

13 Da Costa (J. M.)

MODERN MEDICINE:

A LECTURE

DELIVERED OCTOBER 7th, 1872.

INTRODUCTORY TO THE COURSE

AT THE

JEFFERSON MEDICAL COLLEGE.

BY

J. M. DA COSTA, M.D.,

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE.

PHILADELPHIA:
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AT a meeting of the students in attendance at Jefferson Medical College, held Oct. 8th, 1872, the following resolution was adopted; that,—

A committee of the Class shall be appointed to wait upon Prof. Da Costa, and request the privilege of publishing the "Introductory Address" delivered by him Oct. 7th, 1872.

FRANK WOODBURY, *Secretary.*

W. SCOTT WOLFORD, *President.*

CORRESPONDENCE.

LETTER OF COMMITTEE.

PHILA., Oct. 9th, 1872.

PROF. DA COSTA :

DEAR SIR,—We, the undersigned, have been appointed by the Class at Jefferson Medical College a committee to secure a copy of your "Introductory Address" for publication. We echo the unanimous sentiment of our Class when we say that the pleasure and profit derived from its delivery were only equaled by our satisfaction on learning of the action of the Trustees of this College in selecting you as our Professor of the Theory and Practice of Medicine.

Very respectfully yours,

C. H. FISHER, *Chairman of Committee.*

D. GILMORE FOSTER, Pennsylvania.
E. W. McCANN, Ohio.
L. J. PICOT, North Carolina.
J. P. DUCKETT, South Carolina.
JAS. W. IRWIN, Indiana.
W. A. BURRIS, Louisiana.
CHARLIE LAURENCE, Texas.
ANTONIO GOICOURIA, Porto Rico.
FRANK TALIAFERRO, Virginia.
W. P. STUBBS, Georgia.
J. C. DAVIS, M.D., Mexico.
J. W. NORCROSS, M.D., Vermont.
ED. L. PARKS, Massachusetts.
JOHN ELIASON, Maryland.
GEO. M. MCHENRY, Illinois.
W. F. MCCRORY, Canada.
J. W. FRASER, S. Wales.
J. I. URTECHO, Nicaragua.

J. B. RICH, Connecticut.
J. L. GASKINS, Florida.
H. J. ENGLISH, Arkansas.
J. E. HALBERT, Mississippi.
C. M. TRENCHARD, New Jersey.
A. A. AUSTIN, Missouri.
J. E. BRUNET, Cuba.
W. G. SPENCER, New York.
H. ENGEL, M.D., Prussia.
JOS. D. READ, Nova Scotia.
W. J. ROTHWELL, Idaho.
F. M. ROSS, Maine.
G. W. PRETTYMAN, Delaware.
SAML. HENDERSON, Tennessee.
J. A. CAMPBELL, West Virginia.
P. H. WARREN, JR., Iowa.
F. A. A. SMITH, M.R.C.S., England.
F. W. HATCH, JR., California.

JOHN B. ROBERTS, *Secretary of Committee.*

GENTLEMEN :

The lecture you ask for is at your disposal, and with it accept my sincere thanks for your very kind letter and the warm good feeling it evinces.

With much regard, faithfully yours,

J. M. DA COSTA.

Messrs. C. H. FISHER, D. GILMORE FOSTER, J. B. ROBERTS, and other gentlemen of the Committee.

MODERN MEDICINE.

It is with feelings of a very curious character that I look up at the bright young faces before me. It is not so very long, and it seems a still shorter time, since I sat where you now sit, had the same feelings of curiosity to hear and of anxiety to learn as you now have, the same enthusiasm and wonder of a beginner at a science of which he knows not even the alphabet. It requires but little imagination—for it seems so vivid as to be almost real—to see this door open and one by one the members of the Faculty, from whom we were to obtain instruction, enter. Heading them is the dignified, scholarly Dungleison, then steps the calm, judicious Huston, rounds of applause greet the popular, elegant Mütter, the upright, high-minded Bache, the handsome and talented Mitchell, the enthusiastic and gifted Meigs, and one who is still among us, the only one left of that brilliant band,—let him pardon the old pupil rather than the colleague in thus alluding to him,—our skilled anatomist and surgical artist, Pancoast.

Following this well-remembered introduction to studies here, comes the collegiate course with its tasks and aspirations; then busy years of practice

and the toil of professional life; and now, by the flattering choice of the trustees of this institution, I am brought back to scenes which I have so vividly still in mind, brought back to take—it must remain an object of ambition to say to fill—the place of a most distinguished member of this Faculty, your late revered teacher of the Practice of Medicine. Not united by the ties of instruction, but by the ties of warm friendship ever since he came among us, I cannot, in fulfilling the duty assigned to me of paying on the part of the Faculty a tribute to his memory, do so without sorrowful and keen recollections of a bond that by time and the full opportunities I had of knowing him, in health as well as in many an hour of suffering, had personally become one of sincere attachment. Let this friendship be to you an additional guarantee that the deep interest in the class, and the sense of responsibility felt in its instruction, so characteristic of the late Professor, will continue; the memory of kindly relations will strengthen and keep fresh that true devotion to the duties of the office left as a legacy to the chair.

