PORCHER (FR. P.)

PRESIDENT'S ADDRESS:

BEFORE

South Carolina Medical Association,

MEETING HELD IN COLUMBIA, APRIL, 1872.

YELLOW FEVER IN CHARLESTON, 1871,

WITH REMARKS UPON ITS TREATMENT.

BY

Francis Peyre Porcher, M. D.,

PROFESSOR OF CLINICAL MEDICINE, MEDICAL COLLEGE OF SOUTH CAROLINA, CHARLESTON.

[From Transactions of South Carolina Medical Association.]

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FRAN. PEYRE PORCHER, M. D.,

Prof. of Clinical Medicine, Medical College of South Carolina Charleston.

"But we have got enough, we have the satisfaction to find that 'In Nature there is wisdom, system and consistency.'"
[*Hutton on "Theory of the Earth; Huxley on Geological Reform," "Lay Sermons and Addresses."*

GENTLEMEN: "True knowledge of things," says Julius Scaliger, "cometh from things themselves." (*Rerum ipsarum cognitio vera a rebus ipsis est.*) A truth of the highest importance, especially to the medical observer, is contained in this aphorism: which asserts the great need of a recurrence to the original observation of Nature, as the source and fountain head of true knowledge—of all knowledge indeed, save that got by faith in the word of God as revealed in the Bible, wherein the knowledge is of a different kind, and comes directly from the Creator himself. This is not the "natural" knowledge to which the aphorism refers, and there need be no conflict between them.

There is a depth of meaning to be detected by the keen observer in a maxim like this; for in advising him to seek for truth, by scrutinizing closely into the nature of things, it embodies the soundest practical wisdom, and gives the clue in the search for discoveries, the greatest and highest of which all lie along the path to which it leads—like that luminous track in the heavens which is sown thick with constellations.

Nature may not only be studied in the normal states of man and animals, in plants and minerals, and in the phenomena of the Universe generally; but even in diseases, also, which represent an abnormal and pathological condition, during which the system is apparently agitated by unusual commotion, and disorder and disturbance seem to reign within, she still asserts her supremacy, and her operations can be securely traced. The several classes and varieties of disease, each after its own order, are as much under the dominion of law and system as

are the healthy states of man; and in the phenomena manifested by them they maintain an almost invariable uniformity. They are characterized by a train of symptoms, stages and results, which are so regular that the approach of each, and the successive order of their occurrence, may be predicted and anticipated, with a near approximation to certainty.

Taking a practical hint then from this aphorism, and being careful at the same time to avoid that scepticism which is born of flippancy and ignorance, we are not to put too entire a trust in the stereotyped sketches of special maladies handed down to us in the books; which with many truths and often marked by great beauty and accuracy of description, yet, through much copying, through defective observation in their authors, or their want of instruments of precision, still hold and perpetuate some errors. Let us go back, from time to time, and re-examine the material of which others constructed their original draughts; using no arrogance, but as medical philosophers, we must boldly see for ourselves whether every lineament in their cartoons be true, just and correct,—and that nothing is either omitted in the drawing, or added in the coloring. Then we, also, must paint from life, and new create afresh our own pictures. Those who have deservedly obtained the greatest distinction in our profession,—men of profound and varied attainments, who have been deeply versed in the knowledge of disease, and have been skilled in the art and practice of physic, have almost invariably, in their description, drawn after Nature. *We* should strive to imitate their example, and be ever ready to appeal to that munificent and bountiful mother, who, with lavish hands, offers her stores to all alike,—to the most humble as well as to the most exalted,—to any, so that he be an earnest toiler who, sitting ever at her feet, will patiently and carefully explore the rich and abundant treasures which she opens to his inspection.

But to enter upon such a task, which for us involves clinical observation and pathological anatomy in their strictest sense, (the only solid foundation upon which any enduring medical edifice can be constructed,) the first essential is: that we must strive to possess completely what Lord Bacon calls the *nuditas animi:* that nakedness of mind which shall be sensitive to the most delicate impressions, and open to every new proof, derived either from an inspection of nature, or obtained logically by processes of reasoning. We must purposely divest ourselves of every prejudice, bias, or partiality; erasing from our thoughts all preconceived opinions based

upon what has, erroneously perhaps, been considered classic authority, and still upheld only "by old repute, consent, or custom."

Such a plan, faithfully carried out, will enable us not only to detect inaccuracies, but to add to facts; and thus to contribute our quota, however slight or humble it may be, to the new knowledge of our day and generation.

Tedious, indeed, for those who may not possess the wit to study them, the accurate relation of cases, *noted at the bedside*, are yet among the most precious legacies we can transmit to others. These, also, are pictures after nature; for they exhibit the *natural history* of the morbid states attempted to be portrayed. In them we have something true, vital and tangible, inasmuch as they represent what really exists, namely: the inception, growth, decline and termination—the hourly or daily manifestation, (in a word) of one or more of the diseases which afflict the race of man. These histories are doubly precious, because such malady, whether isolated or epidemic, will recur again, here or elsewhere, under forms very slightly different,—and to be forwarned is in a measure to be forearmed. If, in addition, we can show from our protracted study and experimentation of any special malady, that certain measures may be applied successfully for its relief; or that it may be shorn of some of its terrors, still another value is added.

But often—when we ask for knowledge—they give us a Book! The book is useful. But let the student be at no loss: let him go to the bedside and read the volume of life which he will surely find there—every leaf of which, in its infinite variety, is stamped and graven by the facts of nature.

My effort has been to move, at least, in the direction indicated above; and to seek to perform, however imperfectly, a task of the kind referred to, by recording at the bedside the phenomena and results under treatment of

YELLOW FEVER

as it prevailed in Charleston during the past summer (1871)—so far as it came under my personal observation.

An apology must be made for bringing before you for consideration a disease of local origin,—or if not, the scene of the operations of which are certainly local—and confined almost exclusively to a single section of the State. Fate threw the material in my way; and the best I have is offered, with the

hope: that even in so imperfect and feeble a narration, some principle, or suggestion, or fact may be adduced which may not prove entirely barren of interest. You will pardon the absence of elevation in the style of the address which consists in part of a sketch of events as they occurred—and which is intended as a contribution to their history.

All cases of *Fever* of any and every description are here recorded,* in an appendix, which will not be read, and which want of space will not permit us to publish at this time. Whether every one, or which of these was *Yellow* Fever—under the varying and changeable application of the term as made by many witnesses, I, or no one else up to this date, will pretend with any certainty to decide. For two forms existed together in this, as in other epidemics; namely: yellow fever and a milder and more ephemeral species known and designated as "Break bone." Yet this also was not by any means *ephemeral*—for it often had a duration of several days.

Whether they constituted two distinct species, or were only varieties of one and the same malady, has, strange to say, never been decided. No distinct lines of demarcation between the two have ever been satisfactorily established—no physician, however acute, having clearly pointed out any precise diagnostic difference; though many cried eureka! upon more rigid scrutiny, the hopes they offered of a solution of the difficulty proved fallacious.

