and under the concept of condition-treatment, with the aim of eliminating from the disease complex its causative state and influences, we should turn our attention directly to the tissue and structural conditions of the vasomotor apparatus which has brought about this super-development of heat.

We have shown the difference between the heat of chemic actions at death, and the elevation of temperature or increase of animal heat by increased vital functioning of organs and systems during febrile conditions. The rapid evolvement of inductive energy means also liberation of caloric, the surcharged ganglionic centres mean increased nerve energy for maintenance of these exaggerated activities; friction, both of blood current upon vascular walls, and increased transmission of nervous impressions constitute the third condition; the fourth condition of heat evolvement and increased body-temperature lies in chemic actions in extravasated blood-plasma in areas, and organs, whose vasomotor activities are obstructed to the extent of capillary stasis.

These four conditions point to the means of relief, as follows:

(a) The slowing of blood circulation, not by paralyzing the centres of the circulatory force, the heart and lungs, but by removing the ganglionic nerve-tension, which will relax the involuntary muscular coats of arteries and veins, the interstitial involuntary muscular bands, and thus also widening the areolae or extra-vascular spaces (see Figs. 4 and 5), remove the pressure upon the capillary vessels, allowing a full and free circulation.

This cancels the first, second, and third conditions of body-heat evolution, and indicates the direction of therapeutic measures to equalize the circulation and nervous action; and the remaining question is what to use for this purpose. First, let us remember that in this aroused and excited state of the resistive instinct we may, even with properly indicated and sanative medicines if in too large doses, or mixed with alcohol in the form of high alcoholic fluid extracts or other irritating substances, only further provoke the resistive ire, instead of relieving the conditions; and then wonder why our agents produced exactly opposite results from that we expected of them.

Be particular then, that your medicines be not in too large doses - better be too small than too large, as it is much easier to increase the dose, than to diminish the quantity you have put in the stomach and circulation. For instance: Water, a half glassful, normal fluid extract, or glycestero-alcoholic fluid extract (see Lyle's *Materia Medica*, pp. 605-608), one-half teaspoonful, mix; a teaspoonful from fifteen minutes to an hour apart. Saturated fluid extract (*ibid*, p. 10), ten to twenty drops; water a half glass, mix; a teaspoonful every ten or fifteen minutes to an hour. Do not combine more than two agents when administering them thus; as far as consistent with the actual necessities always give them singly; other things equal, this is ample dosage.

With a hot dry surface, dry tongue coated dirty white, and a temperature of 102° to 103°, the type of remedies to meet first second and third conditions is as follows: Fluid extract *Lobelia Inflata* (glycestero-alcoholic), gtt. 15; saturated fluid extract *Phytolacca Dec.*, green root, gtt. 10 in a half glass of water; a teaspoonful every half hour. Nitrate potassa two drachms in a half glass of water, give a teaspoonful every half hour, alternated with above.

If there is a temperature varying from 100° to 102°, with cool and clammy surface and rapid pulse, the three conditions can be better met with Nitrate potassa as above, alternated with fluid

extract Cimicifuga Rec. ten drops in a half glass water, a teaspoonful every fifteen minutes to a half hour. In many cases pure nervines, the vasodilators and vasoconstrictors, combined in varying proportions according to the degree of general vaso-tension, given in larger or smaller doses meet these conditions perfectly. Types of such nervine dilators and constrictors are: Scutellaria Lat., Passiflora Incar., Valeriana Off., and Cypripedium Pub. Caulophyllum Thal. Viburnum Op.

A most important fact to bear constantly in mind even while thus treating the conditions of an elevated temperature is, that you can relax the vasomotor tension, and slow up the circulatory activity too quickly. If the relaxation of the vasoconstrictors reach beyond a certain limit, they react suddenly and violently reaching even beyond the former tension; and unfortunately there are no prominent exterior signs of this reaction, except that the physician finds the temperature rising and other febrile aberrations increase as he applies without stint his most powerful vasodilators, nervines and “relaxants;” because as we have tried to show, vital resistance is a most stubborn thing in the face of coercion. Like the man of which it is a constituent faculty, you can *coax* better than *drive* it.

Therefore be not anxious to get rid of the temperature - it is the life of the resistive and eliminative endeavors; control it within reasonable bounds but do not subdue it. If other conditions of fever are favorably met with proper therapeutic measures and the patient's general vitality is sustained, the temperature should not be below $101\frac{1}{2}^{\circ}$ in continued fevers, until the febrile causative conditions are permanently removed. We have in personal practice always had the most favorable and complete recoveries in continued fevers with a high and unvarying temperature from start to finish.

Do not allow yourself to become scared about the high temperature thinking it will burn the life out of your patient, and the rapid circulatory functioning will wear out the heart. Remember the lungs have just as much to do with the force of the circulation

as the heart, and you have two of the most loyal and enduring organs of the body as your allies in this febrile warfare; treat them kindly therefore; work with, and not against them and they will do you yeoman service; the last thing your patient will ever do on earth is to quit breathing. When your fever patient dies, and you will loose them under the most proper and scientific, even sanative treatment just as sure as you practice medicine long enough, be sure that if your treatment has been sanative, directed to the conditions in accord with Vital indications, the death-cause will never be heart-failure, lung-exhaustion, or bodily-conflagration. Vital force, with all the aid that Physiomedical Philosophy and the most scientific practice of sanative medicine can give it cannot accomplish the impossible. "It is given to man but once to die," sayeth the wise man. When your patient gets sick enough he dies, and there's the end of it.

(b) In this febrile contention of extrinsic inimical causations and intrinsic resistive vital activities, accidents and casualties are possible, and sometimes occur, the most serious of which is congestion, stasis, and extravasation of blood-plasma into extra-vascular spaces, or cavities - effusions. These afford a field for chemic actions, or bacterial development. In either case, the evolution of heat and rise of body-temperature is an almost certain sequence.

In the earliest treatment of this, the fourth condition of temperature in fever, we still deal with undeveloped symptom-complex or so-called disease. Hence the treatment has no regard for other than tissue-states or disease conditions, and its specialized treatment belongs to the next section of this work. Yet, the observant physician will from his patient's environments in a given case, be able to prognosticate the probability of development into a fever symptom-group, and anticipate such an untoward event by proper treatment of the adverse conditions.

The Vital indications of treatment in this accidental febrile condition are of two-fold character, yet intimately correlated. First, to return the extravasated plasma to the general blood current. Second, to prevent bacterial development in this plasma should its absorption be impossible.

Return of extravasated plasma, or absorption, are two entirely different processes, the former meaning endosmosis or physical movement of the plasma back into the blood-current; the latter means that bioplasm takes up and devours the plasma-constituents and converts them into its own substance. Both processes should be encouraged and aided by therapeutic measures. But they each require different agents and procedure.

The endosmotic return of this extravasated plasma could be best accomplished by first stimulating the lymphatic circulation, which is in fact nothing more nor less than the normal return of the exosmosed or outward pressed blood-plasma, in the process of metabolism or tissue-unit nutrition. Second, by vasomotor dilatation, to be followed with increased heart-force and respiratory efficiency; in other words, increase the force of the heart and lung functions.

The typical agents for the first indication, vaso-dilatation, which means lessening of the ganglionic nerve tension, is *Phytolacca Dec.* tincture, or saturated fluid extract of the green root; *Lobelia Inflata*, normal fluid extract; Infusion, or glycero-alcoholic fluid extract *Asarum Can.*

The vasodilator should be given first, and in sufficiently diluted form, or small doses to be kindly received by the Vital force, and not arouse its resistive instinct. The signs of lowering vaso-tension are manifest in slight nausea, cool perspiration, and general lassitude; which must be quickly followed by decided vasomotor stimulation. Types of vaso-stimulants are *Capsicum ann.*, *Xanthoxylum Frax.*, *Zingiber*. Much better effect will be obtained by thus administering these agents separately and successively, than to give them in combination as in the *Lobelia comp.* For the conditions

are so various, and consequently the proportion of vasodilatation and stimulation required will so vary that the fixed quantities of any formula cannot possibly meet these variable conditions, and often the very opposite results occur from that looked for and earnestly desired in critical cases especially.

To render the extravasated plasma void as a culture-field for bacteria is often a very difficult task. For to begin with, the patient may have a depraved and sporule-loaded blood, and enervated organism from improper living and unsanitary environments, and these bacterial sporulae, like the fabled Halcyon, only await the calm of this stasis of the capillary current and extravasated plasma for a most favorable breeding season.

The most powerful antiseptic is vital action. If the function-units are endowed with sufficient potential vitality, it is easy with such vital stimulants as Capsicum, Myrrh, Xanthoxylum, etc., to arouse this potential or latent vitality and render the surrounding tissue-units so vitally vigorous as to resist the inimical ptomains, and vital demands of the disease-organism or "pathogenic" bacteria, so that they form an invulnerable phalanx so to speak, holding at bay these adverse micro-organisms until the favorable conditions for their existence and development have subsided.

But unfortunately, as we have already indicated, the patient may have a depraved organism, may have squandered his vital reserves in riotous living, or in the bliss of an ignorance that "in the end biteth like an asp and stingeth like an adder," has surrounded himself with "whited sepulchers." With such unfavorably constituted patients the only recourse is to reach if possible, this inundated bacterial field with anti-bacterial media (antiseptics) through the circulation; in other words, load the blood-current with fluids which are inherently inimical to bacterial growth and multiplication. There are a number of sanative agents that possess this power; of course they are unknown to those who believe that an antiseptic must necessarily kill, and will not believe in the possibility

of poisoning the disease-microbe without also poisoning the patient. The most reliable of these sanative antiseptics are Baptisia tinct. Cinnamomum Cas. Alpinia Off. Such remedies are best administered in the form of infusion or normal fluid extracts, in large and frequent doses, well diluted with very hot water.

These rules and methods are laid down it must be remembered, with the single idea of treating temperature from the standpoint of its being a purely symptomatic manifestation, and the rational idea of canceling abnormal temperature conditions. But in the fever complex we have a number of conditions with their consequent functional manifestations whose importance demand thorough consideration. The heart's function-speed is so closely allied to the temperature, as we have seen, that every condition of abnormal temperature is primarily through aberrant functioning of the circulatory apparatus; therefore what we have said concerning temperature in the purely febrile complex, applies equally to the circulation. Yet there may occur conditions of the circulatory apparatus requiring special attention.

The heart may be weak histologically and structurally, acquired or hereditary, and require the administration of therapeutic influences tending to sustain its function-units in their arduous functional task. And here let me warn the practitioner against the pernicious idea of stimulating and toning the heart on every occasion of extra functioning of this organ under the delusion of so-called "heart failure," and that extra and continued functional activity will exhaust it. For the fact is that no heart tonic or stimulant can ever produce an iota of vitality *per se*, they only draw out or force into action the potential vitality of the tissue-elements, and as a rule the Vital protective instincts draw on the reserves of unit-energy only as necessity demands, with rigid economy husbanding every resource; now if heart stimulants are given too early, or too freely in these emergencies of extra functional demands, they make premature requisitions upon the vital reserves and overdraw, running

out this reserve energy before the emergency has been met; the same as though a soldier with ten days' rations in his haversack, should devour it in five days.

The writer like many others in early practice, has grievously realized the above facts in cases of prolonged child-bed labor; in well-meant zeal to aid the travailing patient, plying abundant vaso-stimulants too early in the labor, found himself and patient at a dead stand-still in spite of quadrupled doses of most trusty stimulants; and like a becalmed vessel, obliged to idly wait until the function-units gathered a head of potential vitality through the physiological channels of assimilation and reparation, when after so long a time if forcible delivery was not resorted to, labor would be resumed vigorously, and a happy termination finally reached.

Use heart-stimulants and sustainers then in fever, but be sure that you have good need of them. Keep an ever watchful eye and analytic mind upon the conditions of your patient, and the vital indications as evidenced by the general and special functioning, and with a broad conception of the febrile phenomena, and a scientific penetration that goes beneath the surface manifestations of temperature to the tissue-states, and functioning conditions in the evolution of body-heart, and with sanative treatment of the conditions first, and the functional consequences of these conditions, and as sure as there is such a thing as rational scientific medicine, you will cure - not every case that comes under your professional management - but every case that a cure is at all possible.

1. Treatment of Excretory Aberrations, in Febrile State. -

Previous to the secretory, we will deal with the excretory departures in the febrile consequences; because as already shown, though feeding of the function-units in all disease conditions is a most important matter, yet the first requisite to successful unit-metabolism or tissue-feeding, is free and unobstructed escape of the excretions or products of disassimilation. With these sewers thoroughly open, the excretory organs and apparatuses in active and

efficient commission, it is easy to reach the function-units with new materials for their sustenance.

We place the skin first in the excretory functions of the febrile state, because its eliminative work is most important; besides which, more than any other organ or system, remedial measures through it may be made to influence the general system. But we here have to consider only its eliminative work, and the effect of the sudorific or perspiratory function, in removing the superheat from the body. The indications for treatment of the skin in fever, naturally divide the therapeutic measures into two classes, as follows:

(a) Aiding the excretory function of the skin to do its share in eliminating the disease causation, and canceling the functional aberrations of organs and systems, as far as its functional value stands in its correlations with the entire symptom-complex.

We have but to bear in mind the extent of the body-surface and immense excretory area it presents, in order to estimate the value of the function-work of the skin and its position in the febrile complex.

Another most important point to be kept before the practitioner, is what we have already called attention to, that you can coax the Vital force much easier than you can drive it. Excessive diaphoresis does not mean skin-excretion, any more than hydruresis means efficient kidney excretion.

To increase and sustain the eliminating efficiency of the skin, it is necessary to have the sudoriparous gland-ducts free and unobstructed, which means a clean body-surface. Often the patient of unsanitary environments and hygienic ignorance has a skin coated with ancient accumulations, affording rich pasturage for myriads of bacteria which even infest the sudoriparous ducts down to the gland-tubules; so that the entire perspiratory apparatus needs to be thoroughly antisepticized.

Now, the administration of a steam or vapor bath, the first thing, to such a patient is not a judicious procedure; neither is it the best thing to do first with a patient even of cleanly habits of body. Because, in the unhygienic patient the hot vapor only softens up the accumulations in the glands, while the perspiration brings new food-supply out of the depraved blood-plasma to them, thus only rendering the bacterial culture-field more favorable and productive; it can invariably be noted that after giving such a patient a vapor bath, the exhalations from the surface become more offensive; it is because they are more loaded with bacterial ptomains from the freshly stirred-up soil of the bacterial field.

Neither are cold, cool, or tepid sponge baths the best thing to do for the unclean fever patient, for they in a measure soften and moisten the bacterial soil like the vapor bath, rendering it more inhabitable, because freshly stirred up and put in favorable bacterial culture conditions. Now, while it is a fact that as a rule, with rare exceptions, these bacteria are not pathogenic and in a sense only scavengers, yet neither the food they eat, nor the feasters are needed in the febrile state, and it pays to get rid of both as soon as possible. Don't believe that bacteria are good company for a respectable physician to associate with in the treatment of disease.

The first thing then in surface treatment of any febrile case but especially the unsanitary, is a good old-fashioned hot water and soap scrubbing; this should be repeated every twelve or twenty-four hours according to conditions, until the surface is as clean as possible. As a rule we prefer plain, pure soap - castile, unperfumed - though the Hydronaphthol antiseptic soap is excellent.

During this first surface cleaning, internal vasomotor stimulants of a mild character with special tendency towards the capillary circulation may be administered. Types of such agents are *Asarum Can.*, *Cimicifuga Rac.*, *Caulophyllum Thal.* They should be given well diluted with very hot water; infusion stands first, normal

fluid extract a teaspoonful to a tablespoonful in a teacupful of hot water; glycero-alcoholic fluid extracts stand third in efficiency, and lastly, come high alcoholic fluid extracts, 10 to 20 drops in a cup of hot water. We will have something to say about tablet and powder triturates, further on.

In the ordinary excretory function of the skin, or what is called insensible perspiration, the sebum of the sebaceous glands mix with the sudorific fluid or sweat, and forms a peculiar emulsion and in the initial febrile state, even in persons of cleanly habits very often this emulsive excretory matter becomes exceedingly tenacious and of a peculiar gummy nature, so that cold or even tepid water converts it into a kind of resinoid, and the friction of sponge or wash-rag when the body is given a sponge-bath, works this gum-resin into the ducts of the sudoriparous glands sealing them up as it were, with this pernicious excrementitious sealing-wax. Therefore, it is best as already indicated to begin with a radical scrubbing of the surface in all febrile cases of any gravity.

After the first treatment, frequent sponging with thoroughly boiled soft water to which may be added medicament, salines, alkalies, or acids, as desired and kept up during the active febrile stage. A very good addition to hot sterilized water for a sponge-bath is, to one-half gallon one tablespoonful aqua ammonia and three tablepoonsful distilled extract Hamamelis Vir.

The object to be attained by surface sponging and bathing in fever is not so much to reduce the temperature, as to relieve the *conditions* of super body-heat; this must be kept in mind otherwise we bathe to *subdue* fever, which means deathly cold bathing; excessive tepid sponging, or extreme excitation of perspiration by any means, which amounts to the same thing in the end, must be avoided and the only avenue to the golden mean in therapeutic measures is to watch carefully the vital indications of remedial aid and faithfully follow them.

With the external surface in a thoroughly aseptic condition we are ready for the second division of therapeutic procedure which we group as follows:

(b) Intrinsic therapeutic aid of the skin-function in the febrile state must be directed to the end of increasing the ganglionic central innervation in the sub-dermoid capillary circulation in such a manner as to dilate the vessel-caliber, at the same time sustaining the capillary - current against stasis and the capillary walls against too rapid exosmosis, extreme dilatation, or rupture; thus to secure increased and even exaggerated diaphoresis of a physiological character without overworking the sudoriparous apparatus, or force it from the physiologic to the colliquative state.

In fulfilling the above indications by the scientific application of therapeutic agents, as above stated, only such agents must be employed as will increase the functional potency of the ganglionic neurones (nerve-units), at the same time, or by the combination of other agents directing this increased innervating force to the surface-capillaries and the involuntary muscular lattice-work of the sub-dermoid areolae, the latter of which, as we have shown (Figs. 4, 5), exert indirectly a most important control on the capillary blood-volume by compressing the areolae and capillary walls - vasomotor compression - or by withholding this inhibitory influence and allowing the capillary walls to dilate - vasomotor dilatation.

If we can select one agent that will do both, and we certainly can in many cases, so much the better; for even admitting that this therapeutic effect may be accomplished more quickly by the usual custom of combining two or three or more agents in certain proportions, for instance *Caulophyllum Thal.*, and *Viburnum Pru.*, two central ganglionic stimulants, with *Asarum Can.* and *Xanthoxylon Frax.*, two capillary stimulants, we yet doubt very much the efficiency of combinations over single-agent dosage. However,

this subject is reserved for discussion under its proper section of Therapeutics.

It is preferable, other things being equal, to use a central nerve sustainer, for instance Cola Acuminata, or Erythroxyton Coca, instead of general stimulants; these are used singly, or two of them combined, given every one-half, one, or two hours according to urgency of the case for eight, twelve, or twenty-four hours; then their dosage is lengthened to two, four, six, twelve hours, or longer intervals as indicated, and the vaso-stimulants with sub-dermoid tendency are commenced; types of which are Xanthoxylum Frax., Asarum Can., Asclepias Tub., Cimicifuga Rac. These like the central sustainers are given singly or combined and at considerable intervals from the other agents.

If the skin is thus kept in good external condition and the internal vasomotor functioning to the surface encouraged and sustained, ample and physiologic diaphoresis maintained as far as possible throughout the febrile attack, not only is the resistive and eliminative functional burdens of other organs and apparatuses much lightened, but secondary tissue-unit and structural results escaped, accidental obstructions and other casualties avoided.

Take for instance the diffusion-stasis of the renal capillary circulation as mentioned under Secondary Febrile Consequences, page 75, the extravasated blood-plasma inundating and obstructing the kidney-unit work will be carried away through lymphatic circulation, whose current will now be freely drained by the active transpiration. Thus the skin may be made to not only do its share of the battle against disease causations, but it may be induced to take up the burden of other less fortunate organs which are being overpowered by adverse odds and are sinking under a too heavy load of vasomotor impediment.

2. *Treatment of Aberrant Kidney - Work, in the Febrile State.* -

As before mentioned in the summary of functional consequences and structural results of febrile phenomena (page 73), in the onset both

secretions and excretions are increased, to be followed later as a rule, by suppression, because of the capillary stasis of the unit blood-supply at these secretory and excretory organs; in other words the inability of the gland-cells (function-units) to secure sufficient quantity and quality of circulating blood-current to elaborate from, and to eliminate these important products. Now it may be said in a general way that the skin as an excretory organ, is the surface-drainage of the body, while the kidneys are the organ-sewers or deep outlets of the organism. Hence, while not so much may be done by these organs directly to lighten the burden of others, yet their importance in the febrile warfare stands at least equal to the skin, notwithstanding the versatility of functioning it may exhibit under proper therapeutic guidance.

The most successful treatment of fever, then, when the functional consequences are but fairly developed, is that which, other things being equal, would commence at the first flush or unhampered resistive action of the secretory and excretory organs, ere the capillary congestion and stasis-diffusions occur. In this stage active diuretics are indicated, such as Buchu, Juniperus Com., etc. But later on, when the renal circulation is slowing into congestion and stasis, central vasomotor stimulants and sustainers are indicated; such as Erythroxyton Coca, Hydrastis Can., Cola Acuminata, etc., together with renal capillary vasomotor toners; types of such therapeutic agents are Celastrus Scan., Eupatorium Purpureum, and Epigaea Repens.

But inefficient kidney-work in these febrile manifestations are not always due to the local renal vasomotor conditions, in other words, the kidneys may not be at fault. It requires a certain amount of arterial blood-pressure in the renal arteries and arterioles, for proper urinary excretion; and no matter how healthy these organs may be, they cannot produce urine if this arterial pressure falls below the required force. Now any obstruction of the general circulatory force such as inefficient heart-action, or lung function,

etc., will lower this pressure; so also obstruction of the abdominal aorta, pressure of an enlarged Liver, distended Stomach or Intestines, abdominal tumors, aortic dilatation, or aneurism, etc., may reduce the renal arterial pressure below the normal requisite and thus suppress the urine. In such cases so-called "diuretics," or agents that influence locally or directly the kidney-function, would not only be very improper therapeutic procedure, but may be positively harmful and even disastrous, for the therapeutic influence will reach the kidney units, though not so powerfully as if the normal conditions there existed, nevertheless sufficient to increase their functioning, which with the scant and depraved materials at hand because of the obstructed circulation, cannot but exhaust the unit-vitality. These facts only accentuate what has herein been often referred to, that of ascertaining the exact conditions and keeping in close touch with the Vital indications, which always demands the therapeutics of condition-treatment.

Careful and accurate observations should be taken of the quantity and quality of urine excreted during twelve, or twenty-four hours' kidney-work during the entire febrile attack and well into the convalescent state; for as we have seen, the secondary results are often even more serious than the acute stage; and the physician has by no means done his whole duty towards his febrile patient, no matter how skillfully he may have handled the acute stages, until he has assured himself that there are no permanent secondary conditions to retard or prevent complete recovery.

Now we do not mean that the physician shall make complete analyses of the urine every twenty-four hours, this is by no means required except perhaps in special cases, and may alarm patient and friends unnecessarily. The nurse should keep correct measured estimates of the urine and have a representative quantity on hands for the physician's inspection at each visit, and at least every three days during the height of the febrile stage twenty-four hours

collection should be taken and tests for albumen, urea, and sugar made.

It must be remembered in this practical inspection of the urine, that the quantity of fluid is not always a correct representation of the actual kidney-work, it is best therefore to take some normal urinary constituent as a standard of the physiological work the kidneys are doing under the febrile aberrant functioning. As the principal excretory work of these organs is quite uniformly represented by the quantity of urea excreted and in almost all forms of fever the quantity of urea is, or should be, considerably increased above the normal, this constituent is therefore a valuable representative of physiologic kidney-work in febrile conditions. Of course this estimation of urea to be of value, must in some proximate way at least be quantitative; this is not always convenient and indeed, is sometimes impossible. A rapid, convenient and practically reliable method of bedside quantitative estimation of urea is a desideratum that unfortunately has not yet been devised, despite the attention that practical examination of urine has been given within the last few years. The prevailing idea amongst urinary analysts seems to be that abnormal urinary-constituents should receive undivided attention of the practitioner and the question of what are the kidneys really accomplishing of their actual physiologic requirements, passed by as a minor consideration.

As the subject of general practical urinalysis shall be given full consideration in the section on Diagnosis, it is not necessary to further discuss it at this time.

3. *Treatment of Intestinal Excretion in Febrile Conditions.* -

The intestinal tract, though a part of the digestive apparatus whose accessory gland-organs, except the Liver which is a dual-function organ, all belong to the secretory class; but within this tube the debris of digested and absorbed alimentary substances combined with the Liver excretion (bile) forms the fecal excrement which, from

the fact of its proneness to degenerate into septic matter and bacterial culture-soil under the elevated temperature, renders its importance in the febrile state equal to either the kidneys or skin. Especially is this so in typhoid and other febrile forms with enteric storm-centre.

Now this important position of the intestinal tract and especially a proper conception of the actual nature of its excrementitious matters, has led to both sins of commission and omission in treatment of the bowels in the therapeutic management of fevers. Some physicians believing that too free activity can hardly be induced, use excessive catharsis and thereby often reduce the patient to extreme prostration by draining the general blood plasma through the bowels; others under the impression, we may say delusion, that the Liver must be constantly lashed into its functional work by so-called "hepatics," turn their whole therapeutic gunnery upon this unfortunate organ; others again who believe that the intestinal tract should rest during the febrile stage, or that "nature" will act when necessary, withhold all therapeutic agents that influence intestinal evacuations.

In this, as in all other therapeutic measures, the scientific judicious practitioner will carefully watch the general conditions and in a conservative way meet them as they occur in the field of aberrant functional activities, with appropriate agents which simply cover the conditional needs and no more nor less. The broad requirements in this direction that will cover the large majority of febrile cases are first, to keep the gastro-intestinal tract clear of all alimentary surplusage such as unnecessary food substances, digestive debris and inert matters, as well as unused digestive fluids; second, to keep the tract in an aseptic condition.

The first of these requirements is obtained by administering small and oft repeated ("broken") doses of vasomotor sustainers and stimulants of the Liver and intestinal secretory glands. Types of which are Hydrastis Can., Euonymus Atro., Apocynum Andr.

Leptandra Virg. Podophyllum Pel.; to be followed in due time by light "hydragogue" cathartics, with such agents as Liquid Citrate of Magnesia, Solution Carbonate Magnesia, Magnesium Sulphas, or Potassium et sodii tartras. This catharsis should be carried only to the extent of clearing out the alvine canal of all solid and semi-solid matters and until the evacuations are well nigh odorless, but not to the extent of depletion of the patient's general strength. After this, regular evacuations one or two in twenty-four hours should be maintained throughout the febrile attack and continued during the convalescent period.

The second requirement is that of remedies that will maintain an aseptic state by preventing saccharine, acetic, albuminoid, or putrefactive fermentation in the gastro-intestinal tract and thus render it sterile to other forms, especially pathogenic bacteria, or bacilli. Such agents must be non-poisonous and sanative in character, such as can be administered in combination with liquid foods, and nourishing beverages, in sufficient quantities to keep the entire gastro-intestinal contents thoroughly antisepticized. Types of such agents are Sodium Sulphate, Sodium Hyposulphite, Sodium Salicylate, Potassium Chlorate, Potassium Nitrate, Acid Borate, Acid Citric, Acid Tannic.

It is best in administering these alkaline and acid antiseptics, to alternate them in periods of twenty-four or forty-eight hours.

Of vegetable antiseptics Baptisia stands first; Oleum Cinnamomum triturated with sugar of milk, or with Boric Acid and given in capsules so as to reach the intestinal tube before dissolving. Erythroxyton Coca is also an excellent intestinal antiseptic.

All solid, semi-solid, and unassimilable alimentary substances should be avoided; as heretofore mentioned, the physician should bear in mind that it is not the patient, or the patient's appetite or palate that is to be gratified or feasted, but THE FUNCTION-UNITS OR TISSUE-ELEMENTS, that are to be supplied with proper pabulum to sustain them in their resistive warfare; and if the alimentary tract

is loaded with septic material supplied by indigestible food substances, or a surplusage of even proper aliment, the function-unit supplies will be deficient both in quantity and quality however much the patient may be fed with "sick-room delicacies" or "pre-digested reconstructives."

4. Treatment of Secretary Organs, and Apparatuses, in Febrile Conditions. -

The Digestive Secretions, see Plate IV, are more directly involved in the febrile state than any others; therefore we shall consider only the digestive secretary organs and glands at this time, leaving the other secretary organs and cavities for discussion in the section on General Principles of Practice.

The same febrile causative conditions and functional consequences as before mentioned, that affect the excretory function also retards and obstructs the secretary organs; the phenomena only differing in detail according to the structural and anatomical differences of these organs and their function-units. Therefore the indications for treatment of the ganglionic nerve centres and vasomotor apparatus, as laid down for these, the excretory organs, apply in a general way also to the secretary organs; so that it is only necessary here to speak of the special indications for treatment of the aberrant secretary functioning under febrile conditions; and the treatment of these special indications need be only generalized at this time, as it is to be treated in detail further on. These indications we group as follows:

(a) Maintaining the best possible condition of the entire blood-volume, by full and free eliminative functioning and by full unobstructed general circulation, to maintain sufficient constant and unvarying arterial-pressure at the gland-capillaries.

(b) Supporting the inherent vitality of the secretary function-units, the structural and organic integrity of every organ and apparatus involved in the extra-functional work of secretion.

(c) Maintaining functional unity and relative values of the gland-organs and structures of the various apparatuses concerned in the work both of secretion and the completion of those general functions to which the secretions are accessory.

(a) If the indications for treatment of the excretory organs have been kept in clear view and faithfully carried out, the blood-current comes to the gland-cells in the very best condition for their elaborative work, being devoid of excrementitious matters and septic toxins; hence, loaded with uncontaminated and constructive pabulum-supplies for the secretory cells. It then only remains to secure sufficient arterial pressure by a full, easy, regular and unobstructed circulation. The treatment of temperature-conditions, as already discussed (page 89 to 92), will have secured this required blood-pressure at the secretory function-units.

(b) The inherent vitality of the secretory function-units of course vary according to the state of constitutional vigor as influenced by individual habits, environments and heredity. Hence each case must be studied alone, and the treatment carefully applied to the conditions.

If the patient has already his gland-organs depraved with specific virus, auto-toxines from bad dietetic habits, alcohol, tobacco, and other narcotic poisons, the difficulty in supporting this lowered vitality under severe febrile strain is very great; under such adverse constitutional conditions not only suppression of the secretions, but tissue-degeneration and suppurative necrosis, abscesses of the glands, and so-called "fever sores," are very liable to occur.

With such unfavorable conditions of his patient the physician is greatly handicapped in even the best possible treatment he may command. The only course to pursue is to give these crippled secretory organs, as best he can during the febrile state, special alterative treatment as though no other complications existed, even

to neglecting the acute conditions; for as a rule the acute storm is self-limited, the Vital force overcoming the disease-conditions so far at least as to remove the imminently dangerous conditions, and subdue or modify the balance into sub-acute state; but these pre-existing chronic conditions will not only remain, but will come out of the fever conflict much aggravated; hence, it is good practice to give special attention to these chronic depraved conditions of the secretory organs during the acute febrile attack.

Proper agents for secretory gland-treatment belong to the so-called "alteratives" as will be shown further on, these agents are used under the erroneous and impossible notion that somehow, they "act" directly on the blood. Representative of this class of agents are *Stillingia Sylvatica*, *Phytolacca Decandra*, *Menispermum Canadense*, *Sanguinaria Canadensis*.

These "alteratives" may often be combined with agents to meet the acute febrile conditions very satisfactorily; for instance, *Menispermum* and *Lobelia Inflata*, make a harmonious partnership to relieve the vasomotor tension and at the same time influence the secretory gland-units. It is desirable always to reach the conditions if possible with single and direct prescribing, avoiding triple and quadruple combinations.

(c) The maintenance of harmonious functional balance of organs, systems, and apparatuses during the excitement and turmoil of a febrile storm, is a feat that belongs only to expert diagnostic skill, and scientific sanative therapeutics. The physician must not only possess for this practice most acute perceptive faculties and broad comprehension of detail values, but he must be possessed of untiring painstaking energy and zeal for his profession. If the patient is kept crammed with "shot-gun prescriptions," of various and conflicting drugs, accuracy of therapeutic co-ordination of functional values is rendered impossible, and the patient would have better chances under homeopathic high-dilution "potency", or even the absolute expectant or do-nothing plan.

The special therapeutic management of functional inco-ordination belongs to the section on General Principles of Practice, and it is not necessary to consider this subject further here. However we must not yet leave this

matter until some reference is made to the functional alienations of organs and systems associated into apparatuses; for this inco-ordination breaks the continuity of the associate functional work like digestion, circulation, etc. Now if the secretions, as is very common in febrile conditions, are suppressed on account of inability of the gland-units to elaborate, the mucous membrane of the alimentary tract becomes dry and irritated from over-ganglionic innervation; assimilation is suspended, an insatiable thirst - "internal," or gastric fever - torments the patient, and reflex violent heart action with inco-ordinate conflict between the digestive and circulatory apparatuses results, exaggerating all the febrile functional consequences and working the patient into a general neurasthenia, so-called "nervous fever."

Such a febrile state is most grievous and uncontrollable to the physician who treats symptoms and prescribes by routine formulae; but to one whose chief use of symptoms is as diagnostic guides and who traces aberrant functional consequences to their source in tissue-states, applying his therapeutic measures directly to the primary tissue-unit causation of these outward disease-signs, treating the conditions that give rise to the functional departures, using agents that act in harmony with Vital demands for remedial aid, such a case of violent inco-ordination of febrile functioning and nervous reflexes have no terrors for him.; they are easily controlled by such direct and effective remedial means as will be unerringly indicated by Vital manifestations.

Now the beginner should be cautioned that from what is thus said as to treating the conditions in such a case of functional disharmony, not to conclude that such rational treatment will perform miracles and overcome the impossible. Nor must he infer that the reflex aberrations or neurasthenic condition of his patient should be

given no therapeutic consideration. This very important matter of secondary and palliative treatment will be fully presented hereafter in the section on General Principles of Practice; also the 3rd division of febrile condition-treatment as outlined above, namely, secondary febrile results, will not be further discussed at this time, as it too properly belongs to that section.

In this section of our work the aim has been only to point out the tissue-states with the primary disturbances in tissue-units first, and the gross organs secondly, which constitute undeveloped symptom-complexes or incoherent febrile forms; then in correlative order, regarding only the function-values to the whole organism of the various organs and systems, we have tried to point out a rational line of treatment of the causative tissue-states and exaggerated functional performances or symptoms arising therefrom. The chief object being to emphasize the importance of treating conditions instead of symptoms.

For this purpose only, we chose the febrile form of disease, because of the variety and coherency of functional disturbances or aberrant consequences arising from the invasion and perversion of function-unit bioplasm. Hence we leave for the present some of the questions raised in this connection, in what to the casual reader may seem an unsatisfactory state of discussion, but it is sincerely hoped that these very important points will be fully cleared up to the logical mind in the coming pages.



PART FIFTH.

PRINCIPLES OF DIAGNOSIS.

SYMPTOMS AND FUNCTIONAL ABERRATIONS OF DISEASE; SYMPTOM VALUES; PATHOLOGY; SYMPTOM GROUPING AND DISEASE-COMPLEX; CLASSIFICATION OF DISEASE - COMPLEXES; GENERAL PRINCIPLES OF DIAGNOSIS; SPECIAL DIAGNOSIS; PROGNOSIS.

I.

SIGNS OR SYMPTOMS, AND FUNCTIONAL

ABERRATIONS OF DISEASE.

The dividing line between general bodily *ease* and what is understood in practical medicine as *disease*, is far more sharply drawn than would be accepted from a purely technical and theoretical standpoint. Which is to say, that purely theoretical medicine and the bedside common-sense application of practical medicine, are two extremes that can probably never be wholly reconciled; and it may be best for general medicine, if their reconciliation should be impossible.

This difference between theory and practice obtains in every other profession and science. There are many correct theories in law that cannot be applied in practice; there is no science but has theories that are absolutely philosophical, yet of no practical value; even in mechanics there are theoretical principles that are perfectly conclusive, but can never be practically demonstrated. Then, certainly, it should be no discredit to medicine nor to the value of

theoretical medicine, that its theory and practice are not always concordant. Hence, we may legitimately maintain a theoretical state of health and of disease; and the practical normal state of health can be sharply distinguished from the practically diseased or abnormal condition. In other words, for all practical purposes the skilled diagnostician draws a line between the sick and well state of an individual as definitely, even though his standard of health be arbitrary, as the theorist can from his purely hypothetical standpoint.

We here deal only with the practical view of health and disease from this standard of health-state and the definition of disease laid down in Part Second (page 26). And with the unit-concept of disease phenomena and causation of functional departures from the normal rate and quality of work, as discussed in the previous section, we are now prepared to study in a systematic and comprehensive manner the various disease-signs or symptoms and group them into practical correlations for the purpose of diagnostic accuracy.

By the term *sign or symptom of disease* is meant those functional manifestations or general and special sensations of unease, that invariably, in a more or less marked degree, arise from any condition of tissue units that is adverse to their normal or natural functioning capacity. Hence, a sign of disease or disease-symptom is a signal from the function-units, by means of changes in their normal rate and quality of functional performances of the various organs and systems, indicating that their living matter or bioplasm has been invaded by some form or influence of adverse matter.

The term *functional-aberration* is applied to the manner in which an organ, system, or apparatus performs its entire function or work as compared with its operations in a state of practical health or the normal condition. For instance, the first sound of the heart may have a light murmur, arising from a partial inefficiency of the mitral valve; this condition may not interfere in any perceptible degree with the heart's rhythm, rate, or action upon the circulation; this mitral murmur of

the heart-sound would then be purely a signal or *symptom* of an abnormal tissue-state of the mitral valve. But should this defect of the valve become so great as to materially interfere with the heart's force upon the blood-current, it would also derange the heart-rhythm and destroy the balance or co-ordination of the various steps of the normal heart-function, then these abnormal actions would be called *functional aberrations*, because the symptom is now expressed in aberrant heart-functioning.

The term disease as applied in Physiomedical Philosophy, broadly covers the tissue-unit invaded state, including tissue and structural conditions - *which constitute the conditions of disease*; as thus used disease is a unit (see p. 65); but as popularly and we believe erroneously used, the term is made to include all the symptoms and functional aberrations. (See definition of disease, page 26.)

Indeed it would be more strictly in accord with this Philosophy to dispense entirely with the term disease, as too broadly generalizing and too vague to be of service as a scientific term, especially when it is desired to deal only with definite and systematized truth and principles. Besides, as generally used heretofore in medicine, it is confusing and misleading to the beginner, who is almost sure to get the idea that symptoms, and not conditions, are of paramount importance in diagnosis and treatment, which leads to the fallacy of formulas-practice and empirical prescribing; a notion and habit of practice that is exceedingly hard to get rid of, should one desire to learn the "more excellent way." But, being as old as medicine itself, and like many other terms born in the primitive and crude superstitious ages of medicine and long outgrown, it has been carried forward with the general progress until traditional usage has made it legitimate. So with the right conception of this Philosophy, the word disease can be used scientifically and made to do definite and proper duty, and with this understanding we use the term in the broad sense as above and elsewhere defined.

Referring again to the distinction between symptoms and functional aberrations, it is important to understand that this distinction, though in a technical sense arbitrary, is none the less a true and most valuable practical distinction to make in scientific and accurate diagnosis. For the primary causative conditions may advance no further than merely to cripple the function-units at a circumscribed or focal point in an organ and not be sufficient to appreciably affect its functioning, so that its work may go on practically uninterrupted; in which case its function is in nowise aberrant. Likewise there may occur focal function-unit invasion and resultant causative phenomena, without functional consequences or aberrations; that is, so far as we can observe by the usual diagnostic investigation, the organs and systems are doing a requisite amount and quality of function-work for the ordinary standard of health of the individual; yet, when any considerable demand for body-work or physical resistance is made during this state, it fails and the individual discovers that he is weak or sick; when, before this, he felt in usual strength and health, except perhaps, vague wandering sensations of unease, such as dull aches, undefined pains, and discomfort.

The normal condition or state of health founded on tissue-unit conditions (see p. 26), requiring of these units sufficient functioning potency to meet reasonable demands for bodily or physical labor, therefore, draws a well defined line between health and disease, leaving functional aberrations entirely out of the question, as they are the advanced manifestations or consequences of the primary function-unit conditions.

II.

SYMPTOM VALUES.

The first requisite to scientific accuracy in diagnosis is a thorough understanding of the individual or unit importance of each sign or symptom, each functional aberration, and the relative and correlative values of each and all that may be present in a given case. A good knowledge of the physiological work and relative values of

organs, systems and apparatuses is most essential to this understanding and appreciation of symptom-values. In the Third section of this work (pp. 38 to 61) we have endeavored to present the anatomical and physiological values in a systematized manner, which, it is hoped, will materially aid in this important essential of diagnosis.

If one does not understand the anatomy and physiology of an organ, if one does not know how and why it performs its physiological work, one is certainly incompetent to judge of the nature and diagnostic value of its abnormal or aberrant functioning. For instance, in diagnosing the nature and cause of a cardiac disturbance one must first know the cause of its normal sounds, the necessity for their occurrence at a certain rate and in perfect succession with uninterrupted rhythm, etc., in order that it may perform its work to meet the normal requirements, before it is possible for him to make out a clear and accurate diagnosis of any given case of heart trouble.

Reference has been made to the correlation of organs and systems in their functional co-operations, which becomes prominently manifest only when the function-units are invaded by disease causations, and unaffected organs and systems join their resistive energy with those of the invaded organs or parts, so that the aberrant functioning is not confined to the parts invaded but the engagement becomes general; to use a military expression, there is "firing all along the line." These secondary aberrations are often called reflex or sympathetic disturbances; it is more proper to say *secondary* instead of reflex.

The signs and symptoms of disease, or more scientifically speaking, the causative phenomena and functional consequences - aberrations - of disease-conditions, are therefore of two classes: *primary* and *secondary*, or as they are popularly called, *direct* and *reflex* disturbances. While the term reflex used in this connection is liable to cause confusion with "reflex nervous action," "tendon-reflexes," and "reflex nervous aberrations," terms so much

used in neurology, yet on the other hand, the term secondary symptoms and aberrations may lead one to confuse it with the secondary *disease-results*, a distinction already made in the grouping of Febrile Phenomena (see p. 74); but it is hoped that so much has already been said about disease conditions and their consequences as manifest by functional departures from the normal work, that there will be little danger of confusion in using the term *secondary* instead of reflex when referring to this class of symptoms. And with a little thought about the secondary disease-results as fully described under Secondary Febrile Results (pp. 74 to 78), it will be evident that from these secondary disease-conditions - to be more fully discussed farther on - there may arise both direct and secondary symptoms and functional aberrations, hence we shall use the terms direct and secondary symptoms, and aberrations.

From these facts it will be seen that all symptoms and all functional aberrations of disease naturally come under one or the other of two values in diagnosis; namely, *direct*, and *secondary values*. The value of a symptom or a functional aberration, then, relates first to its importance as a sign or index of the function-unit condition; secondly, to its expression of the state of organs and systems.

The distinction already shown, between a pure symptom and functional manifestations, now serves us in ascertaining symptom and function values; for we must clearly keep this distinction in mind or we fail to rightly correlate and comprehend the principles of systematic diagnosis. To illustrate, temperature is purely a symptom; it is the effect primarily to be sure, of function-unit conditions, but indirectly of exaggerated or aberrant functioning of the circulatory apparatus (see pp. 69-70). Yet temperature is one of the most important signs in every form of disease, because it indicates not only that there is extensive unit invasion requiring abnormal functioning of the entire vasomotor apparatus, but that the causation is either violently or virulently inimical to the well-being of the organism. Again, pain is purely a symptom, being the result only

of violent or virulent influences upon the tissue-elements, exaggerating the transmissive functioning of sensory nerves into abnormally severe impressions upon nerve centres, or peripheral nerve end-organs. Yet, pain is not only the most unerring and important sign of disease-state, but it is the one that receives more therapeutic attention than all other symptoms or aberrant functions combined. It is really the stumbling-block and bug-bear of medicine.

In fact, the most formidable difficulties that beset the practice of medicine are purely secondary symptoms, mere shadows of the real disease-conditions. Therefore, in estimating symptom-values as well as the functional consequences, if we based our estimate purely upon the symptomatic and aberrant manifestations, in other words, if we used only the surface signs as real intrinsic values in making up a diagnosis, it would be most superficial and fallacious. Therefore, it is evident that *the value of symptoms and functional departures in diagnosis lie in what they indicate as to the disease-conditions*. If the beginner in practice allows his anxiety to cure his patients quickly and make a reputation as a "lightning healer," to betray him into the fallacy of attempting to reverse this natural law and diagnose on the notion that symptom values are intrinsic only in the surface signs and functional manifestations; he becomes a symptom treater - an aberration doctor.

III.

PATHOLOGY.

The term pathology as understood by other schools of medicine relates to the functional aberrations and to any or all gross structural changes that occur in disease. Gould's Dictionary defines it as "That branch of medical science which treats of the modifications of function and changes in structure caused by disease." This definition like that of disease is too broad and vague to be of much scientific value as it covers both the conditions and consequences, and is therefore synonymous with the word disease. In Quain's Dictionary

an article by James Paget defining pathology, part of which has been quoted (pp. 27 and 28), and as there shown, this eminent authority admits the impossibility of assigning legitimate premise or definite sphere much less a scientific definition of pathology, because it is impossible to draw a definite line between health and disease, for the reason, we think, of the absence of a foundation hypothesis or theorem from which to logically reason. That the difference between this attempt to attain logical and practical conclusions by reasoning from chaos, and the definite practical conceptions of these obscure morbid processes afforded by Physiomedical Philosophy may be better shown, we take space to quote further from this able article, as follows:

“In this impossibility of scientific definition the range of pathology is vaguely settled by a general understanding as to what may be called disease, and in this settlement are included all the states which are distant from health, whether they be in the way of diverging from it or in that of returning to it, as in convalescence. And some states are included for which it is hard to assign a better or other reason than that they are not useful to us. When fruits or other parts of plants or animals, revert to their more natural state and become useless, they are generally regarded as diseased.”

“In this view pathology may be regarded as an extension of physiology into the study of living bodies in conditions widely unlike those of their ordinary life. Pathology, herein, accepts the conventional limitation of physiology to the study of the nature of living things; but the limitation is convenient more than just.”

The question of practical health and its mergence into disease has already been fully discussed; we revert to the matter again only to show the difficulties in the way of scientific medicine without premises founded in basic conceptions. The lameness of having no better premise than a general and “unjust” agreement about a thing because no one has definite ideas of the same is sadly apparent when most vital facts must be passed over by admitting that they are

included as disease conditions “for no better or other reason than that they are not useful to us.”

This vagueness and the impossibility of better settling the range and practical value of pathology, so candidly admitted by these eminent authorities, renders it incumbent upon Physiomedical Philosophy to assign to this most important department of medicine its legitimate province. To do this it is only necessary to refer to the Theorem with its basic tissue and function-unit concept of the primordial functional inception of health and disease; that in both health and disease all manifestations inherent to the organism are the aggregate expression of living matter in these tissue-units. Then with what has already been said concerning causative phenomena, symptoms, and function-aberration it is not difficult for the logical mind to perceive that the moment inimical invasion or disturbance of its bioplasm occurs at the organic-unit (tissue-element), the normal or physiological state ceases and the pathological state begins; thus the point at which physiology vanishes and pathology appears is as logically and practically definite as that of health and disease.

With this view of pathology, laying its foundation principle in the unit invasion and then carrying it up through the nature of symptomatic-phenomena and aberrant function-consequences, in other words, broadly yet definitely setting the bounds of pathological study within the beginning of causative phenomena and the limit of secondary disease results, we are prepared to accept the definition of pathology given in Foster’s Dictionary, namely, “The science of disease. Specifically the science of the nature of disease.”

Therefore, in as much as the previous section as well as the present one covers the entire ground of pathology and the various sub-sections place the whole discussion in a more comprehensive form, it is not deemed necessary to further pursue the subject under this heading. However we cannot dismiss the subject without at

least mentioning the remarkable confirmation modern science has made of the basic principles of Virchow's long obsolete Cellular Pathology.

IV.

SYMPTOM GROUPING, DISEASE-COMPLEX.

In grouping symptoms and aberrations for diagnostic purposes we first consider their general values, which, as we have seen, depend wholly upon their connection directly, or secondarily, with the function-unit and structural integrity of organs and systems. Next we consider them in the order or sequence of their occurrence in relation to the nature of causative unit-invasion and primary disease-conditions or causative phenomena. Lastly, they are arranged according to their correlations in functional results or aberrant consequences.

The general values of symptoms and aberrations as already seen, are naturally divided into direct and secondary.

Direct symptoms are those that are manifest in or through the function-units locally at the point of unit-invasion.

Secondary (reflex) symptoms are those subdued manifestations discoverable in function-units not directly disturbed or invaded by the disease causation, but in direct structural continuity, or in close functional harmony with the invaded or disturbed units.

Direct functional aberrations are the abnormal operations of an organ, or system, arising directly from a focal lesion or invasion of its function-units.

Secondary functional aberrations are those exaggerated or abnormal activities manifest in an organ or system whose function-units or structural integrity, not being directly invaded or disturbed, is intimately associated directly in its functioning, or relatively connected through nervous innervation, or inhibition with a primarily diseased organ or system.

When symptoms are systematically grouped according to their values, their direct and secondary symptomatic relations, and the correlations of each symptom and aberrant function with the disease-condition, they form a symptom-complex - more properly speaking, disease-complex - which for convenience we call a disease (see page 65); special names have been given the various complexes or diseases, founded upon prominent symptoms, aberrations, or conditions which is the legitimate province of scientific nosology; but some authors who are accepted as authority have gone to the nosological extreme of an endless and confusing nomenclature which includes extrinsic objects, substances, places, etc., that are irrelevant to any scientific or practical notion of disease (see pp. 79 and 80).

Therefore, this Philosophy requires a nosology or symptom-grouping into disease-complexes founded upon unit-invasion, tissue-state, and functional aberrations, which constitute the conditions of disease. Any material departure from this scientific basis of nosology only creates confusion and indefinite impractical notions of diagnosis. Let us rightly understand, then, that a *disease-complex (symptom-complex), form of disease*, pathologically speaking, is, *a number of symptoms and functional aberrations directly related to a pathological function-unit condition, and indirectly (reflexly) correlated with each other.*

If this basic principle of symptom-grouping and nosology were always strictly adhered to, scientific diagnosis and direct therapeutics would be far more easily attainable, but unfortunately the growth of pathology, as well as other important collaterals of scientific diagnosis and treatment of disease, have come up through so much vagueness as to the real nature of disease, which, with the inexorable law of custom or common usage, even in our present advancement of medicine in so many other respects, renders readjustment of nosological nomenclature to advanced ideas of disease almost impossible, because physicians are loath to drop old and long-used names for disease and take up new terms even though they are more expressive

and scientific. As an instance, the term Scrofula is still made use of by eminent authorities notwithstanding for many years it has been settled beyond doubt that this once supposed different form of disease is in fact Tuberculosis.

Another great barrier to accurate and scientific pathology as well as diagnosis, originating in the same past ignorance as to the exact nature of disease, is that of naming a disease-complex after the original investigator of that particular disease-form, in other words the builder of a system-complex; instances of which are Bright's disease, Addison's disease, Raynaud's disease, Pott's disease, etc. Such a method of nosology only tends to confused notions of the exact nature of abnormal phenomena and the causative tissue-unit states from which they result. Conditions, instead of eponyms, must be the foundation of scientific nosology; it is right and proper that the names of our original investigators and pioneers should be historically enshrined, but there are other ways certainly as efficient as that of encumbering nosology and handicapping diagnosis.

To better comprehend the exact nature of a disease-complex or disease-form, as well as the proper pathological basis for grouping symptoms in accordance with their values, relations to conditions and correlations, a schematic symptom and aberration group is presented. (Fig. 6.)

V.

CLASSIFICATION OF DISEASE-COMPLEXES.

The classification of disease-complexes or forms of disease consists in grouping together the various forms in a systematic and correlative manner for the purpose of accurate diagnosis and scientific treatment. As has been shown in the classification of fever

forms, the general classification of disease-forms must be based on the primary conditions of unit bioplasm and abnormal or pathological phenomena arising therefrom. While such a classification will not accord entirely with the nosology of other systems of medicine, it is hoped to so arrange this nomenclature as to make a concordance with the other methods sufficiently easy to avoid any serious confusion with those who have long used the old pathology.

Most significant of the fallacy of previous notions as to the real nature of disease, and a purely symptomatic pathology, is the conspicuous absence in recent works of other schools of any attempt at systematic and correlative classification of diseases. It is only too evident to the unbiased mind that such an attempt, in the present confused and transitional advancement of that school from the cumulus of traditions, would result in far too radical changes for their ethical well-being; for which advancement, candid history must give large credit to the force of new schools of medicine. In this connection it is not only a proper credit to this attempt to place *The Philosophy of Physiomedicalism* in definite and practical form before an intelligent medical public, but it is just to our neighbors of the Regular profession to quote the following from the Preface of *Twentieth Century Practice of Medicine*, Vol. I.

“To those who realize the many and radical changes that have taken place in the healing art during the closing years of this century no apology is needed for the work here presented. Within a little over a decade a new science has arisen and a new theory of infectious diseases has been established, while the advances made in many other branches of internal medicine have been hardly less remarkable. Indeed, it is not too much to say that a new era has begun, one in which the rational treatment of disease engages the best thought of the best workers, supplementing, while not supplanting, the study of pathological anatomy by which the preceding era was characterized. The science of medicine has been in great part re-cast - the time is now ripe for it to be re-written.”

Yet this great twenty-volume work makes no attempt at the very foundation of correct diagnosis and scientific practical treatment of disease, namely, systematized and logical symptom-grouping or pathology and nosology; consequently, in the over fourteen thousand pages of this great up-to-date practice of medicine we doubt if fourteen hundred of them are devoted to the actual practical treatment of disease; for instance, in the first volume, Prostatitis is given 20 pages of description and $4\frac{1}{2}$ pages of treatment. Acute Exudative Nephritis has 9 pages of description and 2 pages of treatment. Vol. XIX devotes 446 pages to the history, etiology, pathology, etc., of malaria and $36\frac{1}{2}$ pages to its treatment; and sad to say, except Quinine, but two other remedies, viz: Iron and potassium tartrate, and Fowler's solution of arsenic, are recommended; and of this $36\frac{1}{2}$ pages of treatment $14\frac{3}{4}$ pages are devoted to the nature and treatment of Quinine poisoning! See page 470 to 479, Vol. XIX.

This confusion as to the actual nature of disease manifestations must necessarily lead to the above inefficient and unsatisfactory state of its treatment, no matter how scientifically and exhaustively its pathology, etiology, etc., may be handled, because it is all based on false premises as this Volume of Twentieth Century Practice just quoted from sadly illustrates, for there is nothing to be desired in the scholarly and conscientious manner in which the pathology and etiology of Malaria is dealt with; in our humble opinion only the correct premise as afforded by the Physiomedical Theorem is lacking to carry forward this well-begun work to the final practical results of logical diagnosis and rational treatment. It is nevertheless as true as it is strange that such well-informed methodical and really scientific minds could become confused and fail to comprehend and appreciate the important, even vital difference, between aberrant functional consequences which in themselves are merely the signs and symptoms of disease-forms, and the cause of these consequences, or disease-conditions.

It is believed that the true nature of so-called disease has already been herein fully established as primarily a tissue-unit condition, with consequent functional aberrations and secondary structural and organic results; therefore, disease cannot be any form or manner of force or substance; in other words, disease-causation cannot be the disease, any more than functional aberrations can be the disease; the cause cannot be the effect, nor vice versa.

Of course any view of disease must regard the causative nature as well as the character of functional consequences as important factors; hence, a pathology and classification of disease-complexes must necessarily include in its scope the general or special characteristics of the disease-causation. For instance, a severe laceration caused by a rabid dog would require different treatment from one caused by a perfectly healthy dog; as also a febrile state from surgical injury would require different treatment from a fever caused by so-called malaria. Yet with the right concept of the febrile manifestations and causative conditions the therapeutic management would not be so materially different in principle as in degree, after all; it would differ only in the requirements of emergency; so that a knowledge of the nature of disease-causations are more useful to pathology, etiology, and nosology, than to actual practice from the standpoint of unit-invasion and condition-treatment of disease.

As already indicated in fever phenomena, so, also, in general diseases, from the above standpoint of basic conditions and considering the general nature of causations, all disease forms or complexes naturally come under two grand divisions, namely, *unit-invasion* and *unit-lesion*. By adhering closely to this concept of disease only can we avoid the confusion already referred to (pp. 79 and 80) an error that only becomes more marked the greater effort is made at practical scientific classification of diseases. For instance, in the "Twentieth Century Practice of Medicine" a volume of 639 pages is devoted to "Occupation Diseases," in which 95 different substances, influences,

etc., are classed as diseases, among which are Alcohol, Tobacco, Morphine, Chloral, Mercury, Arsenic, Quinine, Lead, Tin, Aconite, Belladonna, Rarefied Air, Cold, Heat, Electricity, "Effects of the Sewing-machine," etc., confusing thus the causation and disease, must certainly lead to confused and ineffectual treatment, as is manifest by the paucity of practical and definite treatment offered by these otherwise really great medical works.

As already stated the cause of a disease should be included as a factor of greater or less value in its pathology, but to make it paramount to, or synonymous with disease, cannot but greatly hinder the scientific practice of medicine. We therefore shall apply to all inimical substances, forces, or influences the general term pathocausative, meaning that they are causal to pathological conditions of unit-bioplasm. Thus we have as a basis of all disease-complexes or diseases:

(a) PATHOCAUSATIVES: All substances, forces, or influences that are directly or indirectly inimical to the normal functional potency of the function-units of the organism, when brought in direct contact with, or indirectly influencing unit-bioplasm.

(b) CAUSATIVE PHENOMENA: All abnormal manifestations of unit-bioplasm in the unit, or in tissues, but not yet sufficient to occasion functional departures of organs and systems.

(c) FUNCTIONAL CONSEQUENCES: All abnormal or aberrant functional actions of organs and systems, the consequence of pathocausative invasion and causative phenomena.

(d) SECONDARY RESULTS: All tissue-unit conditions, tissue-states, and functional aberrations indirectly resulting from the functional consequences or the primary disease conditions produced by a pathocausation.

Definite and scientific, at the same time simple and explicit Pathology and Nosological classification of all disease-forms is thus reached by systematically working up from the unit-concept of disease-conditions, to the functional consequences of the same. Only by this scientific method, we are convinced, can a comprehensive idea of disease be obtained; hence, let us reiterate - symptom grouping requires a knowledge of symptom value as to causative conditions; a proper symptom and aberration group constitutes a disease-complex; a disease-complex is a form of disease, or more briefly expressed disease-form; the proper nomenclature of disease-forms, is therefore, based upon first, the local or general tissue-states or disease-conditions, as *Uremia*, *Septemia*, *Leukemia*, etc.; second, upon the organs, systems, and apparatuses constituting the storm-centre of the disease-complex, as *Gastritis*, *Hepatitis*, *Enteric Fever*, *Gastric Fever*, etc. In Plate VI we have endeavored to synthetically arrange the various disease-complexes into a systematic nosological classification upon this basis; of course this is not presented as a perfect or complete classification, it is intended more as a suggestion as to the scientific and practical lines upon which a complete nosology and nomenclature must be worked out; for much more accurate knowledge concerning the nature of the various disease-forms must be attained before an absolutely correct classification will be reached. (Plate VI.)