But I may not speak further for myself; I must speak for the Faculty. Dr. Dickson joined them in 1858, leaving the Professorship of Practice of Medicine in the Charleston Medical College, of which he had been one of the chief ornaments, and bringing with him the reputation of a brilliant lecturer. This reputation did not diminish during the years he labored here; and the man who came among us at the age of sixty retained to the last the grace of delivery and the flow of refined language which

had made him at forty the most distinguished lecturer in his branch at the South. Equally ready in addressing those assembled in the medical classroom, or on occasions of a purely literary or festive character, Dr. Dickson spoke always in a way that charmed his audience; and no matter what physical pain he was suffering,—and of late years he scarcely ever spoke without being in pain,—his animated manner and rapid flow of thought carried them and him along. To him, indeed, this exercise of mind was at times a remedy; it lulled the grovelings of the body, which, however, was prone afterwards to revenge itself on the hardy spirit that occupied it.

Both in his lectures and his numerous addresses the scholar and the man of culture was always visible; a more eager and miscellaneous reader it would, indeed, have been difficult to find. His was the cry of Horace, "Let me have books," and poetry, works of fiction, of travel, of history, treatises on the natural sciences, on law, were all laid under contribution, often carefully annotated, and thus instructing himself he was always able to instruct others. All this varied knowledge was well digested, and when given forth was rendered conspicuous and embellished by the early training of the scholar, kept up by subsequent study; for from the time he left Yale College he never relinquished his classical and literary pursuits, sometimes, during his busy years of practice, remitting them, but never wholly abandoning them. Though his reading, when not on professional subjects, was of late chiefly in the direction of the natural sciences, his love of literature, and especially

his classical studies, gave a tinge to many of his productions, and the spirit of most showed unconsciously the school in which the man of letters and the thinker had been trained.

“Quo semel est imbuta recens, servabit odorem
Testa diu.”

I have spoken of Dr. Dickson as the professor and the scholar; I have yet to speak of him as the author and the man. It would be out of place here to give a detailed list of his systematic works or his numerous contributions to medical or literary journals, but I mention as prominent among them his “Elements of Medicine,” his “Essays on Life, Sleep, Pain, and Death,” and his more recent very interesting volume entitled “Studies in Pathology and Therapeutics.” In all of these, and in many others, the professional verdict has recognized the acute philosophical thinker as well as the accomplished writer; and as a man, neither I nor those by whom I am surrounded can think of him without emotion. Cheerful, genial, of poetical temperament, the most delightful of companions, with a charm of conversation quite his own, friendly to all, of manners the most courteous, no wonder he was beloved and respected by every one, and that his native city gladly put him forward as a representative, as when they sent him as a delegate to the laying of the corner-stone of Bunker Hill Monument, or selected him to preside over the dinner given to Marshall Hall, or to publicly introduce Edward Everett to the people of Charleston. And during his latter years, when reverses of fortune and increasing suffering, caused by a most painful disease,

would have broken the spirits of most, it was sad-
dening, yet ennobling, to see this old man retaining,
amid care and anguish, his cheerfulness and tender-
ness, his fortitude and bright courage. Gathered to
his fathers, he has left a void in many a mourning,
loving heart, and also an example of manly virtue
that we may all contemplate and profit by. Truly it
may be said of him at first as at last:

“And thus he bore without abuse
The grand old name of gentleman.”

The chair to which I have succeeded is, as you
know, one dealing specially with the practice of medi-
cine, and I have thought that I could not, perhaps,
better occupy this hour than with a discourse on the
present state of the branch which I am to teach.
Let us, as it were, take stock of this our science; see
what modern medicine really is; what it has accom-
plished; what are the demands on it; what its tend-
encies and aspirations; and how these are likely to
be furthered or interfered with. Such an inquiry is
surely a very fitting one. We learn, by defining our
knowledge, to separate distinctly the known from
the unknown; we discern more clearly the course
marked out for us, and that which it is profitless or
dangerous to pursue, leading to barren localities or
spots marked by castaway opinions and wrecked
lives. Like the captain, we must know whither we
are to steer before we begin our voyage. We ap-
proach perilous places carefully, warned by knowl-
edge that they are perilous, and directing the bow of

the noble ship where there is safety for her, we let her sail on the broad ocean, confident in her strength, watching, controlling, but not fettering her actions, steadying her with her sails, taking pride in the ease with which she rides the waves, and pressing her on to some well-ascertained destination, or embarking with her in a voyage of discovery with all the safeguards which experience and skill must use, should even we reach new channels.

In taking a calm survey of the existing state of our science, we find that work has been of late years accomplished or is chiefly progressing in the direction of ascertaining with readiness, What is the matter with the sick? What becomes of the illness if left to itself? What cures it, or at least does good? and, How can the malady be prevented? These great questions lie at the foundation of practical medicine, and their importance is more than ever realized.

To detect what is the matter with the sick, or the great art of Diagnosis, rests at present on a very different footing from what it formerly did. Learnedly to discuss about peccant humors, intelligibly to describe some very slight alteration of the pulse, were at one time among the higher accomplishments of the physician; while attention to the gross character of the discharges, to the kind of pain, the manner of breathing, and the state of the circulation, furnished him, in reality, nearly all of the signs by which he could judge. Now the science of diagnosis is beginning to attain the precision of the exact sciences. This we owe, not simply to better means of inves-

tigation, but to that advance in morbid anatomy and general pathology which is among the glories of our medical era. We are constantly learning to appreciate more keenly particular tissue changes, or are discovering new ones; we are grouping them together or separating them, and then the work of the diagnostician begins. He finds out whether, among the symptoms belonging to what advancing science shows is not one but several morbid states, there are any traits by which he can tell the newly-found member from the family connection. For instance, the pathologist has taught us that the continued fevers have different lesions, or, rather, that one of the group has a special lesion, while the others have not; the diagnostician has learned to tell with accuracy the enteric fever from typhus, from simple continued, and from relapsing fever. Or, to allude to inquiries still progressing actively: under the term phthisis we are finding a whole group of affections which we are trying to separate according to their origin and termination, obtaining, should we succeed, firmer ground for foretelling the issue of an individual case of consumption, and greater skill in meeting its indications.