Among the observers there were to be found the lax and the strict constructionists—so that the usual confusion prevailed: *quot homines, tot sententiæ*—there were as many opinions as there were persons to utter them. The question was, it must be confessed, surrounded by many difficulties: For whilst some forms of fever were very mild, and some, characterized by black vomit and suppression of urine, were very fatal, others presented every intervening shade of difference between the two. And though the access of what proved to be the simplest cases, was sometimes severe and violent, the intensity of the disease was dependent for the most part, I think, upon the amount of *climatization* enjoyed by the party suffering; and its gravity and its termination, whether favorable or unfavorable, would be modified, it seemed to me—by individual differences of bodily health and constitution—by neglect, by delay, or methods of management injurious or beneficial in their effects.

*Save one occuring in a deformed child which had been previously weakened and prostrated by spinal disease and who died, but without symptoms of Yellow Fever.

For my own part, I tried in vain to separate the two diseases—if they are admitted to be distinct in form or essence and to require a different management.*

Some of our physicians—easily cutting the Gordian knot, after their fashion—affirmed that only those in whom death nearly or quite resulted, had the yellow fever: and so from these you obtained credit for curing only such as got well as it were by a miracle; or (if you will excuse a quotation from a most ancient and sacred writer the poet Job) who got well "by the skin of their teeth!" Those also, who were what may be vaguely called "very sick": who had high fever, or some violent symptoms of several days' duration, occasionally enjoyed the uncertain credit of having had the real disease. This was no slight privilege which they had earned (if they could only be certain that they had earned it) for as a general rule to which there are very few exceptions, it gives exemption from future attacks.

I could learn of no more scientific points for discrimination, nor was the decision ever positive or based upon well established scientific reasons. The naked truth may as well be uttered, which is: that it was never elevated above the dignity of a question of *plus* and *minus;* and at this moment, there are many, myself among the number, who in this, or in earlier epidemics, were attended by the most competent and distinguished practitioners and who recovered from a fever of some gravity which gave uneasness to those around us; but we cannot have the satisfaction of knowing from any one whether or not we have had *Yellow Fever,*—or that form of the disease which suffices to give immunity from future attacks.

Individually, I am of the opinion, that in many under my care, who, by careful and assiduous attention on the part of their attendants, were rescued, from falling into a dangerous condition, and who recovered,—the result would have been quite the opposite if they had been "managed" otherwise. So that it was the early treatment and the appliances, and the

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*In a paper on "Pathology and Treatment of Yellow Fever—Epidemics of 1854 and 1858—in Charleston;" Charleston Medical Journal, March, 1859, I used the following language: "I do not pronounce all these *Yellow* Fever, giving immunity from second attacks, for I find it impossible to distinguish, with precision, the grades of fever prevailing where there are those of every shade of intensity—from the simplest to the most severe. I defy any one to decide positively into which category to throw some of those occupying the undeniable middle ground—two severe to be called simple fever, and yet hardly enough so to be classed as Yellow Fever, and giving immunity from future attacks—and yet the physician has seen apparently milder fevers, at their outset, followed by black vomit."

eternal vigilance which sufficed to change the issue—and which did change it. And I hold that such case, so metamorphosed by the simple, but important difference of *management*, would have had a very different termination ; and would then, even by the most sceptical—have been placed in the category of true yellow fever,—which was denied them if they did not get almost or quite into the third stage. The mild cases, (break bone, so called) *may* get well with little or no interference. The difficulty was : that they could not be surely distinguished at their inception ; and the stranger, in my experience, sometimes had attacks, which when vigorously managed at the beginning, were full as innocent as those from which natives suffered and which in these received the designation of "break bone."

It may therefore excite more than our surprise to see the facility with which Reports are published which inform us precisely how many of those seized had "yellow fever" and how many "break bone"—without the slightest allusion to there being any difficulty in distinguishing them. The precision of numbers is admirably shown in the long column of figures, and the beauty of the "numerical system" is exhibited in such papers in a highly attractive manner!

But in a fever like this, which does its work so rapidly, it was at least plausible to believe and to argue : that neglect, delay, the avoidance of the proper means and appliances for reducing temperature, etc., would have very much to do with modifying the nature, history and ending of each case. This need not excite surprise : for did we venture now to treat scarlet fever, diphtheria, or even measles, with agents as active as those we were in the habit of administering in yellow fever, they would inevitably be *made* quite as fatal.

But you who examine the cases recorded here, can judge of the general absence of bad symptoms following the plan adopted ; and you can estimate its influence even among those freshly arrived from abroad—in whom it is more than probable that the disease from which they suffered was yellow fever.

It may only be said here, truly, that : despite the depressing accompaniments of heat, fatigue, or other disturbing causes, every item which was thought worthy of attention was noted at the bedside, two or three times a day ;—so that you, or any one, might read the "natural history" of the disease. An occasional hiatus occurs with regard to the use of the thermometer—caused by the breaking of the instrument and the delay attending its replacement. This was done invariably

amidst the harrassments which occasionally beset the practitioner during the prevalence of an epidemic pestilence,—which if not very severe in comparison with others,—yet created such a panic among the people, and so much alarm among their medical advisers as to drive almost immediately from the city nearly every one who could leave it.

Some of the physicians, and the proprietors of the daily journals also, for a long time stoutly denied the existence of the fever. When they were asked the question, and with the papers, were answering *no;* others of the physicians and the telegrams said decidedly *yes!* What then were the "kindreds of the people" to do who depended on them for information? How were *they* to act amid such discrepant opinions? Like the blockish Grecian they cried: "give me to *see*, and Ajax asks no more." But no one came forward to offer them the light they required. In this strange conflict, which it behooves me to relate, the authorities and the Board of Health—the very constituted ministers and guardians of the temple of Hygeia, who were specially appointed and were supposed to preside at her altars—whilst professing to report the presence or the absence of contagious disease, omitted to announce any,—or ignored its presence if it existed.

When all at once, like a flash of lightning in a clear sky, a statement was exploded by the Medical Society—sitting in full conclave—which declared the presence of 37 cases of yellow (?) fever in our very midst!

Meantime, Rumor, set at liberty by our own palpable contradictions, or our failure to declare the real condition, on swift wings and with her thousand tongues, flew through the land, ever gaining strength as she sped, (*viresque acquirit eundo*)—and gendering on her path a full and baleful brood of doubts, uncertainties and exaggerations—till truth and error were mingled in undistinguishable confusion. But one thing was certain: a decree had already gone forth, like that kept alive in the breast of the citizens of Rome against her African rival "*Carthago delenda est!*" The city must be shunned, and by consequence ruined. Unfortunately the doom was a just one.

Will it be believed that a grim and expensive farce like this, spiced by no humor of comedy to enliven it, but as fraught with horror and as deadly and as remorseless as ever a tragedy of Æschylus, is permitted to be repeated at each time that any vague and unauthorized report of the existence of the

fever arises in our midst—whether it be well or ill founded. The actual loss of millions of trade, anxieties and heart-aches inevitably occur if it be false—destitution, sickness and death are the additional accompaniments, if it be correct: and no one arises who is astute enough to prevent it. Yet all men know that the only way to establish confidence is invariably to make a frank and explicit statement of the whole truth when it is once clearly ascertained; that when a conviction exists in the minds of every one, and it is surely known that a competent tribunal, scientific or municipal, will inevitably in times of public danger proclaim, according to its best judgment, the facts in its possession—each citizen, without panic or undue excitement, can act advisedly and prepare to meet the calamity which threatens him.