VI.

GENERAL PRINCIPLES OF DIAGNOSIS.

As will be inferred from the preceding discussion, *diagnosis is the science of interpreting the values and correlations of symptoms and functional aberrations, with disease-conditions.* By DIFFERENTIAL DIAGNOSIS similar disease-complexes are distinguished from each other. In line with above is DIAGNOSIS BY EXCLUSION, which is a method of reaching conclusions as to disease-conditions and the

disease-complex by excluding all other probable and possible forms. DIRECT DIAGNOSIS is defined by Gould as “the recognition of a disease from the existence of one or more signs or symptoms, independently of or in relation with other symptoms, or with age, sex, physical and mental characteristics, residence or occupation, or with the family history.” Viewed from this (Physiomedical) Pathology, direct diagnosis would deal directly with the disease-conditions which consist of the invasive unit-conditions and tissue-states, logically accounting thus for the symptomatic manifestations in a given case. The fact is, from this viewpoint direct diagnosis is more important than indirect diagnosis which is the prevailing method of diagnostic procedure; that is, to commence with the symptomatic and functional aberrations - with the surface manifestations - and by logical correlations proceeding inward to the causative conditions. The direct method is the true logical procedure therefore, but unfortunately this is not always expedient and in many obscure cases is impossible.

The fact is, every good diagnostician uses both direct and indirect methods, in other words he proceeds synthetically and analytically. Indeed much of the physician and surgeon’s reputation depends upon his ability to analyze and account for symptoms; nothing is more common than for the patient or friends to ask, for instance, “why do I feel this pain here in my foot and ankle when you say the trouble is in my hip?” or, “why is the most pain and tenderness in my right side, if as you say, my left ovary is in the worst condition?” or, “Doctor, how do you account for these very unpleasant sensations in the back of my head and extending down my spine?” The expert diagnostician runs the scale from aberrations and symptom-values down to unit-conditions, back and forth, as the musician runs the gamut, until every disease-sign is placed in its exact relation, correlations, and values in the disease-complex.

PHYSICAL DIAGNOSIS is the investigation of disease manifestations by means of physical apparatus, and by manual inspection of any and all parts of the body that can be thus reached. It is the

opposite of SYMPTOMATIC DIAGNOSIS, which is diagnosing merely by the symptoms as obtained from the patient or friends. Of course, the careful physician would not found a diagnosis upon either physical or symptomatic signs independently of each other; he accepts any and all means that may enable him to reach exact conclusions. He must obtain all signs, symptoms and aberrations present in any given case, he must use all physical means and diagnostic instruments or apparatuses, he must differentiate and exclude, until he has accurately reached the disease conditions, then only is he justified in rendering a positive diagnosis.

For practical purposes of diagnosis all symptoms and aberrations may be classed in two natural divisions which are called objective and subjective signs or symptoms.

OBJECTIVE SIGNS are all signs or manifestations of disease which the physician, independent of the patient's statements, is able to obtain by physical inspection, manual manipulation, and diagnostic instruments or apparatus. Urinalysis, chemical examination of secretions, excretions, contents of stomach, and of the blood; microscopic examination of the blood, secretions, excretions, tissues, structures and morbid growths, are included in objective signs of disease.

SUBJECTIVE SIGNS are those which the patient relates and describes. For instance, pain and all sensations of ill-ease and discomfort, which constitute the great bulk of disease accompaniments, indeed this is the only picture of disease, projected on the patient's mental screen, the physician must depend almost wholly upon his patient for all these signs, for he can neither see nor feel his patient's pain, consequently he must take the patient's word for all pains, aches and uncomfortable sensations. The patient may state that a certain part is very tender and even flinch greatly when the part is touched, yet the physician cannot by any means be absolutely certain as to the amount of any tenderness that may exist; even perfectly undesigning persons may unconsciously exaggerate their sensations largely, indeed, it is a very inherent instinct of humanity to exaggerate

pain and discomfort, one always has a “*bad* cold,” “the *worst* toothache that ever anybody had,” etc. The family history, heredity, general and special environments, history of the case, etc., all belong to the subjective signs, or information concerning the case.

Many years ago the author adopted seven general rules of diagnosis which have served so successfully that they are herewith submitted, believing that if the young practitioner will adopt them in the beginning of his career he cannot fail to become very proficient in diagnosis.

1. Trained thoroughness of examination and educated senses, have eyes as it were, in your fingers'-end. Diagnosis is by no means a lazy man's business. The fellow who is afraid to take off his gloves to examine a patient has no moral right to be in the profession. Every sense should be alert and habituated to the detection of disease-signs. The tactile sense is of far more importance than the average practitioner ever stops to think of; in abdominal diagnosis and operations, the sense of touch is of far more importance than that of sight; an educated touch is one, if not the most important requirement of skillful diagnosis. The old maxim of what is worth doing is worth doing well is most applicable in diagnosis. Paradoxical as it may seem to say it, it is as unfortunate for the physician as for the patient to attempt an examination when he is too busy to make it thorough. Ignorance is more pardonable than sheer neglect.

2. Be systematic, methodical, and logical - common-sense logic - in diagnosing. Never found a diagnosis wholly on one or two prominent symptoms. The secret of success in any work is a working system and logical methods, but more especially is this so in diagnosis and treatment. These things should become so fixed in the life of a physician as to constitute an integral part of his mental constitution. With such fixed habits nothing will induce the physician to make a loose diagnosis.

3. *Never guess at anything, the diagnostician ought to be the poorest guesser on earth.* It is far better for the physician's reputation, not to mention the moral phase, to say candidly "I don't know," than to give a guess as his professional opinion. Indeed if one is thorough in examinations, proficient in anatomy, physiology and pathology, there is no need of guesswork. Not that one may always be able to form a definite and exact diagnosis by any means, but one will be enabled to explain to the full satisfaction of patient and friends the impossibility of rendering a clear diagnosis.

4. *Be absorbed in your case, deliberate and painstaking, impressing the patient that his case is the one of the hour in your estimation, as it really should be.* It is by no means detrimental for your patrons to say, "He is slow but sure;" "I don't mind waiting, for I know when he gets to me I shall not be slightly dealt with." But remember there is quite a difference between making haste slowly and "pokyess."

5. *Take nothing for granted, never jump at conclusions. When in doubt make frequent re-examinations before giving an opinion.* In kidney troubles of a grave character, as well as serious constitutional conditions where complete and exact analytical examinations are requisite to a conclusive diagnosis, time must be taken, days and weeks often; it is unreasonable then, to think of rapid diagnostic procedure. So, also, in cases where such extensive procedure may not be necessary, yet there are doubts, nothing is lost by taking time to study the case. One may be sure of good standing with an intelligent and reasoning clientele for such skepticism, providing he does not manifest neglect of thoroughness in the ground-work of his medical education.

6. *Always be ready and willing, if possible, to explain the nature of symptoms and conditions, but make your explanations brief, untechnical and explicit to patient and friends.* Deal with people as they are, not as they should be; one sometimes finds highly educated

persons, whom one would naturally suppose capable of apt understanding, to be far more unreasonable and unreasoning than others whom he knows to be illiterate. Common sense is inherent, not the creation of a literary education. Again the ignorant can much better be impressed by plain, common-sense explanations, brief and to the point, than by any technical language, which to them is mere jargon, while the educated and truly intelligent always admire briefness, perspicacity and directness in a physician.

7. *Be sincere, candid, and honest with your patients, demanding the same candor and honesty from them.* A clown in the sick-room is as much out of place as a minister in the circus-ring. One can easily be pleasant, cheerful, animating and hope-inspiring in the sick-room, without being a "jolly-joker," clownish, or boorish. While on the other hand it is as impossible to accurately diagnose the insincere, facetious, and hilarious patient, as the eccentric, morose one, or even the malingerer; therefore, acquire a reputation for meaning strictly business in your diagnosis and treatment, if nothing else. The appellation "gassy doctor," is a synonym for "incompetent doctor." If thus business-like with his patients, the physician can justly demand of them the same conduct towards himself. The writer once entered the room of a man whom he was treating for severe fracture of leg at lower third, very respectfully giving him a cheerful good morning; he did not deign to look up from his newspaper, but greeting us with a swinish grunt he commenced with a tirade of profanity at the pain, which he averred "kept me awake nearly half the night," and "I don't propose to put up with it another minute longer." Without a word of reply we deliberately removed the splints, packed up the extension apparatus and with all snugly tucked under arms departed with a quiet "Good day, sir." He procured another medical attendant with much difficulty and we learned treated him with great respect.

Diagnostic instruments and apparatus are indispensable; one should avail one's self of all these mechanical aids to complete

diagnostic investigations, but the armamentarium should never be carried to the extent of ostentatious display, or the intent of producing a profound impression upon the patient; because, if ignorant and superstitious, they will be disappointed at anything less than a miracle at your hands; on the other hand, an intelligent patient is disgusted with an unnecessary display. Again, if the sensory faculties are not thoroughly educated to both the physiological and pathological conditions of every organ and system of the body, the mind trained to logical and systematic investigation of disease-manifestations, all the physical diagnostic apparatus one can surround one's-self with only makes incompetency more incompetent. Therefore, the beginner should first train thoroughly into acute and active service his *natural* diagnostic resources, which must constitute his chief armamentarium - *touch, sight, hearing, smelling, and even taste; perception, conception, apperception*. Then only is he ready to intelligently and most effectively apply diagnostic instruments and apparatuses.

One should, in fact naturally does, have a uniform beginning to his method of diagnosing; the most common and perhaps most natural, is to feel the pulse and examine the tongue. The very busy practitioner takes the most apparent objective or subjective sign and proceeds in that line. The mind naturally acting rapidly and automatically to a great degree is apt to carry one on mentally more rapid than is best for the depth and thoroughness of scientific and accurate conclusions, so that if not held in abeyance by one's better judgment one is prone to take too much for granted and jump at conclusions. Preconceived notions, which is the bane of scientific diagnosis, is best avoided by thus commencing with one region of the body or some general function, such as the circulation, digestion, etc., or the head, thorax, or abdominal cavity. The writer prefers to begin with the patient's own subjective-story of his ailment, which is usually brought out by simply asking, "How are you complaining?" If too garrulous one can interloquite and hold him relevant; and as he proceeds we can note the prominent symptoms and features of his history and in a differential way assign the cause or causes for

each symptom as related, yet avoiding any attempt at a final conclusion until after a thorough physical investigation of every objective sign of disease is completed; this is apt to hold the mind in methodical restraint.

After the patient has exhausted his list of pains, aches and discomforts, we continue the subjective examination by well directed questions till all are ascertained, weighed in the differential balance, each given its condition-value and placed in due correlation with other subjective and objective signs.

Several years ago Prof. J. Redding informed the writer of his method, that of commencing with the head, taking each organ and part of the cranium from above downward, thus proceeding by subjective symptoms and objective inspection, "from the crown of the head, to the sole of the feet," as he expressed it; which plan we have found most excellent especially in obscure chronic cases; in fact it is the only way to make a thorough examination of a chronic case, while at the same time by it we acquire habits of system and thoroughness of examination, avoiding hasty conclusions.

In infancy and childhood, in delirious and insane patients, the neurasthenic and hysterical, in pending litigation to recover damages for personal injury where expert medical testimony is required, and in suspected malingering, the diagnostician must rely almost wholly upon objective signs, and in all cases they constitute the chief element of a complete diagnostic investigation.

First, both in methodical procedure and diagnostic importance, is the patient's physical and mental constitution, or what is usually denominated temperament. In the early career of medicine before the advent of diagnostic instruments and systematized pathology, physicians were compelled to rely largely on exterior signs of disease; so that the physical conformation, complexion, color of the eyes, hair, the gait, mental make-up, etc., of the patient were most important. Hence, very early attempts at differentiating and grouping of temperaments or types of constitution were made; the origin, therefore,

of the idea of temperament is almost primeval with that of medicine. Galen is credited with the first systematic classification and description of the temperaments; he grouped them into four primary types, the *dry*, the *moist*, the *hot* and the *cold*, with five compound temperaments, viz.: the *hot and moist*, the *hot and dry*, the *cold and moist*, and the *cold and dry*; also a *balanced* temperament in which all the above temperamental constituents were combined in perfect balance.

Galen's classification into four primary temperaments still obtains; of course, as better knowledge of physiology and psychology was attained, these were modified and re-arranged. With the advent of "humoral pathology" they were changed to *sanguine*, *bilious*, *phlegmatic*, and *melancholic*. These were based upon the preponderance of the supposed different "humors" of the body. Again, with the advent, or rather advancement of phrenology, the temperaments were re-arranged with the aid of craniology; and in 1856 W. Byrd Powell, M. D., published a book on "The Human Temperaments," which may be justly called the foundation of our modern science of temperaments, as Galen's was the basis of primitive notions of temperament.

Powell's four primary temperaments were *sanguine*, *bilious*, *lymphatic*, *encephalic*. Of these he constructed six "binary combinations," as follows: *Sanguine-bilious*, *sanguine-lymphatic*, *sanguine-encephalic*, *encephalic-lymphatic*, *bilious-lymphatic*, *bilious-encephalic*; and four "ternary combinations," viz.: *Sanguine-bilious-lymphatic*, *sanguine-encephalic-bilious*, *sanguine-encephalic-lymphatic*, and *bilious-encephalic-lymphatic*. Powell was undoubtedly a remarkable man, a deep student, sincere and thoroughly honest. He became so proficient in the practical application of phrenology and temperament, that he could accurately tell what the color of hair, eyes, complexion, and the temperament of an individual was, by examining simply the naked skull. He could further tell the age at which the individual died, and if by disease, the nature of it. While a medical

student at Cincinnati, Ohio, in 1867, the writer witnessed a trial of his remarkable skill by a number of skulls taken to him direct from the dissecting room, the antecedents of which he could not possibly have had knowledge, and in no instance did he fail. We have seen him accurately announce the religious belief of a person from the form of head and temperament, also predict the death of persons almost to the day. We mention these facts for the purpose of calling attention to the immense practical value to the physician that a scientific knowledge and practice of these facts may be; we contend that medical men cannot longer afford to ignore any and every fact that may aid them in practical diagnosis and treatment of disease. That the ignorant and designing may have brought facts and principles into public disrepute, is no excuse for medical men to wholly ignore them.

The great benefit personally experienced in the practical application of a good knowledge of temperament, etc., and the scarcity of practical literature upon this very important subject, is our excuse for giving space to quote from the excellent description of temperaments in Vol. II "Dictionary of Psychological Medicine," by D. Hack Tuke, M. D., LL. D., as follows:

"1. The Sanguine Temperament. - Individuals of this temperament vary in height but are oftener short, and usually not stout till later on in life, when they have a tendency in that direction. The head and bones are small, features well defined, nose rather short, and lips of medium thickness, not thin; neck short. Complexion fair and bright, often ruddy, hair reddish and plentiful in early life, eyes blue. Mentally persons of this temperament are characterized by great susceptibility to external impressions and to the feelings of pleasure or pain attached to these impressions; their mental movements are rapid but shallow, they are impulsive, emotional and excitable, easily provoked and as easily forgetting. They lack persistence and have bad memories. They have often powerful imaginations and clever thoughts. The sanguine temperament is useful in

preventing narrowness of mind, and in imitating new ideas, but is not suitable to an older age than that of childhood, and lacks the steadiness necessary in life. The diseases said to be especially common in those of this temperament are diseases of the circulatory system and heart, hemorrhages and acute inflammations; illness in these individuals, including insanity, generally run an acute course.

“2. *The Nervous Temperament.* - In persons of this temperament the figure is slight but often tall. The head is small and narrow, the forehead being proportionately large. The features are small and sharply cut, the nose and chin pointed and the lips thin. The skin is dark and dull, the complexion sallow, the hair is usually brown and the eyes dark or grey. They are restless and active; speech rapid. Mentally their activity is great, but they are characterized by too much changeability. They think readily, but have bad memories; suffer much from emotions of hope and fear, but easily get over them afterwards. They imagine well and are much influenced by their environment. They have tender feelings, but can forget easily; very susceptible to sensations. They seem to be particularly liable to insanity, and especially mania, and to diseases of the nervous system.

“3. *The Biliary or Choleric Temperament.* - Individuals of this temperament are usually short and thickly built, and even if tall they are correspondingly big. The head is large and square; features large and not well defined, nose outspread, mouth wide, skin rough and hairy. Complexion, hair and eyes dark in color. Voice rough. Movements clumsy but capable of much exertion; they are not impulsive, but steady in thought and judgment; memory good; speech deliberate but decided; they make up their minds about anything and stick to it. They are passionate and jealous, and do not forget an injury; their feelings are not easily excited, but are strong when aroused. Affection strong. They are perhaps less liable to disease than those of any other temperament, but are said to be more frequently affected with the symptoms usually included

under the heading 'lithic acid diathesis.' There is no particular form of insanity assigned to individuals of this temperament, but they are possibly more liable to general paralysis or mania than the other forms. The question of the connection between temperament and insanity has never been adequately gone into.

"4. The Phlegmatic or Lymphatic Temperament. - Men of this type are, as a rule, thick set, short-necked, bulky individuals, with want of proportion in their build. The head is not large, the features are not well defined. The hair is light or sandy and often thin, the eyebrows light. The complexion is colorless and pasty, the eyes have a washed-out appearance, often greyish in color. The skin is unhealthy looking; speech is slow and movements sluggish. Mentally, individuals of this temperament have good judgment, but are slow; common sense fairly good and memory good; not emotional; heavy and plodding; feelings persistent, though not powerful. Much lack of energy. Persons of this temperament are liable to chronic diseases, and to chronic catarrhs; in them disease runs a slow, atypical course. They are liable to dementia rather than to other forms of mental affection."

With the advance in clinical diagnosis, improvements in diagnostic instruments and methods, of which bacteriology has played no small part, together with the decline in importance of heredity as a diagnostic factor, temperaments have, unjustly we think, fallen greatly in the background. While there can be no doubt that this, like phrenology, mesmerism, and all other truths and principles in the crude state of our knowledge concerning them, have been greatly overestimated and misapplied, it cannot but be evident to all unbiased minds who have given them candid scientific investigation, that there is far too much truth in them of which medicine has not yet grown out of need, for scientific medical men to wholly cast them aside.

The physician who is eminently successful professionally and otherwise, whatever other elements of success may attend him, will always be found taking people just as they are, not as they should

be to fit some impossible ideal that he has set up in his own mind; and by thus simply accepting individuals as he finds them, and the same is true of their complainings and symptoms when sick, he is enabled to accurately determine *just what they are*, also to decide exactly what ails them when sick. This is what accurate knowledge and careful study of the human temperaments (psycho-physical constitutions) more than any other one thing will enable the physician to do. With all faith in the truth of this, we deem it important to here devote considerable space to the discussion of this subject and to advance some personal ideas thereupon.

First, the mental make-up or what is known as *mind* is the result wholly of the physical organization. Psychologists are coming to realize more than was ever dreamed of in the past, that mind is not a something inherent in or generated by the neurine tissues or tissue-elements of the brain, but that the neurones - nerve cells or function-units - of the cerebrum associate, co-ordinate, and differentiate impressions, and construct concepts, notions, ideas, emotions, reflections, etc., only by virtue of a surcharge of induced vital energy sent to them through the afferent nerves from every kinetic or working tissue-element or function-unit of the body; and, therefore, this that we call *mind* is no more resident in the brain, than in the finger or toe, but consists of kinetic energy-waves and currents derived from the living matter of the tissue elements generally. Hence it is, that the athlete has not only an athletic body but an athletic mind; the expert mechanic a mechanical mind and a mechanical body, as can be readily discerned by the observant in every movement and action, as well as in his mental performances. The scholar reveals the scholarly instincts as much in his physical constitution as in his mental performances. It is as impossible for the prize-fighter to convince an assemblage of church-goers that he is a minister of the gospel, as for the minister to procure backers for a glove contest with a noted champion.

It being true then, that the organic body is the result of inherent integrative, constructive and developmental purpose of bioplasm and

Vital Force, and that all mental manifestations or *mind*, are the result solely of this physical organism, it follows that this close correlation between body and mind results in a psycho-physical constitution of the human organism that cannot escape the force of environments, habits, occupation, etc.; that these environments, etc., by their influence and counter-influence, actions and reactions of body and mind, and mind and body, mould and model both the physical and mental; so that physically and mentally (leaving the spiritual out of consideration here) man is a dual organization, "one and inseparable."

The term temperament, therefore, should mean the psychophysical constitution of an individual; thus used, the term would include the effects upon, first, the tissue-units, tissues, organs and systems; secondly, upon the mental construction, of all influences and environments, such as heredity, prenatal influences, age, occupation, diet, habits, etc. With this view of temperament, we have an aid to diagnosis that is invaluable and cannot be displaced by any or all diagnostic instruments and methods that modern ingenuity can devise.

From this standpoint we accept the four temperaments or psychophysical constitutions as already quoted from Tuke's Dictionary of Psychological Medicine, to which is added our personal observations as to the influence of medicines, etc., and psychic treatment of each class, as follows:

1. Sanguine Temperament. - This temperament suffers acutely, is prone to neuralgias, headaches, etc. Has little fortitude and is impatient under suffering; is hard to relieve from pain or mental distress; requires large doses of medicine as a rule, the system soon becomes inured and unresponsive to the influence of medicines, so that in chronic diseases especially it is better to let the system rest after continued medication for a few days, giving two weeks or two months respite according to nature of case, and resume medication again for twice the rest-period. Often this temperament is hard to

control; it has little self-denial and much trouble is experienced in keeping it on proper dietetic rules, etc. Constipation and rectal troubles are somewhat common in these patients, especially hemorrhoids and contracted spasmodic sphincters. Not good subjects for psycho-therapeutics or suggestive treatment, are poor hypnotic subjects. Females of sanguine temperament are prone to acute uterine troubles, such as ovarian inflammations and congestions, neuralgia of pelvic organs, pelvic cellulitis, painful menstruation, abortion and miscarriage, uterine and other hemorrhages.

2. *Nervous Temperament.* - This temperament affords not all the neuroses by any means, yet, it is the home of neurasthenia and hysteria. The intellectual and cultured of this temperament, what Powell calls the encephalic temperament, are easier to treat when sick than any other; while on the other hand the ignorant and uncultured of this temperament are the most difficult and troublesome of patients. The negro race as a rule have this temperament most predominant. They are treated best with small doses of medicine. The majority of chronic complainers and medicine-takers are of this temperament; they are good exaggerators of their symptoms and ailments, and suffer greatly from reflexes; it furnishes a very large contingent to the array of chronics. They are usually very punctual in taking their medicine and following the directions of their physician, but the effect of medicines upon their system is as erratic and uncertain as their nature. They are emotional, apprehensive, and full of erroneous notions about their ailments, though the intelligent and educated are easily persuaded out of these notions and make the best subjects for psycho-therapeutics. Females of this temperament are prone to chronic diseases of the genito-urinary organs. They are good child-bearers and make good recoveries from accouchement. They are subject to leucorrhoea and catarrhs of the genito-urinary mucosa. Diabetes and albuminuria are perhaps more common to this temperament than any other.

3. *Bilious Temperament.* - This temperament furnishes the majority of chronic rheumatics; while it withstands venereal infection badly, it is as a rule less easily infected than the sanguine or nervous temperaments. Tuberculosis and scrofula are common in this temperament. It withstands disease well as a rule; is courageous, has fortitude under suffering, tenacious of life, does not die easily. Medicines usually act well on this temperament, but it requires rather large doses. Is subject to kidney and bladder troubles, especially chronic suppurative Nephritis, Pyelitis, and urinary calculi; uremia is very common. The bilious temperament does not suffer nearly so much from hepatic troubles as the sanguine and lymphatic, notwithstanding the name; in fact *renal* would be more appropriate than bilious temperament. In females of this temperament uterine fibroids, sarcoma, pyoophoritis, and pyosalpingitis are common. Hypochondriasis, melancholia, and hysteria are not infrequent.

4. *Phlegmatic or Lymphatic Temperament.* - This is really the bilious temperament in pathology. Hepatic troubles and derangements of the portal circulation are most common to the lymphatic temperament. This temperament contract disease readily, especially infectious and venereal diseases. Vital resistance to disease-causation is low, these patients readily succumb to severe acute attacks; they convalesce slowly; require large dosage, though medicines act promptly; are not of a costive habit; gastro-intestinal catarrh is common, because as a rule they are high livers. Females are prone to abdominal hernia, uterine displacement, ovaritis, endometritis and cervical erosions. This temperament make good subjects for psycho-therapeutics.

Combinations or compound temperaments, so far as practical medicine is concerned, we think, are impracticable and confusing, because the temperaments are unstable, changing with age, etc., and combinations cannot, therefore, be of utility, as the largest number of dominant temperamental traits belonging to any one temperament places the individual in that class, no matter what others are discernable;

for most of the physical and mental elements of all the other classes must be present in a less marked degree in an individual type of any temperament.

The temperaments change with age, education and culture, environments, occupation, physical and mental derangements, severe injuries, etc. The menopause changes the temperament of females largely. In short, any continued persistent influence that tends to change the ordinary conditions and functions of body or mind generally, will change the temperament or psycho-physical constitution of the individual. And if the cause or causes be such as severe and long continued grief, anxiety from business involvements and reverses, fear and apprehensions, the influence radiates from the cerebral centres through the efferent nerves to the general tissue-units of organs, systems, etc., impressing the unit-bioplasm until subtle physical changes of their molecules are wrought; then these changes in the unit-bioplasm react through the afferent nerves upon the neurones of the cerebral centres and psycho-physical changes result in transformation of temperament. So, also, causes, such as tissue and structural injuries or traumatic lesions, physical demands of occupation or body-work, climate, diet, and any or all direct physical causes may by the force of reflexion through the afferent nerve-currents upon the cerebral neurones work the same psycho-physical changes; this is action and reaction of body and mind.

That temperaments are unstable and subject to change does not militate against their utility generally in medicine, nor specially as a valuable aid to diagnosis; for the scientific physician first studies the temperament in a given case just as he finds it, harmonizing its dominant characteristics with the age, environments, etc.; and as there are both physical and mental constituents in every individual that remain unchanged throughout life despite age, environments, etc., the scientific student of psychological medicine will be able to accurately predict the future changes in the young, or trace backward the temperamental evolutions from the original, that have taken place

in the adult, middle, or advanced age of the individual. Again, these changes cannot, in the very nature of things, be rapid; they are the result of growth, either developmental or regressive changes, or both; therefore, the physician has ample time to use them for his present practical needs long before these changes can affect their utility.

The secret of diagnosis then, is, as already indicated, to take the individual just as he is and the case as you find it; determine first the temperament and individuality, the constitutional peculiarities and character-eccentricities, which we all possess in a more or less marked degree; one of the most important of which, to the physician, is that of taste and preferences as to taking medicine; as we all know there are some who complain of and protest loudly against the "villainous potions," while others uncomplainingly swallow anything given them; the susceptibility or the immunity of the system to the influence of medicine, a thing the experienced diagnostician can predict beforehand with much accuracy, is very important to know. In short, the physician must learn to read his patient like a book and with an acuteness and rapidity bordering on intuition, encompass every element of his physical and mental makeup at the very first step of a first examination. And the more systematic, methodical, and thorough the physician trains his mind and habits, the more easy and natural these things become to him, so that he soon finds it almost an impossibility to make a careless and incomplete examination of a patient. The most embarrassing and irksome task for the thoroughly trained diagnostician is to be called upon off-hand, at inopportune time and place, to make an examination. The writer is acquainted with physicians who dread being called on to hold off-hand clinical examinations of patients at medical society meetings, almost as much as the final account-giving of this earthly career.

Diagnostic charts are a most important adjunct to scientific examinations. Of these, temperature registers or so-called "fever charts" are perhaps most commonly used. They consist of a square

card or paper ruled into columns and divided by horizontal lines into squares; at the top of each column is marked the day and hour; the transverse spaces register the degrees of temperature; dots are made in the proper squares at each observation and eventually connected by lines which constitute a temperature record of the case throughout the febrile period. The same way graphic records of pulse, respiration, etc., can be kept. By rulings with different colored ink and different sized squares, a complete and compact record of all the principal aberrations of a case either acute or chronic may be kept, such as temperature, pulse, respiration, action of kidneys, bowels, etc., and in surgical or other cases records of condition of wound, discharge from an abscess, or mental state of a patient may be registered, being more convenient and accurate than a case-book.

A complete examination of a patient in methodical order of procedure may be divided into steps or sections, as follows:

(a) *Personal History.* - Name. Sex. Age. Residence. Occupation. Temperament. Early education. Environments. Habits, as to temperance, punctuality, honesty, morality, etc.

(b) *Clinical History of Case.* - Duration. Nature and order of development of prominent symptoms and conditions; duration of each period. Nature of previous diagnosis and treatment, with results of same.

(c) *Present Symptoms and Conditions.* - Objective conditions. Subjective conditions and symptoms. General symptoms. Special functional aberrations. General conditions. Special conditions.

(d) *Diagnosis.* - Disease complex, or name of disease. Complications. Secondary conditions. Reflexes.

(e) *Line of Treatment.* - Special indications. General indications. Palliative treatment. Diet and hygiene.

VII.

SPECIAL DIAGNOSIS.

Special diagnosis relates to methods and means of ascertaining the nature of aberrant functioning and conditions of special organs or systems; it is the special or local application of the general diagnostic principles and rules already laid down. For instance, in either acute or chronic disease-forms of any gravity it is most important to be accurately and fully informed as to the condition and function-work of the circulatory apparatus; with the Stethoscope and Pleximeter, by auscultation and percussion we ascertain the physical condition of heart and lungs; with the sense of touch, the rapidity, volume and vigor of general circulation is obtained. By the Sphygmograph registered tracings are made of the pulsations of Radial, or any other surface artery, from which the condition of the heart and blood vessels are accurately judged. The thermometer reveals much as to nutrition and tissue changes. By chemical examination of the urine, a sufficient and liberal outfit for which should be in every physician's office, the condition of kidneys and character of their functioning is ascertained. By various diagnostic instruments and appliances the condition of neurones and muscular systems are obtained. Finally, with the microscope and accessories every fluid and solid of the body can be inspected and their integrity definitely studied. Although there are many excellent and very complete publications on the market devoted to these special methods of diagnosis, it is deemed essential in so far as the legitimate scope of this work will admit to take up somewhat in detail the discussion of some of the more important special diagnostic methods of observation; of course, extensive details must be avoided and only practical facts and procedure pointed out in as brief and concise manner as possible; the idea being to give original experiences, rather than abstracts of current literature on this subject, pointing out the nature of information of most practical purpose to be learned from the special works upon these various subjects.

The Microscope in Diagnosis. - No physician no matter where located or how busy he may be with general or special practice, can afford to be without some kind of microscopic outfit, sufficient at least to yield satisfactory results so far as it goes. While the busy practitioner's outfit may be far from that of the expert microscopist it may yet be most complete and satisfactory for his practical requirements. With the many excellent works on practical microscopy and bacteriology, replete with simplified, easy and rapid methods of investigation, with the cheapness of good practical microscopes and accessories now on the market there is no reasonable excuse for any intelligent physician who desires and deserves a paying patronage to be without a good microscope and ample accessories.

In the purchase and general use of a microscopic outfit it is only necessary here to offer a few practical suggestions. It is economy in the end, financially as well as in scientific acquirements not to purchase too much in the beginning, but rather a few well chosen first-class materials. For instance, get a first-class microscope-stand if but one objective is gotten with it; for to this, one can add later on as they become better up in the work and better informed as to what they need, such things as a mechanical stage, double or triple nosepiece, sub-stage condenser with attachments, etc., while with a cheap stand these most important adjuncts to satisfactory work could not be attached. One should not undertake to work with high power objectives until one has become quite expert in the use of $\frac{2}{3}$, $\frac{3}{4}$, and $\frac{1}{5}$ inch objectives. In examining an object commence with the lower, say $\frac{2}{3}$ objective, then the $\frac{1}{5}$ and so on to the highest, but do not attempt immersion lenses until the lower ones have been thoroughly mastered. As soon as possible obtain a camera lucida and practice using till it can be handled with ease and rapidity; in examinations of bacteria, diseased tissues, etc., one very often does not have time to mount, and the field, as one happens to catch it, often cannot be preserved by mounting; in short, the busy practitioner finds very many objects and situations

where the camera lucida fills a pressing need that no other microscopic accessory can serve. A most helpful piece of microscopic furniture is a microscope table which, if properly arranged, saves much time. This should be of ample capacity to hold, besides the microscope, all necessary materials, such as reagents, staining and mounting materials, etc., arranged in convenient order for rapid work, with a large chamois to wrap around the microscope and fasten with rubber bands, a large silk handkerchief to cover the other contents and a large colored table spread to throw over all; the whole outfit can be kept safely from dust, etc., and yet be ready for use at any moment. The physician who wishes to get the best results from the microscope in medicine should take a few weeks' course of instruction in the laboratory of some medical college, which he can do as recreation during his vacation and not miss the time.

PRACTICAL URINALYSIS.

There is no other product of the organism in health or disease of so much diagnostic value as the urine; the practitioner in this twentieth century without a fair knowledge in this direction and sufficient apparatus to make some kind of examination of the urine is certainly a back number. No outfit and no examination of the urine can yield conclusive practical results without being at least proximately quantitative; it is not enough to know that there is albumen or sugar in the urine, one should know proximately the percentage or quantity per twelve or twenty-four hours that the kidneys are eliminating. It is now well understood that albuminuria by no means always indicates organic disease or even functional departure of the kidneys and that not in all cases is it even preceded by abnormal conditions of the blood-constituents and grave disturbance of the physiologic balance between assimilation and disassimilation; however, the quantity of albumen thus escaping from its normal metabolic commission must be an exact measure of the gravity of the tissue-states and disease-conditions of the general system.

In the past, when quantitative urinalysis belonged exclusively to the expert analyst, the physician had to be satisfied, after ascertaining the specific gravity, with obscure indications of albumen and sugar; here his examination of the urine ended. But, now, with the many convenient and practically accurate apparatuses for easy and rapid estimation of urinary constituents, which can be obtained at such reasonable cost no one would think of stopping with the ordinary tests for sugar and albumen in the diagnosis of any important case. Indeed urea, as well as other normal constituents of the urine are being found to be of much more importance to the diagnostician than these abnormal materials in very many cases. In fact we have come to learn that in most cases the important question is not so much what *abnormal* matters the urine may contain, as what of *physiologic work* are the kidneys really doing? It may not be too much to say that when we shall attain far more accurate knowledge concerning the physiology and pathology of the kidneys than is at present known, it will be discovered that they, like all the other excretory organs, will under proper therapeutic guidance help to unload the organism by eliminating adverse materials, even though foreign to the normal urinary constituency, as we now compel the bowels, skin, etc., to do extra-functional work to unload the system; and it is by no means improbable that among these extra-urinary excreta may be albuminoids, and saccharine system-surplusage and thus by physiologic extra kidney-work exert a powerful depurative action, protecting the system from such dreaded pathologic causations as malaria, and auto-intoxicants. And too, it may not be out of place here to predict that such ideas and methods can only come to us along scientific lines of the unit-concept, the ceaseless and irresistible inherency of function-unit bioplasm to resist and eliminate inimical causative influences.

Urea. - Nearly all establishments dealing in chemical and philosophical instruments keep some of the many apparatuses for quick estimation of urea, albumen, sugar, etc. Of these apparatuses the

author has obtained excellent results with the following: Doremus' Ureometer, designed by Charles Doremus, M.D. Ph.D. of Bellevue Hospital Medical College. This is a very practical instrument for quick estimation of urea, but requires considerable care and skill in preparing and handling the reagent, which consists of a solution of Sodium hydrate, 8 oz. to 20 oz. water, to which is added 2 oz. Bromine. This reagent must be very carefully prepared in at least the above quantity, kept in a well-stoppered bottle and in summer in a cool place, when it will keep indefinitely; this is marked "Strong Hypobromite solution" and is diluted with an equal volume of water for use; not over 6 or 8 oz. at a time should be thus diluted for use, kept also well stoppered and in a cool place. The bromine is a most troublesome thing to handle and if not properly managed so much of it may be lost as to materially impair the accuracy of the reagent; besides one may inhale much more of the bromine than is agreeable or healthful; to avoid which put the Sodium hydrate solution in a bottle with mouth sufficiently large to admit a two-ounce bottle of bromine; after carefully clearing the luting away from the stopper let it down in the Soda hyd. bottle with a small wire till the bottom nears the solution, break it at the bottom with a small hammer or piece of metal introduced alongside the bromine bottle, then let quickly down into the solution and shake till its contents have escaped, quickly withdraw the broken bromine bottle, close and give the reagent a good shaking; decant from the broken glass into a small mouth glass or rubber-stoppered bottle and put away well wrapped in dark colored paper. We have thus been explicit because the directions accompanying Doremus' Ureometer are very meagre and unsatisfactory, causing many to whom we have recommended it to throw the instrument aside in disgust after a few very unsatisfactory trials. This instrument costs only one dollar.

The quantity of urea excreted in the twenty-four hours is so uniformly representative of the quantity and quality of the kidney-work both in health and disease, that it is not a little strange that

more attention is not given to this subject and that better, more accurate and convenient means are not provided for quantitative estimation of urea.

Sugar. - For estimation of sugar a most excellent instrument is Einhorn's Saccharometer, especially Fiebig's Modification of the same. Full directions accompany this instrument, or rather a pair of them, packed in a box at the reasonable price of one dollar and fifty cents; for Fiebig's Modification two dollars. An apparatus for using Whitney's Reagent, put up by Lewis Chemical Co., N. Y., is still better.

Albumen. - For simplicity, practical accuracy and rapidity in quantitatively estimating albumen we know of no better instrument than Esbach's Albumenometer. It consists simply of a straight graduated tube and the reagent, which is a standardized solution of picric acid; it costs the trifle of seventy-five cents. The reagents for all three instruments are very inexpensive. The author has a number of times tested Esbach's instrument with the Centrifuge and Purdy's method of estimating albumen, in no instance was there any practical difference.

Specific Gravity. - Specific gravity being one of the most important characteristics of urine in health and disease, places its diagnostic value high; a thoroughly correct urinometer therefore is one of the indispensables of a urinary outfit; with it must be a correct thermometer to ascertain the temperature while taking the specific gravity, for the urine should always be of a uniform temperature to obtain the correct specific gravity; 60° F. is the most convenient temperature, winter and summer. The quantity of solids in the urine determines the actual kidney-work; for it must be remembered that the fluid is simply a menstruum holding in solution the excrementitious products of kidney-functioning; therefore it is most important to know the amount of solids in a given quantity of urine which should, in any attempt at complete urinalysis, be the mixed urine for 24 hours. There is happily an easy and rapid way of reaching a practical estimation

of the urinary solids, by taking the last two figures on the urinometer-scale registered in a given case, that is, the number in excess of 1,000 as a multiplier, and the number of fluid ounces voided in 24 hours as the multiplicand, the product will proximately represent the total solids in grains. The quantity of solids excreted by the kidneys of a healthy adult in 24 hours ranges from 60 to 70 grammes, or an average of 1,000 grains; of this 20 to 40 grammes - 308.6 to 617.2 grains - should be urea; and the total quantity of fluid should be 40 to 50 fluid ounces; it should be acid in reaction with a specific gravity of 1,018 to 1,020, the usual variations within the bounds of health being 1,015 to 1,025.

The importance of specific gravity is therefore very broad and has been found to practically indicate the following diagnostics:

- (a) High specific gravity (above 1,025) but small in quantity and high color, indicative of the febrile condition,
- (b) High sp. gr. and increased quantity indicates diabetes mellitus.
- (c) Low sp. gr. with increased quantity indicates diabetes insipidus, or hydruria.
- (d) Small quantity with low sp. gr. is a grave indication, uremic conditions will be found present, no matter what causations whether there be albumen present or not.

But it must be borne in mind that notwithstanding the importance of any one sign or symptom, it should always be considered as no more than a unit in the disease-complex and its true value placed only after it has been properly correlated with all the other factors of the complex. Furthermore the diagnostician who can see no further than the kidneys in estimating the import of aberrant, kidney function, in other words, he who finds his diagnosis wholly upon a urinalysis will be in error more often than the "water doctors" of the past, who diagnosed by going into a guessing-trance while gazing on a bottled specimen of the absent patients' urine.

The author once gave a specimen of urine to an expert analyst, a non-medical man, but a thorough scientist, an eminent professor in a literary college for an analysis, as he was making a specialty of examining urine for physicians. The specimen was one of that peculiar kind that one occasionally finds, loaded with both phosphates and organic products that seem to have simply filtered into the kidney-pelvis directly from the renal vessels; such a specimen especially after standing a few hours in warm weather looks and smells like anything else but urine. Our friend after examining the specimen and without asking a question about the patient, gave it as his opinion, in which he was quite positive, that the person was in the very last stage of Bright's disease and could not possibly live a fortnight, while the man who voided that urine, a boiler-maker and perfect specimen of stalwart health, was, unconscious of his death-knell from the professor, lustily pounding away on resounding iron at the factory.

We deem it space well given in this connection to quote the following very practical ideas from "*Clinical Diagnosis*" by Dr. Dudolf v. Jaksch; translated from the German by James Gagney, M.A. M.D., page 172:

"An abnormal specific gravity of the urine is a fact of great importance in disease. It affords an approximate estimate of the quantity of solids excreted by the kidneys, and consequently of the energy of metabolic processes within the system. It may be stated as a general rule, that when the quantity of the urine is diminished in disease, its specific gravity is raised. A considerable departure from this rule implies one of two things: Either tissue-changes are notably suspended, and their products, urea, uric acid, etc., formed in smaller quantities; or these processes remaining active, such products fail to be removed by the kidneys. To the first of these causes is to be assigned that rapid decline in the density of the urine which sometimes precedes a fatal termination in acute fevers. Of still more serious import is a sudden fall in the specific gravity in

nephritis, unattended with any alteration in the quantity of urine passed. The phenomenon in this instance points to the failure of the diseased kidneys to separate the urea and salts elaborated within the system. The author has had many opportunities of observing that such a fall in the specific gravity is apt to precede - usually by several days - the oliguria and suppression which herald an attack of uraemia; and it often affords a valuable warning of what is impending at a time when all other symptoms are wanting. Moreover, the symptoms of uraemia may develop whilst the urine remains but little diminished in quantity, and in such cases we shall always find its specific gravity is greatly lessened.”

Records of urine examinations should be made and filed, they make valuable data for a complete history of the case, besides one cannot keep fully in touch with the progress of the treatment, especially of chronic cases, without such records. The author has for years been using the following blank form which he has put up in tablets of 500 each:

EXAMINATION OF URINE.

.....19.....
Urine of M......*Act.*.....*Res.*.....

PHYSICAL AND CHEMICAL.

Nature of Specimen.....
Total quantity in 24 hours.....*oz.* *Total solids*.....*gr.*
Color..... *Odor*..... *General appearance*.....
Reaction..... *Specific gravity*..... *Albumen*.....
Sugar..... *Urea*..... *Biliary matters*.....
Indican..... *Pus*..... *Blood*.....
Other abnormal matters in solution or suspension.....
Quantity, nature and color of sediments.....

MICROSCOPIC.

Anatomical elements.....
Morphological elements.....
Bacteria.....
Crystals.....
Other constituents, normal and abnormal.....
Conclusion
Examination made by.....
(Address)

The Centrifuge. - The recent advent of this most valuable apparatus in diagnosis has in some respects been fraught with advances in scientific medicine almost equal with that of the microscope itself, to which it stands as an aid especially in medical diagnosis, that is perhaps unequalled by any other single accessory. Heretofore, when micro-organisms were found in urine, it was impossible in many cases to definitely determine whether they were accidental, or actually in the urine when voided; now with the centrifuge sedimentation of the total solids in solution or suspension can be obtained in 3 or 4 minutes after voidance, and accurate quantitative estimates made both chemically and microscopically. With the aid of the centrifuge quantitative and volumetric examinations of the blood, sputa and any normal or abnormal fluid of the body can now be more accurately and quickly made than was possible before centrifugation was applied to diagnostic methods.

The Medical Centrifuge consists of metal cut-gearings revolving an upright shaft at a very high speed, to the upper end of which is fastened a horizontal detachable metal frame with a pivoted ring at each extremity. These rings serve as holders for two conical, plain aluminum tubes which receive graduated glass tubes for urine or any other fluid to be examined, they hold 10 c.c. and the scale indicates one-tenth of a cubic centimeter. The machines are mostly made to turn by hand, weighing complete three pounds; they are

also made for attachment to electricity, water, or any other power. There are also attachments to the upright for sedimentation of blood and volumetrically estimating the red and white corpuscles and liquor sanguinis; this is called the Hematocrit. There is also a sputum attachment for examining sputum. The centrifuge is geared to run as high as ten thousand revolutions per minute; ordinarily the hand machine has an average speed of five thousand revolutions. This machine should be in the laboratory of every physician who aspires to expert diagnosis; they can be had much cheaper now than when first introduced three or four years ago; with only the urinary attachments the price is \$20 to \$25, with all attachments complete for urine, blood, and sputum examinations, \$30.

Examination of the Blood. - There can be no material change in the blood itself without affecting the tissue-elements and eventually the entire body; so also if elemental and structural changes occur in organs and systems to the extent of unusual or abnormal function-work, the blood must suffer. In fact, the blood is the most important and far-reaching in functional purpose of all the physiological body-fluids. While the blood carries to every tissue-unit of the body either directly, by the capillary network, or indirectly, through lymph-spaces, its pabulum or food supply, it also brings to the elements poison or inimical causations, should they invade the blood-current either from within - autotoxic - or gain access from the external world; not only this, but the blood current comes to the secretory glands with the synthetic constituents of the various secretions, and carries to the excretory glands the worn-out matters of function-unit action for their elimination from the organism. From these facts we understand the vastness of the field of physiology and pathology of the blood, and how important a good knowledge of the best methods for blood examination must be to the diagnostician; but here, as in every other department of diagnosis, the first requisite is a thorough acquaintance with the normal or physiologic state of the blood.

The blood-plasma, or *liquor sanguinis*, is transparent, of a slightly yellowish tinge and quite fluid; the red color of the blood is imparted by the red blood-corpuscles: in arterial blood these are brighter while in the veins they are darker, hence the dark bluish color of venous blood, and brighter red of arterial blood. The red corpuscles derive their color from the presence of haemoglobin, a crystalline matter called the oxygen carrier or respiratory pigment, because it is believed to absorb oxygen at the lungs and carry it to the tissue-elements of the body. In man the amount is 13.77 per cent., in woman 12.59 per cent., reduced by pregnancy to from 9 to 12 per cent. Hence estimates of the normal state or richness of the blood is based upon the amount or percentage of haemoglobin found in the red blood corpuscles; this is proximately determined in examination of the blood as taken from the vessels by the number of red corpuscles in proportion to the white corpuscles or leukocytes; the normal proportion being 1 leukocyte to 500-1,000 red corpuscles. There are a number of excellent apparatuses for estimating the haemoglobin or proportion of red corpuscles; these are called haemometers, haematoscopes, chromometers, and cytometers. But, as already mentioned, the centrifuge by volumetric estimation is the most rapid, easily manipulated, and as accurate as any of above and will no doubt displace every other method. However, the micrometer will no doubt always be more or less used for this purpose.

When the blood is rich in haemoglobin it is evidenced to naked-eye by its rich, bright red color; when deficient in haemoglobin it is dark red. When the number of white corpuscles or leukocytes exceed the normal proportion the blood is pale, thin and watery, and the individual is pale, ashy color either emaciated, or a fat, bloated appearance and very white; this condition is called leukaemia.

The blood is alkaline, with a specific gravity of 1,045-1,075 (Landois). The specific gravity and reaction is obtained with some difficulty; the reaction, because the deep red color obscures the color of litmus paper and it is necessary to overcome this difficulty.

Liebreich's method is perhaps the most expedient, consisting of clay, or better, plaster paris plates soaked in neutral litmus solution, by dropping a little blood on these and washing it off again the reaction can be observed. Glazed litmus papers and those coated with paraffin are used. As there probably never can be such a thing as absolutely acid blood in the living body, all tests are for determination of the degree of alkalinity, and therefore, are quantitative; so that these test papers, plaster plates or alkaline solutions are prepared in series of different strengths and the reactions thus graded. With the Liebreich's plaster plates impregnated with the ordinary litmus solution for testing urine the author obtains sufficient practical quantitative tests by using first his own blood and then the patient's on the same plate and noting the promptness and degree of brilliancy as shown by comparison of the two tests.

It is important in many cases to know the degree of the blood's alkalinity. It is very frequently diminished in fever, especially continued and prolonged attacks; in uremia it is invariably diminished, sometimes quite low, as also in muscular rheumatism even without uremic causation; also in organic diseases of the liver, leukaemia, pernicious anemia, and diabetes. It is increased temporarily during active digestion of a hearty meal, by the constant and free use of rain water, or soft spring water. In neurasthenia, melancholia, and hysteria the author has in a large majority of cases, examined found the alkalinity, quite perceptibly increased, in many decidedly so.

The specific gravity of blood is not so easily obtained even as its reaction, mainly because it is rarely possible or advisable to obtain from the patient a sufficient quantity for the ordinary methods, so that special apparatuses are required; Landois' modification of Roy's method is perhaps the best. However, specific gravity is of little more than experimental value, the same diagnostic indications being mostly obtained by other means it is not often necessary to determine the specific gravity. In women the specific gravity is

lower than in men. Lloyd Jones, *Journal of Physiology*, viii. 1, 1887, has shown by a series of very careful and accurate experiments, that it is highest at birth, falls gradually during the first few years of life, reaching its lowest point in man at 35 to 45 years. In pregnancy, fasting, ingestion of large quantities of liquid food, and gentle exercise diminishes the specific gravity.

The formed elements or cellular elements of the blood are the unit-bodies, so that the blood is really an organized fluid as much endowed with Vital Force and vitality as any of the solid structures. It is now well recognized that there is an influence exerted upon the organism by the blood that cannot be accounted for, neither by the mechanical force of its circulatory movements, its nutritive constituents, or the vito-chemic processes included under the term metabolism; the only satisfactory explanation being in the inherent unit-potency of its formed elements. These unit bodies are the red and white units or corpuscles, and a third class recently fully verified as permanent elements called blood-tablets or *plaques* (*Bizzozero*). They have a diameter less than half that of the red blood-corpuscles. So little is, as yet, known of these blood-plates that they are not considered of diagnostic value; yet from personal observations the author considers them of immense value when rightly viewed; all observers agree that in the reconstructive work of Vital Force such as convalescence from fevers the blood-tablets are found to be plentiful, while during the febrile state - the resistive and eliminative stage - they are diminished in number; in pregnancy - a constructive and developmental attitude of the system - they are very much increased in number.

These blood-units like tissue-units in any other part of the organism are the first to suffer from inimical substances or influences that may invade the blood-current; as before stated, they may be the carriers of poison as they are of food to the tissue-units; therefore, in pathological conditions of the blood the pathocausative invades the cellular blood-elements or blood-units which constitute the seat

of causative phenomena just the same as in tissue-units of the solid tissues and structures; an examination of the blood in any toxic condition of the organism or general disease-form in the very earliest stages will verify this important fact. In Jaksch and Gagney's *Clinical Diagnosis*, page 6, we have the following statement: "Pathologically, the corpuscles exhibit changes as to quantity and character which are of the utmost importance in diagnosis. These changes seldom occur separately, but are usually combined - although alterations of the *structure* of the corpuscles may be more pronounced in some cases, of their *number* in others."

All students of blood-pathology agree that the condition, number and proportion of the blood-units (corpuscles) furnish most valuable diagnostic data; and it is because of these facts that so much attention has been given blood-analysis and so many apparatuses and instruments have been devised for estimating the blood-elements.

In health there are five millions of red blood-corpuscles to the cubic millimetre of blood, in woman four and a half millions. As already stated in any general disease-form the blood-units early show changes, the red units (corpuscles) may temporarily or permanently diminish to two millions or even three hundred and sixty thousand to the cubic millimetre (Vierordt). Besides many undefined sporulae, and various pathogenic and non-pathogenic bacteria and bacilli found in the blood in disease conditions, there are often found many well studied parasites belonging both to the animal and vegetable kingdom. Principal among which are bacillus of anthrax, spirillum of relapsing fever, bacillus of tubercle, bacillus of typhoid fever, streptococci, bacillus of tetanus, malaria bacillus and plasmodium, all of which are classed as vegetable parasites; chief of animal parasites or *Haematozoa*, are distoma haematobium, fillaria sanguinis hominis.

With a good microscope and accessories among which should be a stage micrometer, and a centrifuge with hematocrit, one can

soon learn to make blood examinations with ease and rapidity, and will find it a most invaluable aid in accurate diagnosis; in fact it is not only more easily done, but yields more accurate diagnostic data than urinalysis.

EXAMINATION OF THE SECRETIONS.

Of chief interest amongst the secretions in disease are the digestive fluids: *i.e.*, *saliva, gastric juice, intestinal fluid, pancreatic fluid,* and the *bile.* - See Plate IV.

THE SALIVA.

This is quite an unstable fluid, yet one of the most important of the digestive fluids; being composed of both *digestive* and *adventitious* secretions - salivary fluid and mucous; consequently any considerable disproportion between these two classes of secretions whether in health or disease must in a greater or less degree modify the digestive activity of the saliva.

The saliva is more easily obtained than any other of the digestive fluids and should be carefully studied and frequently examined especially in diagnosing any constitutional chronic disease-complex; for all the other digestive fluids except the gastric juice do not greatly differ from it in physical or chemical constitution, the reaction of all except the gastric juice being alkaline, the activity of the salivary and mucous glands of the buccal region, the quantity and quality of their secretory products therefore are most valuable data as to the same condition and functioning of the pancreas, liver, and intestinal glands; and, with the centrifuge and microscope, examinations of saliva are so easily and accurately made that the saliva should by no means be overlooked even by the very busy practitioner.

Fresh saliva is fluid, transparent, colorless, or often of a bluish color, sometimes opalescent, generally somewhat thick and stringy. A fresh specimen from a healthy person sedimentated in the centrifuge

shows the fluid part quite transparent and very light, with a light grayish sediment; 10c.c. of saliva yields seven-tenths cubic centimeter of solids. Under the microscope the principal morphological elements are:

(a) *Salivary Corpuscles.* - Pale somewhat spherical bodies, nucleated with quite granular appearance of the bioplasm; they are in fact saliva-units and indeed resemble leukocytes or white blood-corpuscles very much.

(b) *Epithelium.* - Polygonal forms, generally found in large masses and in considerable quantities, though varying greatly in both health and disease, they vary also in size as they come from different parts. They do not really belong to the salivary secretion but are the old elements loosened by the muscular actions from the mucous membrane of mouth and tongue, many however are from the actual secretory cells of both the salivary and mucous glands. (See Fig. 4.)

(c) *Fungi.* - In health are fission-fungi and non-pathogenic, of many varieties. In disease are principally mould and yeast fungi, both pathogenic and non-pathogenic, chief among which are *Spirochaete buccalis*, *Comma bacilli*, *Leptothrix buccalis*, micrococci and staphylococci in several varieties.

The only formed or permanent element of saliva seems to be the salivary corpuscle, the epithelium and fungi are accidental and foreign substances. The fungi are by some authors believed to wholly or partially make up the digestive ferment. That the non-pathogenic may in health have something to do with the vito-chemic action of saliva in digestion we would not attempt to dispute, but the presence of pathogenic forms in health and their predominance in disease would certainly preclude the idea of fungi being a physiologic constituency of saliva.

Chemical analysis of saliva affords very little of practical interest except that it contains a vital ferment that changes starch into sugar. There can be no doubt that saliva is a vitally organized fluid like the blood, and by the same inherent vital potency exerts vito-chemic actions upon food-substances which the chemical laboratory fails utterly to synthesize because they can occur only when vital conditions obtain under direct inhibition of Vital Force.

When we consider the exposed situation of this very important and highly vitalized digestive fluid, being constantly subjected to extrinsic and so often inimical substances in food, drink, and air, the immense pasturage for micro-organisms afforded by the putrid remnants of bad food and decaying teeth, and especially in that of the ruminator of tobacco, and imbiber of villainous drinks, we can but marvel that the saliva can be other than a most pernicious septic fluid. Yet, notwithstanding bacteriologists have found such great variety and abundance of micro-organisms in the saliva - Miller having cultivated over fifty different fungi - this fluid is endowed with sufficient vitality to wield an aseptic power over these adverse influences and maintain its physiologic integrity in the great process of digestion and assimilation; its functional position is by no means insignificant when we consider that it is first of the digestive fluids to come in contact with alimentary substances, and all subsequent steps of digestion and assimilation must in a great degree be influenced by insalivation.

GASTRIC JUICE.

The naked-eye appearance of gastric juice is much like the saliva, being transparent and nearly colorless. It is the only one of the five digestive fluids that has an acid reaction. It is difficult to obtain a specimen of pure gastric juice for examination, especially from the good feeder who does not believe in an empty stomach. The saliva even in the fasting state is being continually swallowed and mixed with the gastric juice by the energy of affinity between

their alkaline and acid natures. Even by means of a gastric fistula directly into the stomach, difficulties are still met, for there are a number of different glands whose secretions differ materially; first, there are the two classes of secreta, *digestive* and *adventitious* from the gastric-peptic and gastric-mucous glands; besides the peptic glands of the cardiac and pyloric regions of the stomach differ both structurally and physiologically, so that their secretions differ materially in their digestive activity. However, the gastric sound of *Leube* and *Külz*, properly manipulated, will furnish a very fair representation of the mixed gastric juice for practical purposes of proximate examinations.

In the morning before taking food is generally the best time to procure a specimen of gastric juice; the gastric sound, a pliable gum elastic tube ending in a rounded closed extremity with a number of perforations the size of a pin's-head, furnished with a lacquered handle, is introduced into the stomach, being gently pushed on until slight resistance is met; it is now held fast between the patient's teeth, a bone collar being slipped over the tube for that purpose; after a little pause the handle is removed and a stomach-pump attached to the tube, very gently the piston is pulled out and soon after the sound withdrawn and contents discharged into a proper vessel for examination. Much care and gentleness is necessary in manipulating the gastric sound, too violent suction exerted by rudely withdrawing the piston of stomach-pump may tear the mucous membrane and produce severe hemorrhage. A good plan, especially in children, is to simply press on and knead the stomach thoroughly after introducing the sound instead of attaching the stomach-pump (*Boas* and *Ewald*), and thus pressing into the tube, siphon it off. It is not often that sufficient digestive fluid can be obtained from the stomach at one time to make a systematic and complete examination, so that it is necessary to make a series of examinations from different specimens. Again, the gum elastic sound of *Leube* and *Külz* cannot always be used with safety. In recent hemorrhages, whether from

stomach or lungs, aortic aneurism, recent deep ulcers of stomach, in laryngitis, and greatly debilitated persons, the tube of *Leube* and *Külz* should not be used. In all such cases the soft rubber stomach tube if carefully manipulated, the stomach contents obtained through it by gentle compression, there is practically no danger. In many cases the patient can readily empty the stomach by self-induced vomiting or regurgitation.