These are some instances of the light afforded to the practical physician by the earnest and more complete study of pathology. But while he acknowledges most gladly that the chief advances in his art have been through the labors of the pathologist; while he knows that the rapid strides which pathology has taken have left him, in many instances, far behind; while he feels, therefore, that his knowledge as a

diagnostician is not on a level with that of the pathologist,—he can also point to cases in which the skill in recognizing and in appreciating morbid conditions has set tasks for the pathologist. Is this not true of Addison's disease? of which it is much in doubt whether it be a general malady of the supra-renal capsules, or a special disease there seated, or be produced by an affection of the nerves that supply them. Is it not true of locomotor ataxia? a disorder which is clinically well defined, but of which it seems a narrow view to limit it to a lesion of portion of the spinal cord. Yet, in these instances, it is again likely that the pathological knowledge will come which will set the diagnostician actively to work, by showing him,—as has happened in the case of Bright's disease,—under the symptoms supposed to characterize the complaints mentioned, a whole genus of affections, the individual members of which he will have to labor hard to learn to distinguish. So it is that our horizon is all the time enlarging, and we have to strive to keep our lookout clear and commanding.

There is, however, a caution which, in all our dealings with the pathologist, must be borne in mind: not to adopt too hastily views of an affection, and with these to assign it a special localization. Until we are satisfied that the revelations of the autopsy have been comprehensively looked at and represent a full truth, or are a very near approach to this, it is more judicious for the practical physician to retain impressions of a malady, and to seek for its diagnosis in channels, which do not commit to any special doc-

trine or opinion of its cause. Is it not better, for instance, in the fragmentary state of our pathological knowledge on these subjects, to look upon diabetes as a well-defined complaint, without reference to its source or its anatomical peculiarities? Is it not wiser to retain epilepsy in our divisions, though we are aware that it is a perversion of action occurring in diverse morbid conditions, which starts the hideous disorder?

Much of the advance in diagnosis and of its present high position is due to physical diagnosis, due, therefore, to the readiness with which distinct tissue changes are appreciated. But these physical signs are not in themselves sufficient; and I look to the day when we shall have a clearer idea of the inception, extent, and advancement of tissue alterations than we now have; when the amount of force expended in a diseased action, if I may so express myself, shall be more accurately gauged, and the progress of disorder more readily detected; when we can measure the something of life that is all the time undergoing the changes of life even in pathological textures, and estimate more closely the finer physical alterations being made and the upshot of these alterations.

Another wish, for which we must look to the future for fulfillment,—one that bears a certain relation to that just expressed,—is, that we should have fuller knowledge of the relation of disordered function to actual disease, should appreciate more clearly the fact that disease may grow out of perturbed function, and detect more certainly the earlier structural alterations

occasioned. This seems to me one of the most promising paths for diagnosis to advance on, and we are beginning to take steps on it, as in learning to recognize how functional disorder of the heart may end in organic affection, how months of thumping, irregular contraction may increase the walls and stretch the cavities of the agitated organ.

Yet another line in which to direct inquiry, and where our present knowledge is defective, is to endeavor better to discern the effect of diatheses on morbid conditions. To illustrate my meaning: Rheumatism, gout, syphilis, malaria, influence, we all know, other disorders, and lead to certain tissue changes. But how? and how can the changes produced be discriminated irrespective of the history we may obtain of the complaint? Again, are the chest affections of fevers—of the exanthemata in particular—so characterized that they yield distinctive signs to physical inquiry?

In making a diagnosis we have to deal not only with what can be directly ascertained, but also with what is the most probable. It is not the actual that we can seize upon, which alone requires to be studied, but equally the shadowy maybe that we can only discuss, which enters largely into the calculation; and in so looking, the fruits of some of the splendid pathological researches of late years are distinctly visible. We have them before us when we recognize in a person suddenly seized with paralysis, and laboring under valvular disease of the heart, that a clot has been washed into the vessels of the brain, and announce the symptoms to ensue; or when we see a

man writhing in a fit, and, suspecting disease of the kidneys, find the urine albuminous, and know of the poisoned elements circulating in the blood, and of the numerous convulsions likely soon to follow; or when we detect altered sensation on one side of the body, and beginning palsy of the other, and discern what part of the nervous system has been crippled, and what further injury may be looked for. Here, then, is a fine scope for learning and experience, and the bright achievements of the day in this respect are matters of sincere congratulation. Yet it must be confessed that in many diseases we want alike more knowledge of what is positive and recognizable by distinct signs, and of what is probable. We want it very much in the diagnosis of abdominal affections, where even an inference is not always possible; and many an investigator has been thus far in the position of one who has spent a life

“Dropping buckets into empty wells,
And growing old in drawing nothing out.”

Much of the advance in diagnosis is due to the microscope, not only indirectly by its great aid in solving pathological questions, but by its direct application to subjects appertaining to clinical medicine, as in the recognition of the characters of urinary deposits, or in the detection in any discharge of the false and the accidental from the true and the integral. But, though estimating this means of investigation most highly, I cannot help thinking that in the further progress of practical medicine chemistry will come to the front. Already she has done much for

us. No urine-caster in his wildest dreams thought that the attempt would ever be made to do what is done now every day by the least expert, when he finds sugar or albumen in the urine, and tells the accompanying symptoms or the consequences. Yet, although chemistry has done much, our claims on her, as our hope in her, are still great. We want her to give us simple processes for detecting readily at the bedside that which thus far the professional chemist alone can work out. We hope for new elements to be found to show us clearly, by analysis of the discharges, what is going on all the time in the way of change of tissue or of fluids in nature's laboratory within the body. Her great future, then, will be our great future, if her earnest workers will think of us constantly in our responsibilities and our needs.