What a great flame a little fire kindleth! A kerosene lamp kicked over by some brutish beast that "wants discourse of reason," suffices to create untold miseries; burns hundreds of millions of property—whilst lofty cathedrals with spires pointing star-wards—stately warehouses—palaces of marble, or of stone, filled with jewels and with gold,—the houses of the lowly and all things fashioned by the art and handicraft of man, go down "in one red burial blent." How much easier, and better, and wiser were it to stamp out the flame when it is no bigger than a man's hand. There is always no one to do this little thing—which undone—is followed by such mighty consequences. And thus also is it with the rise of yellow fever, as now managed in the City of Charleston.*

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* In addition to several communications made to the daily journals on the subject of the Hygiene and Health police, of Charleston, I proposed the following scheme to the Mayor of Charleston, Oct., 1871, for improving its sanitary condition and in the interest of trade and commerce; whereby a comparatively small semi-tropical city may be kept clean, and the enormous loss and inconvenience entailed by the prevalence of epidemics may, it is hoped, be avoided:

1st. To take new levels of streets and lots preliminary to,

2nd. A general improved system of drainage. This to be extended, if possible, to the section of country between the Ashley and Cooper Rivers, and beyond the corporate limits: in order to destroy all sources of extra-mural malarial infection.

3d. Ventilation and drying of houses, cellars, etc., by mechanical expedients; with the frequent use of chlorides of lime and zinc, carbolic acid, copperas and other disinfectants.

4th. System of earth closets enforced. [For plans of construction and economy in use of, see Dr. J. E. Reeves' Report to the City Council of Wheeling, Va.]

5th. Enforcement of ordinance with regard to prohibition against opening the earth to any considerable depth for laying foundations of buildings, or for any other purposes, after the month of May.

6th. Purification of cistern, well, and other water used for drinking, in accordance with advances made in the progress of modern chemical knowledge—as in London, New York, and other large and enlightened cities.

I will not pretend to go into a history of this disease as an epidemic; but remark that it seemed clearly to have a native origin. The history of each of the early cases is well known and was carefully traced and described by members of the Medical Society, the register of which contains a record of them.

The first, which is cited here only incidentally, was that of a woman (but not reported at the time from prudential motives) who lived in Chalmers street, and who could not be shown to have contracted the disease from any foreign source;—nor need we have had to search far to find local cause to originate it. This person, Lizzie Clark by name, a native of Ireland, aged 30, had been here twenty years, and had never had yellow fever. She was seized July 20th and died on the 27th with black vomit and suppression of urine.

The disease then became more or less rife in localities hard by—where the residents breathed no

> "Sabean odors—from the spicy shore
> Of Araby the blest."

Nor any, wafted from fresh woods and pastures new—across the pleasant meadows; but, on the contrary the purlieus and cellars of Market street and Rafer's alley, dank with slime and reeking with filth and garbage, and where recent ditching and disturbance of the earth had been going on, exhaled a pestiferous atmosphere. In Hayne, and at the corner of King and Wentworth, likewise, excavations had been made

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7th. Introduction of water from without to supply the wants of the city and for flushing the streets, cleansing and irrigation.

8th. *Fall and winter* cleansing of ditches, drains, sewers and cess-pools—with use of disinfectants.

9th. Authoritative daily reports by medical and scientific commission, on first appearance of epidemic disease, to prevent misconception of true state, and as a substitute for unfounded or exaggerated rumors.

10th. Publication of popular papers on internal police, hygiene, and containing advanced ideas on matters connected with the preservation of the public health for the instruction and guidance of the citizens. (See Reports of "Privy Council," England, those on "Sewage," and by Boards of Health of New York and other cities.)

11th. Concert of action between Health Officers, City Surveyor and Inspectors of Streets, under the direction of the Mayor and Council.

12th. Public vaccinations and re-vaccinations by the Ward physicians.

13th. Reduction of cost of medical supplies by manufacture of compounds from the crude materials purchased at wholesale prices.

It is needless to add that the administrative officer selected to carry out such measures—where so much is at stake involving the health, welfare and happiness of the people—should be possessed of the best ability at our command, and he should be fully up with recent scientific progress in all the great centres of trade and commerce.

for buildings, and a nest of cases were subsequently disinterred around such spots. From these examples we may learn a new but oft repeated lesson—still unlearned—with reference to the possibly injurious effects of opening deeply the soil of a semi-tropical city at this season of the year for any purposes.

The east winds prevailed continuously for an unusually long period, namely: from five to six weeks; and literally *blew* the germs of the disease from its point of origin towards the west, in almost a straight line;—from whence it gradually radiated and extended as the winds veered after the lapse of several weeks.

Thus, in a limited space, scarcely three hundred yards in width, which stretched like a fatal swath athwart the city, was confined for a time that dreaded, inhospitable, hæmagastric pestilence—which is ever to the people a name of terror, and which comes at intervals to scourge the cities for their neglect. It drives the stranger from their borders, or destroys him if he remains; it checks the useful enterprises and activities of man, and saps the foundations of his prosperity, by paralyzing trade and commerce in all their branches. It closes up every line of traffic and every avenue of entrance or of exit, both by sea and land:—forbidding admission equally to the heavily laden ships—freighted with rich merchandise, which the friendly winds blow in from every coast; and diminishing the profits and the benefits of converging lines of railway—that gather their varied stores from remotest districts.

I believe that these ills are in a measure preventible, and that it is even possible by judicious management, began early and used perseveringly, to avert or escape many of the fatal consequences of this malady, which is so frightful when unchecked. If this belief is well founded—anything concerning it must be interesting to the physician, or to the philanthropist, and indeed to the people of the whole State. Let me then touch briefly upon a few of the most striking features of its advanced stages; whilst I recall, from distressful scenes which came under my observation, and which are vividly impressed upon the memory,—some of the most malignant symptoms developed at that period of the fever, when the "blood" being "touched corruptibly" the *disease* has got completely the mastery: and the patient is smitten,—in the impressive language of Scripture, "as a reed is shaken in the waters." "The tree of life" is tossed by the whirlwinds, but

" the water of the river of life " is poisoned at its roots—and it must die!