Within the last decade much attention has been given the so-called chemistry of stomach digestion, and a great number of complicated and laborious methods of chemical quantitative analyses of the normal stomach secretions have been described; all of which the most eminent practical physicians have found to be not only impracticable but wholly unreliable in results (see Vol. VIII, Twentieth Century Practice, page 147); it is in our opinion impossible for analytical chemistry to ever afford much real aid in the ultimate solution of these physiologic problems. The chief barrier to which is the fact that the moment chemical agents come in contact with these vitally organized fluids, all organic genesis must be obliterated and chemical synthesis results in creations that have no equivalent in the physiologic constructive processes or functioning results.

For the above reasons we most heartily agree with Max Einhorn in Twentieth Century Practice, who in volume and page above cited, says: "But besides the errors of these analytical methods, it has been found by the most eminent authors that in reference to treatment and diagnosis we do not derive from these tests any more data than from the simple method of titration and determination of free hydrochloric acid." Therefore, we shall give here only the simpler and practical methods of examination of the stomach contents by volumetric estimation.

Where time will admit it is best to use a test-meal. Of these a number have been devised; the idea being to use some simple aliment in definite quantity, and when the digestive process is at full

completion obtain from the stomach-contents a specimen for examination. Of test meals the Ewald-Boas test-breakfast is most used. It consists of one or two rolls - 35.70 gm. - and one cup of tea or water - 300 to 400 c.c. - taken in the morning fasting, and the examination commenced about one hour after the meal; filter the gastric juice from the residuum of digestion, and examine at once. About all that is of practical utility in the diagnosis and treatment of stomach troubles which can be obtained by examination of its contents are the following: 1, *Pepsin*; 2, *Propeptone*; 3, *Peptone*; 4, *Rennet ferment*; 5, *Reaction*. These we consider briefly here as it is the present purpose to acquaint the reader with the normal conditions of the stomach-function, believing he will then be better qualified to observe and meet the abnormal departures; for detail work in extensive laboratory investigations he is referred to the many excellent works on clinical diagnosis, pathology and bacteriology; the principal object in the present work being to give general information of present and practical utility in accordance with our Philosophy.

1. ESTIMATION OF PEPSIN. - The property of pepsin to convert the proteids, such as fibrin and albuminoids, into peptone, is taken as the standard of digestive integrity of the gastric juice, therefore, the tests are made with fibrin or albumen as follows: Take the white of a hardboiled egg, cut into a thin disk is best, about 1 cm. in diameter and 1 mm. thick, put 1 cc. of the gastric juice, filtered as above described, in a test tube and add the egg-albumen; keep at a temperature of 99° F. The disc of albumen disappears in from 2 to 6 hours according to quantity of pepsin present (Twentieth Century Practice). The instructions are to add hydrochloric acid if the gastric juice be found alkaline, but the author has found that hydrochloric acid diluted as in this test, without any gastric-juice, will digest egg-albumen cooked in 6 to 10 hours, and therefore, is of the belief that such procedure destroys the value of this test, for

should the gastric juice be alkaline it is *prima facie* evidence of abnormality and is determined by tests for reaction (5).

Another test is, to 10 or 20 c.c. of filtered gastric juice diluted with an equal quantity of water in a test tube at a temperature of 40° C. add a small quantity of well-washed blood fibrin; if no change occurs in 10 or 12 hours pepsin is entirely deficient. If after 4 to 6 hours the odor of putridity is present it indicates a very low state of digestive action, allowing putrefactive fermentation to occur in the stomach contents (*Jaksch and Cagney*).

The important endowment of gastric juice, as already said of saliva, and we may justly place this property above even its direct digestive action, is its wonderful antiseptic power; which, in the face of the myriad army of bacteria that constantly invade the stomach in food, drink, etc., still maintains asepsis of the ingesta. There is probably no doubt but this antiseptic power of the juice depends mainly on its pepsin. Therefore, we see the importance of frequent examinations of the gastric juice and estimation of its richness in pepsin; especially in chronic gastric and intestinal troubles. We also learn why the administration of pepsins and peptonoids in these ailments are almost invariably followed with good results. For this reason we have placed pepsin first in estimation of the gastric juice, whereas nearly all other authors place hydrochloric acid as of first importance; we certainly think that the hydrochloric acid is purely incidental to subsequent vito-chemic actions in the formed gastric juice, and its part in the further processes of stomach digestion is wholly physical, the same as this free acid would behave toward these ingesta under similar conditions outside the stomach, except that *it is here under inhibition of absolute vital conditions*.

The physiologic data certainly sustains our contention; the blood is alkaline, not even an isomeric form of hydrochloric acid can be found in it, and analysis of the gastric peptic gland-units in the full flush of secretion reveals no trace of it. Besides, as already

mentioned, even when these chemic products are obtained by chemical analysis of these vitalized organic fluids - the blood, gastric juice and saliva - they are procured by purely chemic actions at the expense of the organic genesis and by total dethronement of vital inhibition; in other words, the first touch of chemic disorganization obliterates every vital synthetic identity, and chemic forces and reactions hold absolute domination producing analytic results in strict abeyance only to chemical laws; certainly then these new products resulting directly and wholly from chemic actions and reactions cannot logically be in the least chargeable to the inherent intent of living matter, tissue-units, or Vital Force.

Now we must not be understood as ignoring so-called "organic chemistry." Rational chemistry of organisms, the proximate chemical estimation of organic tissues and products, more properly termed proximate chemistry or chemic estimation of organized matter, is a most valuable aid to physiology, pathology, and diagnosis; the fatal error lies in the abuse of organic chemistry; in such ideas as are held by the Chemic-radical Theory, and in undertaking to found a theory of physiology and pathology, with concordant therapeutics and practice of medicine, upon the revelations of this so-held "organic chemistry." Such narrowness and one-sided science is a grave detriment to the progress of broader scientific medicine. We must make use of chemistry in diagnosis exactly as we employ every other aid, with a broad and rational intelligence. It would be no more irrational and narrow to found a physiology, pathology and practice upon urinology, thermometry, or pleximetry than this attempt to place the organic and vital processes in the domain of chemistry. Under the unit-concept of organic genesis and the broad ideas of Physiomedicalism only, can one hope to obtain the best results from "organic chemistry," as well as all other aids to scientific medicine.

Quantitative estimation is important here, as in examination of all other functional products. With blood-fibrin in a standard quantity, proportionate to a known strength of the dilute gastric

juice, in the test already given, one can obtain practical quantitative results; or what is simpler and as accurate, volumetric estimation; have 1 c.c. in the disk of cooked egg-albumen, of the first test above given, and 10 c.c. of the filtered gastric juice, the test will show the quantity of pepsin as one to ten. A similar test from a healthy stomach will give the normal standard for comparison.

2. PROPEPTONES. - The peptones are of course like the acids, secondary constituents of the gastric juice, they represent the digestive strength and activity of this digestive fluid rather than vital morphologic elements; but they are nevertheless most important in the digestive process as representatives of the digestive potency of gastric juice. The albuminate alimentary constituents are, early in the digestive process, acted upon by certain elements of the gastric juice, about the first step being the production of propeptones, next these are carried farther into peptones or the full albuminate digestion; therefore, if the test meal contains a good proportion of albuminates a better test of the peptogenic activity of gastric juice is obtained; this the author believes is a more physiologic test of gastric digestion than reliance upon the hydrochloric acid test. We have certainly obtained more reliable data with this procedure than the acid idea, especially when free acid is added to the material tested; so that it has been our custom to add considerable cooked egg albumen to the test meal and only look after the pepsin and peptones in our tests. Of course, the acidity of the filtrate is always tested with litmus paper or quantitatively with a standard litmus solution.

Test for Propeptones. - A standard reagent is prepared by dissolving 2 grammes of sodium chloride in 15 c.c. of distilled water; to 5 c.c. of the well filtered gastric juice add the above reagent, drop at a time, with a pipette or dropping tube, and carefully note the result. The sodium chloride precipitates propeptone if present, and the mixture becomes turbid; adding the reagent, a drop at a time, and noting the promptness or delay, the degree of turbidness in

proportion to reagent used, a very satisfactory volumetric estimation is obtained.

3. PEPTONE. - As already mentioned, peptone is the result of finished gastric digestion of the albuminoids, and a test for pepsin and peptone is usually quite sufficient to ascertain the activity of stomach digestion in most cases; in fact, a test for pepsin will serve all practical purposes in the large majority of cases. However, in special and obscure cases of stomach trouble and general inanition, especially in children, it sometimes becomes necessary to trace out the several principal steps of stomach digestion; for instance, it may be necessary to ascertain the proportionate activity and completeness of the different steps of peptonization, then it becomes necessary to estimate for propeptones, peptone, pepsin, etc.

Estimation of Peptone. - To five cubic centimetres of the clear filtered gastric juice add, drop by drop, a one per cent, solution of cuprum sulphate, a purple or violet reaction shows if peptone is present; should the reaction not appear it may be due to too great acidity of the gastric juice, in which case the fluid should be made slightly alkaline by adding a solution of sodium hydrate.

4. RENNIN FERMENT. - This is the milk-curdling ferment of *Hammarsten*, who first investigated its action upon milk. It is always present in a healthy stomach, and absent in any serious derangement of the stomach mucosa; therefore, this is an important constituent of the gastric juice to look for in diagnosis of grave stomach troubles. The test for rennet being simple and easily made renders it still more important in diagnostic investigations.

Estimation of Rennin. - Put 5 c.c. of boiled and filtered cow's milk in a test tube and add the filtered gastric juice drop at a time, shaking well at each addition, keeping the milk to about 100° F. over a spirit lamp or in hot water; if rennet is present the milk will curdle in from ten to twenty minutes owing to the activity of the rennet.

the quantity of gastric juice required to completely coagulate the milk gives a practical quantitative estimate.

5. REACTION. - The normal reaction of gastric juice is strongly acid, and in the healthy state of the stomach with vigorous digestion alkaline solutions and substances seem to make little impression on the normal degree of acidity; likewise, the ingestion of acid drinks and foods produce no very appreciable increase in acid reaction of the gastric juice. The author has used the stomach tube in fifteen minutes after taking a heaping teaspoonful of soda bicarbonate in dry powder, using no fluids whatever, and found the reaction decidedly acid. After eating two apples and drinking a glass of strong lemonade we have found no pronounced increase of acidity by careful tests. Chemical analysis of the gastric juice as to its acidity, yields hydrochloric, butyric, acetic and lactic acids; but we have already expressed our conviction that these results of chemic disintegration of this, as all other vitally organized fluids, can yield but little practical results regarding the vital genesis of the gastric juice; therefore, there is no practical need of more than a quantitative examination as to the general acidity of the gastric juice.

Estimation of the Acidity of Gastric Juice. - Ordinarily common litmus paper will answer as a general test, and by observing the promptness and degree of redness produced in a good deep blue litmus paper, especially if a number of volumetric dilutions of the gastric juice are made and dropped successively at different points, numbered correspondingly on a square sheet of blue litmus paper, a practically correct quantitative estimation can be obtained.

For a more extensive and yet convenient test of acidity, we quote from Twentieth Century Practice, Vol. VIII, p. 142, as follows:

“The degree of acidity is determined by adding a drop of a one-per-cent. alcoholic solution of phenolphthalein to 10 c.c. of the filtrate (filtered gastric juice), and adding as many cubic centimetres of a one-tenth normal sodium hydrate solution until a slightly red

color arises. The number of cubic centimetres of the one-tenth sodium-hydrate solution required for that purpose is multiplied by ten and expressed by this figure - *i.e.*, the degree of acidity is expressed by the number of cubic centimetres of a one-tenth normal sodium-hydrate solution required to saturate or make slightly alkaline 100 c.c. of the filtrate. Thus, if we find that 10 c.c. of the filtrate require 6 c.c. of the one-tenth normal sodium-hydrate solution in order to bring on the red color after the addition of the phenolphthalein, we say the acidity is 60. The figure of the acidity multiplied by 0.00365 gives the per cent, amount of hydrochloric acid. If, for instance, the acidity is 60, then the per cent, of hydrochloric acid will be $60 \times 0.00365 = 0.219$ per cent."

In any local disease-state of the stomach, whether in the mucosa and gland-elements, the involuntary muscular structure, its vasomotor blood-movements, or innervation, there are more or less pronounced changes either continued or periodical, permanent or temporary, in all the constituents of the gastric digestive juice. Therefore, it is most important to the Physiomedical diagnostician who treats *conditions* instead of *symptoms*, to not only acquaint himself with the physiologic state of the gastric juice, but to be able to make rapid and accurate estimations, by which means alone he is able to determine the exact nature of aberrant departures. Such examinations are the only means of determining the structural and tissue-unit conditions of the stomach. The practitioner who thus ascertains the condition-departures from the normal will proceed therapeutically to aid the Vital Force in restoring vital integrity and functional potency to the stomach tissue-units by toning up the vasomotor activity, instead of administering pharmacal pepsins and peptones which simply produce artificial and mechanical stomach-digestion, only adding to the inertia of the organ, deepening its functional lethargy by overloading the already obstructed vasomotor circulation.

BILE, PANCREATIC AND INTESTINAL FLUIDS.

It is unfortunate for accurate diagnosis and more so for scientific practice that practical examinations of the digestive fluids and direct inquiries into the great processes of digestion ends with the gastric juice; for it must be remembered that stomach-digestion is only the first step, a primary one at that, of the general process of digestion. When stomach-digestion is completed the aliment has been in contact with but two digestive fluids, whereas, it must meet three more of greater importance, and too, intestinal digestion also deals with absorptive assimilation or starting the completed nutriment on its reparative mission. If, therefore, we could have direct access to, and observe intestinal digestion as we can the gastric process, the most difficult problems of practical medicine would be within easy command. The role played by the bile, pancreatic and intestinal juices in intestinal digestion, the specific action of each upon their special line of the alimentary substances, in short, the vito-chemics of intestinal digestion and assimilation are questions of most vital importance, of which probably only proximate knowledge may ever be obtained. Through accidental and artificial openings into the common ducts of the liver and pancreas, and into different parts of the intestinal canal, studies have been made of the biliary, pancreatic and intestinal digestive fluids; but the study of these vitally organized fluids thus either removed from under vital control, or under diseased and aberrant conditions of their normal seat of action, can never yield definite physiologic data. Yet, notwithstanding these difficulties, we are convinced from our personal researches on these lines that if physiomedicalists would interest themselves more in original researches, there is a wonderful field before them along the lines of our unit-concept, and vital supremacy of functional intent, in the investigation of these vital fluids and their functioning processes, instead of chemism and chemico-radical ideas. As it is, however, we must be content with symptomatic indications and what objective surface

signs we may obtain as to the condition of the liver, pancreas and intestinal tract, and the character of their secretions.

THE SPUTUM.

In the mouth, saliva from the salivary glands and mucous from a great variety of mucous glands are intimately mixed, both products are, we believe properly, herein classed as secretions, though this is not in accord with most authorities, because probably of a failure to consider these questions with sufficient care; the former we have classed as a digestive secretion, and the latter as an adventitious secretion. The sputum proper, of course, may contain considerable saliva, but true expectoration is a mixture of mucous from the pharyngeal, laryngeal, tracheal and bronchial mucous glands, all of which differ somewhat in each locality, as to size, special structural formation and their mucous products. The fact that the sputum is expectorated or thrown out of the mouth has probably given rise to the notion that it is an excretion, but in fact this has nothing whatever to do with its physiologic genesis. Indeed in a perfectly normal condition of these membranes there is rarely ever any expectoration.

The fact is, that the mucous, serving as it does the mechanical purpose of a protective clothing for the delicate tissues beneath it, as it grows old and worn being pushed away by the newer formed strata from beneath, naturally exfoliates continually in minute layers, falling off into the mucous cavities. In the ordinary healthy state of these structures this exfoliation of the mucous is so gradual and in such small quantities that expectoration is unnecessary, because it is taken up by absorption and returned to the general circulation; but in an exaggerated state of the vasomotor mucous capillary circulation, or an inflammatory state, these secretions become correspondingly increased in quantity and abnormal in quality, rendering expectoration necessarily abundant, and often quite purulent in character, so that it is only in abnormal conditions that frequent expectorations of sputa occur.

EXAMINATION OF SPUTA. - The sputum in diseases of the mouth, pharynx, and air passages may contain a number of abnormal products, chief among which are blood, puss, exfoliated epithelium and other tissue-elements or tissues; these latter often enable the clinician to locate the seat of any special lesion, by identifying their histological relations with the parts affected. It is very important, therefore, to be able to keep well informed as to the state of these secretions. Fortunately, with a little practice one can be able to obtain very valuable information from a naked-eye inspection of the sputum. With the centrifuge, its sputum attachment and the microscope, one can obtain most valuable diagnostic data from sputum examinations. The method of *Nothnagle* is to collect the sputum in a sediment glass, a conical vessel holding 4 to 6 ounces, and examine as to: 1, *Quantity, in a given time*; 2, *specific gravity*; 3, *reaction*; 4, *color*; 5, *smell*; 6, *tendency to stratification*.

1. *Quantity.* - In quantity the sputum varies so greatly that it is scarcely possible to establish a standard; as already mentioned, in a perfectly healthy state of these parts there is very little sensible expectoration, while, on the other hand, in severe chronic catarrhal inflammations it is sometimes very excessive and purulent; in empyema and pulmonary abscesses it often reaches 30 to 40 ounces in twenty-four hours. Nevertheless, the quantity in a given time is important to know.

2. *Specific Gravity.* - But little clinical value can be placed in specific gravity of sputum, yet in special cases it is sometimes important. The usual method (*H. Kossel*) is to collect in a flask, stoppered to prevent evaporation, and take the specific gravity with the specimen heated to 60° C. (140° F.), or till it is as fluid as possible. The ordinary urinometer float may be used, or the pycnometer if greater accuracy is desired.

3. *Reaction.* - The sputum is alkaline with exceedingly rare exceptions in abnormal conditions; these are where the salivary

glands are greatly obstructed, as in rare cases of parotitis, in mercurial salivation, and salivary fistulae; also in habitual acid eructations from superacidity of stomach. The ordinary blue and red litmus paper answers well for ascertaining the reaction of sputum.

4. *Color.* - Ordinarily the sputum is white or grayish-white. A green color is usually indicative of purulent condition, or at least bacteria-laden sputa, though the presence of biliverdin may impart a greenish hue.

5. *Odor.* - The odor of sputum is not constant or characteristic; yet the more serious the conditions and tissue-states of its source, the more pronounced and offensive the odor, so that there is much of diagnostic value in the smell of sputa, after all.

6. *Stratification.* - Dilute the sputum with from one to five volumes of water, according to thickness and tenacity, in a cylindrical tube, graduated if accuracy is desired; Esbach's albumenometer tube answers admirably. After standing from 3 to 6 hours, well marked stratification of the contents occurs according to density of the constituents; holding the tube against a dark background with a strong direct light gives a better outline to the different strata. "Spirals," shreds of tissues, fibrinous, mucous, and blood coagula, the peculiar "nummular" arrangement found in certain cases, together with various other important indications in many cases can be studied very satisfactorily by thus stratifying the sputum.

While the above methods are very convenient, easily made and altogether satisfactory so far as they go, and in the large majority of cases are all that the busy practitioner needs, yet in some cases, especially tuberculosis, an examination of the sputum will be often inconclusive without a microscopic examination, especially in the early stages.

THE VOMIT.

There is much more to be obtained clinically by studying the vomited materials than would at first seem possible to those who have not made a special study of these objective methods of diagnosis. In acute gastric catarrh, chronic gastritis and dilatation of the stomach, chronic ulcer of the stomach, gastric carcinoma, gastric abscess, in fecal impaction of bowels, in parasitic affections of stomach, in croup and diphtheria, in typhoid and gastric fevers, some forms of cephalalgia, and in many cases of poisoning, accidental or intentional, there is nearly always more or less vomiting; in all of which by careful examination of the vomit it is quite possible to learn not only the nature of the pathocausative, but very much of the actual tissue-state's can be thus obtained. Under the term vomit is not only meant the gastric juice and its normal elements, with whatever abnormal conditions of the stomach contents that may obtain, but all ingested materials such as aliment or other substances, the salivary fluid with mucous secretions of mouth, pharynx and esophagus are included; the alimentary substances will of course be found in different stages of digestion. These may be investigated in the following order:

(a) *Muscular fibres.* - These can be readily recognized under the microscope by their striated appearance etc.

(b) *Fat substances.* - Fatty globules and the so-called fat-needles are discernable with a moderate magnifying power by their refractive property, and are readily dissolved in ether.

(c) *Connective structures and elastic tissue.* - These require a rather high magnifying power, $\frac{1}{8}$ or $\frac{1}{10}$, with nitrate of silver or acetic acid reagents.

(d) *Starch granules.* - The concentric arrangement of starch granules render them very easily recognizable. Tests may be made with iodopotassic-iodide solution, which always gives a blue stain in the presence of starch.

(e) *Vegetable cells and fruit remnants.* - These are differentiated by naked-eye appearance, and by microscopic aid.

(f) *Blood corpuscles.* - They are usually more or less changed by the action of the gastric juice, the leucocytes not so much as the red corpuscles, yet their identity is preserved in sufficient numbers to be distinguishable microscopically.

Besides the above are a variety of bacterial fungoid organisms, some of which are sufficiently constant in the vomit from whatever cause to render their study of diagnostic value; prominent among which are *mould fungi*, *yeasts* - *saccharomices cerevisiae*, *fission fungi* - *rod-like bodies*, various forms of *bacilli* and *micrococci*, *sarcinae ventriculi*.

THE FECES.

The offal, or inertia of ingestion, comprise the feces; necessarily then this is a variable functional product belonging to the class of excurrent excretions (see Plate V). While in a general way the feces have marked invariable characteristics in health, yet diet nonetheless exerts a marked influence over their special character both as to naked-eye appearance and physical and chemical constituency. Three physiological elements enter into definite constituency of the feces in a healthy state of the gastro-intestinal tract, viz.: the *alimentary ingesta*, *digestive fluids*, *gastro-intestinal mucous-secreta adventitia*. These are the theoretical constant and invariable constituency of the feces in health and disease, and in fact give their normal naked-eye appearance; all abnormal departures must be occasioned by the lack or exaggeration of one or more of these elements; for instance, if the feces are light, ashy, or clay-colored, it is evidence, other things being equal, that the liver is inactive, because bile gives to the feces its characteristic yellowish or ochre color. So also, if the smell is putrid or carrion-like, indicating a septic condition of the intestinal contents, it is evidence that the gastric juice is inadequate either in quantity or antiseptic power, also a deficiency in digestive activity of the intestinal digestive fluid.

These facts show the importance of being well acquainted with the characteristics of the normal feces, for no matter how much or in what direction they may be perverted by disease conditions, there are present some of the normal characteristics by which we can be guided in making up an opinion as to the nature and extent of aberrant or abnormal conditions present in a given case. In a general way the physical and naked-eye appearance of feces may be grouped as follows:

(a) *Color.* - Dark yellow, greenish yellow or golden; light or dark ochre, tending to light greenish hue. Caused by the bile pigment - stercobilin (Vanlair).

(b) *Odor.* - The fecal odor is characteristic as it is indescribable. In every species of animals the feces have a characteristic odor; but all, including human feces, possess a common element, that of exciting repulsion in the olfactory sense.

(c) *Consistency.* - The discharge is moulded into cylindrical casts of semi-solid consistency, varying from a rather firm or hard formation to that of semi-moulded or a mushy mass.

(d) *Quantity.* - Variable in health, yet sufficiently stable within average limits to readily be distinguishable from the abnormal or exaggerated state. The average in a healthy man ranges from 120 to 200 grms.

These normal characteristics of the feces are notably changed in the following disease forms:

(a) *Typhoid Fever.* - Color lighter, yellowish or dark brown, sometimes bloody and dark or black, bright red clotted or pure blood. Consistency, moulded hard, or in balls; semisolid or quite thin but rarely ever wholly liquid. Odor offensive, often fetid.

The direct causative conditions of these changes are: 1. Local inflammatory tissue-states of the patches of Peyer; 2. General febrile-state suppressing the digestive and adventitious secretions; 3. Gangrene and necrosis of intestinal mucosa.

(b) *Cholera, Asiatic and Infantum.* - White - rice-water appearance - liquid, faint alkaline, or fetid odor, large evacuations.

Caused by paralysis of vasomotors of intestinal secretory apparatus from septic infection or auto-infection of intestinal mucosa.

(c) *Dysentery.* - Grayish white, yellowish red and bloody; carrion or fetid odor; semi-liquid or mucous consistency; small and variable evacuations.

Caused by: 1. Obstruction of the mucous glands of colon and suppression of their adventitious protection of the solitary glands and follicles; 2. Inflammation of the mucosa caused by denudation and infection from septic enteric matters; 3. Ulceration and gangrene of the mucous structures of colon and rectum.

(d) *Celiorrhoea or Diarrhea.* - Large liquid evacuations, usually putrid and fermentative odor; light yellow or grayish color.

Caused by temporary paralysis of vaso-constrictors, extravasation of blood-plasma into intestinal tract, and septic fermentation of intestinal contents.

REGIONAL EXAMINATIONS.

The diagnostician must be well acquainted with regional anatomy and physiology. The great cavities of the body - thorax, abdomen, and pelvis - together with their subdivisions and the organs and parts contained in each, with the physiological relations of all, must be familiar subjects to him. Knowing the normal position

of each organ of the various cavities and their anatomical relations with others, one can quickly detect abnormal states and functioning of organs or regions and the nature of the same. The location, actions, and anatomical relations of the muscular system; the triangles and other subjects of regional anatomy, including anatomical landmarks; the vascular and nervous systems; the organs and apparatuses of special sense; general and special anatomical and physiologic relations of these organs, systems and apparatuses, constitute the essential basis of pathologic and diagnostic skill; and, as we have already striven to show, the skill of the practitioner is accurately measured by his expertness as a diagnostician. These essential bases of diagnosis of course can only be referred to here, as there are so many excellent and exhaustive text-books upon these special subjects. However, it is confidently believed that sufficient has herein been said to start the student and practitioner on the sure road to expert rational diagnosis.

VIII.

PROGNOSIS.

The first question a physician must answer after examining a case is, "What is the name and nature of my ailment?" The next that quickly follow are: "Will I get well, or must I die?" and "How long will it be?" The latter are always the most important to patient and friends; they are not nearly so much concerned, as a rule, about the specific name or nature of the ailment as to the final outcome. Happy, because most fortunate, is the physician who can always answer these questions to the satisfaction of his patrons and himself. There is no other qualification that so elevates the physician in the eyes of the laity as ability to accurately foretell the outcome of any serious sickness or injury of his patients; the peculiar reverence such prognostic ability begets in the public mind is one of the psychological mysteries. The author calls to mind an old physician, a competitor of his early practice, who was rarely found sober, yet it

was a most common belief expressed in a general saying of his bailiwick, that “whenever Dr. _____ says a man is going to die, he will die whether his time has come or not.” Guess-work is all right when one guesses right; some men are born guessers; this man happened to be one of that class, and built a great reputation almost wholly on his ability to thus prognosticate, in a number of cases almost to a minute, the demise of patients; and even those of other physicians, of whom he knew nothing except as told him by friends. It is not uncommon to hear a person remark, “I surely believe if doctor so-and-so would tell me I was going to die, I would certainly die.”

While, as above stated, one may be naturally a good guesser, the eminent prognosticator is the physician who bases his predictions on a ripe scientific knowledge of the physiologic and pathologic facts in each case, giving an opinion with matured and candid judgment.

Prognosis not only relates to the matter of recovery or death of a sick person, but to a forecast of the duration, general course and special variations of that course, and the final results. If the prognosis is doubtful, or *prognosis anceps*, then the physician should explain to patient and friends the nature of conditions and probabilities upon which his doubts are based. A dubious shake of the head and mysterious demeanor may aid the charlatan to escape anxious and pointed enquiries and conceal his ignorance of the patient’s condition, but the honest competent physician will have little trouble in making his opinion explicit and intelligible to patient and friends. If his prognosis is unfavorable, or *prognosis infausta*, then the physician should in a logical yet plain and untechnical manner give the pathological facts and conditions upon which his conclusions are based. Likewise if the prognosis is favorable, or *prognosis fausta*, the physician gives not only the hopeful news but explains fully the grounds for such favorable predictions.

In all these prognostications and the explanations of one’s opinions, one gives his patients the plain, reasonable view of things,

illustrating in a modest way definite knowledge of one's profession and at the same time by candor and honesty teaching his patrons to expect of him no more than scientific possibilities; that he is a medical man, and not a medical Deity; the physician thus saves his patrons much grievous disappointment, gaining for himself an enviable reputation as a correct, upright man. For, while there are many cases that the competent and careful physician may accurately prognose, there are a considerable number of apparently plain cases that it is simply impossible for anyone to predict with any degree of certainty what the outcome will be; if, therefore, one ventures into guess-work in these impossible cases, however good natural guesser, one is quite likely to be a sad disappointment as a prognosticator; he may in a single failure of this kind lose a hard-earned reputation for prognostic accuracy. Therefore, by honesty and candor, explaining why it is impossible to accurately predict the result in uncertain cases, and why it is possible in other and definite conditions to foretell the outcome, one can build up a solid and enduring reputation.

The only scientific and accurate data for correct prognosis is, first, skill in diagnosis; it is impossible to foretell the course and final result of any disease-form without an accurate knowledge of its nature, the tissue-states, functional aberrations, and secondary conditions. Therefore, it requires a skilled diagnostician for an accurate prognosticator. In making a scientific and accurate prognosis it is necessary to carefully consider and logically group according to their relative values the following facts concerning any given case:

(a) *The diagnosis.* - It is necessary in the large majority of cases that a correct diagnosis be made. If there is any doubt in his mind as to the correctness of his diagnosis, the physician should be reserved in his prognosis. Of course, in very apparently fatal injuries, or in the moribund state one can predict a fatal result with no other knowledge than the objective appearances; so also in very slight injuries and ailments a favorable prognosis may safely be given.

(b) Clinical history and present condition of the patient. - Whether the disease is acute or chronic it is essential to know the different stages and disease-states through which the case has passed, the intensity of the attack and complications; in short, its course and progress up to the moment of prognosis.

The present condition of patient relates to his age, environments, vitality, vital resistance, reserve vitality, and life tenacity; the causative condition of tissue-units; the existence of organic disease; traumatism, heredity.

(c) Temperament and sex. - As has been shown, pages 136-7 and 141 to 145, the temperament plays an important part in diagnosis, yet, its value is nonetheless abridged in prognosis; and the physician who fails to study temperaments loses much valuable aid to prognosis.

Sex must always be considered in any attempt at a forecast of the outcome of a disease-form. Females as a rule have less vital resistance than males, but more tenacity of life and endurance of suffering.

The matter of *vitality, vital resistance, reserve vitality, and life-tenacity* should be well understood by the physician who aspires to correct prognosis. These terms are, we believe, not well defined by medical authorities generally, which naturally gives rise to much vagueness in their specific meaning as used in medicine. The Physiomedical Philosophy naturally makes a decided distinction between these terms as follows:

1. VITALITY. - *Relates to the force and vigor of vital action as manifest by the general functional activities.*

2. VITAL RESISTANCE. - *The resistive and eliminative capacity of Vital Force as manifest in the individual under exposure to disease-causations and in disease-conditions.*

3. RESERVE VITAL ENERGY. - *The reserve energy of Vital Force remaining in the bioplasm of function-units during the requisite functional activities in health and disease.*

4. LIFE-TENACITY. - *The persistency with which an individual clings to life under adverse environments and severe disease-conditions.*

The recognition of these four attributes of individual constitution under sickness, if closely studied and properly differentiated, will be found most valuable in making up a forecast of the outcome of a disease-complex in any given case; in fact, they constitute the key to scientific prognosis. The three - vitality, vital resistance, and reserve vitality - are almost purely physical attributes, but life tenacity is more of a psychologic attribute; of course, all are in a general sense psycho-physical.

1. The individual in which *vitality* dominates may not have high vital resistance under disease-conditions, and also very little life-tenacity. Such a person will, to the casual observer, be the very picture of health and vigor; fine physique, sprightly, lively and jolly disposition, energetic and persistent; under favorable healthy environments he is a hustler and accomplishes a great deal of work. Such men make our statesmen, orators, eminent professional men and great writers; but when serious sickness overtakes them, they quickly succumb. Their career is usually brilliant but short. They are very susceptible to disease-causation. Such men can rarely make great generals, or become eminent in a calling beset with hardships and exposures, because their vital resistance being low, and vitality high, they cannot resist vicissitudes and inimical influences, so that when attacked, especially with febrile disease-forms, they are restless, fretful, apprehensive, soon exhausting their vital reserves, and being deficient in life-tenacity they soon "let go of the willows," as the saying is.

2. Again, one may have high *vital resistance*, good vitality, but very little life-tenacity. Such men become eminent in callings where

there are great hardships, exposures and danger. Of such stuff pioneers and great warriors are made; General Lawton was a pure type of this character. Their low life-tenacity, lack of love of life, renders them indifferent to danger, their high vital resistance renders them quite immune from disease-causations, so that endurance, energy and courage are the dominant attributes of such a character.

3. The *reserve vitality*, or potential energy, has already been discussed at some length (see pp. 25-26 and 95-96). During the vital integrity and ordinary function-work in health, and the extra-functional activities required for body-work or physical and mental labor in the occupations and professions of life, there is necessarily resident in each nuclear bioplast of the tissue-units a greater or less reserve of potential vital energy; in other words, the Vital Force holds in reserve for last emergencies a greater or less portion of its potential energy; this is the reserve vitality or ultimate potential vital energy. In disease the kinetic vital energy requisite for bodywork is withdrawn to the vasomotor apparatus for the vital resistive, eliminative and reconstructive warfare against disease-invasions, and, of course, the individual is incapacitated for physical and mental work.

Unfortunately, there seems to be no definite means of ascertaining the amount of reserve vitality possessed by the individual organism. The vitality, by which is meant the vigor of outward functional manifestations, mental as well as physical, seems to furnish no accurate data as to reserve energy; for it will be readily apparent to the observant that persons with high vitality ("animal spirits" of the old authors) are easily exhausted, they seem to be continually drawing on their reserves, they manifest little endurance under heavy work and stand severe sickness badly. Vital resistance also affords little evidence as to the vital reserves of the individual; for one may be able to resist disease-causations to a great degree, yet when disease finally establishes a foot-hold their vital reserves may be found very low, as will be evidenced by the rapidity with which the system sinks

under severe disease-conditions. So also it may be often observed that persons with much life-tenacity and deficient reserve vitality, although they make a more stubborn fight, go down despite their tenacity.

Here then is the stumbling block of prognosis; if it were possible to accurately measure the reserve vitality of each individual, not only would prognosis become an established certainty, but therapeutics and practice of medicine would become revolutionized. Strange indeed it is, when the immense importance of this subject to both scientific diagnosis and prognosis is considered, that this subject, affording so much valuable aid to scientific medicine, has received so little attention from medical authors. However, it is altogether probable that in the near future much will be developed in this direction. Indeed, already considerable valuable data have been ascertained that will serve to guide scientific experimental observations along these important lines. Of course these attributes being psycho-physical in a great measure, and the reserve vitality depending on the capacity or potentiality of living matter in tissue-units, it is scarcely probable that in a mathematical way, especially by mechanical apparatus, this reserve potentiality of dynamic energy can ever be estimated; therefore, as in phrenology, physiognomy, etc., which no authentic writer on psychology, neurology, etc., offers to dispute, exterior structure and conformations must be studied and differentiated for data as to reserve vitality of individuals; and in this much satisfactory progress has already been made. Yet a most promising and practically unexplored field lies invitingly open, especially on the lines of Physiomedicalism, for original research.

The author has for more than thirty years made use of the following landmarks of reserve vitality with most satisfactory results, and especially recommends the *plane of Powell*.

This consists of the occipito-frontal plane or a line drawn from the external occipital protuberance (the inion) to the external angular

process of the frontal bone, and a tangential line to the external meatus auditorius; the length of this tangent or perpendicular line indicates the reserve vitality. Powell calls it "Vital Vigor." The occipito-frontal plane measures the depth and also practically the breadth of the occipital fossa, and consequently the relative size of the cerebellum and cerebrum. It is well known that persons whose cerebrum is disproportionately larger than the cerebellum are as a rule short lived; for the back brain beyond doubt holds the vito-motor forces, while the cerebrum contains the psycho-motor centres; hence, the logic of Powell's theory. When the distance from the occipito-frontal line to the external opening of the ear is reduced to $\frac{1}{3}$ or $\frac{1}{4}$ inch the individual rarely lives to middle life. We have never found a person 80 years old or over in which this line was less than one inch; the large majority, 76 per cent out of 267 of which the author has recorded measurements, showed $1\frac{1}{3}$ inches.

The following physiognomic or facial conformations we have in a very great number of observations found to be prominent in individuals of good reserve vitality and life-tenacity: Chin long and well rounded, not sharp; mouth wide, with tendency to turn up at the corners especially when laughing; face broader through upper maxillary and the molar bones than at the forehead; ears large and standing well out from the head. Of course, these signs of physiognomy are rather coincident than essential to the histologic conditions of reserve vitality; yet their close, and we may say, invariable association with the general psycho-physical constitution of individuals, renders them valuable aids to the study of scientific prognosis.

4. We have said that *life-tenacity* is a psychic attribute, because such attributes depend more on the mental or psychic constitution than the physical state. Such persons have great persistency, pertinacity, and fixedness of purpose; they may or may not have great love of life, they do not cling to life when sick from pure love of living, but from sheer pertinacity and determination to live; in other

words, they are too stubborn to die. Such individuals may have very little vitality, in fact this is the rule; consequently, they are not usually strong, vigorous or active persons; and if vital resistance is not good they will usually be sickly and nearly always complaining, yet will pull through, a very severe sickness, under which the highly vital disposition would quickly succumb. The practitioner of any considerable experience can readily call to mind the chronic complainer and medicine-taker, who is always going to die but invariably gets better in time to prevent funeral expenses.

Again, every practitioner observes that in febrile disease-forms, typhoid for instance, in one individual the temperature runs exceedingly high from beginning to end, while in another in which the conditions are apparently much worse the temperature is comparatively low. The high temperature always accompanies high vital resistance, a sthenic form of fever. The individual will not contract fever easily, but when he is attacked it is very severe, because his high vital resistance wages a vigorous warfare against inimical invasion. If, with high vital resistance there is large life-tenacity, which is often the case, the individual will usually recover, though acute attacks of sickness are always severe.

The "balanced" or ideal condition is that in which all three attributes are large and evenly combined. Such persons are vigorous, energetic, with immense tenacity of purpose; they are practically immune from disease so that their endurance and uniformly good health under adverse environments render them almost as invulnerable as Achilles. Barring accidents such persons invariably live to a ripe old age. In severe sickness of whatever nature, other things being equal, one can safely prognosticate recovery in this constitution; at least, this has been the author's experience in a very large number of observations.

Unfortunately for the laity, and more fortunate for the profession of medicine, such perfect balance of these valuable constitutional attributes are largely exceptional, else high *resistance and*

tenacity would probably put one-half the medical profession out of commission. The rule is that scarcely more than one of these attributes are fully dominant in one individual. For instance, where *vitality* is very large, *reserve vitality* is quite sure to be small, because the system in high vital manifestations requiring vigorous functional activities must necessarily make a larger draw on the vital reserves than one with low vitality; however, such an organization is quite often compensated by high life-tenacity, in which case the individual is more fortunate than if possessed of high *reserve vitality* and low tenacity. Again, it will be found as a rule that an individual with high vital resistance has low vitality, *i.e.*, the functions are slow, steady, but of good strong action; for instance, the pulse will be slow, steady, with a large forceful volume. Such a person as a rule has good *reserve vitality* but low *tenacity*. The important fact to bear in mind, which will be very frequently demonstrated to the observant practitioner by his sick patients is, that those who are largely immune from disease die easily when once stricken with severe sickness.

The student of scientific prognosis will of course bear in mind that, as was emphasized under the discussion of diagnosis, those prognostic signs and conditions stand only as units, and their real value is only available when logically correlated with all others present in a given case. Whenever there is present in a patient disease-conditions which are beyond the potentiality or possibility of the resistive, eliminative and reconstructive powers of Vital Force, aided by the very best therapeutic measures possible under the circumstances, to remove, then they will die notwithstanding any amount of life-tenacity, reserve vitality, etc., in their physical make-up. Therefore, the important thing after all is to determine accurately the *disease-conditions, the aid that may be relied on from the patient's psycho-physical constitution, and what may be reasonably expected from the best therapeutic measures possible, in any given case.*

RULES FOR PROGNOSIS.

1. Never venture to predict the outcome of a case without a careful and thorough examination of the patient.

As already stated, the only true basis of prognosis is scientific and accurate diagnosis. Of course, the physician is often called to cases of sickness or injury that the conditions are so self-evident as to require little examination for a prognosis; but, if he is naturally loose in diagnosis, or even if he is a careful diagnostician and relaxes his vigilance in prognosis because of the seeming self-evident conditions, he is surely doomed to make a grave mistake sooner or later, for nature always has surprises in store for the indifferent physician.

2. Be reserved and conservative as to positive predictions, unless there is most unmistakable data for definite prognosis.

There is so much of the unknowable in the inscrutable potentialities of Vital Force and living matter that the physician who justly appreciates the grand concept of physiologic vitalism, is awake to the possibility of his being easily mistaken in apparently most positive surface signs. Therefore, the judicious prognosticator will provide a liberal margin for possible chances of mistake in his predictions. It is far more pleasant to give a reserved and even vague opinion than to find oneself utterly mistaken in a very positive prognosis.

3. Be deliberate, systematic and logical in making up an opinion as to the outcome of a case, carefully weighing every prognostic factor with broad comprehension of their relative values.

There is nothing the physician says about his patient that is so carefully noted, treasured up, and anxiously looked forward to by patient and friends, as his prognostications; and also there is no subject that he is so often misunderstood and misconstrued as in his prognosis.

4. Use plain, common sense language and demeanor in rendering a prognosis, always giving logical reasons for your conclusions.

There are some people who will not be satisfied with anything less than a medical Deity in their physician, and are therefore subject to very frequent and bitter grievances against medical men; but an intelligent clientele will readily understand the difference between prognosis and prophesy. Therefore, beware of attempting to make an intelligent public believe that you are the seventh son of a seer.

5. Be candid, sincere and brief in your predictions, yet tender, hopeful, and considerate of the feelings of patient and friends.

The physician whose patients have implicit, we may say worshipful faith in him, his word is law and gospel, and he has no greater opportunity for retaining and strengthening this faith or weakening it, than in his prognosis. In the supreme hour, when he becomes the messenger of the angels that sing, "On earth peace, good will unto men," bringing "good tidings of great joy," or when he stands as the arbiter of the death angel, soothing and softening the poignant arrows of the last agonies and the grief of sore bereavement, it is then that the trusted physician displays the heroism of his calling, manifesting his greater powers for weal or woe. Let him beware then how he wield these, the larger privileges and honors of his profession.



PART SIXTH.

PRINCIPLES OF THERAPEUTICS.

THE RELATION OF EXTRINSIC MATTER TO THE LIVING ORGANISM; FOOD, MEDICINE, POISON; THERAPEUTICS AND THERAPEUTIC AGENTS; THE LAWS OF REMEDIAL INFLUENCE AND CLASSIFICATION OF MEDICINES; IMMUNITY AND ANTITOXINES; SURGICAL THERAPY, GENERAL AND LOCAL.

I.

THE RELATION OF EXTRINSIC MATTER TO THE LIVING ORGANISM.

Being essentially a vital domain ruled by Vital Force through the living matter of tissue-units, which living matter exists nowhere else in the universe except in living beings, the living organism is, therefore, in the vital sense absolutely independent of all other forms or aggregations of matter. The primordial germinal state of the organism is structureless bioplasm or living matter, and every subsequent step of developmental organization is simply a systematic and constructive conversion by condensation of bioplasm into tissue-units, tissues, structures, organs, systems, apparatuses, and finally, the organized human being. (See pp. 16, 17, 18.) Consequently every part and particle of the organism, except the bioplasm of its units and vital fluids, have at one time been structureless, transparent living matter. The fact that every tissue-unit, tissue and structure of the organism consists of bioplasm and its systematized products

under direct vital inhibition, places every other substance, no matter what its nature or juxtaposition, extrinsic to and in foreign relation with the living organism.

The wisdom of Vital organic genesis provides every organized being with the means of reaching and subjugating extrinsic substances to the processes of digestion, assimilation, absorption, and conversion into pabulum for the bioplasm of its tissue-units, which finally converts this pabulum into its bioplastic substance, differing essentially from every other form of matter. By no other means can extrinsic matter become intrinsic to the vital domain than by being thus naturally, or by artificial means, prepared and by living matter converted into its own individuality.

But, while extrinsic matter is thus at the mercy of the disintegrative forces of digestion, assimilation, etc., and must furnish the subsistence of organic life, the organism is in turn subject to the inimical influences of myriad forms and forces of extrinsic matter. In other words, while it subdues very many forms and forces of matter, subjugating and reconstructing them into its own intrinsic continuity, the living organism must wage a ceaseless warfare of resistance to and elimination of vast armies of inimical substances, forces and influences that not only menace and attack it continually, but gain access boldly or insidiously into the very intrinsic provinces of the vital domain, and must be eliminated as inimical and disturbing elements of physiologic balance and functional harmony, ere they become disease-causations. Yet, notwithstanding this ceaseless vigilance and contention of Vital Force, these inimical substances not infrequently establish a permanent foothold in the Vital realms, as manifested by a disease-complex, when a hand-to-hand battle, as it were, ensues, and often the vital forces are overthrown, when disintegration and death come off victorious.

These facts as to the general relation of extrinsic matter with the living organism, naturally place all extrinsic substances and influences into two grand divisions, viz.: *helpful* and *harmful*; in

other words, all substances, forces and influences must necessarily either directly or indirectly aid Vital Force in maintaining full vital integrity of the organism, or they must be directly or indirectly more or less inimical to its ability to maintain the health-state. There can be no middle ground in the attitude of extrinsic substances towards the living, acting normal organism; they are either for or against it, in a greater or less degree. The casual observer, or one who takes a purely practical standpoint, will dispute this assertion and proceed to prove that many forms of matter exert no influence upon the organism, and, consequently, are wholly inert.

From a purely therapeutic standpoint, of course we must concede that a substance may be inert, so far as remedial results are concerned; but, in the question of the inherent nature of extrinsic substances and the inherent nature of living matter and vital conditions of tissue-units in their normal functional expressions, there can be no such thing as a substance that in no degree directly or indirectly and in no manner impresses or influences either the tissue-state or functional expressions of the living organism; in other words, an absolutely inert substance when introduced into the system. The organism either appropriates to its own aid or convenience, or rejects and dejects from out the vital domain as useless or inimical, every substance either directly or indirectly, intentionally or otherwise introduced into its enteric provinces. It matters not how indigestible, inassimilable or inconvertible a substance may be, the resulting functional resistance and expulsion of it by the organism is an expression of a vital response, the same as though it had been assimilated and taken up by the living matter of tissue-units, occasioning causative, resistive and eliminative vital phenomena; for, after all, as we shall see further on, it is solely the behavior towards matter of the bioplasm of tissue-units, as expressed directly in causative phenomena or indirectly in functional consequences, that determines the relation of all substances to the living organism.

Notwithstanding there can be no such thing as a substance whose relation with the organism is absolutely inert, it's wonderful

endowment of adjustment to and final toleration of most adverse influences and substances is the marvel of physiology, and demonstrates possibly more than any other one thing on earth the fact of a Supreme Mercy in the order and beneficence of creation. Were it not for this merciful law of adaptability and tolerance by the Vital Force of inimical and repulsive substances, not only would the tobacco user and spirituous imbiber, the narcotic and stimulant lover, be deprived of his quids, his smokes, his hilarious pleasures and delusions, but it would be impossible for men to venture on great enterprises and undertakings that expose the body to vicissitudes and adverse environments.

This law of adaptation and accommodation to adverse conditions and substances is such that, notwithstanding the Vital Force of living matter in the tissue-units exerts to its utmost its inherent resistive and eliminative instincts immediately upon its invasion by inimical substances, and continues the resistive warfare as long as the invasion persists, yet, should these efforts prove partially ineffective and the invasion continue persistently, not in sufficient force to wholly overpower the vital reserves, then the living matter proceeds to adjust and accommodate its resistive instincts in toleration of these new and abnormal influences which it is forced to withstand. Like a subdued but unconquered nation, it simply accepts the inevitable and wisely adjusts its home conditions as best it can to these new foreign relations. And thus it is that the beginner is unbalanced by a single drink or upset by a few whiffs, when the toper can knock off his half-dozen daily glasses, or the inveterate smoker reduce to ashes a good sized tobacco plantation, and feel "none the worse for the wear," that is, according to his own perverted judgment. And so it is, also, that persons of high vital resistance and reserve vitality may do an immense amount of work, maintaining practically a fair state of health for many years under very adverse and unhealthy environments. Indeed, as we shall discuss further on, this law of adaptation is the real factor in so-called "immunization."

Individual constitutions vary greatly in the readiness with which they become adapted to new or adverse influences and environments. Those with large vital resistance have the most accommodation; those with high vitality have least adaptability, because, as will be seen further on, a high or over-active rate of functioning which is characteristic of great vitality, is very unfavorable to adjustment and accommodation to adverse or abnormal influences or conditions. It is the moderate or slow, persistent and large volume of functional movements that more readily adjusts itself to these foreign relations. Such a constitution, paradoxical as the name may seem, we find in those of large vital resistance, for it must be borne in mind that vital resistance, as here used, relates strictly to the capacity of the living matter of tissue-units to resist and evade those causative phenomena resulting from the presence of patho-causatives which would sooner or later lead on to disease-complexes; the eliminative capacity may be called into service wholly in this resistive effort and the patho-causative be eliminated so rapidly as to evade sufficient constitutional disturbance to produce functional aberrations. Again, the accommodative capacity of the bioplasm of units may be drawn on and the patho-causative so insidiously minimized in its introduction that the signs of disease are allowed to advance no further than these causative phenomena, and the presence of these foreign matters and influences is simply tolerated because the Vital Force can do no better under the untoward circumstances.

It is, indeed, a very superficial and unscientific view of a most important subject to conclude that because a substance does not cause functional aberrations, but simply obscure causative phenomena, it is therefore inert; or that because a substance is ejected from the body little changed or not at all apparently, it must therefore be inert. As we have seen (pp. 81 to 84), the causative phenomena may or may not result in functional manifestations, so that the observer who can penetrate no deeper than the functional aberrations and secondary results, is certainly incompetent to judge of the actual relations which a subject may bear to the living organism.

Taking the two grand divisions of substances as they relate to the organism, then, that of helpful and inimical, we must establish, arbitrarily to some extent it is true, a definite standard of classification by which we may justly place a substance, force or influence upon one side or the other. Such a standard, of course, is possible only under the concept of the Physiomedical Theorem: that there is a Vital Force with inherent and instinctive intent and purpose of protection and maintenance of the organic vital integrity; that this Vital Force, through living matter of tissue-units, endowed with the instinct of self-preservation, possesses the power of selection of those substances that either directly or indirectly aid and sustain all favorable conditions of vital integrity, and rejection of all substances and influences directly or indirectly inimical to vital potency of bioplasm; or, in the event of impossible rejection of these unfavorable substances or influences, adjusting the vital conditions in a limited degree and under vital control to toleration of their sojourn in the vital realms.

It is evident, then, that the very fact of the organism being compelled to adjust its vital conditions to toleration of a substance or influence, is proof that it is not helpful, even though directly harmful results may not occur. Therefore, the standard by which all substances may be arranged in their relations to the living organism is *the behavior of living matter of tissue-units towards any form of matter introduced directly or indirectly into the organism, as may be expressed by causative phenomena, functional consequences, or secondary results.*

II.

FOOD. MEDICINE. POISON.

FOOD.

Every act of functioning in the living organism, from the least to the greatest, from the formation of a drop of perspiration to the mighty force of the heart's action propelling the total blood-volume the round of the circulation in forty-four seconds; from the transmission of a fly's footstep on the surface to the mental conception of gigantic schemes - all are done at the expense of the living organized matter. Every functional act, physical and mental, means waste of the organism. This waste or physiologic disintegration must be compensated, at least in equal ratio to its occurrence; also, this physiologic integration must take place on the same general plan of disintegration. These two great processes are generalized under the terms assimilation and disassimilation.

This physiologic waste and repair is by no means done in a mechanical way such as attrition and aggregation, but like every other process in the living organism, is purely vital, depending primarily, as does every other vital process, upon the service of living matter of tissue-units, wrought out by the marvellously simple process of growth and condensation of this mighty minimal formative and functional matter. In other words, both waste and repair occur primarily in and through the bioplasm of function-units.

Alimentary substances must first, by the process of digestion, be reduced to an assimilable state; next, by *absorptive assimilation*, *i.e.*, its reduction through the villi and lacteals to chyle; finally, by *circulatory assimilation* (the postal and lymphatic movements), they are brought to a state of pabulum for living matter of tissue-units. Here only can the process of reparation take place; here and nowhere else in the organism is the waste of functional activities compensated; because here and nowhere else in the organism does the actual physiologic disintegration or waste occur; for, while the formed material

of tissue-units and tissues wear out by molecules and as rapidly are replaced, molecule by molecule, yet this molecular restoration can come only from the systematic condensation of living matter.

Bioplasm or living matter is the only form of matter that is not atomic in constitution; it is absolutely homogeneous and purely vital in its constitution, consequently, condensation of living matter is no more nor less than a return to atomic and molecular form of matter. Hence, as pabulum comes through the capillary current to the tissue-units, the bioplasm takes it up and converts it into its own homogeneity, appropriating thereby the potential energy of the alimentary substances; then, as the atoms and molecules of the formed material of tissue-elements, which make up tissues and structures, are thrown off or exfoliated by the force of functional action, they are replaced, atom by atom and molecule by molecule, through the simple yet mighty organic process of condensation and return of living matter to the atomic state of matter, thereby furnishing new atoms to replace the worn out ones. Thus the process of waste and repair of the organism, with the unceasing intelligent instinct of Vital Force through living matter, is carried on.

With this view of assimilation and disassimilation, waste and repair, it is not difficult to determine what nature of material constitutes a food substance, or the relation of matter to the organism so far as food is concerned; the only real difficulty being in the classification of individual food-substances according to their special office in the process of repair. For, it is found that not only is it necessary to have materials that are susceptible of conversion by living matter into its own intrinsic constituency, but the bioplasm of tissue-units must be directly or indirectly aided in the assimilation of such materials by other substances that do not in themselves to any material extent furnish this reconstruction constituency. For instance, the pabulum is fluid, that is, the direct nutritive molecules or those to be converted into bioplasm are in suspension, the aqueous media being a necessary menstruum or vehicle, water, therefore, is one of

the most important direct aids to bioplastic nutrition and repair; in fact, the reparative process would be impossible without some form of aqueous menstrua; indeed, every step from digestion to bioplastic reparation depends substantially upon fluid menstrua, of some form or character.

Again, there are substances which when properly assimilated into pabulum-constituency, although ingested or taken up by bioplasm of the units, do not furnish actual constituency for its material substance, yet exert an influence on the bioplasm, increasing its ability for active and vigorous metabolism; in other words, they indirectly aid the reparative processes. We therefore may properly divide food-substances into: 1, *Positive foods*; 2, *Negative foods*.

1. POSITIVE FOODS. - *A positive food substance is one whose chief constituency furnishes reparative or reconstructive material for bioplasm.* No substance can furnish positive nutrition to the living matter of the organic units except it has at least passed through primary synthetic metabolism; that is, it must have passed through the constructive metabolism of vegetable life. Much of our food-materials have passed through secondary constructive metabolism; that is, they have passed through vegetable life, then becoming food-substances for animal synthetic metabolism, finally come to us as animal food-substances, furnishing positive nutrition again for animal constructive metabolism; so that we have vegetable and animal food-substances.

The vegetable, drawing wholly on the inorganic domain for both positive and negative foods, must necessarily contain a considerable constituency of inorganic materials which cannot be converted into bioplastic substance; much of these inorganic principles, after passing through secondary or animal metabolism, are converted into organic compounds, but a considerable portion are not materially changed, continuing in the animal food-substances as minute particles or molecules of inorganic and unconvertible matter; yet they are taken up by the living matter of the tissue-elements and serve an

important part in tissue-construction, for when the naked bioplasm condenses, forming tissue-units, this inorganic matter is systematically deposited unchanged in the tissues, forming firm and useful support for certain parts; the whole bony system is thus synthetically constructed, the inorganic matter affording its solidity.

Inorganic matter, therefore, while furnishing valuable constructive pabulum for bioplasm, cannot be converted by bioplasm into its own substance, but nevertheless is by and through bioplasm converted into tissue-elements, tissues and structures, thus becoming a secondary positive food-substance. Hence, positive food-substances are subdivided as follows:

(a) Primary Positive Food-Substances. - Those food-substances that furnish largely matter that can be converted by the living matter into its own inherent and permanent substance; in other words, that which furnishes the proximate principles of bioplasm. Meats, albumenoids, etc., are positive foods.

(b) Secondary Positive Foods. - Those food-substances composed largely of matter that, when taken up by living matter, cannot be converted into its own substance, but are by condensation of living matter synthetically transferred through tissue-units to tissues and structures. Inorganic matters, earthy phosphates, fats, oils.

Of course, all true alimentary food-substances contain both primary and secondary positive matters, but one or the other will, to a greater, or less degree, predominate and place the substance in one or the other class. For instance, meats being more highly organized contain the larger proportion of material for the primary reparation of bioplasm. Vegetables are next richest in proximate principles of bioplasm. While, on the other hand, cereals and plants containing largely inorganic or earthy matter and cellulose, furnish the secondary positive foods. Fats and oils are secondary positive substances, because fat cannot be converted into bioplasm; fat tissue is produced

by the living matter becoming engorged with fat-globules until it becomes a fat-cell; the living matter being crowded out to a thin layer on the surface, condenses, forming a capsule or cell-wall; the cells or tissue-elements are synthetically arranged into tissue and structures forming fat or adipose structure, which is really a negative tissue having no action in itself, serving simply a mechanical purpose.

2. NEGATIVE FOODS. - *Those alimentary substances whose larger constituency do not furnish direct pabulum for living- matter of tissue-units, yet, either directly or indirectly, exert a helpful influence upon the motility or potentiality of bioplasm.* Every substance digestible or capable of absorption into the blood-current or other vital enteric fluids of the organism, when introduced into the economy, no matter through what avenue it gains access, must come in contact with the tissue elements. Here the living matter has the power of selection or rejection of these assimilated materials so far as its actual desires and needs are concerned. It may and does to the best of its ability resist the invasion of objectionable substances; nevertheless, when such substances in minute suspension in the fluid circulatory and reparative media are brought in contact with tissue-units, they may simply by diffusion of inherent subtle chemic or mechanical forces, through the bioplastic substance, exert as direct and decided influence upon the living matter as if they were taken in and assimilated into the bioplastic matter. If such substances are not directly inimical to the well-being of the living matter, their influence is accepted without any resistance and they become thereby purely negative foods. Hence, it is not necessary for a substance to bodily gain access to the bioplasm in order to influence it.

Again, substances may by constructive metabolism be taken into living matter, as are primary and secondary positive foods, yet, unlike them they simply pervade the bioplastic substance and are finally ejected by catabolic process along with the workout bioplastic molecules, yet exert a decided influence upon its motility or potentiality. If such substances in any way aid the functioning potency of bioplasm,

they are direct negative foods. Therefore, we divide negative foods into:

(a) *Direct Negative Foods.* - Those food-substances which furnish no constructive material either for bioplasm or tissues, yet are taken up by the living matter exerting an intrinsic helpful influence upon the functioning potency of living matter in tissue-units, being eliminated, little changed in physical constitution by bioplastic catabolism. Examples: Inorganic salts, such as chloride of sodium, alkalies, acids, pectin or vegetable jelly, etc.