It is one of the signs of the time in which we live that instruments are being eagerly looked for and made use of to assist in the problems which the practical physician has to solve. I have already alluded to the valuable aid of the microscope. The thermometer, the laryngoscope, the ophthalmoscope, are instruments the services of which are also anxiously sought.

The thermometer has had its value chiefly attested in the differential diagnosis of fevers, in rheumatism, in certain diatheses, and in some affections of the nervous system. It is certainly, whatever the occasion, a signal step in advance on estimating the animal heat by the hand, and has already established its claims to be viewed as a permanent and indispen-

sable part of our means of investigation. Whether it will prove of as much value in foretelling the issues of disease, as some of its more sanguine admirers believe, is among the unsolved questions of the day.

The laryngoscope is of such service that to practice without employing it in the class of diseases to which it is applicable, is not alone neglectful, but unjustifiable. The simple instrument not only shows us exactly what the trouble in the windpipe is, but tells us how far this is likely to be benefited, and often saves much useless dosing; on the other hand, it guides us in applying remedies to the very seat of the disease, or in removing obstacles that could not be reached without it. Every time it achieves these results it reflects from its polished surface a halo around the memory of Tuerck, or gives additional fame to the name of the living Czermak.

Then the ophthalmoscope, which has already done such brilliant work for the eye surgeon, is knocking urgently for admission into the armamentarium of the medical practitioner. It looks into the eye and wants to tell us from what it there sees of what is going on within the brain; and thus the eye is to be, not figuratively, but in reality, something of a "mirror of the soul." And not only into the workings of the brain does it promise to give insight, but also to inform us of textural changes that take place in parts remote from the organ,—as in the kidneys. It is premature to estimate how much the ophthalmoscope will really do for practical medicine. It has already made known to us some things we

were previously ignorant of, and through the able labors of Bouchut, Hughlings Jackson, and Allbutt, it promises to enlighten us much more.

Further, we have the pulse-tracer, or sphygmograph,—very useful, no doubt, in pathological and therapeutical inquiries, but requiring much care in its application, and still of unsettled value as an instrument for what we need at the bedside; and stethoscopes to intensify sound; and all kinds of scopes and graphs,—instruments to look into the bladder, to inspect the œsophagus, the stomach, to record muscular movements, to measure this or measure that, some of use, others not. In truth, this multiplication of instruments must be looked upon with some dread. Should it progress at the rate of the last ten years, and should only part of the means employed be found to be serviceable, the time will come when it will be impossible for one person to be master of all with anything like the skill requisite for an opinion, and such a subdivision of labor will naturally follow that a professional visit of the future will be a curious thing indeed. Let us take a glimpse into this future.

Madam is in her boudoir, reclining on the sofa, in expectation of her medical attendants. A drag drives up, from which alight two servants with heavy bags, who assist four doctors to descend. The fraternity is announced, and, followed by the servants, enters the room. The bags are deposited; the servitors withdraw, and after the exchange of a few remarks the examination begins. Dr. Ready, the junior practitioner, conducts the first inquiries, makes the

ordinary investigations of the different organs, and before finishing pulls out of his pocket a tablet containing the volumetric examination of every fluid in the body, completed since the last visit. This is looked at by all. Dr. Reckoner then takes traces of the movements of the heart, of the pulse, of the action of the muscles, records the velocity of their contraction, and estimates the amount of nerve-supply, showing the diagrams and figures to the patient, who inspects them with the look of a connoisseur. Dr. Eyeman now applies the improved ophthalmoscope, which photographs as well as is used to see by. Again Madam shows active interest, and declares that the picture is very pretty. A mysterious nodding and whispering take place. There has been indigestion with pain at the pit of the stomach,—can there be anything wrong with the blood-vessels there? Dr. Magnet, who is a very accomplished physicist, steps forward: “If you will permit me, I will make you transparent.” And by means of a modified, portable Ruhmkorff coil, and an instrument with lenses dexterously passed into the stomach, the fair patient is really rendered transparent. The examination is completed; fortunately no serious lesions exist, and a consultation held in the next room results in the advice to take a few glasses of soda-water, and a daily ride on horseback.

But to look at the subject in a serious manner. We have in the recognition of disease certainly gained already much by employing instruments; but they have been simple instruments. Better it is not to bring forward any, except such as are very readily

applied and of striking value, for the exigencies as well as the sense of the profession cause them to be rejected. Nor is it by the application of instruments that diagnosis will be reducible to mathematical rule. In truth, we can hardly hope that by any means this will be accomplished. It is our boast that there are more and more and simpler and simpler precepts to guide us, and we may reasonably look for far greater improvement. But the problems are so many, and the combinations and contingencies in nature so great, that we cannot expect the time ever to come when all that personal experience teaches, all the keen appreciation of differences in cases of apparently the same disorder, can be formulized so as to be as readily discerned by the tyro as by the accomplished physician; when medical tact and insight shall be superseded by accurately balanced rule and broadly enunciated principle.