Then no picture made up of the several horrors which may accompany the passage of man to the charnel house can be more ominous of evil, dark and forbidding in its aspect. A consternation, silent, but hopeless, is depicted on the faces of those around as the occurrence of each well known harbinger of death is seen for the first time; and the beholder stands pale with apprehension before each new terror, the cause of which he is now powerless to remove. Prominent among these are:

(1st.) The consuming fever, which has burnt up, decomposed or liquified the blood,—laden also with the effete materials generated by a high combustion and by the retained excretions which lead to uraemic poisoning and to coma. (2d.) The general hue of saffron or of bronze upon the skin—either dry and hot to the touch, or bathed in a clammy moisture. (3d.) The eyes—those "cunning'est patterns of excelling nature," on which the myriad pictures of the external world were wont to be painted in exquisite minuteness—which were used to be instinct with life and motion, and ever ready with the rapidity of thought to be lit up and animated by the mind;—now watery, dull and hazy: unenlightened by the clouded intellect, they answer to no message from the brain within. (4th.) That strangely colored fluid, which the skill of the microscopist has vainly attempted to distinguish, seems to give relief, as it is voided easily through the throat and lips—but with the escape of which life flows almost surely away. (5th.) The blood, oozing from every portal of the body,—from mouth and tongue, from uterus and ear, and eye—seen for the first time upon the white sheets! (6th.) The dusky, lurid countenance, marked by its listless, apathetic hebetude.* (7th.) The complete loss at times of the faculty of speech; or (8th) the wild, maniacal or muttering delirium;—all, and each of which, foretell the ending of mortality. In strange contrast to these, the sufferer may be insensible to the fate which awaits him, though standing upon the brink of a precipice over which he is soon to plunge irrecoverably into the abyss beyond. His pulse and tongue are absolutely good; his skin, to a superficial examination, is natural to the touch; his mind is clear and tranquil; or, the placid sleep of infancy

* "There is a singular wildness and fierceness of the visage," says our own Dickson, "resembling that of intoxication combined with sadness and terror."

(that sweet oblivious antidote for every woe)—may bury his senses in forgetfulness; when the convulsions preceding the death struggle interrupt this peaceful scene, put a sudden and violent termination to the hopes and fears of gathering friends, who—all unconscious of evil amid such a deceptive calm—scarce have time to bid adieu forever to him they love. Thus ends this strange, eventful history.

In the disease as it existed in Charleston, the contamination of the atmosphere did not seem to affect, or to be transported by those who were shifting their quarters from point to point amid their daily avocations,—and who only entered, but did not sleep within the infected locality. The morbific cause was seemingly swept onward by unseen agencies, principally by the winds—those sightless couriers of the air—which have so much to do with the diffusion of fomites;—and the course and progress of the disease could easily be detected by the direction of the weather cock—which, as I said before, scarcely shifted during six weeks.

Thus, the fever did not retrace its footsteps; did not go back upon itself towards the east—beyond the point where it began. For months, therefore, scarcely a trace of its existence could be found along the Bay, Battery or east end of Tradd street; from whence in preceding epidemics seamen, who were seized by it, had crowded the Marine Hospital—then under my care. It is apparently a strange fact, but easily accounted for, that this year the shipping did not suffer; and only very late in the season some cases occurred in the localities just mentioned which were reached by a circuitous route. The seeds of the disease—as if material germs, borne, as it were, by a flood—were *drifted* elsewhere, along Market, King, Archdale, Beaufain and Wentworth streets; and for months no cases appeared in the remote districts of Hampstead or Gadsden's Green, which include the north-eastern and north-western extremities of the city. During all this time, the residents who had incontinently fled from these sections at the first intimations of danger, might have remained safely and quietly at their homes—and this course I advised at the early meeting of the Medical Society to which reference has been made. It was evident that an unusual panic, for which there was no sufficient cause, had driven them off: for the disease for a very long period was plainly localized within easily ascertained limits—which without quitting the city, could have been shunned as places of residence.

Only a few remarks will be made with reference to the vexed and difficult question of pathology. But with regard to treatment—whilst I remember the pithy admonition sent by the Ruler of Israel to the King of Syria—who came up with his chariots and his horsemen: "Tell him: Let not him that girdeth on his harness boast himself as he that putteth it off"—in giving the opinions derived from my own prolonged experience, I will express what I think *de novo*—not with unbecoming positiveness on all points, I hope,—but without regard to the "written law," though it be contained in bulky volumes. Whilst many even now claim great success and a large proportion of recoveries, others tell us that there is no method of treatment which can be relied upon in this disease; that a certain heavy percentage must die, despite all we do; and we must, therefore, without farther exercise of mind, try everything—but succumb to inevitable destiny. This "percentage," I feel sure, will often be found to depend, for the most part, not so much upon a failure in the efficacy of the means at our disposal as upon the existence in some cases of certain unavoidably unfavorable conditions; in many others, upon the neglect of ordinary precautions, want of care, useless delay in treatment, and other preventible causes—which, being guarded against will, I think, render the disease more amenable to measures which *are* efficient for its relief. Let not this dread term "percentage" with its delusive air of precision—like that "horrible shadow" conjured up and existing only in the highly-wrought imagination of the murderer, and, paralyzing his arm and his courage—frighten us also from all future effort to lower it.

Dr. Thomas King Chambers, in his Harveian oration on "Restorative Medicine," attempts to give the several causes, or characteristics of disease—the categories in which all diseases must necessarily fall. Yellow Fever, I am inclined to think, may possibly be embraced under one of these. If for example then, it be admitted to be owing primarily to a deficiency of vital, or "a partial loss of functional force," (though these terms seem to me vague, and unsatisfactory,) caused by organic or other germs—which act, perhaps, in the nature of a ferment, and which excite a fever in the blood like the zymotic poisons:—most certainly, the inceptive stages do *not* require the corollary of Mr. Chambers' proposition to be carried out, namely: that "restorative medicines" are to be used for their relief. Being unable, therefore, to wed the corollary to the proposition as a natural sequence,

in this instance at least: if I am correct, a defect or want of comprehensiveness exists in the generalizations sought to be established by him. It is *not* "by endowing or enriching the body," that cures are effected in this stage at least. No cod liver oil, beef tea, or other nourishment, or even stimulants, are applicable here. Very little building up is required at any period in this disease, till absolute convalescence is reached, and when all danger of gastric irritability is overpassed.

The peculiar malarial, yet material poison, when first in operation in the system, produces (through nervous paralysis of the capillary arteries perhaps) intense fever and great excitement of the circulation, with torpor of the glandular and secretory apparatus. It shuts up all the secretions and excretions, and with a high fever, which it creates,—rapid destructive metamorphosis of the tissues occurs, caused by the intense combustion going on. So that "spoliative," in place of enriching treatment, in the shape of mercurial, saline, or other purgatives, are, on the contrary, imperatively demanded in this inceptive stage. These are to be accompanied by revulsives, hot foot baths, and the application of cold to the upper extremities, in order, severally, to empty the intestinal canal and the torpid glandular organs; to diminish temperature, and to contract capillaries. All these means, also, serve, incidentally, but powerfully, to lessen the tendency to nausea and to irritability of the stomach. The latter does not decidedly lead to, or induce black vomit, as is commonly supposed—though the one often accompanies or precedes the other. Both result from the same efficient cause, namely: the *altered condition of the blood* induced by the fever. The peculiar vomit is probably owing to what Warren calls "mortified blood"—blood thinned by the decomposing action of excessive fever, transuding into the stomach and blackened by its acids. I could discover by the microscope, frequently used, no distinct difference between this and other bloody matters vomited—which have been acted on by the gastric juice—as where blood from a cancer is poured into the stomach and afterwards ejected.