(b) *Indirect Negative Foods.* - Substances which, when brought by assimilative or absorptive processes in proximity to or contact with tissue-units, are not taken up by bioplastic metabolism and have nothing to do with reparation or constructive processes, yet exert an intrinsic helpful influence upon living matter of tissue-units, increasing their functioning potency. Water is a pure type of indirect negative food. Gaseous forms, as oxygen, nitrogen, etc.

From this the standpoint of unit-concept and the idea that functional potentiality of the living organism is absolutely inherent to living matter and Vital Force, we cannot accept the prevalent notion that, "As the solar force employed in the construction of organic compounds through the agency of the vegetable organism becomes locked up in the compound, formed, such compound represents matter combined with a definite amount of latent force. In the employment, therefore, of organic matter as aliment by animals, we have to look upon it not only as yielding the material required for the construction and maintenance of the body, but as containing and supplying the force which is evolved under various forms by the operations of animal life." - Quain's Dictionary of Medicine, Aliment.

Such a notion of the source of the motive power or initial causative force of the functional activities manifest in the organism, are confusing and inconsistent instead of helpful in the solution of these

eminently important physiologic problems. On the logical mind it forces the unanswerable questions: If solar force stored up in alimentary substances affords the only functional potency of living matter, then what directs this kinetic "solar force" into systematic intelligent constructive, defensive and reconstructive operations that are being continually manifested by the intelligent and purposeful functioning of the various organs, systems and apparatuses? How and by what is this solar force equalized, inhibited and readjusted into the perfect normal balances between assimilation and disassimilation in accord with the various and constantly varying demands of the organism?

We contend that the notion advanced by our Theorem offers the only logical and satisfactory solution of these great problems. The weight of all scientific evidence as evolved from most trustworthy experimentation supports the Physiomedical idea of a oneness of all vital manifestations, inherent to living matter or bioplasm of tissue-units, namely: Vital Force. That this Force is inseparable and essential to the existence of bioplasm; that by and through Vital Force bioplasm becomes living matter, possessed with the instincts of want, desire, affinity, repulsion, likes and dislikes; in other words, it is possessed of the intelligence of self-preservation and regeneration.

Possessed of this necessary discrimination in the laws of its self-preservation, the bioplasm of tissue-units selects from its pabulum such materials as are in any way helpful to its well-being and functioning potency, rejecting those that are obstructive or inimical. Certain molecules of matter it can disintegrate and synthetically construct and reconstruct into its own homogeneous unatomic substance, replacing the substances that becoming exhausted have been condensed by affinities into atomic state again; thus replacing its functional or physiologic waste. Such substances or forms of matter are DIRECT POSITIVE FOODS.

Operating by direction of these same intelligent instincts of self-preservation, bioplasm imbibes from its pabulum substances that it is

not desirable to convert into its own substance but are incorporated by condensation into new atomic or molecular forms; these naturally become INDIRECT POSITIVE FOODS.

Again, certain of the pabular matters are imbibed by bioplasm and simply used as aids to its self-helpful state or its functional work, and after serving these purposes are eliminated unchanged atomically, thus becoming DIRECT NEGATIVE FOODS.

Finally, certain other forms of matter are permitted to pervade the bioplastic substance and are made available aids to the bioplasm or its functional ability, but are converted into constructive forms, and therefore are INDIRECT NEGATIVE FOODS.

Thus by rationally classifying food-substances on the fundamental physiologic facts of the potency of their constituency to aid the constructive ability and functioning power of living matter, the Vital Force standing paramount over all stored up solar, chemic, or physical forces resident in alimentary substances, subjugating, arranging, adjusting and inhibiting their inherent forces and qualities to the one single and ultimate purpose, that of maintaining the vital integrity of the organic domain, we have a purely vital classification of foods, founded in the deeper and scientifically practical basis which must yield far more unerring results in practice than the chemic classification, which, leaving wholly out of sight these the essential vital necessities of the very basic conditions of all life-force and functional manifestations, that of living matter of tissue-units, assigns an arbitrary position to food-substances according to the products obtained by their chemic disintegration and the relation of such products to those of physiologic disassimilation.

This *vital classification* of foods does not in the least ignore proximate chemistry (so-called "organic chemistry"). The proximate chemical estimation of alimentary constituencies stands, in its rational and practical position, at the entrance and exit - assimilation and disassimilation - of all alimentary substances to the vital realms; it guards both the front and back door of the vital domain; it renders

most valuable aid to alimentation and dietetics. But, when these substances once enter the vital domain and the process of assimilation and reparation or constructive metabolism are operating upon them, then chemistry is off and the Vital Force has absolute control; then, if chemistry wishes to make enquiries as to the results at any stage of this process, all must be stopped for the time being and the vital synthetic work up to that stage must be analytically undone by chemic processes, and the result is wholly proximate, not duplicate of Vital processes. Chemistry can go around to the back door, taking up these results of vital action upon the alimentary substances, the excretions - garbage, so to speak - and give us again most valuable information as to the mighty changes wrought in these food-substances by Vital Force, the proximate amount of kinetic energy it may obtain from a given amount of aliment, the values of different articles of diet as to their positive and negative positions towards the living matter of tissue-units, in short their relative values as to the vital integrity and functional potency of the function-units.

With this notion of food-substances we can derive far more scientific aid from chemistry, in studying aliment and dietetics, than is possible by basing all vital phenomena on chemism. The chemical classification which divides aliment into, 1, Nitrogenous principles; 2, Non-nitrogenous principles; 3, Inorganic principles, is practically in accord with the vital classification and verifies our contention that chemistry aids our understanding of proximate principles but has no part in the actual metabolic and catabolic processes *per se*.

As inorganic matter is a continuance of both nitrogenous and non-nitrogenous principles, there are in fact but these two divisions chemically of alimentary substances; the nitrogenous corresponds to the positive foods and the non-nitrogenous to the negative foods. The behavior of Vital Force and living matter as expressed in functional work under experiments with the various articles of diet, has demonstrated that a state of health cannot be maintained on a diet wholly of positive food-substances, any more than it can be under a

diet of purely negative food. Chemistry then comes in and shows us that positive foods are those consisting almost wholly of nitrogenous principles, while negative foods contain little or none; and that the human organism demands for its physiologic maintenance a proper combination of the nitrogenized and non-nitrogenized organic principles. Happily these two great chemical food-principles are found in both animal and vegetable food-substances, so that most animals can exist and maintain the health-state on an exclusive diet of either animal or vegetable food-substances. Yet, while this is possible so far as the actual organic demands of the body are concerned, it happens, fortunately so too, that the gustatory nerves of many animals, and especially of man, are so adjusted that after more or less continued indulgence, in either animal or vegetable diet exclusively, they become surfeited; such foods become repulsive and a change is demanded, notwithstanding the individual continues in health. No doubt ancestral education has had much to do with this adjustment.

Thus education and heredity have so changed and perhaps perverted the inherent power of adaptation of living matter and Vital Force, that it is now impossible to build a system of dietetics upon what might theoretically seem to be the normal inherent tendencies and requirements of the original and primitive human organism. And were this even possible, the constant change of environments naturally wrought by uncompromising time and vicissitudes, met as they are by the inherent force of adaptability of the organism to these constantly varying and changing environments, preclude the practicability of an exclusive diet of either animal or vegetable food by man as the ideal existence; while, at the same time, when stern necessity demands he can exist exclusively on either for almost an indefinite period.

The wisdom of these facts suggest a broad practical adaptation of sick-room dietetics to the conditions present in each case, as scientifically studied and carefully carried out in detail, as in the administration

of therapeutic agents. Only by such a course can we expect accurate and helpful results from dietetics.

Of the nitrogenized foods, albumen, fibrin, casein, musculin, etc., are found more largely in animal foods; gluten, legumin, with vegetable albumens and caseins, in vegetable foods. Of the non-nitrogenized principles, sugars, starch and fats are representative - the fats being derived more largely from animal food-substances; yet vegetable oils and gelatinous fats are more assimilable, furnishing a better quality of fat-foods than animal fats.

Perhaps no subject in general medicine has received more painstaking and laborious experimental investigation than aliment and dietetics; had there been as much, or, perhaps half this labor applied on the lines of Physiomedical Philosophy, or the vital idea of waste and repair of the organism, practical medicine would have received far greater advancement. But unfortunately all these investigations have been wholly from the standpoint of chemism. For instance, the non-nitrogenized food-principles are called hydro-carbons because the oxidation of carbon produces heat; it was presumed that the non-nitrogenized principles were the calorific or heat-producing principles of food, when the fact is that no manner or form of combustion could possibly occur anywhere in the living body without producing a temperature that would consume the tissues at any point where such oxidation might occur.

Most of the eminent authorities, if not wholly renouncing the chemic idea of the living organism, especially alimentation and physiologic reparation, speak in very doubtful language of chemism, or leave us to infer that there is a force at least equally dominant with chemical force in the living organism; as proof, we have space for but one quotation from the great work of one of the greatest physiologists, as follows:

“Non-nitrogenized Alimentary Principles. - The important principles belonging to this class are sugar, starch, and fat. From the fact that these are supposed by some to be exclusively concerned in

keeping up the animal temperature by oxidation of carbon, they are frequently spoken of as the carbonaceous or calorific elements of food. They are sometimes called hydro-carbons.

“In many respects there are marked and important differences between the nitrogenized and non-nitrogenized articles of food; and whether or not these differences relate to the nutrition of the organism, is a question which will be considered in its proper place. The production of animal heat, which is supposed by some to be due entirely to the action of non-nitrogenized substances, is closely connected with the function of nutrition, and all that is at present known of this general process must be taken into consideration with calorification. It is certain, however, that all alimentary and proximate principles which contain nitrogen, excluding the inorganic and some crystallizable organic substances, have very different properties from those which contain no nitrogen. While the nitrogenized principles are in a state of continual change, so that it is impossible to fix upon any formula representing their exact ultimate composition, the non-nitrogenized principles are not changed unless by the influence of some other substance known as a ferment, and have a distinct and definite chemical composition. The latter not only differ greatly from the nitrogenized principles, but most of the individual articles of this class present distinct peculiarities in their general properties, reactions and ultimate composition. Treating of them as alimentary principles, we have now only to do with their general properties, and the changes which they may be made to undergo outside the body.” - *Physiology of Man*; Austin Flint, Jr., M.D., Vol. II, pp. 54-5.

As already indicated and as confirmed by the above position taken by this eminent author, which is certainly sustained by all candid observers, chemistry only shows us what these substances can be made to do under purely chemical states and relations “*outside the body*,” without any relation to Vital Force and absolutely under the control of chemic laws and environments; under these chemic relations and actions, for instance, it is observed that certain

food-principles yield a greater or less per cent, of nitrogen, while a certain other class yield none; hence, the two classes of nitrogenous and non-nitrogenous principles are established.

After thus ascertaining the chemic relations of these food-substances outside the organism, then experiments are made by observing closely the behavior of Vital Force and living matter towards these substances by administering them and noting carefully the causative vital phenomena and functional consequences; in other words, placing them now wholly under vital control and ascertaining *what Vital Force does with them inside the body*. These observations yielding different physiologic results with the two different classes of food-principles which chemistry separated, we, therefore, call them proximate physiologic food-principles.

With these scientific, distinct and self-evident relations between metabolism and chemism - physiology and chemistry - it is not a little strange that eminent medical practitioners can be deluded into the belief that the chemist can go into his laboratory and by analyses of these food-substances, synthetically construct, in a few minutes, these proximate principles that it has taken Vital Force weeks, months and even years to produce through constructive metabolism. A candid study of vital statistics and the high death-rate of children, especially in infantile life, leads one to sadly mistrust that chemical foods have much to do with child-funerals, especially so when one has tried these "*pre-digested*" foods," identical constituency of *mother's milk*," etc., and found the little patients die of inanition while being stuffed with these laboratory foods. The fact is that the rapid growth of "chemical laboratories" and "chemical companies," instead of physiologic pharmaceutical laboratories, have become the reproach of practical medicine.

The practical dietarian well knows the delusions of pre-digested foods and concentrated "chemical constructives;" he well knows that in infant feeding, mother's milk stands first and above all, if the mother is reasonably healthy; and that all so-called substitutes from

the laboratory are fatal delusions; that when a substitute is necessary, he must appeal to nature's physiologic laboratory, and cow's milk is the first best substitute; next to this comes some vegetable food-substance, rich in albuminates and caseins, such as sago, rice, barley, oatmeal.

In the successful employment of these vegetable aliments to obtain the albuminoids, caseins, glutens, etc., in short, the nitrogenous principles, everything depends upon their preparation. Sago, rice, and barley, must be so cooked as to completely hydrate the starches, by which the albuminoids and caseins are separated from the other constituents in the form of pectin or vegetable jelly. This can best be accomplished with any of the above mentioned articles, by putting cold water over them in a closely covered porcelain vessel, macerating thus cold for from two to five hours, then cooking closely covered slowly in a water or sand bath for three to five hours, stirring frequently. Carefully dried and finely cut beet leaves, or in case these cannot be obtained, apple-tree leaves, in the proportion of one-fourth or fifth by volume, not only renders these cereals richer in albuminose and pectin but also adds greatly to their palatableness; for children with weak digestion and loose bowels, for adults with gastro-intestinal catarrh and debilitated conditions of the digestive apparatus, we specially recommend this method of preparing the vegetable nitrogenized or positive food-substances; of course, sufficient sugar, with some flavoring if desired, should be added to render them more agreeable to the taste.

A most important fact too frequently overlooked in feeding the sick, is the necessity of a certain portion of indirect negative food-principles or what is generally called inert food-matters. These are necessary as adjuncts to assimilation by keeping apart the emulsified and highly concentrated ingesta, so that the absorbents may not become clogged; in other words, they act like a brush during intestinal action to keep the villi unobstructed. These indigestible matters also aid by attrition under the motions of peristalsis. In the most

delicate conditions of the gastro-intestinal tract; in the most extreme case of debility of the digestive apparatus, and even in great irritability of the mucosa, varying proportions and fineness of these negative matters if carefully prepared and administered with the nutrition, far better results can be obtained than with highly concentrated chemically prepared foods.

As proof of the above position we have but to mention the rapidly growing reputation of prepared gland-tissues, lymphoid bodies and other animal organs, which are being placed on the market under the pharmaceutical names of "Protonuclein," "Trophonine," "Peptenzyme," "Panopepsin," "Bovinine," etc., together with the serum therapy, or use of the vitally organized fluids. There can now be no further doubt that if the tissue-units of certain tissues and structures of the animal economy are so prepared as to preserve their organized state with the bioplasm in a latent condition and administered as food, either by the alimentary tract, subcutaneous, or applied directly to the bared tissues, they are rapidly assimilated by the unit-bioplasm and become most potent reconstructives of diseased parts. Every careful and candid test of these tissues and vital fluids in their normal organic state will convince any reasonable mind that they are far superior to any chemical synthetic product.

So also in the preparation and use of vegetable foods, practical observations are fast settling the question of physiology versus chemistry. The malt preparations, the diastasic products and numerous other theoretical turnouts of the chemical laboratory have all been tried in the balance of bedside practice and found sadly wanting. The sooner we accept the self-evident and common sense physiologic facts, that the nearer we approach the inherent laws and products of the Vital Laboratory - Vital Force and living matter - in the preparation and administration of food-substances, the sooner will dietetics become an exact science.

MEDICINE.

We here restrict the term medicine to the discussion of what constitutes rational scientific remedial measures in accord with the Theorem and Principia of Physiomedicalism, reserving its broader consideration for the concluding section of this work.

As the functional potency of the organs and systems reside solely in the living matter of function-units (tissue-elements), so also the potentiality of every form of extrinsic matter, when brought in relation with the living organism, is determined solely by the causative phenomena and functional results; in other words, the behavior of living matter towards extrinsic matter, as manifest in and through the bioplasm of tissue-units. This being an ultimate fact, because of its easy and indisputable ocular demonstration by means of the microscope, it follows logically that all substances administered to the living organism for the relief of disease-states or conditions of tissues or structures as well as functional aberrations, must be *passive*, not *active*; they must be inherently possessed of stored-up inactive or potential qualities, not kinetic or active and acting forces or energies; so that the inherent potentialities of medicines are remedial only because of Vital action in and through living matter or bioplasm, which acting upon and assimilating the medicinal substances thus converts its inherent potential and passive qualities into active or kinetic vital energy in and through the same bioplasm. Therefore, instead of autokinesis or inherent activity, a true and proper therapeutic agent - medicine - is wholly passive; but they possess inherent constituencies that happen to be proper constructive and restorative material which Vital Force can avail itself of, and use in aid of its vital vigor, thus sustaining its efforts in resisting and escaping or throwing off disease causations and disease conditions, and restoring the normal or physiologic state of the parts, or the entire organic unity; the bioplasm then, acting upon the agent, *i.e.*, absorbing, assimilating and appropriating to itself these helpful passive potential

constituencies, converts them into its own vital state and they become vital energy. Thus, when we say medicines exert a sanative influence upon the activities of living matter and Vital Force, we use the terms “exert” and “influence” relatively in the passive sense as compared with the supreme motive power of the organism, Vital Force, which is manifest wholly and only in and through bioplasm or living matter. These terms are herein applied only to food and sanative agents or true medicines, and in this sense only, just as one speaks of a parent’s influence over his child. The intelligent and judicious father does not, by inherent physical force, constrain his son to grow up into a correct character, but by wise counsel and inspiring example, his influence flows in upon the son’s intelligence, who *acts upon* this influence afforded by his father’s advice and example; he, of his own volition and psychic force, constructs out of these materials furnished by his father’s advice, etc., his own individual character; thus the parent’s potential and passive characteristics are converted by the son’s psychic force into his own active individuality.

Now I know that the above is not the popular notion of a medicine, as held by a large majority of eminent medical authorities. It is quite generally believed that medicines are possessed of some kind of mysterious force which when once in the system becomes paramount, usurping the throne of Vital Force, and by means of their own inherent autogenetic energy, *act* upon the tissues and organs of the body, holding absolute sway; for the time being at least, they run the vital machinery at their own sweet will. This idea has been the stumbling block of therapeutics. This belief in medical action, which is in fact a lingering trace of the superstitious age of medicine, is responsible for more confusion among medical students and disagreement and contention amongst medical authorities, and has done more to hinder the progress of medicine towards the desired goal of an universal and scientific unity, than perhaps all other errors combined; for the final tribunal of any system or philosophy of medicine, is practical therapeutics.

For instance, we have a very large and eminent class of medical practitioners who believe that in disease the tissues or organs affected must be *acted upon* by some agent or influence which it is known that if given to a healthy organism would produce a departure from the normal standard of health in the functional actions of the same parts, in the opposite direction from that already manifest in a given case; a medicine, therefore, to fill the requirements of such therapeutic notions must *act* upon the organs or parts thus affected in such a way as to produce an abnormal state opposed to, or contrawise from that already existing. While, on the other hand, we have a large class of medical men who, though believing medicines "*act*," hold the theory that the diseased manifestations or functional aberrations constitute disease *per se*, and must be pathologically changed into a similar or simulating action to the existing form of aberrations or symptoms of disease. In accordance with this notion, a medicine must be an attenuated form of disease-causation that will produce similar functional disturbances to that of the existing aberrations; hence, that which constitutes a medicine for the one class of these medical practitioners, would be either worthless or a most obnoxious agent to the other.

Physiomedical Philosophy, logically taking the view-point of vitalism and the unit-concept of all functional activities, necessarily accepts nothing as a medicine that is not a sanative or physiological remedy for disease-conditions and aberrant results of these abnormal tissue-states; that there is nothing in the living organism which *acts*, in the biologic and physiologic sense of that term, except the living matter or bioplasm; all functional activities being purely the autocinesis of living matter of function-units. This being true, if medicines were also possessed of autocinetic action, there would necessarily be a conflict of *actions* invariably following their administration, and as a rule their "exhibition" would be any-thing but satisfactory to the medical practitioner. As has already been shown (pp. 200-1), bioplasm disintegrates matter and then

reconstructs its various constituents into its own substance; more accurately speaking, bioplasm destroys the atomic construction of matter, integrating it into bioplastic homogeneity, and in this process there is a transference of the potential energy of matter to bioplasm and it is now purely vital energy. This view, from the vitalistic standpoint, upon which Physiomedicalism must be uncompromising, places medicines and their results wholly subsidiary to living matter; therefore, medicines instead of acting - putting forth power or manifesting activity or energy - on the tissue-elements, or tissues and organs, are on the contrary, acted upon by the living matter which puts forth its inherent vital energy, disintegrating and assimilating the medicinal substance and appropriating its inherent potentiality to its own needs and purposes.

Therefore, the disintegrated constituency of medicines by furnishing proper materials to the living matter contribute to its vital energy, and in this it aids the resistive and eliminative efforts of the Vital Force to restore the disease-states and functional aberrations to the normal or physiologic condition.

At first thought some may deem our distinction purely theoretic and too finely drawn. The methodical mind, however, cannot fail to grasp the logic of these deductions, as well as feel the importance to the practitioner of correct notions as to whether his medicines *act* upon the organism (which would be impossible except they possess autogenetic force and action), or whether the Vital Force through the inherent motility of bioplasm of the tissue-units acts on medicines forcing them to contribute passive material to be converted into energy by living matter, the results of which are expressed in a change of quality or quantity or both of vital manifestations, *i.e.*, functional actions. In this sense we may properly use the two words action and influence therapeutically. *Action*, "The putting forth or exerting of power; an acting, doing, or working; operation; activity; as a man of action." - Standard Dictionary. This word certainly applies to the inherent and most purposeful phenomenon

plainly seen in bioplasm under the microscope; while the term *Influence*, “The gradual or unseen operation of some cause; the property or process of producing modifications especially when slow or permanent” (*ibid.*), accurately expresses the therapeutic notion of a Physiomedical medicine.

Accuracy in the bedside application of therapeutics, the success of remedial measures, certainly depend upon definite notions based upon scientific knowledge of the physiologic nature of functional activities and the relation of the agent employed to aid those vital activities. Thus, in studying this question with the view of scientifically as well as practically deciding as to what constitutes a medicinal substance, we must approach the subject equally from the side of therapeutics and physiology. What is so flippantly stated by some authors as the “physiological exhibition” or “effects” of a drug - quinia, strychnia, potassium bromide, for instance - must be strenuously protested against, if we are to have a science of medicine. Such inconsistency and damaging incoherency in the usage of medical terms certainly should cease; it is hard to conceive that otherwise most able and conscientious authors will lend their aid to such corruption of scientific terms, so hindering to the advancement of medical progress, instead of calling things by their right names. When quinia is administered in such excessive quantities (overdoses) as to result in derangement of the cerebral circulation and nervous functions, they are pathologic results obtained by irritating living matter of function-units; these aberrations are incited by arousing the resistive instincts of Vital Force and compelling it to eliminate the wholly unnecessary surplusage of quinine; because such aberrant functioning does not result in permanent injury to the organism is no excuse for calling these functional aberrations the “physiologic effects of quinine.”

We are not in sympathy with the chronic grumbler or medical calamity-howler; yet, at the expense of being so classed by the inconsiderate medical optimist, we do aver that these erroneous

notions concerning the so-called action of medicines, their “physiologic exhibition,” etc., are largely responsible for the lamentable incoherency of therapeutics which has piled up a monstrous materia medica, ranging from bed-bugs to gold, cold water to snake-poison, from dog-fennel to dynamite; in short, the present materia medicas of all schools include almost every known substance in, upon, or around the earth, not excepting the spirit-world. No doubt the only reason other worlds have not been drawn upon in substance is the inadequacy of transportation. It is our firm conviction that should an universally exact science of medicine suddenly dawn on the profession, there would be weeping and wailing and gnashing of teeth amongst the hordes of “chemical companies,” manufacturing houses, medicine makers and drug takers generally, for this vast array of pharmaceuticals would melt away before the light of scientific therapeutical accuracy, like frost before the rising sun, into a few simple, sanative, therapeutic agents.

In accordance, then, with these vital conceptions of medical influence upon the bioplasm of function-units, a medicine is defined as follows:

Any substance which, when acted upon (disintegrated) by the bioplasm of function-units when under the influence of patho-causatives (pathologic conditions), by its inherent constituency will furnish sanative materials to the inimically invaded or deranged bioplasm, thus sustaining the inherent resistive, eliminative, reconstructive and restorative efforts of vital force.

POISON.

Gould’s Dictionary of Medicine defines a poison as: “A substance that destroys the life of an organism or impairs the functions of one or more of its organs. A substance capable of producing noxious and even fatal effects upon the system, no matter by what avenue it be introduced; and this, as an ordinary result in a healthy

state of the body, and not by mechanical means.” Then follows an elaborate table of poisons, taking up thirteen and one-half pages, giving name, character of poison, symptoms of poisoning, fatal dose, mode of producing death, treatment and antidotes. This table is very interesting to the physiomedicalist, as it forcibly points out to him the fact that if Physiomedicalism were not deeply rooted in an incontrovertible Theorem it would be at the mercy of its opponents in the position that its materia medica eliminated “all substances or agents currently known as poisons.” For instance, in the list of poisons are placed bloodroot (*Sanguinary Can.*), boric acid, camphor, cubebs, dog-bite, glass, gold, pennyroyal (*Hedoma*), ipecac, iron, castor oil, milk, etc. Lobelia inflata of course, is a terrible poison, and this is the way it is classed: “Name - Lobelia inflata (*Indian tobacco*). Character of Poison - Depressant. Symptoms of Poisoning - Severe vomiting, with intense depression and prostration; giddiness, tremors, convulsions, collapse, death. Treatment and Antidotes - Evacuate; tannic or gallic acid; stimulants; strychnia; warmth; recumbent position.”

Quain’s Dictionary of Medicine says: “There is no legal definition of the word *poison*, and the definitions usually proposed are apt to include either too much or too little. Generally, a poison may be defined as a substance having an inherent deleterious property, which renders it capable of destroying life by whatever avenue it is taken into the system. Substances which act only mechanically, such as powdered glass, are not poisons. In popular language, a poison is a substance capable of destroying life when taken in small quantities. A poison, then, may be defined as any substance which, when introduced into the system, or applied externally, injures health or destroys life irrespective of mechanical means or direct thermal changes.”

We have quoted thus extensively from two very eminent authors of the most popular school of medicine for a two-fold reason: that their notions may be justly stated and the very apparent difficulties.

may be set forth which beset the way of medicine, devoid of a fundamental hypothesis and correlated philosophy. The contradictions - one placing glass in the list of poisons, the other declaring that it is not a poison; the inconsistency - castor oil, pennyroyal, milk, nitric acid, lactic acid, soda, wild cherry, nuxvomica, morphia, are all placed alike in the category of poisons, while the most virulent poisons are given as antidotes for the most harmless agents. For instance, the antidotes for castor oil (*Ricinus communis*), are "morphia hypodermically" and "opium by enemata." The antidotes for bloodroot (*sanguinary canadensis*), are "opium, amyl nitrite, atropin." See Table of Poisons, Gould's Dictionary of Medicine.

Now from the standpoint of exact science, and there is no reasonable excuse why medicine should not become a science, we must affirm that these things are lamentable inconsistencies, whether they be viewed from the standpoint of Physiomedicalism or any other science. Not only this, but such notions are alike most damaging to the beginning physician and dangerous to his clientele, for if he is taught and believes that castor oil is as much a poison as strychnia, and strychnia no more a poison than castor oil, he may play sad havoc with his unlucky patients ere he discovers the errors of his education. Our contention is, that this most important question as to what constitutes a poison, should be more definitely settled and broadly understood by the medical profession generally, regardless of schools; that there can be but one scientific basis upon which to found this universal and definite understanding, which is that of vitalism - the relation of extrinsic substances to bioplasm of the tissue-units of the living organism.

The definitions of poison above quoted, which in substance are given by all other authors of that school, assert that any substance or thing, except "mechanical means," capable of destroying life, impairing the functions of one or more organs, or producing noxious effects upon the system, is a poison. This is simply declaring *everything in the world*, except "mechanical means," a poison; for there

is not a single known substance or force in the world but what abnormal results upon the organism, or some part of it, can be effected with it and can be carried far enough to produce death. A person can be made very sick, even unto death, by bread, water, air, heat, cold, any and all substances, common or uncommon.

To bolster up this lame notion of poison, it is necessary, by a “general understanding,” to hold that quantity changes the inherent nature of substances and annuls the law of their natural relation to the living organism; that a reasonable quantity of bread is a food, while sufficient of it to make one sick is a poison; that a reasonable quantity of cold water is a wholesome drink, but enough of it to injure the stomach, or irritate the solar plexus and produce fatal neuralgia, is a poison; that a reasonable quantity of strychnia in certain forms of sickness is a medicine, but enough of it to produce death is a poison.

Now lest we be deemed unfair in the presentation of their notions, the following is quoted from the pen of no less eminent authority than the veteran James F. Hibberd, M.D., who enjoys a national reputation as a practitioner and most forcible writer, not only having served a number of terms as President of the Indiana State Medical Association, but he has served with distinction as President of the American Medical Association (Regular), the largest society of medical men in the world. In a discussion through the public press with the author, in April, 1891, he says:

“Arsenic is an irritant poison in sufficient quantity, but in medicinal doses is a most valuable drug in certain disorders. Opium is a narcotic poison in improper quantity, but a blessed medicine when given in proper doses to patients who need it. Strychnine is a spinal poison when improperly taken, but a valuable nervous tonic in the hands of him who knows how to use it. In short, the Regular maintains that many substances classed as food and medicine are food or medicine or poisons according to the quantity consumed and the method of ingestion. Now for an example: Milk is used

constantly as a food. This is axiomatic. A few weeks ago a man by accident swallowed a large amount of corrosive sublimate; a doctor promptly administered a quart or more of milk, titillated the patient's fauces with his finger, inducing immediate vomiting, which brought up the poison suspended in the milk, and the patient's life was saved. Here milk was a medicine. A man, unused to labor, worked very hard at a fire three hours one hot July afternoon, came home bathed in perspiration and exhausted; his wife, to cool his heated blood, nourish and strengthen him, gave him a pint of iced milk, which he drank without a pause; in ten minutes he was seized with cramps in his stomach, followed by systemic convulsions and died comatose before midnight. Here milk was a poison."

We replied in answer as follows: "Now I venture if the Doctor will step into the primary department of our public schools, relate the above story of the cold-poison-milk, and ask the pupils if they believe that the milk was poison, he will receive a prompt answer, 'No,' from eight out of ten; then if he will ask them, 'What really killed the man?' he will get as prompt answer, 'Too much cold,' from the same majority."

It is inconceivable to the logical mind how such able, scientific medical men can escape conviction of the vast harm done to medicine by putting such fallacies and inconsistencies before the public mind. Such logic sounds all right from the Irishman who protested that it was not the fall which hurt him, but the quick stopping he had; it would be difficult, too, to convince the son of Erin that the ground was poison because it stopped him too suddenly.

As already asserted, we still contend that when it comes to the practical use of the term poison, in therapeutics as well as the scientific classification of poisons, we must reason from *the fundamental basis of the observed effects of these things upon the cell structure or architecture and its bioplasm, as shown by the microscope, and manifest*

by the causative phenomena (function-unit invasion, tissue and structure conditions) and functional performances of organs and systems.

With this logical understanding as to the results of these therapeutic and pathologic agents, and following the preceding deductions (pp. 195-6), together with the general logic of our Philosophy, dividing all substances, but more especially those generally employed as therapeutic agents, into *helpful* and *harmful*, gives us the only absolutely scientific start in the solution of this most vital question of therapeutics, as to what really constitutes sanative and pathologic therapeutic agents; establishing a legitimate premise from which we may draw an inseparable line between patho-causatives and true sanative remedial agents - poisons and medicines.

While all agents, whether pathologic or sanative, must be classed on the merits of their inherent constituency the same as we class foods and medicines, yet in order to draw a definite line between poisons and sanative therapeutic agents we must go further than this. For instance, as is well known, even with a thoroughly sanative agent given in excessive and unreasonably large quantities long continued, one can derange the normal functional harmony; but because such results are obtained by the abuse of any substance whether using it therapeutically or not, should not be accepted as evidence that it is a poison, there must be a more definite line than this. Fortunately, we need not go far to find this dividing line that sharply separates poisons from all other therapeutic agencies and remedial measures; *this cardinal distinctive inherency of a poison, lies in its toxicity.*

But, here again, we have to contend with the bane of medicine - the senseless vagrancy of its terms. Gould's Dictionary defines a toxicant as: "1. Poisonous or toxic. 2. A poisonous agent." Therein given are thirty-three words as forms and derivatives of this word; we have already seen that the notion of a poison as held by this school of medicine is too vague to be of any use to science, being anything that will derange or destroy life-manifestations;

hence, all we can learn from their definitions is, that a toxicant is a poisonous agent and a poisonous agent is sometimes such and sometimes not, according to circumstances. So that we must apply to Physiomedical Philosophy for a scientific understanding of what a toxic agent is as well as why it is so.

Our notion of a poison based on the unit-concept and the vitalism of living matter and Vital Force brings us to view a substance as a poison, BECAUSE ITS INHERENT CONSTITUENCY exerts a destructive effect upon the INTRACELLULAR STRUCTURE OR FORMED MATERIAL OF NEURONS (NERVE-UNITS OR NERVE CELLS).

We therefore apply the term toxic only to those agents or substances whose inimical constituency is expended wholly on the tissue-elements (neurons) of the nerve centres, and the functional aberrations which follow in the train of its virulency are incited by the powerful reflex actions of inhibition, innervation, enervation and final exhaustion of the nerve centres. By thus restricting the term poison to toxic agents, and as the term toxicant is generally used in connection with the effect of poisons on the nerve centres, we are in accordance with the known facts as to the *modus operandi* of those substances generally known as poisons.

No one observing carefully the results of the administration, to two dogs, for instance, of one grain of strychnia to one, and twenty grains of powdered lobelia seed to the other, can escape the conviction that one is a toxic agent and the other is not; he will have little difficulty, too, in deciding which is the poison.

This definition excludes mechanical force, fire, excessive cold, escharotics, concentrated acids or alkalies, etc; because these things either act directly upon tissues and structures, disintegrating them collectively, or produce such powerful depressant impressions or surgical shock upon the ganglionic nerve centres as to suspend the vasomotor functions, heart and lung actions, long enough to cause death; while it places a poison in its scientific relation, restricting it to those substances that possess only destructive toxicity and must

be brought in contact with the nerve cells (neurons), either by direct absorption into tissues and structures, or by the systemic process of assimilation. For instance, strychnine must be brought in contact with the structure of certain neurons of the spinal cord and medulla, before its violent and fatal effects are manifest; while excessive cold, as in Dr. Hibberd's case of "cold milk," projects a direct mechanical impression upon the superheated solar plexus and semi-lunar ganglia (lying immediately beneath the thin stomach-walls), the same effect as a severe blow, suspending the vasomotor functions, producing clonic spasm of the involuntary muscular coats of stomach and bowels, causing excruciating pain, nervous exhaustion and coma. This legitimate differentiation of a poison from other substances that are inimical, deleterious, and even fatally hurtful to the organism, avoids the ludicrous dilemma of the endless-chain-poison. The distinction is clear and decisive - A MEDICINE INFLUENCES THE BIOPLASM OR LIVING MATTER, A POISON ACTS ON THE STRUCTURE OF TISSUE-UNITS.

It may be urged by those educated to view everything as poison from a sledge hammer to a loaf of bread, that this definition is entirely too narrow, but the philosophy of scientific medicine demands a restriction of terms to definite confines; certainly, Physiomedical Philosophy cannot accept the notion of vaguely calling everything that kills, poison; it requires that the term must definitely place these substances in their true logical relation with living matter and Vital Force; it demands that those substances that tend to harm or to kill must be classified, according to their respective inherent nature, upon some fundamental basis; only by this exact and scientific procedure can we avoid the illusion that the quantity of any given substance changes its inherent nature. This point cannot be too much insisted upon; the student of physiomedicalism should be thoroughly conversant with these facts; therefore, we take time and space at this stage of the discussion to revert to the

history and progress of this great principle which, as we shall show, is purely a conception of this Philosophy.

Physiomedicalists were the first to demonstrate the unit-concept of physiologic, pathologic and therapeutic manifestations. In 1880 Prof. Jacob Redding made extensive experimental investigations upon the leukocytes, or white blood-corpuscles, of man and the frog; he studied under high microscopic amplification the behavior of these naked bioplasts or masses of living matter under the influence of various well known therapeutic agents. (*Physiomedical Journal*, July No., 1881, p. 207.) The agents were used in form of an aqueous decoction of definite volumetric strength. We quote from his article as follows:

“Capsicum. - Under the influence of this agent the living matter behaved in a very remarkable and peculiar manner. For the first few seconds they presented a spherical form - the condition universally observed in every kind of blood-bioplast when first drawn - but what was of striking peculiarity in this case, not having been observed by us under other circumstances, was the phenomenon of the little granules, of which the mass is largely composed, constantly and rapidly moving in every conceivable direction without the contour of the bioplast being changed in the least, so far as we could detect. This state of things did not continue to exceed five minutes, however, when the majority of those in the field of the microscope at any one time seemed instinct with life and vigor, constantly undergoing change of form, and sending forth pseudopodial extensions from every portion of the body and again retracting them, sending forth a long filamentous projection which would rapidly increase in its transverse diameter at the expense of the remaining portion, and thus they would move from place to place. All these movements were executed with a vigor and energy never witnessed by us before. At the expiration of one hour not a single spherical bioplast could be discovered, but all seemed to be endowed with ‘new life’ and increased animation. This change of form was at first slow and almost imperceptible,

but as time grew apace they became more and more vigorous, until both the internal commotion, so to speak, and the external transfiguration (I can think of no other word which will express it) were tumultuous and certainly calculated to excite our admiration and astonishment. Indeed a mental drone could but have been enthused at the transcendently beautiful sight. After they had 'lived too fast' for one hour and thirty minutes, I selected a moderately large, highly granular and quite active bioplast, and timed him or her or it, as the case may be, whilst it journeyed from one side of the field to the other, and notwithstanding that it pursued a markedly serpentine course, it executed the entire distance, seemingly about six inches, in reality a little more than the one-hundredth of an inch, in eight seconds - no snail's gait, 'I come to tell you.' At the expiration of over two hours they were no less happy; not in the least cast down, in nowise exhausted, but as intensely energetic as at any former time."

Professor Redding made experiments with strychnia, arsenic, mercury, etc., in the same manner; in contrast to the behavior of bioplasm under the influence of capsicum, we quote from him as to agents generally denominated poisons:

"We have endeavored to determine this question by submitting the living matter of man, animal and reptile to the influence of these agents under the microscope. We found that 1-700,000th part of a grain of strychnia almost instantly transformed the living matter into non-living fat globules. * * * We have seen hundreds of living moving bioplasts 'suddenly and rapidly' suspend all vital phenomena from the destructive influence of less than 1-40,000th part of a grain of morphia, and thus remain a dead and smeary mass." - *Physiomedical Journal*, May, 1882, p. 135.

We have made diligent search through a very large number of works at command and have as yet been unable to find any experiments directly upon the living matter of the organism with a view to determine the primary influence of agents upon this the basic

causation and motive power of all functional actions, previous to these experiments of Dr. Redding in 1880-2. We shall, therefore, accord to him the honor of being the first to thus scientifically and absolutely settle the question, not only of what constitutes a poison, but also the basic fact of all therapeutic influence. That these facts have since been verified by eminent investigators holding radically different notions from Dr. Redding on general medicine, is certainly very convincing. In 1897 F. Nissl first made experiments by slowly poisoning animals and examining the neurons or nerve cells removed alive and placed under the microscope by his special method, using arsenic, strychnia, phosphorous, veratrin and many other agents; these studies were followed by numerous eminent investigators of Europe and in this country. We quote from the very excellent work of L. F. Barker, "The Nervous System," pages 282-3, as follows:

"Nissl has demonstrated definite lesions in the large motor cells of the ventral horns of the rabbit after poisoning with strychnine, veratrin, alcohol, phosphorous, the toxins of tetanus, and trional. He has also shown the alterations produced in the Purkinje cells and spinal ganglion cells of the rabbit after lead poisoning, and the changes in the cortical cells after poisoning with alcohol, morphine, and lead. Nissl has emphasized the differences of the alterations produced in the same group of cells by the action of different poisons, and has further demonstrated that the same poison can lead to entirely different results in different types of cells in the same animal. He has referred not only to the changes in the chromatic and achromatic substance, but also to the nuclear alterations in such intoxications.

"Nissl has investigated the nerve cells in acute, sub-acute and chronic forms of poisoning, since he finds that the effects of poisoning vary very much according to the time during which the intoxication has been active. Especially interesting are the results which he has obtained in his so-called 'sub-acute maximal intoxications,'

in which the animal under experiment receives daily an amount of poison just short of the lethal dose until death occurs (after from a few days to several months). The alterations in arsenical poisoning are well shown. The whole nerve cell is swollen, there is marked diminution in the amount of tigroid substance, so that it is often impossible to distinguish the chromatic from the non-chromatic portion of the cell. Alterations in the nucleus can also be made out.

“In his studies of phosphorous poisoning, Nissl found very profound alterations in the nerve cell - alterations which tend at the beginning to affect one portion of the cell in preference to others, although no definite rule as to the exact portion likely to be affected in a given instance could be laid down. In advanced stages of the poisoning the cell is remarkably diminished in size and the nucleus smaller than normal. The architecture of the cell becomes completely obscured, the only trace of tigroid remaining being a few dust like particles and irregular granular masses. The cells may go on to complete atrophy, and eventually entirely disappear.” (See Fig. 5.)

Among the many admirable illustrations of this great work of Barker's are half-tone reproductions of photomicrographs of the nerve cells under poisoning from arsenic, phosphorus, veratrin, etc.

Thus with such eminent authorities, both from the “regular” as well as physiomedical standpoint, the author feels that he has a right to contend that the present notions concerning poison and medicine which are held not only by other schools, but by many physiomedicalists, are, in the light of science, not only erroneous and misleading to the practitioner, but tend to lower the standard of medical practice in the eyes of the lay public. Therefore, we have no apology for presenting in the following chapters what we believe to be the proper scientific solution of this question, one which does full justice to the other schools of medicine while placing physiomedicalists in the only logical position in accord with their principles and Philosophy. As already shown, we cannot accept the prevalent idea of other schools that everything which in any quantity or any

manner may cause death, is a poison; nor will it do to draw an arbitrary line in discrimination against certain agents. The term must be placed in its limited scientific sphere on the firm foundation of known facts and principles.

For years the author has felt the necessity to the Physiomedical cause of more definite notions and better established principles with regard to poisons and sanative agents. Feeling sure that there was pathologic and therapeutic facts and laws rendering it not only possible but practicable to establish a definite and incisive line between poisonous and sanative agents therapeutically. Being unable to work from the divergent and conflicting lines of the other schools and profiting by the landmarks so clearly indicated in Prof. Redding's experiments in 1881; also profiting by the more recent works of others, working with advanced methods he has diligently, and without bias it is hoped, advanced steadily and persistently on strict Physiomedical lines, with no mean laboratory and other facilities, to this end. If these twenty years of experimental work have borne no other fruit, the satisfaction in our own deep-grounded conviction that Physiomedical Philosophy and Practice is the most profoundly scientific yet eminently practical and humane system of medicine ever evolved, has amply repaid us. These personal studies and experimentations alone could never have brought this satisfactory assurance, it was only after we had studied the great experimental work done on these same lines, but from a wholly different viewpoint, and with entirely different objective points in view by such eminent authorities as Nissl, Lugaro, Braner, Gold-scherder, Ewing, Barker and many other eminent investigators in Europe and America, that we could not escape the conviction that every correlative fact and principle that has ever been discovered in this direction naturally admits of easy adjustment to this Theorem and its rational philosophy. Besides these original investigations, by far the greater part of which had been accomplished before gaining a knowledge of what the above authorities had done, we have since

gone carefully over the whole field, with Nissl's and modified forms of his and others methods; experimenting on leukocytes of man, animals and reptiles, then working directly upon the fresh tissue-elements and tissues; upon the neurons especially, kept alive for many hours by a capillary current of blood plasma at the proper temperature; using materials from young mice, dogs, cats; from fetuses six weeks to nine months old, commencing the experiments in many cases before life was entirely extinct. We have experimented with all the prominent poisons given in the following classified list, by slowly poisoning different animals with them and then examining the neurons and other tissue-elements by the most improved microscopic methods and best instruments; moreover, we have had the opportunity of examining these tissue-elements and tissues in three persons who died from slow lead poisoning; one from slow strychnia poisoning, and one from acute poisoning by same agent; one case each of acute and chronic poisoning from arsenic; one from chronic and two from acute morphia poisoning, and one case of a chronic morphine taker, who sustained a fracture of the skull, we secured and examined the cortical neurons of cerebrum taken from the left cerebral hemisphere on either side of the upper end of the fissure of Rolando, from both the ascending parietal and frontal convolutions.

As already intimated, we would not venture to assert that the following deductions from the above personal experimental work are actual demonstrated facts, were they not in all essential points verified by the eminent authorities already mentioned. But in following these, our conclusions as to the physiologic and pathologic differentiation of poisons and medicines, we especially refer the reader to the quotations from Barker, page 230, also to chapters xxiv and xxv of his excellent book from which these are taken. We regret very much our inability to reproduce all of it here, together with the splendid photo-micrographic illustrations of the effects of the different poisons upon the neurons or nerve cells.

Our conclusions, derived from the indisputable sources above mentioned, briefly stated are as follows:

1. Bioplasm of tissue-units everywhere rejects poisons, refusing to assimilate them, and to the utmost of its resistive and eliminative powers wars against their inimical and disintegrative action upon the unit integrity and tissue continuity.

2. Bioplasm accepts and assimilates medicines, because its inherent instincts enables it to differentiate between helpful and harmful substances.

3. Poisons exert a chemico-dynamic action upon the cell-structure or unit architecture everywhere to some extent, but their virulence is expended almost entirely upon the structure of the neurons or nerve cells of both the cerebrospinal and ganglionic (sympathetic) centres and ganglia, mainly because they possess less vital resistance than the general tissue-units.

4. Medicines being possessed of sanative constituencies which are in a potential and passive attitude in their inherent and logical relation with bioplasm, cannot therefore act in the dynamic or chemic sense of force or energy, either on the living matter or cell architecture; but, furnishing reparative and restorative materials to living matter by means of which it may maintain its vital integrity, medicines impart or exert a wholesome and helpful influence in aid of the resistive, eliminative and restorative efforts and results of Vital Force in the disease-state of the organism or any part thereof.

5. (a) A poison is dynamically active.
 (b) A medicine is passive, yet possessed of influence.
 (c) A poison is destructive.
 (d) Medicines are restorative in their influence.
 (e) Poisons are destroyers.
 (f) Medicines are builders, constructive.

- (g) Bioplasm rejects and resists poisons.
- (h) Bioplasm accepts and assimilates medicines.
- (i) Poisons attack the unit architecture.
- (j) Medicines sanatively influence the living matter of tissue-units by affording helpful constituents for its assimilation.
- (k) Poisons are pathologic.
- (l) Medicines are physiologic.

6. Medicines if given in excessive and illogical doses, when contra-indicated by the functional expressions of the disease-conditions, may increase the abnormal conditions and aggravate the functional aberrations; or if taken in excessive quantities in health and continued long enough they may even become disease causations - pathocausatives. Yet *medicines are always inherently sanative, and they tend to influence the diseased organism in a curative manner; their illogical use and therapeutic abuse cannot change their medicinal inherency to that of a toxic agent or poison.*

7. If in the disease-state a poison be given in sufficiently small quantities and in strict accordance with the vital therapeutic requirements, as expressed by the unit conditions and aberrant functional actions, and discontinued at the proper time, whether the desired result is obtained or not, it may prove a remedial agent, or it probably may not result in permanent damage to the organism. But it is a pathologic agent nevertheless, and neither quantity, or conditions of the organism can change its inherent toxicity; hence, if not given in exact quantity, in perfect accord with conditions, or continued until irreparable damage is done, its real inherent nature, that of a pathocausative, instead of a remedy, is manifest. *Inasmuch, therefore, as it is not always possible to determine the exact indications for their remedial application, being also impossible to establish a practical rule for definitely determining, under all circumstances and conditions of the organism, the exact quantity that may be remedial, or lethal, and as it is absolutely impossible to prevent or control their toxicity when once they*

gain access to the function-units, poisons should never be employed as therapeutic agents.

As illustrative of these conclusions and our position as to the peculiar manner in which poisons attack the neuron structure, we have, in Fig. 5, reproduced from Barker's work on the nervous system, p. 283, a normal neuron (nerve cell) and one showing the effects of arsenic; the reference marks and letters, of course, are ours. Especial attention is called to the fact that the neuron architecture, N A, is wholly obliterated, the dendrons or nerve-fibers, D, are destroyed, and the dendron body degenerated into a fibrous tissue-element; yet the nucleous and nucleolus, N B, which constitute the bioplasm or living matter of the cell, are little affected, being nearly as large as in the normal neuron, 1. When, however, the neuron has fully degenerated into a connective-tissue cell, and in consequence requires less vitality, the nucleus and nucleolus become very much contracted and consequently the living matter greatly lessened.

The leukocytes, amoeba, or any other form of so-called "naked" or isolated bioplasm, are very useful for experimental work in studying living matter independent of organic results and functional phenomena. But they afford little reliable data when it comes to studying the effects of substances upon the physiological unity; especially is this so in the study of therapeutics. For instance, we have experimented with the tincture, and infusion of green *Phytolacca* root, as well as several other agents of the same class, on the leukocytes of man; and while invariably they seem to completely abolish all vital manifestations, though there is no change in the bioplastic structural integrity, and a mild faradic current will revive them even after thirty to forty minutes of apparent death, yet to all intents and purposes the effect of the agent is inimical. But these same agents in the same form, even though twice the strength as in above experiments, used on the living neurons of dogs and mice, have no effect on the neuron structure, but the nuclei or living matter becomes



Fig. 5.

EFFECTS OF ARSENIC UPON THE NERVE CELL. - (After L. F. Barker, "The Nervous System," p. 283.) B - Bioplasm or living matter of the neuron or nerve cell. N - Nucleus. NA - Neuron architecture or cell structure. D - Dendron or beginning of nerve fiber.

enlarged and takes on a dormant attitude towards faradic electrical stimulation for from thirty to forty minutes, when the influence passes off and the bioplasm returns to the normal state. The best method is that of Nissl, with its modifications; that of subjecting freshly taken tissue-elements in their tissue continuity, both from animals that have been subject to administration of agents for a considerable time, or fresh normal tissues kept alive in blood plasma long enough to complete the desired experiments.

While all truths, the accumulated experimental work of all observers no matter what their standpoint or beliefs with regard to medicine, are valuable and may legitimately be used in adjustment to Physiomedical Philosophy, giving due credit to the authors, of course, yet physiomedicalists must go over the whole field of experimentation for themselves; it is unreasonable to expect, and unjust to require of those who work from wholly different standpoints and medical faith, that they work in the interest of other than their own view-point only in so far as the strict integrity of truth and science may exact from them disinterested research.

Each and every therapeutic agent employed by physiomedicalists must be carefully subject to experimentation along strictly Physiomedical lines. These briefly stated are:

(a) BIOLOGIC STUDIES. - Leukocytes; taken from the systemic circulation, from the spleen, and from the lymphoid bodies (so called lymphatic glands). Single tissue-units or cells from various parts of the cerebrospinal and ganglionic nerve centres, from the liver, mucous membrane of stomach and intestines, from kidneys, in short, from all the important organs of the body. Comparative tests must be made of the effect on the elements from these various parts by the same agent. The fresh cells and leukocytes are used and kept as nearly as possible in their normal state during the observations.

(b) HISTOLOGIC STUDIES. - Tissues and structures freshly taken from living animals and when possible the human, from the various important organs and systems of the organism, by the same methods, in serial and comparative experimentation, must be closely studied under the influence of these various therapeutic agents.

(c) PHYSIOLOGIC STUDIES. - These agents must next be administered to animals, and the human, in a healthy state, and the functional results on the various organs and systems closely observed. If they are sanative agents the administration will be followed by no other result than a temporary increase or diminution in the function-rate and vigor of the particular organ or part reached by the agent.

(d) THERAPEUTIC STUDIES. - After the biologic, histologic and physiologic studies the agent is finally brought to the bedside test as to its value in remedying pathologic conditions and aberrations. If one has followed carefully these successive tests of the agent, keeping a logical chain of connection between the observed results on bioplasm, tissue-units, tissues, structures, organs and systems. With a fair knowledge of anatomy, physiology and pathology, one can obtain almost infallible sanative therapeutic remedial results.

(e) PATHOLOGIC STUDIES. - The physiomedicalist must not only be able to obtain the above knowledge and remedial results with sanative agents or true medicines, but he must also study pathologic agents. If he has any doubt as to the sanative nature of an agent he must be able to test and study its inimical effects or actions both in the health and disease states, by these same methods and means in successive and serial experimentations, thus setting at rest all doubts as to what are and what are not sanative therapeutic agents.

While it is true, as a rule, the better one is equipped the better results may be obtained; and expensive microscopes and elaborate accessories, together with extensive laboratory facilities, are much to be desired; yet all this does not mean effective practical results. One need not despair and fail to make earnest and honest effort in this noble work because one's means may happen to be limited; the greatest results and reputations have been built up from the most humble beginnings. One will be surprised after awhile, at the amount of equipments acquired without missing the money, by adding a little now and then, and will be proud of the advancement made in scientific and practical knowledge acquired under limited means and humble equipments.

The following classification of poisons is based wholly on what we believe to be absolutely demonstrated facts, verified by the accumulated experimental work of all eminent authorities, viz.: That the primary affect of all poisons are exerted upon the neurons, or nerve cells, of both the cerebrospinal and ganglionic (sympathetic) centres; that no other substance, whether inherently sanative or inimical, will so affect the neurons; in other words, poisons, and poisons only, act on the neuron-structure. Consequently we have classified these various poisons according to the nature of those functional aberrations which invariably result from their toxicity, and the anatomical and physiological regions which, by the laws of bioplastic selection, etc., to be discussed in the following section of this Part, they are enabled to specially attack. We do not pretend to give either an exact or complete classification of all poisons.

It is hoped only to here lay down the general lines and principles of their scientific study and classification. It has cost us years of patient, arduous experimentation and study to settle the question in our own mind beyond doubt, that poisons act primarily upon the cell-architecture or formed material of the neurons because they here meet the least resistive vitality; thus establishing a scientifically correct basis upon which to practically study and accurately

differentiate sanative agents and poisons. But so much of careful, unbiased, broad and logical experimental work is required to bring these important subjects up to the requirements of an absolutely correct science, a goal that is wholly possible only on Physiomedical lines in our opinion, that no one individual's work can count much more than a unit in the great and grand results that await the investigations of the conscientious and industrious worker.

CLASSIFICATION OF POISONS. - *Class 1. Cerebrospinal Poisons.* - Poisons which act directly on the neurons of *the cerebrospinal axis generally.*

(a) *Narcotics.* - Those poisons which affect the cortical neurons in such a manner as to reduce or cancel their storage capacity, thus producing the functional aberrations or symptoms of *sopor, stupor, lethargy, mental obliteration.*

Agents. - Opium, Morphia, Narcein, Codein, Laudanum, Chloral Hydrate, Actea Spicata.

(b) *Deliriants.* - Poisons which affect the cortical and basal neurons in such a manner as to produce mental inco-ordination, resulting in symptom-complexes called *delirium, neurasthenia, hysteria, catalepsy, insanity.*

Agents. - Belladonna, Atropine, Hyoscyamus niger, Hyoscyamus albus, Hyoscyamin, Hyoscin, Solanum dulcamara, Datura stramonium, Duboisia myophoroides, Cannabis indica, Cocculus indicus.

Cerebellar and Spinal Poisons. - Those poisons which affect the neurons of *the Cerebellum, Medulla oblongata, and Spinal cord.*

(a) *Motor Irritants.* - Those poisons whose virulence are expended on the motor and sensory neurons of the cerebellum, producing *motor and sensory inco-ordination*; and on the medulla and spinal cord, also from which reflex impressions are thrown on the motor areas of the cerebral cortex; they

cause violent and inco-ordinate explosions of motor-nerve energy, resulting in the symptom-complexes called *convulsions*, *motor agitations* (*shaking palsy*), *clonospasm*, *contractures*, *hyperesthesia*, *exaltation of special senses*.

Agents. - Strychnos nux vomica, Strychnia, Hydrocyanic acid, Calabar bean, Lolium temulentum.

(b) *Motor and Sensory Depressants.* - Those poisons whose effect directly on the motor and sensory neurons of medulla and spinal cord, and reflexly on cortical motor and sensory areas, are such as to exhaust the neuron static energy, resulting in the symptom-complexes called *paralysis* (*motor and sensory*), *nervous exhaustion*, etc.

Agents. - Aconite, Conium maculatum, Amygdalus communis, Curare, Cyanogen and its compounds.

Class 2. Ganglionic (Sympathetic) Poisons, Organic Nerve-Poisons. - Poisons which directly expend their toxicity upon *the neurons of the ganglionic nervous system*.

(a) *Central ganglionic irritants, and depressants.* - Those poisons which primarily affect the semi-lunar ganglia, solar plexus and gangliated cords. (See page 51, and Plate III.) 1. *Central Irritants.* - Exciting the innervating power of the ganglionic centres to violent explosions of energy which is projected in exaggerated reflex waves upon the spinal ganglion-centres, resulting in grave functional disturbances, such as *violent vomiting*, *clonic spasms of involuntary muscular coats of the intestines, stomach, diaphragm - dyspnea, dysphonia, gastric and intestinal colic*; and reflexly causing convulsive actions of voluntary muscles of spine and extremities - *Opisthotonos, tremors, etc.*

Agents. - Antimony, Arsenic and its compounds. Gratiolus officinalis, Lead and its salts, Rhus toxicodendron, Rhus radicans.

2. *Central Ganglionic Depressants.* - Exhausting, the nerve energy and destroying the architecture of the central ganglionic neurons.

Agents. - Copper and its salts, Barium and its salts, Chromic acid.

(b) *Peripheral Ganglionic Poisons.* - Those poisons which directly affect the ganglionic neurons constituting the secondary or peripheral ganglionic centres which control the various organs of the body, such as the cardiac, pulmonary, and renal centres of the ganglionic (sympathetic) nervous system.

1. *Peripheral Irritant Poisons.* - These could be properly termed organ-poisons; they incite violent and exhaustive exaggerations of functional actions of the organ affected through its special ganglionic centre, sooner or later resulting in fatal exhaustion of both.

Types of such agents. - Zinc, and its preparations - *gastric poison*; *Cyclamen europaeum* - intestinal poison, irritating the celiac centre and plexus; *Cantharis* (Spanish fly) - renal (kidney) and cystic (bladder) poison.

2. *Peripheral Depressant Poisons.* - Those poisons which directly destroy the functioning power of the ganglionic peripheral centres - organ depressants.

Types of such agents. - *Digitalis*, *Veratrum viride*, *Veratrum album*, *Tobacco* - heart and general vasomotor circulatory centres; *Mercury*, and its compounds, *calomel*, etc. - gastric, hepatic, splenic, renal centres (stomach, liver, kidney poisons); *Strophanthus*, *Nitroglycerine*, *Phosphorus*, *Silver* and its salts - cardiac pulmonary, renal centres (heart, lung, kidney poisons).