The second great question I mentioned as one with which modern medicine has been pre-eminently occupied, concerns the study of the natural history of disease. In truth, as regards the whole future of our science, here is, I think, the achievement of our day most pregnant with the seeds of progress. To learn as we have learned of many diseases, and are trying to learn of every one, what becomes of it when left to itself,—how it begins, what laws it obeys, how it progresses, and how it ends,—is to have the only sure basis for prognosis, and the only rational one for therapeutics. This study underlies, then, the application, certainly the appreciation, of all remedies;

and the more we give ourselves to it, the better for us in every respect. Yet it is a kind of knowledge very difficult to obtain. It is only by careful investigation of cases that have come into our hands without previous treatment, or by observing instances of disease so light that they may be safely left to themselves, or by comparing results with those of systems of medicine in which doses are administered that we know to be inert, that such information can be legitimately acquired. But, notwithstanding the obstacles surrounding the subject, the thought and labor expended on it are causing it to be well understood; and I trust that, in addressing you in this hall, and begging you to make use of all your opportunities to further this knowledge, the request will have double weight, since it was here that a chief pioneer in this inquiry, one who did so much to call attention to it, the late Prof. Dunglison, was wont to impress eloquently the facts connected with it on his hearers.

Closely associated with the matter just alluded to, forming, indeed, part of it, is another in which the medicine of to-day is far in advance of the medicine of the past: I mean the clear separation of the processes of degeneration from those of disease. For instance, we appreciate that some changes, such as thickening of certain tissues and loss of elasticity, are the changes of old age rather than of disease; and are not to be remedied at all, or are only prevented from advancing by that mode of life which keeps up the nutrition to a healthy standard, so long as it can be kept up, or so modifies the habits of living and the activity of exertion as to make allowance for the

stiffening and hardening that are taking place. The same kind of degeneration may happen also from some local cause in a part that is dying before its time; and then the question arises, how to limit this withering and to prevent the sign of failing power from becoming the precursor of premature old age. Another form of decay we are now familiar with is that produced by granular disintegration and fatty change, as in the coats of the arteries, especially the arteries of the brain, or the substitution of granular and fatty material for the muscular structure in the walls of the heart; and the knowledge that the manifestations occasioned are mostly those of waning life-force has led to a most salutary revision of our method of dealing with them. Further, we understand that under certain conditions similar changes may be altogether helpful, as in the breaking up of the exudation in pneumonia by fatty degeneration, or the hardening and calcification of tubercle.

From these considerations we turn to the third division of our subject, and ask ourselves, Where does modern medicine stand with reference to its curative powers? Now, I think that on the whole the answer is a very gratifying one. The wits of former times used constantly to shoot their shafts of ridicule at our modes of treatment; some of the present day do so still, and fancy that they have proved a great deal when they prove that medicine is not the *one* perfect science. Unfortunately, there are members of our profession who join in the accusations brought against this department of our science, and question whether we have made any real progress, or possess

much greater power over disease. With some this may be honest conviction; with others it proceeds from the unlucky possession of the spirit which Goethe has assigned to his Mephistopheles, "der Geist der stets verneint,"—the spirit that always denies. Yet, notwithstanding all that is said to the contrary, the thinking men both in and out of the profession recognize a science much more direct in its applications, knowing far better when to act decisively, when to abstain from such action; a science in which the use of old remedies is more clearly understood, while new resources are being constantly introduced; a science which, if it progress as at present, will in the not far distant future have made much of the incurable the curable.

And to appreciate its position let us remember what it was, and see what it, among half-civilized nations, still is. The statement of Macaulay, that in our age every sweeper of a crossing who is run over by a carriage may have his wounds dressed and his limbs set with a skill such as in the time of Charles the Second all the wealth of a great lord or of a merchant prince could not have purchased, may be made equally applicable to the medicine of that day. In the year 1685, not a sickly year, more than one in twenty-three of the inhabitants of London died. Less than thirty years before, Oliver Cromwell, the powerful ruler of the most powerful commonwealth of his age, perished by a bilious fever which any young hospital resident would now be apt to conduct speedily to a successful issue. To come nearer to our own times, Washington's life would in these days, most probably, have been saved,

for the laryngeal trouble of which he died could, with our present means, have been promptly recognized and treated. Then look at the blessings of anæsthesia,—blessings which every American must be proud to think came, under God's providence, from his country; see the way in which the writhings of pain are eased by the subcutaneous injection of morphia; regard the fearful convulsions of epilepsy, held in check by the bromides, and the horror thus removed from many a household, and then defy any one to say that the practice of medicine is a stationary or inert science.

Now let us see where we stand, by comparing our therapeutic knowledge with that of semi-civilized nations. To take the Chinese, a people on the whole not unenlightened, and among whom learning is much esteemed. From a recent author, Porter Smith, who has collected much curious information on their manner of practicing medicine, I learn that parts of the body of the bat, from the longevity and excellent sight of the creature, are prescribed to lengthen life and strengthen the eye-sight. The vaunted remedy for rheumatic affections of the joints, for ague and general debility, is a tincture made from the tibiæ and skull-bones of a tiger. Still more remarkable properties are assigned to some insects, the *mylabris chicorii* in particular. It neutralizes, by passing into the urine, the bite of a mad dog, or rather, to speak in strict accordance with Chinese pathology, it destroys there the little dog with which the mad dog is supposed to have impregnated the bitten person. And paper, too, has many uses we know not of.

After cutting out the printed characters, old paper is a sovereign remedy for barren women.

But to resume. Let us briefly specify some of the therapeutic subjects that are just now engaging particular attention, as well as of those that have comparatively of late years become part of the common stock of knowledge.