After the initial chill, or chilly sensations of the access, is over, I think that there is what Chambers, in speaking generally of some types of disease, designates as "loss of elasticity in the smaller arteries"—*hence the fever*, as in ordinary inflammations. This the cold applications diminish: at the same time that they reduce the high temperature—which rises in the onset of cases of great violence to 105,

107—and perhaps higher. This, of course, if unsubdued, leads infallibly and of necessity to subsequent trouble: to destructive tissue changes, to blood poisoning, to black vomit, to coma and to convulsions. I have seen thorough and persistent spongings with ice-cold water, when combined with the use of the other agencies advised, reduce the temperature, lessen all the bad symptoms in a surprisingly short time; having the power seemingly to change the entire character of the disease, and imparting comparative mildness to its whole subsequent career. I will stand to this truth, for in the perception and practical carrying out of it, lies the whole virtue of the plan which I advocate and assert to be successful.

In general terms then: our first effort must be directed to the relief of the intestinal and glandular torpor, which always exists; and which is marked by costiveness;* we must diminish the cutaneous and general heat; empty the vessels of the system which are laden with impure blood; and obviate the tendency to renal engorgement indicated by the frequent presence of albumen. This is effected by the revulsives, aided by a mild alkaline diuretic, to be referred to subsequently;† after this is done, we must strive cautiously at "construction," and whilst allowing the recuperative powers full exercise, we are to do nothing to impair the strength remaining, or to weaken the energies of the constitution which have become greatly enfeebled. The unacclimated, who are seized with the fever, are nearly, or quite always, in a quasi critical state—ready at any moment to take the descending path and to become dangerously ill;—hence they require as careful handling as children do with scarlet fever. Whilst, therefore, nothing is omitted which will tend to diminish the fever, their strength must be carefully hus-

* I am glad to see that Prof. S. H. Dickson had also noticed this, and that he confirms the observation. He writes that he saw only "one case" which began with diarrhœa. I also have seen but one during four epidemics, and that one doubtful. I have observed that costiveness ushers in all fevers, save possibly typhoid. See proposition 5th, p. 22, of my paper in the last issue (1871,) of your Transactions.

†Dr. Ridge in a paper on Rheumatism, (Medical Times and Gazette, November 4th, 1871,) refers to the action of the salines and alkaline carbonates in lessening oxidation. See also Mialhe, G. Bird, Owen Rees and others.

"Another mode of checking the process is by directly retarding the oxidation of the tissues. In this way, probably, the various vegetable salines act, for it is well known that in passing through the system these salts are decomposed and form carbonates of their base: in this process a large amount of oxigen is consumed. The same amount of oxigen is consumed by the complete oxidation of 2 grains of acetate of ammonia, 5 grains of acetate of potash, 7 grains of citrate of potash, 8 grains of acid tartrate of potash, 9 grains of tartrate of potash."

banded;—for the slightest neglect, the failure to keep down the temperature by the application of cold water, or too much medication—though these may seem light transgressions—are as powerful and as weighty in turning the balance against them—as were the weapons which the arbitrary Gaul threw into the scale—what time he sought to dictate terms to the unconquered Roman.

If the disease under consideration, should be thought to more resemblant to Dr. Alison's idea of inflammation; and therefore to be owing to "a local increase of a vital property," here again, mercurial, antiphlogistic purgatives, used at the beginning, serve to diminish the heart's action; to lessen the inflammation by spoliation; by the drain of fluids from the body, augmented by the cooling operation of the salines—which are added to the other means here recommended. All these are measures which are only to be employed at the beginning, using the agents in sufficient amounts to effect our object, which is: to empty the bowels once thoroughly and effectually, without, as I urged, weakening the patient any more than is absolutely required. Purgatives are on no account to be persevered in. The failure to discontinue them after the efficient action of those used on the first day is procured, is, I am sure, a grievous error—which is often grievously answered for.

Several authorities of great experience, to whose advice I would refer with great respect, commit the fatal mistake of repeating the mercury and the cathartics, and pushing their use much too far. Even Blair, though in my judgment eminently on the right track, and for this reason very successful, *permitted* his "xx of calomel and xxiv of quinine" to be repeated under emergencies, and to be used, again and again, as often as six times. Those who attempted in this city to carry out his precepts to their full limits, were forced to abandon them. I prescribe the same formula almost invariably; but never more than once, unless it is not retained, or it does not act.

Yellow fever has not the duration of typhoid, the causes and the pathology being different. There is usually none of that slow, tedious convalescence; because there is no serious gastro-intestinal lesion; and the intestinal canal and chylopœtic viscera generally are not so much hurt at any one point.

It differs from paludal, malarial fevers, in the marked absence of decided periodicity; and in all its phenomena and

its manifestations, it is nearest to the so-called bilious remittent fever of hot countries. But it is much more intense and violent; albumen escapes much oftener from the conjested kidneys; and it is *characterized* by the frequent occurrence of black vomit—hence death, in fatal cases, occurs earlier.

In a fever like this, of one paroxysm (but with a remission somewhere between the 12th and the 36th hour, occurring more distinctly when the proper means are used early), which is exceedingly violent at the beginning, if unchecked it does all the damage it is capable of in a very brief period. Life is virtually compromised, I believe, in the first 15 hours of its career. In such a fever—where the danger and the terrible sequelae are owing entirely to the extreme intensity of the eremacausis, and the injury worked in the system by the high combustion which acts principally upon the blood,—a certain treatment flows logically. There is no time to be lost in setting about it; and it is only to be regretted that our measures cannot anticipate by several hours the invasion of the attack.

Preferring to be clear, at the risk of being tedious, let me recapitulate in brief, the chief points of the treatment insisted upon:

1st. The absolute necessity of early management. 2d. The employment of a large mercurial purge, followed by a saline cathartic—thus emptying the bowels, and disgorging the liver and the glandular apparatus. 3d. Simultaneously and from the very beginning, using revulsives to the surface of the abdomen; hot stimulating baths to the lower extremities —with the assiduous and protracted applications of ice-cold water to the head, hands and arms — *as long as they are abnormally hot.* 4th. I introduce clause 4th, as it conveys one of the most important injunctions, with a *nota bene!* to indicate: that all purgatives, all active depressing agents must now be discontinued absolutely; and give place to what is perhaps more efficient than a simple placebo, namely: a mild alkaline diuretic and diaphoretic containing morphia.* The cold sponging (towels or cloths are preferable to sponges for the purpose indicated) and the use of mustard sinapisms and hot mustard pediluvia are to be continued

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* R. Acetate of Potash, drachm 1.
Citrate of Potash, drachm 1.
Morphia, grs. 1.
Camphor Water, ounces vi. M. desert spoonful every 2 or 3 hours, as long as there is heat of skin.

so long as headache, heat of surface and high thermometric range, indicate the existence or progress of combustion and destructive tissue metamorphosis—*fever* in other words. Then trust to the recuperative powers of nature; with the aid, if need be, of weak quinine tonics, mild stimulants, nourishment, etc.