Objections may be offered that agents, which some Physio-medical authorities believe to be poisons, have been excluded from this list, and are

thus, inferentially at least, held by the author to be sanative or Physiomedical remedies. Notably among these we mention Chloroform, Ether, and anesthetics generally. Now, in the first place, we have, as we believe, conclusively settled the questions as to how and why a substance is a poison; that not all inimical substances are poisons; that some very inimical substances are not poisons, according to the scientific facts that define a poison; moreover, that poisons may, within restricted limitations, become remedial agents. Secondly, if any one will make the proper comparative observations by subjecting the neurons to chloroform or ether, and to any of the poisons mentioned in this list, they will be convinced that chloroform and ether are not poisons, or at least he must admit that there is no analogy between the effects of chloroform and poisons on the neurons. Again, any one experienced in the administration of anesthetics, or any surgeon of much operative practice, knows that there is no more danger to life in the proper and reasonable use of an anesthetic than in the use of ordinary sanative agents; that harm can be done by these agents, if used in unreasonable quantities and in unreasonable conditions; besides, the Physiomedical surgeon will use the anesthetic exactly as he uses the knife: firstly, because they are the last and only resort; secondly, with the knowledge that he may do harm with them as with all other agents, if not reasonably and scientifically applied in exact accord with the vital requirements. So, also, with other agents that are not poisons, not inherently destructive of vital conditions, but by improper use may be made to produce functional aberrations and even temporary pathologic tissue-states - to put it more plainly, agents that are not of general utility to the physiomedicalist, and need to be used with extra caution, but may be of aid to him occasionally in certain emergencies - he is certainly justified in their use, and is perfectly consistent with his Philosophy if he avails himself of their utility when these special occasions demand.

To any and all criticisms that may be made as to our position on this very important question, we have only to say that herein has been boldly set forth only convictions that we could not escape after years of patient investigation, without the knowledge that any other man except Prof. J. Redding, was working on these lines; then within the past three years learning that the same facts have been verified by more extensive and scientific investigations by most eminent authorities of Europe and this country. Yet, when those who believe differently, can bring forward stronger evidence, no one will be more ready to change their views. We have striven to adhere closely to our Theorem and Philosophy in these deductions, holding our self open to conviction when more and better light is afforded.

III.

THERAPEUTICS AND THERAPEUTIC AGENTS.

As generally defined and understood therapeutics is that department of general medicine which deals with the application of agents and measures for the relief and cure of disease. The term, like too many others in medicine, is entirely too broad, being made to include hygiene, physical culture, etc. There is certainly enough in the strict confines of medical and surgical remedial measures to at least restrict it to a more legitimate province. We are of opinion that the term should be limited to *the administration of medicines and application of remedial measures for the cure of disease-conditions, or disease-forms*. Indeed it would be better to confine it strictly to THE ADMINISTRATION OF MEDICINES FOR THE CURE OF DISEASE-CONDITIONS. For certainly a remedy is not always a medicine and many things that are called medicines are not true remedies for the disease-conditions, as viewed from the Physiomedical standpoint. For instance, a splint may be a remedy for the deformity of a broken limb, but does not come within the strict definition of a medicine; while on the other hand opium will relieve pain, because of this it is

called a medicine, even a “blessed medicine.” But measured by the scientific definition of poison, as already given, it is not only not a medicine, but not even a true remedy, because it does not cure the disease-conditions which give rise to the functional aberrations or pain; moreover, as we have already learned from the most eminent authorities of the medical profession who use narcotics most extensively in their practice, it is a poison, which our Philosophy, and definition of a poison, fully verify.

Physiomedical science demands that any agent, to become a true therapeutic remedy, must first be a *true medicine*; *i.e.*, its inherent constituency and the normal tendency of its therapeutic qualities are kindly accepted by living matter, *furnishing harmonious aid to Vital Force in its warfare against inimical causations and disease-conditions to restore the normal or physiologic balance.* Second, it must be applied or administered in strict accordance with the vital indications to logically meet the conditions and yield directly curative results, at the same time broadly covering the requirements of palliative treatment by removing the primary cause - causative phenomena - of the symptomatic unease. To illustrate: Morphia relieves pain regardless of the causation - thus far apparently it is a remedy for pain; but when weighed in the balance of uncompromising biologic and physiologic facts, it proves to be not only a false remedy, but an uncertain and consequently dangerous one; the pain-ease obtained by it is at the expense of intoxication (poisoning) of the sensory neurons. To be sure, if not carried too far, the neurons may eliminate it and regain their storage and sensory vigor; if this were all, the agent would not be so seriously objectionable, but *there is not a directly curative agent in the whole list of poisons*; moreover, such agents being falsely palliative and absolutely non-curative, are not admissible in direct prescribing or rational scientific and accurate therapeutics.

Now, in our humble opinion some of the older Physiomedical authorities have been in error by accepting the vague notions of other schools in regard to poisons, applying the term indiscriminately

to anything with which the organism can be deranged or destroyed; and then unfairly discriminating against certain substances as poisons without any fundamental rule for deciding what is and what is not the inherent nature of a poison. Either all deleterious agents are poisons, or they are not; and if not, then there must be some practical rule by which to definitely divide and classify them. This, we hope, has already been made plain.

It is not only unjust but futile to deny that practitioners of other schools actually cure very sick patients, using as therapeutic agents substances that are virulent poisons. To say that the patient would have gotten well without medication, or that Vital Force effected a cure despite the poison, is not only begging the question, but making assertions that are not susceptible of absolute proof in any given case. Such a contention is wholly gratuitous, so far as the well being of Physiomedicalism is concerned; there is far too much of superiority in the grand principles and practice of this Philosophy to attempt its defense by sophistry or unfair arguments. As all truths in medicine either belong to, or are placed in their proper relation with each other by the light of Physiomedical Philosophy, so our only logical course lies in broadly and candidly admitting all known facts in general medicine and placing them in their proper correlations with all the facts in a given line and adjusting them to our Theorem.

While it is absolutely true that a poison is a substance whose inherent constituency or normal constitution will when brought in contact with the neurons by assimilation, or directly by absorption, invariably exert a destructive or permanently inimical influence upon the nerve-units, and that the quantity of a poison can have nothing to do with its inherent constitution and relation to living matter and nerve-units, it is also as absolutely true that *the quantity of a poison* taken into the organism and brought to the tissue-units materially modifies the results of its influence upon these function-units, and consequently the functional manifestations. By thus administering

a poison in small doses in dilution with water or other diluent it becomes a remedy if the proper indications are met; this important fact as revealed by microscopic experiments with these poisons upon bioplasm already mentioned, is also verified by the homeopathic practice, demonstrating that exceedingly small quantities in high dilution will reach and influence the living matter of tissue-units resulting in remedial effects.

Thus we can freely accord to those schools whose therapeutic influences are largely derived from substances currently known as poisons, that measure of success with such agents consistent with the facts, as shown in the general results of their bedside practice; for when we come to candidly consider the plain biologic, histologic and physiologic truths and principles, and upon this sure basis an estimate is made of the three principal methods - Regular, Homeopathic, Physiomedical - accurately ascertaining how and why each obtains its remedial results, even granting that each and all cure proportionately the same number of patients, the unbiased reasoning mind cannot escape the conviction that the scientific, logical and safest therapeutic agents and methods, leaving the measure of success out of question, lies entirely on the side of Physiomedicalism. Now let us candidly consider these agents and methods from this rational standpoint and see if our position is well founded.

To avoid repetition we must refer the reader to our Theorem and Principia, page 16 to 21; but what must be especially borne in mind is the inherent resistive and eliminative instincts of Vital Force and living matter, read carefully paragraph 4, page 23. We have herein then, the indisputable scientific facts and principles by which we examine and test these various methods of therapeutic practice as follows:

1. ALLOPATHIC THERAPEUTIC AGENTS. - *Those therapeutic agencies or remedies whose inherent and normal constituency invariably tend primarily to either destroy or permanently damage the functional*

potency and power of the bioplasm of nerve-units, and secondarily to vitiate and destroy the normal standard of the vital fluids and tissue-elements of the living organism. We employ the term allopathic in its scientific sense and not in disparagement of any special school of medicine; for agents which inherently tend thus to inimically influence the vital elements of the organism may within circumscribed limits be followed by remedial results, as we have already shown, yet they are beyond question pathologic agents in any quantity, and these remedial results are obtained because of their power of arousing the resistive and eliminative instincts of Vital Force, goading it into new and opposite functional aberrations; these agents and results are therefore allopathic [*allos*, other; *pathos*, affection]; and the physician who seeks such remedial results, using these pathologic agents, is practicing allopathy no matter what he may call himself, or what school of medicine he may affiliate with.

2. HOMEOPATHIC THERAPEUTIC AGENTS. - *Therapeutic agents employed because of their inherent tendency to produce inimical effects on living matter, or the vital elements and fluids of the organism with consequent functional aberrations, which are required to form symptom-complexes similar to those produced by the patho-causative or disease causation.*

The homeopathic agent must according to their philosophy be also a pathologic agent, but in justice to this method it is but fair to revert to the fact, as already set forth, that they do themselves injustice, as do Physiomedicalists, in accepting the idea of a poison being anything that will derange the functions or destroy life. So the homeopaths hold that because an agent in sufficient quantity or continued long enough will derange functions, or ultimately destroy life, it is therefore a remedy for disease, if given in reasonably small quantities and for a symptom-complex the majority of which symptoms resemble those produced by the agent employed. - *Hanneman's Organon*, p. 69, §16.

3. PHYSIOMEDICAL THERAPEUTIC AGENTS. - *Therapeutic agents whose inherent constituency constitute a true medicine (page 220), exerting a sanative influence upon living matter, vital elements and fluids of the living organism, so as to furnish direct and rational aid to the Vital Force, under pathologic conditions, in restoring the normal potency of tissue-units, and physiologic harmony of organs and systems.*

Physiomedical therapeutics like the other methods above mentioned is in strict accord with its own principles and Philosophy. With a pathology which views disease as a condition of the vital elements and function-units of the organism and consequent functional departures from the normal line of physiologic functioning, it necessarily seeks such agencies and influences as will act in harmony, first, with these essential conditions of normal integrity of these vital elements (living matter and tissue-units); secondly, in sanative aid of the resistive, eliminative and restorative efforts of Vital Force as manifest in the functional expressions or disease-complex. In other words, Physiomedical therapeutic agents must relieve *disease manifestations* by remedying *disease-conditions*. To do this and at the same time aid and maintain the vital integrity of function-units as well as functional actions, an agent cannot be inherently pathologic in its influence and effects upon the living matter or function-units of the organism either in health or disease; therefore the Physiomedical *materia medica* must exclude poisons.

Now at first thought such principles of therapeutics would seem to draw a rigid line of discrimination against current *materia medica*, peremptorily restricting and reducing the Physiomedical therapeutic armamentarium to a ridiculous paucity of remedial agents. Of course we must admit that such judgment is just under the vagrant notion that a poison is anything and everything that can be made to inimically influence the function-units, or destroy life; indeed such ideas of therapeutics would render a true physiomedical remedy an impossibility. But when the term poison is scientifically defined (page 226), and the rules of sanative therapeutics logically applied in

the selection of remedial agents, the number of agents excluded from our materia medica is quite limited compared with those used by other schools and methods, many of which can be admitted into physiomedical materia medica; for, as there is really no restriction imposed, but simply the light of our Theorem, like a beacon, keeping the conscientious practitioner in the straight and safe path of scientific accuracy, so also there is no patent on any truth that this or any other school of medicine may contain.

With this logical understanding of poisons, of sanative remedies, and pathologic agents, we see that simply because an agent remedies disease-manifestations, or even disease-conditions, is not conclusive evidence that it is a physiomedical agent, for as we have shown a poison may be made to do the same thing in proper quantity and under definite adaptability to indications; as already stated, while quantity does not alter the inherent constituency and consequent effects of a poison, it proportionately determines the extent of its toxic action on nerve units and force of the results on functional actions. The same is true of course of any agent, be it poisonous, harmful simply, or helpful to living matter and Vital Force, its therapeutic results necessarily depend on the quantity administered, taken into the organism and brought in contact with living matter of tissue-units; see Section IV. It is therefore erroneous to assume that because an agent is not a poison no harm can be done to the organism by its administration in any quantity, in health or disease; or that because we call a substance a physiomedical therapeutic agent puts it beyond the possibility of doing any harm to the sick or the well.

IV.

THE LAWS OF REMEDIAL INFLUENCE

- CLASSIFICATION OF MEDICINES.

Having arrived at satisfactory conclusions as to what constitutes a true medicine or remedial agent, and ascertaining conclusively the differentia as to food, medicine and poison, the important questions that next demand our earnest attention are, why and how do these various and opposite results occur when these different substances are ingested? If medicines are passive and have no inherent action or motility, why is it that the ingestion of one will be followed by catharsis or evacuations from the bowels, while that of another will result in emesis or vomiting, while still another is followed by diuresis or increased flow of urine? In short, why do we have these various remedial influences from such a variety of therapeutic agents, each passive and inert, so far as inherent autokinesis is concerned, and which certainly cannot of their own volition choose as to what particular tissue, structure, organ, or part of the organism shall receive their influence? Even poisons, possessing inherent chemico-physical or dynamic force by which they are enabled to act upon the structure of nerve cells, certainly must be in abeyance to a higher force; they are wholly unable to exert their toxicity until by some superior acting and active volition, they are absorbed, assimilated and brought in juxtaposition with the neuron-structure. Why is it then that, speaking therapeutically of medicines we have what are called cathartics, hepatics, diuretics, emetics, etc.?

In dietetics we observe the same phenomena; in health or the normal condition of the digestive apparatus, or even in disease, certain food substances furnish constructive material for one part of the organism such as fat tissue, while the ingestion of certain other aliments is followed with the opposite result, that of reduction of fat tissues. Certain foods sustain brain-work while others are followed by disinclination for mental exertion.

If it is essential to the practitioner of medicine to know whether it is his medicines, or Vital Force which act kinetically to bring about desired therapeutical results, how much more important it must be to know why and how these remedial agents reach and influence one region or a single organ of the body to the exclusion of all others. The fact is, that remedial influence from any substance in the disease-state would be impossible and there could be no such thing as therapeutics were it not a fact that there is some force operating through fixed and invariable laws with sufficiently intelligent instincts to select, direct and adjust the inherent constituencies of reconstructive food substances, of restorative and remedial therapeutic agents, to the requirements and emergencies, as the varying and changing needs of the various tissue-elements, tissues, structures, organs, systems, apparatuses and regions of the organism may demand.

It is quite customary to dispose of this most vital question by saying that it is the "affinity" of a food, or a medicine for a special part of the body, that causes it thus to pay its therapeutic respects to that particular locality. Such argument is convenient in the absence of scientific premise and rational philosophy. But the notion that medicines, foods, etc., possess the power and faculty of selecting certain parts of the organism which happen to suit their "affinity" or liking, as a field of operations, belongs to the same reminiscence of medical superstition as that of "active" and "acting" medicines; such an idea of therapeutics has no place in the Physiomedical Philosophy.

If there was not another iota of evidence in support of our Theorem with its great unit concept of the Vital Domain in health, and disease, the evident and demonstrable facts concerning remedial influence of medicine would establish our contention beyond question. The following are facts which anyone with fair skill in the use of the microscope and modern methods of biological and histological investigation may have ample ocular demonstration as to their verity.

1. The living matter of tissue-units being the only thing in the organism possessed of an autokinesis, being the immediate energy of tissue-units and through them of the entire organic unity, is consequently the only active and dominant force in therapeutic results.

2. Bioplasm is the only thing in the organism endowed with the inherent instinctive faculty of absorbing, disintegrating, assimilating and appropriating to its own substance and vital purposes, the inherent molecular constituency of extrinsic substances.

3. Bioplasm is, therefore, endowed with the instincts of self-preservation; through inherent capacity of discrimination it is enabled to select from the circulating blood plasma, those substances that are sanative and helpful to its well being, and reject substances in the same media that are inimical, harmful, or poisonous.

4. In diseased conditions and tissue states, the increased functional activities necessary for the resistive, eliminative and restorative efforts of Vital Force, demands an increased supply of helpful material for living matter of tissue-elements, hence by the laws of Vital economics in demand and supply, and that of bioplastic selection and rejection, remedial substances or medicines in the blood current, or in the extravascular spaces, are drawn on and impressed into service in aid of these sanative activities.

5. Therefore, the controlling factor in the adjustment of the remedial influences of medicinal substances to the wants and demands at any part of the organism that may be attacked by disease-causations, is not that of medical "affinities," but the inherent instincts of self-preservation resident in living matter and Vital Force, which operates through the physiologic laws of bioplastic selection, and the adjustment of supply to demand, through the vasomotor apparatus; thus, medical agents, like food substances, are selected by this living matter from the capillary blood current, or from the blood-plasma in the extravascular spaces at any organ or part where the battle

between patho-causations and Vital Force may be on; in other words, medicines are impressed into service by bioplasm when and where the necessities require if they are at hand.

6. The demands and requisitions of living matter in the tissue-elements, any and everywhere in the organism expressed through the ganglionic and cerebrospinal nerves, in the sensations known as hunger, thirst, undue thermal changes, unease, pain and distress, are sent in as messages to the cerebrospinal centres, and to the great ganglionic centre, the solar-plexus and semi-lunar ganglia - "the abdominal brain" - which, through the vasomotor-apparatus, responds with the requisite supplies; and, by inhibition, or by innervation, as the case may require, governs these vast and varied functional activities, thus serving the individual wants of the function units.

Now let us compare these propositions with the actual pathologic and physiologic manifestations that are present and easily studied by the observant logical mind. We will take as an instance the pathologic condition of renal congestion - obstructed circulation of the kidneys. There is a stasis of the renal vasomotors, the tissue-states of which have been fully described, pages 75-6. Now the capillary current carries both, pabulum or food, to the living matter of the kidney tissue-elements, and the products of disassimilation or materials to be eliminated by the kidneys as urine; it is very necessary in order to not only maintain the normal standard, but the increased or aberrant excitation of function-rate, that there be a proportionately rapid capillary current to and from the kidney function-elements, so as to furnish ample pabulum supplies to sustain the units in their increased work; but exactly the opposite condition prevails in renal stasis and their supplies are much diminished.

Owing, therefore, to this cutting off of the kidney elements from their base of supplies and the increased demands on their vital vigor, they become impoverished. They are like soldiers in a long besieged garrison; they send out over the ganglionic nerves to headquarters

- "abdominal brain" - urgent requisitions for relief and are glad to get any kind of supplies that will afford means of escape from their unpleasant environments. Now, it is well known that there are agents which, given to a person in health, a freer elimination of urine will follow; this is because of the inherent law of bioplastic selection. It has been demonstrated biologically as well as physiologically, that the tissue-units through their living matter are possessed of individual preferences for foods and other substances; not only this, but according to Nissl's as well as experiments of others, page 230, even different parts of the same cell or tissue-unit possess different preferences, or at least they are differently affected by poisons and consequently must possess different capabilities for foods as well as medicinal influences. At all events, selecting one of these agents known as diuretics - buchu leaves, for instance - we administer it in some assimilable form such as an infusion, or the fluid extract diluted with water, per mouth; now, of course, this medicine goes the whole round of the systemic circulation, but the kidney-unit bioplasm possessing a special preference for buchu and, moreover, being now in an impoverished condition and in sore need of its helpful constituency, notwithstanding the slowed capillary current and stagnant vasomotor movement brings it less rapidly to the kidney-units than any other part of the organism, yet the force of bioplastic selection attracts its full therapeutic influence to the renal structures.

The remedial influence of the agent, in a very extreme state of congestion and stasis, will at first only reach those function-units or tissue-elements at the tangent or periphery of the stasis area, but as they become invigorated by its influence and increase their functional efforts through the local vasomotors, the stasis gives way and thus a therapeutic remedial wave, as it were, passes through the congested area breaking up the becalmed state. Thus, we see that living matter of tissue-elements - life plasma or bioplasm - is not only the basic factor in the genesis of living organisms, the organizer and

builder of the vital domain, the instigator of all functional performances in health and disease, the selector and distributor of all nutritive materials in the great assimilative and disassimilative processes, the prime resistive, eliminative and reconstructive force, but, it is also the supreme moving, instinctive intelligence in all therapeutic remedial influence. *The preferences and the needs of bioplasm, therefore, absolutely determines all therapeutic results in any disease-state of the organism or any integral part thereof.*

This viewpoint then, brings food and medicine in close relation. Indeed, the difference between a true medicine and a food-substance cannot be very great along real biologic and physiologic scientific lines. The only real difference is not in principle, but in the tissue-states and requirements of unit-bioplasm. In health the requirements are that of a steady and continual supply to the tissue-units of a substantial and permanent pabulum which the living matter can convert into its own substance, or can indirectly apply to any and all purposes for reconstructing and maintaining the physiologic balance between assimilation and disassimilation - waste and supply; these are afforded only by positive and negative food-substances.

The requirements are quite different in disease; this is an emergency and demands emergency measures; the bioplasm now needs temporary and dynamic but sanative aid in its efforts to sustain its arduous function-work of resisting the inimical actions and influences of pathocausatives and restoring the physiologic balance or normal conditions. After this bridging over the disease emergency, food-substances take up their part again in reconstructing and building up the organism to its former vital capacity.

From this we see that remedial influences must necessarily vary greatly in their nature, as well as in their application in these disease-conditions and tissue-states; hence, it is quite essential that the agents vary widely as to their inherent constituencies which go to aid these vital efforts, just as food substances must have a wide range of variance in their normal constituencies; this is self-evident.

But the most important lesson afforded by these facts is the rational reason why the abuse of a sanative medicine can be made to result in aberrant functional actions and even diseased conditions, the rationale of therapeutics, viz.:

The normal and, of course, continual organic requirements of the organism in a state of health *are furnished only by the proximate principles or constituencies of alimentary substances or foods.* The remedial aid demanded by Vital Force in the pathologic state or disease conditions *can be furnished only by sanative therapeutic agents rationally administered or applied.*

Therefore, by the immutable laws of inherent constitution of substances, and the selective, resistive, eliminative and restorative spontaneity of living matter and Vital Force, if a medicine, even though a sanative agent be given constantly in greater or less quantities for any considerable time when there is no demand or requirement for its medicinal constituency by living matter of tissue-units, Vital Force will reject and repel its influence, which rejection is expressed in resistive and eliminative activities, *i.e.*, functional aberrations.

CLASSIFICATION OF MEDICINES.

It is a fact established beyond question that the effects of each and every substance upon the organism, in health or disease, arises wholly from its primary influence on the living matter and architecture of the tissue-unit; that therapeutic results would be utterly impossible were it not for vital action in living matter of the organic unit; yet, it is also as evident that these therapeutic results would be wholly unattainable were it not for the co-ordinate functional activities of the organs, systems and apparatuses. In fact, the final test of any therapeutic agent consists in these consequences of its influence on bioplasm manifest by the functional activities under pathocausations.

Take for illustration a case of renal congestion, such as above referred to, or that of any other organ that may be thus deranged.

While all remedial agents administered must of course go the entire round of the general circulation, under control of the general vasomotor apparatus, before reaching the special vasomotors supplying the organs involved, yet, they are not taken up until they reach the neurons of the special or local centre presiding over the organ involved; here, by the law of self-preservation, selection and rejection, resident in living matter of the organ-units, the proper helpful constituencies of the administered agents are selected and appropriated at the point involved. Thus the therapeutic requirements and demands, at the local centres, are responded to by an adjustment of the vasomotor function so as to convey an extra supply of the drug to the diseased parts, which is promptly and rapidly done the moment an impression sent from these outlying secondary ganglionic organ-centres reach the solar plexus or abdominal brain.

One can get an excellent conception of the promptness and rapidity with which this response is made by the vasomotor apparatus in thus throwing an increased blood-volume to the part attacked, by observing the conjunctiva, if its circulation is nearly normal, in some operation on the eye such as for cataract, or tenotomy for strabismus, in the prompt vascular turgesence of this membrane which follows the first application of the fixation forceps. A more impressive example, however, of this responsiveness of the vasomotors and their power of almost lightning-like adjustment, is that of blushing. When we remember that in the normal state the whole circulating blood-volume traverses the entire round of the circulation in forty-eight seconds (Flint), add to this the increased rapidity by the exaggerated heart action in most systemic diseases, and we can readily understand how quickly therapeutic influences can be thrown to the affected parts.

These important facts as to the interdependence of the unit and the composite organs and systems for the therapeutic results of remedial agents, teach us how necessary it is to obtain correct and scientific notions as to why and how these results come about, that

there is no chance-work or hocus-pocus in the organism and no mystic "action" or "spirit-like force" (Hanneman) in drugs. Physiomedical Philosophy accepts only the rational facts that the individual organic unit (tissue-element) has a life history, life necessities and organic intelligence, that in no wise differ from the aggregate organic whole - the man; it knows that it needs food when it is exhausted, and how to obtain it when present in the blood-current; it also knows what it needs when sick and how to obtain it when remedial agents or medicines are in the same blood-current.

The notion that medicines "act" directly on structures and organs, instead of influencing their units and through these the functional performances, is, it seems to us, a self-evident error under which definite therapeutics and direct practical bedside results from remedial influences would be impossible. So, also, with many traditional terms and expressions, such as agents being "hepatics," "diuretics," "stimulants," "relaxants," etc.; that the same agent is a "tonic, astringent and expectorant;" or, "a relaxing and stimulating alterant," if used or applied in practice without a knowledge or rational comprehension of the important facts and underlying principles of vitalism, by and through which alone all therapeutic results can be attained, must render advancement in scientific and definite practice of medicine exceedingly slow. Yet, these terms have been so long prominent in the vocabulary of therapeutics that it is now difficult to displace them with the more accurate expressions of advanced therapeutic ideas. Indeed, it is not so essential to dispose of them if one only keeps in mind the facts, using the above simply as convenient terms; just as we still retain the names *artery*, for vessels carrying red blood, or *phrenic*, as applied to this plexus of ganglionic nerves, though we well know that blood instead of air circulates in the arteries, that the mind is not located in the diaphragm, as was believed when these parts were so named.

Mention has been made of medicines being absorbed and assimilated by bioplasm the same as food substances; this subject needs

further discussion, as it will enable us to better understand how variety and diversity of therapeutic results may be obtained from even the same agent. This will also enable us to advance in the first step towards logical classification of therapeutic agents. In fact, the first legitimate grouping of these agents from this advanced viewpoint differs in no wise from that of food substances as already given in Sec. II of this Part, p. 202 to 204. Remembering the distinction we make between a medicine and a food substance, p. 257, that a sanative medicine is or should be simply an emergency food as it were; that the logical office of therapeutic agents are to afford temporarily, potencies that may sustain and support the function units in the extra-functional work necessary to resist and eliminate disease-conditions and restore the physiologic balance, thus bridging over the disease-emergencies. For this emergency a typical food substance is not adapted, because in the first place it is too bulky and composite in its constituency, requiring a tax on the digestive apparatus which it is not now able to perform, as most of these organs and accessories, if not directly involved in the disease-state, are greatly crippled by reflex aberrations. A food substance contains too much so-called inert material or negative principles, both direct and indirect, that would only encumber and hinder the already embarrassed eliminative organs, a medicine is possessed only of subtle assimilable constituencies which are ready to go directly into the circulation no matter where introduced, requiring no tax on the digestive organs and aiding as a rule instead of encumbering the eliminative functions.

Therefore, we may logically divide medicines into the two primary classes of:
1. *Positive*; 2. *Negative* therapeutic agents, which are defined as follows:

1. POSITIVE MEDICINES. - *Therapeutic agents whose chief constituencies are capable of intracellular digestion by the neurons or nerve cells, i.e., the bioplasm of neurons, both cerebrospinal and ganglionic,*

absorbs and assimilates into its own substance, deriving helpful influence in inhibition and innervation of the vasomotor functions in resisting and eliminating pathocausatives and disease-conditions.

Careful and extensive experimentation some years ago convinced the author, as it is believed such experimental work will prove to the satisfaction of all who will thus candidly investigate, that the chief therapeutic constituency of all vegetable agents lies in the nuclear substance, which is the desiccated bioplasm of the plant. One has but to take a specimen each, of the same agent in powder form, one that is known to be fresh and rich in its therapeutic virtues and the other to have lost its qualities wholly; mount them on a slide in a warm, normal salt solution, and with a good microscope observe them carefully under from six to ten hundred amplification. Examining first the fresh specimen one readily discerns the cellular elements, the nucleus and "cell material" or "nuclein," which will be found now to be identical with the living matter or bioplasm of the fresh, green plant, and is, therefore, as already stated, the desiccated bioplasm of the living plant. Now place the prepared slide of the same powdered drug which is known to be therapeutically inert (a fresh specimen can easily be rendered so by subjecting it to too high temperature in drying), it will be as readily seen under the microscope that the nuclein has been destroyed. In its place is a blackened, brittle, insoluble powder that does not swell up under moisture or present any characteristic of cell-material or nuclein or nucleo-albumen. We have discussed this matter fully in Lyle's *Materia Medica*, pages 590-4, to which we refer the reader, not having space to pursue the subject further here.

These demonstrable facts certainly warrant the scientific classification of all *sanative* vegetable therapeutic agents or true medicines as POSITIVE, *because they are acted upon directly by the living matter of organic units, absorbed, assimilated and converted into bioplasm, thus accelerating the vital resistive and eliminating activities in the disease-state.*

2. NEGATIVE THERAPEUTIC AGENTS. - *Those therapeutic substances whose constituencies do not afford bioplastic material, yet they either directly or indirectly afford helpful influences to the vital efforts in disease conditions.* These agents may be subdivided into:

(a) *Direct Negative Agents.* - Those negative sanative agents that are usually absorbed by the living matter or the unit-structure generally, but are not converted into unit-bioplasm, but exert an aseptic and neutralizing influence upon the bioplastic and cell fluids, when in an abnormal state.

(b) *Indirect or Secondary Negative Agents.* - Those agents which exert *vito-physical* influence upon the vital fluids, such as the blood-plasma and formed secretions; or a *vito-chemical* action upon the forming excretions, such as the urine, perspiration, and the gastro-intestinal contents.

By the term *vito-physical*, we mean to say that an agent may under vital restraint or inhibition of Vital Force, simply by mechanical mixture produce a favorable change in the blood-plasma, gastric juice, saliva, in short, all the digestive fluids. For instance, the gastric juice may be overloaded with gastric mucous, so that its digestive work is crippled; or it may contain too much acid. In the latter instance some simple alkali, such as soda bicarb., neutralizes the acid; in the former instance some astringent, such as alum or tannic acid, will coagulate the mucous and set the gastric peptic secretion free. Both are indirect remedial agents, because they do not directly influence the tissue-units; for the reason, that they are not assimilated by the unit-bioplasm, they are negative agents. Also by the term *vito-chemical* influence we mean that under inhibition of Vital Force chemical changes, resulting in antiseptic and aseptic conditions, may take place in the gastro-intestinal contents. Those agents affording constituent materials for such interchanges are indirect negative agents. Splints, braces, in short, every form of surgical mechanical remedial measures, come under the category

of negative therapeutic agents. The alkalies, acids, and all antiseptic as well as aseptic agents belong to this very important and much used class of negative therapeutic agents. Negative therapeutics then in its proper scientific application is no less important than positive therapy.

The list of positive therapeutic agents is a long one, and, in a general way, we may say includes every sanative vegetable agent of the materia medica, with their pharmaceutical products, such as the so called "resinoids," "alkaloids," etc. For, if an agent is a pure medicine or sanative in its constituency, every proper pharmaceutical form of it, however much they may vary in therapeutic results, are all sanative in their inherent tendencies, if administered in accord with the vital requirements and due regard for the unit integrity of the diseased organism.

In the classification of positive therapeutic agents on the physiologic basis, *i.e.*, first, the causative or primary influence on unit-bioplasm of neurons; second, the secondary influence or result on the functional activities, we then logically refer the secondary results to the vasomotor apparatus either local or general; because, in no other way do we obtain secondary therapeutic results. Remembering that every organ of the body has its special ganglionic centre and plexus, is also supplied with involuntary muscular structure and is made up of individual units; in other words, that every organ and region of the organism has its own special vasomotor apparatus, then, bearing in mind the great law of bioplastic selection and rejection, we can readily see how it is that an agent administered in proper form, dose, and under concordant disease-conditions, will be followed by a definite change in the functional activities of a certain organ or part. For instance, if we have a torpid semi-congestive state of the liver vasomotors, it necessarily implies a lowered state of reserve energy or Vital potency of the hepatic units (liver-cells). Now, if we administer an agent for which the living matter of hepatic units have a preference, because its constituencies tend to increase the

vital potency of the hepatic ganglionic neurons (sympathetic nerve cells), their bioplasm selects and appropriates them; hence, from this primary or causative influence we obtain the secondary or functional results in an increased action (stimulation) of the hepatic vasomotors. Therefore, we say of this agent, its influence is exerted in hepatic vasostimulation.

From these, as we believe, logical premises, it is proposed to classify all sanative agents, of both positive and negative types, according to the therapeutic requirements of the pathologic conditions or disease-states. Based thus, on the physiologic activities for therapeutic classification, we group the aberrant functional expressions under disease-causations, into seven classes, viz.: *I, Vasoexaggeration; II, Vasodepression; III, Vasocompression; IV, Vasodilation; V, Vasoatony; VI, Vasotropesy.* To these, in order to include surgical, electrical, and other remedial measures we add: *VII, Mechanico-remedial agents.*

Class I. VASOEXAGGERATION. - *Undue acceleration or exaggeration of the normal function-rate of the vasomotor activities in general.*

The most prominent functional expressions of this tissue-state or causative phenomena are, undue nerve-tension and involuntary muscular contraction, excited vascular movements, elevated temperature, pain, etc. These, as a complex, in fact represent the febrile state.

The logical therapeutic agents to meet the above conditions are *vasorelaxants*. They are called "diffusives," and "diffusive stimulants," when applied to general or systemic vasoexaggeration; in localized vasoexaggeration they are termed hepatics, diuretics, diaphoretics, etc. Therefore, we subdivide vasorelaxants as follows:

(a) *General Vasorelaxants.* - Therapeutic agents whose inherent constituency afford helpful influence to the Vital efforts in eliminating the pathocausatives of, and inhibiting general or systemic vasoexaggeration.

The prime tissue-state to be overcome here is excessive clonic spasm or contraction of the involuntary muscular structures, both *vascular* (within the walls of blood-vessels), and *extravascular* (in structures and organs outside the blood-vessels). Hence the typical vasorelaxant in this state is an involuntary muscular relaxant. *Lobelia Inflata* is a pure type of general vasorelaxant; *Asclepias Tuberosa* perhaps comes next.

(b) *Localized Vasoexaggeration.* - Excessive or exaggerated vasomotor activities confined to a single organ, system, apparatus, or region. Examples - *Cerebral vasoexaggeration*, Meningeal vasoexaggeration, Gastric, Hepatic, Renal vasoexaggeration, etc. So-called "inflammations," such as "Nephritis," "Gastritis," "Meningitis," etc.

Therapeutic agents for these localized vasoexaggerations are *special* or *local vasorelaxants*. The selective and rejective endowments of the unit-bioplasm holds good in these localized troubles the same as in systemic disturbances, and, therefore, most agents that aid Vital Force in the general vasoexaggerations, will be selected from the blood current by the units of the involved organ or part and its influence used in the defensive and eliminative operations. Thus we classify the types of local vasorelaxants as follows:

(c) 1. *Local ganglionic vasorelaxants.*

Leptandra Virginica, *hepatic* vasorelaxant; *Lobelia Inflata*, *gastric* vasorelaxant; *Cassia Angustifolia*, *intestinal* vasorelaxant; *Verbena Hastata*, *renal* vasorelaxant; *Senecio Aureus*, *uterine* vasorelaxant; *Asclepias Tuberosa*, *pulmonary* vasorelaxant; *Phytolacca Decandra Radix*, *cardiac* vasorelaxant.

2. *Local Cerebrospinal Vasorelaxants.*

Cimicifuga Racemosa, *meningeal* vasorelaxant; *Passiflora Incarnata*, *cerebral* vasorelaxant; *Cypripedium Pubescens*, *spinal meningeal* vasorelaxant.

Class II. VASODEPRESSION. - *Subnormal or abnormally lowered vasomotor functional activities.*

The tissue-states of these functional aberrations consist in a deficiency of reserve vitality in the bioplasm of tissue-units generally, see page 186, definition 3. The source of nerve energy, as we have already endeavored to show, being the vital potency and surplus energy of the individual tissue-units generally, we can readily see the gravity of this tissue state.

Therapeutic remedial agents for vasodepression are *vasostimulants*. As this condition may be both general and localized, we classify vasostimulants also, as follows:

(a) *General Vasostimulants*. - Agents whose inherent constituency are helpful to vital conditions, and the resistive and restorative efforts of Vital Force in a general state of vasodepression.

Perhaps the purest type of a general vasostimulant is *Capsicum Fastigiatum*. *Diacentra Canadensis* is quite a reliable general vasostimulant.

(b) *Local Vasostimulants*. - Therapeutic agents whose constituency are selected by bioplasm of the local units of an organ, system, or region suffering from a localized vasodepression, because they aid the resistive and restorative Vital efforts.

Localized vasodepressions may, for therapeutic purposes, be subdivided into those affecting functions of the different organs, systems and apparatuses; as cardiac, pulmonary, digestive, cerebral, spinal, etc. Hence, we subdivide local vasostimulants as follows:

(c) *1. Organic Vasostimulants.*

Eupatorium Aromaticum, *cardiac* vasostimulant; Populus Balsamifera, *pulmonary* vasostimulant; Euonymous Atropurpurens, hepatic vasostimulant; Barosma Betulina, *renal* vasostimulant; Chelone Glabra, *digestive* vasostimulant.

2. *Cerebrospinal Vasostimulant.*

Erythroxyton Coca, *cerebral* vasostimulant; Viburnum Opulus, *spinal* vasostimulant.

3. *Muscular Vasostimulants.*

Fraxinium Americana, *voluntary* muscles; Myrica Cerifera, *involuntary* muscles.

Class III. VASOCOMPRESSION. - *Abnormal contraction (clonic spasm) of the involuntary muscular coats of blood vessels (intrinsic vasocompression) and the involuntary muscular tissues in the extravascular spaces (areola) of the various organs and systems (extravascular vasocompression).*

By reference to our schematic drawings, 4 and 5, probably a better understanding of the terms vasocompression and dilation may be obtained. Fig. 4, schematic of gastric peptic secretion, shows the normal functional modus operandi of these two physiologic processes, while Fig. 6 illustrates the pathologic state of the aberrant functioning in vasocompression and dilation. The distinction between the pathologic tissue-states of these two aberrations, vasodilation and vasodepression, already discussed, must be kept clearly in mind, lest confusion as to treatment occur. By keeping the primary tissue-states in view, there will be little danger of confusion. In vasodepression, which may extend to any and all tissues and structures alike, or to any localized area, there may be some dilatation, or rather relaxation, but it will never pass to a true vasodilation; so, also, there may be a vasocompression reactionary from extreme unit-exhaustion, as in hemorrhage, etc., yet these are secondary functional consequences and not primary conditions, with which we are now dealing from a therapeutic standpoint. The distinguishing fact, however, between these primary pathologic states is, that in vasocompression the primary or causative conditions lie in *irritation* of the ganglionic nerve centres, while in vasodilation there is deficient

vitality in both neurons and tissue-units generally, so that the muscular phenomena are consequential. Therapeutic agents for this condition are *vasodilators*. Vasocompression may be manifest only in the vascular coats causing abnormal diminution of the vessel-caliber, inhibiting the blood-flow into the capillaries; or it may be extravascular, resulting in contraction of the extravascular spaces (see Fig. 5), thus compressing the capillaries and limiting the capillary current. Hence, we subdivide the vasodilators as follows:

(a) *General Vasodilators.* - Agents whose influences through bioplastic selection are exerted on the ganglionic nerve centres generally, aiding the Vital Force to overcome both vascular and extravascular abnormal vasocompression.

Perhaps the purest type of general vasodilator is *Asarum Canadense*, *Anthemis Cotula* and *Anthemis Nobilis* are also pure types of this class.

(b) *Special or Local Vasodilators.* - Agents whose inherent influence is helpful to the vital efforts in overcoming undue intrinsic compression of the blood vessels in any organ or local part.

Illustrations:

1. *Cerebral Vasodilators.* - Cerebral anemia; here the arteries of the meninges or of the cerebral substance, one or both, are compressed and the normal supplies to the neurons much diminished. Agents, *Phytolacca Decandra berries*, *Scutellaria Lateriflora*.

2. *Uterine Vasodilators.* - Menstrual suppression from uterine anemia. Agents, *Senecio Aureus*, *Caulophyllum Thalictroides*.

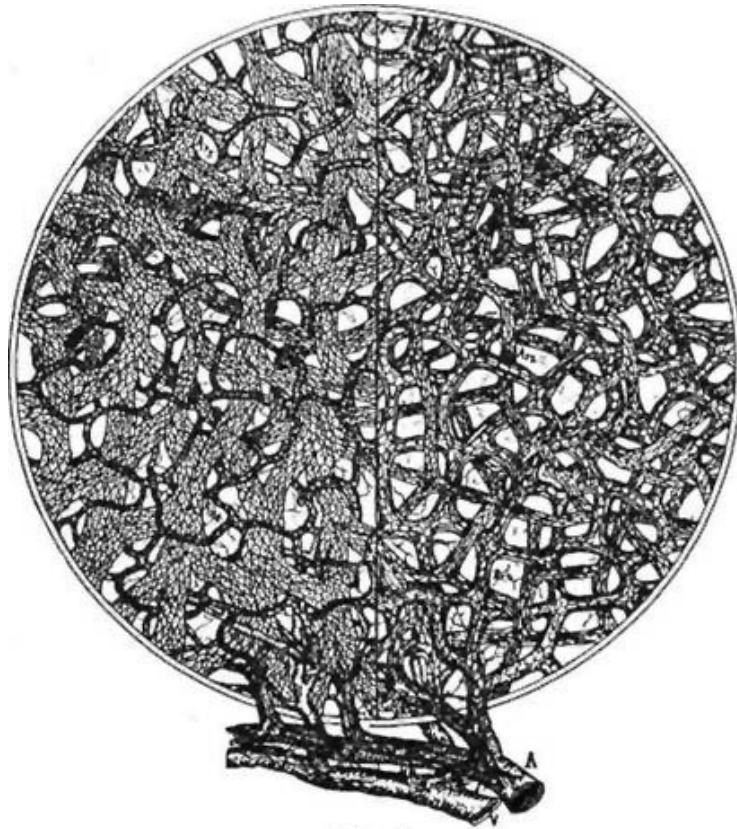


Fig. 6.

SCHEMATIC OF EXTRAVASCULAR CIRCULATION, VASOMOTOR APPARATUS, AND THE PHYSICAL BASIS OF PAIN, INFLAMMATION, ETC. - A - Artery. V - Vein. C - Capillary vessels. M - Involuntary muscles. Ars. - Areolar interspaces or extravascular spaces. G - Represents the ganglionic (sympathetic) ganglia and nerves. C - Represents the cerebrospinal nerves. The right half of the figure shows the normal state, the left shows a state of irritation, pain, inflammation; the extravascular spaces contracted by the pressure of involuntary muscles, the capillary vessels diminished in caliber, and the nerves impinged upon or squeezed and painful; nutrition, etc., all interfered with. - (J.M.T.)

Class IV. VASODILATION. - *Undue relaxation of the involuntary muscular coats of the blood vessels, and of involuntary muscular tissues of organs and systems, causing congestion and stasis of vascular and capillary blood flow, one or both, resulting from the primary tissue-states of deficient innervating action in the ganglionic neurons.* Illustration: General vascular congestion, “congestive chill,” shock, etc.

Remedial therapeutic agents for this complex are *vasocompressors*, which we classify as follows:

(a) *General Vasocompressors.* - Agents whose therapeutic influence are helpful to the vital potency of living matter of ganglionic neurons in abnormal dilatation of the blood vessels or the extravascular spaces, aiding Vital Force to restore the normal balance of the general circulation.

General vasocompressors, *Myrica Cerifera*, *Zingiber Officinalis*, are pure types.

(b) *Local Vasocompressors.* - Agents whose therapeutic constituencies are, by bioplastic selection, appropriated by the neurons of special organ-centres or parts whose vascular supply is obstructed by undue arterial dilation.

Illustrations:

1. *Pulmonary Congestion.* - Agents, *Polygala Senega*, *Polemonium Reptans*.

2. *Hepatic and Portal Congestion* - Agents, *Apocynum Androsemifolium*, *Juglans Cinerea*.

CLASS V. VASOATONY. - *A more or less permanent loss of normal tonicity and unit-activity of the involuntary muscular structures, and the active units of mucous membranes, organs and apparatuses, because of permanent loss of reserve energy in the muscular and cellular tissue-units, generally, or locally.*

Apparently quite opposite symptom-complexes may arise from this state, according to the parts involved. The involuntary muscular

structures alone may be involved, or the muscular structures and active secretive and excretive organ-units may all be affected; a special organ or entire apparatus may be implicated.

Vasoatony of course may be a secondary condition, resulting from serious and prolonged acute disease-forms, or from trophic nerve changes (vasotrophesy); but we apply the term vasoatony as above to that pathologic state only of the involuntary muscles and active organ-units, involving their nervous and vascular supply. The active organ-units, such as the glands and follicles of membranes, both secretory and excretory, the gastro-intestinal, renal, uterine, etc., are entirely different from that of the other tissues of the body, and are consequently subject to special disease-states, from derangement of their special vasomotors; hence, as we shall show, vasoatony, vasotrophesy, as well as vasodepression, are each wholly different tissue-states from the other, with different functional aberrations and symptom-complexes; and, therefore, require different therapeutic management.

Therapeutic remedial agents for vasoatony are *vasotonia*, which we classify as follows:

(a) *General Vasotonics.* - Agents whose inherent constituency aid the Vital Force in restoring the normal tonicity of involuntary muscular structures and the normal unit-activity of cellular and glandular structures generally.

In the list of general vasotonics are naturally placed what are popularly called alteratives; which, we presume, were so named because of their supposed mysterious "action," in some way, altering the blood-elements, a very improbable thing. These vasotonics have a wide range of influence, aiding the vital activities of not only all the secretory and excretory organs, but they influence the entire lymphatic apparatus. Therefore, instead of having any alterative "action," chemically, or physically, directly upon the blood-elements, they aid the Vital Force, through their helpful influence, upon the

tissue-elements of the excretory organs, to eliminate morbid matters from the blood-current and blood-plasma in the extravascular spaces and in the lymphoid circulation; through the secretory and assimilative organs, to furnish new and purer materials for reparation. In this sense only can we say they are alteratives, yet a far more scientific term would be, *eliminative* and *restorative* vasotonics. Hence we classify as follows:

(b) 1. *Primary Vasotonics.* - Therapeutic agents whose influences are used indiscriminately by the tissue-units involved in a general or constitutional state of vasoatony. Types of primary vasotonics: *Hydrastis Canadensis*, *Ptelia Trifolia*, *Liriodendron Tulipifera*, *Cinchonia Calisaya*.

2. *Eliminative (Depurant) Vasotonics* - So-called "Alteratives." Therapeutic agents whose influences are selected by living matter of tissue-units generally, or locally, when involved in a state of *obstructive excretory vasoatony*. Their influences, therefore, are exerted in aid of the excretive and eliminative functional activities.

Types of eliminative vasotonics: *Iris Versicolor*, *Menispermum Canadense*, *general eliminative* vasotonics. *Prinos Verticillatos*, *Cascara Sagrada*, *alvine eliminative* vasotonics. *Celastrus Scandens*, *Apocynum Canabinum*, *renal eliminative* vasotonics. *Alnus Serrulata*, *Echinacea Angustifolia*, *lympho-vasotonics*.

3. *Secernent Vasotonics.* - Therapeutic agents whose principles are selected by the living matter of secretory gland-units in a state of vasoatony. These are also so-called "alteratives."

Gentiana Lutea, *Cocculus Palmatus*, *gastric and intestinal secernent v* asotonics.

Class VI. VASOTROPHESY. - *Innervative degeneration of the neurons (nerve cells) of both ganglionic and cerebrospinal systems, generally, or localized; due to inefficient or obstructed central vasomotor functions, or to some form of neuron-poisoning of the trophic centres of either system of nerves.*

It is hoped that the distinction here made between the two complexes, vasoatony and vasotrophesy, will be recognized as physiologically and pathologically just, as we certainly believe it to be. That, while in both the primary tissue states or causative phenomena may lie in the neurons of both nervous systems, the conditions are very different; in the former the ganglionic neurons lack energy simply, resulting in general or local inactivity; the ganglionic organ-centres of secretory and excretory organs are alike involved. While in the latter, the tissue-state is primarily neuron degeneration. Vaso-depression is not to be confounded with either because it arises from a tissue-state of lowered activities, from any causation, of tissue-element activities of the whole vasomotor apparatus either generally or locally.

This causative pathologic phenomenon vasotrophesy is the basic condition of all degenerative processes in the cerebrospinal nervous system, both central and peripheral. We believe it physiologically just to give wider range to this, we think, hitherto vaguely restricted term: as we have already pointed out, the terms "trophic influence," and "trophic change," as generally used, mean nothing except an undefined arrest of nutrition, involving what are supposed to be special nerves, which in some unknown and unknowable manner, are said to preside over nutrition of special parts. Now as these special trophic nerves have never yet been demonstrated, and as such a thing is not in harmony with the known facts of physiologic congruity and logical adaptation of functional performances; it is, we certainly believe, a more rational position to place the primary tissue-state in the *nerve cells*, as in pain, etc., and make this wider

assignment of the disease conditions and consequent aberrations in this complex of vasotrophesy.

In Part Third, pp. 47 to 56, we have, it is believed, given sufficient facts to sustain our position in the mind of candid students of these important questions. Our contention then, is, that the trophic "sense" or action is necessarily resident in the ganglionic centres primarily; that it is through the extension of the ganglionic neurons (so-called "ganglion cells") and plexuses over into the cerebrospinal axis, that this system derives its so-called trophic centres. It certainly cannot be disputed that the entire great chain of organic functioning included in the term general nutrition (assimilation, reparation, disassimilation), belongs wholly to the vasomotor apparatus, as herein understood. In support of this contention as to the ganglionic (sympathetic) centres in the cerebrospinal axis, we give space to quote from the recent (1900) translation of H. Openheim's great work, "Diseases of the Nervous System," by E. E. Mayer: Lippincott Co. Under the section, "Vasomotor SECRETORY AND TROPHIC DISORDERS," he says:

"The cortex of the brain contains a vasomotor centre, near the motor centres; it has been found by experiments on animals (Ellenburg-Landois). Its stimulation produces decreased temperature upon the skin of the opposite side. * * * The chief centre is in the medulla oblongata, although vasomotor centres are found throughout the spinal cord. The exact locations are unknown. It has been thought that the lower central ganglion of the medulla is the chief centre. * * * Lately Reinhold has described a large area on the floor of the fourth ventricle, as a vasomotor centre. In the spinal cord it is probably the gray matter of the anterior and latter horns which contains the vasomotor centres. * * * That vasomotor fibres pass directly into the peripheral nerves is not improbable. Vasomotor disturbances may occur in diseases of almost every part of the nervous system," pp. 68-9.

If these things be true, as we have contended they are, then all degenerative symptom-complexes have their primary tissue-states in vasotrophesy. So that the term *trophoneurosis* is synonymous with vasotrophesy. Admitting the generally believed theory, which we much doubt, that the cerebrospinal axis exerts direct control over the ganglionic (sympathetic) centres resident therein, we would even then divide vasotrophesies into *ganglionic* and *cerebrospinal*. Each of these we subdivide into *general* and *localized*. For the therapeutic consideration of these tissue-states and functional conditions, then, we classify the remedial agents for these conditions and complexes, into *tropho-restoratives* and *tropho-constructives*, as follows:

(a) *General Ganglionic Tropho-restoratives*. - Therapeutic agents whose inherent constituencies are used by living matter of ganglionic neurons in both the solar centre (abdominal brain) and organ-centres, to aid the vital efforts in restoring the normal state of nutrition when in the disease-state of vasotrophesy.

Typical agents. - Hydrastis Canadensis, Balsamodendron Myrrha.

(b) *Local Ganglionic Tropho-restoratives*. - Therapeutic agents whose medicinal properties render aid to the vital restorative efforts in the disease-form of *localized ganglionic vasotrophesy*. Such as degeneration of involuntary muscular tissues of organs, systems, and apparatuses: The skin, bones, liver, heart, kidney. Contracted, or hypertrophied, liver, heart, kidneys, etc.

Typical agents. - Cactus grandiflorus, Cerus bonplandi, Convalaria Majalis; *Cardiac vasotrophesy*.

Dioscorea Villosa, Morus Cortex; *hepatic vasotrophesy*. Ampelopsis Quinquefolia, Viburnum Prunifolium, Prunus Virginiana; *gastro-intestinal vasotrophesy*.

(c) *General Cerebrospinal Tropho-restoratives.* - Therapeutic agents whose medicinal constituencies afford physiologic aid to vital restorative efforts in the disease-complex and conditions of general cerebrospinal vasotrophesy. Such as paresis, parasthesia, sclerosis, voluntary muscular trophesy, etc. Typical general cerebrospinal tropho-restoratives: Avena Sativa, Cola Acuminata.

(d) *Local Cerebrospinal Tropho-restoratives.* - Therapeutic agents whose constituencies aid vital restorative activities in the disease-form of localized cerebrospinal vasotrophesy. Such as motor trophesy of special muscles, or groups; localized anesthesia, special sense trophesies - optic, olfactory (atrophic rhinitis), auditory, etc. Spinal sclerosis, myelitis, etc. Also the mental centres, affecting perception, apperception, emotions, will, etc.

Typical local cerebrospinal tropho-restoratives:

1. Avena sativa, Cimicifuga Racemosa; *general cerebral* tropho-restoratives.
2. Cola Acuminata, Alpinia Officinalis; *motor cerebrospinal* tropho-restoratives.
3. Phytolacca radix dried, Caulophyllum Thalictroides; *optic neuro*-restoratives.
4. Helonias Dioica, Humulus Lupulus; *mental*, especially *apperceptive and emotional* tropho-restoratives.
5. Turnera Diffusa, Aletris Farinosa; *spinal* tropho-restoratives.

(e) *Tropho-constructives.* - Agents whose inherent constituencies furnish to living matter of neurons, in a tissue-state of trophesy, reconstructive material, thus aiding the restorative Vital efforts.

Tropho-constructives may be properly called emergency foods of the most positive nature. Here, as in dietetics proper, as we have endeavored to show, nature's physiologic constructive laboratory transcends the destructive chemic laboratory. Our empiric grandmothers who stopped vomiting with a powdered "chicken-gizzard," when the doctor had given it up, gave the profession a therapeutic lesson that it has taken over a hundred years to understand. Indeed we are just on the threshold of cellular therapy. The cellular preparations are true tropho-constructives; properly prepared they represent the desiccated bioplasm of gland-units of animals, such as the salivary glands, pancreas, mesenteric "glands," gastro-intestinal mucous membranes, testes, thyroid body, etc. These must be taken from perfectly healthy animals, carefully prepared so that putrescent or other disintegrative processes are not permitted to deteriorate the nuclei or bioplasm. Too much heat must be avoided in drying, lest the latent vitalizing properties of the unit-bioplasm be destroyed. They are carefully pulverized and preserved by antisepticising processes. Thus in proper form, *i.e.*, the unit-bioplasm preserved in its physiologically nascent state, these nuclein products become the most potent positive unit-foods. Their constituencies are almost entirely assimilated and appropriated by the living units, especially when assailed by disease-causations.

These tropho-constructives, of which the author has had most satisfying results, especially with "Protonuclein," and "Troponine," are alike applicable in all classes of vasotrophesy, as above described. We shall have occasion to speak of these agents farther on.

Class VII. MECHANICO-REMEDIAL AGENTS. - *Mechanical appliances, supports, movements; intrinsic and extrinsic muscular and mental actions; extrinsic physical and chemical forces; all extrinsic influences that may be available as remedial aids to the vital instincts in the resistive or restorative efforts in disease-conditions.*

These mechanico-remedial agencies may be sub-classed as follows:

(a) *Surgical appliances.* - Splints, braces, abdominal and uterine mechanical supports; hard bandages, such as plaster of paris, starch, gum, etc.; soft bandages, cotton, woollen, linen, silk; elastic bandages, stockings, etc.

(b) *Intrinsic and extrinsic actions.* - Exercise, massage, psychotherapeutics, etc.

(c) *Extrinsic forces.* - Electricity; gases, such as oxygen, hydrogen, etc.; condensed air, etc.

Thus far we have dealt entirely with the distinct physiologic and pathologic tissue-states and consequent functional departures arising therefrom. These six classes of disease-complexes include all forms of disease states that have been classified under the old nosology; of course this, as we believe, scientific classification necessarily readjusts much of former pathology and nosology to strict physiomedical principles; consequently, at first sight, the innovation may to some appear unwarrantable, but the more this classification is studied by the earnest seeker for science in medicine, the more practical and just it will become.

Necessarily in thus dealing with ultimate therapeutic principles, each tissue-state and consequent symptomatic manifestation, together with the therapeutic agents indicated, must be considered abstractly so far as possible, so that each fundamental principle of rational *condition-treatment* might be kept clear and unconfused in the study of these Principles of Therapeutics. We now turn our attention to the discussion of what may be termed *mixed aberrant tissue-states and symptom-complexes*; which necessitate *compound prescriptions* or *therapeutic combinations of agents*.

1. By the term *mixed tissue-states and functional aberrations*, we mean a combination of any two or more of the above classified

disease-complexes. Some of these may be concomitant, others coexistent. For instance, Vasotrophesy may be a concomitant of Vasoatony, that is to say, it may be a secondary result of vasoatony; while vasodilation and vasocompression may be coexistent locally indifferent parts of the system, arising from the same disease-causation, or from separate invasions. The concomitant complexes which are the secondary tissue-states and functional aberrations, constitute the most dangerous element in nearly all acute diseases. In chronic diseases, as a rule, when they come under the physician's observation, the primary states and aberrations have long passed away, leaving only the secondary or concomitant complexes.

2. These facts render compound prescribing a most important requisite of scientific therapeutic practice; requiring a broader judgment and more accurate knowledge of pathologic conditions than single dosage. Indeed specific medication is not as some suppose, confined to single prescribing, by any means; specific medication in fact is best practiced by meeting specific tissue-states and conditions, with a proper combination of the requisite number of harmonizing agents to supply all the requirements of the vital instincts in their resistive and restorative efforts. For, be it remembered, *the specificity lies not in the medicine, but in the selective and discriminative instincts, and vital requirements of living matter in the tissue-units.* Hence, a therapeutic agent can become a specific only when it answers the specific purposes of Vital Force. Therefore, any number of agents combined, each thus fulfilling the vital requirements in a single or a mixed disease-complex, each being a specific for certain vital demands in the complex, collectively constitute a specific therapeutic combination or compound.

From these facts we see that, while it is, of course, very desirable, and in fact is a natural result of the scientific practice of Physiomedical Therapeutics, to use as few agents as possible to meet the conditions, yet the vast importance of condition-treatment must

not be overlooked in a misguided zeal for single or so-called "specific" dosage. If, however, one agent will meet one or more of certain prominent disease-conditions, and another agent meet one or more of other important conditions in the same case, it will be found best as a rule, especially in acute cases, to give two, or even more of these compound agents, separately and alternately. Happily it is a most valuable characteristic of Physiomedical medicines, that the large majority of them are therapeutically compound, in other words, will meet more than one pathologic condition.