Every one is aware of the discovery of anæsthetics. But the introduction of ether and chloroform to produce insensibility and deaden pain has been followed by their application in other ways. We know them now to be the best means of relaxing spasm, and, by keeping pain in suspense, they often break up its tendency to recur, and thus, as in neuralgic affections, are among our most powerful means of giving permanent relief. Then witness their use in disorders with rapidly-recurring convulsions, especially in the convulsions of childbed or of uræmia; they soothe, they defer, they cure. New anæsthetics, particularly in the amyl series, are being anxiously sought, and when found, it is very likely that the properties just mentioned, as well as others, will be more closely studied and be seen to attend, as scarcely secondary properties, the blessed production of unconsciousness.

Hypodermic medication is leading to great and salutary changes in practical medicine. Not only does the introduction of remedies under the skin, by the simple instrument, produce the promptest and most striking results, as in the case of opiates, where the relief appears like magic, but in the rapid passage of medicines into the blood, and in their action on the vaso-motor system, we may obtain from them what is

but imperfectly attainable when they are swallowed. The effect, then, produced by administering drugs hypodermically or by the mouth is not necessarily quite alike, and valuable investigations will follow a consideration of this fact. By the rapid action on the blood-vessels we may accomplish some most useful results. Hemorrhages have been arrested by the subcutaneous injection of astringents and of ergot; and this drug has been recently thus employed for the cure of aneurisms. Whether this will succeed, we do not as yet know. But it is impossible not to exult in the achievements that must follow from being able to influence all parts of the body so rapidly and effectively; and our debt of gratitude to Alexander Wood, of Edinburgh, the introducer of hypodermic medication, is great.

Electricity is becoming a most useful handmaid to the practitioner. Indeed, it has already been found to be the most potent means of controlling the nutrition of muscles and restoring their power; and with the constant current we are beginning to learn how to effect the nutrition and circulation of deep-seated organs,—even the brain and spinal cord can be got at. Let us trust that they can be really as much influenced as recent observers have led us to believe, for then a new era in the treatment of chronic affections has been reached.

Nor is it only in special means—and of these I have indicated but a few—that the medicine of to-day is so different from the medicine of the past. As great or a greater change may be seen in the general management of disease. We have learned that sim-

plicity is for the most part force; that in combining many remedies we are apt to obtain a *tertium quid* with an effect different from what we aim at; in consequence, polypharmacy is passing away. On the other hand, the time is fast coming when we shall better understand the result of combinations, and by joining medicines be able to counteract in each certain effects not desirable, and to intensify those we wish to intensify. Thus, the union of bromide of potassium with opium often gives us a more calming and anodyne influence, while the nausea and subsequent depression of the opiate are avoided.

Another point in the general management of disease is, that we are aiming much more at curing it by the aid of nature; by assisting or promoting those processes that she always has at work; by upholding the powers of life in place of depressing them. These ideas lie at the root of that "restorative medicine" which of late years has been a subject so much studied. With it, too, is largely mixed up the giving of stimulants in acute disease,—a mode of treatment which, when it departs from the mere object of sustaining or restoring force so as to aid in the natural solution of disorder, has led into routine practice and into as grave errors as it intended to avoid. To give food and sustain, not, in the strict sense of the word, to stimulate, except where imperatively needed; to retain, restore, or develop vital action; to do this, often while forwarding the processes by which nature gets rid of the malady, has become the treatment of a large class of affections. Now, it is very evident that the investigation of the natural history of disease,

to which I have already directed your attention, has had much to do with shaping this system of therapeutics. And that it is a step in advance; that, judged from a practical point of view, it leads to better results, and saves more lives; that more desperate cases are, by its just appreciation, restored, cannot be gainsaid. Yet I do not think that it represents the highest state of medicine. It is a confession of weakness,—a keen appreciation of where our power ends, and how, with the means at our disposal, we had better persuade and guide than command and compel. But the medicine of the future is likely to have different means, and while it cannot retrograde and ignore the forces and efforts of nature, it will probably possess many prompt agents to produce rapid and decisive effects on morbid action,—such agents as we own in the control of quinia on malarial manifestations.

Now, the change in practice that has been induced by trusting more to the processes of nature, and sustaining the patient's strength, and by abandoning the attempt to cut the disease short or to destroy it radically, especially by such potent and lowering remedies as blood-letting or a mercurial impression, has seemed so great that to account for it the theory of a change of type has been mooted. In other words, the form of the disorder is not supposed to be the same: a pneumonia now is not what a pneumonia was; a fever is less active, with symptoms less severe. The controversy which raged with considerable fierceness a few years since is still not settled, and has somehow or other had a bearing

which does not belong to it. I do not wish here to enter into the discussion, but I may state that I see no kind of difficulty in supposing that the altered conditions of civilized life; the greater wear and tear it entails; the many more sedentary pursuits; the new diseases that have arisen, such as cholera; the old diseases that have returned, such as diphtheria, have left in each community their impress on large numbers of persons in a manner to have legitimately influenced to a great extent any practice that may have been a prevailing one. But all this will not account for so sweeping a change as has taken place. It has rather come from a closer study of disease, from a juster appreciation of the powers of life, and chiefly from the fact that, as in any other clinical question, experience has given its verdict, and this in favor of the present treatment. But here let us stop and examine some fallacies, which I believe to be pernicious fallacies, with which the whole question has become mixed up. We seem to have forgotten that the results compared were obtained chiefly in the treatment of pneumonia and of fevers, and have at once generalized that a potent remedy—I am now alluding particularly to blood-letting—is always to be set aside, because we may do better without it in many fevers and certain inflammations. This, logically, is a *non-sequitur*. The point can merely be said to have been proved of individual morbid states, and we must carefully examine for all the evidence obtained on clinical grounds alone before we accept the nowadays readily-credited belief that blood-letting is, under every circumstance, injurious, and

deprive this active agent of all position in therapeutics.