By this method, those recover according to my experience, carefully recorded, who are seen early; who possess their organs in a state of integrity; with the intestinal canal, liver, kidneys, and other emunctories in a fair condition. This surely is not asking too much; and to claim that recovery will almost invariably take place in such cases, under the plans detailed elsewhere and on this occasion, is, if I am correct, making what I cannot but regard as a true and important advance. This, I hope and believe will one day be fully acknowledged. It is now spoken seriously and earnestly, without lightly coming to the conclusions; and I sincerely trust that the expression of them will not be regarded as presumptuous or premature.

Regretting that I cannot always be, after the Horatian example, "a praiser of by-gone times,"—it must be remarked how different this is from a former system of mercurial purgatives repeated every five or six hours, or a constant effort to induce ptyalism by giving mercury with opium, at any and every stage of the disease; with the omission also of other essential measures insisted on here as of the first importance. Persons seized with such a fever, who are not seen for ten to twenty hours;—those who already suffer from organic lesions, whether of the stomach, liver, or kidneys; whose digestive organs (so essential to the nutrition, growth and repair of the system) are irritated and inflamed by the use of intoxicating drinks—cannot be expected to respond to any treatment, however judicious and appropriate.* In such subjects there is great tendency to irritability of stomach; the purgatives are not retained, the inflammatory stages (*Fever*) run high, and cannot be subdued. Congestion of the internal organs, kidneys, etc., with albuminuria occur; black vomit sets in; and uræmic poisoning with coma, generally closes the scene—during attacks of violent convulsions. Under such conditions, all agents prove nugatory; every effort is necessarily unavailing;—and these cases, falsely and illogically reasoned from, bring reproach upon true and legitimate treatment: which can be shown to be serviceable in those who, from the beginning, are not plainly beyond the reach of art.

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* "There is no hope for the drunkard."—S. H. Dickson.

In my humble judgment, if not the height of folly, it is at least extremely unfair to decry—or what is worse: to abandon a course of management, which is eminently and strikingly successful in nearly or quite all the cases of the class previously described, *because* it fails to cure those who have no right to expect a miracle to be worked in their behalf.

Any treatment, which *is* successful, is not so by accident; but because it is based upon the requirements and real nature of the disease—and throughout does the patient no harm. It is high time for the intelligent members of our profession, particularly if they be at all apathetic, to give up the pleasing idea that the practice of physic is all guess-work—in which one artist does full as well as another; that fate and disease have the control: and that *always* when a child or a man dies, the "physician who slays is *Death!*"

After a careful study of the disease during many years,—using the microscope largely in its investigation, and examining the writings and practice of others,—I modified what I thought was advisable in the suggestions of Blair and others. The treatment appropriate to the several stages, founded upon a careful consideration of the pathology of the disease, was thus elaborated.* This, with some misgivings—even after testing it during several epidemics, was briefly epitomized and re-asserted in a paper in the last volume of your Transactions;—which you will observe was issued before the breaking out of the epidemic of the past summer.

There is reason to hope that the general plan therein disclosed, has not been entirely disregarded in their most important features, by others during the past epidemic—though it was called Blair's. I will not say that this, or an analogous method used by others, can never be improved; but (simple as it may now appear) I unhesitatingly express my belief that the principles upon which it is based are well founded, and that its general details will never be materially deviated from without detriment to the patient. Some arterial sedatives may be discovered which shall be specially applicable in the treatment of this disease—or some catalytic agents, like the hyposulphites, used internally or hypodermically, may hasten the cure by neutralizing the poison in the blood and eliminating it.

It has been my business again to test it fully, with results,

*See my Prize Essay before this Association, "Illustrations of Disease with the Microscope," 1861; and papers in Charleston Medical Journal—numbers for January, 1858, and March, 1859.

as will be shown, which completely sustain the previous experiments. The proof of what is stated above is contained in full notes of the disease taken at the bed-side in private practice during some earlier years (1854–'58;) in the records of the Marine Hospital; and in the cases which accompany this Address.

I have also with Blair, Fenner, Stone and others associated quinine with the mercury used at the inception of attacks. My desire was always to give them combined (xx to xxv grains of each to adults;) but it frequently happened that circumstances prevented their administration in these quantities. Often also the quinine was repeated alone in smaller doses. Without laying great stress upon the essentiality of quinine, or claiming absolutely that the cases would not have recovered so easily without it, it may safely be stated that in the quantities used—in my own person when suffering from the fever and in other cases, whether child or adult (for it was given to all)—it certainly did no harm. My experience of its use in this way and at this stage, sufficed to show that it could be safely administered in a maximum dose, at the very inception of a fever of great intensity, without any injury whatever to the system;—and also that it did not apparently add to the excitement. I think it tended materially to diminish it.

But let us examine more closely: in order to discover if it is really *required.* Let us see if it does not aid us in accomplishing one important purpose, which is: to assist with the equally potent mercurial purge, in abating the unusual heat of surface, the high temperature and the excitement of the circulation which usher in the disease. It has been said already that it does not increase them. The consideration of the special quality also of the antiperiodic to contract capillaries and to stimulate nervous power may be omitted for the moment. What do recent writers and observers of credit say of it? The testimony which follows, is gathered promiscuously from them—when they themselves had not in view its special application to yellow fever. Such confirmatory testimony, so obtained, will furnish of course a higher order of proof than if the authors quoted had had a favorite theory to sustain.

Mr. Wm. Squire, who is regarded as an authority on the Thermometrical investigation of disease, in what has been cited (Am. J. Med. Sc., July, 1871) as an important paper on "Temperature variations in the Diseases of Children,"

(contained in the Trans. Obstet. Soc. of London) says: "That quinia checks the advance of Tuberculosis in a most marked degree; whilst in scarlet fever, diphtheria, typhoid and most of the infantile diseases, it causes sleep and shortens the period of illness by *reducing the high temperature* of the evening exacerbations as shown by the thermometer." Dr. Chambers also in the Harveian oration, whilst referring incidentally to "inflammation," says: "By spurring up the contractile arteries to exertion with nervine drugs, among the latter he reports well of quinine, and finding that by its use the fever heat is quickly lowered, he looks upon that high temperature as arising from diminished nervous control."

In a "Report of Committee appointed to investigate the Value of Quinia as a means of Diminishing Bodily Temperature and Pulse in Pyrexia," from Trans. Clinical Society of London, 1871, the general conclusions arrived at are:

"1. That large doses of quinia have a marked effect in reducing the temperature in pyrexia, and a less marked effect on pulse and respiration.

"2. The reduction of temperature has not been permanent, but has varied in duration from one to forty-eight hours.

"3. The most marked effect has followed when quinia was given towards the end of the exacerbation or during the remission.

"4. The disagreeable effects of large doses of quinia have been noises in the ears; headache, nausea, and sickness have been rare; delirium quite exceptional; and as regards the collapse noticed in two instances, it is important to remember that this sometimes supervenes in the course of fever independently of quinia, though in one instance at least there is reason to think the collapse had some relation to the *repeated* large doses of the drug.