In combining agents three important things are to be considered. First, the adaptation of their inherent constituencies to the vital requirements of the tissue-states and consequent functional aberrations in a given disease-complex. Second, their therapeutic harmony. Third, the chemical and physical affinities of each and every agent in the combination.

The first is the most important question of therapeutics. A therapeutic agent is a remedy only when it aids Vital Force through living matter to remedy the abnormal tissue-states, thereby restoring to their normal functioning, the aberrant acting organs and systems. If a therapeutic agent can afford no such aid to the invaded organism, its administration is unwarrantable; for there can be no justification in burdening the already taxed resistive and eliminative powers of the diseased organism with any substance, even an otherwise sanative agent; if it cannot help, it must necessarily hinder, inasmuch as it adds an iota of additional eliminative work to the disease-ridden organism. It is, therefore, a delusion to believe that because an agent is sanative or non-poisonous, it is not necessary to be accurate and scientific in its therapeutic application.

In this consideration dosage is a most important factor. It is also delusive to believe when an agent is indicated, that because it is sanative, too much of it cannot be given. In the first place we must bear in mind the minuteness of the fighting units to be supplied with ammunition (medicine), and that their demand is not for

substitutes, something to take their place on the firing-line, but friendly aid in fighting-supplies. If each soldier was compelled to carry forty pounds of ammunition, instead of forty rounds, he would be disabled by the very thing upon which victory depends. So, also, the units fighting against disease invasion, may be hampered with overdosage of even sanative agents. Again, if an agent or agents are given out of therapeutic harmony with conditions, as set forth in the preceding classification, a vasodilator for vasodilation, or a vasorelaxant for vasodepression, for instance, much harm may result; these opposite conditions, too, may exist in different regions at the same time, hence accuracy in condition-treatment is most essential.

Second, but little less important is the therapeutic harmony of combined agents; by which is meant the extent of influence furnished to living matter of invaded tissue-elements. This is always in exact ratio to the percentage of assimilable constituency afforded the bioplasm of these units. By this important law of therapeutics, if two agents, for instance, are combined in equal quantities in administration, one of which contains twice as much (as much again) assimilable constituency as the other, it will possess twice as much attraction, other things being equal, for the selective instincts of the invaded bioplasts; hence the agent with least percentage (weaker agent) will be carried along with the stronger agent to a different point from that which it was intended; especially will this be so if the diseased conditions are severe and the demands of living matter urgent. For we must keep in mind the important fact that after the agent has reached the units, its medicinal remedial results depend wholly on the behavior of the living matter towards it. In other words, the promptness and rapidity of the response from administration of a therapeutic agent depends on the urgency of vital demands and the avidity with which the invaded bioplasm seizes upon the helpful medicinal constituency when brought within its reach.

In acute cases, the requirements and emergencies being greater, it is more necessary to use very few agents in combination, for the reasons above given; here, single prescribing should be the rule. One may make haste slowly by meeting one condition at a time, rather than by a shotgun combine in the vain hope of hitting all conditions with one compound dose. But in chronic disease-complexes the conditions and requirements are very different, consisting of many secondary conditions, from which arise numerous mixed reflexes. Although even here, one should not attempt too much by combined dosage, but rather treat one or two of the more important conditions and aberrations at a time; however one may carefully select and combine even a considerable number of agents to good advantage. In a proper combination, at first, the weaker agents will be taken by the stronger ones to the most urgent points, but after the conditions are remedied there, the weaker agents, through the great law of bioplastic selection, will then become the stronger ones, because they are now in greater demand and thus draw the heretofore stronger agents with them to the affected parts demanding their constituencies. Thus a compound may, step by step, eventually meet all conditions in chronic cases, where more time is afforded.

The third division of this discussion, *i.e.*, the chemical and physical affinities of therapeutic agents in combination, belongs wholly to pharmacy and of course does not come within the scope of this work.

The administration of therapeutic agents otherwise than by ingestion, may be properly considered here. This may be done per rectum, application to the surface, to subdermoid tissues by denuding them of the epidermis, to the mucous membranes, injection into the various cavities of the body, by direct vascular injection, by hypodermic and deep tissue injection. Of these only rectal administration and superficial and deep dermoid application properly belong to this section of therapeutics.

Rectal administration. - The administration of therapeutic agents per rectum is perhaps as old as medicine itself; yet we doubt if the value of this method of introducing medicines into the organism ever has been fully appreciated by physicians. There can be no other argument against this method than that of conventional modesty; all anatomic and physiologic facts are entirely in favor of rectal administration. In its normal state the rectum is entirely empty, and its large absorbent, or rather endosmotic, surface is entirely unobstructed. Not so with the stomach, both food and medicine must be mixed together in one mass, each waiting for its turn to be absorbed. From the large mucous area of the rectum (quite as great as the stomach), the villi of which are much larger and more active than those of the stomach, substances taken both directly into the capillaries and into the lymphatic vessels reach a large part of the systemic circulation at one bound, as it were. Substances absorbed from the stomach must go the round of the pulmonary circulation and through the heart before they commence to traverse the systemic circulation. The rectum is supplied almost entirely with ganglionic nerves and is therefore not so sensitive as the stomach and will tolerate medicines much better. The pelvic sympathetic centres are numerous and most important, hence impressions on the vasomotor centres can be made here almost as responsive and far-reaching as on the solar centres. These and many other considerations show us the vast importance of the rectum as a threshold for therapeutic measures.

Surface administration. - Here, as per rectum, we do not consider local medication of these parts, but the introduction of therapeutic agents through them into the capillary and general circulation. If the skin be properly prepared, the agent or agents in proper form and rightly applied, we undertake to say that surface or dermoid administration surpasses in efficacy and promptness that of the stomach. Here, too, the anatomic and physiologic facts are entirely in favor of this mode of administration. In fact, it is hard to account

for medicines being so universally inflicted upon the stomach when there are so many other more direct avenues, on any other grounds than that our earliest instincts on entering this world, is to cram everything into the mouth.

Substances taken in from the skin go directly into the capillary vessels and lymphatic tubes, thus reaching the systemic blood-current much sooner than per stomach. Not only this, but if applied over a part affected they reach the ganglionic secondary centres of that region and their influence is expressed directly in the vasomotor activities of the parts. Moreover, the medicine is taken in unchanged; by the process of osmosis (not absorption), it goes directly into the extravascular spaces of the parts, coming at once within reach of the living matter of local units, before it is finally taken farther by the same osmotic process into the capillaries and lymphatics. Thus we get its influence both locally and systemic. Not so with the ingested medicine, it comes in contact with the digestive fluids as well as the ingesta, and its remedial constituencies are often wholly destroyed before they can get into the circulation; and the physician wonders why his medicine doesn't "act."

As we have said, medicines are taken in through the skin by the process of osmosis. The osmotic pressure or attraction originates primarily in the selective endowment of bioplasm, which is the coefficient of the vital requirements in any given case. The secondary or physical elements of this osmotic pressure lie in the differences of density, temperature and affinities of the medicament and the vital fluids - blood-plasma in the extravascular spaces, and in the capillary blood-current. These facts must all be taken into consideration and the dermoid therapy administered in strict accord with them (a thing that is not often done). To insure most satisfactory results, the surface to which the application is made must be thoroughly cleansed, first with hot water, then with pure alcohol, and lastly with plain, cold sterilized water. The medicament must be as fluid as possible, slightly acid and somewhat below the temperature

of the surface, if it is normal or supernormal, if subnormal the application may be quite above it. The rationale of this is, that the blood being alkaline there is an attraction by affinity of the acid application and alkaline blood-plasma; the difference of temperature adds also to the physical attractive forces.

Indirect or reflex therapeutic influence. - Before concluding this section of therapeutics, it is perhaps in order to refer more explicitly to what we have possibly not made sufficiently plain, as to the part the nervous system plays in therapeutic results. The nature and modus operandi of poisons already discussed, has certainly illustrated the role of the nervous system so far as poisons are concerned. So, also, the ganglionic system and vasomotor apparatus have, we think, been placed in their proper position in their therapeutic role in our classification of therapeutic agents, see page 55. What we refer to now is the physiology of transference of therapeutic influence or reflex nervous therapeutic results.

We have already shown that the living matter of neurons or nerve cells take up the constituencies of sanative therapeutic agents and by intracellular or parenchymatous digestion obtain and appropriate their constituencies. Now the cerebrospinal neurons, as we hope has been satisfactorily shown elsewhere ("Inductive Vitality" Transactions, Ohio State Physiomedical Association, 1891), are storage cells for nerve energy; being highly charged with induced static energy. This fact explains how it is that by intracellular digestion of a therapeutic agent its potential energy is transferred into kinetic nervous impulses, which are conveyed by the efferent nerves to organs and systems as secondary therapeutic influence. Again, as impulses from therapeutic impressions by sanative agents are traversing the ganglionic nerves from a peripheral or organ-centre to the solar centre, they are often switched over to other secondary centres of the ganglionic system, or to the cerebrospinal periphera and conducted to their centres. Thus these transferred or reflex therapeutic influences are in fact the most important factors in therapeutics and must be carefully studied by the scientific prescriber.

The profoundly depressive and violent secondary actions of poisons are wrought wholly through this law of transference of influence. The toxic agent acting upon the body-structure of the neurons (the storage elements), liberates their static energy, to which is added the inherent potential toxic energy, and the result is a violent explosion of inimical kinetic energy projected upon the organ, or system, or parts thereof, whichever happen to be in continuity with the central area of toxic action. Thus, from this standpoint, which it is hoped a candid and impartial study of all the facts broadly interpreted will verify, we must, to obtain definite therapeutic results, study and practice wholly on vitalistic lines.

V.

IMMUNITY AND ANTITOXINS.

The subjects of immunization and the so-called "antitoxin treatment," are becoming so prominent, and in one form, at least, are being forced upon the profession generally, regardless of principles, belief, or personal rights, that it is time these questions should be impartially and broadly weighed in the balance of unbiased truth. Certainly we have a right to square these questions by the Theorem and Philosophy of Physiomedicalism and ascertain their relation to the idea of vitalism.

That there is such a thing as so-called "*natural immunity*" we cannot for a moment doubt. In other words, it has been demonstrated beyond question, that the living matter of tissue-units possess in a high degree self-protective endowments, prominent among which is that of adaptation to adverse environments, making the best of adversity. By reference to our definition and classification of poisons it will be called to mind that, as we believe, poisons primarily attack the architecture (cell-structure) of the neurons (nerve cells) only. If our position be true, natural or more properly *vital immunity* is rationally explained.

The explanation then is this: A toxic agent or poison, smallpox virus, for instance, is introduced into the organism in a very minute germinal form; finding a favorable culture field, *i.e.*, suitable pabulum for its constructive unit-multiplication, or proper contagium material for vital or for chemic formative interchanges, as the case may be, the contagion develops, step by step, in definite, formative process, the unit-invasion being necessarily gradual, increasing in exact ratio to the developmental laws of the causative genesis; consequently, the living matter of the invaded neurons is enabled to adapt itself and the neuron-structure, to the adverse conditions and toleration of the toxic matter; meanwhile the storm of aberrant resistive and eliminative functioning goes on. The eruptive phenomena are the result of peripheral nervous irritation by the toxic agency; for, be it remembered, the nerve-fibres are simply a continuation of continuity of the neurons. When the pabulum supply of the (smallpox) toxicant is exhausted, the culture field becomes barren, the storm subsides, but an impress is left upon the neuron structure - perhaps it may be an infiltration of the tigroid substance with atoms of the toxic agent - which remains long after the disease-complex has passed, rendering the neurons immune from a second intoxication by the same poison. This is *vital immunity*. There is no question but in almost every form of disease, as well as the so-called purely contagious, the tissue-units by this great law of adaptation to inimical environments, most likely through inherent re-enforcement of the reserve vitality and vital resistance of the tissue-units, are rendered for a greater or less period immune, not only from the same pathocausative, but different contagium.. After recovery from a severe attack of typhoid, not infrequently the patient, who perhaps was previously for a long time in bad health, becomes quite robust and immune from other inimical causations. So, also, with the infectious disease-forms; infection with one form renders the individual immune from other infections. The author has seen this demonstrated in syphilis and smallpox. In a very large experience (over two thousand

cases) of smallpox, we made careful observations, and never knew one who had had syphilis that took smallpox. Our observations included a number of cases exposed to smallpox fifteen to twenty years after the syphilitic infection.

While all these facts with regard to vital (natural) immunity afford most valuable landmarks to the experimentalist along the lines of immunity, there are basic principles that must not be lost sight of if we would arrive at correct practical results. We must keep in view the idea that the human organism is essentially a vital commonwealth, dealing with it on the broad principles of law and equity generally, viz., the greatest good to the greatest number. This is undoubtedly the fundamental principle guiding all vital operations, as especially manifest in the phenomena of disease. No less important are the instincts of resistance and warfare against inimical invasions of the vital commonwealth, resident in living matter as manifest by Vital Force.

With these facts in mind, we are prepared to consider the question of induced or so-called "artificial" immunity. In the first place we must know that such a process, at the very best, is nothing more than a faint shadow of the actual vital process of *vital* immunization. It is as the photograph to the actual living object. Therefore, we cannot hope for more than a mere imitation by induced immunity. With this understanding that what may be attained at best, shall be simply an emergency expedient when the individual must necessarily be exposed to these infectious and contagious causations, enforced immunity is not only justifiable, but is certainly a most valuable expedient. But when it comes to the consideration of the means by which we shall induce this immunity, we have quite a different question to face. The now rapidly growing popular method of infecting the organism with the same toxic or inimical causation, pathocausative, diluted or possibly modified by poisoning animals with it, and using the blood-serum of the infected animal as an immunizing agent, is certainly not to be commended from a physiomedical view-point.

In the first place, no immunizing agent should be used that pathologically arouses the resistive and eliminative instincts of living matter and Vital Force. The very fact that causative phenomena and secondary aberrant functioning follows the administration of any agent, is *prima facie* evidence that the agent is pathologic - a pathocausative. The notion that an immunizing agent must necessarily be toxic or pathologic, belongs to the ancient epoch of medicine, when it was thought that "all our best medicines are the most virulent poisons." Vital immunization, as just described, is, also, like induced immunity, nothing more than a protective expedient of auto-immunization by Vital Force and bioplasm. But there is in fact such a thing as natural, not auto-immunization, but inherent immunity of the organism from contagious and infectious disease-causations. A fact which, in the excited pursuit of the fabled "elixir of life," in the new form of artificial immunization and antitoxins, our experimental philosophers seem to have lost sight of entirely to-day. It is the experience of every physician whose practice antedates to any extent these days of strict quarantine, that in Diphtheria and Typhoid, not more than two genuine cases occur in a family of eight to ten, without any precaution whatever; that while probably two-thirds of them may have more or less symptoms, a third or fourth will not be in the least affected. That in smallpox, before any such thing as Health Boards, quarantine, or pest-houses were known, and very little precautionary measures were taken, not more than three, at most, out of families of six or eight persons, had the smallpox, though all were exposed more or less. Even in the diseases of childhood - whooping cough, measles, scarlet fever and chicken-pox - from one-fourth to one-third of a family of six to ten children escape. All of which means that ordinarily without any sanitary or prophylactic measures, in the ordinary contagious diseases of childhood, measles, whooping cough, etc., at least thirty per cent are naturally immune. The author was a member of Company F, 90th O.V.I., in the civil war. This Company went out one hundred

strong, as robust and perfect men, physically, as ever shouldered arms. Three months after, while in camp at Nashville, Tenn., measles became epidemic in the brigade; sixty men of Company F had measles, losing twenty-five per cent. by death, and discharge for disability from same cause. These facts show that forty per cent. of these men had been immune from measles up to this time, presuming they had exposures at some time of life previous; which corresponds with above estimate, if one allow ten per cent. for non-exposures.

During the civil war, at Danville, Va., there were confined over five thousand Federal prisoners of war, over four thousand of which were captured at the battle of Chickamauga, the author having had the misfortune to be one of this number. The prisons were two-story brick buildings, unplastered, formerly used as tobacco factories; there were five of them, not varying a great deal in size, so that each building contained something over one thousand prisoners; so closely were we crowded that in the beginning, until death had made room, we could not all lie down to sleep at one time, and had to divide into reliefs. The worst possible sanitary conditions prevailed; no sort of bedding, we reposed at night, stretched on the bare floor with an arm for a pillow; the average clothing was a tattered blouse, pants, and, as a rule neither shoes nor stockings. The food, barely enough to keep soul and body together, consisted of corn-bread, from coarse, dirty meal, made up with stagnant canal water, wholly innocent of salt or other condiment; rusty bacon and twice a week a small cup of most villainous soup. The small windows were firmly nailed down, and closely barred outside with heavy oak slats; if a prisoner presented himself close enough to the window he became a target for the too willing sentry. No fire was allowed even in coldest weather (the memorable cold New Year's of 1864), nothing but the natural body-warmth of these densely crowded prisoners in the stagnant atmosphere kept them from perishing with cold.

Under these extreme unsanitary conditions, early in December, 1863, smallpox made its appearance almost simultaneously in all five

prisons; a raging epidemic was soon on, ceasing only, sometime in February, 1864, because there was no more material to work on. Notwithstanding, there were, in round numbers, three thousand of these prisoners who escaped the infection. Which is to say, that of these five thousand men exposed to smallpox under the most favorable conditions possible for infection, sixty per cent. were immune. Vaccine virus was sent by the Federal government and delivered to the prisoners, they vaccinating themselves; not only was this delayed until all had been too long exposed to be of avail, but it was found to be worse than useless, for the most frightful septic results followed these vaccinations in the majority of cases, while about the same number took smallpox after the vaccination as of those who did not use it at all. So that we are justified, we believe, in eliminating these vaccinations from the cause of this sixty per cent. immunity. Then the only remaining factor against the natural immunity of these three thousand men (sixty per cent.) is the efficacy of previous vaccinations. There had been no smallpox in our department of the army previous to the battle of Chickamauga. By examination and inquiry of almost every individual soldier, it was ascertained that about 86 per cent. had been vaccinated, nearly all in childhood. It used to be thought that one vaccination was sufficient, that it never "run out." Moreover, we found that of those who had smallpox, over 70 per cent. had more or less well defined vaccine scars. Indeed there were eighteen cases already thoroughly marked from a former attack. In view of these facts we think it just to assign ten per cent. of this immunity to vaccination; this leaves fifty per cent. of natural immunity under this most crucial test. The author was given a parole on his honor, by the Confederate Post Surgeon, and placed in charge of the smallpox hospitals, one-half mile from the town. We visited all the prisons once a day, personally examining every suspected case, ordering the removal of all cases to the hospitals, where each case was under direct observation. We still have in our possession the records from which these

statements are taken. Now we are not an anti-vaccinationist, neither an opponent of immunization; the above facts are advanced in the interest of a candid inquiry into the very best methods of immunization, along the lines of Vitalism or Physiomedicalism; believing these great questions can be scientifically and practically solved only in strict accordance with our Theorem and Philosophy.

In view of the above facts, we certainly believe that a fair estimate of natural or inherent vital immunity would be sixty per cent. That is to say, that in all forms of so-called "infectious" and "contagious" diseases, of those persons ordinarily or reasonably exposed, sixty per cent. prove to be naturally immune. Or to put it differently, nature (Vital Force and living matter), in a general way, leaves forty per cent. for induced or artificial immunity. This being true, the question arises, What is the best and safest method of physiologic (physiomedical) immunization? Let us face this question candidly, broadly and solely in the interest of truth and humanity, keeping constantly in view the vital sacredness of the living organism, the Vital commonwealth - "The Temple of God."

It is now well known that artificial or induced immunity is by no means permanent, or infallible, it runs out; besides, in all epidemics of smallpox a greater or less number are observed to have the disease in even a month after successful vaccination. So, also, in physiologic or inherent vital immunity; it could not be otherwise, in the varying conditions of the organism, subject to both intrinsic influences and extrinsic vicissitudes and ever changing environments, but that these immune states of the tissue units would vary in their resistive force, would be weakened and even obliterated by adverse influences and surroundings that tend to deprave the vital fluids and lower the standard of general vital integrity. On the other hand, a high grade of vital integrity means a vigorous vital resistance to unfavorable environments and inimical influences, which in fact constitutes the only logical basis, because on the physiologic and

Vital lines of the immunizing processes. Therefore, we may lay it down as an absolute principle that -

The human organism possesses the highest possible degree of inherent immunity from disease-causations (infectious and contagious), when its organic units (tissue-units) are kept free from invasion by all extrinsic substances not actually furnishing direct positive and negative constructive elements; so that reserve vitality and vital resistance (pp. 185-6) are of the highest grade possible for the individual organism.

Most important of those substances, not actually furnishing positive constructives and reconstructives, are the so-called "luxuries," in reality, "stimulants" and "narcotics," - alcoholic beverages, tobacco, etc. It may seem like a weak echo from the past, in these days of stimulants and narcotics, when the man who uses neither tobacco nor alcoholic beverages is a *rara avis*; when the general consumption of these worse than unnecessary almost quadruple the actual food-necessaries; when an army ration without a tobacco ration is considered almost as incomplete as without bread; when the army canteen seems to have come to stay, for us to raise our voice against these things.

Nevertheless the history of almost every individual, from John the Baptist, with his simple food and raiment, down to our own Washington and Lincoln, who have achieved great things under exposure and adverse environments, were men who lived simply, avoiding these invasive substances and keeping their systems clear of all causative encumbrances. What through heredity has already been accomplished under the present artificial existence, saturated with tobacco, alcoholics, etc., is evidenced in the constant enlarging of our facilities to accommodate the rapidly increasing number of feeble-minded, insane, and criminals; but what the future has in store for the generations that must be born under this rapidly increasing craze for artificial subsistence, we doubt if the future's God could fully portray. We certainly believe that it is no more a part of His Eternal Wisdom to immunize mankind from these evils by vaccination

with strychnia, or any other toxin, than it is by legislation or fanatical saloon-smashing. All these things are simply "emergency clauses," subterfuges and make-shifts in the progress of the coming conqueror, EDUCATION, and THE RELIGION OF THE BODY. - "Know ye not that ye are the temple of God, and that the spirit of God dwelleth in you? If any man defile the temple of God, him shall God destroy: for the temple of God is holy, which temple ye are." - I. Cor. III., 16-17.

Abstinence from these stimulants and narcotics alone, be it understood, does not insure natural or physiologic immunity from pathocausatives. One can so overwork the digestive apparatus, overwhelm the excretory organs and blockade the whole system with a surplusage for putrefaction, with even wholesome food substances, taken in unreasonable quantities and at unseasonable times, thus rendering one's organism an easy prey to contagium, though he be a total abstainer from alcoholics; in fact, after gormandizing with food, a drink of whisky might, by its antiseptic qualities, prevent the putrescence and bacterial growth until nature could dispose of the surplusage, but the whisky is thus a lame subterfuge; temperance in all things, especially in diet, is what we contend for.

The author, not being a healthy boy, early acquired systematic and persistent habits of dietary, practising moderation under all circumstances; when food and drink was wholesome and plenty taking no more than the system required, when unwholesome using no more than bare existence demanded or abstaining entirely till better could be procured; having much less fear of an empty stomach than bad food or water. We are quite confident that these strict habits not only afforded immunity from every form of contagion to which we were exposed, except yellow fever, but enabled us to endure four years of arduous army service, including a year and eighteen days of incarceration in southern military prisons; not only this, but a busy professional life for the past thirty-two years, a severe attack of accidental septemic infection three years ago, leaves

the author at present writing in most excellent condition physically and mentally, in fact none the worse for the wear so far as can be seen. All of which he firmly believes is due far more to strict dietary than to his abstinence from tobacco and alcoholic drinks.

Now we must not be understood as offering in place of induced immunization, the fads of vegetarianism, the raw cereal fiend, or the raw meat gourmand. Our contention is, that it being true that the inherent resistive and eliminative endowments of living matter and Vital Force (vital resistance), under all reasonable conditions of health and exposure of the individual to contagion, is able to afford inherent or natural immunization to sixty per cent., that if the organism can even under very unfavorable conditions maintain so large immunity from these disease-causations without the aid of artificial immunization, it logically follows that the more strictly the individual adheres to the physiologic requirements, necessities, and essential laws of his organism, the more vital resistance, and consequently the greater immunity from disease-causations will he possess. We also contend that in view of the above indisputable facts, it is evident that the present percentage of natural immunity can be greatly increased by the enactment and strict enforcement of efficient public hygienic and dietary laws and educational measures. Then add to this, increased quarantine and isolation measures and enforcements, and there would be no place left for artificial immunization. The fact is, if we take smallpox as a criterion, statistics show that quarantine, sanitation, and public prophylaxis generally, have accomplished far more than vaccination; it is only within the last two decades since quarantine and isolation has been improved and more strenuously enforced that smallpox epidemics have been almost totally abolished, having raged to a greater or less extent from Jenner's time under vaccination, down till so recently.

As we have already said, and all facts, experience and experiment prove it to be so, both artificial and natural immunization are not in all cases permanent; the fact is that a much larger percentage

of artificial immunizations expire or run out than of natural immunity; yet we find that both are so largely limited under the present regime of public customs and private habits of hygiene and dietary that artificial immunization will probably be a necessity, under special circumstances of necessary and dangerous exposure to disease-causations. This being true, and moreover, it being necessary that immunizations be sufficiently oft-repeated to anticipate its expiration, the necessity of using *sanative* agents, instead of *poisons*, becomes more apparently urgent. This may sound strange to those who are accustomed to think of immunization only as a pathologic process, necessarily to be thought of only in connection with toxic agents, even passing strange to those who have never been taught to differentiate between a poison and a sanative agent. But is there such a thing as immunization without toxic agents? The convincing answer comes from the sixty immune persons out of a hundred of ordinary exposures to contagious diseases; for certainly nature (Vital Force) does not effect this inherent immunity through the agency of poisons. If one-half the time, patience and skill had been expended along the lines of Vitalism and sanative immunizing agents, that has been exerted on lines of the materialistic idea and toxic agents, no one to-day would dare suggest toxic immunization to an intelligent patient.

As already mentioned, vital immunization without toxic material as illustrated in the large percentage of natural immunity, long ago suggested to the author the idea of artificial or induced immunization by the method of direct introduction of sanative agents into the blood current of the capillaries. Of course, the idea of carrying a medicament about the person as a preventive of disease is very ancient and probably is derived from the distant epoch of mystic charms, phylacteries, etc. But there can be no doubt in the mind of the candid investigator that certain sanative agents kept in contact with the surface of the body continually will be slowly and persistently absorbed and not only exert their influence as remedial

of disease conditions, but will afford immunity against certain disease causations. With these facts in view, we have experimented with sanative agents on the same lines as now practiced with toxic agents; in other words, instead of using the same causative toxin of the disease-form, "the hair of the dog to cure the bite," we used sanative agents whose inherent constituency is known to be effective in aid of Vital Force in overcoming certain disease-forms. These were prepared carefully in the form of a thoroughly sterile infusion of definite metric strength, to which is added the normal saline strength (chloride of sodium) - 0.6 per cent., so that an exact unit dosage could be practiced. So far as these experiments have been tested sufficiently to warrant reliable conclusions they have been most satisfactory. Of course, much experimental work extending over a long period of crucial testing is necessary to develop this method; but enough has been done to demonstrate beyond doubt *that immunization can be accomplished physiomedically, i.e., with sanative agents and in harmony with physiologic laws, as efficiently and much more safely than it is possible to do allopathically, i.e., pathologically with toxic agents.*

Neither space or present plans allow anything like a detail of the extensive experimental work by which the above conclusions have been reached along Physiomedical lines. The following general rules of procedure, with a thorough understanding of the Theorem and Philosophy of Physiomedicalism, will enable anyone inclined to scientific practical investigations to get a good start on right lines.

TYPHOID IMMUNIZATION. - After cleansing the alimentary tract with Syrp. Juglans cin. green rad., to which is added ten per cent. Tr. Myrrh Camp., the person to be immunized is kept on a plain nutritious diet avoiding all condiments, taking very light easily digested foods for supper; which dietary must be closely adhered to during the period of danger from exposure to actual contagium or unfavorable environments. Strict regularity of all habits and duties are essential. Two c.c. of a warm sterilized 0.25 per

cent. infusion *Baptisia Tinctoria*, to which is added 0.6 per cent. Chloride of Sodium, are injected hypodermically morning and evening, forty minutes before meals. These injections are repeated three days in succession, discontinued for three days, then recontinued for two days; after which, one or two injections a month of 2 to 4 c.c. will insure immunity indefinitely under proper habits of living.

MALARIAL IMMUNIZATION. - The same regulations of dietary and hygiene as above are necessary in malaria. The immunizing agent is *Eucalyptus Globulus*, in the same medicinal strength and normal saline solution as above. If exposed to malarial patients, injections should be taken twice daily for five days, then once a week during exposure. If living in a malarial district, an initial immunization of one injection a day is continued for ten days, after which two injections in one day out of each thirty days will suffice.

DIPHTHERIA IMMUNIZATION. - Maintain the same dietetic and hygienic regulations as above; inject hypodermically a standardized infusion, as already described, of *Alpinia Officinalis*, to which is added instead of chloride of sodium, the same percentage of sulphate sodium; one-half c.c. should be thus administered evening and morning to children under one year; from 1 to 5 years, one c.c. 5 to 15 years, two c.c. from 1 to 3 a day, according to conditions and dangerousness of exposure. The injections are usually given from 3 to 5 days in succession, then once or twice a week during exposure will suffice.

Of course aseptic precautions are very necessary in this hypodermic medication, as should be strictly practiced in any other procedure of this kind. We have the first abscess, or even ulceration to result in our experiments and practice, having used almost every sanative agent, both in infusion and fluid extract, in hundreds of cases under all conditions of health and environments. We have given as much as ten c.c. (five ordinary hypodermic syringes full) at one time of full strength saturated tincture of Myrrh Comp,

made with 60 per cent. alcohol; of Fluid Ext. Avena Savita, 80 per cent. alcohol, to patients in extreme states of emaciation and general debility; with the exception of very occasionally a small tender subdermoid induration lasting from ten days to three weeks at the outside, we have never yet had any untoward after results from subdermoid medication. Such an experience certainly warrants one in asserting that when suppuration or any other septic results occur from this method of medication, it is wholly attributable to unclean and unskillful procedure, for which one is no more excusable than for administering unclean and deteriorated medicines per mouth, or doing bunglesome and dirty surgery.

We do not claim that these immunization processes and agents herein hastily described have been carried to the stage of absolute demonstration. We have had failures, but are happy to state that in no instance has death occurred, nor even what could be called unphysiologic results in this practice of immunization, which is the rule in failures with antitoxins or toxic immunizing agents. Again, there may be agents much more efficacious than the above, we have had equally good success with others not herein named; in short, much and varied experimental work and practice must yet be done before sanative immunization reaches anything like absoluteness. But we are convinced that any unbiased, careful and analytic student of Physiomedicalism, who will work on these lines sufficiently, cannot escape the conviction that sanative immunization is no longer a theory, but an actual fact.

ANTITOXINS.

The so-called "antitoxins" are in fact not what their name implies. They are nothing more nor less than the toxins or poisons (supposed excretions) of the most virulent pathologic germs known; diphtheria bacillus for instance, simply diluted by systematic and progressive administrations hypodermically to a horse, until the resistive instincts of Vital Force are in a measure subdued and the

living matter of the tissue-units is gradually brought to passive toleration of the poison, when the horse is said to be immune. The animal is now bled from the jugular vein, the blood kept in a cool place until the blood-serum has separated from the other elements, when it is siphoned off, put up in aseptic containers and is now called "antitoxin," because it is believed, as experiments really seem to verify, that if injected hypodermically into a diphtheria patient, in some unexplained way this serum becomes a fatal toxin or poison to the diphtheria bacillus. Some authorities believe that it does not kill the bacillus, but simply neutralizes their poisons. In either instance we cannot see how the name "*antitoxin*" can be logically applied to this blood-serum dilution of diphtheria toxin or poison; for it is still a toxin, and no amount of dilution can change its inherent virulency or convert it into a non-toxic or sanative agent. It is certainly a toxin, whether it kills the germ or annuls the toxicity of its toxins or poisons.

At the very most, then, this serum-dilution of diphtheria bacilli toxins - "*antitoxin*" - is only prophylactic; it has nothing curative in its inherency or its action upon the neurons or upon their bioplasm - living matter; nor is it even remedial in its action or results upon the diseased organism. So far as it goes, it is just as inimical and invasive to the vital integrity of the living organism as the bacillus diphtherias and their undiluted toxins, so that the homeopathic dilution of this purely allopathic agent constitutes the only physical, chemical, and pathologic as well as therapeutic difference between the so-called diphtheria "*antitoxin*" and the toxin of diphtheria. This being true, it is simply impossible to explain how it is that this highly diluted toxin - 150 to 500 units per c.c. which really, according to homeopathic potencies, means about the 60 billionth dilution - can, by any known laws of physics, chemistry, physiology, pathology, or therapeutics, neutralize or destroy either the bacillus diphtheriae or their toxins in a severe case of virulent diphtheria; how does the exceedingly weak or diluted toxin

overpower the exceedingly virulent or strong toxin, both having the same origin, in fact, being one and the same thing? It is exceedingly hard for the logical mind, accustomed to study the human organism as a rational vital domain, heretofore failing to detect even a weak point in the chain of coherent logical vital phenomena, to believe that Vital Force would make a special departure in favor of this so-called "antitoxin treatment." For our part, so long as there remains so much of the seeming impossible that must be accounted for and explained away, before this treatment can take its place with assured truth and established science, we prefer to account for the apparent good results from antitoxin treatment on the rational lines of Vitalism and our Theorem.

In the first place, as already shown, we are convinced beyond doubt that immunization with sanative agents is more effective and lasting, than with toxic agents, to say nothing of the safe and sanative nature of this method. In the next place, evidence is fast accumulating and we are now quite sure that it will eventually be established beyond question, that the fresh blood-serum from a healthy horse, properly injected hypodermically, or by areolar transfusion, into a patient with virulent diphtheria, will be followed by far more marked beneficial results than with serum impregnated with the toxins of bacillus diphtheriae. The truth of this the writer has verified sufficiently to risk his reputation for accuracy and honesty of statement herein. If this be true then these grave questions face the candid investigator - Does not the good results that follow the "antitoxin" treatment occur when the toxin has been eliminated from the blood of the horse before the serum is taken? And does not the very bad results so frequently following its administration depend on the fact that the serum ("antitoxin") does really contain the diphtheria toxin? From these considerations we are led to believe that if we would pay more attention to public education and enforcement of individual hygiene and health habits, public sanitation and prophylaxis, that there would be such a very small

percentage of the non-immune in the higher civilized countries that there would be little demand for immunization and antitoxin treatment; while, when these processes are necessary for protection in our intercourse with less fortunate peoples it could be done safely and effectually with sanative agents.

SANATIVE ANTITOXIN TREATMENT. - This is done in the same way and with same agents already described under immunization; at the same time the usual physiomedical treatment of these disease-forms is administered; we here describe in detail this treatment for the one most prevalent and fatal disease-form, because most others are so well managed under the Physiomedical System that this treatment is not necessary as a rule.

Sanative Subdermoid Treatment of Diphtheria. - R. 15 c.c. of sterile infusion of *Alpinia Officinalis*, to which add .01 per cent. Sulphocarbolate Calcium. Inject hypodermically in a child under 1 yr. .05 c.c. from 2 to 4 hours. 1 to 5 years, 1 c.c. every 3 to 6 hours. 5 to 15 years, 1 to 2 c.c. every 4 to 8 hours. Adult 2 to 4 c.c. 4 to 8 hours.

VI.

SURGICAL THERAPY, GENERAL AND LOCAL. - GENERAL SURGICAL THERAPEUTICS.

Operative surgery, or what may be more properly called the *art* of surgery, is that part of general surgery relating to ingenuity and skill in adaptation of means and methods to accomplish in the most rational way the best results; this not only includes that branch called mechanical or supportive surgery, but manual skill and expertness in the use of surgical instruments, etc. Thus far, Physiomedical surgery differs very little from that of other schools, aiming here as in every other department of medicine, to accept and practice the best known rational and conservative methods, giving due credit to the authors and inventors of the same. But when it comes to the most important department of surgery, what may well be called *the*

science of surgery, we necessarily lean heavily on our vital concept of the resistive and reparative instincts of living matter and Vital Force. This, the department of surgical therapeutics, admitted by all authorities to be the essential part of surgical success, is one of the most crucial practical tests of the sure foundation of the Philosophy of Physiomedicalism. At the early advent of antiseptic surgery Physiomedicalism accepted the germ theory, because it was quickly seen to be consistent with the Vitalistic idea; but while the other schools of investigation were diligently seeking "antiseptics" of the most virulent nature to kill the germs - the invaded organism and the invading germs being often buried in the same grave - Physiomedicalists knowing that the germ possessed living matter and Vital Force, with an essential life-history in no wise differing in fundamental vitalism from the human organism, sought with sanative means to simply destroy the essential conditions - culture fields - of germ life. In this, as in all physiologic (Physiomedical) procedure, they soon evolved the truism that, THE HIGHEST STATE OF ANTISEPSIS IS REACHED AND MAINTAINED ONLY THROUGH THE HIGHEST GRADE OF VITAL INTEGRITY AND INHERENT RESISTANCE OF THE LIVING ORGANISM. The truth of this proposition has long since been fully verified; little is now heard from surgeons of all schools about *antiseptics* (killing the germs); but we hear much about *asepsis* (destroying the conditions favorable to their growth and development). We here venture the prophecy that within the next decade "*antitoxin*" will be occupying the armchair of senescence in the opposite corner with *antiseptics*.

The therapeutics of Physiomedical surgery pre-eminently recognizes and seeks to closely accord its surgical procedure as well as after treatment with this *vis conservatrix naturae*. So that the knife is but a dependent ally upon those agents which we have classed as Vasotonics, Trophorestoratives and Trophoconstructives (pp. 174-5). Instead of depleting and mercurializing the patient preparatory to a severe surgical operation, it is sought to first place the digestive

apparatus in the best possible state of functional work, and then with tonics and constructives obtain the highest plane of vital integrity, of resistive and recuperative activities of the entire organism, previous to placing a patient under the ordeal of the knife; then, it is reasoned, if such preparation is essential in severe operations, they cannot consistently and safely be neglected in those of lesser gravity. Not even in most urgent emergency cases should the surgeon allow himself to rush into operative work unmindful of first aid to "the men on the firing line" - the intrinsic resistive and recuperative forces (Vital Force and living matter).

The condition of the blood is of first importance in all surgical cases, because pure and highly vitalized blood means the highest of functional work, not only of the digestive apparatus, but the entire list of both secretory and excretory organs and apparatuses, rapid reparation and restoration in both surgical and traumatic wounds and shock. The idea of starvation, excessive catharsis, and otherwise depleting a patient previous to a severe operation, especially in abdominal surgery, fearing that "inflammation" and "fever" may follow as an after-result because of general plethora, is one of the past errors. This Philosophy holds that there cannot be too high grade of vital vigor, resistive and restorative activities, for surgical ordeals; practical results in Physiomedical surgery have long since verified this theory.

In surgical cases of either traumatisms, or intrinsic general degenerations from acute or chronic inflammatory states and primary or secondary depravity of the blood volume and the secretions, we do not think of chemically or physically changing the blood with "alteratives" - mercury, arsenic, gold, silver, and their numerous salts - but by the scientific administration of general tissue-constructives, vasotonics and trophorestoratives, living matter and Vital Force are directly aided in the eliminative and reconstructive work. By such methods conservative surgery becomes the rule and radical operative procedure the exception entirely. The fact is that the

most eminent surgical authorities of all schools agree that the higher science of surgery lies in the realms of conservative success. The greater surgeon is the one who can save the most tissue from disease and the knife. The most skillful surgeon is the one who cures the most cases with the least operative work. Indeed Physiomedical Surgery views a resort to the knife as a tacit acknowledgment of defeat in higher surgical science, a surgical retreat - burning the bridge. This may sound retrogressive to some, in these days of aseptic surgical achievements; but the Physiomedical surgeon, with no desire to invade the vital domain simply because he may without causing death, is content with the wonderful achievements of conservative aseptic surgery, practiced in accord with this Philosophy. He believes that the mission of the surgeon is to save, not to sacrifice, that the highest achievements of antiseptics and asepsis lie in the field of conservative surgery.

If the sure foundation of our Theorem and Philosophy in ultimate medical truth needs further proof, it is amply afforded in the fact that the highest plane of aseptic and antiseptic surgery, reaching almost to marvelous results, was attained only when the germ theory was adjusted to and practiced on the Physiomedical idea; which, as already shown, is that the life history and vital requirements of the germ, whether pathogenous or pyogenous, must be taken into account as well as the invaded organism; that those of the latter must in every possible way be favored, stimulated, and toned up to the highest plane of vital action; for in so doing we destroy the most favorable conditions of existence and propagation of the germ life. In other words, the highest plane of vital activities and consequent vital resistance, means destruction of the vital requirements of disease germs. The central idea, then, of Physiomedical asepsis is, that the vital requirements of the disease micro-organism, and the vital requirements of the normal tissue-unit of the human organism are necessarily and inherently opposite in every essential respect; that they cannot both exist under the same vital conditions in the

healthy organism. To use an old saying, "what is food for one is poison for the other." By which we mean to say that bacterial life exists in the organism at the expense of healthy pabulum for living matter of the tissue-units; that the toxins - nothing more nor less than the excretions or products of disassimilation of the microorganisms - so deprave and deteriorate the vital fluids and pabulum of the bioplasm of tissue-units, that, thus robbed of normal pabulum, their vital energy and resistance are lowered, while the most favorable conditions obtain for germ life and development. Thus the disease germ, with its toxic ptomaines, is enabled to create favorable conditions for its existence and propagation at the expense of the normal food supply of the tissue-units of the invaded organism. This being true, it is also an important fact that, so long as the standard of vital integrity of living matter, vital fluids, and functional activities of an organism are maintained at the required physiologic state, the vital requirements of inimical micro-organisms, either pathogenic or otherwise, cannot obtain. Hence, our truism - THE IDEAL ANTISEPTIC IS VITAL ACTION AND VITAL INTEGRITY OF THE LIVING ORGANISM.

TRAUMATIC SHOCK. - This is usually called *shock of injury*. When following severe surgical operations, which it does to a greater or less extent, it is then called surgical shock. This condition belongs to the class of vasodepression; it is in fact a *central ganglionic depression*, with resultant depression of the whole vasomotor apparatus; a stasis or blood-congestion follows, involving all the organs and apparatuses. The nerve centres are profoundly depressed from stasis of circulation and suspension, for the time being, of the entire process of nutrition - assimilation, reparation and disassimilation - and that too, in the supreme moment of damage and peril to the whole organism, when the need of these great processes of organic life is the sorest.

Indications for Treatment. - In this condition the logical indications of treatment require more of vasotonics than stimulants,

though both have a valuable place. The custom of administering alcoholic beverages to the injured under the delusion that they are “stimulants,” is not nearly so prevalent now as a few years ago; we are happy to say that up-to-date surgeons of all schools have turned the evidence of their experience against alcoholics, as not stimulants at all in such cases, but on the contrary, they directly depress the vaso-centres. Some types of vasostimulants and vasotonics have been mentioned in our classification of medicines (pp. 266-270-1). In profound shock the patient is usually incapable of swallowing medicine, so that some other avenue to the blood-current must be used. The rectum offers the next most convenient route. But in very profound depression following severe injuries it will often be found that the entire bowel-structure, especially the capillary vasomotors, are in such a state of shock and stasis that endosmotic movement (so called “absorption”) of the medicated enemata into the general circulation is very slow and indeed often impossible. Our very successful experience with subcutaneous or hypodermic injections of remedial agents under these extreme circumstances naturally inclines to place this method of medication very high in the treatment of shock or severe vasodepressions from any cause.

The method usually is, to mix equal parts Tr. Myrrh Comp. and Fluid Extract Avena Sativa (not “Con. Tr.”); we prefer not less than a 2, nor more than a 4 c.c. hypodermic syringe; if too large injection be used, or if too forcibly injected, mechanical injury of the tissues locally may result. Fill the syringe half full of the above mixture, then fill with boiled water, draw the water into the syringe while quite hot and mix in the syringe, so that the injection is given at about blood temperature. From 2 to 4 two c.c. syringes-full may thus be given at one time, of course making the punctures some distance away from each other. One must be governed in the quantity used and frequency of its repetition wholly by the condition of patient; if a very prompt and marked increase in the vigor and frequency of the heart’s action, general circulation and functional

manifestations is not manifest in ten seconds, to two or three minutes after the first injection, then the patient is in a most profound and imminently dangerous state of depression. Under no circumstances of haste and emergency should the surgeon be tempted into giving a hypodermic injection without aseptic precautions; we are convinced that trouble here can result only from four sources: *Dirty syringe, dirty skin, dirty hands of operator, dirty medicine.* A one-ounce bottle each, of sterilized distilled water, alcohol, and green soap; a little carbolyzed aseptic gauze, and absorbent cotton, should be always kept in the emergency case for this purpose.

The above is for first aid only, in traumatic vasodepression. After this the case comes more under general therapy; the tissue-states and organic conditions, of course, must be met as they are manifest by the functional aberrations. The central idea of Vitalism and the inherent conservation of Vital Force, is kept constantly before the practitioner of this Philosophy in surgery, as well as the general practice of medicine.

TRAUMATIC VASOEXAGGERATION. - "Traumatic fever," "surgical fever," etc. The febrile state arising from traumatism is not different, so far as the febrile phenomenon is concerned, from the febrile state induced by any other invasive causation of a febrile phenomenon. But, added to this febrile state, is a local traumatic condition from which it arises. Taking our concept of a disease-complex, the idea that these aberrations in fever are all the result of the resistive eliminative and restorative vital efforts, that they simply express the manner and methods of Vital Force in contending against disease causation and conditions, we can readily understand the kind of aid required of therapeutics in traumatic febrile conditions. In ordinary febrile phenomena, the first work is resistive and eliminative; after the causation is eliminated, the resistive warfare over, there only remains to correct the secondary results and restore the general physiologic tone and vigor. Not so in the febrile storm arising from traumata; there is the lesion to be repaired and

the parts to be restored as nearly to the normal state as possible, which good work cannot lag in the least during the febrile period. This double duty is not easy for Vital Force, or for the surgeon who stands as its trained assistant. It is much less trouble and looks to the laity more like surgery to amputate a crushed limb, than to spend days and weeks saving it, however successful the result. So also the Vital Force may heal the surgical incision by first intention, whereas, with the best aid of conservative surgery it will require weeks to fill the breach and restore the member to anything like its former normal proportions. But in the end there can be no question that the reward falls to the conservative surgeon.

In surgical vasoexaggeration, then, the reparative process must be encouraged and maintained, the same as though no febrile aberrations existed. In fact, we well know that the elevation of temperature and accelerated circulation are not to be combated as the disease, but as necessary secondary results of disease-conditions, the vital resistive efforts; and simply strive to modify and maintain them within rational and physiologic bounds. The patient must be systematically fed on easily assimilated and most nourishing foods. At the same time neurotomes and stimulants must aid in sustaining the nerve energy of the organ-centres.

LOCAL SURGICAL THERAPY.

The surgeon who can take a crushed and mangled finger, with bones comminuted and tendons torn, and by patient, persevering skill, finally bring it out quite a useful member, even though somewhat deformed, has accomplished a greater surgical feat than he who has performed a hip-joint amputation. Surgical skill lies in saving not in sacrificing. Two ideas may well be called the medical crown-jewels of the close of the nineteenth century, viz: The unit-concept of the human organism, and asepsis. The idea of tissue-unit metabolism, that each individual unit possesses all the trophic instincts manifest by the organic entirety; and that these units can be fed locally or directly as effectively as through the digestive and circulatory

channels, is certainly one of the most brilliant conceptions of all the centuries of medicine.

Tissue-unit feeding has placed the possibilities of local surgical therapy almost within the realms of the miraculous. Yet this is in fact not an entirely new principle. Our great-grandmothers tell of how in pioneer days, the venom of the rattlesnake was stayed by the warm flesh of a chicken, cut or torn asunder while alive and applied to the parts. It is only within the last five years, however, that the physiology of this has been solved by the unit-concept, and local unit-metabolism has become a scientific fact. We now know that in the case of snake-bite, the living matter of the tissue-units invaded by the poison, having the extra pabulum at hand afforded by the fresh vital fluids, and living matter of the chicken, is thus enabled to resist and eliminate the snake-toxicant - no two things can occupy the same space at the same time - the pabulum and bioplasm having the strongest affinity for each other, the inherent repellent instincts of the living matter towards the poison thus holding it at bay, as it were, until its substance is thoroughly occupied with the pabulum afforded by the fresh chicken-tissues to the exclusion of the snake-poison; meantime the excretory organs can eliminate the venom from the vital domain.

The above facts are fully illustrated in the following cases which we take time here to briefly relate. The author conceived the idea that the cancer cell is simply a degenerate form of tissue-element, and like other disease germs, requires a degenerate soil and depraved pabulum as essential conditions for its development and propagation; that, therefore, if the normal tissue-units surrounding a carcinomatous development could be highly nourished by normal pabulum, which would be abnormal pabulum for the cancer cells, they could be made to crowd out the cancerous cell-growth and development, just as one form of vegetation finding more favorable conditions crowds out other vegetable life whose environments are less favorable.

Case No. 1. A case was selected of epithelioma involving the inner canthus of the left eye, which had destroyed the edges of both lids for a distance of one-fourth inch above and below and eaten inward alongside the eyeball to a distance of one-half inch, with a circular opening more than a half inch in diameter. The excavation was washed with hot carbolic solution and then curetted lightly under a stream of very hot carbolized normal salt solution, dried out well and packed with plain aseptic gauze saturated with Trophonine (which we have described, page 276), and covered with rubber tissue; the dressing was changed from two to three times a day. In less than three weeks the cavity was entirely filled with healthy cicatricial tissue.

Case No. 2. A scirrhus of the mamma, which had not healed after extirpation two months previous, was very painful and breaking down rapidly. After cutting away all suspicious tissue the wound healed rapidly, most of it by first intention; but three weeks thereafter one end of the cicatrix commenced breaking down rapidly and in three days a cavity an inch and a half in its largest diameter by three-fourths of an inch deep had sloughed out. This cavity was curetted well and packed with aseptic gauze saturated with Trophonine and covered with rubber-tissue, the dressing being changed every three or four hours. In eleven days from the first dressing the cavity was entirely filled with healthy cicatricial tissue.

Case No. 3. Recurrent mammary carcinoma; two years previous we had removed the breast, which was very large and sloughing with most offensive odor. Three months previous we operated for first recurrence, in one month for second recurrence, we now made a third operation at the last incision did not all heal and about one-third was breaking down rapidly; the recurrences all being in parts of the cicatrices. In three days a cavity one and a fourth inches in diameter extending to periosteum of rib had sloughed out. The cavity was now washed out well with Liquor Antiseptis and filled with Protonuclein powder and covered with a light dressing of

carbolated gauze, dressed evening and morning. In eighteen days the cavity was filled with healthy cicatricial tissue and there is as yet no appearance of recurrence, now eight months.

Case No. 2 had a recurrence one year after above treatment, was induced to try a "cancer doctor," and died promptly from the torture of the "cancer plaster."

Case No. 1 has not had a recurrence now two years and a half since the cure.

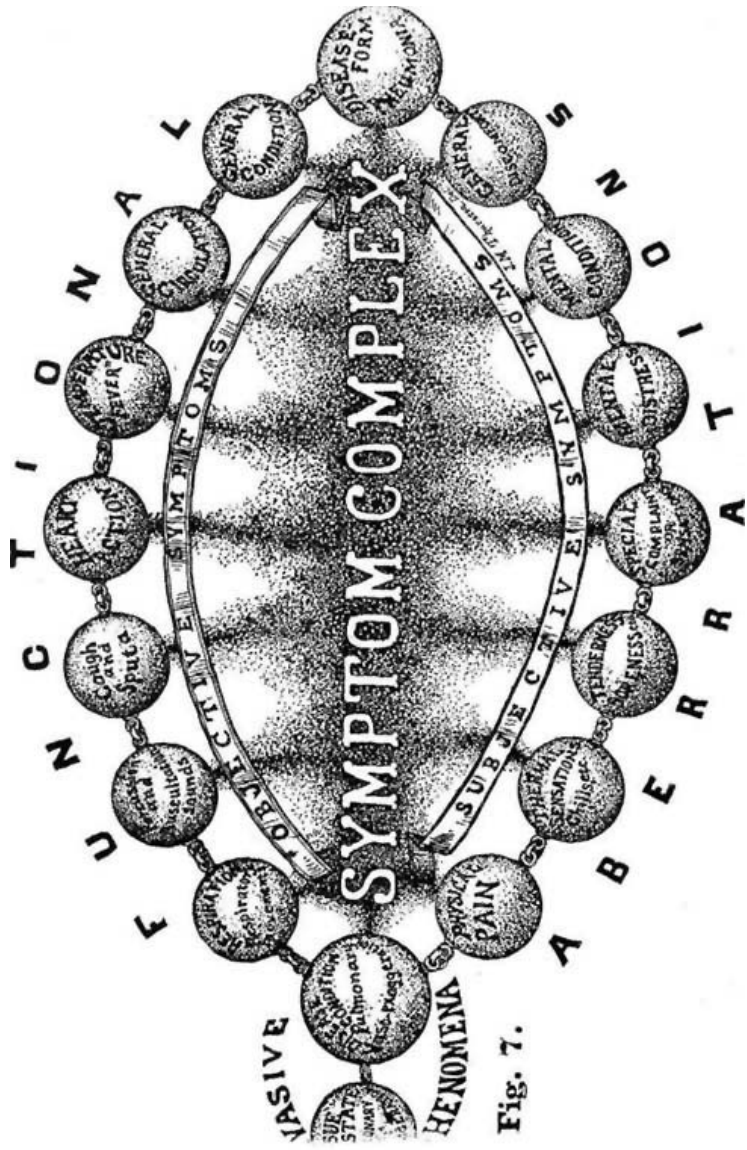
We have treated crushed fingers and toes with bones comminuted into small fragments and tendons crushed off, the larger vessels mangled, etc., and after wiring bones together and stitching the tendons, by the Trophonine dressings had practically perfect members as a result of tissue-feeding, patience, and faith in Sanative Surgical Therapy.

Early in antiseptic surgery it was believed that if germs were destroyed and excluded from a wound nature would do the rest, that the wound was bound to heal promptly. Even yet, one is occasionally called in consultation where a wound or abscess has been antisepticized with Hydrogen dioxid, Mercury bichloride, Acid Carbohc, etc., for weeks and months with no signs of healing - armies have been conquered by starvation when no enemy was in sight - the tissue elements were simply starving to death. The first step in local surgical therapeutics is a full and free circulation to the parts so that the units may have abundant reparative materials. This is accomplished by the topical application of vasostimulants and tonics, such as Tr. Myrrh Comp., Fluid Hydrastis Can., Fl. Ext. Myrica Cer., Fl. Ext. Alpinia Off. A full and active local circulation must be secured, not a plethoric stasis of the parts, with tumid purple or livid tissues, but an active blood movement, so that the units may have a constant stream of new materials and a rapid exit of the disassimilative detritus. In the extremities, or other pendant and vascular parts, the circulation must be limited by mechanical support, such as judicious bandaging, compresses and other methods of

preventing undue distension of the blood vessels and excessive inundation of the extravascular spaces so fatal to the process of reparation.

Should the continuity of vascular circulation be so interrupted by extensive lacerations and comminutions, then local unit-feeding is resorted to as already described. In fact, the local units should be carefully looked after in any considerable trauma, whether the local circulation is much interfered with or not; feed the tissue-units, both intrinsic and extrinsic, if necessary; the reparative process cannot be too much hastened; the idea of healing a wound too quick is a mischievous notion, if the parts are clear of extrinsic matter, which it is the surgeon's first duty to see is the case, and the reparative efforts of Vital Force properly sustained, in the meantime the wound and contiguous structures kept in an aseptic state, the reparative process cannot advance too rapidly.





PASSIVE

PHENOMENA

Fig. 7.

PART SEVENTH.

GENERAL PRINCIPLES OF PHYSIOMEDICAL PRACTICE.

CLASSIFICATION OF DISEASES; GENERAL PRINCIPLES OF TREATMENT: THE CONSUMMATE CURE OF THE SICK; TREATMENT OF PAIN; THE MERCURIAL TREATMENT; PRINCIPLES OF PSYCHOTHERAPEUTICS; PHYSICIAN AND PATIENT.

I.

CLASSIFICATION OF DISEASES.

We have already, we think, shown conclusively, from our standpoint, that the term disease means a correlated symptom-group, arising from definite primary conditions of tissue-units, tissues and structures; being a symptom-complex, it is therefore divisible into: 1. *Invasive phenomena* - tissue-unit conditions; 2. *Functional aberrations* - abnormal functional expressions of the invaded or disturbed tissue-units, or *the symptoms of disease*; 3. Secondary conditions or tissue-states, with the functional aberrations arising from these secondary tissue-states. These constitute the logical chain of a symptom-complex. So, also, no diagnosis can be complete and comprehensive without including all the secondary and multiple transferred tissue-states or reflex functional aberrations or departures. This is the fundamental principle of success in the treatment of any form of disease. One must see the disease complex as a logical chain of correlative and continue cause and effect. (See Fig. 6.) Only by such a comprehensive view of the otherwise

vague term *disease*, can one differentiate between symptom and condition, between primary, secondary, and reflex tissue-states and functional manifestations, which will enable him to treat the *conditions* of disease instead of the *symptoms* of these conditions.

In Parts Fifth and Sixth we have already indicated our idea of the logical classification of symptom-groups or disease-complexes, from the standpoint of this Philosophy. The scope and purpose of this work permits only an analytic outline of the Physiomedical classification of diseases as here presented. In this classification there of necessity can be but one basis, viz - *The Physiological*; viewing all functional manifestations in health and disease as the aggregate expression of tissue-unit conditions, there could be no other landmarks for pathologic classification than the normal plane of this aggregate unit expression. In this way the aberrant functioning can be measured accurately in form and severity, in gravity of portent, or insignificance of value, in exact ratio as they represent the nature of the tissue-unit departure from the physiologic or normal state. We have striven to arrange our classification as far as possible in concordance with the established terms and clinical facts of other nosologies, so as to cause as little confusion as possible. As already mentioned, our Physiomedical nosology is not perfect by any means, and we make no claims to an exhaustive or wholly satisfactory classification, but certainly believe that so far as it goes it will be found a practical working classification, becoming more complete and useful as our pathology is developed and built up.

II.

GENERAL PRINCIPLES OF TREATMENT.