Nor can we with justice or reason assume that our different treatment is altogether owing to juster and broader views. We forget that we have remedies which formerly did not exist, or the powers of which were unknown. We can control the action of the heart and reduce the pulse with aconite or veratrum viride, where our forefathers had nothing but the lancet. They had to bleed to relieve spasm or produce relaxation; we do it rapidly with hypodermic injections, with ether, with chloroform. Let us, then, be just to those who have preceded us, and by being just ourselves make the public understand the question in its true light. It is not simply increased wisdom, but also different tools, that have led to such changes as we find in the practical medicine of the day; and somehow I fancy that Sydenham with his great insight, and Mead with his learned judgment, and even that great bleeder, Rush, had they lived now would have employed, whatever their pathological views, their accustomed weapons much more sparingly, and vied with the best of us in the skilled use of our present appliances. Accustomed to the means they possessed, they used them boldly; had they had better means they would have employed them as vigorously; and to reflect on them for resorting to what they did, when they mostly had nothing else to resort to, is unjust. Do you blame the horseman of the olden time because he could not in one day accomplish the distance you may in an hour in a railway car? Do you

think less of the valor and skill of men who fought gallantly with cross-bows because we use breech-loading rifles? Do you not respect the achievements of the scientific chemists of the last century, whose laboratories and rude apparatus you may smile at, but who, nevertheless, gave to the world results on which their brethren of the present day in their improvements still build? And if you recognize gladly how much easier the accomplishment of everything has been made, either in peace or in war, how the means have so grown that in our times only certain things have become practicable, then also recognize that the same applies in medicine; and to hold other than in esteem those who mostly had not the power of acting differently, or to join in the public cry abusing them, is not a credit to any one having justice and professional honor at heart.

There are many other matters growing out of the consideration of the present position of therapeutics, to which I should like here to call your attention. Time, however, does not permit. But I cannot leave the subject without taking full cognizance of the interest and scientific spirit with which this important branch of our art is being handled. New remedies are being carefully tested, old remedies retried with fuller knowledge; new results being gained, old ones examined in the light of an extending acquaintance with general pathology; a clearer conception of what is attainable with the means we possess, a shrinking from attempting the impossible with remedies of which, tried over and over again, experience has shown that we can accomplish only

so much and no more ; less theorizing, more careful deduction ; a growing disposition to avoid exclusive systems, and those which have proved fallacious,—seemingly burnt-out volcanoes, among which fire still lingers, and which, if stirred up, become dangerous—these characteristics mark the way in which therapeutics is now being studied.

But the greatest of all questions connected with the science and art of medicine is, after all, not how to cure disease, but how to prevent it. Here, too, we have earnest work and good results to record ; we should have more to note, were the public, for whose benefit chiefly the researches are made, more alive to their importance, and more anxious to supply the necessary means. How usefully could not money be expended in this way by government or by some of our rich men, who will spend anything on pictures, on horses, on houses, on expeditions to distant countries perhaps, and nothing to aid in preventing what is constantly jeoparding the lives of those dearest to them ! Let us trust that we shall live to see the day in which not only efficient sanitary authority shall be everywhere active in carrying out and enforcing what science shows to be the best way of preventing disease, but that the means will be amply furnished to investigate thoroughly how it originates and how to destroy its propagation. We of the profession are surely not inactive in the matter. We may refer to observations on the relation between the water-supply contaminated with cholera dejections and the spread of cholera ; to the accumulating evidence, which it seems to have needed

the sickness of the heir to a throne to impress, that typhoid fever is connected with defective drainage; to the proposals for promptly isolating and stamping out contagious diseases; to the facts ascertained by acting on which the mortality from pulmonary consumption has been, in some places, reduced by the drainage of the soil alone; we may point to these contributions to show that preventive medicine is actively employed with momentous questions, and is achieving most useful results. The medical mind, too, is beginning to make the importance of the subject recognized at some of the great centres of learning. Thus, the venerable university of Oxford has in Dr. Acland a distinguished member who loses no opportunity to further the study of the subject. Moreover, it has recently expressed itself through its Radcliffe trustees, such honored representatives of our profession as Paget, Gull, and Ogle, as anxious to aid in the scientific study of preventive medicine, and has offered pecuniary aid to advanced students desirous of doing work in this direction.

But to recur to matters which more especially concern the physician in his daily intercourse with the sick, and which relate chiefly to the curative department of his art, Can we say that all the activity and zeal displayed are for good or lead in the right direction? We cannot; some wrong tendencies are plainly visible which threaten the true progress of clinical science. The eagerness with which, owing to the immense issues at stake, all improvements are sought for has fostered a feeling of unrest, and we