"5 Although with the exception perhaps of certain cases of rheumatic fever in which the temperature is high, no decided evidence has been obtained to show that quinia has any influence in shortening the attack of a specific disease as typhus or scarlet fever, yet, from the *marked effect on the temperature* and pulse, there is reason to believe that at the *critical stage of acute disease*, when pulse and temperature are high, a large dose of quinia might be employed with benefit."

In a paper on the use of quinine in the Diseases of Childhood, Dr. C. Bing, Prof. Pharmacol. Univ., Germany, says:

"The action of Quinine in this disease is attributed to the

overcoming of the alteration of the blood, to the *diminution of the high temperature*, and to the direct removal of the histological causes producing the erysipelas."

Dr. Charles Murchison, in his Lecture on the Treatment of Pyrexia, (British Med. Journal, Feb. 17, 1872,) where he gives an admirable resume of the pathology and management of fevers, says:

"Quinia, *in large doses*, has an undoubted influence in lowering the temperature of pyrexia. In most cases of severe pyrexia, ten, fifteen, or twenty grains will, within an hour or two, cause a fall of the temperature to the extent of three or four degrees, and to a less degree of the pulse. * * The effect may be maintained by a repetition of the dose; and the remedy has often appeared to me to be of equal service when a pyrexia was at its crisis, and when the temperature was rising in place of falling." (Am. J. Med. Sc., April, 1872.) In the above quotations the italics are my own.

In a paper on the Alkaline Sulphites in marsh fever, M. Polli (Journal de Medicine,) refers to the efficacy of sulphites of soda and magnesia, and as also, "still more serviceable than quinine in yellow fever." He also refers to their value as preventives of marsh fever, and uses them thus: "He prescribes six grammes of sulphite of magnesia, or ten of sulphite of soda in two doses dissolved in water, morning and evening, and considers this sufficient to preserve an adult during the season favorable for epidemic disease. This dose can be taken without inconvenience for several months together." These antiseptic agents *may* prove prophylactic in yellow fever likewise.

The sulpho carbolates were tried by myself and others during the summer—but only after the fever was declared, and with doubtful results.

Besides the high temperature, the "loss of elasticity in the smaller arteries," I may add here, is also diminished by the conjoined application to the head and upper extremities, of cold water which, as before stated, I regard as of the first necessity also to every successful management of the disease; and more particularly in severe cases, by aiding greatly in abating the dangerous symptoms.

In all the cases reported on this occasion there were but three deaths,* and these occurred to persons addicted to the

*Not including of course a death, accompanied by black vomit, which occurred half an hour after I was summoned. One case with black vomit, in a white adult, recovered.

use of alcohol in excess. In one an enormous drain from the system caused by chronic Bright's disease, with albuminuria and suppression of urine, complicated the attack. Two of these died in violent convulsions. All had, of course, excessive irritability of stomach, with vomiting, from the moment they were seized with the fever. I did not abandon a plan of treatment which, apparently, was incompetent to save only cases such as these.

By careful examinations with that inestimable instrument, the thermometer, which is essential certainly to the proper study of fevers, I became convinced of an important mistake, which has been made by previous observers. This is: that there is a stadium in yellow fever somewhere between the 15th and 40th hour—when it has been said the fever subsides and goes off. There is a *remission* of the fever and general excitement, which is indeed owing to the action of the purgative medicines, the quinine, the cold sponging, the foot baths and the revulsives which have been used. The tongue, it is true, is often moist and natural; the hands and skin become cool and pleasant to the touch; and the pulse may be, and often is, between 60 and 80; but if we examine closely the surface of the abdomen, or press the hand deep in the axilla, we will find that the fever is not gone. If we now subject the decision to the crucial test—in other words apply the thermometer—it will reveal the fact that there is *no* complete intermission; and that the temperature is invariably above 98½. With all the apparent calm of body, mind and other general symptoms, the internal heat is often over 100°. Interstitial changes are silently and insensibly proceeding, and death may ensue when the subsequent exacerbations make their appearance;—if these latter are not subdued or aborted by the potent measures which I have urged as essential, in the early stages, at least, of this insidious disease.

By examinations of the atmosphere daily during the entire summer with prepared paper, ozone was found to be nearly always present in considerable amount. This does not accord with the observations of Dr. W. H. Ford and others. Ozone did not commence to diminish decidedly until October 18th; but with all my efforts nothing conclusive could be established, save that it did exist in marked amount during the prevalence of the disease under consideration. This allotropic condition of the oxygen of the air of M. Faraday, has been found also in varying degrees, at different periods, since

the disappearance of the fever with the advent of a temperature low enough to generate ice; and to-day, April 4th, when bronchitis and catarrhal affections are extremely common, I find that the prepared paper, exposed to the atmosphere, is not more highly discolored than it often was during the prevalence of yellow fever.*

And now, Fellows of the State Medical Association, I must thank you, in the few moments left me, for the high honor conferred in committing to me the responsible duties of watching over your interests, and of presiding at your councils. This would be regarded as such at any time; but more signally was it an honor worthy the aspiration of any one, and more particularly should it be and was appreciated at that period of our history, when difficulties, doubts and mistrust assailed our organization from every quarter; when we were struggling for very existence; and a man was required to be at the helm who was far more competent than he whom you have chosen,—save that it would have been difficult to exceed him in the earnestness of his wish to perform the duties imposed by the position.

Hoping that others present will make suggestions and devise and propose plans for giving greater development to our progress as one of the most important institutions of the State; I will only refer incidentally to the policy of enabling those in good standing, who are not members of county societies, to enter our association; of offering an annual prize for essays; and appointing a committee to secure papers and contributions for each meeting.

Our brethren elsewhere are actively engaged. Organizations of like character with our own, have been formed in Alabama, Georgia, Louisiana and several others of our sister dependencies of the South. A lively interest is being manifested by them; and they issue imposing volumes of Transactions. Let not us of South Carolina fall behind our coworkers in such generous and useful enterprises. We have had grievous troubles, hard to be endured; our energies have been paralysed during the course of a protracted contest, in which you honorably bore your full share; by unheard of

*I add this note, lest some of my readers should conclude, from what is written in the earlier portions of this paper, that I advocate the exclusive local origin of yellow fever; whereas my opinion (however unimportant it may be) is that attention to internal cleanliness should always be conjoined with a strict quarantine of vessels from infected ports.

suffering since, through scarcity of the actual necessaries of life, by difficulties within and without, springing out of political and social complications—we have been sorely tried. I am, I hope, no dreamer or enthusiast, who, in the hurry of his wishes, sees none of the real obstacles which stand in his path. I know, therefore, that this condition of things has drained and almost exhausted our resources, crippled our capacity for action—and greatly lessened the interest which many of us would otherwise take in efforts to advance the welfare of our profession and the position of ourselves individually as physicians and as men of education. But let us not give way to despair. It helps no cause to repine and to despond! Thoroughly furnished unto all good works, and doing the things which his hands findeth to do—let each one, albeit unaided and alone, go forward to meet the shadowy future, with a brave heart and a spirit undaunted by difficulties—which know *no such word* as fail. We shall find, doubtless, that we have been purified, trained and strengthened by the toils through which we have passed; and we have learned to endure with uncomplaining fortitude many of the ills which would overwhelm those less accustomed to them than we are now.