The system of Physiomedicalism, although it cannot be said to be new, is yet far from the goal of a perfect medical science; indeed all that its most ardent advocates can claim for it in this respect is, a most assured and healthful developmental stage. But we certainly believe that with its deep and enduring foundation in a Hypothesis

PLATE VI.
**PHYSIO-PATHOLOGIC CLASSIFICATION
 OF DISEASE-FORMS.**

VASO- EXAGGERATION	{	General Febrile Phenomena:	TYPHOID FEVER. YELLOW FEVER. MALARIAL FEVER. EXANTHEMATOUS FEVER. RHEUMATIC FEVER. SEPTIC FEVER. CEREBROSPINAL MENINGITIS.
		Local Febrile Phenomena:	CEREBRITIS. MYELITIS. PERITONITIS. LYMPHANGITIS. RHEUMATISM. OCULAR APPARATUS. AUDITORY APPARATUS. VASO-PHARYNGEAL VASOMOTORS. EXCESSIVE AND ASSIMILATIVE VASOMOTORS.
		Localized or Inflammatory Phenomena:	GENITO-URINARY VASOMOTORS. CIRCULATORY APPARATUS. TUMOROID STRUCTURES AND ADNEXA. TRAUMATIC.
VASO- DEPRESSION	{	Cerebrospinal:	GENERAL SHOCK. NEURASTHENIA.
		Ganglionic:	GENERAL CIRCULATION. INVOLUNTARY MUSCLES.
		Localized:	CASTRO-INTESTINAL. HEPATIC, RENAL, ETC.
VASO- COMPRESSION	{	Cerebrospinal:	HYPEREMIA. HYPERASTHESIA. NEURALGIA.
		Ganglionic:	TEMPORARY SURFACE ANEMIA. CASTRO-INTESTINAL IRRITATIONS. LOCALIZED CHRONIC IRRITATIONS. SYNCOPE.
VASO- DILATION:	{	Intrinsic or Arterial:	EPILEPSY, CONVULSIONS, ETC. CONGESTIVE CHILL.
		Extrinsic or Extravascular:	CAPILLARY CONGESTION GENERAL OR LOCAL CARDIAC ASTHMA. CONGESTION OF ORGANS AND APPARATA
VASO- ATONY:	{	Cerebrospinal:	VOLUNTARY MUSCLES. SPECIAL SENSE ORGANS.
		Ganglionic:	INVOLUNTARY MUSCLES. ORGANS AND APPARATA.
VASO- TROPESY:	{	Cerebrospinal:	CENTRAL DEGENERATIONS. MOTOR AND SENSORY PERIPHERAL.
		Ganglionic:	SPECIAL SENSE ORGANS. CENTRAL OR ABDOMINAL BRAIN. ORGAN CENTRES.

W.C.

of basic medical truth and correct principles, the ultimate attainment to an exact and absolutely scientific medical science along these lines, is beyond question. No earnest and competent practitioner of this System, with a few years' experience, can have the shadow of a doubt as to this. The longer and more earnestly a physician devotes himself to this Practice, the more loyal and earnest is his faith in its great truths and their splendid practical results at the bedside. The fact is that no earnest industrious student and practitioner of Physiomedical Philosophy can escape, to a greater or less degree, becoming an enthusiast in medicine; he must be very level-headed and self-guarded to escape being regarded as a fanatic by his brethren of other ideas and methods of practice.

If the earnest seeker after medical truth for the sake of truth, and the very best methods of curing the sick, will put himself on the side of Vitalism, loyally espousing the cause of the vital commonwealth (the living organism), and diligently study the phenomena of health and disease from the vitalistic standpoint, he will certainly be able to see behind every functional manifestation in health and in disease, one universal, supreme instinct and intent for the very best interest, self-protection and self-preservation of the organism, instead of blind, erratic and untrustworthy forces, incoherently working their own destruction; it is then that this work begins to become a real fascination. Then, as he grows in knowledge of the wonderful physiologic potencies and resourceful instincts of self-preservation, resistance to inimical invasions and conditions manifest in living matter and Vital Force, his confidence in the great *vis medicatrix naturae* amounts to an abiding faith and a swerveless zeal for sanative therapeutics, in harmony with these grand principles of physiologic medicine. The physician who mistrusts and fears what he believes to be incoherent and destructive inherent forces of the sick organism, cannot but mistrust and fear his own agents and efforts in the treatment of the disease; while, on the other hand, the practitioner who sees in the functional aberrations, however violent and irrational they

may appear to the uninformed, the purposeful and sanative instincts of a Supreme Ruler of the vital domain, exerting its best efforts for sanative results, feels that sublime confidence in his sanative agents, working in harmony with this Vital Ruler of the domain, that can only come from accurate and scientific knowledge of the situation. His confidence is begotten of a faith founded in a knowledge of scientific facts, demonstrated by bedside results.

This cannot but be true, the force of education should certainly hold good here, as in religion, politics, etc. This may sound like the advocacy of close medical sectarianism, something foreign to broad scientific medical advancement, but to the well informed there can be no apprehension of exclusiveness; for while it is possible medicine may never reach a point where there can be no honest differences as to most important facts and principles, yet we have too much faith in the good intentions and the honest sincerity of the reputable medical profession at large to seek and secure the very best possible means and methods of healing the sick, to believe that any medical sect or school can long hold a monopoly on the best system of practice. Yet the Theorem and Philosophy of Physiomedicalism must ever live and exert its influence upon medicine, because it is founded in truths and principles that cannot die.

The first great principle of this Practice, then, is that of Vitalism.

Vital Force, in and through living matter of the function-units (tissue-units), is the essential healer of the sick, and not the physician.

The successful practitioner of Physiomedicalism therefore must be a very close student of physiology, yet broad and liberal in his interpretation and practical application of these great truths and principles; it should be impossible for a thorough physiomedical student to become a narrow-minded medical bigot. He should become an enthusiast in biology, histology and physiology, and he will naturally become an optimist in pathology. In proportion to his knowledge of the physiologic integrity and sanative intent of

Vital Force, and his experience in this method of treating the sick, will lie his faith in this Philosophy of medicine; and so it is, as a rule, that the greater one's knowledge of and experience in its practice, the greater his success in these methods of treating the sick and the greater his faith in Physiomedicalism.

Now, by this we do not mean to say that the Vital Force can always successfully overcome disease, or that the physician has nothing to do but follow its leadings. It is often necessary to lead Vital Force, but the physician must beware how he attempts to supersede or usurp its legitimate province. Nor do we mean that Vital Force is omnipotent to save against any odds; indeed, we freely admit that, left to itself, in many instances under inimical invasions and severe disease-conditions, the highly aroused resistive instincts and efforts of Vital Force may, in some cases, work untoward results; as, for instance, in fractures, severe lacerations, etc.; were it otherwise, attempts at remedial aid would be not only senseless, but very harmful in most cases. What we wish to impress upon the medical practitioner is, that he must thoroughly comprehend the sanative tendency and restorative intents of these vital efforts under all circumstances; so that he may stand as a scientific artisan in aid of these vital instincts and tendencies; to use a facetious expression, "*for this are we doctors.*"

The most trying situation for the beginner is that of battling with the febrile phenomena; it is hard for him to discern sanative intent and restorative purposes in a temperature of 104° F., a radial pulse of 130 per minute, dry heavily coated tongue, high delirium, and frequent liquid fetid stools. If he has been taught that the *disease per se* is "Typhoid Fever," his mind is too much occupied with agents that will *reduce* the "*fever,*" to think of vital efforts; his fever thermometer is now a far more welcome ally than Vital Force, it must stand aside until he has subdued the rapid heart-action, narcotized the nerves, and driven the animal heat from the body with its cold packs, etc. After these functional manifestations

have been kept suppressed as long as it is thought safe to do so, the case is relinquished again into the hands of Vital Force, and in the meantime if it has been able, despite these suppressive measures of the doctor, to eliminate the invasive causation and restore the invaded tissue-conditions, the health-state is eventually reached again entirely through the sanative instincts and efforts of this Vital Force, and no thanks to the suppressive treatment.

Now we will not deny that in the above method of treating "fever" as the disease, the treatment may often be successful and in many cases actually save the patient's life; that is to say, that in cases of violent febrile phenomena in a vigorous constitution with high resistive and reserve vitality, where the invasive causation is not too virulent and the tissue-conditions not too profoundly pathologic, such heroic treatment by depletion, suppression, and depression of these high resistive activities may cut short the battle before some secondary and purely accidental organic mishap occurs, and may thus be rational as well as successful treatment. But is it the very best treatment? Certainly the physician is bound both morally and legally to give in return for his patient's money the best service the profession affords. Viewed from our standpoint this is surely not the best treatment, even allowing that it is equally successful in curing as many equally bad cases as the vitalistic methods, there is still left in favor of the latter, the most important fact that the patient is not left with a depleted and wrecked constitution, requiring many weeks or months of arduous reconstructive work for Vital Force to repair the damage of both, treatment and pathocausative, ere the patient can feel like his former self.

Now let us take each of these aberrant functional expressions as mentioned, carefully analyze them in the light of this Philosophy and learn the actual facts as to which is really most to be feared and most strenuously combated - the aberrant functioning of the organs, systems, and apparatuses, or the material causation and conditions that have necessitated these aberrant or supernormal

functional expressions. The temperature being the most generally fought manifestation in fever, we give it our first attention: We find it a symptom-complex, for it consists of a number of abnormal tissue-states which combine to produce excessive development and accumulation in the structures, of animal heat, caused as follows:

- (a) By increased tissue-unit metabolism to supply the extra expenditure of functional energy.
- (b) By retention of excretory matters owing to congestion of the excretory vasomotors; chemical reactions in these retained excretions evolves heat.
- (c) By development of latent heat in the blood and vascular tissues owing to the exaggerated blood movements.
- (d) By retention of this excessively developed animal heat and electricity in the tissues, owing to pressure on the sudoriparous glands by the contracted areolae or extravascular spaces and capillary congestion, thus greatly diminishing the normal diffusion and dispersion of the rapidly evolving animal heat.

Now there certainly must be a basic causation or prime inciting factor of all these abnormal conditions. In other words, we certainly must admit that fever is only a secondary result, a symptom-complex arising from a definite and material causation. It is also clear that this causation cannot be living matter, tissue-units, or Vital Force; for these are all the normal elements of physiological function, not the causations of pathologic or aberrant functional expressions; if they were, then fever would be a phenomena perfectly common to the health-state, a normal functional expression. Then if the fever is neither the primitive causation nor tissue-state of a disease-complex which we call "Typhoid Fever," "Malarial Fever," "Lung Fever," or any other febrile phenomena, it cannot be scientific, logical, nor a safe practice to direct our therapeutic efforts to the fever as the disease *per se*. Moreover, it is an empiric

and dangerous practice to paralyze the cardiac centre, narcotize the sensory centres, and extract the body-heat with cold, in order to "*subdue*" a few of the functional expressions of a disease-complex, the "*fever*."

The symptom-complex or disease-form called Pneumonia is defined as, "any inflammation of the lungs." - Gould. Twentieth Century Practice, Vol. VI., page 677, says: "The usual pathological conditions found in lobular pneumonia are catarrhal in nature. There is no fibrinous exudation. The alveoli are filled with epithelial elements, leucocytes, and mucoid secretion from the bronchial tubes. The mucous membrane of the bronchioles leading to the invaded air-cells is thickened, softened and swollen, of a dark red color, and covered with secretion. The small tubes and alveoli are often so entirely choked with inflammatory products and epithelial debris as to prevent the entrance of any air whatever. The bronchial and perivesicular tissues present interstitial inflammation with numerous leucocytes and enlarged capillaries," etc., etc.

The author takes up three pages describing secondary abnormal conditions and tissue-states, every single one of which results either from a definite pathocausative, or from the aberrant functioning which the organs and systems must in the very nature of things assume in order to resist and eliminate the invasive causation. In his definition of Lobular Pneumonia this author says:

"This disease, called also broncho-pneumonia, disseminated pneumonia, or catarrhal pneumonia, is now regarded by most writers as an infectious inflammation, the pathogenic micro-organism of which is supposed to be either the bacillus of lobar pneumonia or the streptococcus of suppuration. Lobular pneumonia is that form of inflammation of the parenchyma and vesicles which occurs in isolated patches, comprising one lobule or a number of adjacent lobules in different parts of the lungs. The disease in the vast majority of cases begins in inflammation of the bronchial mucous membrane, which finally involves the air-cells and parenchyma of the lungs.

“In all forms of pneumonia, more or less bronchitis is necessarily associated with the disease. In broncho-pneumonia there is always some capillary bronchitis present. In lobar pneumonia the etiological factor, probably the pneumococcus, seems to enter the air-cells themselves, setting up at first hyperaemia, then inflammation with exudation. In lobular pneumonia, it has always been held that the inflammation at first is in the bronchial mucous membrane and afterward extends into the air-cells and perilobular tissues. Recent writers, however, declare that the inflammation is caused by a micro-organism, and that it does not involve the mucous membranes of the bronchial tubes, but originally affects the air-cells themselves. The writer is in doubt as to the correctness of this view, because it is of daily occurrence that a bronchitis, pure and simple, extends into a capillary bronchitis, and that a capillary bronchitis extends into the air-cells, producing broncho-pneumonia. If catarrhal pneumonia depends on the presence of the pneumococcus, we should be able to show that capillary bronchitis and many cases of ordinary bronchitis must also depend upon a microbe; in the meanwhile, we rather incline to the view that lobular pneumonia is an extension of the inflammatory processes present in the capillary mucous membrane which involves the air-cells and tissues immediately surrounding them.” - *Ibid*, pp. 675-6.

Being far from our intentions to misrepresent the ideas of our friends of the opposite methods of practice, we have given space for the above quotations from this eminent up-to-date authority, that the reader may be able to judge of our fair dealing. Attention is called to the following facts as shown in the above quotations:

(a) As in the febrile complex, there is no discrimination made between the disease conditions *per se*, and the secondary conditions and functional expressions essentially necessary for vital resistive and eliminative work in order to restore the health-state or physiologic balance. Invader and

invaded, the usurper (the inflammatory causation), and the defender (the “inflammation,”) are both treated alike as one common enemy.

(b) The “mucoïd secretions in the bronchial tubes,” the “thickened, softened, swollen, dark red color of the air-cells, covered with secretion,” etc., all these things are called the disease; as already stated, they cannot be the voluntary and unprovoked doings of a healthy organism, they are not auto-pathologic.

Yet the above symptomatic manifestations with their results are regarded as the disease by that pathology and so treated; for cold packs, ice bags to the chest, strychnine, digitalis, and whisky are the popular therapeutic agents used in these methods of treatment for pneumonia. - *Ibid*, p. 684.

(c) The confusion and uncertainty as candidly expressed by the above author, in accounting for the pathocausation; if the germ causation be accepted, then the causation of capillary bronchitis cannot be accounted for; all this proves the fallacy of viewing the symptoms as the disease, instead of the tissue-states and invasive phenomena.

Again let us examine the pathology and principles of treatment practiced by the other school in pulmonary hemorrhage. Referring again to the Twentieth Century Practice, page 684-5, Vol. VI., we are correctly enough informed that:

“The pathology of haemoptysis consists in the rupture of a vein or artery, pulmonary or bronchial, from some of the many causes in the section on etiology. The blood may come from a highly congested mucous membrane with a capillary rupture or from inflamed or ulcerated tissues in or about a blood-vessel. As the most frequent form of haemoptysis is found in phthisis, it is easy to understand how the eroded and ulcerated tissues will weaken a vessel and cause its rupture. The pathology of haemoptysis is of course the rupture

of a blood-vessel. The causes leading to this rupture may be simple congestion from chronic valvular disease of the heart or congestion from any of the many causes, such as hyperaemia from a cold, bronchitis, etc.”

Now it would certainly seem essential that a physician must hold in deepest contempt the grand instincts of self-preservation in the resistive and eliminative forces, the loyal heroism exhibited by the vital efforts in self-defense and restoration, often in the face of overwhelming odds, always manifest to the observant, in the organism under disease, the magnificently grand yet logical and commonsense physiologic methods by which living matter and Vital Force accomplishes these processes in adversity. Being thus utterly indifferent, we can understand how one can be so lost to every sense of sympathy for, and appreciation of the physiological rights and the inherent integrity of the organism, who would treat a patient with consumption (the most common victims of haemoptysis), with valvular disease of the heart, or with chronic bronchitis, or congestion from severe cold, any or all of these grave conditions, and the patient now has added the still graver condition of profuse hemorrhage from the lungs, as follows:

“The apartment cool, clothing light. Ice-bags applied to the chest, nose, and back of neck. Ice or very cold acid drinks. Lead, gallic and tannic acids, ergot. Ergotin gr. 2 to 5 hypodermically. Atropine gr. $\frac{1}{100}$ hypodermically. Full doses of ergot and laudanum. Thirty drops of each every hour.” - *Ibid*, page 651.

This treatment of course is perfectly logical with the materialistic idea of physiology and pathology. The ice congeals the living matter of the tissue-units, suppressing the circulatory functions, subduing the vital resistance, etc. In other words, the physician says to Vital Force, “ there is a very small opening in a very small vessel in a small bronchial tube, if you run the circulation at its normal rate the vessel will bleed, therefore I will freeze down your circulatory apparatus, I will paralyze it with atropine, opium, etc.,

I will close down the vasomotors with lead, ergot, etc.” The Vital Force answers, “I can’t give up the ship because there is a small leak in the hold, I propose to stand by the pumps till the ship is under stem and stern; the more you scuttle the ship the harder I will try to pump, as long as there remains life enough in the tissue-units to give me a functional action.” And so it is, if the physician is forced to discontinue these heroic remedies because death is imminent, the resistive energies, so long suppressed and smouldering, break into a violent flame of reaction and before Vital Force can equalize the circulation, the hemorrhage is on worse than ever.

But what better has the vitalistic Philosophy to offer? This brings us to the second great law of Physiomedical practice, which has been most aptly expressed by Dr. G. H. Mayhew in the latin phrase, *conditiones medica saniter*. The logical sequence then of treating the conditions, with sanative medication, is, that:

1. It works with Vital Force, *not against it*.
2. It aids the vis medicatrix naturae, *does not hinder it*.
3. By sanative therapeutics, *not toxic agents*.
4. By sustaining and guiding vital action, *not dethroning Vital Force*.
5. By repletion, *not depletion*.
6. By vital concession, *not life-suppression*.
7. Vitalism, *not materialism*.

With these cardinal principles of practice let us now examine into the pathology and treatment of these same symptom-complexes or disease-forms. The febrile phenomena in general has been discussed in Part Four, so that it is only necessary here, in order to illustrate and compare the different methods of practice, to give the Physiomedical treatment of pneumonia and hemoptysis, showing the physiologic reasons for the same.

Pneumonia, we are generally told, is an "inflammation" of the lungs. This Philosophy views inflammation as a symptom-complex, pure and simple, with a causation that affects primarily either the general vaso-centres ("fever"), or one or more local vaso-centres ("inflammation") That is to say that in a febrile phenomena of a general and continued character, malaria for instance, we have a general vaso-exaggeration (see page 265 and plate VI), the patho-causative (disease causation) affects primarily the abdominal brain (solar plexus), and from there is reflected to the circulatory secondary or out-centres, viz: the cardiac, pulmonary, aortic, carotid, etc., the secondary aberrant influence. The extravascular ganglionic (sympathetic) centres or neurons are affected or actually invaded by the inimical action (toxin or poison), or forces (cold, extreme thermal changes, nervous exhaustion, etc.), or substances (micro-organisms, etc.) This constitutes the tissue-unit state or disease *per se*; which incites or gives rise to the functional aberrations - signs of disease, symptom-complex called "*fever*." While in the complex called "inflammation," the primary causative invasion is in some local vaso-centre, for instance the liver ("hepatitis"), the kidneys ("nephritis"), the gastric vaso-centre ("gastritis"), or the dermoid extravascular vaso-centres, as the so-called "local inflammations" following the introduction of foreign substances, as a splinter, a contusion, or laceration of the surface, etc. Of course if these invasions of the out-centres are severe and extensive enough the reflexation-waves of aberration may reach the cardiac and pulmonary centres, and finally the abdominal brain, when a febrile phenomena will result (traumatic fever).

With this understanding of the febrile part of it, we apply these principles to the treatment of the complex called pneumonia, which, from this standpoint, we would define as *pulmonary vasoexaggeration, because of invasion or derangement of the neurons of the pulmonary vaso-centres (pulmonary ganglionic centre)*. As a very natural consequence the heart would be the first to be touched by the reflex tidal wave from the pulmonary invasion; finally, the whole circulatory apparatus is drawn into the aberrant storm and

soon a general fever is on; all radiating from a small storm-centre in the pulmonary ganglionic nerve centres. Thus we have the picture of pneumonia from the vitalistic view-point, which unerringly points out to the observant practitioner a clear incisive line of therapeutic duty, in aid of the sanative efforts and curative intents of living matter and Vital Force. He has the key of differentiation between cause and effect, between the tissue-states of the disease condition (invasive phenomena) and the organ-states or the disease results, the functional aberrations or symptoms of disease. Keeping these two grand divisions of a disease-complex, the primary disease condition, and the secondary disease results or disease symptoms, clear and distinct in his mind, the therapeutic treatment of each becomes an easy problem, an outline of which would be as follows:

(a) THE PNEUMONIA CONDITIONS. - *Irritation of the pulmonary ganglionic (sympathetic) centres.* - The pathocausative may be extreme and sudden thermal changes, irritating vapors and gases, micro-organisms, toxic substances, etc. The vasomotors of the bronchial mucosa, the vesicular vasomotors, or the pulmonary parenchymatous vasomotors, any or all may be the seat of the invasive phenomena (primary tissue-states).

(b) PRINCIPLES OF TREATMENT OF THE PNEUMONIA CONDITIONS. - These therapeutic agents belong to the class of *vasorelaxants*, and sub-class *local (pulmonary) ganglionic vasorelaxants*.

Thus, instead of depressing and suppressing the vital action in living matter of the pulmonary neurons with cold, and narcotism, the bioplasm and neuron-structure are relaxed with such agents as *Cypripedium Pub.*, *Scutellaria Lat.*, *Lobelia Inf.*, etc. So that when the functional operations, or symptomatic manifestations (functional aberrations) are thus aided, the neurons will have a full and

free circulation to aid the Vital Force in resisting and expelling the disease causation.

(c) THE PNEUMONIA FUNCTIONAL ABERRATIONS (DISEASE SYMPTOMS). - *General vasoexaggeration or febrile phenomena.* - This does not differ physiologically or pathologically from the febrile manifestations arising from any other causation; it is nothing more than a radiation through reflex actions of the ganglionic nerves, of the vasomotor disturbances from the centre of invasion - in this case the pulmonary vaso-centres - but it demands a special treatment in accordance with the physiology and pathology of the storm-centre.

(d) TREATMENT OF THE PNEUMONIA FUNCTIONAL ABERRATIONS. - We have already referred to the immense advantage of therapeutic harmony and correlation of sanative agents (pp. 280-1); we have an apt illustration of this great law here. Combined with agents for the disease conditions we may now add those in aid of the functional resistive and eliminative operations, such as Capsicum, Xanthoxylum, etc. (Cardiac vasostimulants), to sustain the heart's action and general circulatory integrity, so that the ganglionic pulmonary centres may have a full supply of pabulum to sustain them through the attack. The circulation is equalized, the patient kept warm instead of cold; the surface capillaries and vasomotors, especially over the lungs, are kept open, and a free blood movement encouraged with poultices of Lobelia and Capsicum, stimulating liniments, etc. The class of trophorestorative and trophoconstructive agents, (see page 275) are used in the later stages of this complex.

Thus we have in our therapeutics of pneumonia both physiologic and pathologic rules and reasons for the same, founded deeply

in the logic of the situation. For instance, we give Lobelia Compound, composed of Lobelia Inflata, Cypripedium Pubescens, Capsicum Fast., we have the first two agents to be carried, by the law of bioplastic selection (page 253), to the invaded pulmonary ganglionic neurons, where they are vasorelaxants; the Capsicum a positive vasostimulant drawn strongly to the cardiac neurons exerts a general vasostimulating influence, inviting an extra plasma supply to sustain the neurons of the storm-centre, already prepared by the neuro vasorelaxants, Cypripedium and Lobelia, to receive and assimilate the helpful materials.

Now let us apply the Vitalistic methods of treatment to hemoptysis and see if they offer anything superior to the materialistic methods already quoted.

(a) HEMOPTYSIS CONDITIONS. - "Rupture of a vein or artery, pulmonary or bronchial." Loss of blood; loss of vital potentiality of pulmonary ganglionic neurons, because of lack of pabulum supply - Vasotrophesy of the pulmonary ganglionic centres.

(b) HEMOPTYSIS FUNCTIONAL ABERRATIONS. - General vasodepression; in severe cases there is both depression and atony of the solar centre, extending to the aortic and mesenteric centres, causing great vasodilation of the abdominal circulation; while the dermoid vasomotors are collapsed-vasocompression; so that the blood volume is crowded on the dilated interior blood vessels, including the pulmonary capillaries.

(c) TREATMENT FOR BOTH HEMOPTYSIS CONDITIONS AND ABERRATIONS. - Inhalation of a very hot astringent and stimulating spray or vapor, a solution of alum and chloride of sodium with a fine spraying atomizer; vapor from slacking lime with chloride sodium, etc., to contract and close the ruptured vessels.

Diffusive vasostimulants, such as *Erigeron Canadense*, *Xanthoxylum Fraxineum*, *Cimicifuga Racemosa*, etc., are administered freely, while stimulating liniments and friction are applied vigorously to the spine, extremities and whole body-surface, so as to withdraw the blood pressure from the interior, obtaining overpressure in the surface vasomotors, and diminished vaso-activity of the interior blood movements.

Thus we must recognize and keep constantly in mind that every disease-complex has its focal point or storm-centre, the disease-conditions; from which radiate the functional expressions (symptomatic results). This logical position with regard to cause and effect of disease-conditions and their sanative treatment on the Vitalistic Hypothesis places Physiomedicalists on solid ground with regard to the germ theory of disease-causation. We can accept and act on the germ theory without compromise of a single principle; because, it matters not essentially whether bacteria, their ptomaines (toxins), or any other substance, force, or influence, be the patho-causation, we have only to do with ascertaining and treating the tissue-unit conditions (causative phenomena) and the consequent functional aberrations with the secondary transferences or reflex organ-states and functional expressions. Of course it is quite essential to scientific diagnosis which this Philosophy encourages by all means to call to our diagnostic aid the microscope and bacteriology; but we use these aids for quite a different purpose from those who believe that the sole object of bacteriology in medicine is to assign to each and every pathologic state and aberrant functional expression, a specific bacteria as its one and only causative; with the notion that if a specific micro-organism can be isolated as the absolute cause of a disease, then it will be easy to obtain from its toxins an "antitoxin" for the ailment. This is certainly a scheme fraught with intense fascination and an unquestionable medical millennium;

for eventually there would be no toxins to make antitoxins, because there would be no more germs to make disease!

The facts are, as the most ardent advocate of the antitoxin theory of any experience cannot but know, there are, and always will be, many disease-forms or symptomatic functional expressions and complexes that can have no direct origin in micro-organisms. Moreover, it is a well known fact that the same disease-form may in some cases be of germ origin, while in others no trace of the micro-organism can be found. Hence a medical practice predicated wholly on the germ theory of disease-causation can never approach an exact science. The variance and untrustworthiness of experimental as well as practical evidence so far adduced on these lines, naturally leads the unbiased to the conclusion that such premises are founded in erroneous conceptions and interpretations of the fundamental facts. In view of this, it is certainly safer to take the substantial ground of condition treatment, and use the vitalistic methods of warfare against pathogenic and pyogenic microorganisms alike, attacking them from the rear and cutting off their supplies - destroying their culture fields, the conditions of their existence, by increasing the facilities and activities of vital resistance and elimination.

One of the important guiding laws of this Practice is to equalize the blood movements in a physiologic manner, by favoring general vasomotor activities. In doing this we must use therapeutic agents (1) that will influence the ganglionic centres, (2) that will influence the heart and the involuntary muscular structures of the vascular coats, involuntary muscles of the extravascular spaces of the dermoid structures, and in the various organs (see Fig. 6). This is what Prof. Curtis meant by saying "equalize the circulation and nervous action." It would have been more physiologic to have reversed the order and said, *increase the nervous action and equalize the circulation.*

Thus the vasomotor apparatus becomes the most important physiologic division of the organism. The therapeutic guidance and aid of these vast functions are the chief study of the practitioner of these methods. In a general way, for practical purposes, the vasomotors may be divided into *intrinsic* or interior and *extrinsic* or exterior vasomotors, which are subdivided as follows:

1. Intrinsic or interior vasomotors. - The organic and systemic vasomotors constitute that part of the general vasomotor apparatus supplying the interior organs and apparatuses of the body, such as -

(a) *Neuro-vasomotors.* Cerebrospinal and ganglionic systems.

(b) *Myophorous vasomotors.* Vasomotors supplying the voluntary and involuntary muscular systems.

(c) *Osteo-vasomotors.* Those supplying the periosteum and bony system.

(d) *Pulmonary vasomotors.* The vasomotors of the pulmonary circulation.

(e) *Cardiac vasomotors.* The vasomotors of the heart.

(f) *Portal vasomotors.* The vasomotors of the portal circulation.

(g) *Mesenteric vasomotors.* Vasomotors of the mesenteric circulation.

(h) *Genito-urinary vasomotors.* Vasomotors of the kidneys and generative organs.

2. Extrinsic or exterior vasomotors. - That division of the general vasomotor apparatus supplying the exterior surface of the body and those surfaces lining the great cavities of the body, such as -

(a) *Dermoid vasomotors.* The vasomotors supplying and controlling the capillary circulation of the skin and adnexa with the immediate subdermoid structures.

(b) *Gastro-intestinal vasomotors.* The vasomotors of the mucosa of the gastro-intestinal tract.

(c) *Peritoneal vasomotors.* The vasomotors of the peritoneum.

Now the practitioner must bear in mind that all these vasomotor areas or subdivisions of the great vasomotor apparatus, while made up of greatly different and differing tissues and structures and performing very different functional work, are nevertheless under the direct inhibition and innervation of secondary or local centres of the ganglionic nervous system. This being true, it logically follows, as is easily demonstrated in practice, that these areas of vasomotor functioning can be influenced therapeutically, at the desire and purpose of the scientific practitioner, through independent vaso-centres. Thus he has at his command a vast field of therapeutic operations against disease-conditions and causations. But it requires, first, a thorough knowledge of the anatomy and physiology of these regional vasomotors. Second, he must be able to accurately differentiate the pathologic conditions, aberrant functioning, disease causations, etc. He must readily discern and differentiate between a vasoexaggeration and a vasodilation (inflammation and congestion); a vasodepression and a vasoatony (inefficient functional action from obstruction, loss of neuron innervating energy); he must also be able to distinguish a vasotropesy from either of the two latter (see p. 272).

Let us suppose, for instance, a vasoexaggeration of *b* division 1; this may be a *myophorous vasoexaggeration*, presenting a symptom-complex called *muscular rheumatism*. Now having the disease-conditions and the symptom-complex, we next proceed to ascertain the disease causation or pathocausative. This search for the causation is not conducted with a view to finding a specific rheumatoid bacteria and its toxins, in order to obtain a rheumatism antitoxin; and, too, the object of such a quest makes all difference in the world as to the find. The sole object then in ascertaining the causation of this myophorous vasoexaggeration or inflammatory rheumatism is, first,

to prevent its invasive influence and action or cumulative operations. Second, to aid the Vital Force in eliminating from the organism the causative materials which have already accumulated in the system and are still active as a provocative causation of the aberrant functioning. Now if the pathocausative be wholly due to, disease-germs or bacteria, we first destroy the culture field, dispel the essential conditions of bacterial life, by obtaining the very best conditions of tissue-unit vitality and functional resistive and eliminative activity. Next, aid is rendered in eliminating their toxins, repairing what lesional damage may have been sustained by their inroads, and restoring the physiologic balance of functional work.

Again, the rheumatic causation may be due to both intrinsic and extrinsic causations; such as vasodepression, or a vasoatony of the urinary apparatus, or the portal circulation, one or both. Such conditions of the excretory functional activities must necessarily be followed with an accumulation of these excrementitious matters in the system, and they soon become pathocausations because they are now foreign and inimical to the best vital conditions; these matters cannot be allowed to float in the active blood-current, as most serious effects on the heart, lungs, and nervous system must quickly ensue. Consequently the Vital protective instincts strive to keep them in the extravascular spaces, and in the sluggish lymphatic circulation, where they may work the least harm. The muscular system being the largest producer of urea, and other elements of the liver and kidney excretions, it follows that these structures would have the largest share of these retained matters. Now add to these intrinsic causative conditions that of exposure to wet and cold atmosphere subject to extreme thermal changes, and a rheumatic storm is easily set going, with the muscular system as the storm-centre, because it is overloaded with these intrinsic causative matters. Of course, as a rule, it is not difficult to remove the patient from the extrinsic causative influences; but not so with the intrinsic causations, the muscular structures are saturated with uremic toxins, and

the urinary and perhaps the portal apparatuses are inadvertently adding to this rheumatic tissue-state because of vasoatony, etc.; so that the Vital Force has no small task before it, and certainly needs judicious skilled sanative therapeutic aid. Vasotonics and vasostimulants must be gotten to the depressed and atonied organs and apparatuses; vasorelaxants must be furnished the vasoexaggerated muscular structures; palliatives for the nerve peripheries crying out under the excruciating infringement upon their delicate structures by the distended capillaries and the unrelenting involuntary muscles in the extravascular spaces (see Fig. 6). These latter conditions must not be neglected, so that neuro-relaxants and sedatives, such as *Cypripedium*, *Scutellaria*, *Caulophyllum*, must be given either separately, or combined with the vasorelaxants.

Again, let us define by this nomenclature the symptom-complex usually called *pneumonia*. The tissue-state or disease-conditions with the causative phenomena of this complex comes under class 1, being a disturbance of the intrinsic vasomotors, a *pulmonary vasoexaggeration* (see Fig. 7). There are various types of this disease-form, such as broncho-exaggeration, catarrhal, disseminated, interstitial, lobular, etc., acute and chronic, terms which relate either to the location in the pulmonary apparatus of the storm-centre, or the degree of functional aberrant activity. But the great advantage of this Nosology is that the nomenclature is founded on the tissue-states and disease-conditions, instead of the functional consequences or symptoms of the disease-conditions.

Thus from the Vitalistic standpoint we first ascertain the tissue-states and disease-conditions as in any other disease-form. As already implied in this Nomenclature and Nosology, pulmonary vasoexaggeration is an abnormally excited state of the pulmonary vasomotor activities, from inimical invasion of the pulmonary function-units. Next, diagnostic inquiry is directed to the pathocausative. Here also we are concerned only in inhibiting the causative operations. Therefore, it is not essential as to its bacteriologic, thermal,

chemic, or other particular character, only in so far as such knowledge enables the practitioner to intelligently proceed in rendering the causations inoperative as direct or provocative of the disease-complex. Finally, the functional consequences are investigated; naturally enough the heart-action must be accelerated in order to maintain the pulmonary circulatory cycle against the contracted and congested pulmonary capillary vessels, requiring double or perhaps quadruple the normal cardiac energy. Then necessarily this accelerated heart-action leads to a general febrile state, owing to causes heretofore enumerated. Now it would be most fallacious from this view of these phenomena to "attack" this febrile complex as "lung fever" only. On the contrary the temperature, rapid heart-action, pain, etc., are treated as symptoms purely; while the main therapeutic armamentarium is directed to the conditions of pulmonary vaso-activities and the consequent tissue-states.

We have already shown the difficulties besetting a nosology founded purely on the materialistic basis; it is again referred to here in the hope of more clearly and justly setting forth the essential differences of the two methods, so that the student may be able to obtain the good and avoid the errors of both alike, for much advancement must yet be made before any method or system can become wholly devoid of error. The materialistic system of practice must depend wholly upon experimental methods of obtaining accurate data, this has reached a high degree of perfection in the now modern clinical practice; so much so, that it would perhaps be unjust to longer refer to it as the empiric system, yet it is in fact nothing more nor less than empiricism brought under advanced scientific methods of practice. There can be no reasonable objection raised against clinical practice; in fact it has done more perhaps to advance medicine than any other one method. But what we do contend is, that to get the highest results for scientific medicine out of clinical methods, we must work from a definite hypothesis and on concordant philosophical principles. Certainly to the wholly

unbiased mind who will carefully observe the practical results of both, the doubt and confusion under which the great minds labor who devote themselves patiently to clinical practice on these materialistic lines, cannot but believe there is something essential lacking. This essential want, we think, is a correct hypothesis and philosophy to guide and direct these clinical observations. And so it is that the materialistic nosology views pneumonia as a pulmonary inflammation *per se*, treating it strictly as such, directing therapeutic measures wholly against this symptom-complex, the functional consequence of disease. The nomenclature of this method practically ignores physiology, taking no notice in practice of either tissue-states, or invasive phenomena.

The Vitalistic method, on the other hand, bases its nosology as well as pathology on the direction and character of aberrant manifestations both of the disease-state and consequent functional departures from the physiologic standard. Of course this method has also disadvantages; one of the greatest, perhaps, is that it is apt to lead the practitioner into too broad generalization in diagnosis and treatment. It also disinclines one to strict clinical methods; because under condition-treatment and with sanative therapeutic agents, such constant satisfactory results are obtained, together with the consciousness of the physician that his remedies are safe and trustworthy, engenders an easy-going self-satisfied practice, that does not care for the laborious endeavor of the ever-exacting scientific delver. Thus the Physiomedicalist is apt to drift along in an easy life of glittering generalities. This Practice stands as much in need of clinical study as any other system; the very fact of its foundation in a correct Hypothesis of Medicine, so successfully demonstrated in practice, should be an incentive to most energetic and extensive clinical investigations. More hospitals should be established and thoroughly equipped with the most modern facilities for clinical study and practice. There is no valid reason why this System with its broadness in selecting the best from every source, should not

more universally accept and practice the clinical methods. There can be no better way of proving to the world the correctness of our Hypothesis and Philosophy than by conscientious hospital records.

III.

THE CONSUMMATE CURE OF THE SICK.

Due regard for the physiological rights of the vital commonwealth is one of the important tenets of this Practice. For instance, in the treatment of disease, it is deemed in all cases of at least equal importance to present conditions and in serious and prolonged acute diseases, of *first importance*, to foresee and anticipate permanent or chronic after conditions, which may remain because of neglect of proper therapeutic aid, or from inefficient functional activities during the acute storm. If the physician has used none but sanative medicines, then he can be absolutely certain, whatever chronic state may be left, that it was not due to the remedies used during his treatment; if on the other hand, he has used toxic agents, with a view to subduing and suppressing the functional manifestations, under the erroneous notion that they constitute the disease *per se*, then he cannot but be in doubt as to which is responsible for the untoward after results - his remedies, or the disease. He certainly must know that almost all forms of acute diseases are self-limited, and in a large majority of cases Vital Force would effect recovery unaided by therapeutic agents of any kind; so that should permanent disease-conditions of any organ or system follow an acute attack as a result of the therapeutic management of a case, then the treatment has been worse than meddling. Nevertheless, it is a well known fact that the Vital Force unaided may in some cases fail to completely eradicate the disease-causation, or fully restore the normal tissue-states; indeed, if some organ or part be already in a chronic disease-condition, this and even other associated organs, or apparatuses, are quite likely to be left in a crippled condition - first, because of their inability to

withstand the pathocausative; second, because of reflexed or secondary inimical influences from these chronic tissue-states.

To cure the sick is certainly the praiseworthy aim of any school or method of practice; it is far from us to imply intentional error, much less dishonesty in theory or practice of any system or school of medicine. That there are individuals in all medical schools and sects whose ideas of medical practice never emerge from a horizon illuminated only by the dollar orb, we cannot deny; yet the honest intent and earnest endeavor of the medical profession, as a rule, is undoubtedly a conscientious effort to heal the sick. But there are undoubtedly a wide variance among the various schools, as well as individual practitioners of the same school, as to what really constitutes a complete or consummate cure of a disease-form. It would be perfectly natural as well as logical for the practitioner who honestly believes that fever, and pain, constitutes disease *per se*, to be very sure that when his therapeutic agents have reduced the heart-action, and the animal heat has been extracted from the body with ice, etc., till the temperature is normal, that he has cured the patient of the fever. Or, when he has narcotised the sensory neurons with morphia, he has consummated a cure of pain. Therefore, after such a practitioner has "cancelled" the entire symptom-complex in a given case, by suppressing the aberrant functional activities, he cannot but think that his agents have effected a "radical" cure of the disease. His view-point, of course, is entirely shut in by the horizon of symptomatic manifestations.

Now it is a well-known fact that chronic disease-forms are simply after results or secondary consequences of some form of acute disease. In many cases, it is true, there is not a direct continuity such as the gradual subsidence of the original conditions into a subdued symptom-complex of the same form. Yet, as already shown, in a violent acute attack accidents may happen to distant organs or apparatuses that are necessarily drawn into the fight because of their functional interrelations with those directly involved;

in such cases there may be apparently no relation between the acute attack and the chronic disease-form. So also in all forms of neoplasm or so-called new growths, in abscesses, ulcers, etc., all of which are but the continued subdued expression of some acute stage of causative phenomena, either "idiopathic," or traumatic. The transference of a disease-state directly or what is usually termed metastasis is a well-known phenomenon; but is, we believe, erroneously explained as, "the transfer of the pathogenic virus from one place to another by the blood-current" (Gould). That inimical matters, pus corpuscles and toxins, are conveyed through the blood and lymphatics to distant parts there can be no doubt; but in mumps, for instance, the metastasis cannot be of *materies morbi*. We think the more physiologic as well as pathologic explanation would be, that of a transference of the local vasoexaggeration from the parotid vaso-centre, by violent impressions through the ganglionic nerves, projected upon the spermatic vaso-centre, until a local vasoexaggeration is incited at that point.

Moreover, it is our belief, verified by a number of experiments on animals, and by observation and treatment of nervous diseases in man, that there is such a thing as what we shall call the transmutation of one disease-form into an entirely different disease-state in the same or in wholly different organs and systems. It is only upon this theory that many otherwise obscure nervous diseases can be explained; notably exophthalmic goiter, neurasthenia, the so-called "true insanities," psychoneuroses, etc. Also, secondary functional aberrations, or a transference as above of primary disease phenomena from one vaso-centre to another may finally be transmuted into a psychic disease-state, obstructing and deranging the higher differentiating functions of the cortical neurons, such as the proper correlations of apperception and co-ordination of ideas.

These facts only emphasize what we have already said, that in the treatment of acute disease the anticipation and prevention of chronic disease as a result of the acute storm, is in some cases of

even more importance than the management of the acute attack; because, as has been said, nearly all acute diseases are self-limited, ninety-five per cent. would recover with simply good nursing. Therefore, we cannot but see the immense advantage of condition-treatment by the Vitalistic method with sanative medication. We certainly believe that in no other way can the *consummate* cure of the sick be accomplished. "An ounce of prevention is worth a pound of cure," and there can be no more opportune time to administer that ounce of prevention than in this acute storm, by physiologically aiding the vital efforts and carefully protecting the organs, systems, and apparatuses against accidents, intrinsic and extrinsic, thus, if possible, preventing transferences and transmigrations of disease-conditions and aberrations by "*conditiones medica saniter.*"

IV.

THE TREATMENT OF PAIN.

In the patient's estimation, the chief end of the doctor is to relieve pain. The pain and discomfort vastly overshadows in his mind every other consideration, and as a rule the sufferer accepts without question or complaint any and everything that offers a chance of relief. So that the temptation to practice the palliative and placebo treatment of pain, instead of its consummate cure, by ascertaining and removing its causes, is very great; in fact the public is much more blamable than the medical profession for the great prevalence of that worse than fraudulent practice of administering an opiate for every twinge of pain or discomfort, without regard to the conditions or causations. Under a false notion that narcotism means a cure of pain, an unthinking public impels the physician to this deceptive practice, which has degraded the physician's function almost to that of the keeper of an opium joint, and filled the land with "Keely Institutes." Consequently the Physiomedicalist who undertakes the treatment of pain from the vitalistic

standpoint, with a view to its cure by removing the conditions of its causation, has no easy task before him. Indeed were it not that the principles and Philosophy to this Practice appeal so directly to the reason and common sense of the individual of average intelligence, rendering the education of his clientele a pleasure, the strict adherence to Physiomedical Principles in the treatment of pain, especially by the beginner, would be impossible.

It is necessary that the practitioner of these methods should be an educator of his patients in the pathology of pain. In this he will not be successful, except he is well grounded in the fundamental principles of this Philosophy and has made a close study of the pathology and causation of pain, on the rational lines of vitalism. This is not an inviting System of Practice for the lazy and indifferent, no more than the cold-blooded seeker after wealth and honor; but a rich reward awaits the conscientious, patient, scientific practitioner, in love with his profession, who could not enjoy an unearned fee, or undeserved honors.

As already stated, the first essential to the successful treatment of pain is correct ideas as to what pain really is, or in other words, the essential pathologic state and aberrant conditions of pain. In framing our definition of pain (Part Second, pp. 34-7), it is, we hope, made plain that the tissue-state or the conditions of pain is always in the tissue-units while the aberration of pain or the pain-symptom lies in the sensory neurons or nerve cells. The complex consists of a more or less violent projection or exaggerated transmission, by the sensory nerves, of impression-waves upon the sensory neuron-groups or centres; in other words, it is the neuron or nerve cell that *really feels*. Any substance, force, or influence, therefore, that will incite or arouse the inherent instincts of self-defense and resistance to inimical influences and conditions, resident in the living matter of tissue-units, is, in a greater or less degree, a pain-causation. If the bioplasm in these tissue-units or "organic cells" are endowed with the faculty of selecting from the various elements of

the blood-current their food and medicine as their necessities require, of which there can be no reasonable doubt, then certainly these same bioplasts of the tissue-units must possess the power of apprising the nerve centres of the inimical unit-condition. Thus, in exact proportion to the severity or gravity or other characteristics of this abnormal state of the peripheral units generally, or at any point, locally, is the character of these projection-waves sent to the centres and the nature of the pain or discomfort as recognized by the sensory neurons. As proof of this, we have the fact that the very earliest as well as the most positive intimation of the presence of disease in the organism, is pain, or discomfort. The next most prominent fact in proof of this theory of pain is that of anesthesia, already referred to; the anesthetic renders the sensory neurons incapable, for the time being, of taking cognizance of these urgent messages from the invaded units, hence insensibility to pain.

These facts being understood, we easily see how it is that there is such an endless variety and every degree of intensity of these sensations of pain and discomfort, from that of a mild, gently warning twinge of unease, to the most excruciating pain. The nerve fibers, of which the nerve trunk or so-called "nerves" are made up, are simply a continuation of the neuron or nerve cells, "the dendrons"; they are the fingers with which the neuron reaches out to the periphera to feel, see, hear, smell, and taste the good, as well as the bad things of the external world. The neurons are not versatile, in fact each neuron is limited to a single function or faculty, though there are billions and billions of the same kind. For instance, an optic or sight-neuron knows nothing but light, and an impression made on its finger, the periphera of its fiber (axon), is always interpreted as light. Close the eye, tap on the ball, and you get light-flashes. So, also, the auditory neurons recognize only sounds, the olfactory neurons, only odors, etc. It is now well known that there are neurons that only recognize heat, others that can only take cognizance of cold; others again, that can only recognize impressions

we call pain. So that impressions must be made on the *pain* nerve-fibre by impingement, such as the internal pressure by distended and pulsating blood-vessels, the contraction of muscles, voluntary and involuntary (see Fig. 6), or from external impingement such as blows, punctures, cuts, etc., in order to produce pain. Consequently it must necessarily be, as it is in fact, that there are as many different forms or varieties of neuro-aberrations or abnormal nervous sensations, as there are varieties of normal nerve functions, no more and no less, each neuron performing its own definite office. An *auditory* neuron, for instance, cannot recognize as light an impression from a ray of light, neither can a *heat* neuron feel a cold impression as cold. These variously endowed neurons are connected or associated in the brain by the "associate nerve fibres," so that their individual faculties are conjugated into percepts, concepts, notions, ideas, etc., by the intellect-neurons (the mind). Thus we learn and know all that we can ever know of this world. But the things in this world that we so far have no means of taking cognizance of - feeling, seeing, hearing, smelling, tasting, etc. - far exceed those that our neurons unaided can ever reveal to us.

Now, any or all of these normal nerve functions can be exaggerated or super-functioned, to a degree of unease, discomfort, or actual pain. That is to say, the neuron is capable of receiving and interpreting the transmission-waves, through the dendron or nerve fibre, only up to a certain rate of transit-speed; this is its physiologic function-rate, which of course has a considerable range before the pathologic is reached. If these things were not thus, the living organism would be left helplessly at the mercy of the innumerable inimical forces and vicissitudes of its environments. Consequently the All-wise mercy of thus endowing the organism with these protecting functions of warning pains, and disease. Then, certainly, if rightly understood and interpreted, these facts lead us to a higher regard for the grand principles of vitalism, and a more sacred regard and rational care of this wonderful Vital Commonwealth.

With these facts before us, it is not so difficult to treat pain after all. Being thoroughly informed himself as to what and why pain really is, the tactful physician finds it rather a pleasant task to inform his clientele on this most important subject; for, as an almost invariable rule, he finds them willing listeners and apt scholars in grasping the practical facts. However, the most inopportune time to make the patient believe that pain is a friend and suffering is all in the mind, is when he is suffering a good big storm of pain and discomfort; at that time he will most likely insist on introducing you to his friend the enemy and will be more than willing to see how *you* will stand pain. Therefore, if possible to do so without any mental aid from your patient, relieve the pain first and as quickly as possible, with sanative and rational therapy. Then you can inform him how you did it, making plain the radical differences between palliation by narcotism with its bad after results and that of its rational and radical cure by removing the pain-conditions; show him the happy after results, without agonizing apprehensions that the pain may return worse than ever as soon as the medicine "wears off."

The two methods of stopping pain must be kept distinct and incisive in the patient's mind. The pain aberration is at one end of the string - the nerve - and the pain causation at the other end; the nerve carries the pain-impression to the neuron (nerve cell), and *it does the feeling*. Morphia, for instance, which is the "prince of narcotics," acts on the sensory neuron-structure in such a way as to inhibit the receptivity of the living matter, consequently there can be no pain receipt until the living matter has eliminated the narcotic and regained its normal sensory receptiveness; which it will do, providing the quantity administered has not been sufficient to permanently disable or destroy the neuron structure, or the bioplasm of the nerve-units. But morphia is a poison, as we have already shown; it possesses a dynamic energy which is exerted directly or primarily on the neuron-structure; so that, while the living matter of the invaded neurons may eliminate a sufficiently small dose

(so-called medicinal dose) of morphia, yet its effects upon the neuron-structure (formed material of the nerve-cell) remains for a comparatively long time, and another dose administered before these after effects are obliterated adds that much more to the already crippled neuron, until finally these accumulated effects are exhibited in profound narcotism. This is called the "cumulative effects of the drug."

Moreover, if morphia be continued for a greater or less period, owing to the mento-physical constitution of the individual, the bioplasm of the neurons eventually tiring of the long-continued resistive and eliminative warfare, sets about to adapt itself to a toleration of the presence of the poison, in which, to a degree they succeed, so that apparently things go well for a time. But it is found that the quantity of the drug must be increased from time to time as the resistive instincts of the living matter gains strength from constant suppression. However, should the morphia be withheld entirely, or even the dose materially diminished, then this long-suppressed resistive energy of the neuron-bioplasm breaks forth, like the long-accumulated energy of a volcano, into a storm of resistance that renders the poor victim of the opium habit frantic with cravings for the drug. And so it is that if a perfectly healthy person, who has not the slightest twinge of pain, takes morphia in so-called medicinal doses regularly for a sufficient period, and then discontinues it, he is racked with the most unbearable pains in every part of the body, and in addition he is beset with the most horrible mental distress and apprehensions of disease. So that the light amount of relief from pain, acquired by this morphia inhibition of the sensory neuron-recept, is purchased at the cost of vital integrity of nerve cells.

Nor is this all, in a great many cases where narcotics ought to do the greatest good were they capable of physiologically relieving pain, they are a most dismal failure. Not infrequently the physician will be urgently requested by the patient to not give him

morphia; he will say, "I positively cannot take it, doctor, it does not relieve my pain and nearly kills me." Which the doctor finds to be true if he disregards the patient's request and administers the drug. These are cases in which the pain is almost entirely mental. That is, the sensory neurons soon become non-receptive from sheer exhaustion and the waves of aberrant impulses are forcibly projected on through the sensory cell-groups, by means of the associate nerve fibers, into the *mental cell-groups*, converting what is usually termed mental distress, into actual mental *pain*, the very acme, the "top round," so to speak, of human suffering. In such a state nothing short of a lethal dose of morphia would quiet the patient and if the physician persists in giving it, if he does not kill his patient the after effects are never forgotten and no matter how much the patient may suffer again, he pleads with the physicians to not give him morphia.

The physiologic treatment of pain commences at the causative end of the phenomenon and necessarily seeks to radically remedy the pain-conditions, instead of palliating the pain-aberration or symptom of pain. Take as an illustration mesenteric vasoexaggeration, vaguely termed colic. Deranged intestinal digestion having resulted in putrescent intestinal ingesta, generating poisonous gases, toxins, etc., which have attacked the mesenteric ganglion-neurons and secondarily the abdominal brain, results in a storm of involuntary muscular spasm; the impingement upon cerebrospinal sensory nerve-fibres transmits violent impulse-waves to the cerebral sensory neurons, thence on to the mental areas, so that most excruciating pain as well as mental torture constitute the *summa summarium* of the patient's idea of colic. Now what the laity recognize as colic is simply the aberrations; the *colic-conditions* are at the other end of the nervous system - the periphera. Hence the two methods of treating colic:

(a) VITALISTIC METHOD. - Minimize the colic-conditions of pain, *i.e.*, relax the mesenteric vasomotors with nervine

vasorelaxants - Cyripedium Pub., Caulophyllum Thal., Asarum Can., etc. Neutralize the intestinal fermentation with alkaline antiseptic agents - Rhei et potassa Comp., etc. Remove the colic-causations with mesenteric vasostimulants and tonics - Capsicum, Zingiber, Apocynum, Leptandra, Podophyllum, etc.

(b) MATERIALISTIC METHOD. - Cancel the colic-aberrations, i.e. inhibit the neuron-functions with narcotic poisons - hypodermic injections of morphine, etc.

Now, to those educated from the *materialistic* standpoint, and accustomed to view pain from the aberrant end of the nervous system, who treat disease on a symptomatic nosology, subduing the aberrant functional efforts with toxic therapeutic agents, the latter method of pain-treatment seems to have every advantage over the former. It gives the patient what he craves, quick relief from his suffering (providing the agent acts as it should). To be sure, it only cancels the symptoms for the time being, leaving the pain-causation untouched and when the neurons have succeeded in throwing off the narcotic action, if the Vital Force has not succeeded in eliminating the causation and the neurons cry out again in resistive protest against such irrational treatment, another hypodermic of morphia will silence them again. Of course, if the resistive and eliminative vital efforts do not succeed in getting rid of the causation, as well as the narcotism, the patient may go down into a typhoid condition, or some brain trouble may supervene, which must be met as they come up; thus the physician, as well as the patient, are in blissful ignorance of the "might have been," under vitalistic condition-treatment. We cannot but view with charity the physician who having been educated on these lines, conscientiously administers the above treatment in strict accordance with the principles of his system; we can hope that eventually he may obtain "more light and better." He who has attempted an education on vitalistic lines, but was incompetent to grasp the fundamental ideas and principles and has abandoned

this System for more easy-going methods, with due compassion for his mental defects, we can only congratulate the cause on its riddance. But for the one who has been thoroughly educated in these Principles and Sanative Methods, who has fully witnessed the results of "the more excellent way," but from purely selfish considerations, viewing the noblest profession on earth from simply a commercial standpoint, turns traitor to his own honest convictions and deserts this System of practice for other methods, under the delusion that they are more convenient and popular, there can be no extenuating circumstances. "To whom much is given, much will be required." But the cause is to be congratulated that such instances are very rare. The writer's extensive acquaintance with students and practitioners of this System has afforded excellent opportunity for observation in this direction, and it seems like a judgment that the few men who have thus "wandered after strange gods" have invariably been dismal failures.

When pain is thus inhibited with morphia, the neurons invariably suffer to a greater or less extent an irreparable loss of vital potency. With a dose now and then, in what may be thought an emergency case, apparently no harm comes of it. Even frequent resort to this drug, especially in the bilious and phlegmatic temperaments, apparently is not followed with perceptible ill effects, so that one occasionally hears persons say they have taken morphia when necessary all their lives and are quite sure it has done them no harm. Such notions are wholly delusive and can be held only by the uninformed and unobservant. Take the case of colic already instanced, and this is but a fair sample of what will occur in any given case to a greater or less extent under the morphia treatment of pain; the agent has no effect on the colic-conditions, the patient is simply relieved of the pain-aberration, while Vital Force, crippled by the loss of vital potency in the nerve units, overcomes the pathocausation with considerable difficulty, and though not feeling quite so well as before the attack for several days thereafter, the patient, so far as he can tell, finally recovers entirely. But after a time, while

seemingly in the best of health, he is suddenly seized with another attack of colic; morphia is again administered, the pain relieved and things go on as before. Then another attack comes, and so on. Eventually the attacks grow more frequent and severe until they either reach a fatal termination, or some serious complication results. Now the facts are that each administration of morphia leaves the neurons with less innervating potentiality, the mesenteric vasomotors are proportionately weakened and the colic-conditions recur more frequently with increasing severity.

The condition treatment of colic on the other hand, obviates such untoward events by removing permanently the pathocausative, leaving the neuron-potency rather increased and the units invigorated instead of depressed. But it may be asked, Does this treatment always and invariably both cure and relieve pain? If so, is it not too slow in very severe cases, allowing the patient much unnecessary suffering? Is it not a fact that the causation of pain as well as the pain conditions, cannot always be ascertained, and in many instances - neuralgias, headaches, etc. - cannot always be removed, while the curable cases require a long continued course of treatment, even then often failing because of mistaken prognosis; in the meantime the patient must suffer continuously? Is it not also a fact that in long continued pain the neurons or nerve-units require a supersensitiveness and pain becomes a secondary nerve-function, in other words a nerve-habit, so that after the pathocausative and even the pain-conditions are removed, the pain-habit continues and the patient's suffering is not in the least abated? These are very pertinent questions, we answer them numerically as follows:

1. No, this treatment will not invariably cure pain and there are cases it will not even relieve; neither does the narcotic treatment afford even relief in such cases. However, the failure of this treatment to relieve pain promptly is, in all cases, due entirely to failure of the physician to diagnose correctly and accurately prescribe the remedies. Of course the same may be said of the other

treatment and allowing this, the question is, which does the least harm? After thirty-five years of practice on these lines, careful experimentation with the narcotic treatment for pain, and close observation of the results of both methods in the hands of eminent practitioners of the respective systems, the author unhesitatingly affirms that in the hands of a thoroughly educated practitioner this Method of pain-treatment will promptly and permanently *cure ten cases* to where the other method simply *relieves one*. This may to some seem like an unwarrantable statement, but we cheerfully invite candid investigation. One most important fact apparent to anyone who will look around at the numerous "Keely Institutes" in the land, is that the Vitalistic treatment, even after its most signal failures, always leaves the patient in much improved general health, and we challenge any one to find an inmate of an institution for the cure of the morphine habit, who has been under no other treatment from the beginning of his ailment except correct Physiomedical Therapeutics.

2. As to the tardiness of this Method in relieving pain, the same experience with both methods, and observations as above mentioned, impels us to challenge comparison in this respect. We unhesitatingly assert that on the average, with a fair selection of cases, in promptness and rapidity in pain-relief, to say nothing of cure, this method excels that of narcotism. The more severe the pain the more prompt and certain will this treatment cure it, because, first, severe suffering means a more apparent causation rendering diagnosis less difficult and its removal in the large majority of cases easy, with proper remedies; second, with correct diagnosis and proper prescribing the agents can be given in large and frequent doses until the desired results are obtained, without in the least endangering life by toxic effects of the agents given. Not so with the other method, the agents must be stopped short of the lethal dose (which it is impossible to accurately determine in severe cases), whether the desired results are obtained or not.