are in some danger of being too much influenced by investigations that will have to be seriously scrutinized before even their bearing is admitted. I allude particularly to the experimental therapeutics of the last few years and to those especially where conclusions are drawn from experiments on animals. Such experiments can never be more than suggestive of research, or of explanation of results obtained at the bedside; and to apply them to man, particularly to man in disease, seems to be a grave error. Why, the reasoning does not hold good even from one animal to another; and even if it did, we cannot draw any conclusions as to what would happen in man, until we prove that the same morbid states occur in animals as in man and obey the same laws; in other words, that animal pathology is exactly like human pathology. I say, therefore, that the results obtained, however interesting the experiments, are but suggestive; sometimes the suggestions are valuable, at others they do not in the least increase either our therapeutic or our pathological knowledge. To show you how difficult it is—and I will not even further allude to the differences in morbid states—to apply observations made on animals to the human frame, here are some illustrations. Baker in his Abyssinian travels states, that the camel feeds on the senna plant without its producing a purgative effect. Supposing you were to experiment on camels with senna, had made the most elaborate study of the secretions under its use, how would the knowledge gained help you in man? Would it prevent anybody from being very uncomfortable if, at your suggestion, he took senna

leaves as an article of food by way of varying his diet? It is well ascertained that goats are not affected by doses of nicotine poisonous to man; rabbits can be nourished on belladonna; swine and cows eat hyoscyamus with impunity; careful observations have shown that birds are scarcely susceptible to its influence or to that of opium; and of this peerless drug, how little of what we have found out about it in animals is applicable to man! If there be an animal that resembles man, it is the monkey. Indeed, he is, if we accede to the observations of Darwin, our progenitor, and we should be proud of the descent. Let us see what Headland has told us about opium in his classical work: "Some of the lower animals are almost insensible to its action. One grain of morphia will send a man to sleep; but Flandin gave five hundred to an ape without any results, although it entered the system and passed into the urine."

How unlike, then, are animals to man! They may be either not affected at all by the same drugs, or differently affected. And further, when in addition, to the dissimilar action we have varying abnormal conditions, some of these, perhaps, artificially produced, how wide from the mark may the reasoning be that would make results obtained by experimenting on animals applicable to man when stricken with disease!

I do not wish to be misunderstood. I am not discussing the propriety or impropriety of vivisection in general. I am not questioning how far this mode of interrogating nature may be imperative in physiological research. Nor will I fail to acknowledge

the skill and ingenuity with which in therapeutic experiments on animals the conclusions have been worked out; but I deny the direct applicability of these conclusions to human disorders.

Trousseau was wont in eloquent language to deplore that too chemical an explanation was given to diseased processes, and too chemical a basis to therapeutics, and arraigned chemistry for "being mixed up with our art in an inappropriate and impertinent manner." This danger has passed; but the one just discussed is as great and more subtle. In truth, the position of clinical medicine in regard to all experiment designed outside of its own limits, and all deduction from other sciences, however closely allied, is a difficult one. The physician must be very careful what he assumes, and be wary of all conclusion not formed from actual observation, or at least sanctioned by observation, at the bedside. Let us recognize, then, that as yet practical medicine is a study by itself. The accessory sciences help it greatly; to be ignorant or careless of them is to set bounds to our investigations and resources; and the time may come when these sciences will form the basis of medicine. But that time has not as yet come; and while they are most valuable as enlarging our knowledge, suggesting new points, new tests, new checks, and while simply invaluable as giving a scientific turn of mind, their limits are not always our limits, nor their truths our truths. The same may be said even of those branches of our science apparently the most closely united to clinical medicine. To quote the words of a master-

mind now living, of Sir James Paget, in his address to the Clinical Society in 1870: "Having spent nearly equal periods of study, first in physiology and morbid anatomy, and then in practical medicine and surgery, I feel sure that clinical science has as good a claim to the name and rights and self-subsistence of a science as any other department of biology, and that in it are the safest and best means of increasing the knowledge of diseases and their treatment."

Such, then, I take to be one of the dangers which spring from the interesting pursuits and love of work of our day, and threaten the true progress of medicine. Another peril which the teeming activity of the present has occasioned is of a different kind. Everybody is in earnest, wants to do something; and as everybody's judgment is not equally good, nor his knowledge of what has been done on a par with his zeal, we are being burdened with a literature that knows no limit. There is a flow of writing and talking which deepens hourly. One doctor publishes in medical journals incessantly and not differently from what is contained in every text-book; and another at a medical society, out of the fulness of his heart rather than out of the fulness of his knowledge, often enlightens his listeners on what they all know well.

Then the extent and wants of the enormous literature that is thus fostered lead to plagiarism, only perhaps to be defended in the spirit in which Molière defends it: "Je prends mon bien où je le trouve." Oh for what Sydney Smith has called a few eloquent

flashes of silence! If you, when going forth from these halls, investigate a subject thoroughly, write about it thoroughly; but if you have not examined it carefully, and have nothing new or well considered to say about it, be thoughtful enough to say nothing.

Yet all these are small faults, are but the weaknesses of a learning life, outgrowths, perhaps unavoidable outgrowths, of the interest engendered by the rapid extension of the human mind into nature,—never so rapidly proceeding as at present; never enlisting more talent, more self-devotion; never productive of so much good. It seems, indeed, as if we had reached a new era, a science almost new is ours now, so much simpler, and showing capacities and possibilities for rapid improvement scarcely dreamed of before; and amid this growing perfection we see distinctly the imagination, the power, the aspirations of youth in the many, the active toilers. It is, then, into this life that you are about to enter; to enter it as one who at dawn watches the sun, as it begins to illuminate the landscape. Bands of yellow and purple fringe the dark clouds, the sky becomes blue, shadows gradually melt away, mists clear with a rosy hue at the top, and through them the trees and fields begin to be visible, while far-off mountain peaks reflect the golden light; everything is full of rosy, bright life, and the hum of the stirring, active laborers reaches the ear. So it is now with us. We are at the dawn of the great future, a future of which we catch a glimpse, a future to which, under God's ruling hand, we must all contribute. To work, then; you to yours, we to ours.