You who reside in cities, possess many advantages which result from the greater daily contact and attrition of mind with mind, during the keener rivalries and clash of adverse interests which are constantly spurring you on,—and through the influence of the varied stimuli which exist wherever large bodies of men are gathered together. You, on the contrary, who live in the rural districts—with certain inevitable draw-backs—by those compensations which wisely run through nature and temper its harsh necessities—still enjoy many privileges not accorded to us. You are forced to trust more to your own unassisted energies; you are compelled to go without needless circumlocution and by no circuitous routes more directly to the heart of things; you are consequently richer in expedients—readier and more fertile in resources. You have besides greater quiet and more time for reflection and observation; brought more constantly face to face with nature—that great patrimony of man—you can observe a thousand useful phenomena ever presented to your attention in your daily rounds of business. These have great effect in forming and strengthening individual character: they give superior poise and tranquility, and furnish splendid examples of practical skill for our imitation.

I must content myself with urging a special plea upon you at this time, which involves for individual action measures wide and comprehensive in their results. It is to beg earnestly that you who are, as it were, the custodians of knowledge for the people, to whom—as to a sacred priesthood of an earlier age—they will apply for relief in all their physical ailments, and in many of their moral difficulties :—that you will not remit your exertions, nor swerve one hair's breadth from the direct path which leads assuredly both to profits and to honors; but that all of you, everywhere within the borders of our beloved State, will strive to enrich yourselves with the knowledge of facts with regard both to nature and art; and that you will gather and record observations on everything, around and about you, that may be likely to prove useful to our common profession. By doing these things systematically, you will not go amiss; for thus you will be enabled more surely to make your impress upon the spirit and progress of the age in which you live. Each of you can realize the wish of Harvey: he can "search and study out the secrets of nature by way of experiment." No peculiar talent, or rare endowments are required—but only the courage necessary to undertake and the perseverance to pursue. Science, says Prof. Huxley, is but "trained and organized common sense, differing from the latter only as a veteran may differ from a raw recruit;" and the vast results obtained for science by men of not more than ordinary capacity, "are won," he adds: "by no mystical faculties, by no mental processes, other than those which are practised by every one of us, in the humblest and meanest affairs of life."

Nothing should escape your attention—each one being guided in his selection of subjects for observation, by the natural turn of his mind and the bent of his inclinations. I will direct your attention to some of these. Surrounded by the general phenomena of animate and inanimate nature—you can add new impulse to the astonishing progress already made by modern biological science; you can note the mode of operation of natural forces, the law of evolution of organic forms; anatomy, comparative and human, paleontology, fossil remains, the Fauna, and the Flora medical and general of the country or the district: the habits of animals, and the properties of plants; meteorology, electricity, storms, ocean currents, persistence and force of winds, clouds, dews, moisture, evaporation, temperature, atmosphere—these it will be your province to observe. The physical features and the structure of the

earth, geological strata; fall of rain, course, flow and evaporation of water as respects health, drainage; forests, rivers, thermal and mineral springs; the causes and the nature of health and sickness in cities and in districts, undue prevalence of certain diseases, climes and periods favorable or unfavorable to health—or the epidemic constitution of seasons; ozone, miasm, fevers, endemics and epidemics; duration of life, births, deaths; anthropology, past and present: the remains of earlier races, and the influence of race as it affects health or civilization and the social problem*:—all are open to your investigation as physicians; and to you it properly belongs to fulfil duties which your opportunities and advantages not only permit, but, in a measure, enforce. You will lose nothing by employing your hours of leisure in the investigation of these and kindred topics. It will give you greater influence and higher position among your neighbors and friends; and will infallibly add to the well-being and to the prosperity of your country.

I would invite the attention of the younger members to the study of some branch of natural history, or natural science, which, whilst it teaches the advantages of order, method and system, in an especial manner, sharpens and strengthens the powers of perception and discrimination; so that the celebrated diagnostician, Schoenlein, made no extraordinary assertion when he declared: that he learned his art from having studied *Cuvier!* Besides, you will enrich your thoughts and minds with a most healthy and life-giving aliment:—for the soul of man,—what though he dwells in comparative poverty, amid pure and simple occupations—is elevated by converse with nature: and from its contemplation, he looks up with blessings in his heart to the great Author of the Universe.

The true physician will never cease from his education, or discontinue his researches; and he will strive to attain to that improvement and perfection of his intellectual faculties, by a process which Sir Henry Holland describes, as consisting "not merely in the formal education which belongs to schools, but in that later and riper discipline to which a wise man will subject himself throughout every part of his professional course."†

Those of you, in conclusion, who live amid tranquil scenes—away from the busy haunts of men—whether it be

*For it is race, says D'Israelli, which is "the key of history and the surest clue in all ages to the conduct of mankind."

†"Medical Notes and Reflections."

in the secluded glens among the mountains, where the dews of morning glisten upon the delicate leaves of the mosses which clothe the rocks and where flowers of unrivaled hue bloom amidst the snows—you can explore the secrets of nature, and trace out, interpret and admire her marvelous works—equally impressive whether exhibited on their minutest, or most stupendous scale. You can look forth, for example, with awe and wonder to observe a magnificent panorama where circling mountains stretch beyond the horizon's utmost verge: their vast and ponderous forms, "on sunless pillars deep in earth" uplifted,—and, like "Pelion piled on Ossa," towering sublime into the middle heavens; or when the sun illumines with roseate hues their snow-clad summits, or the full-orbed moon, rising in cloudless majesty, floods the pale landscape with her sacred light.

> Precipitous, black, jagged rocks
> Forever shattered and the same forever—

save what the fretting hoar-frosts wear. In igneous fusion melted, after the reign of "Chaos and old Night," they had been upheaved from depths Plutonic, and rent asunder by some mighty convulsion, they stand as giant sentinels—scarred by time and hoary with age—ever to keep perpetual watch and ward upon the land. Yet not inutile, or conducive to no end besides,—but rich in ores and minerals, with trees innumerable crowning their shaggy steeps, swept by winds and gathering a retinue of storms about their brows—through which the lightnings pierce and flash incessant—they condense from humid air abundant rains: wherewith to fill the rivers, streams and fountains, and to replenish and refresh the fair and fruitful world. Or if along the borders of the sea-washed shore, where the wild waves play, you gather a tiny shell upon the beach, you may admire its beauty, and scrutinize the form and proportions of a creature—which took from its abode in the briny ocean wherewithal to build the solid foundation of the continents!—but everywhere something will be found to gratify your curiosity for knowledge, yet increase the thirst for more. To any one of you, if he will cease from his labors occasionally, to observe and reflect upon what he sees, or hears, or reads, may be applied with truth, I trust, the simple and beautiful lines of Wordsworth:

> The outward shows of sky and earth
> Of hill and valley he has viewed;
> And impulses of deeper birth
> Have come to him in solitude.