3. As to the impossibility of always ascertaining either the pain-causation or the pain-conditions, we unhesitatingly take the negative side of this question, and assert that he who honestly believes that in any reasonable case it is absolutely impossible to determine either the disease-causation or the disease-conditions, while the patient is living and able to take a thorough examination, proclaims *himself*, and not medicine, a failure, and should get out of the profession at once. That one may often lack knowledge, experience, skill, diagnostic apparatus, etc., to diagnose certain cases may be no discredit to his reputation as a successful general practitioner, and is certainly no fault of medicine. That the most expert diagnostician may be so handicapped by environments, the conditions of his patient, etc., as to render a correct diagnosis impossible is also true, yet this is no argument against the infallibility of thorough scientific diagnosis. As to the impossibility of curing the pain-conditions, of course very occasionally one meets incurable pain-conditions, as there are very few disease-forms but may reach an incurable stage. But we assert, without fear of successful contradiction, that the Sanative condition-treatment of pain will find far less incurables than any other method now in vogue. When we do find them, however, instead of converting them into "morphine fiends," they are built up physically by neuroconstructives and restoratives, until they are better able to bear the pain; then, with properly applied psychotherapeutics, their fortitude may be strengthened until the pain becomes a trivial affair. The writer has a patient with facial neuralgia, perhaps incurable, who has been under his treatment for two years, and now only suffers at intervals of from one to three months, the paroxysms yielding to sanative treatment after from two to twelve hours. She now could not be induced to take a narcotic knowingly. Previously she had been under narcotic treatment for a year and was most thoroughly disgusted with it, though perfectly ignorant of any other method until coming under this treatment. There can be no question in the

physician's mind who will candidly test the non-narcotic Vitalistic Method of pain treatment, that it is most efficient and far more humane, even in incurable cases, than the morphia treatment.

4. At first sight it would seem an unfortunate pathologic fact that the sensory nerve centres will, under long continued suffering of a certain character, largely mental, acquire a pain-habit, and the patient seemingly suffer as acutely after the pain-causation and conditions have been removed as before; yet, while these are the class of patients that invariably and quickly become morphia habitues, because the neuron morphia-state is also a pain-habit, on the other hand they are the easiest cases managed by the Vitalistic Method. They almost invariably yield to psychic therapeutics, after the pain-causation and conditions have been permanently removed with sanative therapeutic agents. The morphia habitue is almost wholly unamenable to psychotherapeutics.

V.

THE MERCURIAL TREATMENT.

Next to, or perhaps equal with morphia, stands mercury in its myriad pharmaceutical forms, in the therapeutic estimation of practitioners of the materialistic methods to-day. There are at present at least thirty-five "official preparations" of mercury in service, with a tendency to increase instead of diminish the list. In former years the then "heroic doses" of this drug were followed by such disastrous consequences that a resistless current of popular prejudice seemingly drove it out of use and the laity, in the absence of terrible cases of "salivation" and "fever sores," are under the delusion that mercury has now gone quite in disuse. But a glance at the growing list of mercurials in the materia medica of the Regular school, or a short sojourn at Hot Springs, Ark., would readily dispel this delusion. The fact is that "chemical pharmacy," and a

better knowledge of the toxic virulence of these preparations, have enabled the practitioner to better subdue and mask their pernicious effects.

That mercury in any form is a poison none of its most ardent advocates will attempt to deny. We have, it is thought, justly placed it in the class of ganglionic (sympathetic) nerve-poisons, of the peripheral organ variety (pp. 241-2). That is, an organ-poison of the depressant variety; its virulency being mostly expended primarily on the gastric, hepatic, splenic, and renal ganglionic centres. In large doses or long continued its toxicity through derangement of these important organ-centres, secondarily depraves the vital fluids - blood, secretions, etc. - until every tissue and structure of the body suffers from its baleful influence.

As the most universal and extensive use of mercury by its advocates as a therapeutic agent, is in the treatment of syphilis, we shall discuss the mercurial treatment mainly in this disease-form. Especially as it is claimed by the advocates of that method that syphilis cannot be successfully treated without this agent. We hope to give the best of evidence that in this, as in the treatment of pain with morphia, as a most eminent authority of that system nearly a hundred years ago exclaimed, "The small amount of good derived from its influence is overbalanced by a huge sum of evil!" While, on the other hand, the scientific and consummate cure of syphilis can only be accomplished along vitalistic lines, with sanative therapy.

The Twentieth Century Practice of Medicine, Vol. XVIII, pp. 304-5-6, says: "Mercury has up to the present day remained the sovereign remedy in syphilis. When this is supplied to the body in any way it exerts such an influence on all the tissues that the constitutional disease in the great majority of cases heals in a manner which borders almost on the miraculous. We shall call the treatment which is adopted at any period of constitutional syphilis the *temporary* one. It has been observed, however, that mercury, when

administered immediately after the appearance of the initial lesion, also modifies the system (and perhaps the virus as well) in an unmistakable manner. In the hope that the disease might in this manner be aborted, or at least rendered milder, a constitutional mercurial treatment, *preventive medication*, has been employed very early, even before the appearance of constitutional symptoms.

“We shall first discuss the *temporary* mercurial treatment, as being by far the most important, and shall begin at once with that method which has long been the method of choice in the treatment of lues, and which on account of its efficiency is still highly recommended. I refer to *inunctions* (friction, rubbing) with blue ointment, simply called the inunction method. * * * Unguentum cinereum is rubbed daily or every second day into a fresh part of the skin for twenty minutes, and even longer, in doses of from 0.5 gm. in children to 2-4 gm. and more in the adult, until the amount applied has entered the skin. * * * To facilitate this, the whole surface of the skin is divided into several regions, and the inunctions are then made in the following order: First inunction, the flexor surfaces of both forearms; second inunction, the flexor surfaces of both legs; third inunction, the flexor surfaces of both arms; fourth inunction, the inner surfaces of both legs; fifth inunction, both groins; and sixth inunction, the back. When the end of the cycle has been reached, it is to be renewed as often as necessary. But we should not neglect to order a bath to be taken at least before each inunction, so that the skin is freshly cleansed and thus is prepared for the absorption of the mercury.” Pages 307-8, we have the following: “The permanency of the result is probably based on the fact that mercury taken into the body in this manner is only very slowly eliminated. The researches of Paschkis and others have shown that traces of the mercury can be found in the body for years. In the case of one of my patients who had received seventy inunctions early in 1892, and who took iodine only later, traces of mercury were still found in 3.350 gm. of urine analyzed in Ludwig’s laboratory at the

end of March, 1895. In another patient, mercury could be detected ten years after the last course of inunctions.

“In what way is the mercury absorbed in inunctions? The startling effect which inunctions exert on the syphilitic process naturally excites curiosity as to how the mercury is absorbed. Primarily we think of an absorption by the skin. Microscopical sections of skin which has had blue ointment rubbed into it, shows the presence of mercury in the hair follicles and ducts of the sebaceous and sweat glands. The metal is therefore forced mechanically by the inunctions into the pores of the skin, perhaps even more deeply, and there it experiences the chemical changes necessary for absorption. It has, however, also been determined by clinical observation and repeated researches in this direction that the mercury contained in the ointment becomes vaporized and is then undoubtedly absorbed in the form of gas, and that to such a degree that occasionally the nurses and even the friends of patients (as Welander and others, myself included, have seen) are attacked by more or less distinct symptoms of mercurial poisoning. In one of my cases the vaporized mercury could even be detected in the urine of an occupant of the same room who was not directly being treated with mercury, but who nevertheless was cured of his luetic lesions.”

One must investigate the mercurial treatment with wholly unbiased mind, with a keen perception of cause and effect; one must have sufficient knowledge of the essential principles of the materialistic and vitalistic methods, and then witness this mercurial treatment in a number of cases, before he can become awake to its horrors. Before proceeding further we desire to refer the reader to the assertion early in the above quotations, italicised by their author, that the mercurial treatment is *temporary*. As we look in vain through his book for a *permanent* or *curative* treatment for syphilis, we are justified in presuming that this school has *only a temporary* treatment for this dread disease, which is mercury. Then if it can be proven that this *temporary* treatment of syphilis is fraught not

only with serious permanent impairment of the organism, but often causes death, certainly the unbiased mind would decide that such dangerous treatment, which at best can only promise *temporary* relief, is certainly not to be preferred above the disease. This we undertake to prove by evidence that we are confident the candid reader will not undertake to gainsay, as follows:

The Twentieth Century Practice of Medicine, above quoted from, after giving in careful detail the mercurial treatment, devotes twelve pages to a most candid consideration of "Mercurial Poisoning." Which, being both candid and eminent authority, we give considerable space for, as follows: "No matter in what manner the mercury is incorporated into the system, we must always be prepared to see at any time a series of symptoms caused by the presence of this metal which are by no means indifferent, and which together make up the condition known as *hydrargyrosis* or *mercurialism*" (mercurial poisoning).

"We shall first describe briefly *chronic mercurial poisoning*, as it appears in certain trades, such as quicksilver mining, hat making, mirror making, etc. Disturbances of digestion are usually the first symptoms presented, being caused by a catarrh of the stomach and intestines, now and then an increased secretion of saliva and stomatitis are noted, and following this symptoms of anaemia and increased irritability occur. The patient is easily frightened, becomes embarrassed and confused by the slightest causes, and seems awkward and clumsy, especially when he thinks himself observed; his sleep is restless and disturbed by dreams. In the further course of the intoxication a tremor is observed, which begins in the facial muscles and the tongue, extending to the extremities, and may increase to convulsions; during sleep the tremors cease or at least become much diminished. Paralysis succeeds tremors if they are very marked. Neuralgias also in the form of pains in the extremities, oppression of the chest, and especially headache and toothache make themselves felt in the most troublesome manner. Loss of intelligence is not so

very frequent, but actual mental disturbances only exceptionally occur. If the cause has been in action for a long time, a *mercurial cachexia* is induced during the long continuance of these conditions. In the course of this cachexia the bones become fragile; pulmonary phthisis is frequently developed; occasionally albuminuria of short duration occurs, nephritis not necessarily being present; dropsies are terminal symptoms in grave cases. Women in this condition are very liable to abort, and children who are born of them are weakly and debilitated and frequently become the victims of scrofula or rickets.

“The other extreme of hydrargyrosis is represented by *acute mercurial poisoning*, in which gastroenteritis, even in the fatal cases, is the most prominent symptom. The therapeutic use of mercury also induces certain forms of acute and chronic hydrargyrosis, which the physician ought to be able to recognize distinctly. The pathological changes caused by mercury occur singly or in groups in the oral cavity, the intestines, and the kidneys. In addition to these typical locations, the evidences of poisoning not very infrequently exist in the skin, and we may also occasionally note the creation of a hemorrhagic diathesis and certain more or less grave disturbances within the sphere of the nervous system.” - *Ibid*, pp. 333-4.

“Changes in the *nervous system*, as well as in the voluntary and involuntary muscular apparatus, are among the effects of mercurial poisoning. These in their lighter forms cause restless sleep and rheumatic pains in the extremities. It is however of greatest interest to note that acute hydrargyrosis may also lead to grave changes in the nervous system, to an actual *polyneuritis*.” - *Ibid*, p. 336.

“Affections of the *kidneys* are no less dangerous as predisposing to or aggravating mercurial poisoning. From the fact that the kidney plays a very important role in the elimination of mercury, it is evident that this organ, in case it is already diseased (nephritis, amyloid degeneration), may become greatly endangered when mercury is administered. The unfavorable influence of mercurial

treatment in the presence of constitutional diseases and cachexia, in so far as these are not caused by syphilis, should also be emphasized. In the case of sufferers from *tuberculosis*, hemorrhagic diathesis, etc., the condition may be markedly aggravated by the exhibition of mercury. Nicolich indeed has reported the case of a robust man who was addicted to alcohol, in which death followed six inunctions (each of 3 gm.), which had been ordered by an oculist." - *Ibid*, p. 337.

"We are furthermore compelled to emphasize the fact that a forced mercurialization exerts an unfavorable influence on the syphilitic process. I have been able to convince myself of this fact in my own patients, and still more so in those of other physicians, and have repeatedly demonstrated that a cure could be obtained in these cases only after the mercury was discontinued. We must not overlook the additional fact that patients treated by the chronic method" (mercurial) "quite frequently lose ground and suffer from digestive disturbances and insomnia; they are most frequently, however, attacked by manifold disturbances of the nervous system. The treatment extending over years, therefore quite frequently exerts an aggravating influence on the development of the disease, and affects the constitution of the patient in a depressing manner." - *Ibid*, p. 356.

Further eminent evidence as to the mercurial treatment is furnished by "System of Practical Therapeutics," Hobart A. Hare, Lea Bros. & Co., N. Y., 1901, as follows: "In recent years those versed in syphilology have differed in regard to the best time for beginning the constitutional treatment of syphilis" (with mercury). "Doubtless, the weight of authority is in favor of withholding specific" (mercurial) "treatment until general adenopathy or secondary eruptions on the skin or mucous membranes appear." - Page 695, Vol. I.

"At whatever period the treatment of syphilis is begun, the medicine first given is mercury in some one of its forms. This drug, properly administered, is a specific, and we can reasonably expect to definitely cure nine patients out of ten who conscientiously

pursue for four years the course of treatment laid down for them. The patient must, however, not conceive the idea that his cure depends only upon the regular ingestion of the medicine he is ordered to take.

“Patients with foul, decaying teeth are easily salivated. The toxic effects of mercury are still more readily manifest on those with chronic kidney disease. Occasionally a patient is encountered in whom even a small dose of mercury acts as a violent poison. This is a matter of idiosyncrasy.” - Page 698, *Ibid*. We select from his “summary of the treatment of syphilis,” the following numbers: “1. The constitutional” (mercurial) “treatment of syphilis should be inaugurated as soon as a probable diagnosis of chancre has been formulated. 3. Mercury should be the basis of treatment in all periods of syphilis. 4. This is most efficient when administered by inunction. 7. Treatment should be continued for at least four years, with appropriate intervals of rest. After the second year a six months course of iodide of potassium should be added to the mercury. 10. Parasyphilitic phenomena” (syphilitic sequelae) “should not be treated by mercury.” - pp. 719-20, *Ibid*.

Under the heading, “Non-Specific Remedies,” in *The Twentieth Century Practice*, page 350, Vol. XVIII, the author says: “Unfortunately we do not always gain the desired result when using the so-called specifics”; (mercurials) “though there may be an improvement at first, this may in rare cases cease and the local lesions may appear to grow worse after a time, while the general condition of the patient is obviously worse; in this respect the forms of syphilis known under the names of malignant and galloping (see above) are to be dreaded especially. Here we shall not usually derive any benefit from the mercurial or iodine preparations, and shall do well to discontinue them. An inspissated sarsaparilla decoction, especially a tonic treatment, will be most efficacious here; fresh air, good food with a glass of wine or brandy, and proper local treatment will yield the best results; the conscientious physician

will also have to decide, during the treatment, whether it is necessary to prescribe other tonic preparations, such as iron, the simple bitters, and arsenic.”

Thus we have a complete picture of the mercurial treatment, which cannot be reasonably questioned as to its eminence as authority. Surely, none are more competent to testify than these most eminent and honest advocates of this method, who represent the accumulated experience of that System for more than a century. That this treatment is purely *allopathic* (see pp. 247-8) no one can deny. Leaving out of the question a sanative and more successful treatment even in syphilis, than the mercurial, we object to it on the following purely vitalistic and rational grounds:

1. It is an acknowledged purely tentative or *temporary treatment*. Not condition-medication, not anti-causative, but, as plainly understood from the above authorities, as well as rational pathology and physiology, simply a supercession treatment, *i.e.*, overpowering and masking one set of aberrant functional expressions (syphilitic), by inducing a more active pathologic state, with a more virulent poison - mercury.

2. There is not a single pathologic condition or functional aberration resulting directly or secondarily from the syphilitic causation or poison, but what can be induced in a healthy person by the continued administration of mercury (for four years) as above recommended for the “*temporary*” treatment of syphilis. This being so, and as also admitted by all authorities, that in many cases it is impossible to make a correct diagnosis of syphilis until the later stages, moreover the weight of authority being in favor of early mercurial treatment even on suspicion, how is it possible to always determine which has really done the most harm, syphilis or mercury? During an enforced sojourn at Hot Springs, Ark., in February and March, 1899, because of surgical septic infection, the author made careful investigations and observations in over two hundred of alleged syphilitic cases under the mercurial treatment.

At least one-half of the 55,000 people who visit this resort annually are treated there for syphilis, with mercury; the almost universal method is that of rubbing pure calomel powder (*hydrargyri chloridum mite.*) into the skin. The "rubber," usually a darkey, who rubs the mercury, is a most important functionary at Hot Springs, Ark. The ordinary dose is a half ounce at a rubbing. We are absolutely certain from most searching examination of a very large number of cases that at least ten per cent. of all the cases that are subject to the mercurial treatment at that place for syphilis, never had a trace of syphilitic infection, and the amount of damage done these unfortunate victims of mistaken diagnosis, by mercurial poisoning, is incalculable.

3. It is our candid belief after thirty-three years of active personal practice, and careful observation and inquiry as to the results of the treatment of syphilis, by the most eminent practitioners of both methods, that at least ninety-five per cent. of the so-called "tertiary forms" of syphilis or its reputed effects upon the bony system, are wholly due to mercurial infiltration, and *not the syphilitic poison*. Furthermore, the above investigations have furnished conclusive evidence that more than fifty per cent. of so-called "secondary syphilis," what is generally termed the eruptive stage ("lues"), are entirely due to the same cause, or to Iodide of potassium. In our own practice not twenty per cent. of those whom we treat from the beginning and who have never had a dose of mercury, ever have the least appearance of the so-called "syphilitic eruptions," nor indeed any form of syphilitic sequela; and we know of a number of Physiomedical practitioners who have much better success in curing syphilis.

4. A most objectionable feature of the mercurial treatment is the horrible condition it puts the patient in during a mercurial course. Even though it was as successful as some of its ardent advocates claim, one would certainly be justified in wholly discarding it even for a less successful method, and one would surely be culpable did

he adhere to it knowing that there is even an equally successful treatment. When the system is fully under the toxic action of mercury, as it is in the earlier stage of a mercurial course, the vital potentiality of every tissue-unit in the organism is held absolutely in abeyance to the toxicity of the drug and vital resistance as well as reserve energy is at the lowest ebb. So that the resources of Vital Force are reduced to a functional atony, and is barely sufficient to maintain the most ordinary necessities of the organism. Of course as time goes on, if the resistive and eliminative energy of the system is not wholly broken down, eventually the units adapt themselves to the inimical environments and under certain vital restrictions the mercury is tolerated. We have already quoted the best authority, showing the terrible state of a mercurialized patient in stronger language than we would dare to express with our limited observation. The throwing off from the body of the mercurial fumes in most repulsive putrescent odors, "to such a degree that occasionally the nurses and even the friends of patients are attacked by more or less distinct symptoms of mercurial poisoning," is simply horrible. Our most unpleasant experience at Hot Springs, Ark., fully bears out this statement, thrice we were compelled to change rooms on this account. We can never forget the noisome odors from these mercurially mutilated victims. Notwithstanding the room had stood empty a week and subject to a thorough cleaning and fumigating after a former occupant had undergone a mercurial course there, the wardrobe and other furniture were so saturated that although they were subjected to a second most thorough fumigation, I was forced to vacate it the third day, on account of most unpleasant constitutional effects. The second, and third rooms were abandoned because of persons taking "rubbings" of mercury in an adjoining room. We witnessed almost every form of neuroses, both acute and chronic, resulting from mercurialism. There were a large number of cases here the second and third time, after being treated for syphilis, for the treatment of a most deplorable state of chronic mercurial rheumatism,

they had simply exchanged syphilis for rheumatism through mercurial bargaining. We have examined at least one hundred cases of chronic mercurialism, which for our own part, knowing whereof we speak, we would gladly exchange the best one of them for syphilis pure and simple. We have used the term mercurial mutilation, we aim so to speak from the purely vitalistic standpoint; that mercury does eventually *mutilate* the neuron or cell-structure of the nerve units beyond repair, we have certainly presented ample evidence from trustworthy authority (see pp. 230-1, Fig. 5, facing page 236). Of course many, perhaps the majority, who are subject to this unit-mutilation apparently recover and are seemingly as good as ever so far as outward appearances of physical health go. So, also, we see persons suffer extreme exterior mutilations in railway accidents, etc., and barring the apparent stumps, scars, and deformities, have every appearance of "good health." The only difference being in the latter case the effects of the mutilation are exterior and apparent, while the former are deep-seated in the minimal elements, unapparent, yet none the less they are scars and deformities, beyond the power of Vital Force or medical science to erase. It is indeed hard for the logical mind at all acquainted with these scientific facts with regard to the mercurial treatment, to conceive of any possibility by which a person subject to a four years' course of this treatment, could escape most serious and irreparable damage to his organism.

5. Another serious objection to the mercurial treatment is the extreme caution that must according to these authorities be continually exercised during its course, the frequent necessity for its discontinuance because of grave poisonous effects and the impossibility of ever knowing which is doing the most harm, the syphilis, or the mercury. The great advantage of the hot water baths, etc., of the hot springs, it is claimed by the practitioners of this method, is because it aids the system to get rid of the mercury more readily, so that much larger doses can be given with impunity than in ordinary

practice. It is exceedingly difficult to apprehend the philosophy of such ideas; if in order to protect the system from its poisonous effects it is necessary that the mercury be “washed out” of the body by these thermal springs, where is the benefit of these heroic doses? Again, if these thermal waters enable the system to effectually eliminate both the mercurial and the syphilitic poisons, why will they not equally, if not more effectually, eliminate the syphilitic poison unhampered by mercury? We have been able to conclusively answer these questions in the affirmative in our own mind. Up to the present time fifteen very severe syphilitic cases, two of them the so-called “galloping” or malignant, have been sent to Hot Springs, Ark., under our special directions and sanative treatment; they never had a dose of mercury in any form, and returned apparently perfectly cured; several of them now over two years without the least symptom in any form. Besides, a number whom by our solicited advice, while there, abandoned mercurial treatment and using only the baths, etc., are now rejoicing in their happy escape.

Now it is freely conceded that our personal observation and experience count little against the vast array of accumulated authority in favor of the mercurial treatment, we could not think of condemning it on this ground alone. Therefore we have depended on the evidence of eminent and honest authorities who practice that method, from some of whom we have herein freely quoted, even more than we have on the experience of practitioners of Physiomedicalism, covering a period of more than seventy-five years of active and extensive practice. We further concede that the mercurial treatment does cure a considerable number of cases without leaving any apparent damage to the organism. Indeed, for argument’s sake, we may grant that it will cure an equal number of cases, taking them as they come, with that of the Vitalistic or Physiomedical Method; for even with this more than liberal concession we believe the competent and impartial investigator must admit the advantages to be largely in favor of the Sanative methods.

But what better has the Physiomedical Philosophy to offer? Has it no specific remedy for syphilis, or does it propose by “nonspecific” treatment to permanently eradicate this dread “specific disease”? What has this Vitalistic Method to offer in the way of statistical comparison with the results of the mercurial treatment? These are very pertinent questions, and we earnestly hope to make answers that shall be candid, if nothing else.

In the first place, for argument’s sake we will make the most liberal concession of allowing the mercurial treatment *equal* success with the Sanative Method, taking the treatment of syphilis as a criterion. So that we simply assume, that of two methods, each apparently curing an equal number of cases, the rational mind would certainly choose the one most physiologic in its essential nature and consequently fraught with practically no danger to the vital integrity of the organism, rather than the one that is essentially pathologic in its nature and as admitted by its advocates, to be fraught with much danger of permanent and irreparable damage to the organism. This being true, we have certainly carried our point already as to the danger of the mercurial treatment; and it only remains to point out in a general way the efficiency as well as practicability and rationality of the Vital or Sanative Treatment of syphilis. Of course the detail treatment of this disease-form is foreign to this work, but we hope the present contemplation of a future work (*The Practice of Physiomedicalism*), to which it rightly belongs, may be realized and the treatment in detail, fully presented.

Replying to the first question then, in a general way, this Philosophy offers the “more excellent way” of condition-treatment, on vitalistic lines, with a sanative and physiologic therapy. It offers a large number of safe and efficient therapeutic agents for syphilis that, either singly or in scientific combinations, will meet every abnormal tissue-state and every direct as well as every consequential syphilitic condition. This treatment is wholly reliable and ample for any and every emergency, and instead of being compelled to

discontinue it on account of other disease states, or because of the inimical effects of the remedies, they can be readily adjusted and therapeutically adapted to all complications, so that there can be no condition of the system and no complication of the syphilitic complex that would preclude the Vitalistic Method of treatment.

To the second question we answer, this System has no "specific" therapeutic agent for syphilis. As has already been explained, the specificity is not in the therapeutic agent, *per se*, but in its scientific administration to remedy *specific disease-conditions*; in other words, it depends on the skill and ability of the physician to specifically prescribe his agents. Hence Physiomedicalism neither has nor seeks "specific medicines" for syphilis, or any other so-called "disease." The Vital Method ascertains the *specific tissue-states and conditions of functional aberrations or symptom-complexes*; when these are accurately diagnosed, it is easy to find the proper agent to aid Vital Force in remedying the *specific disease-conditions*. Thus this Method demands scientific and accurate diagnosis and rational condition-treatment, instead of diagnosis by rote and treatment by title of "disease." The fact is that in scientific medicine there can be no such thing as a "specific" therapeutic *agent*, as the term is used and understood by the materialistic system of practice. Were it otherwise, medicine would certainly be a happy-go-lucky business, any tyro could administer the "specifics" and *practice* medicine. In our humble opinion, this erroneous therapeutic notion of "specifics" is largely responsible for the enormous prosperity of the patent nostrum traffic, and the growing "proprietary medicine" abuse. Of course it is not claimed that the Vitalistic Method will permanently cure *every case of syphilis*, neither can the mercurial treatment lay any claim to such infallibility, else they would not so frequently resort to what they are pleased to term "the non-specific treatment." There are persons whose organism are already in such a diseased and depraved condition when the syphilitic infection occurs, affording the virus such a rich culture-field that no power of

earthly therapy can stay its ravages. But if scientifically administered and faithfully adhered to by the patient, it will surely and permanently cure every case in which there is a reasonable possibility of a cure; *and it will as certainly not in the least endanger the life of the patient, or leave a single tissue-unit permanently crippled.*

As to the third question, we must candidly plead inadequacy of statistical evidence with respect to clinical hospital reports to substantiate the superiority of this System; the reason for which we challenge a candid investigation of the facts. When the Government becomes generous enough to open the doors of the public hospitals and educational institutions to fair competition of the different schools of medicine, such statistical evidence will be forthcoming. Meanwhile we earnestly solicit unbiased inquiry into the results in private practice and private hospitals.

A very grave obstacle to our Method of treatment of syphilis, is an unreasoning public prejudice. A very large number of physicians are possessed with a senseless fear of syphilis, their apprehensions are exaggerated by attributing to the syphilitic contagium the frightful effects of mercurial poisoning; this begets an unquestioning faith in mercury as "a sovereign remedy," amounting to a superstitious belief. This species of superstition has been engrafted into the laity until the practitioner of Sanative methods has much difficulty to keep his patients wholly aloof from the mercurial treatment. To be sure, very often after the patient has abandoned the Vital treatment for the mercurial, more to satisfy the insistence of meddling relatives or friends, he is glad to return to this Method; but positive evidence of success in this treatment requires that the patient have not a single dose of mercury in any form. It is also only just to demand that the physician who attempts the Physiomedical treatment of syphilis be devoid of prejudice and such highly exaggerated notions of syphilis, or a blind faith in mercury as the one and only "specific" remedy. Moreover, one must be educated in Physiomedical Philosophy and Therapeutics and imbued

with a rational faith in his remedies. It is far better for the practitioner to stick to the method of his education and belief, even though he realize that they are erroneous, than “fly to others that he knows not of,” and half-heartedly tinker with a method in utter ignorance of its underlying principles.

VI.

PRINCIPLES OF PSYCHOTHERAPEUTICS.

In these days of “faith-cure,” “prayer-healing,” “spirit-healing,” “short and long distance mental healing,” “metaphysical therapeutics,” “christian science,” “occult science,” etc., etc., if for no other purpose than as an educator of a credulous, mystified, doubting and inquiring public, the medical practitioner, no matter of what legitimate school or system he may be, should thoroughly understand and be able, not only to explain to the laity the underlying truths and principles from whence all these fancifully named and so-called “healing methods,” have been framed. But the candid and practical investigator will also find in the scientific arrangement and proper use of these principles, to which the term psychotherapeutics has been most aptly applied, a very useful and legitimate aid to the intelligent physician in the treatment of an important class of cases. That there are physiologic and psychologic truths and principles underlying all these things, a few of which have been vaguely understood and woven into mythical sophistry, both intentionally and ignorantly, to catch the large class of both unintelligent and intelligent miracle seekers, is so apparent to all scientific self-reasoning minds who have studied the subject, that any considerable discussion of this phase of the subject here would be gratuitous. That the scientific study, classification and practical application in therapeutic practice of these truths and principles legitimately belong to scientific medicine, instead of these fanciful “healers,” cannot but also be apparent to the rightly informed.

They certainly belong as much to legitimate medicine as do the great life-work of such men as Bastian, Bain, Locke, Tuke, Maudsley, Charcot, Hammond, Mitchell and hosts of other eminent medical authors, from whose works all these things have been taken, and euphoniously named to suit the fancy of the self-styled originator. Certainly the educated physician should avail himself of these scientific principles in legitimate practice, and suggestive or mental therapeutics or more properly *psychotherapeutics*, should rapidly find its way into the legitimate resources of the general practitioner, instead of being limited to the special practice of neurologists and alienists.

Of course our allotted scope confines us here to a discussion only of the general principles, and not the details of psychotherapeutic practice. However, we are glad to refer the reader to the following most excellent works: *Mental Therapeutics - Rest - Suggestion.* - Francis X. Dercum, M.D.; P. Blackiston, Son & Co., Philadelphia. *The Law of Psychic Phenomena.* - Thompson J. Hudson, LL. D.; McClure & Co., Chicago. *Hypnotism.* - Albert Moll; Scribner & Sons. *Illustrations of the Influence of the Mind Upon the Body, Designed to Illustrate the Action of the Imagination.* - Daniel Hack Tuke, M.D., F. R. C. P., LL. D.; Henry C. Lea's Son & Co., Philadelphia. *Pathology of the Mind.* - H. Maudsley, M.D.; D. Appleton Co. *The Brain an Organ of the Mind.* - H. C. Bastian, M. A., M.D., F. R. S.; D. Appleton Co. *The Will Power.* - J. M. Fothergill, M.D.

The fundamental facts and principles of psychotherapeutics may be grouped into three classes: 1. The correlation of mind, body, and the external world. 2. The objective mind, the subjective mind, and the emotional mind. 3. Suggestion or volitional reason-impressions and the influence thus exerted upon the subjective mind.

1. THE CORRELATION OF MIND, BODY, AND THE EXTERNAL WORLD. - We briefly discuss this most important and far-reaching subject only as it directly relates to the matter in hand - psychotherapeutics.

The term mind includes such intricate and apparently limitless phenomena that it is easy for the imaginative who study this subject, to readily leave out of question its purely physical basis, the organic body, and soar off into metaphysical realms, attributing mind functions largely to influences and forces wholly extrinsic and independent of gross anatomical components, minimal physical elements - neurons or nerve cells - and physiologic organization or functions. And so it is not difficult for the so-called "spirit medium" to convince a very considerable class of individuals that the spirits of the dead return, write, speak, and otherwise convey messages to their corporeal auditors. The hard facts that dispel this, in a narrow sense, "beautiful dream of spiritism," are, that every phenomena of this kind, no matter how mystic, marvelous, or miraculous they may appear, *are wholly and absolutely within the brain of the individual, who is under the influence of both suggestion (positive influence or reason-impulses of the operator), and auto-suggestion (the subject's suggestion or self-impressions)*, nothing more and nothing less. As there are two anatomical divisions of the nervous system, each having wholly different physiologic offices, so there are two distinct anatomic and physiologic divisions of the mind, namely, the *objective* and the *subjective* mind (See the Law of Psychic Phenomena, T. J. Hudson). The objective mind brings to the subjective mind crude materials, so to speak - percepts and concepts - of which the subjective mind, through the mind faculties of *apperception, reason*, and that most important one of *emotion*, constructs every notion, idea and understanding that it is possible for us to learn through all the senses, both common and special, of the world we live in. Now we can gain no more knowledge, nor no more accurate ideas of things than our individual physical organization is inherently capable physically and mentally of conveying and constructing into ideas. Hence, there are as many and widely differing minds as there are physical organizations - "many men, many minds." Each individual mind has its individual limit of intelligence and mental

achievements, wholly independent of education and environments; and all are limited to the possibilities of their physical potentiality. Take, for instance, the infant of uncivilized parents, surround it with most advantageous environments of culture and education, while it is true you may elevate it both physically and mentally far above its parents, yet it reaches an absolute limit, beyond which no possible effort of education can carry it; which, when compared with a descendant of educated and cultured parents, he stands almost as low as his parents are beneath him. So also with the most highly educated, cultured and accomplished individual, compare his utmost limit with what there remains yet for him to know of the universe, and which it is utterly impossible for him to know, and the comparison leaves him lower than he stands above the savage.

2. THE OBJECTIVE, SUBJECTIVE AND EMOTIONAL MINDS OR MIND DIVISIONS. - The subjective mind is utterly dependent upon the objective mind for all its impressions of external things, it is wholly blind to the external world, often with the aid of imagination or emotional mind constructing ideas and notions exactly opposite to the real nature and purpose of the external facts. This subjective mind may be compared to a general who is confined in a dungeon cell, but in communication with his vast army of a million men (the tissue-units), and their officers (the nerve centres), only by means of hundreds of telegraphic instruments, each sounding its message, great numbers of them clicking away at one time, each with a different message; all must be heeded, considered, differentiated, and the entire great army maneuvered as a unit, without the general ever actually seeing a single individual of his army, nor a glimpse of the enemy.

Now it is an inherent tendency of this subjective mind (imagination, emotion, etc.), to magnify and exaggerate these messages coming up in such divergent impulse-lines as they do at the nerve centres, because the subjective mind is so remote and wholly incapable of realizing directly the nature of actual causative substances

or occurrences Which incite these transitive impulses. So that were it not for reason and volitional will-power these impressions would be continually so magnified and exaggerated by the emotional part of the subjective mind, that one would be constantly in a state of extreme frenzy. In fact this is exactly what occurs in insanity, reason and volitional will lose their control of the subjective mind. This subjective mind then, is what has been vaguely termed the emotions, but it includes a number of mind faculties making a most important group. It is indeed the *poetry of life*; were it not for this part of the mind, life would be only *prose*, utterly devoid of *poetry* or *music*.

As has already been pointed out, besides the five senses that were formerly believed to include all the nerve functions, it is now known that not only is the sensation we call pain recognized by special sensory neurons or nerve cells, but the sensations of heat and cold, itching, fornication, etc., in fact every normal function of the nervous system is presided over or rather received at the centres by special neurons which can take cognizance of and register no other than its own special interpretation of impulse-waves or transitions. Now all pathologic sensations or those of discomfort are felt only when the units locally or generally are invaded by pathocausatives, and causative phenomena are present; then the impulse-waves diverge and switch off in transit to the centres, disturbing these various sensory circuits. For instance, some will be traversing both kinds of the thermal nerve arcs, the result is cold and hot sensations at the same time; they may pass over the cold arcs, and as these impulses travel in interrupted currents the sensation is that of "chilliness"; again, they may in the same way traverse the heat arcs alone, and the sensation is that of "hot flashes." Thus we see what a great number and variety of unpleasant sensations or messages that may come up, all at one time, to this imprisoned and apprehensive general in his cell, *the subjective mind*. That of heat and cold; light-flashes from the optic nerves; roaring, buzzing,

rushing sounds through the auditory nerves; unpleasant taste and smell through the gustatory and olfactory nerves; an endless variety of pains, aches, throbbings, etc., through the pain nerves; and added to all this, the innumerable disturbances of the cerebral *mental* cell-groups from the reflections and re-transmissions of these impulse-waves within the brain itself; and we stand aghast at the terrific strain this subjective mind must endure in many severe disease-complexes both acute and chronic. Only by this view of the pathologic facts can we realize the actual physical hell which the hysteric, the neurasthenic and the insane must endure. No wonder this subjective mind is apprehensive and easily thrown into a state of panic at the first alarm of an invading enemy. In a panic and stampede of a crowd, the exalted apprehensions of this blind and dependent, imaginative and emotional subjective mind, for the time being, holds perception, conception, volition, reason, will, all in abeyance and mental anarchy runs riot with the rational mind.

3. SUGGESTION OR VOLITIONAL REASON-IMPRESSIONS, AND THE INFLUENCE THUS EXERTED UPON THE SUBJECTIVE MIND. - A proper understanding of the above facts with regard to extrinsic and intrinsic relations and interrelations of mind and matter enables us to now intelligently discuss the laws of suggestion or *operative psychotherapeutics*. The most important lesson these facts afford however is as already indicated, that the once so generally held notion of "animal magnetism," or that the operator communicates some kind of force, as magnetic ("animal magnetism"), or electrical, directly to the subject operated on; or that it is possible for any extrinsic motive force as "spirits of the departed," to take material, physical and physiologic possession of one's own nerve centres and for the time being run the "machine;" this idea is not only wholly erroneous, but begets a superstition in the minds of the laity that is most damaging to practical progress in this very important branch of medicine. When in the realms of psychology and especially psychological medicine, we must not for a moment lose

sight of the cardinal facts and the paramount principle of Vitalism; that there is but one motive and functional element of the organism, viz., bioplasm or living matter, and but one supreme ruler of the vital commonwealth - Vital Force. That, therefore, all extrinsic matter, forces, or influences, can reach and influence our physical and mental organization *by and through living matter and Vital Force only.*

The educated physician, then, who practices psychotherapeutics on the principles of Physiomedicalism is making use of a therapy *as legitimate, as real and as effective in its proper sphere as his materia medica.* Also, here, as in the treatment of pain, the first essential is that the physician understand thoroughly the real nature of the underlying principles of psychotherapeutics and its practical operation; the next essential is that he be able to make his patient understand its real nature, and entertain rational notions of its potentiality and therapeutic possibilities. That there is nothing mystic or miraculous about it, no "black art," legerdemain, hocus-pocus or anything of the kind. The fact is that the more rational and intelligent the patients, the better subjects they are for this branch of therapeutics. It is the ignorant, unreasonable and cranky people that are bad subjects for psychotherapeutics. "Know then thyself, presume not God to scan."

Practical psychotherapeutics then, resolves itself into two things, viz: *Suggestion* and *auto-suggestion*, or in other words, *extrinsic* suggestion and *intrinsic* suggestion. The term suggestion as here used is that phenomenon of nerve function to which we have already applied the term *volitional reason-impressions*, by which we mean the subjective mind appealing to reason, to aid it in obtaining correct notions of exaggerated and aberrant impressions, projected on the sensorium or sensory centres; so that by this rational method it may banish all undue apprehensions, groundless imaginings, and subdue and allay the emotional mind. Extrinsic suggestion is the suggestive influence of the physician, or of external environments, while

intrinsic or auto-suggestion is the influence exerted by the patient's own volition or will power; affirmative and negative auto-suggestion are the patient's affirmation or rejection of the operator's suggestions. Consequently to obtain the best results both suggestion and auto-suggestion must work together and in harmony on the same line, affirmative auto-suggestion. Hence the necessity of educating the patient as to the real nature and rationality of psychotherapeutics, so that he may thus be better able to aid the physician in helping himself out of "the slough of despond."

The field of suggestion is broader than humanity, embracing the whole animal kingdom. It follows man from the cradle to the grave, and is the "destiny that shapes all our ends, rough hew them as we may." Watch the little tot with her dolls, she prattles away at them, now teaching, then scolding and punishing them, then petting, every movement, word and gesture is a mirror in which is reflected the very identity of her mother; because she has from birth been almost every minute under the suggestion of this parent. As she grows older and mingles with the outer world, this identity is masked in a large degree by the force of suggestion from many and varied experiences; yet, her mento-physical constitution or temperament retains the parental impress or what is termed *heredity*, that can never be effaced and is handed down in varying degrees through generations to follow.

Thus by the force of suggestion alone almost if not every phase of consanguinity, family trait and heredity, can be rationally accounted for on physiologic and Vitalistic lines. Moreover, if this be true, on the same basis we can account for unconsanguinity, by negative auto-suggestion; which would in the beginning sever the primitive family relations. Cain fleeing into a distant and strange country on account of dislike, the force of strong negative autosuggestion, leading to the murder of his brother; Noah's sons from the same force of auto-suggestion becoming uncongenial and wandering off in opposite directions into different countries, where the

continued force of the suggestion of environments begat opposite and characteristic tribal and native consanguinity and national characteristics. So also the force of suggestion has caused wide separation of family relations, eventually resulting in change of name, and finally unconsanguinity.

With these facts and principles before us, we deem it only necessary here to give two illustrations of practical or operative psychotherapeutics. We first take psychic suggestion, pure and simple, in other words, psychotherapeutics unaided by drugs. This would be called somnolent suggestion or hypnotism. The physician must first diagnose his case correctly, for if possible for correct diagnosis to be of more importance in one class of cases than another, it is in this department; the patient is then told in the most positive and impressive manner (and being sure himself that he is right the physician's suggestions have the more force), that he will be put to sleep and when he awakes all pain and distress will be gone (it is best to set a definite time when it may possibly return). Next the subject in a very quiet place and easy posture is commanded to sleep, "Sleep! sleep! sleep!" the operator says, slowly and impressively, at the same time laying the right hand on the patient's head, or making gentle strokes over the forehead and downward with one or both hands, also stroking the eyelids very tenderly; "Sleep, sleep, sleep," says the subject mentally in auto-affirmative-suggestion, and the desired result will come in eight cases out of ten. It is generally best after the patient is thoroughly somnolent, to wake him up by a sudden snap of the finger and thumb and a very positive command "Awake!" Then he is put to sleep again and kept so for thirty minutes, when he is again impressively informed that all trouble will be gone when he awakes, and remain so for so many days, and the operator with loud positive command says, "Awake!" and as the patient arouses out of his somnolency, says, "you are now all right, your disease is gone," stroking with each hand from the head downward to the fingers he finally says, "there, you are now awake!"

The patient if a properly selected case will be just as sure to be wholly free from pain and discomfort as the operator has been successful in securing a thoroughly somnolent or hypnotic state. But if the patient have a severely crushed foot, a felon on the finger, or any other physical lesion as the causation of his pain, it will certainly return again in full force in a very short time after waking. So that proper cases for hypnotic psychotherapeutics must be those in which the tissue-lesion or physical end of the pain or distress has materially subsided, or has been wholly cured, and the discomfort is entirely at the neuron-end or purely mental.

Psychotherapeutics, therefore, has its widest scope and most successful operative field in its non-somnolent or un hypnotic practice, which takes the patient in a waking and rational state of mind, appealing directly to his reasoning powers with his logical appeals to the subjective mind. It can here be used in a practical way as a most valuable adjunct to therapeutic agents. Illustrative of this practice we will suppose a case of general neurasthenia, of that type with an exalted and exaggerated mental picture of the disease; in which the patient is very sure his case is the worst on record and utterly incurable, he is also just as sure that not one of the one hundred and one physicians who have already treated him knew a little bit about his case.

The physician, after patiently listening to an almost endless and meaningless tale of woe, in other words after giving the patient the floor exclusively until he has gone well over the ground, will then proceed to give him a most rigid physical examination, according to the general rules of diagnosis. He finds a generally run down condition of the reserve nerve energy, from close application, worry, and very bad dietetic habits, which has resulted in vasoatony of the entire digestive apparatus - gastro-intestinal catarrh - from which by reflexion and transmission of aberrant functioning, has resulted in a neurasthenia with its storm-centre in the mental neurons, until all physical basis of disease is completely overshadowed by the

exaggerated mental picture delusively painted by the apprehensive *subjective mind*. Now the physician must succeed in clearly showing the patient exactly what his real physical ailment is, how it has originated, following its development, step by step, up to the present time, and how that with his aid, the whole trouble can be successfully cured; then as clearly point out to him exactly how much of his suffering is physical and how much purely mental, explaining the difference between *physical pain* and *mental suffering*. When successful in this, he has more than half accomplished a cure. After such an examination and explanation of the disease it is not at all uncommon to hear the patient exclaim, "Well doctor, you are the first physician out of all that have examined me, that thoroughly understands my case!" With this sincere assurance on the part of the patient you are master of the situation.

But it must not be expected that with one talk the patient will fully realize and practice what is told him so far as mental therapy is concerned. He will take the medicine faithfully to the minute, but he needs repetition of psychotherapy as regularly as he needs replenishment of his bottle with medicament. With this broad and practical understanding of psychotherapeutics it becomes indeed of even greater importance in many cases than material therapy; for any physician of much experience knows that he has far less trouble in administering and managing his therapeutic agents, than he does in managing his patients and their meddlesome relatives and friends. One knows just about what his medicines will do and has little concern as to their reliability, but he can never tell exactly what his patients and their friends may do; but as a rule with few exceptions, if the physician can get his patient thoroughly under suggestive control, he has little trouble in retaining the confidence and complete mastery of that ever loyal *subjective mind*. Its faith is a blind one, to be sure, but once its confidence is won, you have a most efficient and loyal servant, not in therapeutic aid alone, but there is no better publisher of the physician's fame than the grateful and reverential

patient who firmly believes his physician has wrought little less than a miracle in his cure.

In the treatment of pain, mental distress and every form of discomfort, the psychic force of suggestion if properly practiced will accomplish more for the genuine relief of the suffering than all the opiates that can ever be administered. This may seem like a monstrous assertion, but we are confident that every earnest and rational student of psychotherapeutics who will candidly practice it on Vitalistic lines, will more than bear us out in this assertion. When we keep in mind the physiology of pain, that it is the pain-neurons or nerve cells that really feel pain, also that they can be deprived of this faculty for a considerable time by anesthetics, by physiological sleep, by suggestively induced sleep or hypnotism, by engaging the mind in intense thought, or high emotional excitement, we are then prepared to fully comprehend the physiologic rationality and therapeutic value of psychotherapeutics in the relief and cure of pain. Take as example the Egyptian, Chinese and Indian beggars and fakirs, who eat glass, mutilate themselves in most horrid ways; the Chinese beggars for instance, sit with both legs amputated and lying by their side, while the stumps are kept raw and bleeding, others go about with a skewer run through both cheeks, which they keep turning anon so that the wounds may be kept fresh. (See Carpenter's Travels.) Why is it that these people having exactly the same nervous system as ours, can endure all this while the American must have a hypodermic injection of morphia, or a dose of narcotic, on the slightest ache or pain?

Late experimental investigations with regard to the mental topography of the cerebrum point to the important fact that the pain-neurons as well as all others recognizing sensations of discomfort, are not only closely associated and interrelated, but by means of the associate fibres are correlated intimately with the volitional or will-groups of neurons. This being true we can see how it is that by constant exercise and cultivation just as one gains control of

the muscular and other senses by athletic training, the will and reason faculties can gain inhibitory control over the sensory neuron-groups and actually inhibit pain and mental distress. In fact this is exactly what does occur when one is in a state of extreme mental absorption, or in excitement receives severe wounds and injuries without being conscious of the fact for the time being. That fortitude can be cultivated and developed just as any other of the mind faculties, or the physical strength and endurance, there can be no longer any reasonable ground for doubt. The writer from an extreme sensitiveness to pain, has so developed his fortitude until he was able to extract two of his large and firm upper molar teeth that were beyond repair and causing considerable annoyance. For several nights we had been able to go to sleep and not awake till morning, by counting the throbs of these aching teeth, or by setting words to the rhythm of their thumping, but tiring of this, the forceps were resorted to with permanent success in quieting the cause of this disturbance of our sensory neurons. Twice during an attack of septic infection of two fingers we got ready to amputate the third finger of left hand, intending to do all our self except suturing the flaps, but delayed, not for want of fortitude, but in the hope of saving the member, which hope was finally realized. We amputated the second, third and fourth fingers on one hand, the last, back of the metacarpal articulation, for a boy sixteen years old who refused an anesthetic and sat holding the wrist with the other hand quietly watching the work without a murmur. We have operated on three cases of cataract, evisceration of the eye-ball in two cases, besides the removal of numerous dermoid and subdermoid tumors, some of considerable size, without an anesthetic general or local, and without hypnotic suggestion, by simple suggestion alone. The patient was told that an anesthetic was far more dangerous than the operation, that it would hurt of course, but not nearly so much as he imagined, it would last not to exceed five minutes and he would be glad after it was over that he did not take an anesthetic.

Of course people differ very much naturally in both their ability to endure pain, and in the possibility of developing their fortitude in this respect, yet there is no healthy sane person but is capable, by proper effort and training, of having their fortitude surprisingly developed and strengthened. The benefit of such education and development, if scientifically taught in our public schools, would be incalculable. It would greatly reduce nervous diseases, insanity, and hosts of other ills, as well as doctors' bills.

We trust that sufficient has been said in this our limited scope of an almost boundless subject, to enlist the conscientious interest and scientific study of the seeker after medical facts and principles, in this most interesting and useful auxiliary to broad and liberal medical practice. The most important fact that we have endeavored to make plain is, the every-day practicability of psychotherapeutics; one can practice it always effectually to a greater or less extent on every case he meets, for suggestion need not always be apparent to the patient, in fact in many cases larvated or masked suggestion is more effective than concerted and apparent suggestion; indeed it can be made a fixed habit of practice with the tactful physician, and unconsciously he exerts an influence over his admiring and trustful clientele that far exceeds in everything that rationally works for the physical welfare of humanity, the power wielded by king, potentate, or priesthood.

VII.

PHYSICIAN AND PATIENT.

It is believed that this work cannot be more fittingly closed than by a few remarks on the important question of the mutual relations of the physician and his patient. For as we have already seen, not only does his therapeutic success in battling with disease depend largely on the psychic control of the case in hand, but the physician's success in a business way depends wholly upon the estimate

of his character both as a man and as a physician, made up either partially or impartially by his patients, and the estimate of his clientele is usually echoed by the public generally.

We often hear it said, "I do not like Dr. _____ as a man, he is pretty rough, he swears horribly sometimes, gets on a spree once in awhile, but then you know he is a fine doctor, is well posted, and so successful in our family that we always have him." The saying that nothing succeeds like success, is sometimes thus applied in this very limited manner and some people will base their estimate of the physician only upon his success in curing the sick. But an impartial inquiry into the matter will invariably reveal the same correspondence between the public and the patient's estimate of the man; the former will say, "Well, I guess he is a good doctor, when he keeps straight I guess he has pretty good success, but then he is not a good man and I would not want him in my family."

The fact is that the earnest, educated physician more than any other man, lives two distinct and separate lives, but they are not that of Dr. Jekyll and Mr. Hyde, by any means. As generally expressed this would be called his public, and private life; but this is not true of the earnest and busy doctor, he lives a *devoted professional* life, and a *simple citizen* life. If he is really and truly known as *Doctor* Smith, then he is known only in the realms of Law and Equity as *John* Smith or *Citizen* Smith. The private life of any public man, more especially the devoted physician, should be his one spot on earth that is a sacred retreat, a city of refuge from "the slings and arrows of outrageous fortune." The fact is a man cannot in the very nature of things, become substantially and enduringly eminent in a profession and eminent in the hearts of his countrymen, without being a good man in his family relations; therefore, we contend that his private life should be the one sacred thing not to be molested in making up an estimate of his public life.

If then the estimate of his patients have so much to do in moulding public opinion of the physician, how important it is that he should exert his utmost influence in moulding this estimate by his clientele. That every beginner in practice is thoroughly awake to the importance of this we do not doubt, in fact much observation in this direction leads us to believe that as a rule more zeal than judgment is often exerted in this direction. One may easily overdo the matter of courting business; the young and zealous practitioner is very apt to become blind to everything except the advancement of his own professional interests. Should he accomplish some creditable cure, or do some surgical operation, he wonders why everybody does not sit up at night to talk about it, and the newspapers do not herald his fame far and near and because they do not, he takes it upon himself to apprise the public of his remarkable worth and achievements; no occasion, be it church, wedding or funeral, is inopportune as an advertising aid. If he sees a patron of his even speak to another physician he cannot rest easy till he has "hauled him over the coals" for it. He makes social calls, becomes a society man, an ardent church and lodge worker, all in the vain hope that it may build him up in practice.

The first requisite for a broadly successful medical career, is a comprehensive and sound medical education; to which culture and first-class literary attainments should be added, but used only as auxiliary and should never be put forward sufficiently to overshadow one's professional practicability. Patients like to admire and speak of their physician's medical knowledge and success first, then it is pleasing to say, "he also has a fine literary education." The next requisite is straightforward, thoroughly consistent and honest dealing with the sick. When persons are sick they feel more dependent and helpless than in any other situation, and when thoroughly convinced that their physician is both competent and honest, his influence is almost limitless. It is thus in his power to mould the patient's opinion of him wholly to his professional advantage and

be sure it will remain just as favorable and permanent after the patient recovers. If one wins the respect and loyal patronage of the wife, one is sure to have the good will and patronage of the husband, and *vice versa*. If the child's confidence and friendship is won, it means the admiration and patronage of both mother and father. As a rule the physician who gets along well with the children, who is known as the children's friend, and yet is not considered a "childish doctor," does not lack for the confidence and patronage of the adult class.

The child is naturally suspicious of strangers; instinctively their highly active and unreasoning subjective mind views with grave apprehension the face and form that does not resemble mother, father, brother, or sister. It requires no little tact and judgment to win the esteem and confidence of the child, but once gained, you have a most loyal and consistent friend. Two things the child is utterly devoid of, deceit, and prejudice of first impressions. If its first impressions of a stranger are unfavorable, it yields quickly to later favorable impressions and all its prejudice is wholly eliminated from its trusting confidence. The child-mind is a marvelous thing to the student of psychology; there are many psychical phases of it that are impossible to explain upon a purely anatomical and physiologic basis. Its perfect rationality, coherency and consistency withal, are deep problems. For instance, if one attempts to win the child by extreme flattery or babyish attention, in other words by trying to make a baby of oneself, although one may succeed in attracting its attention and affording much amusement for the time being, yet in the end the little fellow pushes its amuser aside in disgust, just as it throws its playthings away when tired of them. Great, but dignified gentleness, sincere kindness but persistent firmness and above all, honesty and frankness in everything, constitutes the royal road to the child-heart. Being devoid of deceit, the child cannot himself brook deceit in others, and if he disbelieves you in one thing, he mistrusts you in almost everything. While a child is

naturally fond of gifts and admires the beautiful, yet inherently it does not like the idea of selling its friendship and good-will any more than the honest adult. Therefore be careful how you attempt to purchase the child's friendship with gifts. As a rule if not favorably impressed he will refuse the proffered candy or nickel, however he may reluctantly receive it, but at the same time one can plainly see a look of "I don't think any more of you anyhow." Therefore, if desiring to give the child anything in token of your esteem, give it when he has every cause to know that you are giving out of pure esteem and not expecting something in return. Never say "Now if you take your medicine like a good boy, when I return I will bring you some candy, or a nickel," etc. If your little patient is faithful in following directions and you wish to reward him, present the gift and say "I give you this first, because I like you, and next because you are a good boy," or girl, as the case may be. Of course one may argue the child should be rewarded for *duty* first, but we are speaking wholly from the physician's standpoint; affection is one of the larger elements of the child-mind, if he *loves* you, then you are his master so long as you deal truly and lovingly with him. Even in surgery, in the treatment of diseases of the eye, and ear, with proper management one will find as a rule less trouble with children than adults.

Do not be too zealous and persistent then in attempts to win the child-patient and do not expect to accomplish everything at one visit, or one examination, "learn to labor and to wait." Psychotherapeutics is as practicable with children as adults, and one can often use it with great advantage. The child-mind is very susceptible to suggestion and once their full confidence is thoroughly won they become easy subjects for suggestion. We think, however, the hypnotic form is not only not necessary, but should not be practiced on children, as it tends to weaken their self-assertion and volitional will-power if practiced to any great extent on the same subject.

In a general way the same policy will hold in dealing with the adult patient as with children; kindness, but firmness, with an even temper and perfect self-possession. No difference how impatient, exacting and unreasonable the patient may be, one should never *seem* to lose temper, however provoked one may feel. It is better with a few kindly expressed and “fit words aptly spoken,” to bid the patient good-bye and leave, saying, “I will be glad to return and do all I can for you when you can be reasonable and treat me right.” The fact is that a reasonable amount of independence, coupled with proper kindness and respectfulness towards one’s patients, is far better than over-zealous efforts to retain patronage. If one’s patrons think that one is so very anxious to retain their patronage and is “scared to death for fear they will go to some other doctor,” they will often do so to tease him. People like liberty in this as well as other things; they don’t like to feel that they belong to their doctor, any more than to one dry goods merchant, grocer, or any other with whom they may deal. But if they have learned from experience to believe that they have “the best doctor that ever lived,” he owns them, in a professional way, as much as the horse that pulls his phaeton, so long as he merits so high an estimate of his worth.

The greatest mistake that any physician can make is to attempt to build up a practice at the expense of another’s reputation. When a doctor undertakes to make his patients believe that he is the only physician in town who never makes a mistake, and keeps a long list of others’ mistakes, which he relates with zest on every occasion, he may be sure that the intelligent patient will immediately commence watching for *his* mistakes, and will surely find them. Of course such a physician will have some patients, for there are always a few who can be thus fooled all the time, but the large class of the lay public have far more sound sense and intelligent discrimination of the true and the false, than such shallow pretenders ever dream of. Such a man may make a little stir for a season, but the public

soon sets a just estimate on him and he is compelled to seek “pastures new and green.” No matter how badly one may be treated by competitors one will always gain by silent contempt; if one cannot speak well of opposition it is best to say nothing.

The physician certainly has a right to his personal convictions and opinions on religion, politics and all other important public questions and should have the courage of his convictions too; but he can be sure that there will always be a considerable number of his good patrons who will take issue with him on these same questions. Therefore one who is fond of arguments and contentions on these subjects, not only loses valuable time from his professional studies and pursuits, but often loses valuable patrons, to say nothing of temper and self-respect, as well as courtesy and respect for others’ opinions.

As a rule it is very helpful for the patient to have a full and intelligent conception of the exact nature and prognosis of his case; to this end the physician should never tire of carefully going over the whole ground with his patient, pointing out the nature and cause of every variation and phase during the progress of its course and treatment, always being accurate and concise in his statements, avoiding too much verbosity and not permitting himself to be drawn into predictions, speculations, or unwarranted prophecies as to the outcome of the case. If he finds it necessary to try new remedies, or methods of treatment, the patient should by no means be led to infer that he is being experimented upon. While perfect frankness should be the rule with regard to the nature of the case and the general plan of treatment, in our opinion there is nothing so lowering to the dignity of the physician’s personal influence as well as the profession at large, as for the doctor to tell his patient the common name and nature of his medicines; the practice of leaving a thermometer with the patient and have him or his relatives take the temperature, is almost as pernicious as to explain to the patient that “this is poke-root,” “butternut syrup,” etc. Of course the patient

or relatives should be informed as to what the medicine is expected to do, that it is to produce catharsis, diuresis, or diaphoresis, etc., but not only is the therapeutic effect of the drug often destroyed entirely, through psychic suggestion, by telling the patient what they are taking, but the physician descends to the level of a "granny doctor." Uphold the honor and dignity of your profession in a strong, intelligent and reasonable way, and it will as surely and permanently uphold you in the respect and support of an intelligent clientele.



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